Echo Street, Manchester

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April 2023

Turley

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1. Introduction

Overview

1.1 This Environmental Statement (ES) is part of a suite of documents that supports the detailed planning application (hereafter referred to as the 'Application') submitted by iQ Student Accommodation (hereafter referred to as the 'Applicant') for a purpose built student accommodation (PBSA) development (hereafter referred to as the 'Proposed Scheme'). The Proposed Scheme is for up to 1,224 purpose built student accommodation units (Use Class Sui Generis).

1.2 The Proposed Scheme will be delivered on an approximately 0.5ha site bound by Vimto Park to the west, the Manchester Oxford Road-Manchester Piccadilly railway line to the south, the A6 London Road to the east, and Lambert House, Fairfield Hall and the Bulls Head pub to the north (hereafter referred to as the 'Site').

1.3 A previous application[a] was submitted on the Site in 2017 (the '2017 application'), supported by an ES, seeking permission for the following:

"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."

1.4 This 2017 application was granted by Manchester City Council (MCC) 2018. The 2017 application was then subject to subsequent applications[b] in 2019, comprising two Section 73 (S73) minor material amendment applications. These two applications were granted in May 2019 and March 2020 respectively. An ES Addendum[c] (ESA) (the '2019 ESA') was provided as part of the first 2019 S73 application (MCC Ref: 122732/JO/2019). No ESA was provided for the second S73 application (MCC Ref: 125537/JO/2019).

1.5 The Site is cleared of all buildings and trees, which has been implemented through the previous permission. Basement and piling works have also been implemented as part of the previous permission on Site. Additionally, previous archaeological investigations and ground remediation works have been undertaken as part of site enabling works, demolition and excavation. Further details on the Site are provided in **Chapter 3: Site Context**.

[a] MCC Ref: 18267/FO/2017. Approved in June 2018.
[b] MCC Ref: 122732/JO/2019; and MCC Ref: 125537/JO/2019.
[c] Turley (2019) Echo Street – Environmental Statement Addendum, February 2019.

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

"*Development of purpose-built student accommodation (sui generis) comprising 3 interlinked tower blocks with intermediary linking block buildings, associated amenity space and external landscaping."*

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

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

1.9 The remainder of this Chapter is structured as follows:

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

Definition of EIA

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

(a) the preparation of an environmental statement;

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

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

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

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

(a) population and human health;

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

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

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

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

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

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

Legal Framework for the EIA

Overview of the EIA Process

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

Stage 1: EIA Screening

1.14 The Proposed Scheme does not fall within the description of any project listed within Schedule 1 of the EIA Regulations. However, the Proposed Scheme falls within the remit of the EIA Regulations as it meets the threshold/criteria within Schedule 2 10(b) (Urban development projects), as it includes over 150 dwellings. The threshold/criteria does not determine the requirement for EIA but requires a subsequent stage to determine "*whether the development is likely to have significant effects on the environment by virtue of factors such as its nature, size or location*", normally presented within an EIA Screening Report and submitted to the determining authority for their opinion. However, given the characteristics of the Proposed Scheme, receiving environment (the Site), and the precedent for the need for EIA given the 2017 application was EIA development, a number of potentially significant effects were

identified and therefore an EIA has been undertaken. This approach was agreed with MCC as part of their EIA Scoping Opinion (**Appendix 2.2**).

Stage 2: EIA Scoping

1.15 In accordance with Regulation 15, Paragraph 1 of the EIA Regulations, a formal request for an EIA Scoping Opinion supported by an EIA Scoping Report (**Appendix 2.1**) was submitted to MCC in February 2023. An EIA Scoping Opinion (**Appendix 2.2**) was received from MCC in March 2023. An agreed scope of assessment for individual technical topics are set out within the **Technical Chapters 6 – 12**.

1.16 Further details of the scoping process are provided within **Chapter 2: Approach to EIA**, which includes a summary of the comments raised in the EIA Scoping Opinion and the EIA project team's responses.

Stage 3: Environmental Statement

1.17 The findings of the EIA are presented in this ES which has been prepared in accordance with Regulation 18, Paragraphs 3 **–** 5 and Schedule 4 of the EIA Regulations, as well as PPG. An overview of the EIA procedure and methodology adopted throughout the ES is provided in **Chapter 2: Approach to EIA**. The specific methodology adopted for each technical topic is detailed within the respective **Technical Chapters 6 – 12**.

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

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

Regulation 18	Schedule 4	Location within this ES
(3) an environmental statement is a statement which includes at least - (a) a description of the proposed development comprising information on the site, design, size and other relevant features of the development.	(1) A description of the development, including in particular: (a) a description of the location of the development; (b) a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational stages; (c) a description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used; and (d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced during the construction and operation phases.	**Chapter 3: Site Context**, **Chapter 4: Development Specification**; and **Technical Chapters 6 – 12** where relevant.
(3)(b) a description of the likely significant effects of the proposed development on the environment.	(5) a description of the likely significant effects of the development on the environment resulting from, inter alia: (a) the construction and existence of the development, including, where relevant, demolition works; (b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;	**Technical Chapters 6 – 12** where relevant and **Chapter 13: Assessment of Cumulative Effects.**

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

Regulation 18	Schedule 4	Location within this ES
(3)(c) a description of any features of the proposed development, or measure envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment.	(7) a description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational stages.	**Chapter 4: Development Specification, Technical Chapters 6 – 12** where relevant and **Chapter 13: Assessment of Cumulative Effects.**
(3)(d) a description of the reasonable alternatives studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment.	(2) a description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.	**Chapter 5: Consideration of Alternatives.**
(3)(e) a non-technical summary of the information referred to in sub-paragraph (a) to (d).	(9) a non-technical summary of the information provided under paragraphs 1 to 8.	**Volume 4: Non-Technical Summary.**
(4) an environmental statement must— (a) where a scoping opinion or direction has been issued in accordance with regulation 15 or 16, be based on the most recent scoping	–	**Chapter 2: Approach to EIA** and **Technical Chapters 6 – 12** where relevant.

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

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

Regulation 18	Schedule 4	Location within this ES
(a) the developer must ensure that the environmental statement is prepared by competent experts; and (b) the environmental statement must be accompanied by a statement from the developer outlining the relevant expertise or qualifications of such experts.		
–	(3) a description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.	**Chapter 3: Site Context** and **Technical Chapters 6 – 12.**
–	(4) a description of the factors specified in regulation 4(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.	**Chapter 3: Site Context** and **Technical Chapters 6 – 12.**

Regulation 18	Schedule 4	Location within this ES
–	(6) a description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the new required information and the main uncertainties involved.	**Chapter 2: Approach to EIA** and **Technical Chapters 6 – 12.**
–	(8) a description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to EU legislation such as Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or UK environmental assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the details of preparedness for and proposed response to such emergencies.	**Chapter 2: Approach to EIA**; **Technical Chapters 6 – 12** and **Chapter 14: Summary of ES.**
	(10) a reference list detailing the sources used for the descriptions and assessments included in the environmental statement.	**Chapters 1 – 14** (at the end of each Chapter with references made throughout).

Competent Expertise

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

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

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

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

Planning Context

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

1.24 Where planning policy has informed assessments within specific technical chapters, this has been clearly referenced within the respective **Technical Chapters 6 – 12.**

The Project Team and Their Roles

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

Table 1.2: Project Team

Team Member	Role
iQ Student Accommodation	Applicant
Sheppard Robson	Architect
Turley	Planning, EIA, Socio-Economic, Climate Change, Built Heritage consultants
Miller Goodall	Noise consultants
Planit-it	Townscape and Visual consultants
GIA	Daylight and Sunlight consultants
WSP	Wind consultants

Application Reports and Plans

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

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

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

Plans

1.29 The ES has been based on the following plans which are submitted for approval as part of the Application:

- Figure 4.1: Existing Site Plan with Planning Application Boundaries;
- Figure 4.2: Existing Site Plan with Proposed Building Footprint;
- Figure 4.3: Proposed Site Plan with Planning Application Boundary;
- Figure 4.4: Existing Longitudinal and Cross Site Sections;
- Figure 4.5: Proposed Longitudinal and Cross Site Sections;
- Figure 4.6: Lower Ground Floor Plan;
- Figure 4.7: Ground Floor Plan;
- Figure 4.8: Floor Plan 1;
- Figure 4.9: Floor Plan 2;
- Figure 4.10: Floor Plan 3;
- Figure 4.11: Floor Plan 4;
- Figure 4.12: Floor Plan 5;
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- Figure 4.38: Proposed West Elevation;
- Figure 4.39: Proposed East Elevation;
- Figure 4.40: Proposed Inner West Elevations;
- Figure 4.41: Proposed Inner East Elevations;
- Figure 4.42: Proposed Cross Section 1;
- Figure 4.43: Proposed Cross Section 2;

- Figure 4.44: Proposed Longitudinal Section 1;
- Figure 4.45: Proposed Longitudinal Section 2;
- Figure 4.46: Proposed Longitudinal Section 3;
- Figure 4.47: Strip Section – Sheet 1;
- Figure 4.48: Strip Section – Sheet 2;
- Figure 4.49: Strip Section – Sheet 3;
- Figure 4.50: Brick Façade Bay Study 1;
- Figure 4.51: Brick Façade Bay Study 2; and
- Figure 4.52: GRC Façade Bay Study.

1.30 The above plans have informed the ES and is presented as part of **Chapter 4: Development Specification**.

Application Reports

1.31 As set out within the EIA Scoping Report (**Appendix 2.1**), the following reports are appended to the ES in **Volume 2: Technical Appendices**:

- PBSA Assessment of Need;
- Heritage Statement;
- Townscape and Visual Impact Assessment;
- Wind Microclimate Assessment; and
- Noise and Vibration Assessment.

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

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

- Planning and Tall Building Statement;
- Design and Access Statement;
- Rights of Light Assessment;

- Blue Green Infrastructure Strategy;
- Waste Management Strategy;
- Broadband Connectivity Assessment;
- TV Reception Survey;
- Crime Impact Statement;
- Environmental Standards Statement;
- BREEAM Pre-Assessment Report;
- Circular Economy Statement;
- Facility Management Strategy;
- Building Services Strategy;
- Statement of Community Engagement;
- Fire Strategy Statement;
- Arboricultural Note;
- Overheating Study / Ventilation Strategy;
- Interim / Outline Construction Management Plan;
- Archaeological Desk-Based Assessment and Written Scheme of Investigation / Technical Note;
- Air Quality Impact Assessment;
- Transport Assessment;
- Framework Travel Plan;
- Economic Benefits Statement;
- Ground Investigation / Contaminated Land Reports;
- Detailed UXO Risk Assessment;
- Flood Risk Assessment and Drainage Strategy; and
- Ecological Assessment.

Structure of the ES

1.34 The ES is provided in three parts:

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

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

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

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

Chapter No.	Chapter Title	Description of Content
1	Introduction	Introduction to the ES, including definitions of EIA, legal procedure and requirements of EIA and setting out the structure of the ES.
2	Approach to EIA	Description of the overall method adopted through the EIA process and presented within the ES, including assessment criteria for determining sensitivity, magnitude, level of effect and significance alongside adherence to best practice guidance. A summary of the EIA Scoping process and any deviation of approaches to the assessment within the EIA is also outlined.
3	Site Context	Overview of the location of the Site, and the sensitive receptors for assessment within this ES.
4	Development Specification	Comprehensive description of all elements of the Proposed Scheme including its physical characteristics across the construction and operational stages. It is this description which has informed the assessment undertaken as part of the EIA. This description is inclusive of committed primary and tertiary mitigation considered in **Technical Chapters 6 – 12**.
5	Consideration of Alternatives	Outline of the main alternatives considered by the Applicant as required by Schedule 4 of the EIA Regulations.
6	Socio-Economics and Human Health	Presentation of assessment of likely significant effects arising from the Proposed Scheme and

Chapter No.	Chapter Title	Description of Content
7	Climate Change	secondary mitigation required to avoid, offset or reduce anticipated adverse effects or improve beneficial effects.
8	Built Heritage	
9	Townscape and Visual	
10	Daylight, Sunlight, Overshadowing and Solar Glare	
11	Wind Microclimate	
12	Noise and Vibration	
13	Assessment of Cumulative Effects	Provides a single and comprehensive assessment of cumulative effects, including effect interactions and in-combination effects.
14	Summary of ES	Summarises the outputs of the technical assessments presented within the ES.

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

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

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

Availability of the ES

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

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

Turley EIA Team

EIA Team
1 New York St
Manchester
M1 4HD

Tel: 0161 233 7676

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

Manchester City Council

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

References

[1] The Town and Country Planning Act 1990. Available at: http://www.legislation.gov.uk/ukpga/1990/8/contents [Accessed: 28/02/2023].
[2] The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) Statutory Instrument 2017/517. Available at: http://www.legislation.gov.uk/uksi/2017/571/contents [Accessed: 28/02/2023].
[3] Ministry of Housing, Communities and Local Government [Online Tool]. Planning Practice Guidance Environmental Impact Assessment. Available at: https://www.gov.uk/guidance/environmental-impact-assessment [Accessed: 28/02/2023].

2. Approach to EIA

Introduction

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

2.2 This Chapter sets out the following:

- Adoption and application of best practice within the EIA process;
- Scope of the ES, including a summary of the EIA Scoping process and the technical topics scoped in and out of the ES;
- Stakeholder engagement, summarising the level of engagement with statutory and non-statutory consultees, and other forms of engagement; and
- Approach to the assessment of likely significant effects, specifically covering: approach to the assessment against a consistent baseline; future baseline; identification of sensitive receptors; information to inform assessment; assessment scenarios; implementation of mitigation; criteria for determining the level of effects and significance; and limitations/assumptions.

Adoption of Best Practice

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

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

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

Scope of the ES

EIA Scoping

2.5 A request for an EIA Scoping Opinion, together with an EIA Scoping Report (**Appendix 2.1**), prepared in line with Regulation 15, of the EIA Regulations was submitted to MCC in February 2023. In response, MCC provided an EIA Scoping Opinion in March 2023 (**Appendix 2.2**), supported by technical responses from consultees (both statutory and non-statutory) and other interested parties.

2.6 Where additional information or clarification was requested as part of the EIA Scoping Opinion, **Table 2.1** summarises the comments received and how these have been addressed within the ES. Full details of all comments received can be found in **Appendix 2.2**.

2.7 The scope of Approved Projects for cumulative assessment was also confirmed through the Scoping process; the full list of Approved Projects can be found in **Chapter 12: Assessment of Cumulative Effects**.

2.8 Whilst the EIA Scoping Report sought to establish the overall framework for the ES in relation to the environmental topics and likely significant effects, the Proposed Scheme and the strategies that underpin it have been refined or informed by further technical studies, modelling and analysis works and engagement with consultees. As a result, whilst the ES is based on the EIA Scoping Opinion, where the scope of the assessment proposed within the EIA Scoping Report has been altered or amended, this has been clearly identified within the Scope of Assessment section of **Technical Chapters 6 – 12**.

2.9 This is considered to be in accordance with paragraph 038 of PPG which states that: "*…where it becomes evident during the assessment process…that a particular environmental factor is absent or unlikely to be significantly affected by a proposed development, there should be no need for further assessment of that factor even if it was identified in the scoping process…"*

2.10 The EIA Scoping Opinion (**Appendix 2.2**) did not raise any comments on topic breadth, and this remains as reported in the EIA Scoping Report (**Appendix 2.1**).

Table 2.1: Summary of EIA Scoping Opinion Comments

Summary of EIA Scoping Opinion Comment (**Appendix 2.2**)	Consultee	How / Where the Comment Has Been Addressed
"*Further details are required to determine if Traffic and Access can be scoped out of the ES.* *The Scoping Report states that Traffic and Access and Waste has been identified as to not have significant impacts and therefore are to be scoped out of the ES.* *I require further details that the construction of the development would not cause impacts on the local highway. This should include information on trip generation but also traffic redistribution impacts associated with any traffic management during the construction phase. Information should also be provide on proposed/potential road closures, diversions, temporary signals and traffic management. Once this information has been provided, further detailed comments can be provided on whether this can be scoped out of the ES.*"	MCC	A Construction Logistics Plan has been prepared at **Appendix 2.3**, which includes the requested information. This has been informed by the Construction Logistics Plan for the 2017 scheme, which was approved in 2019. Overall it is considered that given the evidence presented in the EIA Scoping Report (**Appendix 2.1**) and the further evidence provided in the Construction Logistics Plan (**Appendix 2.3**), construction traffic is not significant and has been scoped out of the EIA.
"*I would welcome clarification on the list and location of the properties to be considered to ensure we have captured all relevant site. For instance, is Cedar House covered within the assessment but under a different name? Please could you provide a plan identifying the relevant properties to be considered*."	MCC	**Appendix 10.1** shows the properties which have been assessed in **Chapter 10: Daylight, Sunlight, Overshadowing and Solar Glare**.

Technical Topics 'Scoped In'

2.11 Following the EIA Scoping exercise, the following technical topics and their associated likely significant environmental effects have been taken forward and assessed within the ES:

- Socio-Economics and Human Health (**Chapter 6**);
- Climate Change (**Chapter 7**);
- Built Heritage (**Chapter 8**);
- Townscape and Visual (**Chapter 9**);
- Daylight, Sunlight, Overshadowing and Solar Glare (**Chapter 10**);
- Wind Microclimate (**Chapter 11**); and
- Noise and Vibration (**Chapter 12**).

2.12 The likely significant environmental effects considered within each technical topic are detailed within the relevant **Technical Chapters 6 – 12**.

Technical Topics 'Scoped Out'

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

- Archaeology;
- Biodiversity;
- Traffic and Access;
- Air Quality;
- Ground Conditions;
- Flood Risk, Drainage and Water Environment;
- Lighting;
- Waste;
- Major Accidents and/or Disasters; and
- TV Reception.

2.14 The evidence base to support 'scoping out' these technical topics is presented in the EIA Scoping Report (**Appendix 2.1**) and has been agreed as part of the EIA Scoping Opinion (**Appendix 2.2**).

Reporting Significant Effects

2.15 Whilst the EIA Scoping Report sought to establish the overall framework for the ES in relation to the technical topics and likely significant effects, the Proposed Scheme and the strategies that underpin it have been refined or informed by further technical studies, modelling and analysis works and engagement with consultees.

2.16 As a result, whilst the ES is based on the EIA Scoping Opinion (**Appendix 2.2**), where the scope of the assessment proposed within the EIA Scoping Report (**Appendix 2.1**) has been altered or amended, this iterative scoping has been documented within the 'Scope of Assessment' section of **Technical Chapters 6 – 12**.

2.17 This is considered to be in accordance with paragraph 038 of PPG which states that: '…*where it becomes evident during the assessment process…that a particular environmental factor is*

absent or unlikely to be significantly affected by a proposed development, there should be no need for further assessment of that factor even if it was identified in the scoping process…'.

2.18 Where appropriate, **Volume 2: Technical Appendices** provides the further detail of technical topics and effects which are not considered to be significant.

2.19 Notwithstanding the above, in some cases, effects which are not significant have been reported in **Volume 1: Primary Report and Supporting Graphics** to ensure a transparent response to issues raised by MCC and their consultees.

Stakeholder Engagement

2.20 In addition to the consultation undertaken to inform MCC's EIA Scoping Opinion (**Appendix 2.2**), the Project Team have undertaken technical consultation with relevant consultees to inform the scope, assessment methodology/approach and in some instances the outputs of baseline studies/surveys. The specifics of technical consultation are reported within **Technical Chapters 6 – 12**.

Table 2.2: Summary of Environment Related Public Feedback

Topic	General Comment	Relevant Technical Chapter
Noise	Possible noise affecting neighbouring residents in the surrounding area.	**Chapter 12: Noise and Vibration** reports the effect of noise from the Proposed Scheme. No significant effects are reported.
Built heritage	Suitability of the proposed building height in the context of the Conservation Area.	**Chapter 8: Built Heritage** reports the effects to the Conservation Area during construction and operation.
Socio-economics	Support for the development in the context of demand and supply for student accommodation in the city. Query about whether there is sufficient demand for student accommodation in the current market.	**Chapter 6: Socio-Economics and Human Health** reports the need and benefits of the provision of student accommodation the Proposed Scheme will provide.
Townscape and visual	Height and scale of the proposed buildings and the impact this would have on neighbouring properties.	**Chapter 9: Townscape and Visual** reports the visual effects of the Proposed Scheme, taking into account the height and scale. Beneficial effects are reported.
Transport	Highways movements on Granby Row already being busy with rat running of vehicles avoiding the main junction outside Piccadilly.	Transport and traffic has been scoped out of the ES as vehicle movements are not considered to be significant. The evidence for this is set out in **Appendix 2.1** and **Appendix 2.3.**

Approach to Assessment

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

2.22 The exact methodology for the assessment of likely significant effects of the Proposed Scheme during the construction and operational stages is varied across each of the technical topics considered within the EIA, largely due to technical specific guidance and best practice. Therefore, each of the **Technical Chapters 6 – 12** specifically sets out the relevant technical assessment methodologies.

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

Consideration of the Full Extent of Development

2.24 The boundary upon which baseline data has been collected (i.e. study areas) varies between the technical topics and therefore these are reported specifically within **Technical Chapters 6 – 12**. However, all study areas include the Site, as defined in the Site Location Plan shown on **Figure 1.1**. This represents the maximum extent of permanent and temporary development and associated works for which permission will be sought. The planning application boundary is slightly smaller than the boundary (the 'Site') used for the EIA. This is as a result of needed to include sufficient space for infrastructure (highways) / temporary works within the EIA boundary (**Figure 1.1**).

Approach to the Assessment against a Consistent Baseline

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

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

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

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

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

2.28 The baseline conditions for the purpose of the ES will vary dependent on the timing of the survey or the date when data sources will have been accessed. All baseline conditions are based upon data accessed or surveys in 2022-23, as summarised in **Table 2.3**.

Table 2.3: Summary of Baseline Adopted within Technical Chapters 6 – 12

Chapter	Data Collection Type	Timeframe
Chapter 6: Socio-Economics and Human Health	Desk-based research	Data collected during January – April 2023 from sources dated 2021 – 2023
Chapter 7: Climate Change	Desk-based research	Most recent search completed January 2023. Data sourced from: MMC, Greater Manchester and North West emissions – 2020
Chapter 8: Built Heritage	HER Record Check	February 2023
	Site visit	March 2023
	Desk-based research	April 2023
Chapter 9: Townscape and Visual	Desk-based research	February – March 2023
	Site photography	March 2023
Chapter 10: Daylight, Sunlight, Overshadowing and Solar Glare	Daylight and Sunlight baseline assessment	March 2023
Chapter 11: Wind Microclimate	3D computer model	March 2023
Chapter 12: Noise and Vibration	Baseline Noise Survey	May and July 2017 and February 2023
	Baseline Vibration Survey	May and July 2017 and February 2023

2.29 This was confirmed as part of the EIA Scoping Report (**Appendix 2.1**) and subsequent EIA Scoping Opinion (**Appendix 2.2**).

2.30 Some data obtained from third parties may be older, including baseline data utilised to inform **Chapter 6: Socio-Economics and Human Health**, which includes data from the 2011 Census and interim reporting provided by the office of national statistics.

2.31 Throughout the EIA, the origin of all third-party data, the dates of surveys and the dates when data sources have been accessed are clearly outlined within the relevant **Technical Chapters 6 – 12**, alongside any limitations or assumptions.

Consideration of the Future Baseline and Receptors

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

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

2.33 As required under the EIA Regulations, the ES reports the future baseline scenario under a 'do nothing' scenario, which is further discussed in **Chapter 5: Consideration of Alternatives**. However, the future baseline scenario is discussed within each of the **Technical Chapters 6 – 12**. The discussion is associated with how the Site and study area may change assuming the Site was not developed further, and the existing management regime was maintained.

2.34 The assessments presented in the ES are based on the deviation from the existing baseline scenario. **Technical Chapters 6 – 12** present a future baseline condition for information only. Consideration has been given to future sensitive receptors of the Proposed Scheme (i.e. future residents or users of the existing highways and footpaths and the proposed public realm). Although the consideration of such receptors is not specifically required by the EIA Regulations, these receptors have been considered to provide certainty to MCC that the Proposed Scheme is unlikely to create future issues when operational. Identification of Sensitive Receptors

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

2.36 "*a description of the factors specified in Regulation 4(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora); land (for example land-take), soil, (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaption), material assets, cultural heritage, including architectural and archaeological aspects, and landscape*"

2.37 Consistent with the EIA Regulations, the identification of the aspects of the environment likely to be significantly affected by the Proposed Scheme has been identified and set out within the 'Sensitive Receptors' section of each **Technical Chapters 6 – 12**. These are summarised in **Table 3.1** in **Chapter 3: Site Context**.

Development Specification and Detailed Plans

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

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

2.40 The assessments undertaken as part of the EIA and reported in this ES are based on **Chapter 4: Development Specification** and Detailed Plans (**Figure 4.1 – 4.52**) which contains all information required to inform the EIA in a single location.

Quantum of Development

2.41 The quantum of development, set out in detail in **Chapter 4: Development Specification**, is an upper limit to represent the possible development that will come forward and has been a

key parameter used to assess likely significant environmental effects. The ES has been based on a PBSA development for up to 1,224 units (Use Class Sui Generis). This has informed the assessment for the following topics:

- Socio-economics and human health; and
- Climate change.

Massing

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

- Built heritage;
- Townscape and visual;
- Daylight, sunlight, overshadowing and solar glare;
- Wind microclimate; and
- Noise and vibration.

Assessment Scenarios

2.43 As set out in **Chapter 4: Development Specification,** construction is anticipated to commence in 2024, with the construction being completed over 2 years with the Proposed Scheme being anticipated to be fully operational in 2026, in time for the 2026/27 academic year. Where relevant, the assessments within **Technical Chapters 6 – 12** have therefore considered the construction and operational stage of the Proposed Scheme in line with these dates.

Implementation of Mitigation and Monitoring

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

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

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

2.46 In accordance with IEMA Guidance and the EIA Scoping Report (**Appendix 2.1**), three types of mitigation have been identified and used within the ES, comprising;

- **Primary:** modifications to the location or design of the Proposed Scheme made during the pre-application stage that are an inherent part of the project;

- **Secondary:** actions that will require further activity in order to achieve the anticipated outcome. These would be included within the ES following the assessment of effect, under the 'Secondary Mitigation or Enhancement' section, before the reporting of the 'residual' effects. It is anticipated that such measures would be secured by condition; and

- **Tertiary:** actions that would occur with or without input from the EIA feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirements, or actions that are considered to be standard practices used to manage commonly occurring environmental effects. There needs to be a 90% level of confidence that these will be implemented, and they need to be specific with a clear timescale for implementation and responsibility.

2.47 The design process has been informed by extensive studies/surveys/modelling so that potential effects are well understood and primary mitigation has been identified and developed. The Proposed Scheme has evolved to take account of the environmental constraints and opportunities within the Site and study area. Such evolution, as defined above, constitutes primary mitigation and therefore for the purpose of the EIA such measures are considered as part of the Proposed Scheme and therefore set out in **Chapter 4: Development Specification**.

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

2.49 Therefore, **Technical Chapters 6 – 12** have considered relevant primary and tertiary mitigation for both the construction and operational stages prior to undertaking their assessment of likely significant effects. Following the conclusion of effects based on the Proposed Scheme (inclusive of primary and tertiary mitigation) any further mitigation measures or monitoring arrangements have been identified (i.e. secondary mitigation).

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

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

2.52 The primary, tertiary and secondary mitigation detailed within **Technical Chapters 6 – 12** are summarised in **Volume 3: Environmental Management Plan**.

Determining Level of Effect and Significance Criteria

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

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

- The environmental sensitivity (or value / importance etc., as appropriate to the environmental topic) of a receptor or receiving environment to change, including aspects such as adaptability, tolerance or recoverability; and

- The magnitude of change (or impact) from the baseline conditions, including aspects such as probability / likelihood of occurrence, geographical extent, complexity, duration, frequency and reversibility (i.e. temporary and permanent).

2.55 Sensitivity (or value/importance etc.) has been assessed on a scale of high, medium, low and negligible and magnitude of change on a scale of large, medium, small and negligible. Where deviations from these scales is required to meet specific technical guidance this is outlined, where relevant, in **Technical Chapters 6 – 12**.

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

2.57 The assignment of the level of effect has been based on professional judgement and the matrix below (**Table 2.4**) is intended to be a tool to assist with the process. Whilst the matrix provides ranges, this is to guide the competent expert and a definitive assessment of level of effect has been provided for each effect.

Table 2.4: Matrix to support determining the level of effect

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

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

- **Major effect**: Where the Proposed Scheme is likely to cause a considerable change from the baseline conditions and the receptor has limited adaptability, tolerance or recoverability or is of the highest sensitivity. This effect is considered to be 'Significant';

- **Moderate effect**: Where the Proposed Scheme is likely to cause either a considerable change from the baseline conditions at a receptor which has a degree of adaptability, tolerance or recoverability or a less than considerable change at a receptor that has limited adaptability, tolerance or recoverability. This effect is considered more likely to be 'Significant' but will be subject to professional judgement;

- **Minor effect**: Where the Proposed Scheme is likely to cause a small, but noticeable change from the baseline conditions on a receptor which has limited adaptability, tolerance or recoverability or is of the highest sensitivity or a considerable change

from the baseline conditions at a receptor which can adapt, is tolerant of the change and / or can recover from the change. This effect is considered less likely to be 'Significant' but will be subject to professional judgement; and

- **Negligible**: Where the Proposed Scheme is unlikely to cause a noticeable change at a receptor, despite its level of sensitivity or there is a considerable change at a receptor which is not considered sensitive to a change. This effect is 'Not Significant'.

2.59 For some specific Chapters, guidance on the nature of the effect requires that differing criteria or scales for determining significance are to be used. However, there has been consistency of terminology and conclusions to tie in with the above matrix. This ensures that the conclusions of the different effects can be compared during the decision-making process and robustly considered within the cumulative effects assessment. The assessment methodology adopted is set out in **Technical Chapters 6 – 12**.

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

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

2.62 **Technical Chapters 6 – 12** provide a summary of effects table, which outlines the effects assessed, associated sensitive receptors, residual effects and whether the effect is 'Significant' or 'Not Significant'.

2.63 Cumulative effects have been considered as a single co-ordinated assessment (**Chapter 13: Assessment of Cumulative Effects**).

Limitations and Assumptions

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

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

2.65 Where **Technical Chapters 6 – 12** experience limitations or are based on assumptions these have been clearly identified within the relevant chapter.

EIA Requirements at Later Stages

2.66 The ES has identified and assessed likely significant effects based on the information outlined above. This has ensured that all likely significant effects have been assessed and will inform the determination of the planning application, in accordance with PPG.

2.67 Should there be a change to the information outlined above or quantum and parameters, there may be a requirement to Screen any subsequent application to determine any likely significant effects on the environment not previously identified. Any EIA Screening Report and associated assessments will then be undertaken as required, at that stage.

2.68 Should a Section 73 application be required, this would be considered in the same way as a new planning application and it is likely that an EIA Scoping Report would be required to

‘scope’ the likely significant effects of the proposed change which would enable an ‘ES Supplement’ to be submitted alongside this ES. The approach will be guided by the time between the preparation of this ES and any Section 73 application.

References

[1] Department for Levelling Up, Housing and Communities (2020) Planning Practice Guidance [Online], available at: https://www.gov.uk/guidance/environmental-impact-assessment [Accessed: 04/11/2022].
[2] IEMA, Environmental Impact Assessment Guide to: Shaping Quality Development, November, 2015.
[3] IEMA, Environmental Impact Assessment Guide to: Delivering Quality Development, July, 2016.

3. Site Context

3.1 This Chapter aims to provide a high-level overview of the existing Site characteristics and the surrounding area and identifies the sensitive receptors considered in the EIA. A high-level description of the Site has been provided in this Chapter to avoid the need for repetition within **Technical Chapters 6 – 12**.

3.2 The relevant detailed baseline characteristics of the Site and the surrounding area in relation to the technical topics 'scoped into' the EIA are considered within the relevant Chapter (**Technical Chapters 6 – 12**). A summary of the sensitive receptors included in **Technical Chapters 6 – 12** is included in **Table 3.1**.

3.3 The baseline characteristics for the technical topics 'scoped out' of the EIA and which are not reported in the ES are provided in the EIA Scoping Report (**Appendix 2.1**).

Location and Setting

3.4 The Site (**Figure 1.1**) is approximately 0.5ha, located in the administrative area of MCC. The Site is bound by Vimto Park to the west, the Manchester Oxford Road-Manchester Piccadilly railway line to the south, the A6 London Road to the east, and Lambert House, Fairfield Hall and the Bulls Head pub to the north.

3.5 The Site is cleared of all buildings and trees, which has been implemented through the previous permission. Basement and piling works have also been implemented as part of the previous permission on Site.

3.6 The wider surrounding area comprises; Manchester Piccadilly railway station to the east beyond A6 London Road, residential/commercial premises to the north, and a mix of residential, commercial and educational buildings to the south and west.

Topography

3.7 The underlying topography of the study area is generally flat with small level changes.

Identification of Sensitive Receptors

3.8 **Table 3.6** lists the sensitive receptors at which likely significant effects may occur and their relationship to the aspects of the environment outlined in Schedule 4. These are assessed within **Technical Chapters 6 – 12**.

Table 3.1: Sensitive Receptors Identified for Assessment in this ES

Chapter	Sensitive Receptors Identified for Assessment in this ES	Schedule 4 'factor'
Chapter 6: Socio-Economics and Human Health	Local labour force	Population and Human Health
	Students requiring accommodation	Population and Human Health

Chapter	Sensitive Receptors Identified for Assessment in this ES	Schedule 4 'factor'
Chapter 7: Climate Change	Global climatic system	Climate
Chapter 8: Built Heritage	Whitworth Street Conservation Area London Road Police and Fire Station (Grade II*) Jackson Street Mills (UMIST Campus, now University of Manchester) (HER Ref: 2078.1.0)	Cultural Heritage
Chapter 9: Townscape and Visual	The Site and wider townscape character area of North Campus Townscape Character Area Topography & Site Levels	Landscape
	Viewpoint 1: Piccadilly Station main entrance Viewpoint 2: Piccadilly Station taxi rank, Fairfield Street Viewpoint 3: Piccadilly Station platform 13 and 14 Viewpoint 4: Sculptural wall, London Road Viewpoint 5: View west along Granby Row Viewpoint 6: Vimto Park Viewpoint 7: University of Manchester, Altrincham Street Viewpoint 8: Granby Row, Samuel Ogden Street	Population and Human Health
Chapter 10: Daylight, Sunlight, Overshadowing and Solar Glare	Lambert House Fairfield House Warehouse One Stonebridge House London Road Fire Station Vimto Park Selected viewpoints within 500m of the Site where the Proposed Scheme is visible, including: Hulme Street Charles Street Chorlton Street	Population and Human Health

Chapter	Sensitive Receptors Identified for Assessment in this ES	Schedule 4 'factor'
	Minshull Street	
	London Road	
	Fairfield Street	
	Travis Street	
	Downing Street	
	Wadeson Road	
	Eastbound trains towards Piccadilly	
	Westbound trains towards Oxford Road	
Chapter 11: Wind Microclimate	Amenity Space close to Newton's Apple Tree	Population and Human Health
	The Vimto Park	
	Amenity Space close to Barnes Wallis Student Hub	
	Amenity Space close to Renold Building (The University of Manchester)	
	Alan Turing Memorial Park	
	Bainbridge House Commercial Entrances	
	Bulls Head Pub Entrance 1	
	Bulls Head Pub Entrance 2	
	Rahman Piccadilly Hostel Entrance	
	iQ Student Accommodation Fairfield House Entrance	
	iQ Student Accommodation Lambert House Entrance	
	iQ Student Accommodation Lambert House Entrance	
	iQ Warehouse One Entrance	
	Stonebridge House Entrance	
	Cedar House Entrance 1	
	Cedar House Entrance 2	
	Manchester Astronomical Society Entrance 1	
	Manchester Astronomical Society Entrance 2	
	Manchester Astronomical Society Entrance 3	

Chapter	Sensitive Receptors Identified for Assessment in this ES	Schedule 4 'factor'
	Sackville Street Building Entrance 1	
	Sackville Street Building Entrance 2	
	Sackville Street Building Entrance 3	
	iQ Warehouse Two Entrance	
	London Road Fire Station Entrance 1	
	London Road Fire Station Entrance 2	
	London Road Fire Station Entrance 3	
	London Road Fire Station Entrance 4	
	London Road Fire Station Entrance 5	
	London Road Fire Station Entrance 6	
	Piccadilly Station Entrance	
	McDonald Manchester Hotel Entrance	
	Balfour Beatty Kilpatrick Entrance	
	Barnes Wallis Building Entrance 1	
	Barnes Wallis Building Entrance 2	
	Renold Building Entrance 1	
	Renold Building Entrance 2	
	The Gatehouse, The University of Manchester Entrance	
	Travis Street Bus Stop 1	
	Travis Street Bus Stop 2	
	Travis Street Bus Stop 3	
	Piccadilly Station (Stop C)	
	Manchester Piccadilly Rail Station (Stop A)	
	Minshull Street South (Stop B)	
	University of Manchester Bus Stop 1	
	University of Manchester Bus Stop 1	

Chapter	Sensitive Receptors Identified for Assessment in this ES	Schedule 4 'factor'
	Echo St	
	Granby Row East	
	Granby Row West	
	The Vimto Park Walkways	
	Cobourg St	
	S Pump St	
	Altrincham St	
	Proposed Development Ground Floor Entrances	
	Proposed Development Walkway	
	External Courtyard A-B	
	External Courtyard B-C	
	Amenity Space Roof A-B	
Chapter 12: Noise and Vibration	Barnes Wallis Building	Population and Human Health
	Fairfield Hall	
	Joule Library	
	Lambert Hall	
	MacDonald Hotel	
	Maths @ Science West Building	
	Pendulum Hotel	
	Renold Building	
	Vimto Park	

4. Development Specification

Introduction

4.1 This Chapter provides a description of the Proposed Scheme, including a description of how the Proposed Scheme would be constructed and its timescales. This description, together with the supporting spatial plans within the ES, form the basis for the technical assessments presented in **Technical Chapters 6 – 12**.

4.2 The Proposed Scheme is described as:

"*Development of purpose-built student accommodation (sui generis) comprising 3 interlinked tower blocks with intermediary linking block buildings, associated amenity space and external landscaping.*"

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

- Figure 4.1: Existing Site Plan with Planning Application Boundaries;
- Figure 4.2: Existing Site Plan with Proposed Building Footprint;
- Figure 4.3: Proposed Site Plan with Planning Application Boundary;
- Figure 4.4: Existing Longitudinal and Cross Site Sections;
- Figure 4.5: Proposed Longitudinal and Cross Site Sections;
- Figure 4.6: Basement Plan;
- Figure 4.7: Ground Floor Plan;
- Figure 4.8: Floor Plan 1;
- Figure 4.9: Floor Plan 2;
- Figure 4.10: Floor Plan 3;
- Figure 4.11: Floor Plan 4;
- Figure 4.12: Floor Plan 5;
- Figure 4.13: Floor Plan 6;
- Figure 4.14: Floor Plan 7;
- Figure 4.15: Floor Plan 8;
- Figure 4.16: Floor Plan 9;

- Figure 4.17: Floor Plan 10;
- Figure 4.18: Floor Plan 11;
- Figure 4.19: Floor Plan 12;
- Figure 4.20: Floor Plan 13;
- Figure 4.21: Floor Plan 14;
- Figure 4.22: Floor Plan 15;
- Figure 4.23: Floor Plan 16;
- Figure 4.24: Floor Plan 17;
- Figure 4.25: Floor Plan 18;
- Figure 4.26: Floor Plan 19;
- Figure 4.27: Floor Plan 20;
- Figure 4.28: Floor Plan 21;
- Figure 4.29: Floor Plan 22;
- Figure 4.30: Floor Plan 23;
- Figure 4.31: Floor Plan 24;
- Figure 4.32: Floor Plan 25;
- Figure 4.33: Floor Plan 26;
- Figure 4.34: Floor Plan 27;
- Figure 4.35: Combined Roof Plan;
- Figure 4.36: Block C Roof Plan;
- Figure 4.37: Block C Upper Roof Plan;
- Figure 4.38: Proposed North Elevation;
- Figure 4.39: Proposed South Elevation;
- Figure 4.40: Proposed West Elevation;
- Figure 4.41: Proposed East Elevation;
- Figure 4.42: Proposed Inner West Elevations;

- Figure 4.43: Proposed Inner East Elevations;
- Figure 4.44: Section AA;
- Figure 4.45: Section BB;
- Figure 4.46: Section CC;
- Figure 4.47: Section DD;
- Figure 4.48: Section EE;
- Figure 4.49: Strip Section – Sheet 1;
- Figure 4.50: Strip Section – Sheet 2;
- Figure 4.51: Strip Section – Sheet 3;
- Figure 4.52: Brick Façade Bay Study 1;
- Figure 4.53: Brick Façade Bay Study 2; and
- Figure 4.54: Brick Façade Bay Study Gables.

The Completed Project

Overview of the Proposed Scheme

4.4 As set out above, the application is in full with all details provided for consent for the erection of up to 1,224 purpose built student accommodation (PBSA) units across three interlinked blocks.

Land Use Classes and Maximum Quantum

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

- Purpose built student accommodation (Use Class Sui Generis) – 1,224 units.

4.6 A mixture of standard 5-bed (29.8%), standard 6-bed (19.6%) and studio 1-bed (50.6%) bedrooms will be provided.

4.7 Supporting office and amenity spaces are also proposed, which are ancillary to the student accommodation use. These areas will include social, study and wellbeing areas (such as gaming areas, focus lounge and terraces) and back of house/servicing areas (including front of house reception and supporting management office, parcel storage, etc).

4.8 A basement will be provided which will contain cycle parking, bin storage, generator, combined domestic water and sprinkler, and commercial sprinkler tank. There will be an access ramp into the basement.

Layout / General Arrangement

4.9 Built form of the Proposed Scheme will be across three interlinked blocks (Blocks A – C) which will be stepped in height, with height increasing away from Vimto Park to the west. Courtyards will be located between the blocks on ground floor.

Heights

4.10 **Table 4.1** sets out the proposed maximum building heights to parapet level across each block.

4.11 A trolley system will be in place and extend 300mm above the parapet levels of each block.

Table 4.1: Proposed Maximum Building Heights

Block	Maximum Building Height
Block A	Parapet Level +94.040 AOD
Block B	Parapet Level +111.680 AOD
Block C	Parapet Level +129.320 AOD

Note: All levels shown are AOD. GF entrance level is +41.300 AOD

Building Materials

4.12 The building will be constructed of the following materials:

- Main Frame: Reinforced concrete (all slabs, core walls and columns);
- External walls below ground: Contiguous RC piles with internal lining in concrete;
- External walls above ground to main blocks: brickwork cladding system, supported off SFS, including sheeting board, breathing membrane, mineral wool insulation, cavity, and aluminium bracketry;
- External walls above ground to link blocks: GRC (glass reinforced concrete) panels system, supported off SFS, including sheeting board, breathing membrane, mineral wool insulation, cavity, and aluminium bracketry;
- External Windows and Doors – Thermally broken extruded aluminium profiles, including aluminium faced insulated purge panels, aluminium louvres to spandrel panels, aluminium decorative panels and low-e glazing. Where required for robustness (particularly to plant rooms and BOH areas), aluminium will be replaced with steel doors;
- Below Ground insulation - Extruded polystyrene or equivalent;
- Roofs – Green/ Blue flat roof system;
- Internal walls, ceilings and linings – Plasterboard on metal frame systems; and
- Internal doors and joinery – Softwood and MDF.

Operational Access Arrangements

4.13 The Proposed Scheme will be car-free and provide no on-site car parking (see 'Parking Provision' below in relation to the reconfiguration of spaces on Granby Row), which is appropriate for this city centre location. A service access will be provided from Echo Street to facilitate maintenance / service access for Network Rail however this will be an occasional occurrence.

4.14 Pedestrian access to the buildings will be from Echo Street/Granby Row and Vimto Gardens.

4.15 Cyclists will be able to access the cycle store through the main entrance on Granby Row or via the service ramp onto Echo Street.

4.16 A new loading bay is proposed on Echo Street to accommodate servicing and delivery activity generated by the Proposed Scheme.

4.17 Using the TRICS trip rate database it is expected that the Proposed Scheme could generate in the order of 60-70 vehicles per day as a reasonable worst-case scenario, including one Heavy Goods Vehicle (HGV).

4.18 There may be additional traffic movements on specific days of the year when students arrive / depart at the beginning and end of term. The Applicant will have a management plan in place on these days to help control the movement of vehicles around the area to minimise the potential for any disruption to the operation of the highway.

4.19 Equally there will be times of the year where the Proposed Scheme will not be fully occupied, as many students will return home during holiday periods outside of term time. The level of vehicle activity generated by the Proposed Scheme during these times would be less than the forecast 60-70 vehicles per day, which is based on a full-occupancy scenario.

4.20 The Proposed Scheme includes improvements to the public realm around the Site and would deliver widened footways on Granby Row and raised table crossing features on Granby Row to assist more convenient crossing for pedestrians. Such improvements will enhance the environment for pedestrians and cyclists, helping to encourage and facilitate active travel.

Parking Provision

4.21 As part of improvements to public realm, there will be a reconfiguration of the existing on-street public parking bays on Granby Row and their number will reduce from thirteen to eight. Two of the spaces will be wheelchair accessible spaces. The spaces will remain as pay and display.

4.22 Cycle parking for the Proposed Scheme will be provided within a secure and covered cycle store. 305 long-stay cycle spaces will be provided. Short-stay cycle spaces will also be provided with Sheffield stands within the public realm.

Landscaping and Biodiversity

4.23 Landscaping / open space will be provided in the private courtyards between the main blocks and the public realm surrounding the building (Granby Row and Echo Street). The works to the public realm focus on pedestrian use, including general resurfacing, with lowered kerbs, widening of the pavement and localized tree planting along Granby Row extending to the boundary with Vimto Park. The works to the courtyards will include multi stem shade tolerant species, on raised planters, complemented with lightweight furniture and catenary lights. In addition, one of the courtyards will provide means of escape from the central block.

4.24 The Proposed Scheme will include of native and/or wildlife friendly planting to create new habitats as part of the Proposed Scheme has the potential to enhance biodiversity and contribute to the wider green infrastructure network. The new habitats will encourage wildlife, particularly invertebrates, birds and foraging bats, and facilitate the movement of these species between the Site and other greenspace within the wider area.

Operational Hours

4.25 The Proposed Scheme will be operational 24 hours a day/7 days a week.

Lighting Strategy

4.26 The Proposed Scheme will include lighting at accesses, pedestrian routes, and for the operation of the buildings. The proposed lighting strategy will have a range of luminaries in response to the different areas, with the aim of achieving a unified palette across the Site. The strategy shows the general arrangement and type of fittings proposed and will be subject to detailed LUX level calculations in conjunction with the activity within the areas.

4.27 The key principles of the strategy include:

- Using low level luminaries to minimise light spill to neighbouring properties;
- To create a safe environment for students, staff, visitors and those living and using the local area; and
- Reduce energy consumption.

4.28 It is proposed to incorporate LED lighting modules throughout the scheme and levels of automatic control.

4.29 The Proposed Scheme will look to achieve 100% energy efficient fittings throughout with a good level of automatic lighting controls.

4.30 LED lamps will be used throughout and fittings within the student accommodation will have an efficacy no less than 125Lm/W. The student bedrooms will have manual switching to reflect the domestic nature of the rooms.

4.31 Circulation spaces will be controlled via presence detection, with lamp efficacies no less than 125Lm/W.

4.32 Student communal and ancillary spaces will be controlled by a combination of switching and presence detection, with daylight compensating controls. Lamp efficacies will be no less than 125Lm/W.

4.33 All future lighting installations will be designed and installed in line with relevant standards and guidance, including CIE 150: 2017 – Guide on the Limitation of the Effects of Obtrusive Light from Outdoor Lighting Installations, 2nd Edition; ILP GN01 - Guidance Notes for the Reduction of Obtrusive Light 2021; BS 5489-1 : 2020 – Code of Practice for the Design of Road Lighting; BS EN 13201-2:2015 – Road Lighting – Part 2: Performance Requirements; BS EN 12464 – 2 2014 – Outdoor Work Spaces; SLL Guide to Limiting Obtrusive Light 2012; SLL Lighting Handbook 2009; LG 6 (CIBSE) – The Exterior Environment 2016; and ILP Guidance Note 08/18 Bats and Artificial Lighting in the UK.

Building Safety

4.34 The final building management company will have in place the required emergency producers/practices (i.e. Fire Emergency Evacuation Plan (FEEP)) or apparatus/instruments (i.e. smoke detectors/sprinklers) required by law for these uses. In addition, the buildings will be designed, in line with Building Regulations Approved Document D: Fire Safety, with appropriate fire preventative measures (i.e. fire doors, extinguishers etc.) and all external façades and materials will meet the necessary fire resistance standards set out within Building Regulations and by law.

4.35 The design of the Proposed Scheme will be informed by 'Secure by Design' principles and appropriate design and site management measures (including appropriate lighting and digital entry systems at each building).

4.36 Plant rooms and equipment will be designed to contain any spills through bunds and prevent infiltration into ground. It is currently proposed that plant will be housed in the basement which will have a concrete floor.

Surface Water Drainage Strategy

4.37 New drainage will be designed in accordance with current best practice to provide adequate capacity not to flood for the critical 1 in 30-year storm event. Any flood water generated for up to the critical 1 in 100-year plus climate change storm event will be contained within the curtilage of the Site so not to cause damage to buildings, essential services or adjoining developments and services.

4.38 The proposed surface water drainage will not increase the runoff rate and will include an allowance for climate change in accordance with relevant guidance[1].

4.39 The proposed drainage system will be designed in accordance with BS EN 752:2017 and Sustainable Drainage Systems (SuDS) will be incorporated into the surface water drainage network, in accordance with CIRIA 753 – The SuDS Manual[2] where practical.

4.40 In line with MCC guidance, the Proposed Scheme will seek to achieve a minimum reduction in surface water runoff rates of 50% for Brownfield sites, with an aim of reducing runoff to Greenfield rates up to a 1 in 100-year storm event, considering climate change.

4.41 The proposed surface water drainage system will be designed to comply with the minimum reduction of flows set by the Lead Local Flood Authority (MCC) and provide capacity to accommodate the volumes generated for up to the 100-year storm event with an allowance for 45% increase rainfall. Climate change allowances are in accordance with current requirements for the Irwell Management Catchment.

4.42 The Drainage Strategy will demonstrate that the Proposed Scheme will not increase surface water flooding and will include proposals for a robust foul and surface water drainage system including assessment against the Sustainable Drainage hierarchy and necessary capacity to accommodate volumes generated including anticipated increases in rainfall due to climate change for the lifetime of the development. It will include the necessary mitigation for surface water flood risk where required, such as maintaining perimeter ground levels and ensuring the ground levels fall away from buildings to not encourage overland flows to be directed towards the buildings.

4.43 It is currently proposed to discharge via a new connection to the surface water sewer in Echo Street, which connects downstream to the Shooters Brook and River Medlock.

4.44 The proposed drainage solution will remove 100% of the existing surface water flows discharging to the existing combined sewer network and discharge proposed surface water flows to the existing surface water sewer network at a maximum of 50% of existing flows.

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

4.46 For pollution control, a petrol interceptor or filter chamber will be required within the drainage system to serve the external access ramp prior to discharge off site.

Foul Water Strategy

4.47 There will be a separate foul and surface water drainage system.

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

4.49 The proposed foul drainage will utilise existing connections off site where possible and it is currently proposed to discharge via the existing connection into the combined sewer in Echo Street and the existing combined sewer in Granby Row.

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

Potable Water Strategy

4.51 The United Utilities Water Resources Management Plan[3] states that there is forecasted to be a surplus of water available from 2020 – 2040, which a very small deficit occurring from 2041 – 2045. This accounts for future economic and population growth and climate change. A resilience risk is identified for Manchester, associated with numerous single points of failure on the regional aqueduct system which supplies Manchester. Following identification of this risk, United Utilities have identified five

solutions to remove this risk, with the option of rebuilding all tunnel sections, the preference which is included in their plan.

4.52 A new supply enquiry will be required with United Utilities to determine whether the existing infrastructure has sufficient capacity or whether reinforcements are required. United Utilities will adequately assess the needs of the network to ensure their infrastructure is sufficient to accommodate the needs of the existing supply chain and future demand.

4.53 Mains cold water (MCWS) shall connect from the water authority termination point at the Site perimeter and extended to the new incoming position within the tank room in the basement, to serve the cold-water storage tank. From the cold-water storage tank, boosted cold water shall be distributed to serve water around the building including all domestic water outlets and external bib taps.

4.54 Double Check Valves and pressure reducing valves shall be provided on each shower room pod to prevent backflow of water between pods and to regulate pressure.

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

Energy Strategy

4.56 The building is being proposed as an all-electric building, with wall mounted electric panel heaters and high levels of insulation. The communal areas at ground floor level will be served by an air source heat pump simultaneous heating and cooling Variable Refrigerant Volume system. The escape lobby and corridor areas will be served by a wet heating system to be compliant with BS7671 Requirements for Electrical Installations. The heat for the wet system will be generated via an air source heat pump technology with distribution pipework.

4.57 The sustainability strategy has a strong focus on a fabric first approach limit building energy consumption and carbon emissions through consideration of the performance of the building envelope and aiming to reduce solar gains and heat losses to levels commensurate with good practice benchmarks as opposed to reliance on energy efficient measures adopted solely to offset poor performing building fabric. This building will utilise energy more efficiently with the implementing controls, low carbon technologies and renewable.

4.58 The building is intended to be robust and durable with design service life with energy usage during the life of the building being of primary concern in the design. The building is to be designed to meet local planning policy in terms of energy usage and carbon emissions. The building envelope will be required to perform better than the limiting values as stated within the current building regulations Part L 2021.

Overheating

4.59 An overheating assessment has been provided for the Proposed Scheme as part of the overall Energy Strategy. The report demonstrates that the design of the façades, glazing and internal systems provide the occupants with a comfortable internal environment. A detailed study has been carried out to assess the internal temperatures against CIBSE Technical Memorandum 59 (TM59) design methodology for the

assessment of overheating risk in domestic buildings. The assessment factor in thermal sources from occupants, lighting and small power, as well as from external sources, with solar gains and external air temperatures. This method of assessment is referred to as the Dynamic Simulation Method (DSM). The assessment indicated that the spaces required mechanical ventilation to mitigate the risk of overheating this is due to the window not being to open due to the noise levels in the surrounding area. All of the space will be ventilated using highly efficient heat recovery mechanical ventilation units in each accommodation space with local control.

Ventilation

4.60 Bedrooms, bathrooms, and common areas mechanical ventilation plant will incorporate high efficiency heat reclaim technology to recover approximately 90% of waste heat from the building exhaust stale air and use it to pre-warm the building fresh air supply. System resistances will be carefully controlled to ensure that excessive energy is not consumed by the introduction of the heat exchange system therefore keeping fan power to a minimal. The accommodation areas will be provided with their own individual ventilation system with heat reclaim technology. The ventilation systems will each use dedicated Mechanical Ventilation with Heat Recovery (MVHR). Summer bypass facilities will be provided to ensure over heating does not occur during mid-season and summer months. The ventilation philosophy for the scheme is that the MVHR units provide a constant background (minimum) fresh air rate. This will meet the needs of the building regulations for shower and WC facilities, by providing extract from the bathroom pods. The supply air is provided into the bedroom area which will make up air for the extract within the bathroom pod but also maintains a minimum fresh air within the bedroom at all times and ensures that internal air quality is always maintained. In terms of overheating, the MVHR will have an increase ventilation rate during the warmer months and summer to meet both the overheating criteria. The MVHR shall also have the capability to increase it flow to achieve 4 air changes per hour for purge as required by the building regulation.

Space Heating

4.61 For space heating within the accommodation space, highly efficient controlled with wall mounted electrical panels will provide heating to space. Extensive modelling has concluded for an all-electric building there are advantages to providing local, highly controlled wall mounted electric panel heaters. When combined with high levels of thermal insulation, panel heaters can offer a viable low carbon solution for the heating of the accommodation area within the buildings. This solution will also benefit from longer term greening of the grid, reducing carbon impact over the life cycle of the building. The communal areas at ground floor level are served by air source heat pump simultaneous heating and cooling VRV system which is 300% plus efficient, these units offer high efficiencies by recovering heat from the external air during the winter months. In the warmer months, the units provide cooling to areas to mitigate the risk of overheating due to the internal heat gains within the space.

Domestic Hot Water

4.62 Domestic hot water for the building will be generated by air source heat pumps (ASHP). This technology extracts thermal energy from the air and transfers it to the working medium (in this case water). Air source heat pumps use the vapour compression cycle

and can achieve high efficiencies in excess of 300%. As such they are classed as a Low or Zero Carbon (LZC) technology.

4.63 Air source heat pumps typically generate low grade heat, but new products such as the Mitsubishi Q-Ton produces high grade heat due to the use of CO2 as a refrigerant and are able to produce much higher water temperatures. These are proposed for this Proposed Scheme. They are purpose-built products designed specifically to produce domestic hot water. The controls strategies have been developed to optimise running conditions and learn the hot water demand of the site to increase the efficiency. They will be located at roof level and remain serviceable and easy to maintain or replace at end of life.

4.64 By using an ASHP there are no NOx emissions and no local pollution emissions associated with the generation of hot water. As the units use CO_2 as a refrigerant this has a global warming potential (GWP) of 1, therefore having less of an impact on the environment.

4.65 To minimise water consumption, low flow fittings will be used throughout the building, the fittings selected will demonstrate the mandatory requirement for a BREEAM 'excellent,' rated building.

Air Quality

4.66 The only combustion equipment as part of the Proposed Scheme will be the diesel generator and pumps located within the basement. This will be for emergency use and tested on a monthly basis (exhausts will terminate at basement level).

4.67 NO_X filters will be installed in some rooms on the second, third and fourth floor levels to ensure future residents are not exposed to poor air quality.

Waste Arisings and Strategy

4.68 British Standard (BS) 5906:2005 Waste Management in Building – Code of Practice suggests that the weekly waste arisings from an 'domestic' use is equal to the number of dwellings x [(70 litres x average number of bedrooms) +30]. At this stage it is assumed that there will be a mix of one beds and studios (some of which will be occupied on a dual occupancy basis). Whilst the studios may be occupied on a dual basis, they are assumed to be one beds for the purpose of this calculation (i.e. there will be 1,224 dwellings each with one bedroom). On this basis the Proposed Scheme would be considered to generate approximately 122,400 litres (l) (circa 122.4m^3) a week, approximately 6,364,800l (circa 6,365m^3) per annum (assuming 52 weeks per year). It should be noted that this does not take account of any waste arising reused, recycled or diverted from landfill by another means.

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

Resilience to Climate Change

4.70 The evolving climate has been considered throughout the design of the Proposed Scheme. The evolving climate can include an increase in mean summer and winter temperatures; increase in annual precipitation; decrease in mean summer precipitation; and extreme weather events. The following key climate resilience measures are integral to the Proposed Scheme:

- The Building Regulations[4] will be considered in relation to the impact of ground movement in foundation design;
- The landscaping proposals will seek to maximise the ecological value of the Site through the provision of native and/or wildlife friendly landscape planting. This will provide a green space within the site and will subsequently provide new and enhanced opportunities for faunal species. This will include the selection of climate change tolerant species as part of the projects' biodiversity strategy;
- In accordance with national guidance the mitigation proposed in the Flood Risk Assessment will take into account the potential effects of climate change to minimise risk of flooding. This will include consideration of climate change effects on river levels and the design of the surface water drainage system which will take into account the 1 in 100 year storm event and required climate change allowances;
- Where measures are required to reduce the risk of overheating this will be done in accordance with the cooling hierarchy; and
- Provision of water efficient fixtures and fittings, i.e. low flow taps and low water use WCs.

Construction of the Proposed Scheme

Construction Programme and Phasing

4.71 Site preparation and construction of the Proposed Scheme is anticipated to commence in 2024, with the construction being completed over 2 years. The Proposed Scheme is anticipated to be fully operational in 2026, opening for the 2026/27 academic year

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

- Site securement;
- Formation of construction access(s) and temporary construction compound (within the Site);
- Site preparation works, including clearance works, utilities diversions (where appropriate), provision of retained features, etc.;
- Construction of new access junctions, including temporary closures/diversions (where required);

- Excavation, earthworks, levels and material management;
- Construction of spine road and associated infrastructure;
- Construction of buildings and associated infrastructure (i.e. services and plant); and
- Implementation of proposed landscaping, lighting, internal and external finishing.

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

4.74 A commitment has been made to a number of environmental mitigation measures (as set out within **Table 4.2**) to be adopted throughout the construction stage, intended to be secured and managed through a Construction Environmental Management Plan (CEMP).

Site Securement

4.75 Site securement will be achieved through a combination of secure fencing, barriers and hoarding, depending on the exact requirements and proximity to specific works. In addition, the principal contractor will be responsible for the provision of construction staff at key interfaces if appropriate.

Construction Access and Vehicle Movements

4.76 Construction traffic and deliveries to the Site will arrive from the A6 and Fairfield Street. There are options for access routes, either via Back Acton Street, South Pump Street, Granby Row or Altrincham Street / Echo Street. Some larger vehicles may be restricted to certain routes due to space constraints. Vehicles will egress via Cobourg Street or South Pump Street.

4.77 Construction traffic has been forecast and this is expected to be below 100 vehicle movements per day. The daily movements of articulated HGVs could be expected to vary between 2 and 6 articulated HGVs per day, for certain phases of construction, for limited periods. The daily movement of construction vehicles can typically occur over a 10-12 hour period but the timeframe may extend depending on the type of activity occurring on site. In general, the strategy is to avoid vehicle activity during weekday peak traffic periods (0800-0900 and 1700-1800).

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

Construction Compound

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

4.80 It is assumed that the principal contractor will identify the proposed compound locations within a Site Layout Plan as part of a CEMP (**Table 4.2**) for submission and approval by MCC prior to commencement of construction activities on-site.

Temporary Drainage Strategy

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

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

Utilities Strategy

4.83 No offsite work is envisaged for utility connections.

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

Features for Retention / Removal

4.85 The Site is already cleared, though some localised removal will be required. The basement area of the Site has been backfilled while construction works have stopped. The additional material currently in the basement area will need to be removed from Site before the continuation of the works. The works will utilise the existing piles and foundations, but may include some localised demolition of the existing foundations or remedial works to the existing foundations where required.

4.86 Any natural seeding of vegetation that is present on Site since its clearance (currently limited to the edges of the Site) will be removed. Areas where rubbish has been dropped over time will also be cleared and cleaned with care.

4.87 Root protection and temporary paving will be required to adjacent land in Vimto Park.

Earthworks, Levels and Material Management

4.88 To obtain appropriate development plateau levels, it is anticipated there will be both areas where levels will reduce (areas of cut) and areas where level will increase (area of

[a] CIRIA (2015). The SuDS Manual (C753).

[b] BSI (2013). BS8582:2013 Code of practice for surface water management for development sites. Available at: BS 8582:2013 | 30 Nov 2013 | BSI Knowledge (bsigroup.com)

fill). At this stage it is assumed that there will be a requirement for surplus material to be transport off Site due to the basements.

4.89 The existing ground will be stripped and earthworks (excavation) undertaken to create a proposed basement area adjacent to Vimto Park (which will occupy approximately 3/5 of the Site). At this stage, it is anticipated excavation will be required to approximately +36.600m AOD, for installation of the foundations. Fill will then be required up to +37.300m AOD to underside of structural slab. To the east of the Site, the top of foundations level will range from 39.380m AOD to 40.395m AOD.

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

4.91 All waste arisings during construction are to be controlled through the implementation of a CEMP and a best practice waste management strategy (described further in **Table 4.2** below).

Remediation Strategy

4.92 In the event that contamination is identified, a programme of mitigation or remediation work will be carried out as part of the enabling works in line with a Remediation Strategy approved by the regulators and MCC. Recommended remediation is likely to comprise inclusion of an engineered capping layer of clean soils in soft landscaped areas to ensure the end users do not come into contact with contaminated soils.

4.93 Quantitative risk assessments will be reviewed and revised in respect to contamination and ground gas. Where revised quantitative risk assessments identify an elevated risk, design and implementation of any remedial measures will be required to discharge pre-commencement and pre-occupation planning conditions relating to ground contamination. Requirements would be detailed in a Phase 3 Remediation report Strategy and records of completion included in a Phase 4 verification report.

4.94 The implementation of any gas protection measures (e.g gas resistant membrane) will be required to discharge pre-commencement and pre-occupation planning conditions relating to ground contamination will be identified.

4.95 A United Utilities water supply pipe risk assessment will be undertaken to further assess the risk of contaminants entering the water supply prior to installation of water supply pipes. Remediation measures where required would entail ensuring contaminant resistant water supply pipes are used (known as barrier pipe) to prevent migration of contamination into water supply pipes.

Foundations Solution

4.96 There is already piling in place on Site. As a worst case at this stage whilst the foundations solution is developed, it is assumed that construction of the Proposed Scheme will require further piled foundations and remedial works to the existing foundations.

4.97 The Building Regulations[5] will be considered in relation to the impact of ground movement in foundation design. The capacity and integrity of the as-installed piles will be carefully considered in relation to permissible settlements.

Cranes

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

Working Hours

4.99 Construction working hours[6] (noisy work) will be 07:30 to 18:00 Monday to Friday; 08:30 to 14:00 on Saturday; and no noisy work on Sundays and Bank Holidays. Operations outside of these hours will be agreed with MCC.

Construction Cost

4.100 Construction of the Proposed Scheme is anticipated to cost approximately £115m.

Construction Employment

4.101 Construction of the Proposed Scheme will generate 230 total net additional full time equivalent positions within the Greater Manchester Combined Authority area, 90 of which would be taken by people in MCC.

Site Security

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

Construction Waste Arisings and Strategy

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

4.104 Using the anticipated total floorspace (41,794m^2 Gross External Area) multiplied by industry benchmarks[c] for construction waste arisings (10 tonnes per 100m^2 gross area[d]), it is anticipated that 4,179.4 tonnes of waste will be generated.

4.105 It is anticipated that generic waste produced during construction would be controlled through the implementation of a CEMP, secured by planning condition. The CEMP will be informed by the waste provisions of the Environmental Protection Act 1990[e] and the

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

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

[e] Environmental Protection Act 1990 No. 43 Available at: https://www.legislation.gov.uk/ukpga/1990/43/contents [Accessed: 18/01/2023].

Environmental Protection (Duty of Care) Regulations 1991[f] and will set out the principles and legal requirements relating to waste, including any hazardous waste that is encountered and required to be exported off-site for disposal.

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

Construction Environmental Management Commitments

4.107 A commitment has been made to a number of management practices during the construction stage. These will be secured by a Construction Environmental Management Plan (CEMP), as set out within the Environmental Management Plan (**Volume 3: Environmental Management Plan**).

4.108 The Environmental Management Plan (**Volume 3: Environmental Management Plan**) defines the actions needed to manage environmental effects during the construction and operational stages of the Proposed Scheme and should be used as a mechanism to secure the mitigation considered within the ES, largely through appropriate conditions and/or S106 agreements.

4.109 A summary of the CEMP measures which are integral to the description of the Proposed Scheme are provided in **Table 4.2**.

Table 4.2: Construction Environmental Management Commitments

Construction Environmental Management Commitments	
General	
(a)	The proposed construction works will be carried out by a competent contractor that will comply with current legislation[7].
(b)	The site security arrangements for the Proposed Scheme during the construction stage will be in line with the requirements set out in the Construction (Design and Management) Regulations 2015 and appropriate levels of security (personnel / CCTV) will be provided.
(c)	Construction working hours[8] (noisy work) will be 07:30 to 18:00 Monday to Friday; 08:30 to 14:00 on Saturday; and no noisy work on Sundays and Bank Holidays. Operations outside of these hours will be agreed with MCC.
(d)	Climate change adaptation measures will be set out to reduce risks to human health from overheating such as provision of shaded refuges to reduce overheating risks, and potable water supplies to avoid dehydration.

[f] Environmental Protection (Duty of Care) Regulations 1991 No. 2839. Available at: https://www.legislation.gov.uk/uksi/1991/2839/made#:~:text=The%20duty%20requires%20such%20persons,person%20or%20to%20a%20person [Accessed: 18/01/2023].

Construction Environmental Management Commitments	
(e)	3m high Site hoarding lines.
Dust Management / Air Quality	
(f)	The CEMP will be informed by Institute of Air Quality Management (IAQM) guidance[9] and would include prevention measures, such as screening stockpiles of materials, deployment of windbreak netting and dampening exposed soils as appropriate and set out requirements for ongoing monitoring and liaison with the local community, and MCC.
(g)	Measures to control emissions from non-road mobile machinery, such as the use of emission standards for NRMM based on engine size.
Greenhouse Gas Emissions	
(h)	A range of measures will be implemented which will reduce construction and embodied carbon. These measures are set out in the BREEAM Life Cycle Assessment (LCA) report and include:
(i)	25% GGBS within concrete for the ground floor slab, ground beams, pilecaps and core bases;
(j)	98% recycled steel for the rebar.
Ground	
(k)	All earthworks and foundation design will be in accordance with relevant industry guidance, including but not limited to CIRIA Report C572: Treated ground engineering properties and performance[10], British Research Establishment document FB75: Building on Fill - Geotechnical Aspects[11] and British Standard 6031:2009: Code of Practice for Earthworks[12].
(l)	Measures to protect construction workers, neighbours and general public passing by from exposure to any contaminated material which is encountered including (but not be limited to); dust suppression methods, ensuring covered wagons transport material and ensuring suitable PPE is provided and worn on site.
(m)	Fuels, oils and hazardous substances used in construction will need to be suitably stored and bunded containers with spill kits easily accessible.
(n)	A Piling Risk Assessment will be undertaken for any further piling works that are required.
(o)	Site Specific Unexploded Ordnance Awareness Briefings to all personnel conducting intrusive works.
(p)	In medium risk area of UXO the following will be undertaken:

- Open Intrusive Works (trial pits, service pits, open excavations, shallow foundations etc.);
- UXO Specialist On-site Support and Site Specific Unexploded Ordnance Awareness Briefings to all personnel conducting intrusive works; and
- Boreholes – Intrusive Magnetometer Survey of all borehole and pile locations/clusters down to maximum bomb penetration depth

Lighting

(q) Lighting will be controlled through a series of best practice measures, in line with lighting industry standards and guidance including the CIE publication 'Technical Report Document 129[13] and BS EN 12464-2:2014[14].

(r) The following measures are proposed in order to control Light Spill, Glare and Sky Glow effects and thus manage light pollution:

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

Noise and Vibration

(s) Controls implemented in accordance with BS5288-1:2014[16], including site hoardings, hours of operation, and the use of practicable measures to control noise at source.

Construction Environmental Management Commitments	
(t)	Controls implemented in accordance with BS5288-2:2014[17], including the use of low-vibration working methods, such as continuous flight auger (CFA) and reasonable hours of working (see hours above, under General Measures).
(u)	Maintain good road surfaces.
Traffic Management	
(v)	The CEMP will manage construction traffic in the area, seeking to minimise the potential for disruption to other road users through measures such as vehicle booking systems.
(w)	Safe pedestrian routes maintained along Granby Row.
(x)	Site exit managed to keep clear of debris, mud and materials.
(y)	Reuse of materials on site to avoid traffic movements.
(z)	Most traffic and deliveries to the Site will arrive from the A6 and Fairfield Street, with access via the main entrance at Back Acton Street and egress via the main exit at Cobourg Street ie there will be a one-way system in place close to the Site.
Water	
(aa)	The monitoring and setting of targets to reduce water use.
(bb)	A Surface Water Management Plan (in accordance with best practice guidance such as The SuDS Manual (C753)[g] and BS8582:2013 Code of practice for surface water management for development sites[h]) will be established. This will include the installation of a temporary drainage system to collect and contain run-off including any discharge agreements with the local sewer authority and measures to protect the Site from increased risk of flooding during construction, for example compounds storage compounds with raised levels and temporary drainage; and drainage and pollution prevention systems.
(cc)	Introduction of perimeter cut off drains to prevent overland run-off and additional interceptors for pollution and debris collection if required.
(dd)	Bowsers to be in place for potable water requirements until a permeant solution is in place.
(ee)	Measures to limit the amount of silt and other pollutants that are able to reach the existing sewer infrastructure. Silt will be controlled using traps and measures implemented to reduce the amount of material that could be washed

[g] CIRIA (2015). The SuDS Manual (C753).

[h] BSI (2013). BS8582:2013 Code of practice for surface water management for development sites. Available at: BS 8582:2013 | 30 Nov 2013 | BSI Knowledge (bsigroup.com)

Construction Environmental Management Commitments	
	into the Watercourse via overland flows. The use of cut off trenches to intercept the overland flow routes will also prevent pollution.
(ff)	Designation of specific areas where refuelling and maintenance occurs.
(gg)	Storage of materials will be located an appropriate distance away from the watercourse to ensure there is limited flow routes for contamination to use to get the existing sewer infrastructure.
Waste Management	
(hh)	The CEMP will be informed by the waste provisions of the Environmental Protection Act 1990[18] and the Environmental Protection (Duty of Care) Regulations 1991[19] and will set out the principles and legal requirements relating to waste, including any hazardous waste that is encountered and required to be exported off-site for disposal.
(ii)	Hazardous waste will be handled, processed and removed from Site by suitability qualified contractors, all being undertaken in line with The Hazardous Waste (England and Wales) Regulations 2005.

4.110 The measures (including any monitoring) will be set out and agreed as part of the CEMP and agreed with MCC following liaison with the local community and the Environment Agency (where relevant). The CEMP will be in accordance with the following structure:

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

References

[1] Flood risk assessments: climate change allowances (2022). Available at: Flood risk assessments: climate change allowances - GOV.UK (www.gov.uk)
[2] CIRIA (2015). The SuDS Manual C753. Available at: SuDS Manual C753 Chapter List (ciria.org)
[3] United Utilities (2019). Water Resources Management Plan. Available at: Water Resources Management Plan (unitedutilities.com)
[4] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/540328/BR_PDF_AD_L2A_2013_with_2016_amendments.pdf
[5] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/540328/BR_PDF_AD_L2A_2013_with_2016_amendments.pdf
[6] Manchester City Council. Tackle a noise problem – Noise from building sites. Available at: Noise from building sites | Tackle a noise problem | Manchester City Council [Accessed: 14/12/2022].
[7] This includes the Health and Safety at Work etc. Act 1974; the Control of Pollution Act 1974; and Construction (Design and Management) Regulations 2015.
[8] Manchester City Council. Tackle a noise problem – Noise from building sites. Available at: Noise from building sites | Tackle a noise problem | Manchester City Council [Accessed: 14/12/2022].
[9] IAQM (2014). Assessment of dust from demolition and construction v1.1 Available at construction-dust-2014.pdf (iaqm.co.uk) [Accessed 17/1/2023].
[10] CIRIA (2002). Report C572: Treated ground engineering properties and performance.
[11] British Research Establishment (2015). FB75: Building on Fill - Geotechnical Aspects. 3rd Edition.
[12] British Standard (2009). 6031:2009: Code of Practice for Earthworks.
[13] CIE - Technical Report Document 129 (1998) Guide for Lighting Exterior Work Areas.
[14] British Standards (2014) BS EN 12464-2 – Lighting of Work Places – Part 2: Outdoor Work Places.
[15] Institute of Lighting Professionals (ILP) (2021) Guidance Notes for the Reduction of Obtrusive Light (GN01).
[16] BSI Standards Publications (2014). BS5228-1:A1:2014: available at https://knowledge.bsigroup.com/products/code-of-practice-for-noise-and-vibration-control-on-construction-and-open-sites-vibration/standard [Accessed 13/1/2023].
[17] BSI Standards Publications (2014) BS5228-2:A1:2014: available at https://knowledge.bsigroup.com/product./code-of-practice-for-noise-and-vibration-control-on-construction-and-open-sites-vibration/standard [Accessed on 13/1/2023].
[18] Environmental Protection Act 1990 No. 43 Available at: https://www.legislation.gov.uk/ukpga/1990/43/contents [Accessed: 18/01/2023].
[19] Environmental Protection (Duty of Care) Regulations 1991 No. 2839. Available at: https://www.legislation.gov.uk/uksi/1991/2839/made#:~:text=The%20duty%20requires%20such%20persons,person%20or%20to%20a%20person [Accessed: 18/01/2023].

5. Consideration of Alternatives

Introduction

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

5.2 Paragraph 2, Schedule 4, of the EIA Regulations[1] states that an ES should include:

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

5.3 Planning Practice Guidance (PPG)[2] indicates that where "*…alternative approaches to development have been considered, the Environmental Statement should include a description of the reasonable alternatives studied which are relevant to the proposed development and its specific characteristics and provide an indication of the main reasons for the choice made, including a comparison of the environmental effects*.".

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

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

Approach to Consideration of Alternatives

5.6 The EIA Regulations and the online PPG do not identify a specific methodology for the assessment of alternatives or criteria to be used to inform the assessment of 'reasonable alternatives'. The methodology adopted is based on professional experience of similar projects and an understanding of the Proposed Scheme and its characteristics, as well as focus on the delivery of a proportionate assessment, in line with PPG.

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

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

Step 1: Consideration of 'Factors'

5.8 **Table 5.1** reports Step 1.

Table 5.1: Step 1: Consideration of 'factors'

Alternative 'factors'	Considered at Step 2	Justification / discussion
Alternative sites (location)	✗	Alternative sites have not been considered as the Applicant owns the Site and other sites are outside of the Applicant's control. Whilst the Application for the Proposed Scheme is standalone to any other planning application, the Site sits within the Piccadilly Strategic Regeneration Framework area[3], an area which can be regenerated through the arrival of HS2 and Northern Powerhouse Rail into Manchester to provide a gateway to the city. The Site is situated within the North Campus area of the Piccadilly Strategic Regeneration Framework, which will provide '*a new vibrant area in central Manchester that offers a high quality environment, acknowledging the history of the Site.'* Given the above, alternative sites were not considered by the Applicant and will not be taken forward to Step 2.
Alternative technologies	✗	Whilst alternative technologies are available in terms of the construction of the Proposed Scheme these are largely dictated by 'build-ability' and cost exercises rather than environmental-focused considerations. The Proposed Scheme is PBSA, and given this alternative 'technologies' are not considered to be applicable as they would be for other types of development (i.e. industrial processes or energy generation). Specific energy strategy technologies have been considered as part of the overarching Environmental Standards Statement for the Proposed Scheme, but again this is driven more by requirements of planning policy and other regulatory compliance (i.e. Building Regulations) than environmental considerations. Therefore, alternative technologies were not considered to be applicable and will not be taken forward to Step 2.
Alternative development designs (including size and scale)	✓	The design of the Proposed Scheme has evolved in response to stakeholder engagement, market demand / feedback, technical studies and environmental constraints and opportunities (where present in an urban context). Therefore a design process has been undertaken where 'alternatives' have been considered and disregarded. Therefore, alternative development designs are considered to be applicable and will be taken forward to Step 2.
'Do nothing' scenario	✗	The EIA (as reported within this ES) has assessed the likely significant effects largely based on a deviation from the

Alternative 'factors'	Considered at Step 2	Justification / discussion
		baseline environment, which is in essence the current scenario. **Technical Chapters 6 –12** have also stated a 'future baseline' in the absence of the Proposed Scheme coming forward (i.e. a 'do nothing' scenario) (albeit this has not informed the assessment of likely significant effects). Broadly, the 'do nothing' scenario hypothesises that the likely significant effects identified and reported in this ES would not occur (i.e. no adverse or beneficial effects). However, the Site and surrounding area will continue to change regardless of the Proposed Scheme due to the following: • Projected growth in population and economy; and • Wider development / regeneration of the City Centre. In addition, given the desire for MCC to target growth and redevelopment of the area, is considered likely that if the Proposed Scheme was not to come forward another form of proposed re-development would likely be proposed, the environmental effects of which are unknown at this time as they would be based on the nature of any other proposal(s). Therefore, the 'do nothing' scenario was not considered to be applicable and will not be taken forward to Step 2.

Step 2: Assessment of 'Factors'

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

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

Site Response

5.11 A variety of block configurations were tested for the Site, with the original form emulating the blocks located along Granby Row being inefficient as more than 50% of the Site would be unoccupied.

5.12 Through taking into account solar orientation, natural ventilation, and the wider context including Vimto Gardens, it became apparent that it would be appropriate to 'break up' the massing with multiple linked towers rather than designing a single residential block or three separate blocks. This allows the Proposed Scheme to be coherent with the existing urban grain and surrounding context, whilst also allowing for optimal usage of the land and the creation of a living space that is appealing to future users.

Form and Massing

5.13 The massing of the Proposed Scheme was developed in response to site constraints and the Conservation Area, with three towers stepping up from the height of the Sackville Street Building to meet the heights of buildings within the North Campus SRF and immediate Piccadilly high-rise area, becoming a prominent gateway feature harmonious with the wider environment.

Design Development

5.14 Initially, a wrap façade concept was considered, which used emphasised the vertical aspects of the scheme, and giving a contrasting effect to the East and West facades.

5.15 Through pre-application meetings with Manchester City Council and Historic England, it was flagged that there were concerns with the wrap façade, and so a red brick façade approach was developed which directly linked to the surrounding context with a contemporary feel and rationalist window configuration.

References

[1] The Town and Country Planning Act 1990. Available at: http://www.legislation.gov.uk/ukpga/1990/8/contents [Accessed: 16/01/2023].

[2] Ministry of Housing, Communities and Local Government (Online Resource). Planning Practice Guidance Environmental Impact Assessment. Available at: https://www.gov.uk/guidance/environmental-impact-assessment [Accessed: 16/01/2023].

[3]https://www.manchester.gov.uk/downloads/download/6868/manchester_piccadilly_srf_march_2018

6. Socio-economics and Human Health

Introduction

6.1 This Chapter reports the outcome of the assessment of likely significant environmental effects arising from the Proposed Scheme in relation to socio-economics and human health.

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

6.3 In line with **Chapter 2: Approach to EIA**, the assessment reports on the likely significant environmental effects, the further mitigation measures required to prevent, reduce or offset any significant adverse effects, or further enhance beneficial effects. The conclusions are provided both in terms of the residual effects and whether these are considered significant. The assessment of effects takes into consideration both primary and tertiary mitigation (see **Chapter 2: Approach to EIA** for further details) and is informed by the EIA Scoping process (**Appendix 2.1 - 2.2**) and iterative scoping process where applicable.

6.4 This Chapter, and its associated **Figure 6.1** and **Appendix 6.1** is intended to be read as part of the wider ES with particular reference to the introductory Chapters of this ES (**Chapters 1 – 5**).

6.5 In addition, this Chapter should be read in conjunction with **Chapter 13: Assessment of Cumulative Effects**.

Summary of Consultation

6.6 No consultation has been undertaken as part of the preparation of this chapter outside of the EIA Scoping process detailed below.

Scope of the Assessment

6.7 An EIA Scoping Report was submitted to MCC on 17th February 2023, as presented as **Appendix 2.1**. The EIA Scoping Opinion was received on 29th March 2023 (**Appendix 2.2**). This section provides confirmation on the scope of the assessment presented within this Chapter following submission of the EIA Scoping Report.

Effects Not Considered to be Significant

6.8 The following effects were not considered significant as part of the EIA Scoping Report (**Appendix 2.1**) and are not considered further in this Chapter (with detailed justification provided within the EIA Scoping Report):

- Access to primary healthcare facilities;
- Social cohesion and inclusive design;
- Crime reduction and community safety;
- Access to healthy food;

- Access to active and sustainable travel options;
- Access to open space and sports & recreation facilities;
- Access to training opportunities;
- Employment generated during the operational stage; and
- New Homes Bonus and Council Tax revenue.

Effects Considered Likely to be Significant

6.9 The following effects (**Table 6.1**) were considered likely to be significant and are reported within this Chapter:

Table 6.1: Effects Considered Likely to be Significant

Likely Significant Effect	Receptors	Applicable Development Stage
Employment generated during the construction stage	Local labour force	Construction
Provision of Purpose-Built Student Accommodation (PBSA)	Students requiring accommodation	Operation

Assessment Methodology

Legislative Framework, Policy and Guidance

6.10 The following technical standards and guidance has informed the assessment of effects within this chapter:

- Homes and Communities Agency (HCA) (2014) Additionality Guide (4th Edition)[1];
- HCA (2015) Employment Density Guide (3rd Edition)[2];
- NHS Healthy Urban Development Unit (HUDU) (2019). Rapid Health Impact Assessment Toolkit (4th Edition)[3]; and
- IEMA (2017). Health in Environmental Impact Assessment: A Primer for a Proportionate Approach[4].

Defining the Study Area

6.11 In the absence of guidance or policy available to inform the definition of appropriate study areas, it is reasonable to define study areas based on an understanding of relevant local and wider economic geographies, and the extent to which socio-economic and human health effects are likely to be contained within these geographies. A plan of the Study Area is included at **Figure 6.1**, and shows:

- A Local Impact Area based on the administrative area of MCC. The 2011 Census[a] indicates that 38% of people working in Manchester also live within the authority. All effects assessed within the chapter are relevant to analyse at the scale of the local impact area; and

- A Wider Impact Area defined to cover the Greater Manchester Combined Authority (GMCA) area. The 2011 Census found that the majority (84%) of people working in Manchester lived within the wider impact area, suggesting a high level of socio-economic containment within this geography[5]. Employment-related effects assessed within the chapter are relevant to analyse at the scale of the local impact area with the wider impact area presented for added context.

Background Studies to Inform the ES / Establishing the Baseline

6.12 The baseline was determined through desk-based research, relying primarily on data published by the Office for National Statistics (ONS), including the following datasets:

- 2011 Census[6];
- 2021 Census[7];
- Annual Population Survey[8];
- Claimant Count[9];
- Population Estimates[10];
- Jobseekers Allowance by Occupation[11]; and
- Business Register & Employment Survey[12].

6.13 Further contextual information with regard to the baseline is drawn from a range of sources[b], including:

- NHS Healthy Urban Development Unit (HUDU);
- Department for Work and Pensions (DWP);
- Office for Health Improvement and Disparities (OHID);
- ONS;
- HM Government;
- HM Treasury;
- MCC; and
- House of Commons Library.

[a] Where Census 2011 data has been used throughout this chapter, it should be noted that relevant data collected by the ONS for the 2021 Census has not yet been published publicly at the time writing

[b] Source references provided at the relevant points of the text.

6.14 No additional background studies have been undertaken to inform the findings presented in this chapter. The assessment does, however, rely upon economic impact modelling to understand the magnitude of effects. This assessment has been undertaken in accordance with best-practice guidance, as outlined above. The outputs of the economic impact modelling exercise inform the assessment of effects and are detailed within this chapter.

Assessment Process

6.15 As outlined above, there is no overarching guidance which sets out the preferred methodology for the preparation of assessments of the likely effects of development proposals in terms of socio-economic or human health impact. However, there are several methodological guides which cover key elements of the assessment, all of which have been listed above. These have been drawn upon as appropriate within the assessment, with the HCA Additionally Guide[13], alongside statistical evidence published by organisations such as the ONS being of particular relevance to the assessment of economic impacts.

6.16 Drawing on the above guidance, the following methodology has been:

- **Employment generated during the construction stage** – Gross full-time equivalent (FTE) construction jobs have been estimated by dividing construction costs by the average annual turnover for construction sector employees in the North West region[14]. This has then been divided by the length of the construction period (i.e. number of years) to estimate average gross FTE jobs supported on average throughout the construction. Allowances have then made for leakage[c] and displacement[d] and standards set out in recognised guidance[15], in order to calculate net FTE jobs. Multipliers[e] have also been applied to estimate indirect and induced employment, drawing on guidance[16]. The extent to which employment supported by the construction of the Proposed Scheme impacts on baseline levels and growth of local employment in the context of wider economic trends has informed the level of effect against this indicator; and

- **Provision of Purpose-Built Student Accommodation (PBSA)** – The impact of the Proposed Scheme on the supply of PBSA in Manchester is established by comparing the amount of new PBSA proposed to a needs assessment on the current PBSA supply demand context as outlined within Cushman & Wakefield's (CW) Student Need Assessment (SNA), which was prepared to accompany the Application. (**Appendix 6.1**).

Reporting of the Environmental Effect and Significance Criteria

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

[c] Leakage is defined by the HCA Additionality Guide as "The proportion of outputs that benefit those outside of the intervention's target area or group". For example, the number of jobs which would be held by those living outside of the respective impact areas.

[d] Displacement is defined by the HCA Additionality Guide as "The proportion of intervention outputs/outcomes accounted for by reduced outputs/outcomes elsewhere in the target area".

[e] Multipliers are defined by the HCA Additionality Guide as "Further economic activity (jobs, expenditure or income) associated with additional local income and local supplier purchases".

Determining Sensitivity of Receptor

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

6.19 The sensitivity of receptors is determined through comparison with wider regional and national trends. Consideration is also given to the priority and value attributed to specific receptors in strategy and policy terms. The assessment is based on professional judgement.

6.20 In the absence of industry-wide guidance on assessing the significance of socio-economic effects, **Table 6.2** provides a general overview of the sensitivity criteria which have been applied in the assessment. Given the broad range of effects assessed within the Chapter, it is not possible to define specific criteria that would be applicable across all receptors. The sensitivity of each specific receptor is therefore discussed and justified in turn within the main body of the Chapter, based on these general principles.

Table 6.2: Definition of the sensitivity of receptors

Sensitivity	Definition
High	Receptor of national importance, with little ability to absorb, adapt to or recover from change
Medium	Receptor of regional or local importance, with medium ability to absorb, adapt to or recover from change
Low	Receptor of local importance, with some ability to absorb, adapt to or recover from change
Negligible	Receptor of limited or no importance

Determining the Magnitude of Change

6.21 The magnitude of change has been considered as the change experienced from the current baseline conditions at the sensitive receptor and has been considered on a scale of **large**, **medium**, **small** or **negligible**. In the absence of industry-wide guidance on assessing the significance of socio-economic effects, **Table 6.3** provides a general overview of the magnitude criteria which have been applied in the assessment

6.22 To determine magnitude, the absolute impact attributable to the Proposed Scheme is benchmarked (where relevant) against the average annual rate of change in the corresponding socio-economic characteristics or baseline.

Table 6.3: Definition of the magnitude of change

Magnitude	Definition
Large	The change will result in substantial changes to baseline conditions, and/or will be highly likely to affect large numbers of people and/or businesses over the long-term, and, as such, should be acknowledged as an important consideration which (depending on the sensitivity of the receptor) is likely to be material in the decision-making process

Magnitude	Definition
Medium	The change will result in appreciable changes to baseline conditions and/or is likely to affect a reasonable number of people and/or businesses over a medium or long-term duration. The change may be important, but is not likely to be a key decision-making factor unless the relevant socio-economic resource or receptor is particularly sensitive
Small	The change will result in a perceptible difference from baseline conditions and is likely to affect a small number of people and/or businesses over a medium or short-term duration. The change may be raised as a local factor, but is unlikely to be critical in decision-making process
Negligible	The change does not result in variation beyond baseline conditions, and is unlikely to measurably affect people and/or businesses

Determining the Level of Effect

6.23 The level of effect has been informed by the magnitude of change due to the Proposed Scheme and the evaluation of the sensitivity of the affected receptor. The level of effect has been determined using professional judgement and **Table 6.4** has been a tool which has assisted with this process.

6.24 Whilst **Table 6.4** provides ranges, the level of effect is confirmed as a single level and not a range, informed by professional judgement. For each effect, it has been concluded whether the effect is '*beneficial*' or '*adverse*'.

Table 6.4: Matrix to Support Determining the Level of Effect

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

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

- **Major effect**: where the Proposed Scheme is likely to cause a considerable change from the baseline conditions and the receptor has limited adaptability, tolerance or recoverability or is of the highest sensitivity;

- **Moderate effect**: where the Proposed Scheme is likely to cause either a considerable change from the baseline conditions at a receptor which has a degree of adaptability,

tolerance or recoverability or a less than considerable change at a receptor that has limited adaptability, tolerance or recoverability;

- **Minor effect**: where the Proposed Scheme is likely to cause a small, but noticeable change from the baseline conditions on a receptor which has limited adaptability, tolerance or recoverability or is of the highest sensitivity; or where the Proposed Scheme is likely to cause a considerable change from the baseline conditions at a receptor which can adapt, is tolerant of the change or/and can recover from the change; and

- **Negligible**: where the Proposed Scheme is unlikely to cause a noticeable change at a receptor, despite its level of sensitivity or there is a considerable change at a receptor which is not considered sensitive to a change.

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

Determining Significance

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

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

Baseline Conditions

Economic Activity, Employment and Unemployment

6.29 Analysis of economic activity, employment and unemployment rates provides an indication of the latent labour force either currently unemployed or available to start work immediately. Over the year October 2021 – September 2022, the ONS's Annual Population Survey (APS)[17] indicates that economic activity rates amongst the working-age population of the local impact area of Manchester (72%) is lower than within the GMCA area (75%) and across Great Britain as a whole (78%). The employment rate in Manchester amongst the working age population, at 67%, is also lower than in the GMCA (72%) and Great Britain (75%).

6.30 The latest Claimant Count data published by the ONS[18] provides an up-to-date record of the number of people currently claiming benefits principally for the reason of being unemployed. This reveals that as of January 2023, there were 22,300 people in Manchester claiming out-of-work benefits. Of residents in Manchester aged 16-64, 5.8% were claiming out of work benefits which is slightly higher than the 4.9% recorded across the GMCA and the 3.6% recorded in Great Britain.

6.31 Analysis of ONS data regarding Jobseeker's Allowance (JSA) claimants[19] (a sub-set of the above, which also captures the majority now claiming Universal Credit) highlights that circa 355 people were recorded as specifically seeking employment in construction-related trades in the local impact area in January 2023, rising to circa 2,030 at the scale of the wider impact area. This indicates that there is available construction labour locally and in the wider area.

6.32 The social impact of skills and employment is far reaching and has benefits at both the individual and wider societal level, shown clearly by the fact that the NHS's Healthy Urban Development Unit (HUDU) consider access to training and employment opportunities as a 'primary determinant' of health[20].

6.33 Gaining education and employment can have significant economic and wellbeing benefits for both individuals and society. This is exemplified by the fact that health expenditure on an unemployed person is reported to be double the average expenditure per person, given that an individual's overall health and wellbeing – in terms of both physical mental health – is strongly associated with being in fulfilling and stable employment[21].

6.34 Research from the Government's Office for Health Improvement and Disparities (OHID, formerly Public Health England, PHE)[22] highlights the following benefits of having the necessary skills to obtain employment:

- Employment is generally the key means of obtaining adequate economic resources, which are essential for material wellbeing and full participation in society; and
- Work also meets important psychosocial needs in societies where employment is the norm and is central to individual identity, social roles and social status, with employment and socio-economic status being among the main drivers of health outcomes.

6.35 Whilst, conversely, research indicates that a lack of skills and unemployment:

- Causes the loss of regular income, the material and psychosocial impacts of which contributes to the link between unemployment and poor health;
- Causes additional psychological stressors related to status and self-esteem, identity and the loss of a core role in life, which impact on health;
- Is also associated with unhealthy behaviours, including increased smoking and alcohol consumption and decreased physical exercise; and
- Can have effects beyond the individual directly affected, with evidence suggesting that financial difficulties or associated stress can increase the risk of poor mental health among the families of those who are unemployed.

6.36 The ONS regularly monitors national wellbeing and their research[23] highlights a correlation between unemployment and people experiencing feelings of loneliness. Put another way, higher unemployment rates in an area are linked to higher loneliness rates.

6.37 Unemployment, therefore, poses a real threat not only to people's economic means but also their health and wellbeing, and the need for workers to have the skills required to take up new job opportunities is, therefore, one which meets both an economic and a social need.

Labour Market and Industry

6.38 The 2021 ONS Business Register and Employment Survey (BRES)[24] recorded that Manchester accommodates a total of 422,000 workforce jobs, which is approximately 30% of the 1.4 million jobs accommodated in the GMCA. As of 2015, Manchester accommodated 357,000

jobs, indicating that 65,000 additional jobs (an average of 10,900 per annum) were created in the area between 2015 and 2021.

6.39 BRES data indicates that as of 2021 the local impact area supported employment for 11,000 people in the construction sector, equating to 2.6% of total employment in the area, which is lower than the sector's 5.4% contribution to the total workforce in the GMCA region and the 5.0% in Great Britain. The construction industry supported 7,000 jobs in Manchester as of 2015, meaning that there has been an overall increase of 4,000 jobs (an average of circa 650 per annum) in employment in the sector during this time albeit with a degree of volatility between individual years.

6.40 Other key employment sectors in Manchester as of 2021 include professional, scientific & technical (accommodating 59,000 jobs, or 14% of employment); education (52,000, 12%); business administration and support services (47,000, 11%); education (40,000, 9%) and accommodation & food services (36,000, 9%).

6.41 The delivery of new employment and economic growth opportunities are local and national policy priorities as essential components of economic recovery following the Covid-19 pandemic. The Levelling Up White Paper[25] similarly outlines that a key objective of the Government over the period to 2030 is to "…*boost productivity, pay, jobs and living standards by growing the private sector*" and to close the gap in economic opportunities and outcomes between those top performing and other areas.

6.42 MCC's 'Powering Recovery: Manchester's Recovery and Investment Plan'[26] sets out how the Council will seek to ensure that the city emerges reinvigorated from the Covid-19 pandemic and rises to other challenges, such as the uncertainties of Brexit. The Plan sets out the leading role that Manchester can play in the levelling-up agenda through building on investments in economic assets and infrastructure and accelerating growth in high-productivity sectors. Co-operation between public bodies, business, academia and other partners is identified as key to tackling the Council's priorities, which focus on people, assets, innovation, and investment.

6.43 The need for new jobs and a boost to pay and living standards remain of vital importance in the current context of inflationary pressures and the cost-of-living crisis, with ONS research indicating that 87% of adults in Great Britain having reported an increase in their living costs by September 2022[27]. Indeed, it is noted that the high level of inflation has led to 'real wages' (i.e. wages adjusted to take account of inflation) falling in recent months; real wages were 2.5% lower in the second quarter of 2022 compared with a year earlier, and excluding bonuses, real wages fell by 3.0% – a record decline[28].

PBSA

6.44 Manchester's Core Strategy[29] states that students account for a significant proportion of the city's population, and also that much of the retail and leisure offer in areas of the city with high student populations has evolved to primarily meet student needs.

6.45 The Core Strategy aims to 'protect the sustainability and amenity of neighbourhoods' in relation to the occupation of Houses in Multiple Occupation (HMOs) as student households. Whilst family households are considered essential for sustainable communities, given that they support a range of local facilities such as schools and tend to have a greater commitment to the neighbourhood as they live there longer than other types of households,

the Core Strategy reports that areas with a high concentration of student-occupied HMOs can experience increased prevalence of issues such as anti-social behaviour.

6.46 PBSA is therefore identified as key towards meeting demand for student accommodation in Manchester, whilst potentially also freeing up family housing and broadening housing choice for residents of all types in the city.

6.47 CW has prepared an SNA in relation to the Proposed Scheme[30] (**Appendix 6.1**), which reports on the existing and pipeline supply of PBSA in Manchester, the demand pool and student to bed ratios. The SNA notes that Manchester is the UK's fourth-largest higher education location by number of full-time students. There were 74,665 full-time students in 2021/22 across its three main institutions: The University of Manchester, Manchester Metropolitan University and the Royal Northern College of Music. This is a 13.3% increase since 2016/17.

6.48 In 2022/23 there were 26,830 purpose-built student accommodation bed spaces available to students in Manchester, making it also the fourth largest student *accommodation* market in the UK. The assessment also states that, whilst c. 2,500 new bedspaces have been delivered to the market since 2018, a large number of bedspaces have also left the market, including 1,075 at the University of Manchester's (UoM) Owens Park campus.

6.49 CW estimate that there was a 'demand pool' of 54,725 students in 2021/22 (the number of full-time & 'sandwich students'[f], minus students from the region who do not require accommodation and sandwich students currently on a placement year and unlikely to demand a room). Comparing this against the number of beds (26,830) gives a student : bedspace ratio (SBR) of 2.04 and indicates that there were 27,895 students requiring a bedspace and unable to access a PBSA bedspace in 2021/22. This is therefore an indication of the number of students who would instead require HMO accommodation or private housing.

6.50 Further analysis indicates that in 2022/23, the number of students was expected to grow to 55,545, and the number of bedspaces to reduce slightly to 26,782, giving an increased SBR of 2.07 to that estimated for 2021/22 (i.e. a larger imbalance between supply and potential demand) and suggesting that 28,763 students would be unable to access PBSA.

6.51 The assessment also reports on the quality of the accommodation on offer. Of the 26,830 beds in Manchester, just 6,105 (23%) score highly for room quality and even fewer, 3,686 (14%), score highly for the quality of on-site facilities and amenities. A person's ability or otherwise to access housing which is of good quality, is affordable, and which meets their needs can have a significant impact on their physical and mental health. As outlined by guidance from the UK Government's Office for Health Improvement and Disparities (published under the body's former title of Public Health England [PHE])[31], there are risks to an individual's health associated with living in:

- A cold, damp, or otherwise hazardous home (an unhealthy home);
- A home that does not meet the household's needs due to risks such as being overcrowded or inaccessible to a disabled or older person (an unsuitable home); and

[f] Sandwich students are university students whose courses include a one-year placement within a relevant industry, for example business, a science discipline or teaching.

- A home that does not provide a sense of safety and security including precarious living circumstances and/or homelessness (an unstable home).

6.52 Poor housing conditions have all been shown to be associated with physical illnesses including eczema, hypothermia and heart disease, with respiratory health also having been shown to be particularly affected. Poor physical conditions can also negatively impact on mental health, due to the stress caused by living in insecure, overcrowded, cold, polluted or damp conditions[32]. As such, 'Housing Quality and Design' is included as a key determinant of health by the HUDU Rapid HIA Tool[33]**.** Research commissioned by Shelter[34] reported 20% of English adults surveyed stated that a housing issue had negatively impacted upon their mental health in the last 5 years.

Future Baseline

Employment

6.53 It is anticipated that the Proposed Scheme will be delivered over a 2-year period between 2024 (the commencement of site preparation) and 2026 (the completion of all works on Site and the site becomes fully operational). The below therefore summarises (where possible) forecasts for the future baseline at the commencement of the construction stage (including demolition) and the anticipated date of full completion/operation.

6.54 Experian's latest employment forecasts[35] (at time of writing) were published in December 2022. Having been estimated to have fallen by 12% in Manchester between 2019 and 2020 in the wake of the Covid-19 pandemic, total FTE employment as of the baseline year of 2023 was forecast to have recovered to exceed 2019-levels. This contrasts with Greater Manchester region, which is not forecast to recover to 2019 employment levels until 2039.

6.55 FTE employment in Manchester and Greater Manchester's construction sector is estimated to have fallen by an even greater degree (both by 24%) than total FTE employment in the area between 2019 and 2020 and was forecast to remain significantly below the 2019 level (Manchester 16% below, Greater Manchester 15% below) by 2023.

6.56 Between 2023 (baseline) and 2024 (start of construction), total FTE employment is forecast to decrease slightly by 0.1% in Manchester but grow by 0.8% between 2024 and 2026 (completion and operation). A similar trend is anticipated across Greater Manchester, where total FTE employment is forecast to decrease by 0.1% between 2023 and 2024 but grow by 0.3% between 2024 and 2026. FTE employment in the construction sector in Manchester is forecast to decline by 1.4% between 2023 and 2024, and then by a further 1.5% by 2026. Again, a similar trend is observed across Greater Manchester though to a slightly lesser extent; total FTE employment in the Greater Manchester construction sector is forecast to decline by 0.6% between 2023 and 2024 and then by a further 1.0% between 2024 and 2026.

PBSA

6.57 The SNA (**Appendix 6.1**) highlights that, as of March 2023, the development pipeline in Manchester stood at 3,814 bedspaces with just over 1,400 approved. CW have modelled the demand and supply dynamics to 2029/30. Using a 1.5% demand pool growth, to account for an increasing number of domestic and international students, and assuming all beds in the development pipeline (both approved and unapproved) are delivered, it is estimated that in 2026/27, the year in which the Proposed Scheme is expected to become operational, 29,373

students would be unable to access PBSA and as a result could require accommodation in other housing options, such as the general private rented sector.

Primary and Tertiary Mitigation

Construction Stage

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

- UK legislation and guidance issued by the Health and Safety Executive (including the Health and Safety at Work Act 1974 and the Construction (Design and Management) Regulations 2015[36] will be adhered to;
- The Site security arrangements for the Proposed Scheme will be in line with the requirements set out in the Construction (Design and Management) Regulations 2015 and appropriate levels of security (personnel / CCTV) will be provided;
- Provision of details of protective fencing to be installed prior to construction to demarcate works areas and to safeguard members of the public in the wider areas; and
- All measures will accord with best practice in accordance with the Considerate Contractors Scheme and Site handbook for the construction of SUDS (CIRIA C698)[37].

Operational Stage

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

- The Proposed Scheme will incorporate the 'Secured by Design' principles and appropriate measures to enhance community safety, with commercial and residential spaces to be respectively designed with reference to the guidance included with the Secured by Design 'Commercial 2015'[38] and 'Homes 2019'[39] guides.

Assessment of Effects, Secondary Mitigation and Residual Effects

Construction Stage

Employment generated during the construction stage [Local labour force]

6.60 Based on anticipated construction costs[g], and the average turnover per employee per annum in the construction sector in the North West[40], it is estimated that the Proposed Scheme has the capacity to support approximately 480 'person-years' of direct employment within the construction sector. Over the course of a build period of approximately 2 years, this equates to an average of 240 full-time equivalent (FTE) on and off-site construction jobs during the construction stage.

6.61 Of the new construction jobs created, not all will be additional to the local and wider impact area. A proportion of jobs will be taken by those living outside of the local impact area of Manchester or the wider GMCA area (referred to as 'leakage') and a proportion of jobs will be taken by those who, in the absence of the Proposed Scheme, could otherwise be working

[g] Construction cost provided by the applicant

on alternative construction projects locally (referred to as 'displacement'). After assumptions regarding leakage and displacement have been applied, it is estimated that 155 FTE jobs will be directly supported across the wider impact area, of which 70 FTE jobs are likely to be taken by those living in the local impact area.

6.62 The beneficial economic impacts of the Proposed Scheme will extend beyond construction employment to include the generation of indirect benefits for the local economy. Investment in the Proposed Scheme will generate considerable expenditure on construction materials, goods and other services which will be purchased from a wide range of suppliers. This expenditure has far-ranging benefits both locally and further afield as it filters down the supply chain, and via the induced impacts of employment, through onward expenditure.

6.63 The result is that the initial investment in the Proposed Scheme is amplified in an economic 'multiplier' effect with linked benefits in terms of generated expenditure spent locally on goods and services. This will bring indirect employment and financial benefits for local individuals and firms involved in the skilled construction trades and associated professions. It could also help to sustain employment within this sector across the local and wider economy.

6.64 The construction of the Proposed Scheme could be expected to support a further 75 FTE jobs within the wider impact area via indirect and induced effects, including contracts within the supply chain, salaries and onward expenditure, inclusive of 20 FTE jobs in the local impact area.

6.65 The net additional impact describes the total economic impact of both direct and indirect effects and is the sum of the direct and indirect employment impacts. The assessment finds that a total of 230 net additional FTE positions could be generated each year across the wider impact area during the construction period, inclusive of 90 jobs in the local impact area (as summarised in the table below).

Table 6.5: Construction Stage Employment

Employment Generated	Local Impact Area	Wider Impact Area
Person-years of Employment	481	
Construction Period (years)	2	
Gross FTE Employment	240	
Direct Net Additional FTE Employment	70	155
Indirect/Induced Net Additional FTE Employment	20	75
Total Net Additional FTE Employment	**90**	**230**

Source: Turley Economics 2023

6.66 The sensitivity of the workforce in the local and wider impact areas is considered to be high, given the high numbers of people claiming JSA and other unemployment benefits who are seeking employment in the construction sector. This also reflects the heightened sensitivity in the wake of the pandemic and the local, regional and national priority to deliver jobs as part of economic recovery. Supporting employment opportunities is also likely to have

heightened importance in the context of inflationary pressures and the growing cost-of-living crisis.

6.67 As of 2021, the construction sector supported 4,000 more jobs locally than in 2015 (equating to an average increase of 650 employees per year); the 155 direct construction jobs generated by the Proposed Scheme will therefore contribute to maintaining buoyancy in the sector going forwards, equating to 24% of one-year's employment growth in the sector. It is, albeit, also acknowledged that the 155 direct net additional jobs to be supported in construction equates to a small proportion (1.4%) of the total 11,000 jobs in the sector in Manchester. Therefore, the magnitude of change is considered to be small, relative to baseline indicators relating to total local construction employment numbers and recent change in construction employment. The concluded magnitude of change is also reflective of the sector's proportionate contribution to total employment locally (which is in lower than the GMCA and national rates) and the temporary, 2-year (therefore medium-term) period over which the additional employment will be generated. Therefore, there is likely to be a direct, temporary, medium-term, beneficial effect which is considered to be **minor**.

Secondary Mitigation or Enhancement

6.68 No secondary mitigation or enhancement is required/has been identified

Residual Effect

6.69 In the absence of secondary mitigation the residual effect for the local labour force is that same as that reported in the pre-mitigation scenario.

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

Operational Stage

Provision of PBSA [Students requiring accommodation]

6.71 The delivery of 1,224 new PBSA bedspaces in would represent a 4.6% increase on the 26,830 PBSA bedspaces currently available in Manchester and would contribute to housing 4.4% of those students that analysis (**Appendix 6.1**) indicates are currently not able to access PBSA due to a lack of supply. The new PBSA bedspaces would also represent a qualitative uplift in terms of the standard of student accommodation provision in Manchester, with analysis having indicated that just 23% of bedspaces in the city score currently highly in terms of room quality.

6.72 The sensitivity of the provision of PBSA is considered to be high, given the acknowledged supply deficit for this kind of accommodation in Manchester. The magnitude of change is considered to be medium, given that the delivery of 1,224 PBSA bedspaces would be able to accommodate an equivalent number of students currently unable to access PBSA and would provide a permanent and long-term uplift to the provision of high-quality student accommodation options in Manchester. Therefore, there is a direct, permanent, long-term, beneficial effect which is considered to be **moderate**.

Secondary Mitigation or Enhancement

6.73 No secondary mitigation or enhancement is required/has been identified

Residual Effect

6.74 In the absence of secondary mitigation the residual effect for students requiring accommodation is that same as that reported in the pre-mitigation scenario.

6.75 This effect is considered to be **Significant**.

Limitations and Assumptions

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

- The assessment relies on secondary survey data such as the 2011 Census[41], 2021 census[42] and BRES[43] . Each data source has methodological limitations related to data collection, and surveys also only represent the socio-economic context at a specific point in time[h];
- The future employment baseline is based on employment forecast data produced by Experian[44]. There are known uncertainties related to economic forecasting, especially in the current context of ongoing and developing uncertainty caused by factors such as the Covid-19 pandemic, Brexit and the growing cost-of-living crisis. However, where such forecasts are presented, they are considered appropriate to inform conclusions about how the economy and labour market might change in the future; and
- CW's SNA (**Appendix 6.1**), which provides information that informs current and future baseline with respect to the demand and supply of PBSA, has applied assumptions with regards to the growth of the demand pool and the development pipeline.

Summary

6.77 **Table 6.6** provides a summary of the effects, receptors, residual effects and conclusions of significance considered within the Chapter.

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

Table 6.6: Summary of Residual and Significant Effects

Effect	Receptor	Residual Effect	Is the Effect Significant?
Construction Stage			
Employment generated during the construction stage	Local labour force	Minor beneficial	**No**
Operational Stage			
Provision of PBSA	Students requiring accommodation	Moderate beneficial	**Yes**

[h] Where Census 2011 data has been used, it should be noted that relevant data collected by the ONS for the 2021 Census has not yet been published publicly at the time writing.

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7. Climate Change

Introduction

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

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

7.3 In line with **Chapter 2: Approach to EIA**, the assessment reports on the likely significant environmental effects, the further mitigation measures required to prevent, reduce or offset any significant adverse effects, or further enhance beneficial effects. The conclusions are provided both in terms of the residual effects and whether these are considered significant. The assessment of effects takes into consideration both primary and tertiary mitigation (see **Chapter 2: Approach to EIA** for further details) and is informed by the EIA Scoping process (**Appendix 2.1 – 2.2**) and iterative scoping process where applicable.

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

7.5 In addition, this Chapter should be read in conjunction with **Chapter 13: Assessment of Cumulative Effects**.

Summary of Consultation

7.6 No statutory consultee exists in relation to climate change, and as a result no consultation has been undertaken beyond the EIA Scoping process.

Scope of the Assessment

7.7 An EIA Scoping Report was submitted to MCC on 17th February 2023, as presented as **Appendix 2.1**. The EIA Scoping Opinion was received on 29th March 2023 (**Appendix 2.2**). This section provides confirmation on the scope of the assessment presented within this Chapter following submission of the EIA Scoping Report.

Effects Not Considered to be Significant

7.8 The following effects were not considered significant as part of the EIA Scoping Report (**Appendix 2.1**) and are not considered further in this Chapter (with detailed justification provided within the EIA Scoping Report):

- Increasing summer mean and daily maximum temperatures during construction [construction employees];
- Changing annual temperatures and rainfall patterns during construction [construction operations, site habitats and biodiversity, air quality];
- Changes to future climate including temperature and rainfall during operation [site infrastructure];

- Changes to future climate including higher winter and summer temperatures and a decrease in summer rainfall during operation [site habitats and biodiversity];
- Increasing rainfall during operation [site operations, infrastructure and end users];
- Higher average summer mean and daily maximum temperatures during operation causing building overheating [end users]; and
- Decreasing summer rainfall during operation [end users].

Effects Considered Likely to be Significant

7.9 The following effects (**Table 7.1**) were considered likely to be significant and are reported within this Chapter:

Table 7.1: Effects Considered Likely to be Significant

Likely Significant Effect	Receptors	Applicable Development Stage
GHG Emissions	Global climatic system	Construction
GHG Emissions	Global climatic system	Operation

Assessment Methodology

Legislative Framework, Policy and Guidance

7.10 The following legislation and policy has informed the assessment of effects within this Chapter:

- The Climate Change Act 2008[1] was revised in 2019 to set a 100% carbon reduction target (net zero) by 2050;
- National Planning Policy Framework (NPPF) (July 2021)[2] paragraph 8(c) recognises the key role planning has to play in mitigating climate change and supporting the transition to a low carbon economy;
- Government's Net Zero Strategy (October 2021)[3] recognises the importance of the planning system to combating climate change and supporting sustainable growth;
- The UK's Sixth Carbon Budget[4] was implemented in April 2021, enshrining in law a new target to reduce GHG emissions by at least 78% by 2035;
- Government's response to the Future Homes Standard consultation[5] confirms that new dwellings delivered from 2025 will be required to achieve a minimum 75% CO2 emissions reduction on current Building Regulation Part L 'Conservation of Fuel & Power' 2013 standards and include low carbon heating in place of fossil fuels such as gas. A meaningful stepping stone towards this standard comprising a 31% CO2 reduction on Part L 2013 was implemented in June 2022 as part of the Part L 2021 update;

- Following the decision of Stockport Council in December 2020 to no longer progress the Greater Manchester Spatial Framework (GMSF), the remaining nine Greater Manchester Councils including Manchester published Places for Everyone (PfE) (2021)[6] the joint development plan for jobs, new homes and sustainable growth across these Boroughs. In January 2023 Modifications to the Places for Everyone Plan were issued. Updated Places for Everyone Policy JP-S 2 'Carbon and Energy' includes an expectation that new development will work towards being net zero up to 2028 by following the energy hierarchy. This applies to emissions in 'operation' in 2022-2025 and includes unregulated emissions from 2025. Target trajectory is expected to be in line with the Part L 2021 Update / Future Homes Standard 2025, and with residual emissions offset. From 2028, work towards being net zero construction is also sought in line with the UK Green Building Council (UKGBC) Net Zero Carbon Buildings Framework[7]; and

- Manchester's Local Development Framework: Core Strategy 2012-2027 (adopted in 2012)[8] Policy EN4 'Reducing CO_2 Emissions by Enabling Low and Zero Carbon Development' states that all developments must follow the principle of the Energy Hierarchy and where appropriate to connect to low or zero energy schemes. In order to support Manchester City Council's ambition to be a zero-carbon city by 2038 or before, the existing local plan is now under review, the formal consultation stage finished on 1 May 2020. The next stage is the draft Local Plan, which will have more detail on how the city will deal with the main issues it is facing.

7.11 The following guidance has informed the assessment of effects within this Chapter, together with professional judgement:

- Institute of Environmental Management and Assessment's (IEMA) 'EIA Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance' (2022)[9];

- LETI's 'Climate Emergency Design Guide' (2020)[10];

- Royal Institute of Chartered Surveyors' (RICS) 'Whole life carbon assessment for the built environment' (2017)[11]; and

- RIBA's '2030 Climate Challenge version 2' (2021)[12].

Defining the Study Area

7.12 The Site will form the principal study area for the assessment; however, the assessment will include off-site GHG emissions/savings such as those associated with the manufacture and transportation of construction materials, and those associated with the off-site generation (e.g. at a power station) of grid electricity consumed by the completed and operational Proposed Scheme.

Background Studies to Inform the ES / Establishing the Baseline

7.13 **Table 7.2** summarises all studies undertaken to inform the assessment presented within this Chapter.

Table 7.2: Background Studies

Study	Overview	Date of Completion
BREEAM Life Cycle Assessment (Concept Design) which is being prepared by Turley Sustainability as part of the ongoing BREEAM related work for the Proposed Scheme.	Embodied carbon assessment of the Proposed Scheme.	In progress. While the assessment is not appended, a summary of the results from the LCA is included here and used as part of this assessment.
Building Regulations UK, Part L (BRUKL) Output Document prepared by Waterman Building Services Ltd (Appendix 7.1).	Sets out CO_2 emissions and energy consumption (kilowatt hours per square metre [kWh/m^2]) of the building	27.02.2023

Assessment Process

7.14 There is at present no single accepted methodology for the assessment of GHG emissions within EIA. The proposed assessment methodology outlined below is therefore based on application of IEMA's 'EIA Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance' ('IEMA guidance'), together with professional judgement.

7.15 Determining the magnitude and significance of climate change effects (GHG emissions or savings) from new development remains an emerging practice and is complex given the local scale at which GHG emissions typically occur in contrast to the global and transboundary nature of climate change.

7.16 The approach taken in this assessment is to estimate GHG emissions resulting from the construction and operation stages of the Proposed Scheme and to evaluate these emissions in the context of baseline GHG emissions from the Site, local authority's (i.e. Manchester City Council (MCC)) administrative area, Greater Manchester and UK region (i.e. North West England), as well as the future carbon budgets proposed for Manchester and the UK.

7.17 Furthermore, and in accordance with IEMA guidance, consideration is also given to the contribution of the Proposed Scheme to a science-based net zero trajectory in line with the 2015 Paris Agreement's 1.5°C pathway. In order to evaluate the contribution of the Proposed Scheme to this net zero pathway, its construction and operational stage performance is evaluated against the RIBA 2030 Climate Challenge target metrics for 'embodied carbon' and 'operational energy' respectively.

7.18 The applied methodology therefore comprises the following components:

- Establish national and local legislation, policy and guidance relating to climate change mitigation;
- Establish baseline conditions with respect to GHG emissions at the Site, MCC administrative area, Greater Manchester and North West England;

- Establish future baseline conditions with respect to GHG emissions from future carbon budgets proposed for Manchester and the UK;
- Calculate GHG emissions resulting from the construction and operation stages of the Proposed Scheme;
- Evaluate primary and tertiary GHG mitigation measures in place for the Proposed Scheme;
- Evaluate project GHG emissions in the context of baseline emissions and future carbon budgets to establish their context and magnitude;
- Appraise the contribution of the Proposed Scheme to the UK's net zero trajectory;
- Establish whether secondary mitigation is required to reduce adverse effects or enhance beneficial effects; and
- Establish the level of effect in relation to GHG and whether it is significant or not.

7.19 The timescales for the construction and operation stages of the Project are set out in **Table 7.3.**

Table 7.3: Assessed Project Timescales

Development Stage	First Year	Completion / Assessment period	Summary
Construction	2024	2026	Enabling works and construction of the Proposed Scheme is scheduled to commence in 2024 and be completed over the following 2 years.
Operation	2026	2037	The Proposed Scheme is scheduled to be fully operational from 2026. Operational GHG emissions are assessed up to the end of 2037 to enable comparison with the Manchester and UK carbon budgets ending 2037.

Reporting of the Environmental Effect and Significance Criteria

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

Determining Sensitivity of Receptor

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

7.22 GHG emissions affect the global climate system which, in accordance with IEMA guidance, is considered potentially sensitive to any additional GHG emissions. This sensitivity may, however, vary depending on the future global response to climate change, for example should a significant global reduction in GHG emissions (compared with the currently increasing emissions) be achieved over time. IEMA's latest EIA guide to climate change adaptation and resilience[13] recommends the use of the Met Office UKCP18 high emissions scenarios (known as RCP8.5), unless the case can be made for using a different, lower emissions scenario. The RCP 8.5 scenario is considered most appropriate for this assessment and as a result the sensitivity of the global climate system is considered to be high.

Determining the Magnitude of Change

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

7.24 There are currently no published or agreed significance criteria for evaluating GHG emissions in EIA. Therefore, the magnitude of change of GHG emissions estimated from the Proposed Scheme is determined by establishing their scale relative to recent GHG emissions from the local area (MCC administrative area), Greater Manchester and North West England, and also to future Manchester and UK carbon budgets as presented in **Table 7.4**, together with professional judgement.

Table 7.4: Determining Magnitude of Change

Magnitude of Change	Description of Change
Large	A large increase/decrease in GHG emissions (>10%) relative to baseline emissions and/or future carbon budgets
Medium	A medium increase/decrease in GHG emissions (5% − 10%) relative baseline emissions and/or future carbon budgets
Small	A small increase/decrease in GHG emissions (1% − 5%) relative to baseline emissions and/or future carbon budgets
Negligible	A negligible increase/decrease in GHG emissions (<1%) relative to baseline emissions and/or future carbon budgets

7.25 The magnitude of GHG emissions (or savings) from a project, how this effect changes (or otherwise) baseline conditions and/or future carbon budgets at the local, regional and national level are also important components when establishing the magnitude of change. However, how much the project contributes (or otherwise) to the UK's net zero trajectory is a critical additional component as recognised by IEMA Guidance. This is factored into determining the magnitude of change using professional judgement.

Determining the Level of Effect

7.26 The level of effect has been informed by the magnitude of change due to the Proposed Scheme and the evaluation of the sensitivity of the affected receptor. The level of effect has been determined using professional judgement and **Table 7.5** has been a tool which has assisted with this process.

7.27 Whilst **Table 7.5** provides ranges, the level of effect is confirmed as a single level and not a range, informed by professional judgement. For each effect, it has been concluded whether the effect is '*beneficial*' or '*adverse*'.

Table 7.5: Matrix to Support Determining the Level of Effect

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

7.28 The following terms (adapted from IEMA guidance) have been used to define the level of the effects:

- **Major effect**: GHG mitigation measures are not in line with a science-based 1.5°C aligned transition to net zero for that project type, and net GHG emissions equate to a large increase (e.g. ≥10%) relative to baseline local/regional/national emissions and/or future local carbon budgets. A project with major adverse effects is locking in GHG emissions and does not make a meaningful contribution to the national trajectory to net zero.

- **Moderate effect**: GHG mitigation measures are partly in line with a science-based 1.5°C aligned transition to net zero for that project type, and net GHG emissions equate to a medium increase (e.g. >5%) relative to baseline local/regional/national emissions and/or future local carbon budgets. A project with moderate adverse effects complies with some up-to-date policy and good practice but is locking in some emissions and makes only a partial contribution to the national trajectory to net zero.

- **Minor effect**: GHG mitigation measures are in line with a science-based 1.5°C aligned transition to net zero for that project type, and net GHG emissions equate to a small increase (e.g. <5%) relative to baseline local/regional/national emissions and/or future local carbon budgets. A project with minor adverse effects complies with up-to-date and emerging policy and good practice reduction measures and makes a contribution to the national trajectory to net zero.

- **Negligible**: GHG mitigation measures are in line with a science-based 1.5°C aligned transition to net zero for that project type, with minimal residual emissions. A project with negligible effects complies with up-to-date and emerging policy and best practice and plays a part in achieving the rate of transition required by nationally set policy e.g. net zero.

- **Beneficial**: net GHG impacts are below zero and the project results in a reduction in atmospheric GHG concentrations, whether directly or indirectly, compared to the without-project baseline. A project with beneficial effects substantially exceeds net zero requirements with a positive climate impact. It should be noted that the latest IEMA guidance on GHGs in EIA does not seek to differentiate between different levels of beneficial effect (minor, moderate, major) or whether they would be 'Significant/Not Significant'.

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

7.30 Carbon dioxide equivalency (CO_2e) is a quantity that describes, for a given mixture and amount of GHG, the amount of CO_2 that would have the same global warming potential (GWP), when measured over a specified timescale (generally, 100 years). In view of this timescale and the findings of the Intergovernmental Panel on Climate Change (IPCC) 1.5°C Report[14] that some effects from climate change may be long-lasting or irreversible, the duration of effect of the built elements of the Proposed Scheme is assumed to be **long-term**.

Determining Significance

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

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

Baseline Conditions

7.33 The Site comprises foundations/pile and some natural seeding of vegetation limited to the edges of the Site. Whilst the existing Site may result in the release of GHG emissions, the scale of such GHG emissions is considered likely to be limited. For the purposes of the GHG emissions assessment, baseline GHG emissions from the Site are assumed to be zero, an approach that helps ensure a reasonable 'worst-case' approach regarding the GHG effect of the Proposed Scheme.

Local and Regional GHG Emissions

7.34 **Table 7.6** presents the most recent (2020) data on baseline GHG emissions for the MCC administrative area, Greater Manchester and North West England as sourced from Government's UK Local Authority & Regional CO_2 Emissions Statistics[15]. Assumed baseline GHG from the Site are also presented. This baseline data is used to contextualise GHG emissions from the Proposed Scheme and determine the magnitude of change.

Table 7.6: Baseline Site, Local & Regional GHG Emissions

Geographical Area	2020 GHG Emissions (tonnes CO_2)
Site	0 (assumed)
MCC's administrative area	2,186,763
Greater Manchester	11,842,065
North West England	41,921,900

Future Baseline

UK Carbon Budgets

7.35 The UK carbon budgets are effectively a future baseline of national GHG emissions necessary to achieve net zero. The Climate Change Act 2008 sets a 100% carbon reduction target (net zero) by 2050. It is the duty of the Secretary of State to set for each succeeding period of five years (beginning with the period 2008 − 2012) an amount for the net UK carbon account (the 'carbon budget') and to ensure the net quantity of emissions does not exceed the carbon budget. For this reason, it is reasonable to use these targets as an indicator of likely future baseline GHG emissions.

7.36 The UK's Sixth Carbon Budget was implemented in April 2021, enshrining in law a new target to reduce GHG emissions by at least 78% by 2035 and for the first time incorporating the UK's share of international aviation and shipping emissions.

Manchester Carbon Budgets

7.37 The Tyndall Centre has worked with MCC to set future carbon budgets for their administrative area. The 'Setting Climate Commitments for Manchester' (February 2023)[16] report sets out proposed carbon budgets for Manchester up to the year 2100. It should be noted that these carbon budgets relate to emissions from the energy system only.

7.38 **Table 7.7** presents the future carbon budgets set for the UK and Manchester to date which, together with current baseline GHG emissions reported above, are used to help determine the context and magnitude of future GHG emissions resulting from the Proposed Scheme.

Table 7.7: UK and Manchester Carbon Budgets

Period	GHG Emissions [tonnes CO_2e]	
	UK	Manchester
2018 – 2022	2,544,000,000	8,600,000
2023 – 2027	1,950,000,000	4,600,000
2028 – 2032	1,725,000,000	2,400,000
2033 – 2037	965,000,000	1,200,000
2038 – 2042	Not yet set	600,000
2043 – 2047	Not yet set	300,000

Period	GHG Emissions [tonnes CO_2e]	
	UK	Manchester
2048 - 2100	Not yet set	300,000

Contribution to UK Net Zero Trajectory

7.39 In order to determine whether the Proposed Scheme is aligned with and makes an appropriate contribution to the UK's net zero trajectory, it is necessary to provide context for the magnitude of GHG emissions. RIBA's 2030 Climate Challenge provides best practice targets for embodied carbon and operational energy for domestic buildings to ensure the construction industry delivers the significant reductions necessary by 2030 in order to have a realistic prospect of achieving net zero for the whole UK building stock by 2050.

7.40 **Table 7.8** sets out the future targets for operational energy use and embodied carbon for domestic buildings, which are used to help determine whether the Proposed Scheme supports the national trajectory towards net zero by 2050.

Table 7.8: RIBA Climate challenge target metrics for domestic buildings

RIBA Climate Challenge Metrics*	Business as usual	2025 Targets	2030 Targets
Operational Energy ($kWh/m^2/year$)	120	<60	<35
Embodied Carbon ($kgCO_2e/m^2$)	1,200	<800	<625

** $kWh/m^2/year$ = kilowatt hours per metre square per annum; $kgCO_2e/m^2$ = kilograms of carbon dioxide equivalent per metre squared.*

Primary and Tertiary Mitigation

Construction Stage

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

- A range of measures will be implemented which will reduce construction and embodied carbon. These measures are set out in the BREEAM Life Cycle Assessment (LCA) report and include:
  - 25% GGBS within concrete for the ground floor slab, ground beams, pilecaps and core bases; and
  - 98% recycled steel for the rebar.
- A Construction Environmental Management Plan (CEMP) will be developed for the Proposed Scheme committing to a number of environmental mitigation measures to be adopted throughout the construction stage, including control of all waste arisings and use of a best practice waste management strategy; and

- A Construction Traffic Management Plan (CTMP) will be prepared by the principal contractor (when appointed) which will set out the proposed routing of construction stage traffic and measures to enforce such routing (i.e. appropriate signage and banksman).

Operational Stage

7.42 The following primary and tertiary mitigation as described in **Chapter 4: Development Specification** has been evaluated as part of the operational stage assessment and are outlined below.

- All electric development with no fossil fuels used on-site;
- Enhanced fabric performance (U values, air tightness and thermal bridging);
- Energy efficient building services including heating, ventilation, lighting and controls;
- Air source heat pump (AHSP) serving the communal areas at ground floor level as well as generating domestic hot water; and
- Provision of 100% low-energy lighting.

Assessment of Effects, Secondary Mitigation and Residual Effects

Construction Stage

GHG Emissions

7.43 The construction stage of the Proposed Scheme will result in GHG emissions both on- and off-site, from a range of activities including the manufacture of construction materials and products, the transport of materials and waste on- and off-site, the consumption of fossil fuels and electricity by site plant and vehicles, and the treatment of residual construction waste.

7.44 The Proposed Scheme is anticipated to deliver an estimated total floorspace of 38,359 m^2 GIA.

7.45 Construction GHG emissions resulting from the proposed dwellings are calculated based on the BREEAM Life Cycle Assessment (LCA) which is being prepared by Turley Sustainability as part of the ongoing BREEAM related work for the Proposed Scheme. This assessment relates to emissions from raw material extraction, product fabrication, transport and construction, as well as emissions during maintenance and end of life. While the assessment is not appended, a summary of the results from the LCA are provided below and used as part of this assessment.

7.46 The BREEAM LCA covers building substructure and superstructure only. Whilst these elements account for the majority of material emissions in residential developments, in order to assess the worst case scenario, remaining building elements (finishes, façade & services) are estimated based on an extrapolation in line with LETI's 'Climate Emergency Design Guide' to ensure that all elements in the construction lifecycle stages (A1-A5) are covered. In addition, to enable a like-for-like comparison with the RIBA benchmarks, lifecycle stages for maintenance (B1-B5) and end of life (C1-C4) are also included based on the LCA report calculations.

7.47 **Table 7.9** presents GHG emissions calculated for the Proposed Scheme as part of the Life Cycle Assessment, together with the extrapolation of results to cover all building elements.

Table 7.9: Extrapolation of Life Carbon Assessment (A1-A5)

Stages	Building Element	Life Cycle Assessment Result (tCO_2e)	LETI Breakdown	Extrapolated Result (tCO_2e)
A1-A3	Superstructure & Substructure	6,895.5	67%	6,895.5
	Internal finishes	-	*16%*	*1,646.7*
	Façade	-	*13%*	*1,337.9*
	MEP	-	*4%*	*411.7*
	Total A1-A3	6,895.5	100%	10,291.8
A4	Transport	641.5	-	641.5
A5	Construction	-	*1%**	*490.1*
	Total A1-A5	**7,537.0**	**-**	**11,423.4**
B1-B5	Maintenance	817.6	-	817.6
C1-C4	End of Life	258.2	-	258.2
A1-C4	**Total A1-C4**	**8,612.8**	**-**	**12,499.2**

*1% of the total A1-C4 carbon, where A1-A3 carbon represents 21% of the total, in line with LETI's 'Climate Emergency Design Guide'.

7.48 **Table 7.10** below presents annual and total construction stage GHG emissions calculated for the Proposed Scheme. GHG emissions calculated across RICS lifecycle modules A1-A5 are used to establish construction-stage GHG emissions from the Proposed Scheme, whilst GHG emissions across modules A1-C4 (i.e. also including maintenance and end of life) are used for comparison with RIBA's 2030 Climate Challenge targets (given these also these post-construction stage emissions).

Table 7.10: Construction GHG emissions

	Total GIA (m^2)	Total GHG Emissions (tCO_2e)	Annual GHG Emissions (tCO_2e)
Construction Stage (A1-A5)	38,359	11,423	5,712

7.49 The construction stage of the Proposed Scheme is estimated to result in total emissions of 11,423 tCO_2e, equating to annual construction emissions of circa 5,712 tCO_2e across the 2 year construction period.

7.50 **Table 7.11** presents construction emissions as a proportion of baseline emissions from MCC, Greater Manchester and North West England, and also future Manchester and UK carbon

budgets. In order to assess the worst-case scenario, annual average construction emissions are used for comparison with baseline MCC, Greater Manchester and North West England emissions (given these are also annual emissions), whilst total construction emissions are compared with Manchester and UK carbon budgets for that period.

Table 7.11: Contextualised Construction Stage GHG Emissions

Context	Construction Phase GHG Emissions (as a %)
Baseline emissions	
MCC	0.26%
Greater Manchester	0.05%
North West England	0.01%
Carbon Budgets	
UK 4th Carbon Budget (2023 – 2027)	<0.01%
Manchester carbon budget (2023 – 2027)	0.25%

7.51 Annual construction emissions of 5,712 tCO_2e equate to circa 0.26% of MCC, 0.05% of Greater Manchester and 0.01% of North West England baseline emissions. Total construction emissions of 11,423 tCO_2e equate to circa 0.25% of Manchester carbon budget (2023-2027) and less than 0.01% of UK carbon budget for the same period.

7.52 It should be noted that the Manchester carbon budgets proposed by Tyndall Centre relate to emissions from the energy system only, whereas construction emissions from the Proposed Scheme will largely comprise those from the manufacture and transport of construction products and materials. Construction GHG emissions are therefore not readily comparable with these carbon budgets given a substantial proportion of these emissions are likely to occur outside the geographical and/or temporal boundary of the Manchester carbon budgets.

7.53 **Table 7.12** presents the GHG emissions calculated for the Proposed Scheme per m2 GIA (based on an estimated total floorspace of 38,359 m^2 GIA) to enable the like-for-like comparison with RIBA' 2030 targets.

Table 7.12: GHG emissions per m^2 GIA

Lifecycle stage	Emissions ($kgCO_2e/m^2$ GIA)
Products/materials (A1-A3)	268
Transport (A4)	17
Construction (A5)	13
Construction Stage Subtotal (A1-A5)	**298**
Maintenance (B1-B5)	21
End of Life (C1-C4)	7
TOTAL (A1-C4)	**326**

7.54 **Table 7.13** compares embodied carbon emissions (i.e. construction as well as maintenance and end of life emissions) calculated for the Proposed Scheme with the RIBA's 2030 Climate Challenge embodied carbon targets for domestic buildings.

Table 7.13: Embodied Carbon GHG Emissions and RIBA Targets

RIBA Climate Challenge Metrics	Business as usual	2025 Targets	2030 Targets	Proposed Scheme
Embodied Carbon (A1-C4) $kgCO_2e/m^2$	1,200	<800	<625	326

7.55 It can be seen that based on the BREEAM Life Carbon Assessment result and the extrapolation described above, the Proposed Scheme has embodied carbon emissions of 326 $kgCO_2e/m^2$, significantly below the RIBA 2030 best practice target of <625 $kgCO_2/m^2$.

7.56 This performance is considered to represent current best practice regarding construction carbon in residential buildings, and as a result the Proposed Scheme is considered to make an appropriate contribution to the UK net zero trajectory for this issue.

7.57 The sensitivity of climate system is considered to be high. The magnitude of change is considered to be negligible. Therefore, there is likely to be a direct, temporary, long-term, adverse effect which is considered to be minor.

Secondary Mitigation or Enhancement

7.58 No secondary mitigation or enhancement is required.

Residual Effect

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

Significance

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

Operational Stage

GHG Emissions

7.61 The operation stage of the Proposed Scheme will result in GHG emissions from the generation of energy consumed by the proposed dwellings and amenity space.

7.62 Turley Sustainability calculated CO_2 emissions from the Proposed Scheme based on the annual Energy Consumption by End Use (kWh/m^2) provided within the BRUKL Output Document prepared by Waterman Building Services Ltd for the Proposed Scheme (see **Appendix 7.1**) as well as UK electricity grid factors published by the Department for Business Energy and Strategy (BEIS, November 2022)[17] (commercial, consumption-based) which reflect the continued decarbonisation of the UK electricity grid from the ongoing uptake of renewables (especially offshore wind) and closure of coal-fired power stations.

7.63 According to the BRUKL report, the dwellings are predicted to be compliant with the current Part L 2021 standard, showing a 4% carbon reduction above the current Part L baseline. Such performance is considered to represent current good to best practice regarding operational energy performance for new dwellings.

7.64 **Table 7.14** presents estimated operational GHG emissions for the first year of assumed operation (2026), for the last year of the assessed period (2037) as well as emissions over the assessed operational period (2026 – 2037). As the assessment uses UK electricity grid factors which reflect the continued decarbonisation of the UK electricity grid, operational GHG emissions are anticipated to reduce over time, with emissions in year 1 of operations representing the peak/worst-case.

Table 7.14: Operational Stage GHG Emissions

	GHG Emissions (tCO_2e)
Year 1 GHG emissions (2026)	185
Year 12 GHG emissions (2037)	35
12 years cumulative emissions (2026-2037)	976

7.65 The Proposed Scheme is estimated to result in GHG emissions of 185 tCO_2e during the first year of operation (2026), dropping to 35 tCO_2e in 2037, and accumulating to 976 tCO_2e across the assessed operational stage (2026 − 2037).

7.66 **Table 7.15** reports the above operation stage emissions as a proportion of baseline (2020) emissions from MCC, Greater Manchester and North West England, and also future Manchester and UK carbon budgets. Peak annual operational GHG emissions are compared with baseline emissions (given these are also annual data), whilst total operational GHG

emissions are compared with the Manchester and UK carbon budgets for the same 2026 – 2037 period.

Table 7.15: Contextualised Operational Stage GHG Emissions

Context	Contextualisation (as a %)
Baseline emissions	
MCC	0.008%
Greater Manchester	0.002%
North West England	<0.001%
Carbon Budgets	
UK 4th Carbon Budget (2023 – 2027)	<0.001%
UK 5th Carbon Budget (2028 – 2032)	<0.001%
UK 6th Carbon Budget (2033 – 2037)	<0.001%
Manchester carbon budget (2023 – 2027)	0.007%
Manchester carbon budget (2028 – 2032)	0.019%
Manchester carbon budget (2033 – 2037)	0.017%

7.67 Peak annual operational emissions of 185 tCO_2e equate to circa 0.008% of MCC, 0.002% of Greater Manchester and less than 0.001% of the North West England baseline emissions.

7.68 Total operational emissions for the assessed period (2026 – 2037) of 976 tCO_2e equate to a maximum of 0.019% of Manchester carbon budgets (for 2028 – 2032) and less than 0.001% of UK carbon budgets.

7.69 **Table 7.16** presents operational GHG emissions for the Proposed Scheme within the context of the RIBA climate challenge target metric for operational energy for domestic buildings.

Table 7.16: Operational GHG Emissions in Context of RIBA climate challenge targets

RIBA Climate Challenge Metrics	Business as usual	2025 Targets	2030 Targets	Proposed Scheme
Operational Energy ($kWh/m^2/year$)	120	<60	<35	50

7.70 Estimated annual operational energy demand of 50 kWh/m^2 from the Proposed Scheme is aligned with the RIBA operational energy targets for 2025. This performance is considered to make an appropriate contribution to the UK net zero trajectory

7.71 The sensitivity of climate system is considered to be high. The magnitude of change is considered to be negligible. The Proposed Scheme's operational GHG emissions are considered to comprise current and emerging good practice and contribute to the UK's net

zero trajectory. Therefore, there is likely to be a direct, temporary, long-term, adverse effect which is considered to be minor.

7.72 It is anticipated that following implementation of the PfE net zero operational standard, regulated operational CO_2 emissions will be mitigated via carbon offsetting in line with PfE net zero policy upon adoption, with unregulated energy emissions also mitigated to net zero from 2025. As this is not yet confirmed it has not been evaluated in this assessment.

Secondary Mitigation or Enhancement

7.73 No secondary mitigation or enhancement is required.

Residual Effect

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

Significance

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

Limitations and Assumptions

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

- The assessment of the level of effect and whether the effect is 'significant' or not is based, in part, on professional judgement.
- The future UK electricity grid factors sourced from BEIS are projections which may not reflect the actual emissions associated with grid electricity consumption in future. However, BEIS projections have slightly underestimated the rate of grid decarbonisation in recent years, so any inaccuracy in these projections may serve to over-estimate as well as under-estimate GHG emissions associated with the Proposed Scheme's future electricity demand.
- The completed and operational Proposed Scheme will generate additional vehicle trips on the local road network as a result of the operation of the Site; however these additional trips will be limited due to the 'car-free' nature of the Proposed Scheme. In addition, it is not generally possible for current traffic models to estimate net GHG emissions effects from such traffic movements. This is due to the challenge of identifying with any accuracy, the proportion of such trips that are wholly additional (that is, net new trips), and the proportion that are simply trips relocated from elsewhere as a result of the Proposed Scheme. Furthermore, it is not possible to establish the exact distances associated with each of these new trips which is required to estimate the associated GHG. Given this current challenge and car-free nature of development, GHG emissions from operational stage vehicle movements have not been estimated. It is worth noting that Government plans for the increased use of electric vehicles and other low carbon initiatives are anticipated to reduce transport emissions over time thus reducing future carbon/GHG impacts.

Summary

7.77 **Table 7.17** provides a summary of the effects, receptors, residual effects and conclusions of significance considered within the Chapter.

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

Table 7.17: Summary of Residual and Significant Effects

Effect	Receptor	Residual Effect	Is the Effect Significant?
Construction Stage			
GHG Emissions	Global climate system	Minor adverse	NO
Operational Stage			
GHG Emissions	Global climate system	Minor adverse	NO

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8. Built Heritage

Introduction

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

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

8.3 In line with **Chapter 2: Approach to EIA**, the assessment reports on the likely significant environmental effects, the further mitigation measures required to prevent, reduce or offset any significant adverse effects, or further enhance beneficial effects. The conclusions are provided both in terms of the residual effects and whether these are considered significant. The assessment of effects takes into consideration both primary and tertiary mitigation (see **Chapter 2: Approach to EIA** for further details) and is informed by the EIA Scoping process (**Appendix 2.1 - 2.2**) and iterative scoping process where applicable.

8.4 This Chapter, and its associated **Figure 8.1** and **Appendix 8.1** is intended to be read as part of the wider ES with particular reference to the introductory Chapters of this ES (**Chapters 1 – 5**), as well as **Chapter 9 Townscape and Visual.**

8.5 In addition, this Chapter should be read in conjunction with **Chapter 13: Assessment of Cumulative Effects**.

Summary of Consultation

8.6 **Table 8.1** provides an overview of the consultation that has been undertaken to inform the Proposed Scheme and EIA, including the consideration of likely significant effects and the methodology for assessment.

Table 8.1: Summary of Consultation

Body / Organisation	Contact	Date and Form of Consultation	Summary
MCC	Assistant Director of Planning	Letter, 28 March 2023.	Letter confirms Built Heritage will be covered within the EIA. The scope of the assessment set out in the Scoping Report is considered acceptable and agreed.

Scope of the Assessment

8.7 An EIA Scoping Report was submitted to MCC on 17th February 2023, as presented as **Appendix 2.1**. The EIA Scoping Opinion was received on 28 March 2023 (**Appendix 2.2**). This section provides confirmation on the scope of the assessment presented within this Chapter following submission of the EIA Scoping Report.

Effects Not Considered to be Significant

8.8 The following effects were not considered significant as part of the EIA Scoping Report (**Appendix 2.1**) and are not considered further in this Chapter (with detailed justification provided within the EIA Scoping Report):

- Change to the setting of identified listed buildings resulting in an impact to their heritage interests or significance [listed buildings[a]]; and
- Change to the setting of the identified non-designated heritage assets, resulting in an impact to its heritage interests or significance [The Monroe Public House, 36 London Road and Rochdale Canal].

8.9 In addition, the following additional effect is not considered significant and is not considered further in this Chapter.

Change to the setting of the non-designated Jackson Street Mills (HER Ref: 2078.1.0) resulting in an impact to its heritage interests or significance.

8.10 The Jackson Street Mills dates from the 19th century but is now incorporated into the University of Manchester campus which forms a contained site that is separated from the Proposed Scheme by the Manchester South Junction and Altrincham Railway Viaduct. The Proposed Scheme is unlikely to be visible due to the distances involved and scale and mass of intervening built form and topography. Any visibility of the Proposed Scheme would be limited and incidental, integrating with the mixed urban setting of the asset. The heritage interests of the building are not considered to be affected by Proposed Scheme.

8.11 Therefore, the change in setting to this non-designated heritage asset is not considered to be significant and will not be considered further in this ES Chapter.

[a] The Shena Simon 6th Form College, Whitworth Street (Grade II); Institute of Science and Technology (University of Manchester), Sackville Street / Whitworth Street (Grade II); Manchester South Junction and Altrincham Railway Viaduct (Grade II); Manchester South Junction and Altrincham Railway Viaduct (Grade II); Manchester South Junction and Altrincham Railway Viaduct (Grade II); Granby House, 61-63 Granby Row (Grade II) and Orient House, 65-67 Granby Row (Grade II); Sculptural Wall, London Road (Grade II); Former Goods Yard Offices to Piccadilly Station, London Road (Grade II); Train Shed and Undercroft at Manchester Piccadilly Station, London Road (Grade II); 46 Sackville Street (Grade II) and 42 and 44 Sackville Street (Grade II); Regency House with Barclays Bank (Grade II); Minshull House (Grade II) and Mintierna House (Grade II); and Rochdale Canal Lock Number 86, to east of Chorlton Street (Grade II); Rochdale Canal Boundary Wall to Canal Between Sackville Street and Chorlton Street (Grade II); and Rochdale Canal Boundary Wall to Canal Between Chorlton Street and Minshull Street (Grade II).

Effects Considered Likely to be Significant

8.12 The following effects (**Table 8.2**) were considered likely to be significant and are reported within this Chapter:

Table 8.2: Effects Considered Likely to be Significant

Likely Significant Effect	Receptors	Applicable Development Stage
Change to the character and appearance of the conservation area	Whitworth Street Conservation Area	Construction / Operation
Change to the setting of a listed building	London Road Police and Fire Station (Grade II*)	Construction / Operation

Assessment Methodology

Legislative Framework, Policy and Guidance

8.13 The following legislation and policy has informed the assessment of effects within this Chapter, and is detailed further in the Heritage Statement **Appendix 8.1**:

- The Planning (Listed Buildings and Conservation Areas) Act 1990[1];
- National Planning Policy Framework (NPPF) 2021[2]; and
- Manchester Core Strategy (2012-2027)[3].

8.14 The following guidance has informed the assessment of effects within this Chapter, and is detailed further in the Heritage Statement **Appendix 8.1**:

- National Planning Practice Guidance (2014, updated 2019)[4];
- Historic England Good Practice Advice in Planning (GPA) Note 2 'Managing Significance in Decision Taking in the Historic Environment' (2015)[5];
- Historic England GPA3 'The Setting of Heritage Assets' 2dn Edition (2017)[6];
- Historic England Advice Note 12: Statements of Heritage Significance (2019)[7];
- Historic England: Advice Note 1: Conservation Area Designation, Appraisal and Management 2019 (2nd Edition)[8];
- Historic England Advice Note 7: 'Local Heritage Listing' 2nd Edition (2021)[9];
- Institute of Environmental Management & Assessment (IEMA): Principles for Cultural Heritage Impact Assessment (2021)[10];
- Design Manual for Roads and Bridges (DMRB), LA 106: Cultural heritage assessment (2020)[11]; and

- Guidance issued by the Local Authority will also be consulted, together with relevant legislation.

Defining the Study Area

8.15 The Study Area comprises the Site and the surrounding area within approximately a 250m distance. The Study Area and identified heritage assets are shown on the Heritage Asset Plan included at **Figure 8.1.**

Background Studies to Inform the ES / Establishing the Baseline

8.16 **Table 8.3** summarises all studies/surveys/analysis/evaluations undertaken to inform the assessment presented within this Chapter.

Table 8.3: Background Studies / Surveys / Evaluations /Analysis

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
Desk-Based Heritage Assessment	Identification of assets with potential to be affected (significant and not significant) confirmed through a search of the Greater Manchester Historic Environment Record.	January 2023
500m Search of the Historic Environment Record	To undertake an updated search of the local Historic Environment Record in order to identify any Heritage Assets additional to those identified within the 2017 ES baseline.	January 2023
Heritage Statement	An NPPF compliant Heritage Statement has been prepared in support of the Application. This has been carried out in light of the statutory duty of The Planning (Listed Buildings and Conservation Areas) Act 1990, relevant policies of the National Planning Policy Framework (NPPF) and national Planning Practice Guidance for the historic environment. The Heritage Statement has identified heritage assets with potential to be affected, described their significance and setting and assessed the impact of the Proposed Scheme upon that significance. It has also considered other heritage assets unlikely to experience a significant effect. It is included at Appendix 8.1.	January to March 2023
Views Assessment	Contribution to identification of viewpoints (from a heritage perspective).	February 2023

Assessment Process

8.17 This Chapter assesses the potential for significant effects to heritage assets resulting from the Proposed Scheme following primary and tertiary mitigation, in accordance with IEMA guidance[12]. The Built Heritage ES Chapter undertakes the following:

- Assesses the significance of the identified heritage assets and the contribution of setting to that significance;
- Identifies those heritage assets with a potential to experience a significant effect at the construction and operational stages;
- Identifies and defines the magnitude of change arising from the Proposed Scheme and the severity of the effects on those identified assets;
- Identifies mitigation to avoid or minimise adverse impact where possible in a way that meets the requirement of the NPPF;
- Assesses the impact of the Proposed Scheme and its effect on the significance of heritage assets, taking into consideration any mitigation proposed; and
- Assesses the cumulative impacts of the Proposed Scheme in conjunction with other development (reported in **Chapter 13: Assessment of Cumulative Effects**).

8.18 The assessment utilises a matrix that measures both receptor sensitivity (value/ importance), this accounts for significance in the context of NPPF terminology, and magnitude of change/ impact to produce an assessment of the significance of the effect of the Proposed Scheme on cultural heritage receptors. The matrix follows the standard matrix included within the **Chapter 2: Approach to EIA** and at **Table 8.6** below.

8.19 Mitigation by design measures have been integrated into the design of the Proposed Scheme, including associated landscaping.

8.20 The assessment of cultural heritage is a qualitative one, and the evaluation of importance and effect is ultimately a matter of professional judgement.

Reporting of the Environmental Effect and Significance Criteria

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

Determining Sensitivity of Receptor

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

8.23 The following table is taken from the guidance set out in the DMRB:

Table 8.4: Criteria for Assessing Sensitivity of Heritage Assets

Sensitivity	Criteria for Establishing Sensitivity
High	• Sites of international importance, such as World Heritage Sites; • Grade I and Grade II* Listed Buildings • Grade I and Grade II* Registered Parks and Gardens • Scheduled Monuments • Registered battlefields • Conservation Areas containing very important buildings
Medium	• Grade II listed Buildings • Conservation Areas • Grade II Registered Parks and Gardens • Undesignated buildings, monuments, sites, or landscapes that can be demonstrated to have heritage value; equivalent to the designation criteria
Low	• Locally listed buildings as recorded on a local authority list • Undesignated buildings, monuments, sites, or landscapes that can be demonstrated to have heritage value equivalent to the local listing criteria
Negligible	• Buildings, monuments, sites, or landscapes identified as being of very low or no historic, evidential, aesthetic, or communal interest

Determining the Magnitude of Change

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

8.25 In considering the potential magnitude of an impact, a professional judgement has been made about the receptor's susceptibility to change as a result of the Proposed Scheme. **Table 8.5** below sets out criteria which have been used to determine the magnitude of change.

Table 8.5: Criteria for Assessing Magnitude of Change

Magnitude of Change	Criteria for Assessing Magnitude of Change
Large	Loss of resource and / or quality and integrity of resource; severe damage to key characteristics, features or elements. Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality.
Medium	Loss of resource, but not adversely affecting the integrity; partial loss of / damage to key characteristics, features or elements. Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.

Magnitude of Change	Criteria for Assessing Magnitude of Change
Small	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements. Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring.
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements. Very minor benefit to or positive addition of one or more characteristics, features or elements.

Determining the Level of Effect

8.26 The level of effect has been informed by the magnitude of change due to the Proposed Scheme and the evaluation of the sensitivity of the affected receptor. The level of effect has been determined using professional judgement and **Table 8.6** has been a tool which has assisted with this process.

8.27 Whilst **Table 8.6** provides ranges, the level of effect is confirmed as a single level and not a range, informed by professional judgement. For each effect, it has been concluded whether the effect is '*beneficial*' or '*adverse*'.

Table 8.6: Matrix to Support Determining the Level of Effect

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

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

- **Major effect**: where the Proposed Scheme is likely to cause a considerable change from the baseline conditions and the receptor has limited adaptability, tolerance or recoverability or is of the highest sensitivity;
- **Moderate effect**: where the Proposed Scheme is likely to cause either a considerable change from the baseline conditions at a receptor which has a degree of adaptability,

tolerance or recoverability or a less than considerable change at a receptor that has limited adaptability, tolerance or recoverability;

- **Minor effect**: where the Proposed Scheme is likely to cause a small, but noticeable change from the baseline conditions on a receptor which has limited adaptability, tolerance or recoverability or is of the highest sensitivity; or where the Proposed Scheme is likely to cause a considerable change from the baseline conditions at a receptor which can adapt, is tolerant of the change or/and can recover from the change; and

- **Negligible**: where the Proposed Scheme is unlikely to cause a noticeable change at a receptor, despite its level of sensitivity or there is a considerable change at a receptor which is not considered sensitive to a change.

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

Determining Significance

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

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

Baseline Conditions

8.32 A search of designated and non-designated heritage assets (receptors) within the Study Area identified the following:

- 1no. conservation areas;

- 1no. Grade II* listed building;

- 16no. Grade II listed buildings; and

- 3no. Buildings of local heritage interest.

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

8.34 The heritage receptors identified above were assessed in the Heritage Statement **Appendix 8.1**.

Sensitivity of Built Heritage Receptors

8.35 The following section describes the sensitivity of the scoped in heritage assets for assessment in this ES Built Heritage Chapter:

Whitworth Street Conservation Area

8.36 The Conservation Area covers a broad area with varied heritage interest, the character and appearance of which has been weakened in places by the clearance that took place from the mid twentieth century onwards and the eclectic mix of buildings that have been developed since that time. Overall, the **Whitworth Street Conservation Area** is considered to be of **Medium Sensitivity.**

8.37 The character and appearance of the Whitworth Street Conservation Area can be summarised as follow:

- A series of small pockets of off-set grid street patterns that combine to form a dense and consistent townscape;
- An area dominated by former warehouses that reflect changes in style towards the end of the C19th and early part of the C20th;
- A high level of enclosure dominated by the scale and mass of the warehouses with few open spaces;
- Buildings are high quality and high status, often individually distinctive;
- There is a highly decorative quality to many of the structures, interesting textures and use of materials such as terracotta and faience, often in innovative ways; and
- The pre-dominance of brick and terracotta that provides continuity despite the diversity of architectural styles.

Contribution of the Site to the Character and Appearance of the Whitworth Street Conservation Area

8.38 The Site is currently a vacant plot located where the former Chandos Hall (a 20th century tower block) was demolished following the consented redevelopment of the Site in 2018. This Site is surrounded by hoardings and creates an unoccupied space. This contrasts with the larger scale of warehouses and later 20th century development that are located within this area.

8.39 Overall, the Site is not considered to be in keeping with the character with the conservation area and, as a vacant plot, it is considered to make a negative contribution to the character and appearance of the conservation area. Without built development, it creates fragmentation and does not contribute to the street pattern, enclosure and definition that is characteristic of the conservation area.

London Road Police and Fire Station (Grade II*)

8.40 As a Grade II* listed Building the **London Road Police and Fire Station** is considered to be of **High Sensitivity**. The significance of the building is attributed to both its aesthetic value and also the historic value as a complete example of a combined police and fire complex that accommodated the families of the staff. The list description describes the building as '*an ambitious building with much good detail of the period, in unusually complete condition*'.

Contribution of Setting to Significance

8.41 The building fills an entire triangular city block, enclosed by London Road to the east, Fairfield Street to the south and Whitworth Street to the north. It is surrounded by the

complex urban environment of Manchester City Centre which includes the broad mass of Piccadilly Station to the east. To the north is a single amalgamated block which has been developed with tall modern developments including Motel One during the 20th and 21st century. To the south and east are some smaller blocks which were developed with lower brick buildings during the late 20th century and some surviving traditional buildings. The Site is to the south of these buildings.

8.42 The long and robust elevations of the Police and Fire Station are principally viewed from the immediately surrounding streets; in close-up views the mass and scale of the building and its decorative elevations are best experienced. In particular it is best viewed from London Road, from the north and south where the principal main entrance range is experienced. The main side elevations are visible from Whitworth and Fairfield Streets. When viewed from Fairfield Street travelling west past Piccadilly Station into the city centre the tall off-centre tower on the southern elevation forms a prominent landmark and rises above the skyline. Street clutter and trees screen views of much of the lower elevations from this vantage point, until the junction; the building is a striking landmark feature at the Fairfield Street/Whitworth Street junction.

8.43 Some glimpsed views are available of the building from the middle distance; in which views of the building terminates views along narrow streets. The finer grain of junctions along the south side of Fairfield Street contrasts with the long elevation of the Police and Fire Station, contributing to the perceived scale of the building. Views of this nature include those along Pump Street and Back Acton Street.

8.44 The scale, architectural style and triangular plan form enable the police and fire station to command its immediate setting, although it now defers in scale to the recent residential development immediately to the north on Whitworth Street. The building provides an intense level of enclosure to Whitworth Street, Fairfield Street and London Road and contributes to the sense of arrival next to the main entrance to Piccadilly station. The form is strong and assertive in the streetscape and forms a confident feature.

8.45 The decorative form and profile of the building is striking and an important aspect of the experience. The curved forms of the cupolas and distinctive colours and textures of the decoration emphasise the quality and individuality of the building in the streetscape, ensuring its individuality.

8.46 The building is experienced in the context of its position in central Manchester and is surrounded by a complex and variable urban cityscape including traditional and modern buildings. The urban position of the structure is integral to its functionality. There is a dialogue between the building and other traditional examples to the south resulting from height, and materiality, though the scale and mass of the Police and Fire Station is markedly greater, and its emphasis is horizontal. To the east is the bulk of Piccadilly Station and to the west the Institute of Science and Technology Building.

8.47 The volume of traffic and scale of the Fairfield Road and London Road junction affect the current setting of the building, by virtue of their noise and visual clutter.

Contribution of the Site to Significance

8.48 The Site is a vacant plot located to the south of the former police and fire station. Due to the intervening buildings the Site is not visible from the listed building. There is no historical

relationship or development association between the listed building and the Site. Accordingly, the Site is not considered to make a contribution to the heritage significance or setting of the Grade II* listed former police and fire station.

Summary of Built Heritage Sensitivity

8.49 **Table 8.7** confirms the receptors scoped into this Built Heritage EIA assessment and their sensitivity.

Table 8.7: Sensitivity of Built Heritage Receptors

Built Heritage Asset	Sensitivity
Whitworth Street Conservation Area	Medium
London Road Police and Fire Station (Grade II* listed building)	High

Future Baseline

8.50 In the absence of the Proposed Scheme, there are no anticipated changes to the Built Heritage future baseline.

Primary and Tertiary Mitigation

Construction Stage

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

- Construction working hours (noisy work) will be 07:30 to 18:00 Monday to Friday; 08:30 to 14:00 on Saturday; and no noisy work on Sundays and Bank Holidays. Operations outside of these hours will be agreed with MCC. This will mitigate disturbance locally including construction disturbance to the conservation area and setting of identified listed buildings.
- 3m high Site hoarding lines will be in place to contain construction activities and limit disturbance.
- The Proposed Scheme will maintain good road surfaces
- Works will include use of low-vibration working methods and reasonable working hours in accordance with BS5288-2:2014. This will mitigate disturbance locally including construction disturbance to the conservation area and setting of identified listed buildings.

Operational Stage

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

- The three main blocks are clad in a contemporary red/purple brickwork, complementary to the colours present in the Whitworth Street Conservation Area

- The connecting blocks will be clad in a glass reinforced concrete panel to reflect the glazed white bricks and modernist buildings locally to complement the character and appearance of the Whitworth Street Conservation Area.

- The use of high quality detailing of the Proposed Scheme in keeping with the Whitworth Street Conservation Area.

Assessment of Effects, Secondary Mitigation and Residual Effects

Construction Stage

8.53 The principal activities that will have an effect upon heritage assets during the construction stage include:

- Formation of construction access(s) and temporary construction compound (within the Site);

- Site preparation works, including clearance works, utilities diversions (where appropriate), provision of retained features, etc.;

- Construction of new access junctions, including temporary closures/diversions (where required);

- Construction of buildings and associated infrastructure (i.e. services and plant); and

- Implementation of proposed landscaping, lighting, internal and external finishing.

Change to the character and appearance of the conservation area [Whitworth Street Conservation Area]

8.54 The construction stage activities would be located within the Whitworth Street Conservation Area and therefore would have a direct effect on the character and appearance of the area.

8.55 The sensitivity of Whitworth Street Conservation Area is considered to be medium. The magnitude of change is considered to be small. Therefore, there is likely to be a direct, temporary, short-term, adverse effect which is considered to be minor.

Secondary Mitigation or Enhancement

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

Residual Effect

8.57 In the absence of secondary mitigation the residual effects for Whitworth Street Conservation Area is that same as that reported in the pre-mitigation scenario.

Significance

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

Change to the setting of a listed building [London Road Police and Fire Station (Grade II* listed building)]

8.59 The construction stage activities would be located south of the London Road Police and Fire Station in the wider townscape setting and therefore would have an indirect effect on heritage significance of the listed building. Due to the intervening built form and distance

from the Site the majority of the construction stage activities will not be visible from the listed building.

8.60 The sensitivity of London Road Police and Fire Station is considered to be high. The magnitude of change is considered to be negligible in the context of the listed building. Therefore, there is likely to be an indirect, temporary, short-term, adverse effect which is considered to be negligible.

Secondary Mitigation or Enhancement

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

Residual Effect

8.62 In the absence of secondary mitigation the residual effects for London Road Police and Fire Station is that same as that reported in the pre-mitigation scenario.

Significance

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

Operational Stage

Change to the character and appearance of the conservation area [Whitworth Street Conservation Area]

8.64 The construction of the Proposed Scheme will result in new built form located on a vacant plot. It provides an opportunity to enhance the character and appearance of the conservation area though addressing the fragmentation of the area, reinstating the consistent street frontage, enhancing the interface of the building to Granby Row and Vimto Gardens, and ensuring a positive relationship with the relevant listed buildings.

8.65 The Proposed Scheme will not be visible from a large part of the conservation area, due to the height and mass of the Institute of Science and Technology, which blocks views from the principal streets of Whitworth Street and Princess Street. The key attributes of the conservation area, comprising the late Victorian palazzo warehouses of Princess Street and the Edwardian Baroque warehouses of Whitworth Street will not be affected.

8.66 The Proposed Scheme will be positioned at the back of pavement on Granby Row and Echo Street, reflecting the historic position of buildings at the site and ensuring that the development is more consistent with the urban grain and street layout in the surrounding area. This restores the regular grid pattern which is characteristic of the area. This represents a positive benefit of the proposal, reversing the fragmentary appearance of the Site which results from the set-back of the building and vacant spaces around it.

8.67 The height of the Proposed Scheme is larger than the surrounding buildings and is likely to become prominent in the local townscape. The location of the Site is currently fragmentary and inconsistent, with a mixture of open space, modern and historic buildings with a mix of scale, height and mass. As such, the Site is considered less sensitive to change and more tolerant to new development. The development of a building of some height is not considered to be inappropriate. Despite the increase in height the building will not be experienced from the much larger western part of the western part of the conservation area. The building will form a termination of views to the east from Vimto Park, enclosing the views. It will create a dialogue with the tower of the Principal (formerly Palace) Hotel, creating a landmark connection through the streetscape although the simplicity of the

architecture and distance between the buildings will ensure that the new building does not compete with the prominence of the historic tower.

8.68 The three-tower arrangement is inspired by the traditional buildings within the Whitworth Street Conservation Area, where expressed bays are often separated by a distinctive roofline. The height of the building refers directly to the transitional status of the site at the edge of the Whitworth Street Conservation Area and bordering the Piccadilly Station area. The tallest part of the building is located to the east, closest to Piccadilly Station and the height of the blocks step down towards the conservation area to the west. This ensures that the building defers to the robust status of the conservation area buildings and does not appear over-dominant.

8.69 The Proposed Scheme will result in a noticeable change to the Site location and its immediate surrounds, however, the Site is located within an area suitable to adapt, and tolerant to the change, where new development will help enhance the pattern of development and townscape. The overall effect is considered to be negligible on the overall Character and Appearance or heritage significance of the conservation area.

8.70 The sensitivity of Whitworth Street Conservation Area is considered to be medium. The magnitude of change is considered to be negligible. Therefore, there is likely to be a direct, permanent, long-term effect which is considered to be negligible.

Secondary Mitigation or Enhancement

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

Residual Effect

8.72 In the absence of secondary mitigation the residual effects for the Whitworth Conservation Area is that same as that reported in the pre-mitigation scenario.

Significance

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

Change to the setting of a listed building [London Road Police and Fire Station (Grade II* listed building)]

8.74 The Proposed Scheme will be visible above the listed building when viewed from London Road/Store Street junction and from the raised area around Piccadilly Approach. Views of the Proposed Scheme will also be available from Fairfield Street when looking west along the side of Manchester Piccadilly Station. In this view the building will appear to the west of the prominent corner to the Fire Station structure. The Proposed Scheme will also be visible when looking south from Aytoun Street where it will appear in the context of the listed building and the adjacent traditional building.

8.75 The London Road Police and Fire Station is a robust and prominent structure, which, has a setting characterised by mixed urban development. The Proposed Scheme will integrate with the existing urban setting forming a backdrop that is partially visible. The simple design of the proposals, with stepped blocks and a regular pattern of fenestration, will contrast with the decorative expression of the London Road Police and Fire Station. The material palette of the proposals is complementary and results in a background building that does not compete with the architectural interests of the London Road Police and Fire Station and its expressive detailing.

8.76 The Proposed Scheme will result in a noticeable change to some views of the London Road Police and Fire Station due to the proposed height and massing. Whilst contemporary finishes are proposed which will emphasise the modernity of the structure, the colour palette will incorporate warm tones of red brick which will harmonise with those found in the listed building and provide a subtle reference to the decoration of the fire station and other buildings in the conservation area.

8.77 The London Road Police and Fire Station is experienced in the highly urbanised and complex context of Manchester City Centre. This includes a variety of modern developments including some of substantial scale and height. As such, the listed building is considered to be tolerant to a considerable level of change from the baseline condition without affecting its overall heritage interests. The building occupies a city block and is therefore experienced from a wide variety of positions. Accordingly, the Proposed Scheme will only affect limited number of views of the building and part of its wider setting. When viewed, the proposed development would be experienced as a backdrop to the London Road Police and Fire Station; it will not conceal or impede views of it.

8.78 Overall, whilst the Proposed Scheme results in change to the setting of the London Road Police and Fire Station it is considered that the significance of the building will be sustained.

8.79 The sensitivity of London Road Police and Fire Station is considered to be high. The magnitude of change is considered to be negligible. Therefore, there is likely to be an indirect, permanent, long-term effect which is considered to be negligible.

Secondary Mitigation or Enhancement

8.80 No secondary mitigation or enhancement is required/has been identified

Residual Effect

8.81 In the absence of secondary mitigation the residual effects for the London Road Police and Fire Station is that same as that reported in the pre-mitigation scenario.

Significance

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

Limitations and Assumptions

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

- The baseline assessment has been based on information readily available at the time of undertaking the assessment;
- The baseline assessment relies on the accuracy of secondary source data; and
- Inspection of the interior of historic buildings is not required as part of the baseline assessment.

Summary

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

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

Table 8.8: Summary of Residual and Significant Effects

Effect	Receptor	Residual Effect	Is the Effect Significant?
Construction Stage			
Change to the character and appearance of the conservation area	Whitworth Street Conservation Area	Minor Adverse	NO
Change to the setting of a listed building	London Road Police and Fire Station (Grade II* listed building)	Negligible	NO
Operational Stage			
Change to the character and appearance of the conservation area	Whitworth Street Conservation Area	Negligible	NO
Change to the setting of a listed building	London Road Police and Fire Station (Grade II* listed building)	Negligible	NO

References

[1] The Planning (Listed Buildings and Conservation Areas) Act 1990
[2] National Planning Policy Framework (2021)
[3] MCC (2012) Manchester Core Strategy 2012-2027.
[4] National Planning Practice Guidance (2014, updated 2019);
[5] Historic England (2015) Good Practice Advice in Planning (GPA) Note 2 'Managing Significance in Decision Taking in the Historic Environment'.
[6] Historic England (2017) GPA3 'The Setting of Heritage Assets' 2dn Edition.
[7] Historic England (2019) Advice Note 12: Statements of Heritage Significance.
[8] Historic England (2019) Advice Note 1: Conservation Area Designation, Appraisal and Management (2nd Edition).
[9] Historic England (2021) Advice Note 7: 'Local Heritage Listing' 2nd Edition.
[10] IEMA (2021) Principles for Cultural Heritage Impact Assessment.

[11] National Highways (2020) Design Manual for Roads and Bridges, LA 106: Cultural heritage assessment.
[12] IEMA (2015). Environmental Impact Assessment Guide to: Shaping Quality Development and IEMA (2016). Environmental Impact Assessment Guide to: Delivering Quality Development.

9. Townscape and Visual

Introduction

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

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

9.3 In line with **Chapter 2: Approach to EIA**, the assessment reports on the likely significant environmental effects, the further mitigation measures required to prevent, reduce or offset any significant adverse effects, or further enhance beneficial effects. The conclusions are provided both in terms of the residual effects and whether these are considered significant. The assessment of effects takes into consideration both primary and tertiary mitigation (see **Chapter 2: Approach to EIA** for further details) and is informed by the EIA Scoping process (**Appendix 2.1 - 2.2**) and iterative scoping process where applicable.

9.4 This Chapter, and its associated **Appendices 9.1-9.4** is intended to be read as part of the wider ES with particular reference to the introductory Chapters of this ES (**Chapters 1 – 5**), as well as **Chapter 8: Built Heritage**.

9.5 In addition, this Chapter should be read in conjunction with **Chapter 13: Assessment of Cumulative Effects**.

Summary of Consultation

9.6 **Table 9.1** provides an overview of the consultation that has been undertaken to inform the Proposed Scheme and EIA, including the consideration of likely significant effects and the methodology for assessment.

Table 9.1: Summary of Consultation

Body / Organisation	Contact	Date and Form of Consultation	Summary
MCC	Principal Planning Manager	Email, November, 2017	The principal viewpoints were identified within a Townscape and Visual Impact Assessment in 2017 through a process of desktop study and on-site survey. These were then agreed with MCC planning officers.
MCC	Principal Planning Manager	Email, 6th March, 2023	Given the length of time since the previous assessment and considering the previous assessment conclusions, the proposed principal views were reconsulted with the LPA. The principal viewpoint locations and

Body / Organisation	Contact	Date and Form of Consultation	Summary
			general approach to the scoping in/out of views was agreed.

Scope of the Assessment

9.7 An EIA Scoping Report was submitted to MCC on 17th February 2023, as presented as **Appendix 2.1**. The EIA Scoping Opinion was received on 29th March 2023 (**Appendix 2.2**). This section provides confirmation on the scope of the assessment presented within this Chapter following submission of the EIA Scoping Report.

Effects Not Considered to be Significant

9.8 The following effects were not considered significant as part of the EIA Scoping Report (**Appendix 2.1**) and are not considered further in this Chapter (with detailed justification provided within the EIA Scoping Report):

- Changes to all townscape and visual receptors during construction [Heritage, Townscape character, Urban Grain, Land Use, Building Height, Topography, Movement & Access, Open Space, Site Character and Views];
- Change to visual amenity in construction [2017 views 4, 9, 11, 12 and 13];
- Changes to townscape Heritage receptors during operation [Heritage townscape receptors];
- Changes to Townscape Urban Grain receptor during operation [urban grain];
- Changes to Townscape Land Use receptor during operation [land use];
- Changes to Townscape Building Height receptor during operation [townscape building height];
- Changes to Townscape Movement and Linkages receptor during operation [movement and linkages]; and
- Changes to Townscape Environmental Designations and Public Open Space receptor during operation [townscape environmental designations and public open space].

Effects Considered Likely to be Significant

9.9 The following effects (**Table 9.2**) were considered likely to be significant and are reported within this Chapter. The representative view locations referred to the in the receptors column for visual effects are shown in **Figure 9.1** of **Appendix 9.4**.

Table 9.2: Effects Considered Likely to be Significant

Likely Significant Effect	Receptors	Applicable Development Stage
Changes to townscape character within the site context	The Site and wider townscape character area of North Campus Townscape Character Area	Operation
Changes to Topography & Site Levels	Topography & Site Levels	Operation
Changes to the character, composition and amenity of views[a]	Viewpoint 1: Piccadilly Station main entrance Viewpoint 2: Piccadilly Station taxi rank, Fairfield Street Viewpoint 3: Piccadilly Station platform 13 and 14 Viewpoint 4: Sculptural wall, London Road Viewpoint 5: View west along Granby Row Viewpoint 6: Vimto Park Viewpoint 7: University of Manchester, Altrincham Street Viewpoint 8: Granby Row, Samuel Ogden Street	Operation

Assessment Methodology

Legislative Framework, Policy and Guidance

9.10 The following legislation has informed the assessment of effects within this Chapter:

- The European Landscape Convention 2000[1].

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

- Guidelines for Landscape & Visual Impact Assessment[2];
- Visual Representation of Development Proposals[3];
- Planning Practice Guidance[4];
- An Approach to Landscape Character Assessment[5];
- IEMA Environmental Impact Assessment Guide to Shaping Quality Development, 2015[6]; and

[a] The numbering of some of the viewpoints has changed since preparation of the EIA Scoping Report, but all of those views set out in the EIA Scoping Report are still reported in this Chapter.

- Historic England Advice Note 4 Tall Buildings[7].

Defining the Study Area

9.12 The study area for the assessment is approximately 500m from the centre of the Site, in order to encompass the visual envelope of the Site, and surrounding townscape character areas.

9.13 The study area includes the application Site itself and the full extent of the wider townscape around it which the Proposed Scheme may influence in a significant matter due to proximity (influence on townscape character) or visual connectivity. The study area also takes into account the extent of the area from which the Proposed Scheme is potentially visible.

9.14 The study area has been defined through a process of desktop and on-site survey and assessment combined with professional judgement, in accordance with the Guidelines[2].

Background Studies to Inform the ES / Establishing the Baseline

9.15 **Table 9.3** summarises all studies undertaken to inform the assessment presented within this Chapter.

Table 9.3: Background Studies

Study	Overview	Date of Completion
Desktop survey	Baseline townscape character assessment, including historical development, heritage designations, urban grain, urban grain, building heights, topography, movement and linkages, public open space and site character.	February - March, 2023
Photography	Professional photography of key viewpoints	March 2023

Assessment Process

9.16 This assessment has been carried out with reference to the Guidelines for Landscape & Visual Impact Assessment (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.

9.17 The assessment of likely significant environmental effects as a result of the Proposed Scheme has taken into account the operational stage. The construction stage has been scoped out.

9.18 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 Scheme have been assessment. From this, the overall significance of the identified effects on receptors have been assessed.

9.19 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 9.1** and **9.2** 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.

9.20 Visualisations were produced by Virtual Planit, a professional visualization studio with extensive experience in the production of photomontages. Both photographs and photomontages were produced in accordance with Landscape Institute's Guidance Note 06/19, "Visual Representation of Development Proposals"[3]. The photography and photomontage visualisations are contained within **Appendix 8.4**.

9.21 Due to restricted accessibility to Piccadilly Station, views 1, 2 and 3 have not been surveyed and are therefore not verified views. However, the photomontages were produced in accordance with LVIA guidance and retain a high degree of accuracy.

Reporting of the Environmental Effect and Significance Criteria

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

Determining Sensitivity of Receptor

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

Townscape Receptor Sensitivity Criteria

9.24 The sensitivity of townscape receptors is determined through combining judgments about the susceptibility of the receptor to change and the value of the receptor.

Value of Townscapes

9.25 Whilst the assessment of townscape value is partly based on the planning policy importance of the townscape, the value of undesignated assets has also been considered based on criteria taken from Planning Practice Guidance. **Table 9.4** sets out the scale of value for designated townscapes. **Tables 9.5** and **Table 9.6** together set out the scale of value for non-designated townscape receptors.

Table 9.4: Criteria for assessing the Value of Designated Townscapes

Value	Description
High	Sites, features or areas of national or international importance with settings of high quality such as World Heritage Site, AONB, National Parks, Grade I and Grade II* Listed buildings or Registered Parks and Gardens.
Medium	Sites, features or areas of local or regional importance with intact character such as Grade II* and Grade II Listed Buildings or Registered Parks and Gardens, Conservation Areas, Scheduled Monuments, local nature site, long distance recreational routes. Tree Preservation Orders (TPO) and local

Value	Description
	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.

Table 9.5: 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, townscapes, buildings and elements within them all, microclimates and views should all be considered. This is also affected by the way a townscape is perceived using the senses and the effect of transient elements such as the presence of human activity and resulting tranquillity or vibrancy.
Promotes ease of movement	All users should be able to move safely, conveniently and efficiently to and within a place, appropriate number of legible routes to and through it, good connections with each other and other destinations.

Table 9.6: Value of Non-Designated Townscapes

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

Susceptibility of Townscape Receptors to Change

9.26 Susceptibility to change is the ability of a townscape receptor to accommodate the specific proposed development without undue negative consequences.

9.27 The susceptibility of townscape receptors to change has been assessed using the criteria set out in **Table 9.7** with reference to the baseline conditions.

Table 9.7: Townscape Receptor Susceptibility to Change

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

Overall Sensitivity of Townscape Receptors

9.28 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 9.1**.

Type of View and Number of Viewers

9.29 In accordance with the Guidelines, in order to analyse the visual baseline the following range of factors have been considered:

- The nature of the view - glimpsed (i.e. in passing)/filtered/oblique/framed/open views;
- The number of viewers - few/moderate/many viewers,
- The distance between the viewpoint and the Site,
- Whether it is a stationary or transitory view from a footpath or moving vehicular, and

- The current skyline, visual complexity of the view and current focus.

Criteria for Determining Sensitivity of Visual Receptors

Value of Views

9.30 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.

9.31 The assessment of the value of views is summarised in **Table 9.8** below, in terms of High, Medium and Low value. These criteria are provided for guidance only and are not intended to be absolute.

Table 9.8: Value Attached to Views

Value	Description
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

9.32 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 focused on a view and the visual amenity experienced at a given view.

9.33 The assessment of a visual receptor to change is specific to the Proposed Scheme. However, the Guidelines for Landscape and Visual Impact Assessment offers the generic guidance identified in **Table 9.9** as a starting point for the assessment.

Table 9.9: Visual Receptor Susceptibility to Change

Susceptibility	Criteria
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.

9.34 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

9.35 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 9.2**.

Determining the Magnitude of Change

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

9.37 In accordance with the GLVIA3, the magnitude of a given townscape or visual impact has been evaluated in terms of its size or scale, the geographical extent of the area influenced, and its duration and reversibility. A description of this terminology is provided in the following sub-sections.

Size and Scale of Impacts

9.38 The size and/or scale of impacts 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 would not be perceptible.
- Very Small – change would be just discernible.
- Small – a small change would be perceptible.
- Medium – change would be clearly noticeable.
- Large – total change would occur.

9.39 The geographical extent of impacts relates to:

- The area over which townscape impacts 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); and
- The area over which the visual 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

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

Townscape Impacts Magnitude Criteria

9.41 Alongside the size, scale, geographical extent, and duration and degree of reversibility a townscape impact also considers:

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

9.42 The magnitude of impact criteria for townscape receptors are shown in **Table 9.10.**

Table 9.10: Magnitude of Townscape Impacts

Category	Criteria
Large adverse	The Proposed Scheme will result in a total change in the key characteristics of townscape character; will introduce elements totally

Category	Criteria
	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.
Medium adverse	The Proposed Scheme will result in a partial change in the key characteristics of townscape character; will introduce elements partially uncharacteristic to the attributes of the receiving townscape; and/or will result in partial loss, alteration or addition of key elements/features/characteristics.
Small adverse	The Proposed Scheme will result in a small change in the key characteristics of townscape character; will introduce elements that are not characteristic to the attributes of the receiving townscape; and/or will result in a minor loss, alteration or addition of elements/features/characteristics.
Negligible adverse	The Proposed Scheme will result in a just discernible change to townscape character/elements/features/characteristics.
Negligible beneficial	The Proposed Scheme will result in a just discernible improvement to the townscape character/elements/features/characteristics.
Small beneficial	The Proposed Scheme will achieve a degree of fit with the townscape character/elements/features/characteristics and go some way towards improving the condition or character of the townscape.
Medium beneficial	The Proposed Scheme will achieve a good fit with the townscape character/elements/features/characteristics, or would noticeably improve the condition or character of the townscape.
Large beneficial	The Proposed Scheme will achieve a complete fit with the townscape character/elements/features/characteristics, or would substantially improve the condition or character of the townscape.

Visual Impact Magnitude Criteria

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

9.44 The magnitude of change in the view relates to the degree of contrast or integration likely to result from the Proposed Scheme and is influenced by the relative time over which a view is experienced and whether it is a full, partial or glimpsed view.

9.45 The criteria set out in **Table 9.11** have been used to assess the magnitude of visual impacts, based on the degree of change to the view or composition.

Table 9.11: Visual Impacts – Magnitude

Category	Criteria
Large	The Proposed Scheme will cause a dominant or complete change or contrast to the view, resulting from the loss or addition of substantial features in the view and will substantially alter the appreciation of the view.
Medium	The Proposed Scheme will cause a clearly noticeable change or contrast to the view, which would have some effect on the composition, resulting from the loss or addition of features in the view and will noticeably alter the appreciation of the view.
Small	The Proposed Scheme 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	The Proposed Scheme 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 Proposed Scheme will cause no change to the view.

Determining the Level of Effect

9.46 The level of effect has been informed by the magnitude of change due to the Proposed Scheme and the evaluation of the sensitivity of the affected receptor. The level of effect has been determined using professional judgement and **Table 9.12** has been a tool which has assisted with this process.

9.47 Whilst **Table 9.12** provides ranges, the level of effect is confirmed as a single level and not a range, informed by professional judgement. For each effect, it has been concluded whether the effect is '*beneficial*', '*adverse*' or *'neutral'.* Neutral effects recognise the degree to which the proposal fits with existing character, or the contribution that the development may make in its own right, usually by virtue of geed design, even it if is in contrast to existing character. 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 will be used as a guide to determine significance, along with professional judgement.

Table 9.12: Matrix to Support Determining the Level of Effect

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

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

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

Determining Significance

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

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

Baseline Conditions

Townscape Character

9.51 The Site lies within the North Campus Character Area within Manchester City Centre, as set out within Manchester City Centre Strategic Plan. The area is currently characterised by a mix of building typologies and public spaces of varying quality. Modern development sits alongside historic industrial buildings at the interface created by the railway viaduct, with predominantly historic townscape to the north and contemporary university buildings to the south.

9.52 Mayfield and Piccadilly areas to the east are also subject to large scale regeneration proposals as well as the recent redevelopment within the Kampus character area to the north of the Proposed Scheme which incorporates uses such as residential, restaurant and commercial space. The recent redevelopment of London Road fire station includes mixed uses; hotel, retail/leisure space, live/work spaces, office space and an events space.

9.53 Components which contribute to defining townscape character are described in more detail below.

9.54 Townscape character is illustrated in **Figure 9.4** of **Appendix 9.3.** Site character is illustrated in **Figure 9.10** of **Appendix 9.3.**

Historical development and Heritage Designations

9.55 The historical development and heritage within the Site and surrounding context is illustrated in **Figure 9.2** and **9.3** of **Appendix 9.3**.

9.56 Historic mapping shows how the Site has been a component of the tight urban grain of the city centre, although this does not continue into the Site itself. The Site is located within Whitworth Street Conservation Area which is characterised by textile warehouses reflecting the industrial Victorian and Edwardian heritage. The Site in its current form does not contribute positively to defining or reinforcing the character or quality of the conservation area.

9.57 There are a number of listed buildings in the vicinity of the Site, notably the Grade II Listed Manchester South Junction and Altrincham Railway Viaduct and Grade II* Listed London Road Fire Station, which contribute a significant heritage element to the overall townscape appearance and character in contrast to more modern development to the north and south.

Urban Grain

9.58 There is a clear grain and historic street pattern throughout the wider area, although this is absent in the Proposed Scheme, which consists of a cleared site since the demolition of the buildings. There is significant capacity to respond and integrate better to the general pattern of urban grain in the surrounding area.

9.59 Urban grain within the Site and surrounding site context is illustrated in **Figure 9.5** of **Appendix 9.3**.

Land Use

9.60 At present, there are no existing uses on the Site as it is currently cleared for construction. A number of other residential / student residential blocks are located in the immediate vicinity. The Site is surrounded on the south and west by higher education uses. Within the university

campus are a number of open green spaces, including Vimto Park immediately to the west of the Site. To the north east is Piccadilly Station (a major public transport hub for trains and trams) and city centre commercial / retail, entertainment and hotel uses in the wider area.

9.61 Land use within the Site and surrounding site context is illustrated in **Figure 9.6** of **Appendix 9.3.**

Building Heights

9.62 There is an established general height of approximately 6 storeys throughout the historic parts of the study area, reflecting the prevalence of large warehouse buildings. Taller blocks of contemporary city centre development are located close to Piccadilly station, including the newly completed 16 storey high Kampus development. The station itself is raised up, providing a dominant presence on its western edge, but also a degree of severance. The viaduct also creates a physical separation along the southern edge of the Site due to its height and limited permeability. The general moderate height of the university campus is frequently punctuated by taller towers.

9.63 Building heights within the Site and surrounding site context are illustrated in **Figure 9.7** of **Appendix 9.3.**

Movement and Linkages

9.64 Pedestrian Bus services run on most of the primary and secondary routes surrounding the Site. The Site is close to London Road, a key primary route and approach to the city from the south, connecting to the Mancunian Way (ring road). North east of the Site, London Road links to Whitworth Street, a primary east-west route through the city centre. Granby Road and Echo Street which bound the Site on the northern and eastern edges respectively are minor local access roads.

9.65 Movement and linkages within the Site and surrounding site context are illustrated in **Figure 9.8** of **Appendix 9.3.**

Public Open Space

9.66 There are no formal public open space designations affecting the Site. Vimto Park is adjacent to the Site to the west, and primarily forms an open space for use by university students, along with a number of other open spaces within the campus. Sackville Gardens is also within the vicinity of the Site and is an important strategic green space in the city centre.

9.67 Public open space within the Site and surrounding site context is illustrated in **Figure 9.9** of **Appendix 9.3.**

Topography and Site Levels

9.68 The underlying topography of the study area is generally flat with small level changes. The periphery of the Site lies approximately 40m AOD. The university campus is set at a lower level, approximately 35m AOD, to the south of the rail viaduct and Altrincham Street. The buildings on the eastern edge of the Site are at street level. The previous clearance of the Site for construction has levelled the ground to level a uniform platform.

9.69 Topography within the Site and surrounding site context is illustrated in **Figure 9.11** of **Appendix 9.3.**

Key Viewpoints

Viewpoint 1: Piccadilly Station main entrance

9.70 The viewpoint faces south from the elevated main entrance to Piccadilly Station. The view is experienced by a high number of viewers, including people arriving at, and leaving Piccadilly Station on foot, by bike or on buses. The view towards the Site is framed by the station building ion the left hand side and a hotel building on the right hand side. The viewpoint is at a key arrival point and gateway to Manchester city centre. The station forecourt and associated signage and infrastructure dominates the foreground of the view. The viewpoint looks towards the Grade II* Listed London Road Fire Station and Whitworth Street Conservation Area. University buildings to the south of the Site are visible above the roofline.

Viewpoint 2: Piccadilly Station taxi rank, Fairfield Street

9.71 The viewpoint faces south west from outside the Fairfield Street entrance to Piccadilly Station, which forms an arrival point and gateway to the city. The station building to the right hand side partially frames and directs views towards the Site. A mixed collection of buildings at the centre of the view on the corner of Fairfield Street and the A6/London Road form the focus to the view in the foreground. The street furniture and temporary fencing and works form temporary visual clutter within the foreground of the view. The view would be experienced by a high number of people arriving and leaving Piccadilly Station on foot and some using taxis and cycles. The existing Grade II* Listed London Road Fire Station is seen within the right hand side of the view, and forms a subtle landmark.

Viewpoint 3: Piccadilly Station platform 13 and 14

9.72 The viewpoint faces west from Platforms 13 and 14 at Piccadilly Station, which forms a major transport hub within the city and key arrival point. The view looks along the railway line towards the Grade II Listed railway viaduct and beyond to the city backdrop. The viewpoint is elevated and provides wide, open city skyline views within the townscape context . The distinctive Grade II* London Road Fire Station is visible to the right hand side of the view, and the cupola forms a prominent landmark feature in the sky. The view is considered semi private as only those with tickets would have access to the platforms.

Viewpoint 4: Sculptural wall, London Road

9.73 The viewpoint looks west along Altrincham Street/railway viaduct from London Road. The Grade II Listed sculptural wall is visible in the foreground to the left of the view, partially obscured by wire fencing and a foreground semi-mature tree. The Grade II Listed Manchester South Junction and Altrincham Railway Viaduct, which forms the southern boundary of the Whitworth Street Conservation Area, is visible to the right of the view, extending into the centre of the view. The view forms an oblique view from the A6/London Road and would be experienced by a high number of viewers who would be vehicle occupants or pedestrians. The view would be experienced fleetingly by viewers whilst travelling past.

Viewpoint 5: View west along Granby Row

9.74 View looking south west along Granby Row along the eastern boundary of the Site. The Viewpoint is within the Whitworth Street Conservation Area. The Grade II Listed Sackville Street building is visible in the distant right hand side of the view, partially obscured by trees and the angle of view. Viewers would be pedestrians and also some vehicle occupants travelling on local roads. The view is framed on the right hand side by existing contemporary buildings on Echo Street. Existing site hoarding and surrounding poorly maintained public

realm dominate the view in the foreground of the view. The existing Renold Building is visible in the centre of the view, along with the prominent Circle Square Apartments building seen in the background.

Viewpoint 6: Vimto Park

9.75 The viewpoint looks east from the northern edge of Vimto Park, within the Whitworth Street Conservation Area. The view is framed by the Grade II Listed Sackville Street building in the far left of the view, channelling the view along Granby Row. The views is directed towards the Site but currently lacks focus due to the demolition of existing development within the Site. Vimto Park and the Vimto public artwork are a key feature of the foreground and landscape setting, with local cultural associations. Temporary fencing and infrastructure create visual clutter within the view. The Grade II Listed MSJAR viaduct is partially visible to the right of the view. The view would be experienced by a moderate number of viewers who are likely to be users of the public space and sensitive to change. Other viewers would include pedestrians and also some vehicle occupants travelling on local roads, however the road is within the University of Manchester campus and is barrier controlled.

Viewpoint 7: University of Manchester, Altrincham Street

9.76 The viewpoint looks north east from a public square within the University of Manchester North Campus. The viewpoint is close to the southern boundary of Whitworth Street Conservation Area, whose edge is defined by Manchester South Junction and Altrincham Railway Viaduct which is visible through the trees at the boundary of the square. The view is framed by the university building fronting the square to the right hand side and by vegetation on the left hand side. The foreground is dominated by landscape / public realm within the square. The view is well enclosed with little to in the view to indicate the city context beyond. Viewers would be users of the public space and pedestrians who may be sensitive to a change in the view. Viewers may also include people visiting buildings associated with the University of Manchester or at their place of work, who may be less sensitive to a change in the view.

Viewpoint 8: Granby Row / Samuel Ogden Street

9.77 View looking east along Granby Row from the junction with Samuel Ogden Street. The viewpoint is within the Whitworth Street Conservation Area. The view is framed and channelled by the Grade II Listed Orient and Grade II Listed Granby House on the right hand side of the street, as well as contemporary buildings on the left. In the background and terminus of the building line along the southern edge of Granby Row the site is obscured by existing built form and trees within Vimto Park. Viewers would be pedestrians and vehicle occupants travelling on local roads.

Future Baseline

9.78 The Site has been cleared for development and without implementation of the Proposed Scheme would be unlikely to change due to a lack of existing built or landscape features. Without implementation of the Proposed Scheme or other planned development within the study area it is reasonable to assume that the existing character of the townscape and existing views would remain the same.

Primary and Tertiary Mitigation

Operational Stage

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

- The scale and architectural design of the building reflect its status as a landmark development at a gateway site to the city, contributing positively to defining and reinforcing landscape character.

- The Proposed Scheme creates a positive relationship with Granby Street and Vimto Park, with all 'back of house' facilities including plant rooms located on the lower ground floor. The ground floor provides active uses which provide animation at street level and contribute positively to townscape character and avoid the previous poor relationship between the built form and the street typical of previous development on the Site.

- Built form of the Proposed Scheme will be across three interlinked blocks (Blocks A – C) which will be stepped in height, with height increasing away from Vimto Park to the west. Courtyards will be located between the blocks on ground floor. This arrangement will visually 'break up' the massing of the built form in response to the sensitivity of the conservation area.

- Materials take reference from the surrounding context, with red brick cladding which respects the conservation area setting, positively reinforcing townscape character.

- Landscape and open space will be provided in the private courtyards between the main blocks and the public realm surrounding the building (Granby Row and Echo Street). The works to the public realm focus on pedestrian use, including general resurfacing, with lowered kerbs, widening of the pavement and localized tree planting along Granby Row extending to the boundary with Vimto Park. The works to the courtyards will include multi stem shade tolerant species in raised planters, complemented with lightweight furniture and catenary lights. In addition, one of the courtyards will provide means of escape from the central block. The works would also contribute positively to townscape character.

- In addition to widened footways, the Proposed Scheme would deliver widened footways on Granby Row and raised table crossing features on Granby Row to assist more convenient crossing for pedestrians. Such improvements will enhance the environment for pedestrians and cyclists, helping to encourage and facilitate active travel. The works would also contribute positively to townscape character.

- New areas of public realm and roof gardens enhance biodiversity and provide sustainable drainage as well as amenity benefits for residents. The works would also contribute positively to townscape character.

- The landscape proposals will seek to maximise the ecological value of the Site through the provision of native and/or wildlife friendly landscape planting. This will provide a green space within the site and will subsequently provide new and enhanced

opportunities for faunal species. This will include the selection of climate change tolerant species as part of the projects' biodiversity strategy.

Assessment of Effects, Secondary Mitigation and Residual Effects

Operational Effects

Changes to townscape character within the site context [The Site and wider townscape character area of North Campus Townscape Character Area]

9.80 The Proposed Scheme will introduce a new scale and massing to the Site which is not currently present due to previous demolition. The Proposed Scheme will infill the existing gap in development in this key part of the city.

9.81 The pattern and containment of the streets next to the Site will be improved due to new street frontage and public realm areas, with new residential uses bringing life and activity at street level. The Proposed Scheme will bring new uses to a cleared site and be consistent with change happening within the wider area.

9.82 At the site level, the Proposed Scheme will completely change the character of the plot, moving from cleared site and hoardings through to new residential neighbourhood that will link into the wider changes in North Campus.

9.83 The Proposed Scheme introduces new elements that achieve a good fit with the North Campus townscape character area, reflecting the wider plans to transform the area. The scale of the new buildings will result in a partial change to the wider city skyline as well as the more heritage character of the secondary streets that it is located on. The potential impacts at the local level are balanced by the substantial improvement to the street condition and strengthened relationship to the adjacent park.

9.84 The sensitivity of townscape character is considered to be medium, as the study area is considered to display the attributes in **Table 9.5** to a medium extent. The magnitude of change is considered to be medium, as the Proposed Scheme will achieve a good fit with the townscape character through a noticeable improvement within the Site. Therefore, there is likely to be a direct, permanent, long-term, beneficial effect which is considered to be moderate.

Secondary Mitigation or Enhancement

9.85 No secondary mitigation or enhancement has been identified.

Residual Effect

9.86 The sensitivity of townscape character is considered to be low. The magnitude of change is considered to be medium. Therefore, there is likely to be a direct, permanent, long-term, beneficial effect which is considered to be moderate.

Significance

9.87 This effect is considered to be **Significant**.

Changes to Topography & Site Levels

9.88 The Proposed Scheme will work with the existing levels, including a basement level utilising the sunken part of the Proposed Scheme. The new building will address the level change adjacent to Granby Row and Vimto Park, reducing the severance and improving pedestrian

environment. The Proposed Scheme makes use of the existing level changes around the Site and contributes to a good fit within the wider street scene. Access to the lower ground floor level is provided via a ramp down into a servicing yard which is located along the edge of the existing railway viaduct.

9.89 The sensitivity of topography and site levels is considered to be low, due to previous clearance works within the Site. The magnitude of change is considered to be small, as the Proposed Scheme works with the current levels. Therefore, there is likely to be a direct, permanent, long-term, beneficial effect which is considered to be negligible.

Secondary Mitigation or Enhancement

9.90 No secondary mitigation or enhancement has been identified.

Residual Effect

9.91 The sensitivity of topography and site levels is considered to be low. The magnitude of change is considered to be small. Therefore, there is likely to be a direct, permanent, long-term, beneficial effect which is considered to be negligible.

Significance

9.92 This effect is considered to be Not Significant.

Change to the character, composition and amenity of the views

Viewpoint 1: Piccadilly Station main entrance

9.93 The Proposed Scheme will be clearly noticeable in the centre of the view, presenting the slender aspect of the tall blocks. The upper portion of all three of the tall blocks are visible, stepping up from right to left. The intermediate blocks are also partially visible, obscured by the London Road Fire Station. The lower storeys of the building are hidden by London Road Fire Station in the middle ground and the station concourse in the foreground.

9.94 The Proposed Scheme forms a high quality addition to the view and creates an orientation point for people leaving the station. The variety of materials and architectural styles within the view accommodates the contemporary design and city scale of the Proposed Scheme within the overall character. The Proposed Scheme affects the visual distinction of the Fire Station cupola on the skyline. The presence of the proposed building alters the backdrop and the silhouette of the roofline of the Fire Station, notably the cupola as it is no longer viewed against the sky, however the Fire Station remains clearly visible in the foreground of the view.

9.95 The sensitivity of viewpoint 1 is considered to be medium as the view forms part of the arrival experience at the station. The magnitude of change is considered to be medium, as there would be a noticeable change in the composition of the view. Therefore, there is likely to be a direct, permanent, long-term, beneficial effect which is considered to be moderate.

Secondary Mitigation or Enhancement

9.96 No secondary mitigation or enhancement has been identified.

Residual Effect

9.97 The sensitivity of viewpoint 1 is considered to be medium. The magnitude of change is considered to be medium. Therefore, there is likely to be a direct, permanent, long-term, beneficial effect which is considered to be moderate.

Significance

9.98 This effect is considered to be **Significant**.

Viewpoint 2: Piccadilly Station taxi rank, Fairfield Street

9.99 The Proposed Scheme creates a new and prominent feature in the view, due to the proximity of the viewpoint to the Site. The Proposed Scheme forms a high quality new landmark feature in the view, which aids orientation and legibility. The arrangement of development into 3 interconnected blocks, which step down in height, help to visually 'break up' the overall massing of development.

9.100 The Proposed Scheme affects the townscape context of the London Road Fire Station, but retains separation and is viewed in the wider context of a selection of incongruent buildings of varying quality. The variety of materials and styles within the view accommodates the contemporary design and city scale of the Proposed Scheme.

9.101 The sensitivity of viewpoint 2 is considered to be medium, as the view is located at a key arrival point into the city. The magnitude of change is considered to be medium, as there would be a noticeable change in the composition of the view. Therefore, there is likely to be a direct, permanent, long-term, beneficial effect which is considered to be moderate.

Secondary Mitigation or Enhancement

9.102 No secondary mitigation or enhancement has been identified.

Residual Effect

9.103 The sensitivity of viewpoint 2 is considered to be medium. The magnitude of change is considered to be medium. Therefore, there is likely to be a direct, permanent, long-term, beneficial effect which is considered to be moderate.

Significance

9.104 This effect is considered to be **Significant**.

Viewpoint 3: Piccadilly Station platform 13 and 14

9.105 The Proposed Scheme is clearly the tallest element in the view and creates a new and prominent feature in the view due to the proximity of the viewpoint to the Site and the elevated nature of the viewpoint. The Proposed Scheme forms a new landmark feature which is in keeping in terms of materials and form with the city centre development in the backdrop of the view.

9.106 The lower storeys of the building are hidden behind existing rail infrastructure in the foreground and mid ground.

9.107 The Proposed Scheme affects the townscape context of the London Road Fire Station, but retains separation and is viewed in the context of a wider cityscape containing buildings of varying age and architectural style.

9.108 The sensitivity of viewpoint 3 is considered to be medium. The magnitude of change is considered to be medium. Therefore, there is likely to be a direct, permanent, long-term, beneficial effect which is considered to be moderate.

Secondary Mitigation or Enhancement

9.109 No secondary mitigation or enhancement has been identified.

Residual Effect

9.110 The sensitivity of viewpoint 3 is considered to be medium, as the view is located at a key arrival and departure point in the city. The magnitude of change is considered to be medium, as there would be a noticeable change in the composition of the view. Therefore, there is likely to be a direct, permanent, long-term, beneficial effect which is considered to be moderate.

Significance

9.111 This effect is considered to be **Significant**.

Viewpoint 4: Sculptural wall, London Road

9.112 The Proposed Scheme will result in a clearly noticeable change to the view and will help to overcome the visual barrier effect of the viaduct by forming a strong visual connection. The materials are complementary to the viaduct and the Proposed Scheme forms a strong vertical accent. The three distinct blocks visually 'break up' the overall massing of development. The Grade II Listed sculptural wall (Hollaway Wall) does not experience a direct effect but its townscape context will take on a more built up character. The building forms a new backdrop, obscured at ground / lower levels by the Grade II Listed railway viaduct and partially filtered by the foreground tree (this will be most evident in the summer months when the trees are in full leaf).

9.113 The sensitivity of viewpoint 4 is considered to be medium, as the view is moderately important to the experience of the place. The magnitude of change is considered to be medium, as there would be a noticeable change in the composition of the view.. Therefore, there is likely to be a direct, permanent, long-term, beneficial effect which is considered to be moderate.

Secondary Mitigation or Enhancement

9.114 No secondary mitigation or enhancement has been identified.

Residual Effect

9.115 The sensitivity of viewpoint 4 is considered to be medium. The magnitude of change is considered to be medium. Therefore, there is likely to be a direct, permanent, long-term, beneficial effect which is considered to be moderate.

Significance

9.116 This effect is considered to be **Significant**.

Viewpoint 5: View west along Granby Row

9.117 The Proposed Scheme constitutes a substantial change to the streetscene within this view, introducing a large new element which dominates the view. The massing of the proposed building creates a strong building line and presence on the southern edge of Granby Row and positively encloses the street. As part of the Proposed Scheme, the public realm along Granby Row will be enhanced, which will change the appearance and character of the foreground area.

9.118 The sensitivity of viewpoint 5 is considered to be low, as the location is not particularly important as a viewpoint and incidental to the journey for receptors travelling past. The magnitude of change is considered to be large as the Proposed Scheme will form a

substantial new addition to the view. Therefore, there is likely to be a direct, permanent, long-term, beneficial effect which is considered to be moderate.

Secondary Mitigation or Enhancement

9.119 No secondary mitigation or enhancement has been identified.

Residual Effect

9.120 The sensitivity of viewpoint 5 is considered to be low. The magnitude of change is considered to be large. Therefore, there is likely to be a direct, permanent, long-term, beneficial effect which is considered to be moderate.

Significance

9.121 This effect is considered to be **Significant**.

Viewpoint 6: Vimto Park

9.122 The proposed building is clearly visible and creates a focal point at the centre of the view, channelled by existing buildings fronting Granby Row. Therefore, although it stands as an individual/stand alone element, the Proposed Scheme conforms with and enhances the overall composition. The upper portion of each of the three blocks is visible due to the stepping up of the building from the park. The increased scale and mass creates a more dominant edge to the eastern boundary of Vimto Park, creating a positive sense of enclosure for users of the public space.

9.123 The sensitivity of viewpoint 6 is considered to be medium as receptors are users of the public space, where the view forms part of the wider experience of the place. The magnitude of change is considered to be small, as there will be a perceptible change to the view which does not materially change the appreciation of the view. Therefore, there is likely to be a direct, permanent, long-term, beneficial effect which is considered to be minor.

Secondary Mitigation or Enhancement

9.124 No secondary mitigation or enhancement has been identified.

Residual Effect

9.125 The sensitivity of viewpoint 6 is considered to be medium. The magnitude of change is considered to be small. Therefore, there is likely to be a direct, permanent, long-term, beneficial effect which is considered to be minor.

Significance

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

Viewpoint 7: University of Manchester, Altrincham Street

9.127 The Proposed Scheme causes a clearly noticeable change to the view. The building appears in the backdrop of the view, beyond the railway viaduct. The scale of the Proposed Scheme and proximity to the viewpoint make it prominent in the view, increasing the sense of enclosure. This alters the composition due to the reduction in visible sky and enclosing the northern edge of the square to a greater degree than the existing built form. However, the Proposed Scheme positively indicates the city context beyond the barrier effect of the viaduct. The brick façade will contrast with the materials of the existing university building bounding the square but represents a high quality and relates more to the historic character which is evident in the railway viaduct.

9.128 The sensitivity of viewpoint 7 is considered to be low, as the view is not particularly important as a viewpoint. The magnitude of change is considered to be medium, as the Proposed Scheme would cause a noticeable change in the view that would have some effect on composition. Therefore, there is likely to be a direct, permanent, long-term, beneficial effect which is considered to be minor.

Secondary Mitigation or Enhancement

9.129 No secondary mitigation or enhancement has been identified.

Residual Effect

9.130 The sensitivity of viewpoint 7 is considered to be low. The magnitude of change is considered to be medium. Therefore, there is likely to be a direct, permanent, long-term, beneficial effect which is considered to be minor.

Significance

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

Viewpoint 8: Granby Row, Samuel Ogden Street

9.132 The Proposed Scheme is not considered to materially alter the overall composition or appreciation of a channelled view with a strong building line along Granby Row. The distance from the viewpoint minimises the scale of effect. The increased punctuation of the street is considered to be appropriate for this type of view. A small glimpse remains between the proposed building and the left hand side of the street, which maintains some visibility beyond the proposed building to Piccadilly Station. The designated heritage assets continue to contribute to the composition of the view and are not directly altered as a result of the Proposed Scheme.

9.133 The sensitivity of viewpoint 8 is considered to be medium. The magnitude of change is considered to be small. Therefore, there is likely to be a direct, permanent, long-term, beneficial effect which is considered to be minor.

Secondary Mitigation or Enhancement

9.134 No secondary mitigation or enhancement has been identified.

Residual Effect

9.135 The sensitivity of viewpoint 8 is considered to be medium, as the view is moderately important to the quality of the journey along the street. The magnitude of change is considered to be small, as the Proposed Scheme would cause a perceptible change in the view, which would not materially affect the appreciation of the view. Therefore, there is likely to be a direct, permanent, long-term, beneficial effect which is considered to be minor.

Significance

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

Limitations and Assumptions

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

9.138 The assessment will rely on available data, and best endeavours will be made to ensure that the data are accurate and up to date. It is assumed that OS mapping information,

topographic and 3D data and Historic England heritage mapping information are all up to date.

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

9.140 Due to restricted accessibility to Piccadilly Station, views 1, 2 and 3 have not been surveyed and are therefore not verified views. However, the photomontages were produced in accordance with LVIA guidance and retain a high degree of accuracy.

Summary

9.141 **Table 9.13** provides a summary of the effects, receptors, residual effects and conclusions of significance considered within the Chapter.

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

Table 9.13: Summary of Residual and Significant Effects

Effect Operational Stage	Receptor	Residual Effect	Is the Effect Significant?
Changes to townscape character within the site context	The Site and wider townscape character area of North Campus Townscape Character Area	Moderate beneficial	YES
Changes to Topography and Site Levels	Topography and Site Levels	Negligible beneficial	NO
Change to the character, composition and amenity of views	Viewpoint 1: Piccadilly Station main entrance	Moderate beneficial	YES
	Viewpoint 2: Piccadilly Station taxi rank, Fairfield Street	Moderate beneficial	YES
	Viewpoint 3: Piccadilly Station platform 13 and 14.	Moderate beneficial	YES

Effect	Receptor	Residual Effect	Is the Effect Significant?
	Viewpoint 4: Sculptural wall, London Road.	Moderate beneficial	YES
	Viewpoint 5: View west along Granby Row.	Moderate beneficial	YES
	Viewpoint 6: Vimto Park.	Minor beneficial	NO
	Viewpoint 7: University of Manchester, Altrincham Street.	Minor beneficial	NO
	Viewpoint 8: Granby Row / Samuel Ogden Street.	Minor beneficial	NO

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10. Daylight, Sunlight, Overshadowing & Solar Glare

Introduction

10.1 This Chapter reports the outcome of the assessment of likely significant environmental effects arising from the Proposed Scheme in relation to daylight, sunlight, overshadowing and solar glare.

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

10.3 In line with **Chapter 2: Approach to EIA**, the assessment reports on the likely significant environmental effects, the further mitigation measures required to prevent, reduce or offset any significant adverse effects, or further enhance beneficial effects. The conclusions are provided both in terms of the residual effects and whether these are considered significant. The assessment of effects takes into consideration both primary and tertiary mitigation (see **Chapter 2: Approach to EIA** for further details) and is informed by the EIA Scoping process (**Appendix 2.1 - 2.2**) and iterative scoping process where applicable.

10.4 This Chapter, and its associated **Appendices 10.1 to 10.4**, is intended to be read as part of the wider ES with particular reference to the introductory Chapters of this ES (**Chapters 1 – 5**).

10.5 In addition, this Chapter should be read in conjunction with **Chapter 13: Assessment of Cumulative Effects**.

Summary of Consultation

10.6 There are no specialists within Manchester City Council or other statutory consultees relevant to the area of daylight, sunlight, overshadowing and solar glare. As such, no consultation has been undertaken.

Scope of the Assessment

10.7 An EIA Scoping Report was submitted to MCC on 17th February 2023, as presented as **Appendix 2.1**. The EIA Scoping Opinion was received on 29th March 2023 (**Appendix 2.2**). This section provides confirmation on the scope of the assessment presented within this Chapter following submission of the EIA Scoping Report.

Effects Not Considered to be Significant

10.8 The following effects were not considered significant as part of the EIA Scoping Report (**Appendix 2.1**) and are not considered further in this Chapter (with detailed justification provided within the EIA Scoping Report):

- Reduced daylight and sunlight amenity during construction [surrounding residential receptors]; and
- Solar glare affecting residential amenity [surrounding residential receptors].

Effects Considered Likely to be Significant

10.9 The following effects (**Table 10.1**) were considered likely to be significant and are reported within this Chapter:

Table 10.1: Effects Considered Likely to be Significant

Likely Significant Effect	Receptors	Applicable Development Stage
Reduced daylight and sunlight amenity	Lambert House Fairfield House Warehouse One Stonebridge House London Road Fire Station[a]	Operation
Reduced sunlight amenity	Vimto Park	Operation
Solar Glare impacting visibility of road users at sensitive locations such as intersections and junctions	Selected viewpoints within 500m of the Site where the Proposed Scheme is visible, including: Hulme Street Charles Street Chorlton Street Minshull Street London Road Fairfield Street Travis Street Downing Street Wadeson Road	Operation
Solar Glare impacting visibility of train drivers	Selected viewpoints within 500m of the Site where the Proposed Scheme is visible, including: Eastbound trains towards Piccadilly Westbound trains towards Oxford Road	Operation

Assessment Methodology

Legislative Framework, Policy and Guidance

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

[a] The assessment of daylight and sunlight has been expanded to include London Road Fire Station as a sensitive receptor. The proposed use as part hotel means it is subject to assessment under the BRE guidelines.

10.11 There is no legislation that governs daylight and sunlight, with the criteria for assessment relating to daylight and sunlight covered by national and local policy in addition to BRE guidance as set out below.

10.12 The following policy has informed the assessment of effects within this Chapter:

- Revised National Planning Policy Framework 2021[1];
- National Planning Policy Guidance 2021[2].
- Manchester Core Strategy (2012 – 2027)[3]; and
- Guide to Development in Manchester Supplementary Planning Document and Planning Guidance (Adopted April 2007)[4].

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

- BRE 'Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice' (2022)[5]; and
- CIE 146:2002 & CIE 147:2002 Collection on glare[6].

Defining the Study Area

10.14 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."

10.15 There is no specific guidance relating to the extent of a study area. The scope of residential properties that have been assessed has been determined through professional judgement, considering their orientation and proximity to the Site.

10.16 The study area has been expanded to include London Road Fire Station as a sensitive receptor. The proposed use as part hotel means it is subject to assessment under the BRE guidelines. The sensitive receptors are identified in **Appendix 10.1**.

10.17 For Solar Glare, sensitive receptors are considered road users at junctions and train (or tram) drivers on tracks within the surrounding area. Viewpoints at road junctions and on train (or tram) lines within 500 metres of the Site where the Proposed Scheme is visible within the driver's field of view have been identified and assessed. At distances greater than 500m from the Site, instances of solar glare would be unlikely to occur.

10.18 At each of the identified sensitive locations, viewpoints are located at the minimum stopping distance for road users and at the driver's eye level with the focal point being a relevant traffic element, such as signals or incoming traffic. For train drivers, viewpoints are assessed where signals are visible or at representative intervals where the Proposed Scheme would be visible close to the direct line of sight for a substantial stretch of track.

10.19 The identified road junctions and viewpoints assessed are considered most sensitive in relation to solar glare due to a combination of the nature of the use and proximity to the

Site, and therefore consideration has been given to several viewpoints at traffic junctions and train lines from which the Proposed Scheme will be visible. The road user viewpoints assessed are indicated in **Appendix 10.4: Figure 13** and train driver viewpoints in **Appendix 10.4: Figure 14.**

Background Studies to Inform the ES / Establishing the Baseline

10.20 **Table 10.2** summarises all analysis undertaken to inform the assessment presented within this Chapter.

Table 10.2: Background Technical Analysis

Analysis	Overview	Date of Completion
Daylight and sunlight baseline assessment	An assessment of the baseline daylight and sunlight levels to the surrounding sensitive receptors	March 2023

Assessment Process

Methodology for Determining Operational Effects

10.21 The following approaches are undertaken to assess the effect on the sensitive receptors of surrounding properties when the Proposed Scheme is completed and operational:

- Daylight
  - Vertical Sky Component (VSC); and
  - No Sky Line (NSL) Method.
- Sunlight
  - Annual Probable Sunlight Hours (APSH).
- Overshadowing
  - Sun Hours on Ground (SHOG).
- Solar Glare
  - Times of day and year potential reflections occur and their location within a driver's field of view.

Outline Approach for Daylight, Sunlight and Overshadowing Assessments

10.22 The technical analyses carried out to inform the daylight and sunlight assessment have been undertaken by creating a digital three-dimensional (3D) model of the existing Site and Proposed Scheme, based on measured survey data.

10.23 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.

10.24 In accordance with the BRE Guidance, only those surrounding properties which have windows facing towards the Site were included in the assessment. If a nearby property has no windows facing the Site, these properties would not be affected by the Proposed Scheme in terms of light.

Daylight

10.25 Vertical Sky Component (VSC) Method

10.26 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".

10.27 This ratio is the percentage of the total unobstructed view that is available, once obstructions (e.g. the Proposed Scheme), are placed in front of the point of view.

10.28 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'.

10.29 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.

10.30 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

10.31 The BRE Guidelines provide that where room layouts are known, the effect on the daylight distribution can be calculated by plotting the NSL. In terms of the surrounding receptors, it has not been possible to obtain room layouts for all of the properties and therefore layouts have been assumed where information is not available.

10.32 The NSL method is a measure of the distribution of daylight at the 'working plane' within a room. The 'working plane' means a horizontal 'desktop' plane 0.85m in height for residential properties. The NSL divides those areas of the working plane which can receive direct sky light from those which cannot. If a significant area of the working plane lies beyond the NSL (i.e. it receives no direct sky light), then the distribution of daylight in the room will be poor and supplementary electric lighting may be required.

10.33 The potential effects of daylighting distribution in an existing building can be found by plotting the NSL in each of the main rooms. For houses, this will include living rooms, dining rooms and kitchens. Bedrooms should also be analysed, although the BRE state that they are less important. 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.

10.34 In regard to deep rooms which are lit by windows on one side, the BRE Guidelines state (para.2.2.10):

"If an existing building contains rooms lit from one side only and greater than 5m deep, then a greater movement of the no sky line may be unavoidable."

Sunlight

Annual Probable Sunlight Hours

10.35 Sunlight is measured using a sun indicator which contains 100 spots, each representing 1% of APSH. Therefore, where no obstruction exists the total annual probable sunlight hours would amount to 1486, and each spot equates to 14.86 hours of the total annual sunlight hours.

10.36 The number of spots is calculated for the Baseline and Proposed Scheme scenarios during the year and also during the winter period, and a comparison made between the two. This provides a percentage of APSH for each of the time periods for each window assessed.

10.37 The BRE Guidelines note that:

"In housing, the main requirement for sunlight is in living rooms, where it is valued at any time of day, but especially in the afternoon."

"all main living rooms of dwellings…should be checked if they have a window facing within 90° of due south. Kitchens and bedrooms are less important, although care should be taken not to block too much sun".

"If the main living room to a dwelling has a main window facing within 90° of due north, but a secondary window facing within 90° of due south, sunlight to the secondary window should be checked."

"…a south facing window will, in general, receive most sunlight, while a north facing one will receive it only on a handful of occasions. East and west facing windows will receive sunlight only at certain times of day".

10.38 In regards 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%.

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

Overshadowing

Sun Hours on Ground

10.40 The method for assessing hours in sun is the 'sun-on-ground indicator'. The assessment applies to both to new and existing gardens/amenity areas, which are affected by new developments. The BRE Guidelines suggest that the Spring Equinox (21 March) is a suitable date for the assessment. Using specialist software, the path of the sun is tracked to determine where the sun would reach the ground and where it would not.

10.41 The BRE Guidelines recommend that at least half of a garden or amenity area should receive at least 2 hours of sunlight on March 21 or the area which receives 2 hours of direct sunlight should not be reduced to less than 0.8 times its former value (i.e. there should be no more than a 20% reduction).

10.42 The BRE Guide does also refer to transient overshadowing, where it states:

"It is often illustrative to plot a shadow plan showing the location of shadows at different times of the day and year."

10.43 There are no numerical targets associated with the shadow paths upon which significance criteria can be applied. An analysis of the shadows cast by the Proposed Scheme, using Scenario Two have been undertaken, as this represents a worst-case scenario. The plots illustrate the baseline and proposed shadowing during daylight hours on 21 March.

Summary of Criteria for Daylight and Sunlight

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

Table 10.3: Summary of Daylight and Sunlight Assessment Criteria

Method	BRE Criteria
VSC	A window may be adversely affected if its VSC measured at the centre of the window is less than 27% and less than 0.8 times is former value.
NSL	A room may be adversely affected if the daylight distribution (NSL) is reduced beyond 0.8 times its existing area.
APSH	A window may be adversely affected if a point at the centre of the window received for the whole year, less than 25% of the APSH including at least 5% of the APSH during the winter months (21 September to 21 March) and less than 0.8 times its former sunlight hours during either period, and for existing neighbouring buildings, if there is a reduction in total APSH which is greater than 4%.
SHOG	An amenity area may be adversely affected if less than 50% of its area receives less than 2 hours of direct sunlight on 21 March and less than 0.8 times its former value.

Solar Glare

10.45 Solar reflections off a building are particularly important at road junctions including pedestrian crossings and traffic signals, and train tracks, as glare can cause temporary blinding of drivers and pedestrians. Typically, those elements of a Proposed Scheme considered reflective are either glazed elements or specular metal cladding. An assessment has been conducted to determine the time of day, period of year, duration and positioning of potential solar glare according to the driver's line of sight.

10.46 The BRE Guidelines include the following statement in regard to the potential for reflected solar glare from a new development:

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

10.47 The methodology for solar glare is not aimed at addressing the intensity of an instance of reflected solar glare, but rather its occurrence, duration throughout the year and the location of this occurrence in respect of an individual's line of sight. It is also to be noted that the hours presented reflect solar time and therefore do not take Daylight Saving Hours into account.

10.48 At 3° (the fovea centralis), the potential for the reflected glare to cause a hazard is high and mitigation would be required. Between 3° and 30°, there is the potential that there could be an issue and mitigation may be necessary.

10.49 As stated in CIE 146:2002, occurrences at angles beyond 30° would be of little significance in most situations, but may be relevant in exceptional circumstances. When seated in a driving seat of a typical car, for example, the limits of the windscreen would generally obstruct the driver's view at angles beyond 30° from the line of sight. Therefore, the risk of reflective solar glare causing a hazard is reduced.

10.50 Solar Glare is not a comparative assessment; the fact it may occur in the baseline does not necessarily justify its occurrence as a result of a Proposed Scheme. Therefore, the assessment considers the effect of the Proposed Scheme in absolute terms.

10.51 It must be noted that the solar glare assessment undertaken assumes a worst-case scenario whereby the sun will shine every day during daylight hours which is not the case within the UK. Therefore, the solar glare undertaken represents a worst-case scenario.

Reporting of the Environmental Effect and Significance Criteria

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

Determining Sensitivity of Receptor

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

10.54 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 PPG.

10.55 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.

10.56 Furthermore, the use of the surrounding residential receptors is a material consideration in determining sensitivity, and student accommodation and hotels are typically viewed as having a lower sensitivity to changes in daylight.

10.57 As such, the following buildings are deemed to have a low sensitivity to change:

- London Road Fire Station;
- Fairfield House;

- Lambert House;
- Stonebridge House; and
- Warehouse One.

10.58 Vimto Park is considered to have a medium sensitivity to changes in sunlight.

10.59 All road user and train driver solar glare receptors are considered high sensitivity.

Determining the Magnitude of Change

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

10.61 For daylight and sunlight, the BRE Guidelines outline the approach within the accompanying appendix, in terms of assigning criteria to assess the effects. Where the BRE guidance refers to the magnitude of impacts as major, moderate, minor and negligible below, these should be read as large, medium, small and negligible respectively:

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

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

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

Only a small number of windows are affected;

The loss of light is only marginally outside the guidelines;

An affected room has other sources of skylight or sunlight; and

The affected building only has a low level of requirement for skylight or sunlight."

10.62 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."

10.63 The BRE Guidelines do not provide any guidance on what constitutes a moderate adverse impact.

10.64 Therefore, best practice guidance and professional judgment will be used to determine any impacts based on the guidance set out in Appendix I of the BRE Guidelines. Potential effects will be identified as beneficial, adverse or negligible, and their magnitude of effects will be set out as Minor, Moderate and Major (noting as above that these equate to small, medium and large).

10.65 The initial numerical criteria for determining the magnitude of change is based on percentage alterations, as follows:

Table 10.4: Summary of Daylight and Sunlight Assessment Criteria

Magnitude of Change	Percentage Alteration from Baseline
Negligible	0-20%
Small	20-29.9%
Medium	30-39.9%
Large	40%+

10.66 Solar Glare is not a comparative assessment; the fact it may occur in the baseline does not necessarily justify its occurrence as a result of a Proposed Scheme. Therefore, the assessment has considered the effect of the Proposed Scheme in absolute terms and not against a baseline condition and does not include a magnitude of change.

Determining the Level of Effect

Daylight, Sunlight and Overshadowing

10.67 The level of effect has been informed by the magnitude of change due to the Proposed Scheme and the evaluation of the sensitivity of the affected receptor. The level of effect has been determined using professional judgement and **Table 10.5** has been a tool which has assisted with this process.

10.68 Whilst **Table 10.5** provides ranges, the level of effect is confirmed as a single level and not a range, informed by professional judgement. For each effect, it has been concluded whether the effect is '*beneficial*' or '*adverse*'.

Table 10.5: Matrix to Support Determining the Level of Effect

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

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

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

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

Solar Glare

10.71 There are no quantitative criteria within BRE Guidelines (2022) or elsewhere regarding acceptable levels of solar glare.

10.72 All viewpoints assessed for solar glare are considered to be high sensitivity.

10.73 Professional judgement has, therefore, been applied to assign the significance of solar glare arising from the Proposed Scheme and to determine the criteria for assessing the scale and nature of solar glare effects.

10.74 Multiple viewpoints are chosen for each of the traffic lanes or signals affected from a location. If, for example, one location has multiple lanes or traffic signals, multiple viewpoints will be assessed from this single location to ensure that all effects are fully understood.

10.75 Whilst multiple viewpoints may be identified, professional judgement has been used to determine the effect at the location, rather than the individual perspectives at a signal traffic junction. Factors that could influence the nature, scale and resultant significance of effect may include:

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

10.76 The factors in **Table 10.6** have been used to ascertain the possible scale for each view and the factors listed above will then be taken into consideration to determine the overall level of effect for the designated viewpoint.

Table 10.6: Solar Glare Level of Effect

Level of Effect	Description
Negligible	No reflections are visible or if visible all occur at angles greater than 30° from the driver's line of sight and so, as stated by the CIE, will be of "little significance".
Minor	Solar reflections are visible within 30° to 10° or between 10° to 5° of the driver's line of sight for a short period of time.
Moderate	Solar reflections are visible within 10° and 5° of the driver's line of sight occurring for a long period of time.
Major	Solar reflections are visible within 5° of a driver's line of sight.

Determining Significance

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

10.78 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.

10.79 When assigning significance criteria for sun hours on ground effects, consideration has been given to the nature of the adjoining amenity space, as well as the percentage alterations, absolute changes, sensitivity of the receptor, and any other relevant factors.

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

10.81 For solar glare, effects classified as Moderate or Major in scale are typically considered to be 'significant'. Effects classified as Minor of Negligible in scale are typically considered to be 'not significant'.

Baseline Conditions

10.82 The full Baseline Daylight and Sunlight results can be found in **Appendix 10.2** and are summarised in **Table 10.7** below.

10.83 A total of 491 windows facing the Site serving 302 rooms within five buildings were assessed for VSC and NSL for daylight and 53 rooms were assessed for APSH for sunlight within three buildings.

10.84 Out of the 491 windows assessed for daylight, 32 (7%) meet the BRE guidelines for VSC. For NSL, 81 (27%) of the 302 rooms assessed meet the BRE criteria. For sunlight, 19 (36%) of the 53 rooms assessed meet the BRE criteria for both Winter and Annual APSH.

10.85 Overall, this baseline scenario is considered a moderate level of compliance owing to the city centre context of the Site, underdeveloped nature of the Site and height and density in the immediate locality.

Table 10.7: Baseline Daylight and Sunlight results to surrounding sensitive receptors

Address	Total No. Windows That Meet VSC Criteria		Total No. Windows That Meet NSL Criteria		Total No. Windows That Meet APSH Criteria	
	Pass	**Total**	**Pass**	**Total**	**Pass**	**Total**
London Road Fire Station	17	21	10	11	-	-
Fairfield House	100	185	73	112	30	30
Lambert House	101	160	128	137	7	7

Address	Total No. Windows That Meet VSC Criteria		Total No. Windows That Meet NSL Criteria		Total No. Windows That Meet APSH Criteria	
Stonebridge House	2	75	22	26	-	-
Warehouse One	5	50	7	16	8	16
Total	**225**	**491**	**302**	**240**	**45**	**53**

10.86 In the baseline scenario, Vimto Gardens receives direct sunlight to 95.79% of its area.

10.87 Solar glare assessments are not comparative and are therefore considered in absolute terms within the Proposed Scheme scenario. The existing Site is cleared; therefore no reflections would occur from existing structures within the Site.

Future Baseline

10.88 If the Proposed Scheme was not constructed the baseline daylight and sunlight levels would remain the same.

Primary and Tertiary Mitigation

Operational Stage

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

- The height, scale and massing of the Proposed Scheme has been considered through an iterative process. The building heights set out in **Chapter 4: Development Specification** have been designed to correspond with the emerging height and density in the locality and that of the extant consent on the site. As such, in context to the dense, urban nature of the site, consideration has been given to limiting the effects on daylight, sunlight and overshadowing to the surrounding sensitive receptors.

Assessment of Effects, Secondary Mitigation and Residual Effects

Operational Stage

Reduced daylight and sunlight amenity

Daylight

10.90 The full Proposed Scheme daylight results can be found within **Appendix 10.2** and are summarised in **Tables 10.8** and **10.9** below.

10.91 A total of 491 windows serving 302 rooms were assessed for daylight within five buildings considered to be sensitive receptors (see **Appendix 10.1**).

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

Table 10.8: Summary of VSC Daylight Results

		VSC			
		Below BRE Guidelines			
Address	Total No. of Windows	No. of Windows That Meet BRE	Minor Adverse	Moderate Adverse	Major Adverse
London Road Fire Station	21	11	10	0	0
Fairfield House	185	88	20	12	65
Lambert House	160	0	6	15	139
Stonebridge House	75	65	9	1	0
Warehouse One	50	13	4	7	26
Total	**491**	**177**	**49**	**35**	**230**

Table 10.9: Summary of NSL Daylight Results

		NSL			
		Below BRE Guidelines			
Address	Total No. of Rooms	No. of Rooms That Meet BRE	Minor Adverse	Moderate Adverse	Major Adverse
London Road Fire Station	11	11	0	0	0
Fairfield House	112	82	9	3	18
Lambert House	137	6	9	7	115
Stonebridge House	26	26	0	0	0
Warehouse One	16	8	2	1	5
Total	**302**	**133**	**20**	**11**	**138**

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

London Road Fire Station

10.94 A total of 21 windows serving 11 rooms were assessed for daylight within this property.

10.95 For VSC, 11 (52%) of the 21 windows assessed will meet the BRE criteria. 10 windows will experience a reduction of between 20-30%.

10.96 For NSL, 11 (100%) of the 11 rooms assessed will meet the BRE criteria.

10.97 All of the windows that do not meet the target criteria for VSC daylight are reduced by between 20-30% which is a minor impact. Furthermore, the use as a hotel is less sensitive than traditional residential, and all of the affected windows serve bedrooms, which the BRE consider as having a lesser requirement for daylight.

10.98 The sensitivity of London Road Fire Station is considered to be low. The magnitude of change is considered to be low. Therefore, there is likely to be a direct, permanent, long-term adverse effect which is considered to be negligible.

Secondary Mitigation or Enhancement

10.99 No secondary mitigation or enhancement is required.

Residual Effect

10.100 In the absence of secondary mitigation, the residual effects for insert the receptor is that same as that reported in the pre-mitigation scenario.

Significance

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

Fairfield House

10.102 A total of 185 windows serving 112 rooms were assessed for daylight within this property.

10.103 For VSC, 88 (48%) of the 185 windows assessed will meet the BRE criteria. 20 windows will experience a reduction of between 20-30%, 12 windows will experience a reduction of between 30-40% and the remaining 65 windows will experience a reduction in excess of 40%.

10.104 For NSL, 82 (73%) of the 112 rooms assessed will meet the BRE criteria. Nine rooms will experience a reduction of between 20-30%, three rooms will experience a reduction of between 30-40% and the remaining 18 rooms will experience a reduction in excess of 40%.

10.105 The use as student accommodation is a key consideration to understanding the results in context. Student occupants are typically more transient than traditional residential occupiers as their university terms generally run from September to June, so they will not be in occupation for the entire year. Furthermore, the provision of study and social spaces, a gym and other amenities also means they have the option to use other habitable space within the building. Bedrooms are also designed with a desk adjacent to the main window, which means they will consistently receive adequate daylight to this area.

10.106 Given the use, 54 windows that do not meet the VSC daylight criteria serve bedrooms, which are considered by the BRE as having a lesser requirement for daylight. This means that just 46 windows to communal kitchen areas do not meet the VSC target, which is a small proportion (22%) of windows which were assessed, and an even smaller proportion in context to the building as a whole. Similarly, 24 rooms which do not meet the NSL daylight criteria are bedrooms. This means that just six communal kitchens to not, which represents 5% of rooms assessed.

10.107 The majority of impacts are therefore to bedrooms, which have a lesser requirement for daylight, especially given the provision of alternative habitable space within the building.

10.108 The sensitivity of Fairfield House is considered to be low. The magnitude of change is considered to be medium. Therefore, there is likely to be a direct, permanent, long-term adverse effect which is considered to be minor.

Secondary Mitigation or Enhancement

10.109 No secondary mitigation or enhancement is required.

Residual Effect

10.110 In the absence of secondary mitigation the residual effects for insert the receptor is that same as that reported in the pre-mitigation scenario.

Significance

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

Lambert House

10.112 A total of 160 windows serving 137 rooms were assessed for daylight within this property.

10.113 For VSC, 0 (0%) of the 160 windows assessed will meet the BRE criteria. Six windows will experience an alteration of between 20-30%, 15 windows will experience a reduction of between 30-40% and the remaining 139 windows will experience a reduction in excess of 40%.

10.114 For NSL, 6 (4%) of the 137 rooms assessed will meet the BRE criteria. Nine rooms will experience a reduction of between 20-30%, seven rooms will experience a reduction of between 30-40% and the remaining 115 rooms will experience a reduction in excess of 40%.

10.115 Similarly to Fairfield House, the use as student accommodation is a key consideration to understanding the results in context. Student occupants are typically more transient than traditional residential occupiers as their university terms generally run from September to June, so they will not be in occupation for the entire year. Furthermore, the provision of study and social spaces, a gym and other amenities also means they have the option to use other habitable space within the building. Bedrooms are also designed with a desk adjacent to the main window, which means they will consistently receive adequate daylight to this area.

10.116 Given the use, 132 windows that do not meet the VSC daylight criteria serve bedrooms, which are considered by the BRE as having a lesser requirement for daylight. This means that just 28 windows to communal kitchen areas do not meet the VSC target, which is a small proportion (17%) of windows which were assessed, and an even smaller proportion in context to the building as a whole.

10.117 Similarly, 147 rooms which do not meet the NSL daylight criteria are bedrooms. This means that just 10 communal kitchens to not, which represents 6% of rooms assessed.

10.118 The majority of impacts are therefore to bedrooms, which have a lesser requirement for daylight, especially given the provision of alternative habitable space within the building.

10.119 The sensitivity of Lambert House is considered to be low. The magnitude of change is considered to be medium. Therefore, there is likely to be a direct, permanent, long-term, adverse effect which is considered to be minor.

Secondary Mitigation or Enhancement

10.120 No secondary mitigation or enhancement is required.

Residual Effect

10.121 In the absence of secondary mitigation the residual effects for insert the receptor is that same as that reported in the pre-mitigation scenario.

Significance

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

Stonebridge House

10.123 A total of 75 windows serving 26 rooms were assessed for daylight within this property.

10.124 For VSC, 65 (87%) of the 75 windows assessed will meet the BRE criteria. Nine windows will experience an alteration of between 20-30% and the remaining window will experience a reduction of between 30-40%.

10.125 For NSL, 26 (100%) of the 26 rooms assessed will meet the BRE criteria.

10.126 All but one of the windows which do not meet the target criteria for VSC daylight are reduced by 20-30%, which is a minor impact. Given the nature of the impacts and context of the site in a dense, urban location, the effects are considered minor.

10.127 The sensitivity of Stonebridge House is considered to be low. The magnitude of change is considered to be low. Therefore, there is likely to be a direct, permanent, long-term, adverse effect which is considered to be negligible.

Secondary Mitigation or Enhancement

10.128 No secondary mitigation or enhancement is required.

Residual Effect

10.129 In the absence of secondary mitigation the residual effects for insert the receptor is that same as that reported in the pre-mitigation scenario.

Significance

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

Warehouse One

10.131 A total of 50 windows serving 16 rooms were assessed for daylight within this property.

10.132 For VSC, 13 (26%) of the 50 windows assessed will meet the BRE criteria. Four windows will experience a reduction of between 20-30%, seven windows will experience a reduction of between 30-40% and the remaining 26 windows will experience a reduction in excess of 40%.

10.133 For NSL, eight (50%) of the 16 rooms assessed will meet the BRE criteria. Two rooms will experience a reduction of between 20-30%, one room will experience a reduction of between 30-40% and the remaining five rooms will experience a reduction in excess of 40%.

10.134 Similarly to the properties discussed above, the use as student accommodation is a material factor in understanding the results in context. Warehouse One is provided with several different amenity spaces which provide alternative habitable areas within the building for residents.

10.135 Additionally, baseline daylight levels to Warehouse One are low given its design and its proximity to the buildings which are immediately adjacent. Only 10% of windows and 43% of rooms meet the VSC and NSL daylight criteria respectively in the baseline scenario, and this creates a burden on the development site to maintain already low existing levels which leads to deviations from the target criteria.

10.136 The sensitivity of Warehouse One is considered to be low. The magnitude of change is considered to be medium. Therefore, there is likely to be a direct, permanent, long-term, adverse effect which is considered to be minor.

Secondary Mitigation or Enhancement

10.137 No secondary mitigation or enhancement is required.

Residual Effect

10.138 In the absence of secondary mitigation the residual effects for insert the receptor is that same as that reported in the pre-mitigation scenario.

Significance

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

Sunlight

10.140 The Full Proposed Scheme Sunlight results can be found within **Appendix 10.2** and are summarised in **Tables 10.10** and **10.11** below.

10.141 A total of 53 living rooms were assessed for sunlight within three buildings considered sensitive receptors.

10.142 Windows that are not within 90 degrees of due south, or do not serve living rooms, were excluded from the assessment. As such, no assessment of London Road Fire Station or Stonebridge House has been undertaken.

10.143 The buildings are discussed in more detail below.

Table 10.10: 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
London Road Fire Station	-	-	-	-	-
Fairfield House	30	25	0	1	4
Lambert House	7	2	0	0	5
Stonebridge House	-	-	-	-	-
Warehouse One	16	12	2	0	2
Total	**53**	**39**	**2**	**1**	**11**

Table 10.11: Summary of Winter Sunlight Results

Address	Winter PSH		Below threshold for Total APSH		
	Total No. of Rooms	No. of Rooms That Meet BRE	Minor Adverse	Moderate Adverse	Major Adverse
London Road Fire Station	-	-	-	-	-
Fairfield House	30	12	0	0	18
Lambert House	7	3	0	0	4
Stonebridge House	-	-	-	-	-
Warehouse One	16	9	0	0	7
Total	**53**	**24**	**0**	**0**	**29**

Fairfield House

10.144 A total of 30 rooms were assessed for daylight within this property.

10.145 12 (40%) of the 30 rooms assessed will meet the BRE criteria for both Winter and Annual PSH.

10.146 For Annual PSH, one room will experience a reduction of between 30-40% and the remaining four rooms will experience a reduction in excess of 40%. For Winter PSH, 18 rooms will experience a reduction in excess of 40%.

10.147 The sensitivity to changes in sunlight is reduced given the use as student accommodation and the building's location in a dense, urban environment. As such, despite deviations from the BRE target criteria, the impacts are considered minor overall due to the lower sensitivity of the receptor.

10.148 The sensitivity of Fairfield House is considered to be low. The magnitude of change is considered to be medium. Therefore, there is likely to be a direct, permanent, long-term, adverse effect which is considered to be minor.

Secondary Mitigation or Enhancement

10.149 No secondary mitigation or enhancement is required.

Residual Effect

10.150 In the absence of secondary mitigation the residual effects for insert the receptor is that same as that reported in the pre-mitigation scenario.

Significance

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

Lambert House

10.152 A total of seven rooms were assessed for daylight within this property.

10.153 Two (29%) of the seven rooms assessed will meet the BRE criteria for both Winter and Annual PSH.

10.154 For Annual PSH, five rooms will experience a reduction in excess of 40%. For Winter PSH, four rooms will experience a reduction in excess of 40%.

10.155 The sensitivity to changes in sunlight is reduced given the use as student accommodation and the building's location in a dense, urban environment. As such, despite deviations from the BRE target criteria, the impacts are considered minor overall due to the lower sensitivity of the receptor.

10.156 The sensitivity of Lambert House is considered to be low. The magnitude of change is considered to be medium. Therefore, there is likely to be a direct, permanent, long-term, adverse effect which is considered to be minor.

Secondary Mitigation or Enhancement

10.157 No secondary mitigation or enhancement is required.

Residual Effect

10.158 In the absence of secondary mitigation the residual effects for insert the receptor is that same as that reported in the pre-mitigation scenario.

Significance

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

Warehouse One

10.160 A total of 16 rooms were assessed for daylight within this property.

10.161 Seven (44%) of the 16 rooms assessed will meet the BRE criteria for both Winter and Annual PSH.

10.162 For Annual PSH, one room will experience a reduction of between 20-40% and the remaining two rooms will experience a reduction in excess of 40%. For Winter PSH, seven rooms will experience a reduction in excess of 40%.

10.163 The sensitivity to changes in sunlight is reduced given the use as student accommodation and the building's location in a dense, urban environment. As such, despite deviations from the BRE target criteria, the impacts are considered minor overall due to the lower sensitivity of the receptor.

10.164 The sensitivity of Stonebridge House is considered to be low. The magnitude of change is considered to be medium. Therefore, there is likely to be a direct, permanent, long-term, adverse effect which is considered to be minor.

Secondary Mitigation or Enhancement

10.165 No secondary mitigation or enhancement is required.

Residual Effect

10.166 In the absence of secondary mitigation the residual effects for insert the receptor is that same as that reported in the pre-mitigation scenario.

Significance

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

Reduced sunlight amenity

10.168 Full results and drawings for the overshadowing analysis are included at **Appendix 10.3**, and the assessment is discussed in more detail below.

Vimto Park

10.169 With the Proposed Scheme in place, Vimto Park will continue to receive direct sunlight to 95.79% of its area.

10.170 The amenity areas will continue to receive two hours of direct sunlight on 21 March to in excess of 50% of their area with the Proposed Scheme in place and will therefore meet the BRE criteria for Sun Hours on Ground.

10.171 The sensitivity of Vimto Park is considered to be medium. The magnitude of change is considered to be negligible. Therefore, the effect on this receptor is considered to be negligible.

Secondary Mitigation or Enhancement

10.172 No secondary mitigation or enhancement is required.

Residual Effect

10.173 In the absence of secondary mitigation the residual effects for insert the receptor is that same as that reported in the pre-mitigation scenario.

Significance

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

Solar glare impacting visibility of road users at sensitive locations such as intersections and junctions

10.175 The full solar glare assessment is provided in **Appendix 10.4**.

10.176 The assessment has been undertaken from nearby road and rail locations which are considered sensitive in terms of solar glare. These include traffic junctions, pedestrian crossings and signal locations.

10.177 Following a review of an extended area of investigation (approximately 500m radius from the Proposed Scheme), a total of 19 road locations and three train lines were assessed. The assessment considers the potential occurrence of solar reflections from the Proposed Scheme owing to its size and areas of glazing on the façade at these locations. The duration of solar reflections as well as their proximity to a road driver's line of sight have been considered within the discussion below.

10.178 The assessment has been undertaken in a worst-case scenario considering there is no cloud cover, so the sun is shining for all days of the year for the full duration of daylight hours.

10.179 Of the total 19 road locations, a total of five locations do not have any reflections visible within 30° of a road users' line of sight. As such, these five locations are likely to experience negligible effects. These five road locations are listed below and are not discussed further within the Chapter:

- Back Acton Street, junction with Granby Row;
- Minshull Street, junction with Fairfield Street;
- Downing Street 1, junction with Grosvenor Street;
- Fairfield Street 2, junction with Travis Street; and
- Travis Street, junction with Baring Street.

10.180 Furthermore, a total of nine road locations see the potential for solar glare within 30° of a road users' line of sight but great than 10°. These nine are likely to experience direct, permanent, long-term, adverse effects which are considered to be minor. These road locations are listed below and are not discussed further within the Chapter:

- Charles Street 1, junction with Sackville Street;
- Charles Street 2, junction with Princess Street;

- South Pump Street, junction with Granby Row;
- Chorlton Street, junction with Fairfield Street/Whitworth Street;
- Fairfield Street 1, junction with London Road;
- London Road 1, junction with Fairfield Street;
- London Road 2, pedestrian crossing;
- London Road 3, junction with tram lines; and
- Wadeson Road, junction with Grosvenor Street.

10.181 At the remaining five locations and all three train tracks, reflections occur within 10° of a road user or train drivers' line of sight which require further consideration.

Downing Street 2, pedestrian crossing

10.182 The viewpoint assessed shows the view of drivers in the left lane looking at the right side traffic lights. The predominant lights used by drivers in this lane would be those on the left side and there is a second traffic light on the right side, on the opposite side of the junction primarily for use by stationary vehicles.

10.183 **Table 10.12** provides a summary of the duration of potential reflections that could occur within a 10° drivers field of view, where they would occur within the field of view of drivers, from which element of the Proposed Scheme the reflections could occur and finally, an initial significance of effect is given for each instance of reflection, prior to consideration being given to factors such as those outlined below.

Table 10.12: Summary of Potential Reflections at Downing Street 2

Elevation	Times of the day the reflections occur	Times of the year that reflections occur	Location within 10° of driver's line of sight	Initial Magnitude of Effect*
Block B Southern	11:00 – 12:00 GMT	Mid-November to mid-January	2 windows at 10°	Moderate
Block C Southern	11:00 – 12:00 GMT	Mid-November to mid-January	8 windows between 9° and 10°	Moderate
All other reflections occur outside 10° so are considered Minor Adverse				
**Prior to consideration of any mitigating factors outlined below.*				

10.184 At this junction:

- Alternative traffic lights can be used when reflections occur to respond safely at this junction.

- The reflections occur from a very small area within the view, comprising of only 10 individual windows within the 10° the field of view and reflections are broken up by solid elements of the facade.

- Reflections occur well above a driver's visor cut-off line.

- The reflections occur outside peak travel times.

- The probability of the sun shining at the times of day and year when reflections occur within 10° of a driver's line of sight is 30%.

10.185 The level of effect reported has been determined based on professional judgement, in consideration of the initial magnitude of potential effects and the factors outlined above. Given the dynamic nature of traffic movement, the potential effects as reported would only occur momentarily when looking precisely at the affected traffic lights, 23 metres from the junction.

10.186 The sensitivity of drivers approaching the Downing Street pedestrian crossing is considered to be high. Therefore, there is likely to be a direct, permanent, long-term, adverse effect which is considered to be minor.

Downing Street 3, junction with Mancunian Way on-ramp

10.187 The viewpoint assessed shows the view of drivers in the left lane looking at the left side traffic lights. There is an alternative set of lights on the right side and there is a second traffic light on the right side, on the opposite side of the junction primarily for use by stationary vehicles.

10.188 **Table 10.13** provides a summary of the duration of potential reflections that could occur within a 10° drivers field of view, where they would occur within the field of view of drivers, from which element of the Proposed Scheme the reflections could occur and finally, an initial significance of effect is given for each instance of reflection, prior to consideration being given to factors such as those outlined in below.

Table 10.13: Summary of Potential Reflections at Downing Street 3

Elevation	Times of the day the reflections occur	Times of the year that reflections occur	Location within 10° of driver's line of sight	Initial Magnitude of Effect*
Block B Southern	11:00 – 12:00 GMT	Mid-November to mid-January	4 windows between 9° and 10°	Moderate
All other reflections occur outside 10° so are considered Minor Adverse				
**Prior to consideration of any mitigating factors outlined below.*				

10.189 At this junction:

- Alternative traffic lights can be used when reflections occur to respond safely at this junction.

- The reflections occur from a very small area within the view, comprising of only four individual windows within the 10° the field of view and reflections are broken up by solid elements of the facade.

- Reflections occur well above a driver's visor cut-off line.

- The reflections occur outside peak travel times.

- The probability of the sun shining at the times of day and year when reflections occur within 10° of a driver's line of sight is 30%.

10.190 The level of effect reported has been determined based on professional judgement, in consideration of the initial magnitude of potential effects and the factors outlined above. Given the dynamic nature of traffic movement, the potential effects as reported would only occur momentarily when looking precisely at the affected traffic lights, 23 metres from the junction.

10.191 The sensitivity of drivers approaching the Downing Street junction with Mancunian Way is considered to be high. Therefore, there is likely to be a direct, permanent, long-term, adverse effect which is considered to be minor.

Granby Row, junction with Sackville Street

10.192 There is just one lane of traffic, and this is not a controlled junction, therefore the viewpoint assessed shows the view of drivers looking forward as they approach the junction.

10.193 **Table 10.14** provides a summary of the duration of potential reflections that could occur within a 10° drivers field of view, where they would occur within the field of view of drivers, from which element of the Proposed Scheme the reflections could occur and finally, an initial significance of effect is given for each instance of reflection, prior to consideration being given to factors such as those outlined in below.

Table 10.14: Summary of Potential Reflections at Granby Row

Elevation	Times of the day the reflections occur	Times of the year that reflections occur	Location within 10° of driver's line of sight	Initial Magnitude of Effect*
Block A Western	16:00 – 17:00 GMT	Mid-January to mid-March and mid-September to mid-November	From 4°	Major
All other reflections occur outside 10° so are considered Minor Adverse				
**Prior to consideration of any mitigating factors outlined below.*				

10.194 At this junction:

- There are no signals where visibility can be affected by reflections from the Proposed Scheme.

- The majority of potential reflections occur above the driver's visor line, which would mitigate the majority of effects when deployed.

- Reflections occur from a small area, with just two small windows capable of generating reflections within 5° towards a driver at this junction.

- Deciduous trees are located between the junction and the proposed elevations, and would obscure the lower portion of façade. Whilst the trees would not be in leaf for some of the time reflections could occur, the dense branches would still help break up reflections below the visor cut-off line.

- The sun path sits within the field of view of a driver at this junction, once implemented the Proposed Scheme will partially obscure the direct view of the sun. Any reflections visible from the Proposed Scheme would be significantly less intense than a view of the direct sun as is currently experienced at this viewpoint. A large portion of the sun's path would remain visible at this junction with a greater intensity than the reflections that would be generated from the Proposed Scheme.

- The probability of the sun shining at the times of day and year when reflections occur within 10° of a driver's line of sight between 10% and 40%.

10.195 The level of effect reported has been determined based on professional judgement, in consideration of the initial magnitude of potential effects and the factors outlined above. Given the dynamic nature of traffic movement, the potential effects as reported would only occur momentarily when looking precisely at the affected traffic lights, 23 metres from the junction.

10.196 The sensitivity of drivers approaching the Granby Row junction with Sackville Street is considered to be high. Therefore, there is likely to be a direct, permanent, long-term, adverse effect which is considered to be moderate.

Hulme Street, junction with Oxford Road

10.197 The viewpoint assessed shows the view of drivers looking at the left side traffic lights. There is a second traffic light on the right side, on the opposite side of the junction primarily for use by stationary vehicles.

10.198 **Table 10.15** provides a summary of the duration of potential reflections that could occur within a 10° drivers field of view, where they would occur within the field of view of drivers, from which element of the Proposed Scheme the reflections could occur and finally, an initial significance of effect is given for each instance of reflection, prior to consideration being given to factors such as those outlined in below.

Table 10.15: Summary of Potential Reflections at Hulme Street

Elevation	Times of the day the reflections occur	Times of the year that reflections occur	Location within 10° of driver's line of sight	Initial Magnitude of Effect*
Block A Western	17:00 – 18:00 GMT	Mid-February to mid-March and	Between 5° and 9°	Moderate

Elevation	Times of the day the reflections occur	Times of the year that reflections occur	Location within 10° of driver's line of sight	Initial Magnitude of Effect*
		mid-September to mid-October		
Block B Western	17:00 – 18:00 GMT	Mid-February to mid-April and mid-August to mid-October	Between 5° and 8°	Moderate
Block B Western	17:00 – 18:00 GMT	Mid-February to mid-April and mid-August to mid-October	Between 6° and 9°	Moderate
**Prior to consideration of any mitigating factors outlined below.*				

10.199 At this junction:

- Reflections occur from punched windows within a predominantly solid façade, therefore given the distance this junction is from the Proposed Scheme, any reflections would be very broken up by the solid elements of the façade. The glazed elements would only reflect sunlight for very short periods of time and would not reflect the full solar disc, therefore the reflections are lower intensity.

- The sun path sits within the field of view of a driver at this junction, once implemented the Proposed Scheme will partially obscure the direct view of the sun. Any reflections visible from the Proposed Scheme would be significantly less intense than a view of the direct sun as is currently experienced at this viewpoint. A large portion of the sun's path would remain visible at this junction with a greater intensity than the reflections that would be generated from the Proposed Scheme.

- The probability of the sun shining at the times of day and year when reflections occur within 10° of a driver's line of sight between 10% and 30%.

10.200 The level of effect reported has been determined based on professional judgement, in consideration of the initial magnitude of potential effects and the factors outlined above. Given the dynamic nature of traffic movement, the potential effects as reported would only occur momentarily when looking precisely at the affected traffic lights, 23 metres from the junction.

10.201 The sensitivity of drivers approaching the Hulme Street junction with Oxford Road is considered to be high. Therefore, there is likely to be a direct, permanent, long-term, adverse effect which is considered to be minor to moderate.

Pollard Street, junction with Great Ancoats Street

10.202 The viewpoint assessed shows the view of drivers in the left lane looking at the right side traffic lights. There is an alternative set of lights on the left side and there is a second traffic

light on the right side, on the opposite side of the pedestrian crossing primarily for use by stationary vehicles.

10.203 **Table 10.16** provides a summary of the duration of potential reflections that could occur within a 10° drivers field of view, where they would occur within the field of view of drivers, from which element of the Proposed Scheme the reflections could occur and finally, an initial significance of effect is given for each instance of reflection, prior to consideration being given to factors such as those outlined in below.

Table 10.16: Summary of Potential Reflections at Pollard Street

Elevation	Times of the day the reflections occur	Times of the year that reflections occur	Location within 10° of driver's line of sight	Initial Magnitude of Effect*
Block C Eastern	05:00 – 06:00 GMT	Mid-March to mid-April and mid-August to mid-September	Small area at the top of 8 windows between 5° to 6°	Moderate

**Prior to consideration of any mitigating factors outlined below.*

10.204 At this junction:

- When reflections are seen behind the right side traffic lights, drivers can rely on the alterative traffic lights on the left side of the road to respond safely at this junction.
- The reflections occur from only a very thin strip that would barely be perceptible within the field of view, as such as reflections that do occur would be visible for a matter of seconds.
- The sun path sits within the field of view of a driver at this junction. Any reflections visible from the Proposed Scheme would be significantly less intense than a view of the direct sun as is currently experienced at this viewpoint. A large portion of the sun's path would remain visible at this junction with a greater intensity than the reflections that would be generated from the Proposed Scheme.
- The reflections occur outside peak travel times.
- The probability of the sun shining at the times of day and year when reflections occur within 10° of a driver's line of sight is 10%.

10.205 The level of effect reported has been determined based on professional judgement, in consideration of the initial magnitude of potential effects and the factors outlined above.

10.206 The sensitivity of drivers approaching the Pollard Street junction with Great Ancoats Street is considered to be high. Therefore, there is likely to be a negligible effect.

Solar glare impacting visibility of train drivers

Eastbound trains towards Piccadilly

10.207 Four viewpoints have been assessed along this set of tracks, commencing approximately 475 metres from the Proposed Scheme. One signal, MP402, is located within this stretch of track and is visible at viewpoint W2.

10.208 **Table 10.17** provides a summary of the duration of potential reflections that could occur within a 10° drivers field of view, where they would occur within the field of view of drivers, from which element of the Proposed Scheme the reflections could occur and finally, an initial significance of effect is given for each instance of reflection, prior to consideration being given to factors such as those outlined in below.

10.209 Reflections at viewpoint W1 are outside 10° of a drivers' line of sight and so this viewpoint has an initial viewpoint significance of effect of Minor.

Table 10.17: Summary of Potential Reflections for Eastbound trains

Viewpoint	Elevation	Times of the day the reflections occur	Times of the year that reflections occur	Location within 10° of driver's line of sight	Initial Magnitude of Effect*
W2	Block A Western	16:00 – 18:00 GMT	Mid-February to mid-March and mid-September to mid-October	From 5°	Moderate
W3	Block A Western	16:00 – 17:00 GMT	Mid-February to mid-March and mid-September to mid-October	From 5°	Moderate
	Block B Western	16:00 – 17:00 GMT	Mid-February to mid-March and mid-September to mid-October	From 8°	Moderate
W4	Block A Western	16:00 – 17:00 GMT	Mid-February to mid-March and mid-September to mid-October	4° to 6°	Moderate
	Block B Western	16:00 – 17:00 GMT	Mid-February to mid-March and mid-September to mid-October	6° to 7°	Moderate

Viewpoint	Elevation	Times of the day the reflections occur	Times of the year that reflections occur	Location within 10° of driver's line of sight	Initial Magnitude of Effect*
	Block C Western	16:00 – 17:00 GMT	Mid-February to mid-March and mid-September to mid-October	7° to 10°	Moderate
	All other reflections occur outside 10° so are considered Minor Adverse				
**Prior to consideration of any mitigating factors outlined below.*					

10.210 For this track:

- Potential reflections occur predominantly above the driver's visor line, which would mitigate the majority of effects when deployed.
- The reflections are broken up by solid elements of the façade, which limit the duration of reflections and their intensity. The area of each panel visible within 10° is less than 8 pixels in diameter within the view, as such, it is not possible for the full sun's intensity to be reflected.
- The sun path sits within the field of view of a driver at this junction, once implemented the Proposed Scheme will partially obscure the direct view of the sun. Any reflections visible from the Proposed Scheme would be significantly less intense than a view of the direct sun as is currently experienced at this viewpoint. A large portion of the sun's path would remain visible at this junction with a greater intensity than the reflections that would be generated from the Proposed Scheme.
- The probability of the sun shining at the times of day and year when reflections occur within 10° of a driver's line of sight is between 10% and 30%.

10.211 The level of effect reported has been determined based on professional judgement, in consideration of the initial magnitude of potential effects and the factors outlined above. Given the dynamic nature of train movement travelling along a set of tracks, the potential effects as reported would only occur momentarily when at each of the precise viewpoints assessed.

10.212 The sensitivity of train drivers on eastbound track approaching Piccadilly is considered to be high. Therefore, there is likely to be a direct, permanent, long-term, adverse effect which is considered to be moderate.

Westbound trains towards Oxford Road (via Platform 13)

10.213 Three viewpoints have been assessed along this set of tracks, commencing approximately 175 metres from the Proposed Scheme. One signal, MP387, is located within this stretch of track and is visible at viewpoints P13a and P13b.

10.214 **Table 10.18** provides a summary of the duration of potential reflections that could occur within a 10° drivers field of view, where they would occur within the field of view of drivers, from which element of the Proposed Scheme the reflections could occur and finally, an initial significance of effect is given for each instance of reflection, prior to consideration being given to factors such as those outlined in below.

10.215 Reflections at viewpoint E1 are outside 10° of a drivers' line of sight and so this viewpoint has an initial viewpoint significance of effect of Minor.

Table 10.18: Summary of Potential Reflections at Downing Street 2

Viewpoint	Elevation	Times of the day the reflections occur	Times of the year that reflections occur	Location within 10° of driver's line of sight	Initial Magnitude of Effect*
P13a	Block C Eastern	Sunrise – 06:00 GMT	Mid-April to mid-August	From 5°	Moderate
P13b	Block C Eastern	Sunrise – 06:00 GMT	Mid-April to mid-August	From 3°	Major
	All other reflections occur outside 10° so are considered Minor Adverse				
**Prior to consideration of any mitigating factors outlined below.*					

10.216 For this track:

- Potential reflections occur predominantly above the driver's visor line, which would mitigate the majority of effects when deployed.
- The reflections are broken up by solid elements of the façade, which limit the duration of reflections and their intensity. The area of each panel visible within 10° is less than 8 pixels in diameter within the view, as such, it is not possible for the full sun's intensity to be reflected.
- The sun path sits within the field of view of a driver at this junction, once implemented the Proposed Scheme will partially obscure the direct view of the sun. Any reflections visible from the Proposed Scheme would be significantly less intense than a view of the direct sun as is currently experienced at this viewpoint. A large portion of the sun's path would remain visible at this junction with a greater intensity than the reflections that would be generated from the Proposed Scheme.
- The probability of the sun shining at the times of day and year when reflections occur within 10° of a driver's line of sight is between 10% and 30%.

10.217 The level of effect reported has been determined based on professional judgement, in consideration of the initial magnitude of potential effects and the factors outlined above. Given the dynamic nature of train movement travelling along a set of tracks, the potential effects as reported would only occur momentarily when at each of the precise viewpoints assessed.

10.218 The sensitivity of train drivers on westbound track at toward Oxford Road (via Platform 13, Piccadilly) is considered to be high. Therefore, there is likely to be a direct, permanent, long-term, adverse effect which is considered to be moderate.

Westbound trains towards Oxford Road (via Platform 14)

10.219 Four viewpoints have been assessed along this set of tracks, commencing approximately 235 metres from the Proposed Scheme. One signal, MP387, is located within this stretch of track and is visible at viewpoints P14a and P14b.

10.220 **Table 10.19** provides a summary of the duration of potential reflections that could occur within a 10° drivers field of view, where they would occur within the field of view of drivers, from which element of the Proposed Scheme the reflections could occur and finally, an initial significance of effect is given for each instance of reflection, prior to consideration being given to factors such as those outlined in below.

10.221 Reflections at viewpoint E1 are outside 10° of a drivers' line of sight and so this viewpoint has an initial viewpoint significance of effect of Minor.

Table 10.19: Summary of Potential Reflections at Downing Street 2

Viewpoint	Elevation	Times of the day the reflections occur	Times of the year that reflections occur	Location within 10° of driver's line of sight	Initial Magnitude of Effect*
P14a	Block C Eastern	Sunrise – 05:00 GMT	Mid-April to mid-August	4° to 9°	Major
P14b	Block C Eastern	Sunrise – 05:00 GMT	Mid-April to mid-August	3° to 9°	Major
P14c	Block C Eastern	Sunrise – 05:00 GMT	Mid-April to mid-August	2° to 9°	Major
	All other reflections occur outside 10° so are considered Minor Adverse				
**Prior to consideration of any mitigating factors outlined below.*					

10.222 For this track:

- Potential reflections occur predominantly above the driver's visor line, which would mitigate the majority of effects when deployed.
- The reflections are broken up by solid elements of the façade, which limit the duration of reflections and their intensity. The area of each panel visible within 10° is less than 8 pixels in diameter within the view, as such, it is not possible for the full sun's intensity to be reflected.
- The sun path sits within the field of view of a driver at this junction, once implemented the Proposed Scheme will partially obscure the direct view of the sun. Any reflections visible from the Proposed Scheme would be significantly less intense than a view of the direct sun as is currently experienced at this viewpoint. A large portion of the

sun's path would remain visible at this junction with a greater intensity than the reflections that would be generated from the Proposed Scheme.

- The probability of the sun shining at the times of day and year when reflections occur within 10° of a driver's line of sight is 10%.

10.223 The level of effect reported has been determined based on professional judgement, in consideration of the initial magnitude of potential effects and the factors outlined above. Given the dynamic nature of train movement travelling along a set of tracks, the potential effects as reported would only occur momentarily when at each of the precise viewpoints assessed.

10.224 The sensitivity of train drivers on westbound track at toward Oxford Road (via Platform 1, Piccadilly) is considered to be high. Therefore, there is likely to be a direct, permanent, long-term, adverse effect which is considered to be moderate.

Secondary Mitigation or Enhancement

10.225 Moderate or major effects have been reported at one road location, Granby Row, and all three train lines. It is considered necessary to include mitigation measures to reduce the level of adverse effects as much as practicable.

10.226 A more detailed assessment will be undertaken which takes into consideration the detailed glazing properties (which are not yet known nor proportionate with this stage of façade development), to establish the intensity of the reflections occurring, and where necessary, inform the glazing specification to effectively reduce any reflections with the potential to impact safety at the identified locations. Therefore, as the façade details progress during the detailed design, this assessment will be refined further, and any solar glare effects will be mitigated to the greatest extent feasible. A detailed solar glare intensity assessment will be prepared (secured by condition), whereby a detailed solar glare intensity assessment report would be provided and agreed upon prior to installation of the facades. The detailed solar glare intensity assessment report would demonstrate that any reflections occurring from the Proposed Scheme have been mitigated to ensure they are not a safety concern.

10.227 Effective secondary mitigation for this scheme would likely comprise low reflection glazing which would act to reduce the intensity of the reflections and consequently reduce solar glare effects. Based on professional judgement and experience on schemes of a similar nature with comparable solar glare effects, the incorporation of low reflectance glazing to the relevant facades would reduce the potential for significant solar reflections to occur. Low reflectance glazing is required to the eastern elevation of Block C and the western elevations of Blocks A (all floors), B (upper floors only) and C (upper floors only).

Residual Effect

10.228 The sensitivity of road users is considered to be high. Therefore, there is likely to be a direct, permanent, long-term, adverse residual effect which is considered to negligible to minor.

10.229 The sensitivity of train drivers is considered to be high. Therefore, there is likely to be a direct, permanent, long-term, adverse residual effect which is considered to minor.

Significance

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

Limitations and Assumptions

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

- Where actual room layouts were available on the planning portal, these have been considered in regard to the modelling of the internal layouts within the existing surrounding properties. Where layout information was not available, assumptions have been made as to the use and internal configuration of the rooms (from external observations during a site inspection) behind the fenestration observed.

- Floor levels have been assumed for adjoining properties assessed, where access has not been obtained. This dictates the level of the working plane which is relevant for the NSL assessments.

- For solar glare, although great care has been taken in identifying typical viewpoints, this does not guarantee that there are no additional sensitive locations where reflected solar glare could present a particular risk. For practical reasons, the area of the assessment has been limited to the area surrounding the Proposed Scheme. This area extends to a distance of approximately 500m around the Site, in accordance with standard practice. At greater distances, the likelihood of solar reflections causing significant glare is reduced as the time that buildings will reflect is reduced and the area of façade visible constitutes a reduced angle and so reduces the possibility of the whole sun disk being reflected. This approach to solar glare assessment within EIA has been adopted using professional judgement and by reference to the CIE.

- In addition, the methodology for solar glare is not aimed at addressing the intensity of an instance of reflected solar glare, but rather its occurrence, duration throughout the year, and the location of this occurrence in respect of an individual's line of sight. It must also be noted that the hours presented reflect solar time and therefore do not take Daylight Saving Hours into account. This approach to solar glare assessment within EIA has been adopted using professional judgement and by reference to Commission Internationale L'Eclairage (CIE) Collection on Glare 2002.

Summary

10.232 **Table 10.20** provides a summary of the effects, receptors, residual effects and conclusions of significance considered within the Chapter.

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

Table 10.20: Summary of Residual and Significant Effects

Effect Operational Stage	Receptor	Residual Effect	Is the Effect Significant?
Reduced daylight amenity	Lambert House	Minor adverse	NO
	Fairfield House	Minor adverse	NO
	Warehouse One	Minor adverse	NO
	Stonebridge House	Negligible	NO
	London Road Fire Station	Negligible	NO
Reduced sunlight amenity	Lambert House	Minor adverse	NO
	Fairfield House	Minor adverse	NO
	Warehouse One	Minor adverse	NO
Reduction in sunlight amenity	Vimto Park	Negligible	NO
Solar glare impacting visibility of road users at sensitive locations such as intersections and junctions	Selected viewpoints within 500m of the Site where the Proposed Scheme is visible, including: Hulme Street Charles Street Chorlton Street Minshull Street London Road Fairfield Street Travis Street Downing Street Wadeson Road	Negligible to minor adverse	NO
Solar Glare impacting visibility of train drivers	Selected viewpoints within 500m of the Site where the Proposed Scheme is visible, including: Eastbound trains towards Piccadilly Westbound trains towards Oxford Road	Minor adverse	NO

References

[1] Ministry of Housing, Communities & Local Government (2021). National Planning Policy Framework. 2021.
[2] Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2021). National Planning Policy Guidance. 2021.
[3] Manchester City Council (2012). Manchester Core Strategy (2012 – 2027).
[4] Manchester City Council (2007). Guide to Development in Manchester Supplementary Planning Document and Planning Guidance Adopted April 2007.
[5] Building Research Establishment (BRE) (2022). Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice, Third Edition.
[6] Commission Internationale de L'Eclairage (CIE) (2002). 146:2002 & CIE 147:2002 Collection on glare

11. Wind Microclimate

Introduction

11.1 This Chapter reports the outcome of the assessment of likely significant environmental effects arising from the Proposed Scheme in relation to Wind Microclimate.

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

11.3 In line with **Chapter 2: Approach to EIA**, the assessment reports on the likely significant environmental effects, the further mitigation measures required to prevent, reduce or offset any significant adverse effects, or further enhance beneficial effects. The conclusions are provided both in terms of the residual effects and whether these are considered significant. The assessment of effects takes into consideration both primary and tertiary mitigation (see **Chapter 2: Approach to EIA** for further details) and is informed by the EIA Scoping process (**Appendix 2.1 - 2.2**) and iterative scoping process where applicable.

11.4 This Chapter, and its associated **Figures 11.1-11.20** and **Appendices 11.1-11.4**, is intended to be read as part of the wider ES with particular reference to the introductory Chapters of this ES (**Chapters 1 – 5**).

11.5 In addition, this Chapter should be read in conjunction with **Chapter 13: Assessment of Cumulative Effects**.

Consultation

11.6 An EIA Scoping Report was submitted to MCC on 17th February 2023, as presented as **Appendix 2.1**. The EIA Scoping Opinion was received on 29th March 2023 (**Appendix 2.2**).

11.7 No other consultation has been undertaken for wind microclimate.

Scope of the Assessment

11.8 This section provides confirmation on the scope of the assessment presented within this Chapter following submission of the EIA Scoping Report.

Effects Not Considered to be Significant

11.9 The following effects were not considered significant as part of the EIA Scoping Report (**Appendix 2.1**) and are not considered further in this Chapter (with detailed justification provided within the EIA Scoping Report):

- Potential effects on wind microclimate during the construction of the Proposed Scheme (sensitive receptors within 500m from the Site); and
- Potential effects on wind microclimate from the Proposed Scheme beyond 500m from the Site (areas beyond 500m from the Site

Effects Considered Likely to be Significant

11.10 The following effects (**Table 11.1**) were considered likely to be significant and are reported within this Chapter:

Table 11.1: Effects Considered Likely to be Significant

Likely Significant Effect	Receptors	Applicable Development Stage
Potential changes to the wind microclimate from the Proposed Scheme outside of the Site	Existing pedestrian street-level and open amenity spaces receptors within 500m from the Site	Operation
Potential changes to the wind microclimate from the Proposed Scheme within the Site	Accessible balconies, roof terraces and new amenity spaces within the Proposed Scheme	Operation

Assessment Methodology

Legislative Framework, Policy and Guidance

11.11 There is no legislation to inform the assessment of effects within this Chapter.

11.12 The following policy and guidance have informed the assessment of effects within this Chapter, and is detailed further in **Appendix 11.1**:

- National:
  - National Planning Policy Framework, 2021;[1]
- Local:
  - Core Strategy 2012-2027, 2012;[2]
- Guidance:
  - The Lawson Criteria, 2001;[3]
  - Best Practice Guidelines for Computational Fluid Dynamics Simulation of Flows in the Urban Environment, 2007; [4]and
  - Historic England Advice Note 4, Tall Buildings, 2015.[5]

Defining the Study Area

11.13 The study area (**Figure 11.1**) modelled for this analysis includes the Site and the surrounding existing and permitted developments likely to be affected by the Proposed Scheme (500m).

11.14 The extent of the 3D model (**Figure 11.2**) for the wind assessment includes the built area within a radius of approximately 500m around the Site. Beyond this area, buildings and structures should only be represented in the computational domain if their distance from the region of interest is less than six times their height, in line with the Best Practice Guidelines

for CFD Simulation of Flows in the Urban Environment. No additional buildings have been included.

Background Studies to Inform the ES / Establishing the Baseline

11.15 No background studies/surveys/analysis/evaluations were undertaken to inform the assessment presented within this Chapter.

Assessment Scope

11.16 The purpose of this study is to determine the likely significant effects of the Proposed Scheme on the local pedestrian wind environment within the Site and its surrounding areas as compared to the baseline conditions. The assessment follows the guidance given in the Lawson Criteria which is discussed below.

11.17 A three-dimensional computer model of the Proposed Scheme and adjacent areas have been constructed for the assessment which comprise the following Scenarios:

- Baseline Scenario: Assessment of the existing Site with the existing surrounding context;
- Proposed Scenario: Assessment of the Proposed Scheme on the Site with the existing surrounding context; and
- Cumulative Effects (to be reported within **Chapter 13: Assessment of Cumulative Effects**): This Scenario includes the effects of the Proposed Scheme in combination with other future (consented) schemes.

11.18 Schemes currently under construction (not yet at their maximum massing) at the time of this assessment have been considered in their completed form as part of the assessment of cumulative effects.

Assessment Process

11.19 A Computational Fluid Dynamics (CFD) study was carried out to provide a quantification of the pedestrian level wind environment at locations such as pedestrian access routes, building entrances, bus stops and amenity areas. The study combines numerically obtained pedestrian level wind speeds at key areas within and around the Site of the Proposed Scheme with long-term wind frequency statistics transposed from the weather station (see Wind Climate Analysis section for more detail) to determine the probability of local wind speeds exceeding comfort and safety thresholds for a range of common pedestrian activities.

11.20 The pedestrian-level wind environment in an urban setting depends on the general wind conditions at the location and on the aerodynamic effects from the urban environment itself, e.g. the size and shape of buildings and structures. Therefore, the assessment consists of three main parts: calculation of the urban environment's aerodynamic effect on the wind, statistical frequency analysis using historical wind data; and, finally, comparison with the criteria to quantify the discomfort and risk of safety caused by the wind. The CFD study has been used to compute the aerodynamic effect of the Proposed Scheme within the surrounding context.

Assessment modelling

11.21 The three-dimensional CAD model of the Site and the Proposed Scheme has been constructed using the drawing sets listed in **Table 11.2**.

Table 11.2: Drawing Sets used to Construct the Model

Date issued (dd/mm/yy)	Title	File name/Description
02/03/2023	7054-SRA-SI-ZZ-M3-A-00001_Architectural Revit Model_S1_P01_0; 7054-SRA-ZZ-ZZ-M3-A-00001_Architectural Revit Model_S1_P03_1; 7054-SRA-ZZ-ZZ-M3-A-00002_Architectural Revit Model_S1_P03_0; 7054-SRA-ZZ-ZZ-M3-A-00003_Architectural Revit Model_S1_P01_1	3d model of the Proposed Scheme
02/03/2023	ECHO-SRA-ZZ-XX-DR-A-02201_General Arrangement North Elevation_S2_P03_1; ECHO-SRA-ZZ-XX-DR-A-02202_General Arrangement South Elevation_S2_P03_1; ECHO-SRA-ZZ-XX-DR-A-02203_General Arrangement West Elevation_S2_P03_1; ECHO-SRA-ZZ-XX-DR-A-02204_General Arrangement East Elevation_S2_P03_0	Elevations of the Proposed Scheme
05/04/2023	7054_ECHO STREET_PREVIOUS SCHEME_ACCESS GATES_PLANIT.	Specification of the vertical mitigation screen

11.22 The model includes the Site and all buildings within the extent of the study area as shown in **Figure 11.2**. The wind flow around these buildings and terrain is explicitly modelled within this radius, whilst outside this region obstructions to wind are accounted for using mathematical models which assign a 'roughness' depending on the terrain type.

11.23 The model of the existing buildings in the surroundings has been supplemented with available aerial photographic data for the area.

11.24 The detail of the CAD model increases from approximately 1m for the surrounding buildings to 0.2m around the Site, as shown in **Figure 11.3.** The differences of the terrain elevation are illustrated in **Figure 11.4**.

11.25 Using the model described above an assessment of the existing baseline was undertaken. In order to assess the effect of the Proposed Scheme, the model of Proposed Scheme was introduced into the CFD model to represent the 'Proposed Scenario'. The Proposed Scenario assumes the Proposed Scheme on the Site within the existing surrounding context. The model of the Proposed Scenario was simulated under the same wind conditions as the Baseline Scenario to enable a direct comparison. The results of the wind environment assessment of the Proposed Scenario are presented in full in the form of CFD contour plots in **Appendices 11.2** to **11.4**. See Baseline Conditions and Assessment of Effects, Secondary Mitigation and Residual Effects sections.

Assessment Criteria

11.26 The Lawson Comfort Criteria has been adopted for the assessment, and a comparison was made between the modelled results of the CFD study in terms of the suitability for various pedestrian activities against the target pedestrian activity in that location. The Lawson Comfort Criteria define a scale for assessing the suitability of wind conditions in the urban environment based upon threshold values of wind speed and frequency of occurrence.

11.27 The Lawson criteria are specifically designed for pedestrian activities and are related to pedestrian comfort and safety. Therefore, the assessment focuses on assessing the areas with pedestrian use only, including cyclists.

11.28 The frequency of occurrence is used as an indicator of the likely duration of wind speeds. The criteria provide ranges of acceptability to maintain pedestrian comfort for different activities and relate frequency of occurrence to the hourly average wind speed ranges. The criteria ranges are set out in **Table 11.3** below.

Table 11.3: Lawson's Comfort Assessment Criteria

Comfort Category	Threshold mean wind speed (5% exceedance)	Comfort Category
Sitting	4 m/s	Acceptable for outdoor seating and areas one can occupy comfortably for long periods.
Standing	6 m/s	Acceptable for entrances, bus stops, covered walkways or passageways beneath buildings.
Walking	8 m/s	Acceptable for external pavements, walkways.
Uncomfortable	>8 m/s	Not comfortable for regular pedestrian access.

11.29 The Lawson Criteria also identifies a safety criterion to identify those areas where someone could find walking difficult, or even stumble and fall. The Lawson Comfort Criteria define threshold wind speeds not to be exceeded for more than 0.025% of the year. These are particularly strong winds that could cause people to have difficulties while walking and stumble or fall. The safety criterion is set out in **Table 11.4** below.

Table 11.4: Lawson's Safety Assessment Criteria (LDDC)

Safety Category	Threshold mean wind speed (0.025% exceedance)	Safety Category
Pedestrian Safety Limit	15 m/s	Presents a safety risk for pedestrians, especially to more vulnerable members of the public.

General Target Wind Conditions

11.30 The wind assessment for each of these criteria has been carried out considering the season and expected activity on the Site based on the following general target wind conditions:

- Outdoor amenity and seating areas: 'Sitting' during the Summer season;
- Building entrances, bus stops, drop off areas: 'Standing' during all seasons;
- Pedestrian circulation routes: 'Walking' during all seasons; and
- Pedestrian thoroughfares (minor pedestrian routes): 'Walking' during all seasons.

Reporting of the Environmental Effect and Significance Criteria

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

Determining Sensitivity of Receptor

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

11.33 Sensitive receptors for the wind assessment are pedestrian circulation routes, building entrances and leisure open areas within the Site and in neighbouring adjacent areas. Balconies and roof terraces within the Proposed Scheme where occupants are expected to use as outdoor spaces are also considered sensitive receptors. The sensitivity of these receptors has been considered as **high**. No receptors of **medium**, **low** or **negligible** sensitivity have been included in this assessment.

Determining the Magnitude of Change

11.34 The magnitude of change has been considered as the change experienced from the current baseline conditions at the sensitive receptor. The magnitude of change has been used to inform the level of effect at existing receptors and it is measured by the change in suitability of the receptor as reflected and explained in **Table 11.5.**

Determining the Level of Effect

11.35 To determine the level of the effect of the Proposed Scheme on the wind environment, a comparison was made with the existing conditions on the Site where applicable. However, because the pedestrian use of a Site can change between the existing and proposed uses, the assessment should also be based upon the suitability of the Site for the desired pedestrian use, where known. The likely significance of effects is therefore based on the following parameters:

- The magnitude of change of the wind environment in the Proposed Scenario from the Baseline; and
- Adherence to the Lawson Criteria.

11.36 The level of effect has been determined using professional judgement using **Tables 11.5** and **11.6.** This is a necessary departure from the matrix approach set out in **Chapter 2**, to conform with methodology best suited to the assessment of wind effects.

11.37 For each effect, it has been concluded whether the effect is '*beneficial*' or '*adverse*'.

On-site receptors

11.38 The level of effect on the on-site measurement locations is defined by comparing the wind comfort/safety levels with the intended pedestrian activity at each location, using **Table 11.5** below.

Off-site existing receptors

11.39 The level of effect on the off-site measurement locations is defined not only by comparing the wind comfort levels with the intended pedestrian activity, but also by comparing the conditions to those experienced prior to the introduction of the Proposed Scheme (baseline), using **Table 11.6** below.

Table 11.5: Determining the Level of Effect – Off-Site Existing Receptors

Level of Effect	Trigger	Mitigation required?
Major Adverse	Conditions that were 'safe' in the baseline Scenario become 'unsafe' as a result of the Proposed Scheme. OR Conditions that were 'suitable' in terms of comfort in the baseline Scenario become 'unsuitable' as a result of the Proposed Scheme. OR Conditions that were 'unsafe' in the baseline Scenario are made worse as a result of the Proposed Scheme.	Yes
Moderate Adverse	Conditions that were 'suitable' in terms of comfort in the baseline Scenario are made windier (by at least one comfort category) as a result of the Proposed Scheme but remain 'suitable' for the intended pedestrian activity.	No
Minor Adverse	Conditions that were 'suitable' in terms of comfort in the baseline Scenario are made only locally windier as a result of the Proposed Scheme but remain mostly 'suitable' for the intended pedestrian activity.	No
Negligible	Conditions remain the same as in the baseline Scenario.	No
Major Beneficial	Conditions that were 'unsafe' in the baseline Scenario become 'safe' as a result of the Proposed Scheme.	No
Moderate Beneficial	Conditions that were 'unsuitable' in terms of comfort in the baseline scenario become 'suitable' as a result of the Proposed Scheme. OR Conditions that were 'unsafe' in the baseline scenario are made better as a result of the Proposed Scheme (but not so as to make them 'safe').	No

Table 11.6: Determining the Level of Effect – On-Site Future Receptors

Level of Effect	Trigger	Mitigation required?
Major Adverse	Conditions are 'unsafe'	Yes
Moderate Adverse	Conditions are 'unsuitable' (in terms of comfort) for the intended pedestrian use.	Yes
Minor Adverse	Conditions are only locally 'unsuitable' (in terms of comfort) but most suitable for the intended pedestrian use.	No
Negligible	Conditions are 'suitable' for the intended pedestrian use.	No

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

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

11.41 The duration of the effect can be defined as either 'short-term', 'medium-term' or 'long-term'. Short-term is considered to be up to 1 year, medium-term is considered to be between 1 and 10 years and long-term is considered to be greater than 10 years. Since this assessment focuses on the operational stage only, all identified effects are assessed as long-term.

Determining Significance

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

11.43 The Significance has been stated for residual effects only (i.e. following the identification of secondary mitigation).

Sensitive Receptors for the Wind Assessment

11.44 Sensitive receptors for the wind assessment are all pedestrian circulation routes, building entrances, bust stops and leisure outdoor areas within the Site and its surroundings. Specifically, the receptors identified for this assessment are shown **Figure 11.5** and **11.6** and are listed in **Table 11.7**.

Table 11.7: List of Sensitive Receptors

Receptor Number	Description	Use	Target Conditions
Existing Receptors			
1	Amenity Space close to Newton's Apple Tree	Amenity Space	'Sitting' during the Summer season
2	The Vimto Park	Amenity Space	'Sitting' during the Summer season
3	Amenity Space close to Barnes Wallis Student Hub	Amenity Space	'Sitting' during the Summer season
4	Amenity Space close to Renold Building (The University of Manchester)	Amenity Space	'Sitting' during the Summer season
5	Alan Turing Memorial Park	Amenity Space	'Sitting' during the Summer season
6	Bainbridge House Commercial Entrances	Entrance	'Standing' during all seasons
7	Bulls Head Pub Entrance 1	Entrance	'Standing' during all seasons
8	Bulls Head Pub Entrance 2	Entrance	'Standing' during all seasons
9	Rahman Piccadilly Hostel Entrance	Entrance	'Standing' during all seasons
10	iQ Student Accommodation Fairfield House Entrance	Entrance	'Standing' during all seasons
11	iQ Student Accommodation Lambert House Entrance	Entrance	'Standing' during all seasons
12	iQ Student Accommodation Lambert House Entrance	Entrance	'Standing' during all seasons
13	iQ Warehouse One Entrance	Entrance	'Standing' during all seasons
14	Stonebridge House Entrance	Entrance	'Standing' during all seasons
15	Cedar House Entrance 1	Entrance	'Standing' during all seasons

Receptor Number	Description	Use	Target Conditions
16	Cedar House Entrance 2	Entrance	‘Standing’ during all seasons
17	Manchester Astronomical Society Entrance 1	Entrance	‘Standing’ during all seasons
18	Manchester Astronomical Society Entrance 2	Entrance	‘Standing’ during all seasons
19	Manchester Astronomical Society Entrance 3	Entrance	‘Standing’ during all seasons
20	Sackville Street Building Entrance 1	Entrance	‘Standing’ during all seasons
21	Sackville Street Building Entrance 2	Entrance	‘Standing’ during all seasons
22	Sackville Street Building Entrance 3	Entrance	‘Standing’ during all seasons
23	iQ Warehouse Two Entrance	Entrance	‘Standing’ during all seasons
24	London Road Fire Station Entrance 1	Entrance	‘Standing’ during all seasons
25	London Road Fire Station Entrance 2	Entrance	‘Standing’ during all seasons
26	London Road Fire Station Entrance 3	Entrance	‘Standing’ during all seasons
27	London Road Fire Station Entrance 4	Entrance	‘Standing’ during all seasons
28	London Road Fire Station Entrance 5	Entrance	‘Standing’ during all seasons
29	London Road Fire Station Entrance 6	Entrance	‘Standing’ during all seasons
30	Piccadilly Station Entrance	Entrance	‘Standing’ during all seasons
31	McDonald Manchester Hotel Entrance	Entrance	‘Standing’ during all seasons
32	Balfour Beatty Kilpatrick Entrance	Entrance	‘Standing’ during all seasons
33	Barnes Wallis Building Entrance 1	Entrance	‘Standing’ during all seasons
34	Barnes Wallis Building Entrance 2	Entrance	‘Standing’ during all seasons
35	Renold Building Entrance 1	Entrance	‘Standing’ during all seasons
36	Renold Building Entrance 2	Entrance	‘Standing’ during all seasons

Receptor Number	Description	Use	Target Conditions
37	The Gatehouse, The University of Manchester Entrance	Entrance	'Standing' during all seasons
38	Travis Street Bus Stop 1	Bus Stop	'Standing' during all seasons
39	Travis Street Bus Stop 2	Bus Stop	'Standing' during all seasons
40	Travis Street Bus Stop 3	Bus Stop	'Standing' during all seasons
41	Piccadilly Station (Stop C)	Bus Stop	'Standing' during all seasons
42	Manchester Piccadilly Rail Station (Stop A)	Bus Stop	'Standing' during all seasons
43	Minshull Street South (Stop B)	Bus Stop	'Standing' during all seasons
44	University of Manchester Bus Stop 1	Bus Stop	'Standing' during all seasons
45	University of Manchester Bus Stop 1	Bus Stop	'Standing' during all seasons
46	Echo St	Pedestrian Walkway	'Walking' during all seasons
47	Granby Row East	Pedestrian Walkway	'Walking' during all seasons
48	Granby Row West	Pedestrian Walkway	'Walking' during all seasons
49	The Vimto Park Walkways	Pedestrian Walkway	'Walking' during all seasons
50	Cobourg St	Pedestrian Walkway	'Walking' during all seasons
51	S Pump St	Pedestrian Walkway	'Walking' during all seasons
52	Altrincham St	Pedestrian Walkway	'Walking' during all seasons
Future Receptors (On-Site)			
53-63	Proposed Development Ground Floor Entrances	Entrance	'Standing' during all seasons
64-65	Proposed Development Walkway	Pedestrian Walkway	'Walking' during all seasons
66	External Courtyard A-B	Amenity Space	'Sitting' during the Summer season
67	External Courtyard B-C	Amenity Space	'Sitting' during the Summer season

Receptor Number	Description	Use	Target Conditions
68	Amenity Space Roof A-B	Amenity Space	'Sitting' during the Summer season

Wind Climate Analysis

11.45 Wind data was collected from the Manchester Airport meteorological station. The period over which the data was assessed is 20 years. The data was discretised into 36 bins, representing 10° sectors. The nomenclature adopted in this report assigns 0° to winds coming from North and increases clockwise such that 90° refers to winds blowing from East, 180° from South and 270° from West.

11.46 **Figure 11.7** shows a summary of the wind data at the Weather Station for the whole year in the form of a wind rose. Wind direction is shown on the angular axes, with percentage of hours on the radial axes. From this plot, it is possible to observe that south winds are the prevailing wind direction, with these winds also representing the largest proportion of higher wind speeds.

11.47 **Figure 11.8** shows similar wind roses split into three-month seasons. It shows some variation in directionality, with spring showing an increase in north-easterly winds and spring and summer an increase in westerly winds. The winter months are windier than other months, which is heavily weighted to the south-westerly winds.

11.48 Linear regression methods were used to fit the data to a Weibull probability distribution, i.e.:

$$P(U) = pe^{-\left(\frac{U}{c}\right)^{k}}$$

11.49 where the p,c and k coefficients are the probability of the wind direction occurring, the dispersion parameter and the shape parameter respectively.

11.50 To account for the differences in terrain surrounding the Site, adjustments were made using the wind model proposed by the UK Engineering Sciences Data Unit ESDU. This method assigns transposition factors to the c term in the Weibull distribution of the data at the meteorological Site, based on upwind roughness factors which are assigned to various terrain types. The weather centre data was initially transposed to open country terrain and subsequently transposed to a reference height of 97m at the Site, accounting for upwind terrain and topographical features which are shown in **Figure 11.9**. This terrain analysis resulted in the transposition factors shown in **Table 11.8**.

Table 11.8: Transposition factors 10m open country to reference height (30 m) at project Site.

0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°
1.2	1.23	1.21	1.21	1.22	1.19	1.2	1.21	1.22	1.23	1.22	1.21

11.51 The aerodynamic effect from all wind directions must be accounted for and, as the weather data has an azimuthal resolution of 10°, 36 simulated directions will provide the best possible resolution. However, this can be computationally expensive and infrequent wind directions will not contribute significantly to the final outcome. Therefore, some adjacent infrequent directions have been grouped together such that each simulated direction has a similar frequency of occurrence. The grouping methodology is such that the frequency of grouped wind directions should generally not exceed that of the most frequent (prevailing) wind directions.

11.52 In this case, 22 wind directions were explicitly simulated and will be shown in **Table 11.9** in the detail report.

Table 11.9: Wind Directions Simulated

Simulated direction (°)	Bins included (°)	Combined frequency (%)
0	2.311	0
30	4.303	20
55	4.17	50
75	4.12	70
95	4.073	90
120	5.236	110
145	5.606	140
160	4.665	160
170	6.146	170
180	6.021	180
190	6.147	190
200	5.178	200
210	4.446	210
220	3.492	220
235	6.226	230
250	3.653	250
260	3.505	260
270	3.806	270
280	4.359	280
290	3.623	290
305	5.042	300
330	3.874	320

Simulation Details and Assumptions

11.53 A CFD numerical simulation has been performed for each of the directions shown in **Table 11.9**. Relative wind speeds were sampled at a plane 1.5m from the ground. These values were then combined with the weather data shown above and compared against Lawson criteria.

11.54 Each simulation uses numerical methods to solve the governing equations of fluid mechanics around the Site of interest. The Site of interest in this case is the geometry discussed in section 3.3, surrounded by a volume which extends 3km in the horizontal directions and 400m in the vertical direction. The CFD method employed requires this volume to be split into smaller volumes or 'cells'. These cells are nominally hexahedral and reduce in size from approximately 25m in the far field to 0.1m near the building in order to sufficiently resolve the fluid flow. Thin prismatic layers of cells were added to the ground and buildings to resolve the large gradients in the flow near the solid obstructions. In this case, the total number of cells was around 30 million.

11.55 As time-averaged results are of interest, the equations in the model have been time-averaged using Reynolds averaging to produce the Reynolds-Averaged Navier-Stokes (RANS) equations. The realizable version of the k-ϵ model has been used to describe the statistical effect of turbulence by solving transport equations for the turbulent kinetic energy (k) and turbulent dissipation rate (ϵ).

11.56 The velocity magnitude output from the CFD is a mean velocity defined as:

$$\overline{U} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{\frac{1}{2}}$$

11.57 where the overbar represents a time-averaged quantity and u,v,w are the velocity components in the x,y,z directions, respectively. However, a pedestrian's perception to the wind does not depend on direction; a wind from any direction is equally as uncomfortable. Therefore, the velocity of interest is actually:

$$\overline{U} = \overline{(u^2 + v^2 + w^2)^{\frac{1}{2}}}$$

11.58 these scalar values are different because $u = \bar{u} + u'$ and $\overline{u'}^2 = 0$ but $\overline{u'^2} \neq 0$, where u' is the fluctuating part of the instantaneous velocity, u. Using the fact that $k = \frac{1}{2}\left(\overline{u'^2} + \overline{v'^2} + \overline{u'^2}\right)$, the velocity used of interest from the RANS equations is:

$$\overline{U}_{scalar} = (\overline{U}^2 + 2k)^{\frac{1}{2}}$$

11.59 A non-slip condition was applied to the ground and buildings. Buildings and ground within the 500m radius had a rough wall function with an assigned roughness of $z_0 = 0.02m$; the far-field (>500m radius) ground and heavily forested areas had a rough wall function with roughness heights varying between $z_0 = 0.005 \rightarrow 0.30$ depending on their terrain classification (ESDU). The outlet had a zero-gradient boundary condition, side and top walls had free slip conditions. A logarithmic velocity profile was applied to the inlet whereby the velocity varies with height through:

$$U(z) = \frac{u_\tau}{\kappa} \ln\left(\frac{z + z_0}{z_0}\right)$$

11.60 where:

$$u_\tau = \frac{\kappa U_{ref}}{\ln\left(\frac{z_{ref} + z_0}{z_0}\right)}$$

11.61 and $\kappa = 0.41$ is the Von Karman constant, z is the height above the ground, $z_{ref} = 60m$, z_0 is the upstream roughness which varies by direction and $U_{ref} = 10m/s$.

11.62 The SIMPLE algorithm as implemented in OpenFOAM (Engys version HelyxCORE-3.0.0) was used to iteratively solve the equations. The solution was considered to be converged when the residuals (i.e. the relative change from one iteration to the next) were 10^{-5} for momentum and 10^{-4} for pressure.

Baseline Conditions

11.63 A 'Baseline Scenario' has been modelled to represent the conditions on the Site prior to the introduction of the Proposed Scheme, as shown on **Figure 11.10.**

11.64 The model of the existing buildings in the surroundings has been based on models provided by the project team and supplemented with available aerial photographic data for the area. The results of the wind environment assessment of the 'Baseline Scenario' are presented in the form of contour plots of safety and comfort criteria in **Appendices 11.2** to **11.4.**

Pedestrian Safety – Baseline Scenario

11.65 The results of the Baseline safety assessment indicate that the wind environment of the Site and surroundings is within the recommended criteria for safety. This is on the basis that wind speeds do not exceed the upper threshold of 15m/s for more than 0.025% of the time, in line with the guidelines (**Figure 11.11**).

Pedestrian Comfort – Baseline Scenario

11.66 The results of the Baseline comfort assessment (**Figures 11.12** and **11.13**) indicated relatively calm wind conditions with minor seasonal variations.

11.67 The results indicated that the existing wind environment within the Site and its immediate surroundings is largely suitable for sitting and standing in winter, while during summer is suitable for sitting.

11.68 Overall, the results indicated that all of the existing receptors are suitable for the existing uses in the Baseline Scenario.

Future Baseline

11.69 The future baseline has not been quantitatively assessed. However, given the distance of all consented schemes from the Site it can be stated that the future baseline would show similar conditions comparable to those described in the existing Baseline Assessment. On this basis, no natural change can be expected from the future baseline.

Primary and Tertiary Mitigation

Construction Stage

11.70 No primary and tertiary mitigation has been evaluated as part of the construction stage.

Operational Stage

11.71 The proposed design comprises measures to assist with the wind environment where it was predicted as beneficial based on the studies conducted in 2017. The mitigation embedded within the design, comprises a 50% porous vertical screen, acting as a gate, extending parallel to the Proposed Scheme façade on the pedestrian level of Echo Street towards the railway viaduct, as shown in **Figure 11.14.** The dimensions and specification of the vertical screen are based on the following drawings:

- ECHO-SRA-ZS-XX-DR-A-02004;
- ECHO-SRA-ZZ-00-DR-A-02100;
- ECHO-SRA-ZZ-XX-DR-A-02204; and
- ECHO-SRA-XX-XX-RP-A-0001 - Design and Access Statement.

Assessment of Effects, Secondary Mitigation and Residual Effects

Operational Stage

11.72 The wind microclimate around an urban environment is affected by terrain, buildings, and other obstructions. The introduction of a new building development can affect the local wind flow patterns, which can produce uncomfortable and/or unsafe wind environment at pedestrian level. This is particularly relevant for buildings that are taller than their surroundings. Fast-moving high-level winds can downdraft to Pedestrian Level along windward faces of buildings. As air then moves into the low-pressure wake of the building, it can accelerate around corners and/or through restrictions, causing localised regions of relatively high wind speed.

11.73 The local wind environment of the Site and its immediate surroundings is expected to change following the completion of the Proposed Scheme. However, the aim of the project has been to ensure that all areas both within and off-site are suitable for the expected use such as sitting, standing, leisure walking and business walking, taking into account the seasons and the specific location considered.

11.74 The 3D model of the 'Proposed Scenario' is illustrated in **Figure 11.15**. The results of the wind environment assessment of the 'Proposed Scenario' are presented in the form of contour plots of safety and comfort criteria in **Appendices 11.2** to **11.4.**

Potential changes to the wind microclimate from the Proposed Scheme outside of the Site

Pedestrian Safety on Pedestrian Level

11.75 **Figure 11.16** shows contours of annual safety criteria on a plane 1.5m above the ground at the main pedestrian level for the Proposed Scenario.

11.76 The results indicated that following the introduction of the Proposed Scheme including the primary mitigation measure, the recommended criteria for safety are not exceeded at any off-Site receptor location, on the basis that wind speeds do not exceed the threshold of 15 m/s for more than 0.025% of the year.

11.77 The sensitivity of all off-Site pedestrian level receptors is considered to be high. The magnitude of change is considered to be negligible on the basis that the wind conditions are

either suitable for the pedestrian use or the same as in the Baseline. Therefore, there is likely to be a direct, permanent, long-term effect which is considered to be negligible.

Secondary Mitigation or Enhancement

11.78 No secondary mitigation or enhancement have been adopted for these receptors.

Residual Effect

11.79 Residual effects at off-Site receptors are considered to be negligible on the basis that the wind conditions are either suitable for the pedestrian use or the same as in the Baseline.

Significance

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

Pedestrian Comfort on Pedestrian Level in Winter

11.81 **Figure 11.18** shows contours of the winter comfort criteria on a plane 1.5m above the ground at the main pedestrian level for the Proposed Scenario in order to illustrate the worst-case Scenario.

11.82 Following the introduction of the Proposed Scheme, the conditions within the Site and its immediate surroundings are a mix of suitable for sitting, standing, and leisure walking.

11.83 The results indicated that all the identified receptors remain suitable for the existing and intended uses in winter, and therefore, no mitigation is required.

11.84 The sensitivity of all off-Site pedestrian level receptors is considered to be high. The magnitude of change is considered to be negligible on the basis that the wind conditions are either suitable for the pedestrian use or the same as in the Baseline. Therefore, there is likely to be a direct, permanent, long-term effect which is considered to be negligible.

Secondary Mitigation or Enhancement

11.85 No secondary mitigation or enhancement have been adopted for these receptors.

Residual Effect

11.86 Residual effects at off-Site receptors are considered to be negligible on the basis that the wind conditions are either suitable for the pedestrian use or the same as in the Baseline.

Significance

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

Pedestrian Comfort on Pedestrian Level in Summer

11.88 Figure 11.19 shows contours of the summer comfort criteria at the main pedestrian level on a plane 1.5m above the ground for the Proposed Scenario to assess the outdoor leisure areas during their higher occupancy period.

11.89 The results indicated that all the identified street-level amenity areas off-Site remain suitable for the existing and intended usages in Summer, and therefore, no mitigation is recommended.

11.90 The sensitivity of all off-Site pedestrian level amenity space receptors is considered to be high. The magnitude of change is considered to be negligible on the basis that the wind conditions are either suitable for the pedestrian use or the same as in the Baseline.

Therefore, there is likely to be a direct, permanent, long-term effect which is considered to be negligible.

Secondary Mitigation or Enhancement

11.91 No secondary mitigation or enhancement have been adopted for these receptors.

Residual Effect

11.92 Residual effects at off-Site receptors are considered to be negligible on the basis that the wind conditions are either suitable for the pedestrian use or the same as in the Baseline.

Significance

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

Potential changes to the wind microclimate from the Proposed Scheme within the Site

Pedestrian Safety on Pedestrian Level

11.94 The results (**Figure 11.16**) indicated that following the introduction of the Proposed Scheme including the primary mitigation measure, the recommended criteria for safety are not exceeded at any on-Site receptor location, on the basis that wind speeds do not exceed the threshold of 15 m/s for more than 0.025% of the year.

11.95 The sensitivity of all on-Site receptors is considered to be high. The magnitude of change is considered to be negligible on the basis that the wind conditions are either suitable for the pedestrian use or the same as in the Baseline. Therefore, there is likely to be a direct, permanent, long-term effect which is considered to be negligible.

Secondary Mitigation or Enhancement

11.96 No secondary mitigation or enhancement is required.

Residual Effect

11.97 Residual effects at on-Site receptors are considered to be negligible on the basis that the wind conditions are either suitable for the pedestrian use or the same as in the Baseline.

Significance

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

Pedestrian Safety on Elevated Levels

11.99 **Figure 11.17** shows contours of annual safety criteria on a plane 1.5m above the ground at terraces level for the Proposed Scenario.

11.100 The results indicated that the recommended criteria for safety are satisfied for all terraces within the Proposed Scheme which are accessible to the occupants, on the basis that wind speeds do not exceed the threshold of 15 m/s for more than 0.025% of the year.

11.101 The sensitivity of all on-Site elevated level receptors is considered to be high. The magnitude of change is considered to be negligible on the basis that the wind conditions are either suitable for the pedestrian use or the same as in the Baseline. Therefore, there is likely to be a direct, permanent, long-term effect which is considered to be negligible.

Secondary Mitigation or Enhancement

11.102 No secondary mitigation or enhancement have been adopted for these receptors.

Residual Effect

11.103 Residual effects at on-Site receptors are considered to be negligible on the basis that the wind conditions are either suitable for the pedestrian use or the same as in the Baseline.

Significance

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

Pedestrian Comfort on Pedestrian Level in Winter

11.105 The results (**Figure 11.18**) indicated that all the identified receptors remain suitable for the existing and intended uses in winter, and therefore, no mitigation is required.

11.106 The sensitivity of all on-Site pedestrian level receptors is considered to be high. The magnitude of change is considered to be negligible on the basis that the wind conditions are either suitable for the pedestrian use or the same as in the Baseline. Therefore, there is likely to be a direct, permanent, long-term effect which is considered to be negligible.

Secondary Mitigation or Enhancement

11.107 No secondary mitigation or enhancement have been adopted for these receptors.

Residual Effect

11.108 Residual effects at on-Site receptors are considered to be negligible on the basis that the wind conditions are either suitable for the pedestrian use or the same as in the Baseline.

Significance

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

Pedestrian Comfort on Elevated Levels in Summer

11.110 **Figure 11.20** shows contours of the summer comfort criteria at terrace levels on a plane 1.5m above the ground for the Proposed Scenario to assess the outdoor leisure areas during their higher occupancy period.

11.111 The results of the Proposed Scenario for the summer comfort assessment at the elevated levels On-Site indicated that the wind conditions at the accessible terrace are suitable for sitting and therefore suitable for the intended use.

11.112 The sensitivity of all on-Site elevated level receptors is considered to be high. The magnitude of change is considered to be negligible on the basis that the wind conditions are either suitable for the pedestrian use or the same as in the Baseline. Therefore, there is likely to be a direct, permanent, long-term effect which is considered to be negligible.

Secondary Mitigation or Enhancement

11.113 No secondary mitigation or enhancement have been adopted for these receptors.

Residual Effect

11.114 Residual effects at on-Site receptors are considered to be negligible on the basis that the wind conditions are either suitable for the pedestrian use or the same as in the Baseline.

Significance

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

Limitations and Assumptions

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

- The assessment takes into consideration all external wind effects at pedestrian level. Other potential wind effects including wind loads, structural wind loads, natural ventilation and internal flows within buildings are not within the scope of this assessment.
- The assessment also excludes impacts on vehicles or waterways since the Lawson Criteria focuses on impacts to pedestrians.
- The model for the base wind assessment includes all relevant buildings and structures in the surrounding area but as a worst-case scenario excludes trees and landscape features. Where required, these can be added to test mitigation options.

Summary

11.117 **Table 11.10** provides a summary of the effects, receptors, residual effects and conclusions of significance considered within the Chapter.

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

Table 11.10: Summary of Residual and Significant Effects

Effect Operational Stage	Receptor	Residual Effect	Is the Effect Significant?
Potential changes to the wind microclimate from the Proposed Scheme outside of the Site	Existing pedestrian street-level and open amenity spaces receptors within 500m from the Site	Negligible	No
Potential changes to the wind microclimate from the Proposed Scheme within the Site	Accessible balconies, roof terraces and new amenity spaces within the Proposed Scheme	Negligible	No

References

[1] Ministry of Housing, Communities and Local Government (2021). National Planning Policy Framework. Available at: National Planning Policy Framework - GOV.UK (www.gov.uk)
[2] Manchester City Council (2012). Core Strategy 2012 – 2027. Available at: Core Strategy 2012-2027 | Core Strategy 2012-2027 | Manchester City Council
[3] Lawson, T., Building Aerodynamics, Imperial College Press [ISBN 1-86094-187-7], 2001
[4] Meteorological Inst. (2007). Best Practice Guidelines for Computational Fluid Dynamics Simulation of Flows in the Urban Environment.
[5] Historic England (2015). Tall Buildings Historic England Advice Note 4. Available at: Tall Buildings: Historic England Advice Note 4

12. Noise and Vibration

Introduction

12.1 This Chapter reports the outcome of the assessment of likely significant environmental effects arising from the Proposed Scheme in relation to noise and vibration.

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

12.3 In line with **Chapter 2: Approach to EIA**, the assessment reports on the likely significant environmental effects, the further mitigation measures required to prevent, reduce or offset any significant adverse effects, or further enhance beneficial effects. The conclusions are provided both in terms of the residual effects and whether these are considered significant. The assessment of effects takes into consideration both primary and tertiary mitigation (see **Chapter 2: Approach to EIA** for further details) and is informed by the EIA Scoping process (**Appendix 2.1 - 2.2**) and iterative scoping process where applicable.

12.4 This Chapter, and its associated **Figures 12.1**, **12.2** and **12.3** and **Appendices 12.1 – 12.5**, is intended to be read as part of the wider ES with particular reference to the introductory Chapters of this ES (**Chapters 1 – 5**).

12.5 In addition, this Chapter should be read in conjunction with **Chapter 13: Assessment of Cumulative Effects**.

Summary of Consultation

12.6 **Table 12.1** provides an overview of the consultation that has been undertaken to inform the Proposed Scheme and EIA, including the consideration of likely significant effects and the methodology for assessment.

Table 12.1: Summary of Consultation

Body / Organisation	Contact	Date and Form of Consultation	Summary
MCC	Environmental Health	Email, 12th January 2023	Provided methodology for EIA assessment for noise and vibration and confirmed additional noise and vibration monitoring to be undertaken. Confirmed scope of EIA and provided details of the information to be provided in the EIA Chapter.
MCC	Environmental Health	Email 28th February 2023	Email from Laura Miller Environmental Protection Officer MCC confirming our proposed methodology – Construction Stage noise, Construction Vibration, Construction Stage Traffic, Operational Stage Traffic all

Body / Organisation	Contact	Date and Form of Consultation	Summary
			scoped out of EIA. EIA to include Operational Plant and a standalone Noise Impact Assessment.

Scope of the Assessment

12.7 An EIA Scoping Report was submitted to MCC on 17th February 2023, as presented as **Appendix 2.1**. The EIA Scoping Opinion was received on 29th March 2023 (**Appendix 2.2**). This section provides confirmation on the scope of the assessment presented within this Chapter following submission of the EIA Scoping Report.

Effects Not Considered to be Significant

12.8 The following effects were not considered significant as part of the EIA Scoping Report (**Appendix 2.1**) and are not considered further in this Chapter (with detailed justification provided within the EIA Scoping Report):

- Nuisance and disturbance as a result of noise from construction activities [existing residential receptors located close to the Site];
- Nuisance and disturbance as a result of vibration from construction activities [existing residential receptors located close to the Site];
- Nuisance and disturbance as a result of increased noise from construction traffic [existing residential receptors located close to the Site];
- Nuisance and disturbance as a result of increased noise from operational traffic [existing residential receptors located close to the Site]; and
- Nuisance and disturbance resulting from the impact of vibration from railway traffic [new receptors on the Site].

12.9 Following the EIA Scoping process, the following additional effect has been identified. This effect is not considered significant and the evidence to support this determination is outlined below.

Nuisance and disturbance as a result of noise from within the Proposed Scheme [residential receptors located within the Proposed Scheme]

12.10 Noise from operational plant upon receptors of the Proposed Scheme itself shall be designed as the Proposed Scheme is developed to achieve suitable internal noise limits according to appropriate guidance such as BS 8233, WHO: Guidelines for Community Noise and ProPG.

12.11 Noise transmission within the building between residential units will be controlled by the Building Regulations[1]. Separating walls and floors will need to meet minimum standards which will protect occupants from internal noise transmission. The design stage of the Proposed Scheme will ensure that suitable sound insulation measures are incorporated into the structure of the Proposed Scheme to ensure that plant and equipment within the Site will not significantly impact upon future residents. Details of the proposed external façade

treatment, including the wall cladding, glazing and ventilation are included within the standalone noise assessment included within **Appendix 12.1**.

12.12 Therefore, nuisance and disturbance as a result of noise from within the Proposed Scheme is not considered to be significant and will not be considered further within this ES Chapter.

Effects Considered Likely to be Significant

12.13 The following effects (**Table 12.2**) were considered likely to be significant and are reported within this Chapter:

Table 12.2: Effects Considered Likely to be Significant

Likely Significant Effect	Receptors[a]	Applicable Development Stage
Plant Noise	Barnes Wallis Building Fairfield Hall Joule Library Lambert Hall MacDonald Hotel Maths @ Science West Building Pendulum Hotel Renold Building Vimto Park	Operational

Assessment Methodology

12.14 This ES Chapter considers the potential effects of noise from the plant and equipment as part of the Proposed Scheme on the existing noise climate.

12.15 A standalone assessment of the impact of the existing and future city centre noise climate upon the operation of the Site, for example, noise and vibration from the adjacent railway line and transport network on future occupants, has also been produced and is provided in **Appendix 12.1**. The effects of these noise sources on the Site are not significant but have been provided for completeness.

Legislative Framework Policy and Guidance

12.16 The following legislation and policy have informed the assessment of effects within this Chapter, and is detailed further in **Appendix 12.2**:

- Noise Policy Statement for England[2];
- National Planning Policy Framework[3]; and
- Planning Practice Guidance – Noise[4].

[a] The list of receptors identified here are the buildings affected. The details of specific locations assessed within each buildings is set out in **Appendix 12.3**.

12.17 The following guidance has informed the assessment of effects within this Chapter and is detailed further in **Appendix 12.2**

- ProPG: Planning and Noise Professional Practice Guidance on Planning & Noise – New Residential Development[5]
- Manchester City Council "Planning and Noise Technical Guidance"[6];
- BS 7445-1: 2003 Description and measurement of environmental noise - Part 1: Guide to quantities and procedures[7];
- BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings[8];
- World Health Organisation Guidelines for Community Noise 1999[9];
- BS 4142: 2014 Methods for Rating and Assessing Industrial and Commercial Sound[10]; and
- Institute of Environmental Management and Assessment – Guidelines for Environmental Noise Impact Assessment[11].

Defining the Study Area

12.18 The extent of the study area in relation to noise impacts has been informed by the influence of the location of relevant sensitive receptors. The study area extends around the Site to encompass Granby Row and surrounding buildings within a 100m radius. **Figure 12.1** shows the extent of the study area.

Background Studies to Inform the ES / Establishing the Baseline

12.19 **Table 12.3** summarises all surveys undertaken to inform the assessment presented within this Chapter.

Table 12.3: Baseline Noise and Vibration Surveys

Survey Type	Overview	Date of Completion
Baseline Noise Survey (Appendix 12.1)	Baseline noise surveys of the Site and surrounding area have been completed in May and July 2017 and February 2023 following agreement with the EHO on the locations for monitoring	May and July 2017 and February 2023
Baseline Vibration Survey (Appendix 12.1)	Baseline Vibration Surveys of the Site have been completed in May and July 2017 and February 2023 following agreement with the EHO on the locations for monitoring	May and July 2017 and February 2023

Assessment Process

12.20 The assessment of noise from plant and equipment associated with the Proposed Scheme on selected noise sensitive receptors (NSRs) within the locations identified in **Table 12.2** has been undertaken in accordance with BS 4142 2014+A1:20199. The location of the selected NSRs are shown in **Figure 12.2** and a full description of the receptor locations is provided in **Appendix 12.3**.

12.21 The standard presents a method of assessing potential noise impact by comparing the sound level due to industrial sources such as plant and equipment (the Rating Level) with the existing Background Sound Level at the noise sensitive receiver in the absence of the source.

12.22 Background sound levels have been derived from the measurements taken as part of the baseline assessment. Representative Background Sound Levels were derived for two time periods of interest, as follows.

- Day time 07:00hrs to 23:00hrs; and
- Night time 23:00hrs to 07:00hrs.

12.23 The modal value of the L_{A90} measurements taken during the specific measurement period of interest have been taken as the background sound level for each location. An overall representative background sound level of 47 dB L_{A90} has been used as a worst-case Background Sound Level for all receptor locations.

12.24 Prediction of operational sound levels (known as Specific Sound Levels) of plant and equipment at selected noise sensitive receptors has been carried out using CadnaA noise modelling. The following sources have been modelled;

- Boilers and pumps within Basement Mechanical Plant Room 1;
- Transformers and plant within the Basement Substation Plant Room;
- 275kVA Generator within the Basement Generator Plant Room;
- Boilers and pumps within Basement Mechanical Plant Room 1; and
- Condensers and smoke extract fan within roof plant areas on 13th, 19th and 25th Floors.

12.25 These uses have been selected as the noisiest activities likely to take place at the Site and therefore represent a realistic worst-case scenario. Other internal noise sources within the Site such as social, study and wellbeing areas (such as gaming areas, focus lounge and terraces) and back of house/servicing areas (including front of house reception, supporting management office, parcel storage, etc), cycle parking, bin storage, combined domestic water and sprinkle have not been assessed. These uses are located internally and therefore the building provides suitable noise mitigation to the closest existing receptors.

12.26 The model parameter and data used for inputs within the CadnaA noise model for the BS4142:2014 assessment is provided within **Appendix 12.3** and **Appendix 12.4**. Specific plant information was not available at the stage of the assessment and therefore realistic

proposed limits have been used within the assessment. Further detail in relation to the BS 4142 assessment is provided in **Appendix 12.3**

12.27 In this case, no BS 4142 corrections have been applied to the specific noise levels predicted by CadnaA since the plant and equipment are all proposed to be low noise and new and therefore not likely to be perceptible.

Reporting of the Environmental Effect and Significance Criteria

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

Determining Sensitivity of Receptor

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

12.30 The definition of the sensitivity of receptors used within the assessments has been derived from the guidance provided within Design Manual for Roads and Bridges[12] and professional expertise and is outlined in **Table 12.4**.

Table 12.4: Sensitivity of Receptors

Sensitivity	Definition
High	Hospitals (e.g. operating theatres or high dependency units), residential accommodation, private gardens, hospital wards, care homes, care homes at night, research facilities
Medium	Schools, universities, national parks, during the day; and temporary holiday accommodation at all times
Low	Offices, shops, outdoor amenity areas, long distance footpaths, doctors surgeries, sports facilities and places of worship
Negligible	Warehouses, light industry, car parks, agricultural land

Determining the Magnitude of Change

12.31 The magnitude of change has been considered as the change experienced from the current baseline conditions at the sensitive receptor and has been considered on a scale of **large**, **medium**, **small** or **negligible**. The change for plant noise has been calculated by comparing predicted sound levels to the baseline sound levels established from the baseline background sound level data collected during field surveys. The magnitude of change has then been determined, making reference to the criteria in **Table 12.5.**

Table 12.5: Magnitude of Change for Operational Activities

Magnitude of Change	Definition of Magnitude	
	BS 4142 Assessment Level dB(A) (from BS 4142)	Descriptions provided in BS 4142 for the Likely significance of Impact
Large	≥ 10	*"A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context."*
Medium	≥ 5 to < 10	*"A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context."*
Small	> 0 to < 5	No BS 4142 description but the lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact.
Negligible	≤ 0	Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

12.32 Details of all the noise sensitive receptors are provided in **Appendix 12.3** and include the closest residential properties, offices, and receptors within the Manchester University buildings.

Determining the Level of Effect

12.33 The level of effect has been informed by the magnitude of change due to the Proposed Scheme and the evaluation of the sensitivity of the affected receptor. The level of effect has been determined using professional judgement and **Table 12.5** has been a tool which has assisted with this process.

12.34 Whilst **Table 12.6** provides ranges, the level of effect is confirmed as a single level and not a range, informed by professional judgement.

Table 12.6: Matrix to Support Determining the Level of Effect

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

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

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

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

Determining Significance

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

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

12.39 In some instances, noise data has not been available for plant and equipment associated with the Site as a result noise levels have been assumed which are considered to represent realistic noise levels. It is proposed that a planning condition be applied to any planning permission granted to control noise to acceptable levels. This approach is commonly followed in controlling noise from plant and equipment and can ensure that no significant effects will result.

Baseline Conditions

12.40 A summary of the measurement data from field survey work is provided in **Table 12.7** below. Full results from the noise monitoring for both attended and unattended long term monitoring are presented in **Appendix 12.1**. The locations of the monitoring completed in 2023 are shown in **Figure 12.3**.

Table 12.7: Summary of Noise Measurements – 2017 Survey

Location	Descriptor	Sound Pressure Level, dB in Octave Band Centre Frequency, Hz								dBA
		63	125	250	500	1k	2k	4k	8k	
Southern elevation 2nd Floor	Day L_{eq}	73.4	64.5	64.2	62.1	61.8	58.3	58.7	53.7	**66.8**
	Night L_{eq}	68.3	61.1	61.6	59.1	58.3	54.5	58.5	52.9	**64.4**
	*Typical Night L_{Max}	91.6	79.7	81.7	78.4	77.5	74.3	75.6	73.4	**83.3**
Southern elevation 5th Floor	Day L_{eq}	72.4	63.5	63.2	61.1	60.8	57.3	57.7	52.7	**65.8**
	Night L_{eq}	67.3	60.1	60.6	58.1	57.3	53.5	57.5	51.9	**63.4**
	*Typical Night L_{Max}	90.6	78.7	80.7	77.4	76.5	73.3	74.6	72.4	**82.3**
Southern elevation 13th Floor	Day L_{eq}	71.5	64.7	62.3	60.9	62.1	56.3	51.2	45.3	**65.2**
	Night L_{eq}	67.0	60.8	59.2	57.9	59.1	53.7	51.4	44.8	**62.5**
	*Typical Night L_{Max}	88.6	78.5	74.6	74.8	72.5	70.1	68.0	62.8	**77.9**
Eastern elevation 6th Floor	Day L_{eq}	68.8	61.4	59.0	58.1	58.4	54.0	51.0	46.2	**62.3**
	Night L_{eq}	63.8	57.9	56.1	55.6	55.3	49.8	47.1	42.4	**59.0**
	*Typical Night L_{Max}	84.6	75.3	72.9	74.1	71.9	68.6	66.7	60.1	**76.8**
Western elevation 6th Floor	Day L_{eq}	67.6	61.9	56.8	56.1	55.9	51.6	48.0	44.6	**60.0**
	Night L_{eq}	61.8	57.7	52.9	52.6	51.6	46.3	41.2	36.3	**55.5**
	*Typical Night L_{Max}	81.9	74.5	70.3	71.5	69.6	66.4	62.2	57.3	**74.3**

**Typical Night L_{Max} is the 98th percentile of the $L_{Max,1min}$ measurements for the whole night-time period (23:00 – 07:00)*

Table 12.8: Summary of Noise Measurements – 2023 Survey

Location	Descriptor	Sound Pressure Level, dB in Octave Band Centre Frequency, Hz								dBA
		63	125	250	500	1k	2k	4k	8k	
MP1 – 3.8m Above ground level 5.5 m from railway line	Day L_{eq}	65.9	60.1	57.5	57.1	53.9	48.3	41.4	34.6	**58.4**
	Night L_{eq}	63.2	58.3	54.5	51.6	50.7	45.1	38.4	32.8	**54.7**
	*Typical Night L_{Max}	84.6	77.2	73.2	68.3	67.6	63.3	56.1	53.5	**72.4**
MP2 – 2.5 m from ground level at far north eastern corner of the site.	Day L_{eq}	65.7	61.7	59.2	59.4	55.2	50.4	44.1	36.5	**74.4**
	Night L_{eq}	61.8	58.0	55.3	55.1	51.5	46.2	39.9	32.3	**69.6**
	*Typical Night L_{Max}	81.3	73.8	74.7	70.1	68.0	64.4	61.0	53.7	**73.3**

**Typical Night L_{Max} is the 98th percentile of the $L_{Max,1min}$ measurements for the whole night-time period (23:00 – 07:00)*

12.41 All values are free field sound pressure levels in dB re 20 µPa.

12.42 It has not been possible to replicate the noise measurements from 2017, which assessed background noise levels at various heights across the Site, due to the Chandos Hall building being demolished. The noise model has been validated with both the 2017 and 2023 survey data.

12.43 **Table 12.9** below outlines the noise sources affecting the Site and adjacent receptors.

Table 12.9: Description of Noise Sources Measured – 2017

Measurement Locations	Noise Sources
South facing elevation (overlooking railway)	Railway noise dominant. Train passbys are all quite slow, due to proximity of Piccadilly Station. Mixture of diesel (louder) and electric (quieter) trains. Occasional diesel freight trains during day and night. Occasional horns. Rail squeal often audible, due to track curve near Piccadilly, though not directly adjacent to Chandos Hall. Distant general road traffic hum dominant in between train movements. At upper levels the rail noise reduces a little and traffic hum becomes more noticeable. Some noise at higher floors from fixed M&E plant on rooftops of University buildings.
East facing elevation	Distant general road traffic hum dominant. Ambient noise levels are higher at the upper floors of the existing building where there is a direct line of sight to Piccadilly station taxi drop off/ interchange area. Some

Measurement Locations	Noise Sources
(facing towards Piccadilly station)	playground noise from existing nursery audible at lowest floors. Rail noise audible becoming more significant closer to the railway line.
West facing elevation (facing towards Vimto Park)	Distant general road traffic hum dominant. Louder at higher floors of the existing building. Subjectively lower noise levels than east facing elevation. Rail noise audible becoming more significant closer to the railway line.

Table 12.10: Description of Noise Sources Measured – 2023

Measurement Locations	Noise Sources
MP1 facing railway line	Railway noise dominant. Train passbys are all quite slow, due to proximity of Piccadilly Station. Mixture of diesel (louder) and electric (quieter) trains. Occasional diesel freight trains during day and night. Horns from railway occasionally. Occasional rail noise squeal, due to track curve near Piccadilly, though not directly adjacent to the Site. Distant general road traffic hum dominant in between train movements.
MP2	Railway noise evident at this position but not always dominant. Noise from general road traffic on Granby Row and the A6 and surrounding road network more dominant.

Background sound levels

12.44 The results obtained during the noise survey were analysed in order to determine the typical background sound levels at noise sensitive receptors for use in the BS 4142 assessment. Full details are provided with **Appendix 12.3.**

12.45 The free-field representative background sound levels from the 2017 survey for the nearest residences, which are currently those student dwellings located on Granby Row are as follows:

- Day time 54 dB $L_{A90,1hour}$
- Night-time 47 dB $L_{A90,15\ minute}$

12.46 The free-field representative background sound levels from the 2023 survey for the nearest residences, which are currently those student dwellings located on Granby Row are as follows:

- Day time 54 dB $L_{A90,1hour}$
- Night-time 53 dB $L_{A90,15\ minute}$

12.47 As a result of the differences in the night-time background surveys, the lower background sound level of 47 dB $L_{A90,15\ minute}$ has been be used within assessment.

Future Baseline

12.48 There are no identifiable natural evolutions that could occur that would result in a future baseline different to that of the existing baseline. Changes in noise levels would only arise from human activities, including changes in the overall traffic movements on the local road network, both as a consequence of future development on the Site or the surrounding area or as a general result of increased/decreased dependence on cars. However, the exact nature of this change is unknown.

12.49 The assessment has assumed that the baseline conditions for 2024 when the Site will be operational are the same as for those measured in 2017 for the night-time and in 2017 and 2023 for the daytime. This will allow for a worst-case assessment of the operational effects, since if there are any increases in background sound levels in the future baseline, this would translate to a lower predicted change in noise levels and a lower impact.

Primary and Tertiary Mitigation

Operational Stage

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

- For space heating within the accommodation space, wall mounted electrical control panels will provide highly efficient heating to the space. The communal areas at ground floor level are served by an air source heat pump (ASHP) simultaneous heating and cooling VRV system which is 300% plus efficient, these units offer high efficiencies by recovering heat from the external air during the winter months. In the warmer months, the units provide cooling to the area to mitigate the risk of overheating due to the internal heat gains within the space.

- Domestic hot water for the building will be generated by ASHP. They will be located at roof level and remain serviceable and easy to maintain or replace at end of life.

Assessment of Effects, Secondary Mitigation and Residual Effects

Operational Stage

Plant noise [Closest residential receptors]

12.51 A summary of the BS4142;2014[10] calculation completed for the plant and equipment is shown in each section and details and inputs into the calculations are shown in **Appendix 12.3**.

12.52 All plant and machinery, including; boilers, pumps, CHP plant and transformers are assumed to operate 24 hours per day. Assessment of the impact of all plant and equipment on selected receptors during the night-time period of 23:00 to 07:00 has been completed, since this is the period of time when ambient and background noise levels are at their lowest. A summary of the results is shown in **Table 12.11** below.

Table 12.11: Night-time Plant Noise Assessment

ID	Receptor	Existing sound level L_{A90}	Rating Level (including corrections) dB	Difference between BS4142 rating level and background sound level	Magnitude of Change	Sensitivity of Receptor	Level of effect
1	Barnes Wallis Building, North	47	22	-25	Negligible	Medium	Negligible
2	Barnes Wallis Building, West (Ground Floor)	47	18	-29	Negligible	Medium	Negligible
3	Barnes Wallis Building, East (Ground Floor)	47	20	-27	Negligible	Medium	Negligible
4	Barnes Wallis Building, West (Middle Floor)	47	20	-27	Negligible	Medium	Negligible
5	Barnes Wallis Building, East (Middle Floor)	47	21	-26	Negligible	Medium	Negligible
6	Barnes Wallis Building, West (Top Floor)	47	24	-23	Negligible	Medium	Negligible
7	Barnes Wallis Building, East (Top Floor)	47	23	-24	Negligible	Medium	Negligible
8	Echo Street Office	47	32	-15	Negligible	Low	Negligible
9	Fairfield Hall (Ground Floor)	47	30	-17	Negligible	High	Negligible
10	Fairfield Hall (Middle Floor)	47	33	-14	Negligible	High	Negligible
11	Fairfield Hall (Top Floor)	47	32	-15	Negligible	High	Negligible
12	Joule Library, East	47	30	-17	Negligible	High	Negligible
13	Joule Library, South	47	30	-17	Negligible	High	Negligible

ID	Receptor	Existing sound level L_{A90}	Rating Level (including corrections) dB	Difference between BS4142 rating level and background sound level	Magnitude of Change	Sensitivity of Receptor	Level of effect
14	Lambert House, East (Ground Floor)	47	24	-23	Negligible	High	Negligible
15	Lambert House, West (Ground Floor)	47	26	-21	Negligible	High	Negligible
16	Lambert House, East (Middle Floor)	47	25	-22	Negligible	High	Negligible
17	Lambert House, West (Middle Floor)	47	26	-21	Negligible	High	Negligible
18	Lambert House, West (Top Floor)	47	27	-20	Negligible	High	Negligible
19	Lambert House, East (Top Floor)	47	25	-22	Negligible	High	Negligible
20	London Road Fire Station	47	22	-25	Negligible	High	Negligible
21	Macdonald Hotel (Top Floor)	47	19	-28	Negligible	High	Negligible
22	Maths & Science Building, West (Ground Floor)	47	14	-33	Negligible	Medium	Negligible
23	Maths & Science Building, East (Ground Floor)	47	13	-34	Negligible	Medium	Negligible
24	Maths & Science Building, West (Middle Floor)	47	19	-28	Negligible	Medium	Negligible

ID	Receptor	Existing sound level L_{A90}	Rating Level (including corrections) dB	Difference between BS4142 rating level and background sound level	Magnitude of Change	Sensitivity of Receptor	Level of effect
25	Maths & Science Building, East (Middle Floor)	47	15	-32	Negligible	Medium	Negligible
26	Maths & Science Building, West (Top Floor)	47	22	-25	Negligible	Medium	Negligible
27	Maths & Science Building, East (Top Floor)	47	18	-29	Negligible	Medium	Negligible
28	Pendulum Hotel	47	23	-24	Negligible	High	Negligible
29	Renold Building	47	28	-19	Negligible	Medium	Negligible
30	Staff House	47	22	-25	Negligible	Medium	Negligible
31	The Bulls Head Pub	47	23	-24	Negligible	High	Negligible
32	Velvet House	47	26	-21	Negligible	High	Negligible
33	Vimto Park	47	36	-11	Negligible	Low	Negligible

12.53 It should be noted that the predicted level of effect is based on realistic assumptions for plant noise, because specific details are not available at this relatively early stage. Appropriate design of plant noise limits will be addressed at the detailed design stage.

12.54 In addition, our assessment has taken a worst-case view regarding baseline background sound levels by using the 2017 measured data. The 2023 survey indicated night-time background sound levels that are 6 dB higher than those used in the assessment.

12.55 The sensitivity of receptors is considered to be; low for two receptors, medium for 15 receptors and high for 16 receptors (as listed in **Table 12.11**). As can be seen in **Table 12.11**, the magnitude of change (ie the difference between the BS4142 rating level and background sound level) at all receptors is less than zero and thus, when considered in accordance with **Table 12.5,** the magnitude of change at all receptors is considered to be negligible.

Therefore, there is likely to be a direct, permanent, long-term, adverse effect which is considered to be negligible.

Secondary Mitigation or Enhancement

12.56 Appropriate design and selection of fixed plant equipment at the Site to achieve MCC and BREEAM plant noise limits at sensitive receptors will be carried out as the scheme is developed. This will typically be secured by use of an appropriately worded planning condition.

Residual Effect

12.57 The sensitivity of receptors will remain; low for two receptors, medium for 15 receptors and high for 16 receptors (as listed in **Table 12.11**). The magnitude of change for all receptors, following secondary mitigation remains negligible when considered using **Table 12.5,** as the difference between the BS4142 rating level and background sound level at all receptors remains less than zero. Therefore, there is still likely to be a direct, permanent, long-term, adverse effect which is considered to be negligible

Significance

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

Limitations and Assumptions

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

- The background noise assessments have not been able to include the same receptor locations as the previous assessment due to Chandos Hall being demolished. Access to the adjacent building, Bainbridge House, Granby Row, was not available due to security issues. Measurements were therefore undertaken at the ground level and compared with the previous assessment when determining appropriate Background Sound Levels for the assessment.

- The assessment is based on the design and operational details available at the time of preparing the ES. Information has been provided by Waterman Building Services Ltd and may change in the future where available. Where specific noise data was not available a realistic assessment has been considered.

- The assessment has not assessed the impact of noise from internal uses such as the potential noisy internal uses; only external noise sources and ancillary sources of noise e.g. boiler plant have been assessed. Individual residential units are not generally considered as new noise sources within planning and noise assessments.

- There are a number of limitations and uncertainties associated with prediction of noise, and where applicable, realistic worst-case scenarios have been adopted based on professional judgement:

  – There is an element of uncertainty in all measured and modelled data used within CadnaA.

  – Regarding the aspects of the assessment which do not rely on detailed noise modelling, the conclusions of the assessment are reliant on the professional

judgement of the consultants involved and the validity of the guidance and tools utilised.

- For robustness, a realistic worst-case approach has been taken assuming:
  - In relation to the operational noise from areas such as the plant and equipment associated with the Proposed Scheme, the assessments have been based on all likely activities taking place for the predictions.
  - No increase in background L_{A90} levels has been assumed when assessing future operational noise.

Summary

12.60 **Table 12.12** provides a summary of the effects, receptors, residual effects and conclusions of significance considered within the Chapter.

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

Table 12.12: Summary of Residual and Significant Effects

Effect Operational Stage	Receptor	Residual Effect	Is the Effect Significant?
Plant Noise	Barnes Wallis Building Fairfield Hall Joule Library Lambert Hall MacDonald Hotel Maths @ Science West Building Pendulum Hotel Renold Building Vimto Park	Negligible adverse	NO

References

[1] HMSO, Building Regulations 2010 see: The Building Regulations 2010 (legislation.gov.uk) (Accessed: 5th April 2023)
[2] Department for Food and Rural Affairs (Defra) (March 2010) Noise Policy Statement for England: https://www.gov.uk/government/publications/noise-policy-statement-for-england (Accessed: 28/02/23)

[3] DCLG, (March 2012) National Planning Policy Framework: https://www.gov.uk/government/publications/national-planning-policy-framework--2: (Accessed: 28/02/23)
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[5] Institute of Acoustics, Chartered Institute of Environmental Health, Association of Noise Consultants (May 2017) ProPG Planning & Noise – Professional Practice Guidance on Planning & Noise – New Residential Development https://www.ioa.org.uk/sites/default/files/14720%20ProPG%20Main%20Document.pdf (Accessed 30/3/23)
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[7] BS 7445-1: 2003 Description and measurement of environmental noise - Part 1: Guide to quantities and procedures: BS 7445-1:2003 Description and measurement of environmental noise Guide to quantities and procedures - European Standards (en-standard.eu) (Accessed 28/2/23)
[8] BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings: https://www.thenbs.com/PublicationIndex/Documents/Details?DocId=306010 (Accessed 28/2/23)
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[10] British Standards Institution, (2014) 'BS 4142:2014 Methods for rating and assessing industrial and commercial sound'. BS 4142 - Noise Assessments and Methods | BSI (bsigroup.com) (Accessed 28/2/23)
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[12] Highways Agency (2011) *Design Manual for Roads and Bridges, Volume 11 Section 3 Environmental assessment techniques, Part 7 DMRB Revision 1, Noise and vibration: https://nationalhighways.co.uk/suppliers/design-standards-and-specifications/design-manual-for-roads-and-bridges-dmrb/* (Accessed 3/3/2023)

13. Assessment of Cumulative Effects

Introduction

13.1 This Chapter reports the assessment of cumulative effects arising from the Proposed Scheme, in line with Schedule 4, Paragraph 5(e) of the EIA Regulations, which states the need to consider the following:

"the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources".

13.2 To accord with the EIA Regulations, in terms of providing an assessment of cumulative effects, this assessment has considered the following types of cumulative effects:

- **Effect interactions**: the interaction of environmental effects of the Proposed Scheme affecting the same receptor either within the Site or in the local area; and
- **In-combination interactions**: the combination of environmental effects of the Proposed Scheme with existing or approved projects affecting the same receptor.

Legislative Framework and Guidance

13.3 Planning Practice Guidance[1] (PPG) refers to the need for cumulative effects to be assessed as part of an ES, but at present, there is no widely accepted current methodology or best practice for the assessment of cumulative effects. As such, the methodology has been based on previous experience and knowledge at Turley, the types of receptors being assessed and the nature of the Proposed Scheme.

Assessment Methodology

13.4 The assessment of cumulative effects, for both effect interactions and in-combination effects, is largely qualitative in nature. The assessment of effect interactions is based on information contained within the ES, whilst the assessment of in-combination effects is also based on publicly available information (i.e. the planning applications submitted for the projects considered for in-combination effects). The approach to the assessment of both effect and in-combination interactions is set out in the following sections.

Effect Interactions

13.5 Following the completion of the **Technical Chapters 6 – 12**, the residual effects have been collated into a matrix so that effect interactions on common receptors[a] can be identified. Where a residual effect is concluded in **Technical Chapters 6 – 12** to be neither adverse nor beneficial, i.e. negligible, then this was excluded from the matrix

[a] The common sensitive receptors considered within this assessment are those which are assessed within two or more of the technical assessments within the ES.

(**Table 13.2** and **13.3**). This is on the basis that a negligible residual effect is unlikely to cause a noticeable change at a receptor or the receptor is not considered sensitive to a change.

13.6 Where residual effects have been considered to be 'minor' or greater, receptors have been categorised into receptor categories, defined by the 'factors' categories outlined in Schedule 4, Paragraph 4 of the EIA Regulations. The threshold has been set at 'minor' as this is considered to address the potential for a number of 'not significant' effects to a receptor becoming significant when they are considered together.

13.7 Where the level of effect ranged across receptors assessed, the worst case level of effect was included in **Tables 13.2** and **13.3**, i.e. the 'least beneficial' or 'most adverse'. If no residual effects for a receptor group were identified, these were not included in **Tables 13.2** and **13.3**.

13.8 Where effect interactions have been identified, a qualitative appraisal has been undertaken for the relevant receptor categories. The qualitative evaluation at the receptor level considered the following:

- Magnitude of change for each residual effects;
- Sensitivity/value/importance of the receptor/receiving environment to change; or/and
- Duration and reversibility of effect.

13.9 This process has been documented within the Assessment of Effect Interactions section of this Chapter.

In-Combination Effects

13.10 The assessment of potential in-combination effects has followed a two-step approach, as detailed below.

Step 1: Identification and Evaluation of Projects for Further Consideration

13.11 A review of planning applications submitted to MCC was undertaken as part of the EIA Scoping Report (**Appendix 2.1**) to identify an initial list of projects (referred to as 'Approved Projects') that could give rise to in-combination effects with the Proposed Scheme. The review considered projects that have submitted applications, rather than any projects that are foreseeable or allocated sites. This is due to it being unlikely that there will be sufficient information to inform a robust in-combination assessment for schemes where no application is yet submitted.

13.12 Applicable projects for consideration of in-combination effects were determined using the following criteria:

- Permitted application(s) either under construction or not yet implemented;
- Submitted application(s) not yet determined but have the potential to be determined prior to the submission of the Proposed Scheme;

- All refusals subject to appeal procedures not yet determined but have the potential to be determined prior to the submission of the Proposed Scheme;

- Located in common geographical area, taken to be within 5km of the Site;

- The project being of a relevant scale, the minimum threshold for this has been projects that have been or would be considered Schedule 1 developments within the EIA Regulations, or Schedule 2 developments, at which there is a potential for 'likely significant effects'. This threshold was be applied with caution.

13.13 In the application of these criteria, if a planning application had not been supported by an EIA it has been assumed that MCC had undertaken a screening exercise upon receipt of the application or issued a screening opinion and concluded that an EIA is not required and therefore the project was not considered to result in 'likely significant effects' (i.e. not EIA development).

13.14 The list of Approved Projects was included in the EIA Scoping Report (**Appendix 2.1**) for agreement with MCC. The agreed list of Approved Projects (as confirmed in the EIA Scoping Opinion at **Appendix 2.2**) is set out in **Table 13.1**.

13.15 The final list of Approved Projects is set out in **Table 13.1** and shown on **Figure 13.1**.

Step 2: Assessment of In-Combination Effects

13.16 A review of available information for each Approved Project was undertaken using MCC's online planning portal. Relevant ES's or other relevant environmental reports were downloaded for consideration by the project team. Where no environmental reporting was available, professional judgement was used in order to determine any potential in-combination effect.

13.17 Where available, consideration was also given to whether there is likely to be a concurrent construction or operational stage with the Proposed Scheme.

13.18 The sensitive receptors identified for the Proposed Scheme were then cross checked against the receptors identified within the Approved Projects. In order for there to be a potential in-combination effect, there needs to be a potential effect on the same receptor for a similar duration within the overall programme for the Proposed Scheme.

13.19 The qualitative evaluation at the receptor level considered the following:

- Combined magnitude of change of all Approved Projects;

- Sensitivity/value/importance of the receptor/receiving environment to change; or/and

- Duration and reversibility of effect.

13.20 Through a combination of the qualitative evaluation and mitigation presented in the ES, conclusions have been drawn as to the likelihood for significant in-combination environmental effects.

Table 13.1: List of Approved Projects for In-Combination Assessment

ID	Planning Ref	Name	Description	Distance From Site	Status	EIA
1	124972/FO/ 2019	Mayfield	Phased creation of circa 2.4 ha (6 acres) of public park, including hard and soft landscaping and new bridges across the River Medlock; erection of 9 storey office development above basement with mezzanine and plant level (Class B1) with ground floor Class A1 (Shop), A2 (Financial and Professional Services), A3 (Café and Restaurant), A4 (Drinking Establishment) B1 (Office) uses, rooftop amenity spaces and terrace levels, associated public realm and riverside walkway; erection of 11 storey Multi-Storey Car Park to provide 581 car parking spaces with associated landscaping; highways and infrastructure works including the creation of new junction from London Road to provide access to the multi-storey car park (MSCP) (Use Class Sui Generis); works to Baring Street, stopping up of Bond Street and Nether Street (alongside associated Traffic Regulation Orders to manage unrestricted parking to Buxton Street, Berry Street and Travis Street (to be delivered and implemented prior to the MSCP becoming operational)) alongside enabling works comprising phased demolition and site clearance, earthworks including re-profiling and construction of retaining walls for the land bounded by the Mancunian Way to the south, Mayfield Depot to the north, Baring Street to the west and Hoyle Street to the east.	300m south east	Part completed / Under construction	Yes
2	125248/FO/ 2019	Baring Street Office 2	Erection of 13 storey building (including ground and mezzanine) comprising office space (Use Class B1) above flexible uses at ground and mezzanine levels (Class A1 (Shop), A2 (Financial and Professional Services), A3 (Café and Restaurant), A4 (Drinking Establishment)/D1 (Art Gallery, Museum and Conference & Training Centre)/D2 (Cinema)/	340m south east	Under construction	Yes

ID	Planning Ref	Name	Description	Distance From Site	Status	EIA
			Theatre (Sui Generis)) with rooftop amenity spaces and external terrace levels, internal ancillary storage spaces for waste, cycles, rooftop plant, back of house functions and associated landscaping works.			
3	132626/FO/2022	M1 Piccadilly, Store Street	Erection of 15 storey building comprising 54 apartments (Use Class C3) with associated residential facilities (residents lounge and terrace and office space), 2 car parking spaces and 57 cycle parking spaces, landscaping, access and associated development.	430m north east	Approved	No
4	126608/FO/2020	Store Street	Erection of part 4, part 11 storey residential (Class C3) development (with roof top plant room) comprising 66 (Class C3) residential units (3 x 2 bed town houses, 46 x two bed apartments and 17 x one bed apartments) together with associated car parking (10 spaces including 5 EVC spaces), cycle parking (66 spaces) communal roof terrace (level 6), landscaping and ancillary infrastructure including rooftop PV panels, alterations to access onto Store Street.	520m north east	Under construction	No
5	125573/FO/2019	First St 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.	920m south west	Under construction	Yes
6	121252/FO/2018	Student Castle, Hulme Street	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	590m south west	Approved	No

ID	Planning Ref	Name	Description	Distance From Site	Status	EIA
			facilities, and 786sqm (GIA) SME incubator workspace (Use Class B1), including public realm improvements and other associated work			
7	120635/FO/2018	Hotspur House	Part demolition and redevelopment and part retention and refurbishment of the former Hotspur Press Complex (Medlock Mill) to deliver 171 residential units (10 no. 1 bed, 1 person apartments, 49 no. 1 bed, 2 person apartments, 2no. 2 bed, 3 person apartments and 110 no. 2 bed 4 person apartments) - Use Class C3, within refurbished mill space and 28 storey building (including two levels of basement), commercial floorspace (Use Classes A1 (shop), A2 (financial and professional services), A3 (restaurants and cafes), B1 (office), D1 (medical clinic, health centre, art gallery and museum only) and / or D2 (gymnasium or bowling alley only) together with servicing, access, landscaping including a new public space and pedestrian route between Gloucester Street and First Street, and other associated works	800m west	Approved	Yes
8	125712/FO/2019	London Road Fire Station	Refurbishment, restoration, reconfiguration and extension of former London Road Fire Station site to create a mixed use development comprising of hotel (Use Class C1), workspace/office (Use Class B1, D1), commercial floorspace for shop and food and drink uses (Use Classes A1, A3 and A4), residential apartments (Use Class C3) and leisure (Use Class D2), together with access and highways works, servicing, rooftop plant and associated works	65m north	Under construction	No
9	121099/FO/2018	The Fairfax	Construction of two residential buildings (Use Class C3) comprising Block 1 (29 storeys) (224 apartments (4 x 1 bed 1 person, 52 x 1 bed 2 person, 64 x 2 bed 3 person and 104 x 2 bed 4 person) 25% 1 bed and 75 % 2 bed) Block 2 (23 storeys) (264 apartments 44 x1 bed 1 person, 44 x 1 bed 2 person, 92 x 2 bed 3 person and 84 x 2 bed 4 person) (33% 1 bed and 67%% 2 bed) with a linked central podium, to deliver 488 units,	490m north east	Under construction	Yes

ID	Planning Ref	Name	Description	Distance From Site	Status	EIA
			shared amenity space, 27 car parking spaces, 492 cycle spaces, landscaping (including new public park) , lighting, highways and associated works following demolition of existing buildings and structures.			
10	127317/FO/2020	The Castings	Erection of a part 25 part 21, part 14, part 7 storey building for 352 apartments comprising 39 Studios, 77x 1 bed, 227 x 2 bed and 9 x 3 bed (Use Class C3) with ground floor commercial space within 4 units (494m2) for Class A1 (Shop), A2 (Financial and Professional Services) A3 (Café and Restaurant), A4 (Drinking Establishment), A5 (Hot Food Take Away), B1 (Office) and D1-D2 uses, ancillary indoor and outdoor amenity space (including 1st and 21st floor external areas) car parking for 20 vehicles, cycle parking and associated hard and soft landscaping works, following demolition of existing buildings.	590m north east	Under construction	Yes
11	122000/FO/2018	Victoria House	Erection of a part 25 part 3 storey residential tower (Use Class C3) for 177 apartments comprising 59 x 1 bed (34 x 1 bed 1 person and 25 1 bed 2 person), 113 x 2 bed (44 x 2 bed 3 person and 69 x 2 bed 4 person) and 5 x 3 bed (3 bed 5 person) with ground floor commercial space (Use Class A1, A2, A3, A4 and D1) above partial basement level associated shared amenity spaces at 3rd floor level, realm enhancements following demolition of existing buildings.	660m north east	Under construction	Yes
12	132214/FO/2021	Ferrous	Erection of a 15 storey building to form 107 apartments (Use Class C3) at floors 1 to 15, residential amenity facilities including a roof terrace (level 14), associated ground floor cycle storage (68 spaces), two ground floor commercial units (Use Class E/ Sui Generis (Drinking Establishment), multipurpose events Pavilion (Use Class E/ Sui Generis (Drinking Establishment), associated landscaping to site perimeter and rooftop PV panels.	590m north east	Under construction	No

ID	Planning Ref	Name	Description	Distance From Site	Status	EIA
13	132489/FO/2021	Affinity Living Port Street	Erection of a part-33, part-11, part 9 part 7 storey residential building above semi-basement level, with associated residents' amenity space including gym (Use Class C3) (comprising 481 dwellings), commercial space (Use Class E), basement car parking (47 spaces), cycle parking (481 spaces) landscaping, and other associated works	700m north	Under construction	Yes
14	121375/FO/2018	20-36 High Street	Construction of a 22 storey building comprising 361 residential apartments (122 x 1 bed 2 person, 119 x 2 bed 3 person, 94 x 2 bed 4 person, 21 x 3 bed 5 person and 5 x 3 bed 6 person (34% 1 bed, 59% 2 bed and 7% 3 bed) ground floor commercial floorspace (Use Classes A1 (Shop), A3 (Restaurant and Cafe), A4 (Drinking Establishment) and A5 (Hot Food Take-away) associated landscaping, including new public realm and pedestrian route, together with servicing, cycle parking, access and other associated works following demolition of buildings at 20-22 and 24-26 High Street and 5 market stalls to Church Street.	850m north west	Approved	Yes
15	114664/FO/2016	St Michael's	Partial demolition of existing buildings. Development up to 171.6m AOD comprising residential (Use Class C3), offices (Use Class B1), hotels (Use Class C1), place of worship (Use Class D1) and leisure/food and drink uses (Classes A1, A3, A4, A5 and D2). Creation of public spaces and new public realm, provision of basement car parking, highway alterations, landscaping and associated works.	950m west	Under construction	Yes
16	134288/FO/2022	Number 3 Circle Square	Erection of 15 storey building comprising office space (Use Class E(g)(i)) and ancillary flexible commercial uses (Use Class E), rooftop terrace, highway works, landscaping, and other associated works.	370m south west	Under construction	Yes
17	125799/FO/2019	John Dalton West/John	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	720m south west	Under construction	No

ID	Planning Ref	Name	Description	Distance From Site	Status	EIA
		Dalton Tower, Chester Street	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.			
18	131859/FO/2021	50 Fountain Street	Full Planning Permission for the demolition of modern extension to Grade II Listed building, retention and refurbishment original Victorian facade, erection of commercial building (Use Class E) with landscaping, and other associated works.	760m north west	Approved	No
19	124495/FO/2019	Land at Great Ancoats Street, Manchester	Erection of a 12 storey building to create a 212-bedroom hotel (Use Class C1) with ancillary facilities at ground and first floor level and associated servicing, disabled car parking, drop-off area, public realm and hard landscaping works, with access from Pollard Street	770m north east	Approved	No
20	115178/FO/2017	Part Site Of Existing Car Park Bounded By Ducie Street, The Rochdale Canal, Peak Street, Tariff Street (Multi-Storey Car Park) And Remainder Of Surface Car Park	Erection of 2 linked buildings ranging in height from 8 to 10 storeys (plus roof top plant room) to provide residential accommodation (Use Class C3) comprising 18 x 1 bed, 84 x 2 bed, 15 x 3 bed, 2 x duplex (4 bed) and 9 townhouses (7 x 3 bed, 1 x 2 bed and 1 x 4 bed) (128 units in total) works to create provision for access and servicing, hard and soft landscaping (to include a secure external area and public realm linking Ducie Street to the Rochdale Canal) and associated works following the demolition of existing buildings. Development to include 128 cycle parking spaces.	500m north east	Approved	No

Assessment of Effect Interactions

13.21 **Table 13.2** and **13.3** detail those receptor categories where residual effects were identified within **Technical Chapters 6 – 12** for the construction and operational stages of the Proposed Scheme, respectively. **Technical Chapters 6 – 12** have each identified specific sensitive receptors within their assessments, and these have been grouped into common categories in **Table 13.2** and **13.3** for further consideration.

13.22 Where effects are reported as significant in **Technical Chapters 6 – 12**, these are shown in **Table 13.2** and **13.3** as **bold** and shaded grey.

Construction Stage

Table 13.2: Matrix of Effect Interactions (Construction Stage)

Effect	Population and Human Health	Climate	Cultural Heritage
Chapter 6: Socio-Economics and Human Health			
Employment generated during the construction stage	Minor beneficial		
Chapter 7: Climate Change			
GHG Emissions		Minor adverse	
Chapter 8: Built Heritage			
Change to the character and appearance of the conservation area			Minor adverse
Chapter 10: Daylight, Sunlight, Overshadowing and Solar Glare[b]			
Reduced daylight amenity	Minor adverse		
Reduced sunlight amenity	Minor adverse		
Solar glare impacting visibility of road users at sensitive locations such as intersections and junctions	Minor adverse		
Solar glare impacting visibility of train drivers	Minor adverse		
Effect Interaction:	**NO**	**NO**	**NO**

[b] Daylight, sunlight, overshadowing and solar glare effects were scoped out of **Chapter 10** on the basis that they would vary during the construction stage, and gradually increase to the potential effects identified for the completed Proposed Scheme. Therefore, interim construction effects were not assessed quantitatively as they would not be significant, or if they were, only on a parity with the completed Proposed Scheme. To ensure a robust assessment of construction stage effect interactions, the residual operation stage daylight, sunlight, overshadowing and solar glare effects above negligible have been included in **Table 13.2.**

13.23 As shown in **Table 13.2**, no residual effects above negligible were reported for **Chapter 9: Townscape and Visual**; **Chapter 11: Wind Microclimate**; and **Chapter 12: Noise and Vibration**.

13.24 Residual effects were reported for the Population and Human Health; Climate and Cultural Heritage receptor groups. However only one residual effect was reported for the Climate and Cultural Heritage receptor groups, and therefore there will be no effect interactions.

Population and Human Health

13.25 Multiple residual effects above negligible to the same receptors were reported for the Population and Human Health receptor group during construction. These are in relation to the beneficial effects of employment generated during the construction stage and the adverse effects of reduced daylight and sunlight amenity and increased solar glare as the massing of the Proposed Scheme increases on Site. For these two topics, the receptors are considered on different spatial scales. For socio-economic effects, the beneficial effect will be experienced across MCC and Greater Manchester, whereas the daylight, sunlight and solar glare effects will only be experienced by receptors surrounding the Site. Therefore, there is only a potential effect interaction on Lambert House, Fairfield House, Warehouse One and certain viewpoints within 500m of the Site where the Proposed Scheme is visible (which experience solar glare).

13.26 Overall, the effect interactions are not considered to be greater than reported individually (as reported in **Table 13.2**) and are not significant. This is due to the different spatial scales the effects are reported on; the varying levels of the daylight, sunlight and solar glare effects throughout the construction stage; the effects being both beneficial and adverse; and none of the construction stage effects being significant in isolation.

Operational Stage

Table 13.3: Matrix of Effect Interactions (Operation Stage)

Effect	Population and Human Health	Climate	Landscape
Chapter 6: Socio-Economics and Human Health			
Provision of PBSA	**Moderate beneficial**		

Effect	Population and Human Health	Climate	Landscape
Chapter 7: Climate Change			
GHG Emissions		Minor adverse	
Chapter 9: Townscape and Visual			
Changes to townscape character within the site context			**Moderate beneficial**
Change to the character, composition and amenity of views	Minor beneficial[c]		
Chapter 10: Daylight, Sunlight, Overshadowing and Solar Glare			
Reduced daylight amenity	Minor adverse		
Reduced sunlight amenity	Minor adverse		
Solar glare impacting visibility of road users at sensitive locations such as intersections and junctions	Minor adverse		
Solar glare impacting visibility of train drivers	Minor adverse		
Effect Interaction:	**YES**	**NO**	**NO**

13.27 As shown in **Table 13.2**, no residual effects above negligible were reported for **Chapter 8: Built Heritage**; **Chapter 11: Wind Microclimate** and **Chapter 12: Noise and Vibration**.

13.28 Residual effects were reported for the Population and Human Health; Climate; and Landscape receptor groups. However only one residual effect was reported for the Climate and Landscape receptor groups, and therefore there will be no effect interactions.

[c] The effect is minor beneficial for Viewpoint 6: Vimto Park; Viewpoint 7: University of Manchester, Altrincham Street; and Viewpoint 8: Granby Row / Samuel Ogden Street. All other viewpoints will experience a moderate beneficial significant effect.

Population and Human Health

13.29 During operation, multiple residual effects above negligible were reported for the Population and Human Health receptor group in relation to the beneficial provision of PBSA (socio-economic effect); the beneficial change to the character, composition and amenity of views; and the adverse effects from reduced daylight and sunlight and increased solar glare. The socio-economic effect is considered on a wider spatial scale, which is 'students requiring accommodation'. Where as the visual and daylight, sunlight and solar glare effects are more locally contained to receptors surrounding and in the vicinity of the Site.

13.30 The receptors which experience a reduction in daylight or sunlight amenity may also experience a change to the character, composition and amenity of views. Whilst it is noted that beneficial effects do not outweigh the adverse effects, different levels of effects would be experienced differently by the varying receptors and during different times (e.g. not all receptors may experience both effects at the same time).

13.31 It is unlikely the students requiring accommodation (those who experience the beneficial effect of provision of PBSA) would experience an effect interaction with the adverse daylight and sunlight effects, as they wouldn't be living within the properties assessed (they would be living within the Proposed Scheme). However they may experience an effect interaction with the change to the character, composition and amenity of views, which may further enhance the beneficial effects already experienced.

13.32 Overall, it is considered that the operational effect interactions will not be greater than reported individually (**Table 13.3**) and will not be significant (except where the effects are reported as significant for the Proposed Scheme alone). This is due to the different spatial scales the receptors will experience effects on; a lack of overlap of some specific receptors; the effects being both beneficial and adverse; and the limited residual effects reported.

Assessment of In-Combination Effects

13.33 Approved Projects identified for the assessment of in-combination effects are detailed **Table 13.1** and shown on **Figure 13.1**. The assessment of in-combination effects is set out below.

Socio-Economics and Human Health

13.34 The construction stage of all of the identified Approved Projects may overlap with the Proposed Scheme in terms of timescales. In-combination effects with the relevant construction stage receptor (local labour force) are therefore likely, as outlined below:

- **Employment generated during the construction stage (High Sensitivity)**: Across All Approved Projects, employment opportunities will be generated in the construction sector. The combined magnitude of the change is anticipated to be large, and therefore the beneficial effect (Major and significant) will exceed the level of effect considered at the Proposed Scheme in isolation. This effect will be temporary and medium-term.

13.35 Approved Project 6 includes the provision of PBSA. The operational stage of this Approved Project will overlap with the Proposed Scheme in terms of timescales. In-combination effects with the relevant operational stage receptor (students requiring accommodation) are therefore likely, as outlined below:

- **Provision of PBSA (High sensitivity)**: Across All Approved Projects, one has been identified (No. 6), which will provide 853 new PBSA bedspaces in Manchester. The combined magnitude of the change is anticipated to be medium, and therefore the beneficial effect (Moderate and significant) will be in line with the level of effect considered at the Proposed Scheme in isolation. This effect will be permanent and long-term.

Climate Change

13.36 The atmospheric concentration of GHGs and resulting effect on climate change is affected by all sources and sinks globally, anthropogenic and otherwise. As GHG emission impacts and resulting effects are global rather than affecting one localised area, the approach to cumulative effects assessment for GHGs differs from that for many EIA topics where only projects within a geographically bounded study area would be included.

13.37 For example, air pollutants are dispersed and diluted after being emitted and only the cumulative contributions of other relatively nearby sources contribute materially to the pollutant concentration, and hence effect, at a particular sensitive receptor in the study area. Due to the persistence of GHGs in the atmosphere, that same dispersion effect contributes to the global atmospheric GHG emissions balance. There is no greater local climate change effect from a localised impact of GHG emission sources (or vice versa).

13.38 For this reason, IEMA's GHG in EIA guidance states that effects of GHG emissions from specific cumulative projects should not in general be assessed. Instead, the contextualisation of GHG emissions from the Proposed Scheme within the context of current and future baseline GHG emissions at various specific geographical levels (i.e.

local authority, region and UK) is inherently a cumulative assessment within that boundary.

Built Heritage

13.39 In terms of built heritage, Approved Projects 8 and 9 both have a common receptor with the Proposed Scheme.

13.40 Approved Project 8 directly affects the Grade II* listed London Road Police and Fire Station through the refurbishment, restoration, reconfiguration and extension of the buildings. There are no indirect setting effects to the London Road Police and Fire Station that would result from Approved Project 8. Accordingly, there is no common effect and there would be no cumulative increase to the indirect effect to the setting of the London Road Police and Fire Station identified as a result of the Proposed Scheme. It is not anticipated that its construction period will run concurrently with the Proposed Scheme.

13.41 Approved Project 9 identifies Whitworth Street Conservation Area as a receptor. However, the Approved Project assessment concluded there would be no impact on the conservation area resulting from Approved Project 9. Accordingly, there is no common effect and there would be no cumulative increase to the construction and operation effects identified as a result of the Proposed Scheme.

Townscape and Visual

13.42 In terms of townscape character, Approved Projects 1, 2, 3, 8, 16, and 20 have a common receptor (townscape character) with the Proposed Scheme. These Approved Projects will provide enhancements to the townscape character, however due to scale of developments, distance from the Site and physical separation from the Site, no in-combination effects are anticipated.

13.43 None of the Approved Projects are visible within the viewpoints assessed in **Chapter 9: Townscape and Visual**, other than Approved Project 9.

13.44 For Viewpoint 6: Vimto Park and Viewpoint 8: Granby Row, Samuel Ogden Street, Approved Project 9 will be visible in-combination with the Proposed Scheme.

13.45 At Viewpoint 6, Approved Project 9 will be partially visible to the left within the gap between existing development and the Proposed Scheme. Approved Project 9 will appear similar in height to the existing roofline, and will create a minor additional built element which will enclose views within the Park in conjunction with the Proposed Scheme. The Fairfax will form a minor addition to the view. There are not predicted to be any significant in-combination effects.

13.46 At Viewpoint 8, Approved Project 9 will form a very minor addition to the left within the view, which will not form a prominent new element within the view in conjunction with the Proposed Scheme. There are not predicted to be any significant in-combination effects.

13.47 Overall, there are not anticipated to be any significant in-combination effects from all of the Approved Projects due to the small scale of the Approved Projects; distance to the Site; or physical separation from the Site. There are no identified viewpoints which

would allow visual receptors to view all identified Approved Projects together, or more than one of the identified Approved Projects. There are therefore not predicted to be any in-combination visual effects when considering all Approved Projects as a whole.

Daylight, Sunlight, Overshadowing and Solar Glare

13.48 No receptors identified within the assessment of effects for the Proposed Scheme in **Chapter 10: Daylight, Sunlight, Overshadowing and Solar Glare** are identified as being subject to an effect from all Approved Projects and/or the Approved Projects are sufficient distance from the Proposed Scheme. As such, there is no in-combination effect.

Wind Microclimate

13.49 To assess the combination of environmental wind effects of the Proposed Scheme with Approved Projects in place, the future committed developments have been included in the model of the Proposed Scenario and have been assessed as part of the study. The wind assessment results of the Cumulative Scenario are presented in **Figures 13.2** to **13.7** and **Appendix 11.2** and **11.3.**

13.50 Approved Projects 1, 2, 3 and 16 (**Table 13.1**), which were considered relevant to the wind assessment due to their location within 500m of the Site have been included in the assessment, as shown in **Figure 13.2.**

13.51 The results of the Cumulative Scenario indicate that wind speeds, within the Site and its immediate surroundings, remain unaffected with respect to the Proposed Scenario. Therefore, the observations made for the Proposed Scenario are also applicable for the Cumulative Scenario both in terms of pedestrian safety and comfort, when comparing it with the Baseline Condition (i.e. the residual effects are negligible). This is expected given the distance of the Approved Projects from the Site.

Noise and Vibration

13.52 There are no in-combination effects with the Approved Projects as no common receptors have been identified, given the distance of the Approved Projects from the Site.

Summary

13.53 The assessment of cumulative effects considered effect interactions (where more than one effect is experienced by a single receptor) and in-combination effects (where effects on a receptor may combine with those of other projects in the locale).

Effect Interactions

13.54 During both the construction and operational stages the Population and Human Health receptor group was the only group that may experience an effect interaction.

13.55 For the construction stage Population and Human Health effects were limited to the beneficial socio-economic effect of generation of employment and the adverse effect of reduced daylight and sunlight amenity and increased solar glare. The potential effect interactions were not considered to be greater than reported individually (and not significant) due to the different spatial scales the effects are reported on; the varying levels of the daylight, sunlight and solar glare effects throughout the construction

stage; the effects being both beneficial and adverse; and none of the construction stage effects being significant in isolation.

13.56 During the operational stage residual effects to the Population and Human Health receptor group were in relation to the beneficial provision of PBSA (socio-economic effect); the beneficial change to the character, composition and amenity of views; and the adverse effects from reduced daylight and sunlight and increased solar glare. It was considered that the operational effect interactions would not be greater than the effects reported individually (and not significant, except where considered significant in isolation) due to the different spatial scales the receptors will experience effects on; a lack of overlap of some specific receptors; the effects being both beneficial and adverse; and the limited residual effects reported.

In-Combination Effects

13.57 The assessment of in-combination effects considered 20 Approved Projects on a technical topic by topic basis (i.e. **Technical Chapters 6 – 12**).

13.58 A summary of the evaluation of in-combination effects is provided within **Table 13.4**, which outlines:

- No in-combination effect was identified – denoted by ×;
- In-combination effects were identified but determined to be no greater level of effect or significance than that reported for the Proposed Scheme in isolation – denoted by =; and
- In-combination effects were identified and determined to be a level of effect or significance greater than the Proposed Scheme in isolation – denoted by >.

13.59 Where a greater in-combination effect is identified and is considered to be Significant, this has been highlighted in **bold.**

Table 13.4: Summary of In-Combination Effects

Technical Topic	All Relevant Approved Projects
Socio-economics and human health	**> (construction employment)** / = (provision of PBSA)
Climate change	×/= (in-combination assessment is inherent within project assessment)
Built heritage	× (due to distance from the Site / urban context of receptors / limited effects reported individually and lack of concurrent timelines)
Townscape and visual	× (due to distance from the Site / lack of visibility / small scale of Approved Projects)
Daylight, sunlight, overshadowing and solar glare	× (no common receptors due to distance of Approved Projects)

Technical Topic	All Relevant Approved Projects
Wind microclimate	= (in-combination effects no different to those reported at the project level due to distance of the Approved Projects from the Site)
Noise and vibration	× (no common receptors due to distance of Approved Projects)

References

[1] Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government (2020). Planning Practice Guidance – Environmental Impact Assessment. Available at: Environmental Impact Assessment - GOV.UK (www.gov.uk) [Accessed: 09/02/23].

14. Summary of ES and Schedule of Mitigation

14.1 The purpose of this Chapter is to provide a summary of the outcome of the assessments reported within **Technical Chapters 6 – 12**, focussing on the following key objectives:

- Provide a summary of residual and likely significant effects, the latter of which should inform MCC's decision making process;
- Provide a summary of the cumulative effects assessment.

Summary of Residual and Significant Effects

14.2 Each of the **Technical Chapters 6 – 12** reports the output of the assessment through residual and likely significant effects, inclusive of a summary. All likely residual and significant effects across the ES are summarised for both the construction and operation stages in **Table 14.1** and **Table 14.2**, respectively.

14.3 Adverse effects are highlighted in red and beneficial effects are highlighted in green. Negligible effects are provided in automatic / normal text. The effects identified as 'Significant' are highlighted in **bold**.

Table 14.1: Summary of Residual and Significant Effects During Construction

Likely Significant Effect	Receptor	Residual Effect
Chapter 6: Socio-Economics and Human Health		
Employment generated during the construction stage	Local labour force	Minor beneficial
Chapter 7: Climate Change		
Greenhouse gas emissions	Global climate system	Minor adverse
Chapter 8: Built Heritage		
Change to the character and appearance of the conservation area	Whitworth Street Conservation Area	Minor adverse
Change to the setting of a listed building during construction	London Road Police and Fire Station (Grade II*)	Negligible
Chapter 9: Townscape and Visual		
None		
Chapter 10: Daylight, Sunlight, Overshadowing and Solar Glare		
None		
Chapter 11: Wind Microclimate		
None		
Chapter 12: Noise and Vibration		
None		

Table 14.2: Summary of Residual and Significant Effects During Operation

Likely Significant Effect	Receptor	Residual Effect
Chapter 6: Socio-Economics and Human Health		
Provision of PBSA	Students requiring accommodation	**Moderate beneficial**
Chapter 7: Climate Change		
Greenhouse gas emissions	Global climate system	Minor adverse
Chapter 8: Built Heritage		
Change to the character and appearance of the conservation area	Whitworth Street Conservation Area	Negligible
Change to the setting of a listed building	London Road Police and Fire Station (Grade II*)	Negligible
Chapter 9: Townscape and Visual		
Changes to townscape character within the site context	The Site and wider townscape character area of North Campus Townscape Character Area	**Moderate beneficial**
Changes to Topography and Site Levels	Topography and Site Levels	Negligible beneficial
Change to the character, composition and amenity of views	Viewpoint 1: Piccadilly Station main entrance	**Moderate beneficial**
	Viewpoint 2: Piccadilly Station taxi rank, Fairfield Street	**Moderate beneficial**
	Viewpoint 3: Piccadilly Station platform 13 and 14.	**Moderate beneficial**
	Viewpoint 4: Sculptural wall, London Road.	**Moderate beneficial**
	Viewpoint 5: View west along Granby Row.	**Moderate beneficial**
	Viewpoint 6: Vimto Park.	Minor beneficial
	Viewpoint 7: University of Manchester, Altrincham Street.	Minor beneficial
	Viewpoint 8: Granby Row / Samuel Ogden Street.	Minor beneficial

Likely Significant Effect	Receptor	Residual Effect
Chapter 10: Daylight, Sunlight, Overshadowing and Solar Glare		
Reduced daylight amenity	Lambert House	Minor adverse
	Fairfield House	Minor adverse
	Warehouse One	Minor adverse
	Stonebridge House	Negligible
	London Road Fire Station	Negligible
Reduced sunlight amenity	Lambert House	Minor adverse
	Fairfield House	Minor adverse
	Warehouse One	Minor adverse
Reduction in sunlight amenity	Vimto Park	Negligible
Solar glare impacting visibility of road users at sensitive locations such as intersections and junctions	Selected viewpoints within 500m of the Site where the Proposed Scheme is visible, including: Hulme Street Charles Street Chorlton Street Minshull Street London Road Fairfield Street Travis Street Downing Street Wadeson Road	Negligible to minor adverse
Solar Glare impacting visibility of train drivers	Selected viewpoints within 500m of the Site where the Proposed Scheme is visible, including: Eastbound trains towards Piccadilly Westbound trains towards Oxford Road	Minor adverse
Chapter 11: Wind Microclimate		
Potential changes to the wind microclimate from the Proposed Scheme outside of the Site	Existing pedestrian street-level and open amenity spaces receptors within 500m from the Site	Negligible

Likely Significant Effect	Receptor	Residual Effect
Potential changes to the wind microclimate from the Proposed Scheme within the Site	Accessible balconies, roof terraces and new amenity spaces within the Proposed Scheme	Negligible
Chapter 12: Noise and Vibration		
Plant Noise	Barnes Wallis Building Fairfield Hall Joule Library Lambert Hall MacDonald Hotel Maths @ Science West Building Pendulum Hotel Renold Building Vimto Park	Negligible adverse

14.4 In summary:

- During construction, there are 4 effects, none of which are significant; and
- During operation there are 15 effects, 3 of which are significant. The 3 significant effects are all beneficial.

Summary of Cumulative Effects Assessment

14.5 The assessment of cumulative effects considered effect interactions (where more than one effect is experienced by a single receptor) and in-combination effects (where effects on a receptor may combine with those of other projects in the locale).

Effect Interactions

14.6 During both the construction and operational stages the Population and Human Health receptor group was the only group that may experience an effect interaction.

14.7 For the construction stage Population and Human Health effects were limited to the beneficial socio-economic effect of generation of employment and the adverse effect of reduced daylight and sunlight amenity and increased solar glare. The potential effect interactions were not considered to be greater than reported individually (and not significant) due to the different spatial scales the effects are reported on; the varying levels of the daylight, sunlight and solar glare effects throughout the construction stage; the effects being both beneficial and adverse; and none of the construction stage effects being significant in isolation.

14.8 During the operational stage residual effects to the Population and Human Health receptor group were in relation to the beneficial provision of PBSA (socio-economic effect); the beneficial change to the character, composition and amenity of views; and the adverse

effects from reduced daylight and sunlight and increased solar glare. It was considered that the operational effect interactions would not be greater than the effects reported individually (and not significant, except where considered significant in isolation) due to the different spatial scales the receptors will experience effects on; a lack of overlap of some specific receptors; the effects being both beneficial and adverse; and the limited residual effects reported.

In-Combination Effects

14.9 The assessment of in-combination effects considered 20 Approved Projects on a technical topic by topic basis (i.e. **Technical Chapters 6 – 12**).

14.10 A summary of the evaluation of in-combination effects is provided within **Table 14.3**, which outlines:

- No in-combination effect was identified – denoted by ×;
- In-combination effects were identified but determined to be no greater level of effect or significance than that reported for the Proposed Scheme in isolation – denoted by =; and
- In-combination effects were identified and determined to be a level of effect or significance greater than the Proposed Scheme in isolation – denoted by >.

14.11 Where a greater in-combination effect is identified and is considered to be Significant, this has been highlighted in **bold.**

Table 14.3: Summary of In-Combination Effects

Technical Topic	All Relevant Approved Projects
Socio-economics and human health	**> (construction employment)** / = (provision of PBSA)
Climate change	×/= (in-combination assessment is inherent within project assessment)
Built heritage	× (due to distance from the Site / urban context of receptors / limited effects reported individually and lack of concurrent timelines)
Townscape and visual	× (due to distance from the Site / lack of visibility / small scale of Approved Projects)
Daylight, sunlight, overshadowing and solar glare	× (no common receptors due to distance of Approved Projects)
Wind microclimate	**=** (in-combination effects no different to those reported at the project level due to distance of the Approved Projects from the Site)
Noise and vibration	× (no common receptors due to distance of Approved Projects)

Summary of Mitigation

14.12 All mitigation committed to throughout the ES is included in **Volume 3: Environmental Management Plan.**

Manchester Metropolitan University
(Aytoun Campus)
The Business School

WHITWORTH STREET

TCB

LB

39.9m

11

11a

MINSHULL STREET SOUTH

39.9m

Cycle Way

2

3

4

5

MINSHULL STREET SOUTH

COBOURG STREET

EBDEN STREET

BACK ACTON STREET

Fairfield House

Sackville Street Building

Lambert Hall

GRANBY ROW

ECHO STREET

FB

38.1m

SP

Lighting Gantry

FB

Wright Robinson Hall

Barnes Wallis Building

ALTRINCHAM STREET

36.9m

Renold Building

James Lighthill B

KEY

EIA Boundary
4980m²

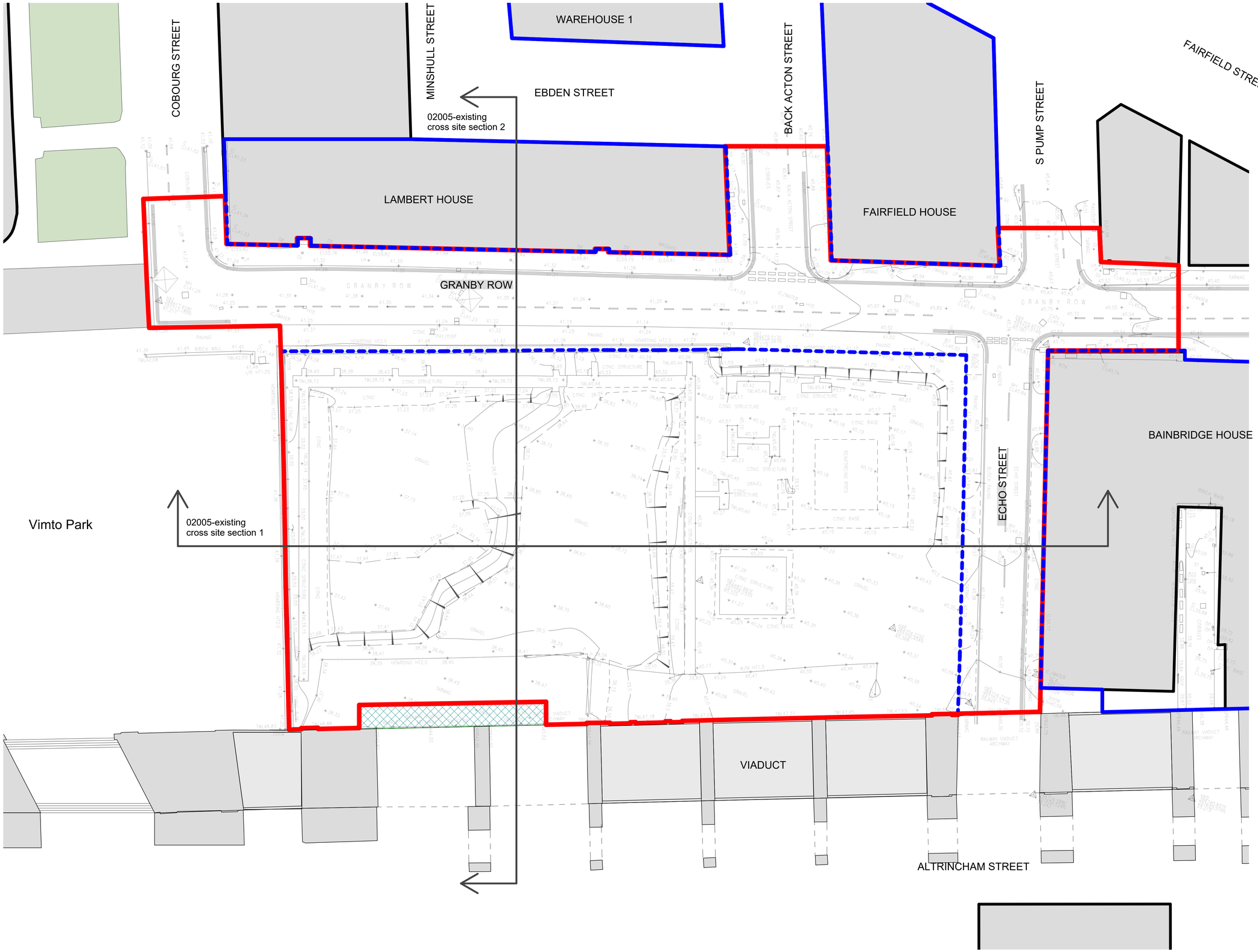
EIA Study Area
1:500 @ A1

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A1



PLAN KEY

Site Boundaries

- Planning Application Boundary
- Applicant Ownership
- Network Rail Ownership
- Footprint of Proposed Building (at Ground Floor Level)

REV.	DATE	AMENDMENT
P01	23/03/23	Draft Issue for Planning
P02	14/04/23	Planning Issue

KEYPLAN

CLIENT

iQ Student Accommodation

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PROJECT
Echo Street PBSA

SCALE@A1	DATE	ORIGINATOR	CHECKED	AUTHORISED
As indicated	**14/04/23**	**LA**	**VC**	**RG**

Existing Site Plan with Planning Application Boundaries and Topo Overlay

Stage 2

STATUS	PURPOSE FOR ISSUE	SR NO.
S2	**Planning**	**7054**

DRAWING NO.	REV.
ECHO-SRA-ZS-XX-DR-A-02002	**P02**

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COBOURG STREET

MINSHULL STREET

WAREHOUSE 1

EBDEN STREET

02006-proposed
cross site section 2

BACK ACTON STREET

FAIRFIELD STREET

S PUMP STREET

LAMBERT HOUSE

FAIRFIELD HOUSE

GRANBY ROW

GRANBY ROW

BAINBRIDGE HOUSE

ECHO STREET

Vimto Park

02006-proposed
cross site section 1

VIADUCT

ALTRINCHAM STREET

PLAN KEY

Site Boundaries

Planning Application Boundary

Applicant Ownership

Network Rail Ownership

Footprint of Proposed Building (at Ground Floor Level)

REV.	DATE	AMENDMENT
P01	23/03/23	Draft Issue for Planning
P02	14/04/23	Planning Issue

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PROJECT
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As indicated	**14/04/23**	**LA**	**VC**	**RG**

Existing Site Plan with Proposed Building Footprint

Stage 2

STATUS	PURPOSE FOR ISSUE	SR NO.
S2	**Planning**	**7054**

DRAWING NO.	REV.
ECHO-SRA-ZS-XX-DR-A-02003	**P02**

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REV.	DATE	AMENDMENT
P01	23/03/23	Draft Issue for Planning
P02	14/04/23	Planning Issue
P03	26/04/23	Planning Issue (minor updates)

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PROJECT
Echo Street PBSA

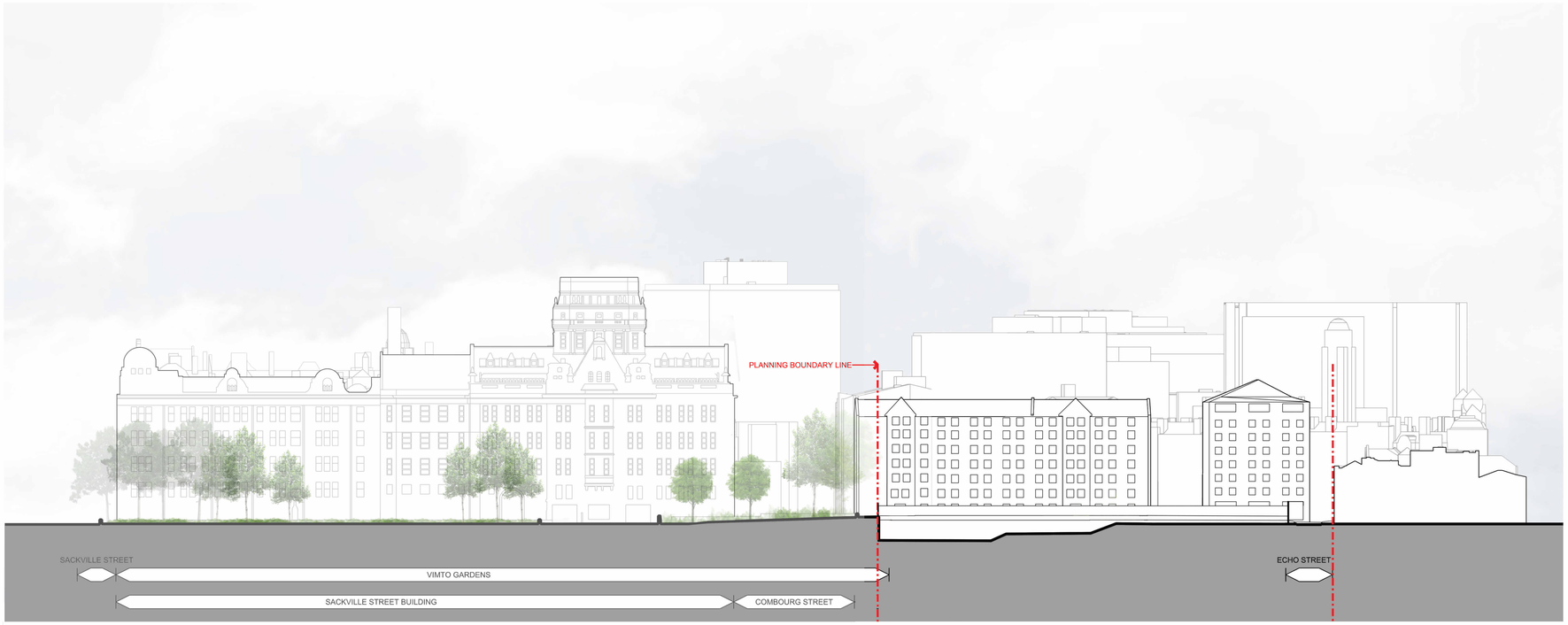
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1 : 200	26/04/23	LA	VC	RG

Proposed Site Plan with Planning Application Boundary

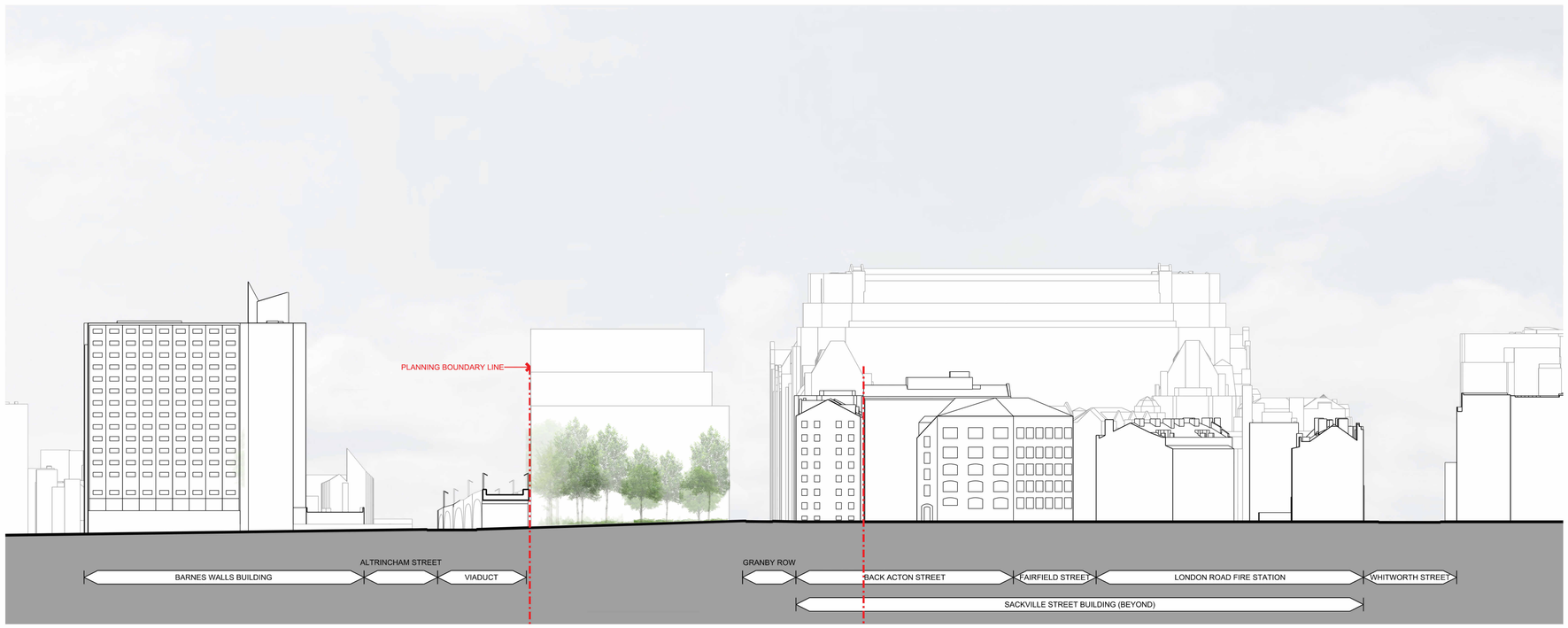
Stage 2

STATUS	PURPOSE FOR ISSUE	SR NO.
S2	Planning	7054

DRAWING NO. — REV.
ECHO-SRA-ZS-XX-DR-A-02004 — **P03**



1 Existing Cross Site Section
1 : 500



2 Existing Longitudinal Site Section
1 : 500

5 0 5 10 15 20 25
SCALE 1:500 m

A1

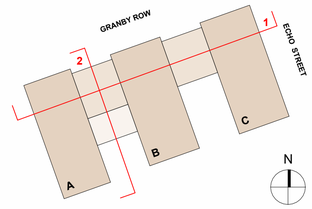
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REV.	DATE	AMENDMENT
P01	24/03/2023	Draft Issue for Planning
P02	14/04/2023	Planning Issue

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PROJECT
Echo Street PBSA

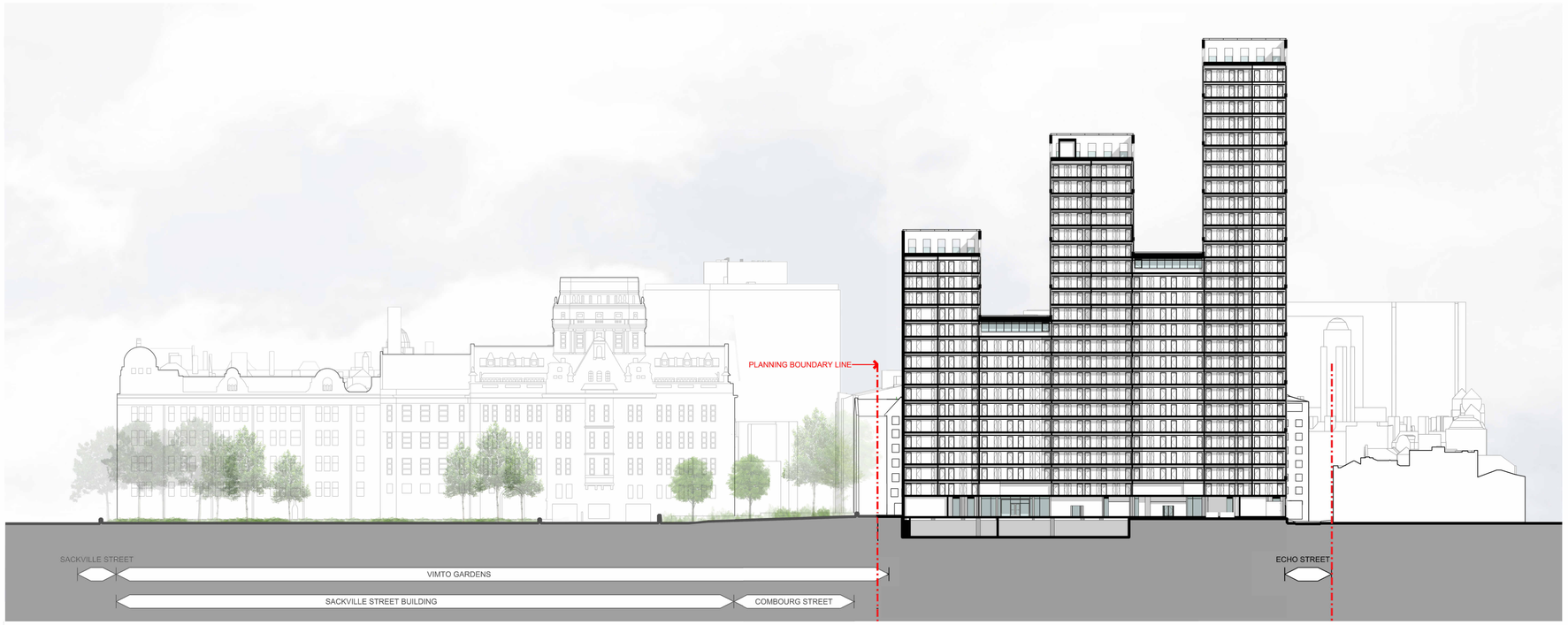
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1 : 500	14/04/2023	LA	VC	RG

Existing Longitudinal & Cross Site Sections

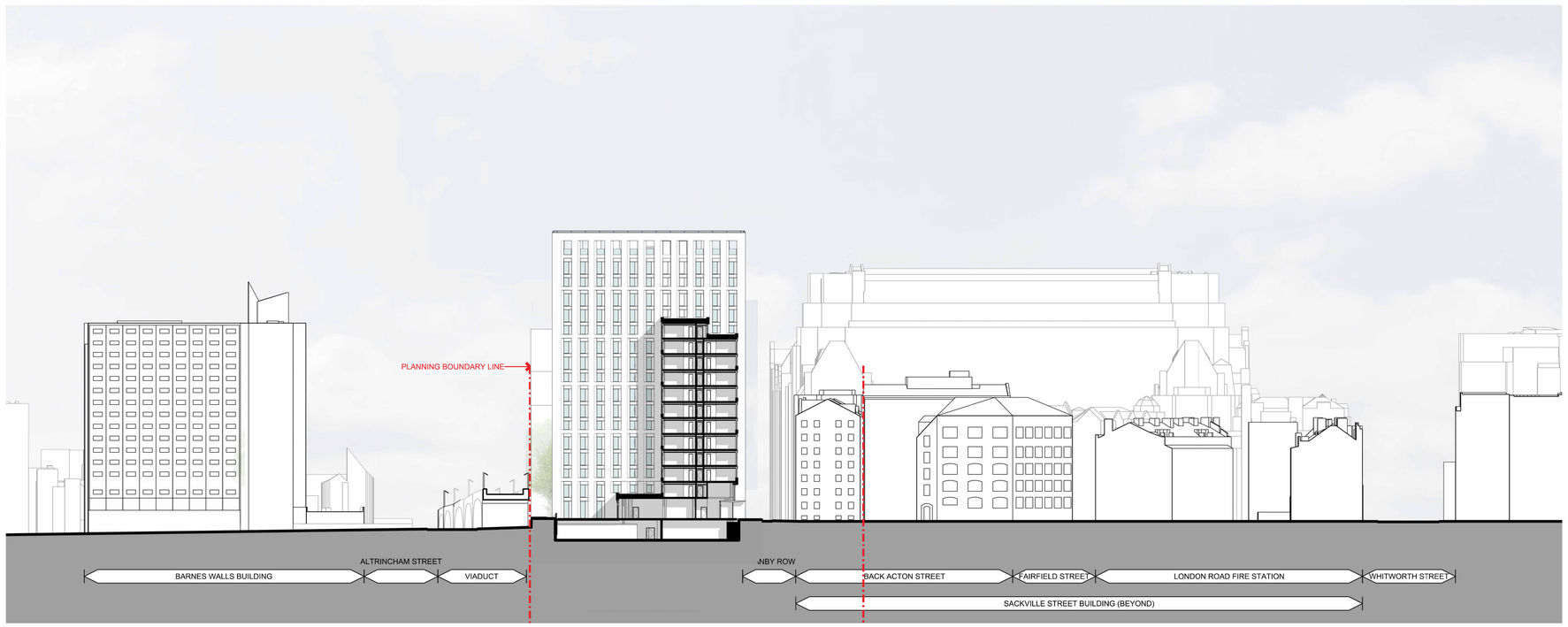
Stage 2

STATUS	PURPOSE FOR ISSUE	SR NO.
S2	Planning	7054

DRAWING NO. REV.
ECHO-SRA-XX-XX-DR-A-02005 **P02**



1 02006 **Proposed Site Section 1**
1 : 500



2 02006 **Proposed Site Section 2**
1 : 500

5 0 5 10 15 20 25
SCALE 1:500 m

A1

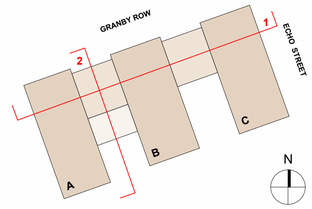
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REV.	DATE	AMENDMENT
P01	24/03/2023	Draft Issue for Planning
P02	14/04/2023	Planning Issue

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PROJECT
Echo Street PBSA

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Proposed Longitudinal and Cross Site Sections

Stage 2

STATUS	PURPOSE FOR ISSUE	SR NO.
S2	**Planning**	**7054**

DRAWING NO. REV.
ECHO-SRA-XX-XX-DR-A-02006 **P02**



1 / 02099 Basement Floor Plan

1 : 100

N

0 1 2 3 4 5 10 m

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PLEASE NOTE:

1. The measured areas shown for all en-suite clusters, studios and kitchens do not yet account for any protruding columns and will therefore reduce accordingly to account for these once locations and sizes are fully known.

2. Wall lining has been allowed for to solid core walls, shears walls and other strucutral items however depth of wall lining subject to change dependent on acoustic requirements. This may result in room sizes reducing.

3. Areas of ensuite bedrooms and studios include the area of the bathroom and the separating wall between bedroom and pod, but exclude the riser.

4. Cluster kitchens will require a riser to provide drainage etc and will reduce the area stated accordingly. The location of this is as yet unknown until full fit outs have been progressed.

5. Studio layouts shown are design intent only and follow Clients brief. Escape routes' distance from hobs to be tested and validated by Fire Strategy with fire suppression measures as necessary. Studio layouts in abeyance until signed-off by Building Safety Regulator (HSE), Building Control Officer, and Building Insurer.

Department Legend

- Water Tanks (incl. Domestic, Commercial & Wet Riser
- Cycle Stores (313 spaces)
- BOH Areas (incl Plant, Services, Stores etc)
- Circulation
- Preferred Structural Column Locations (WIP / Indicative only and subject to change)

REV.	DATE	AMENDMENT
P01	23/01/23	First Issue - Issued for Information
P02	03/02/23	Layouts amended following client + design team comments
P03	27/02/23	Layouts updated following client + design team comments. Preliminary internal fitout layouts included
P04	24/03/23	Draft Issue for Planning (Incl. minor updates)
P05	14/04/23	Planning Issue

KEYPLAN

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SCALE@A1	DATE	ORIGINATOR	CHECKED	AUTHORISED
1 : 100	14/04/23	LK	VC	RG

PROJECT
Echo Street
General Arrangement
Basement Plan

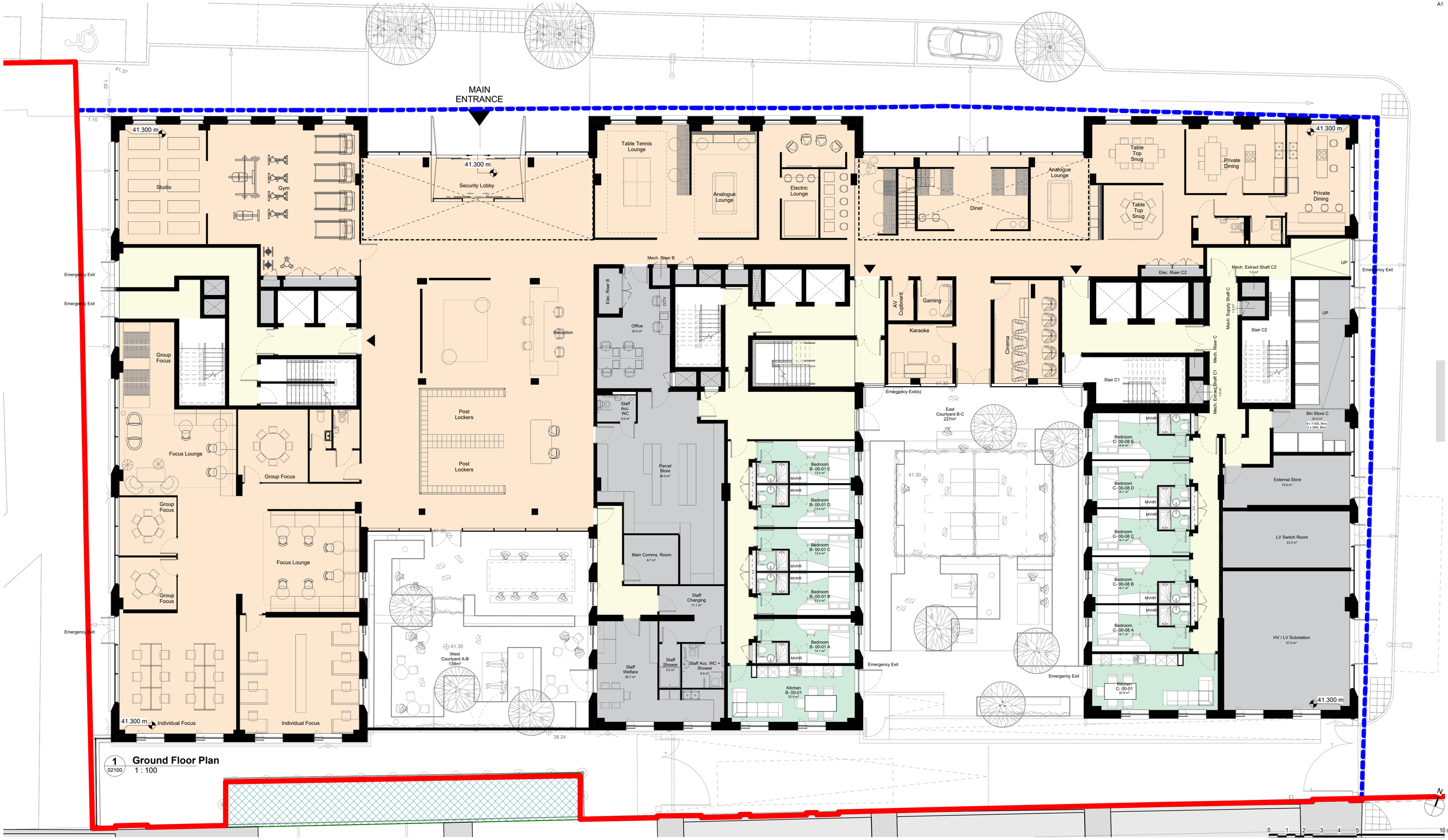
Stage 2

SR NO. **7054**

STATUS	PURPOSE FOR ISSUE
S2	Planning

DRAWING NO. **ECHO- SRA- ZZ- B1- DR - A - 02099**

REV. **P05**



1 / 02100 **Ground Floor Plan**
1 : 100

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PLEASE NOTE:

1. The measured areas shown for all en-suite clusters, studios and kitchens do not yet account for any protruding columns and will therefore reduce accordingly to account for these once locations and sizes are fully known.

2. Wall lining has been allowed for to solid core walls, shears walls and other strucutral items however depth of wall lining subject to change dependent on acoustic requirements. This may result in room sizes reducing.

3. Areas of ensuite bedrooms and studios include the area of the bathroom and the separating wall between bedroom and pod, but exclude the riser.

4. Cluster kitchens will require a riser to provide drainage etc and will reduce the area stated accordingly. The location of this is as yet unknown until full fit outs have been progressed.

5. Studio layouts shown are design intent only and follow Client's brief. Escape routes' distance from hobs to be tested and validated by Fire Strategy with fire suppression measures as necessary. Studio layouts in abeyance until signed-off by Building Safety Regulator (HSE), Building Control Officer, and Building Insurer.

6. Ground Floor amenity space layout completed by Manalo + White Architects design intent only and follow Client's brief. Subject to further review and co-oridnation with SRA and specialist consultants (incl. MEP, structure and fire engineer)

Department Legend

- Amenity Space
- Studios
- 5 Bedroom Cluster (incl Kitchen / Living)
- 6 Bedroom Cluster (incl Kitchen / Living)
- BOH Areas (incl Plant, Services, Stores etc)
- Circulation
- Preferred Structural Column Locations (WIP / Indicative only and subject to change)

REV.	DATE	AMENDMENT	KEYPLAN
P01	18/01/23	First Issue - Issued for Information	
P02	23/01/23	Cores updated following comments from fire engineer (as clouded)	
P03	03/02/23	Layouts amended following client + design team comments	
P04	27/02/23	Layouts updated following client + design team comments. Preliminary internal fitout layouts included	
P05	10/03/23	Minor amendments to layouts to suit DT comments. Bedroom + Studio room tags updated.	
P06	24/03/23	Draft Issue for Planning (Incl. minor updates)	
P07	11/04/23	Proposed M+W amenity space layout updated	
P08	14/04/23	Planning Issue	
P09	26/04/23	Planning Issue (minor updates)	

Plan Key

Site Boundaries

- Planning Application Boundary
- Applicant Ownership
- Network Rail Ownership

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1 : 100	26/04/23	LK	VC	RG

PROJECT
Echo Street
General Arrangement
Ground Floor Plan

Stage 2

SR NO.
7054

DRAWING NO.
ECHO- SRA- ZZ- 00- DR - A - 02100

REV.
P09

STATUS
S2

PURPOSE FOR ISSUE
Planning



1 02101 **Level 01 Floor Plan**
1 : 100

N

0 1 2 3 4 5 10 m

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Department Legend

- Amenity Space
- Studios
- 5 Bedroom Cluster (incl Kitchen / Living)
- 6 Bedroom Cluster (incl Kitchen / Living)
- BOH Areas (incl Plant, Services, Stores etc)
- Circulation
- Preferred Structural Column Locations (WIP / Indicative only and subject to change)

REV.	DATE	AMENDMENT
P01	18/01/23	First Issue - Issued for Information
P02	23/01/23	Layout updated - Studios relocated + mezzanine amended (as clouded)
P03	03/02/23	Layouts amended following client + design team comments
P04	27/02/23	Layouts updated following client + design team comments. Preliminary internal fitout layouts included
P05	10/03/23	Minor amendments to layouts to suit DT comments. Bedroom + Studio room tags updated.
P06	24/03/23	Draft Issue for Planning (Incl. minor updates)
P07	14/04/23	Planning Issue

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IQ Student Accommodation

STATUS **S2**

PURPOSE FOR ISSUE **Planning**

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SCALE@A1	DATE	ORIGINATOR	CHECKED	AUTHORISED
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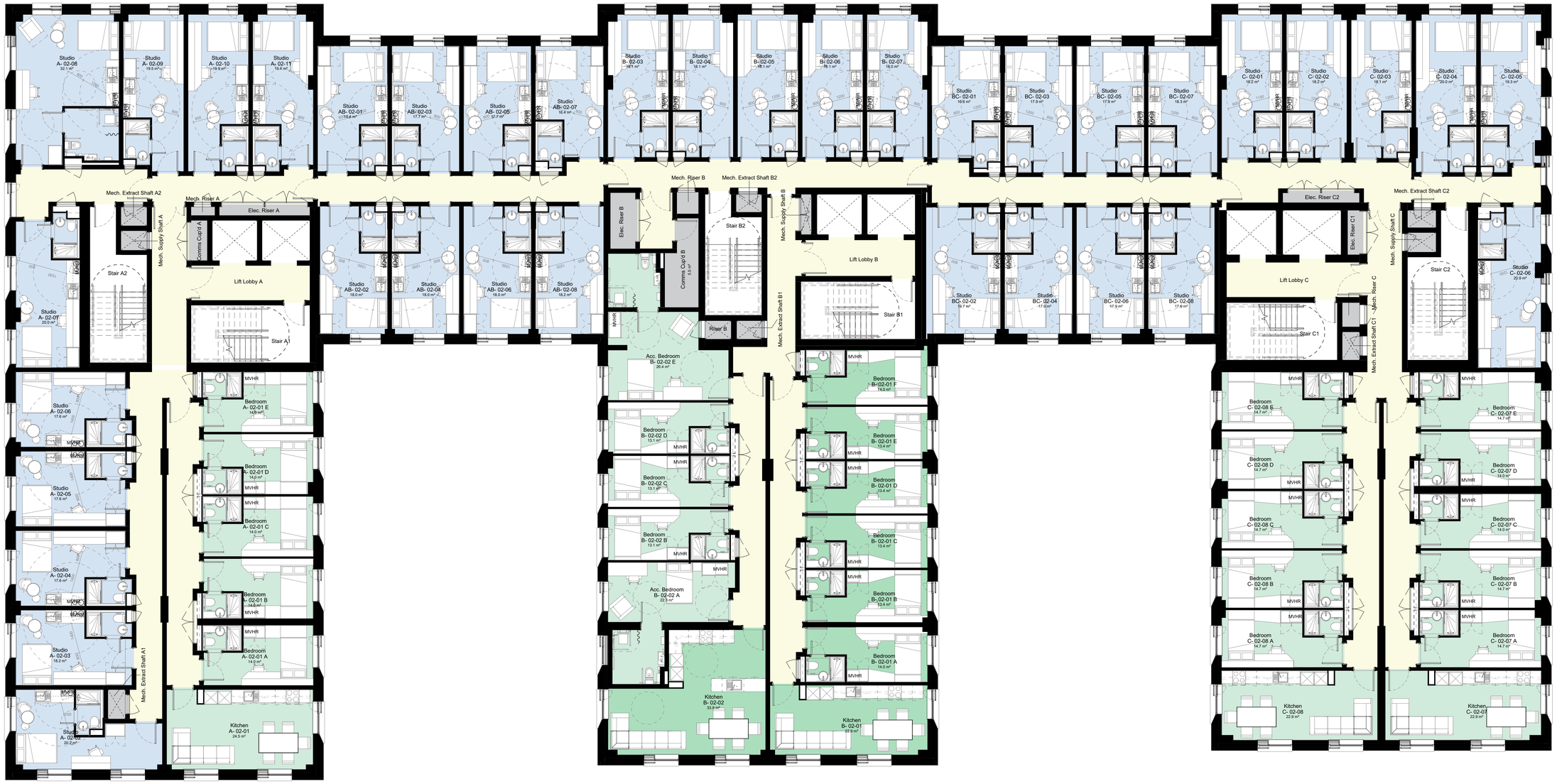
PROJECT
Echo Street
General Arrangement
Level 01 Floor Plan

Stage 2

SR NO. **7054**

DRAWING NO. **ECHO- SRA- ZZ- 01- DR - A - 02101**

REV. **P07**



1 02102 Level 02 Floor Plan

1 : 100

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P06	14/04/23	Planning Issue

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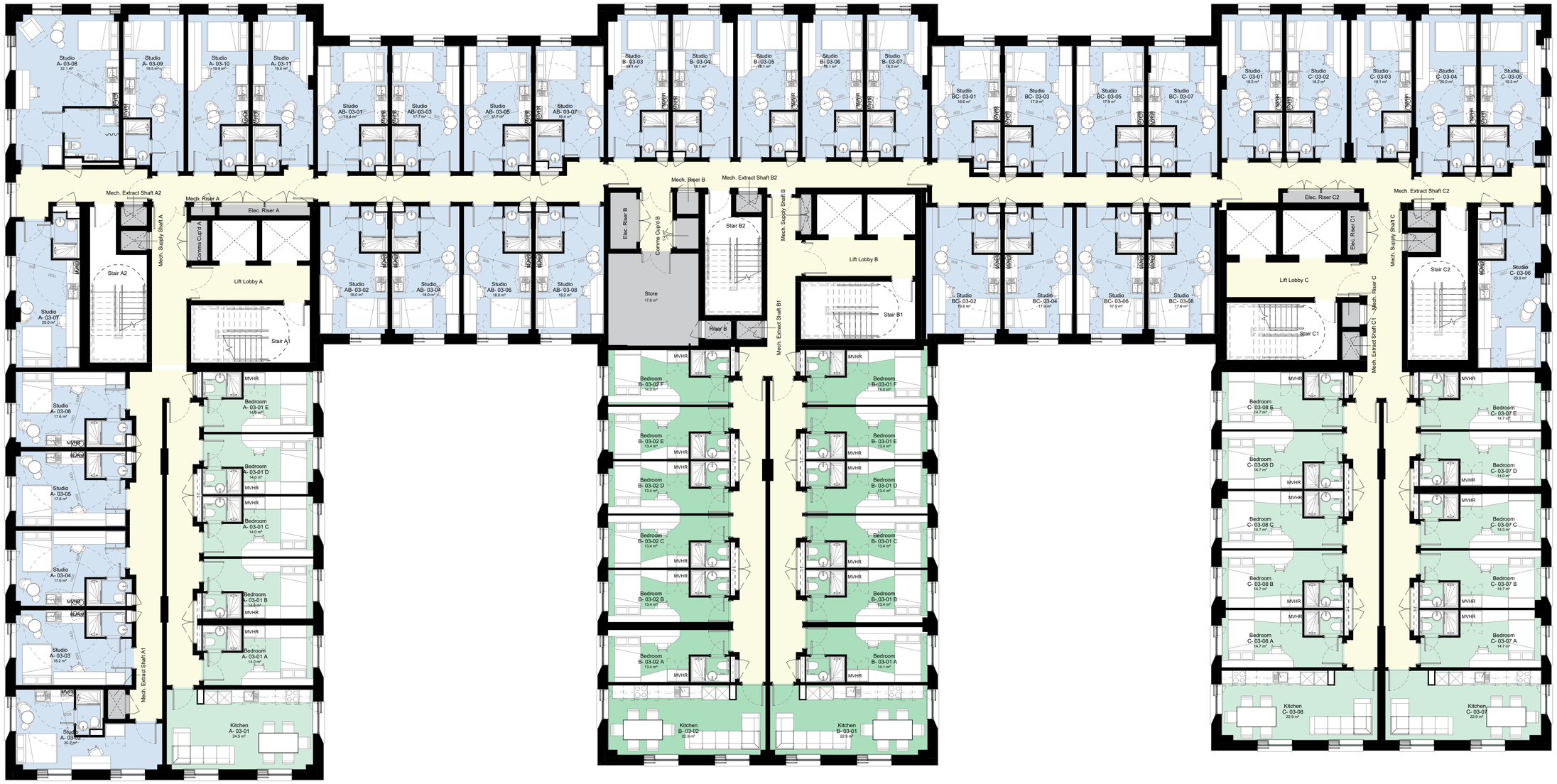
PROJECT
Echo Street
General Arrangement
Level 02 Floor Plan

Stage 2

SR NO. **7054**

DRAWING NO. **ECHO- SRA- ZZ- 02- DR - A - 02102**

REV. **P06**



1 Level 03 Floor Plan

02103 1 : 100

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P06	14/04/23	Planning Issue

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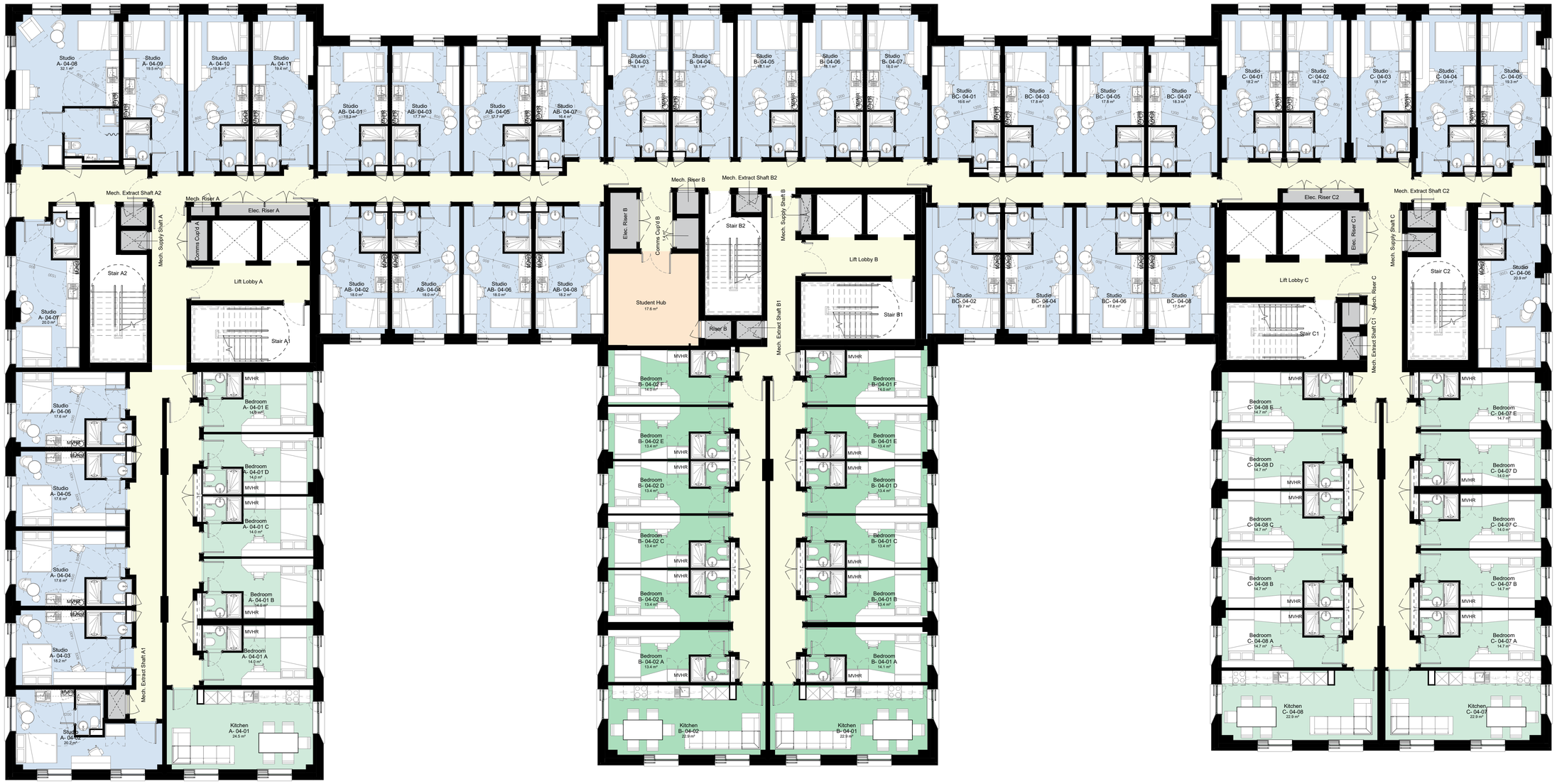
PROJECT
Echo Street
General Arrangement
Level 03 Floor Plan

Stage 2

SR NO. **7054**

DRAWING NO. **ECHO- SRA- ZZ- 03- DR - A - 02103**

REV. **P06**



1 02104 **Level 04 Floor Plan**
1 : 100

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- 6 Bedroom Cluster (incl Kitchen / Living)
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- Circulation
- Preferred Structural Column Locations (WIP / Indicative only and subject to change)

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P05	24/03/23	Draft Issue for Planning (Incl. minor updates)
P06	14/04/23	Planning Issue

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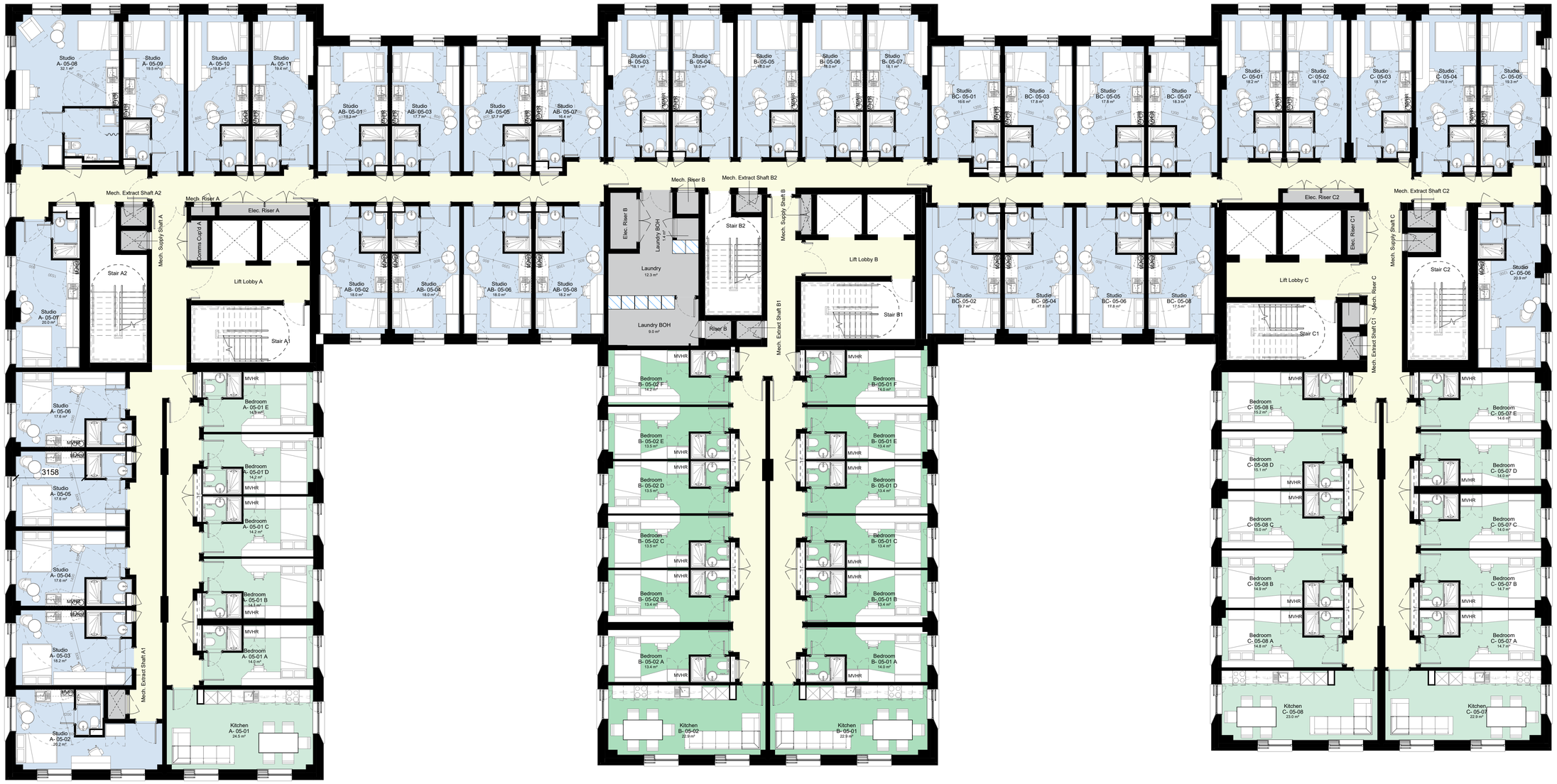
PROJECT
Echo Street
General Arrangement
Level 04 Floor Plan

Stage 2

SR NO. **7054**

DRAWING NO. **ECHO- SRA- ZZ- 04- DR - A - 02104**

REV. **P06**



1 Level 05 Floor Plan
02105 1 : 100

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P06	14/04/23	Planning Issue

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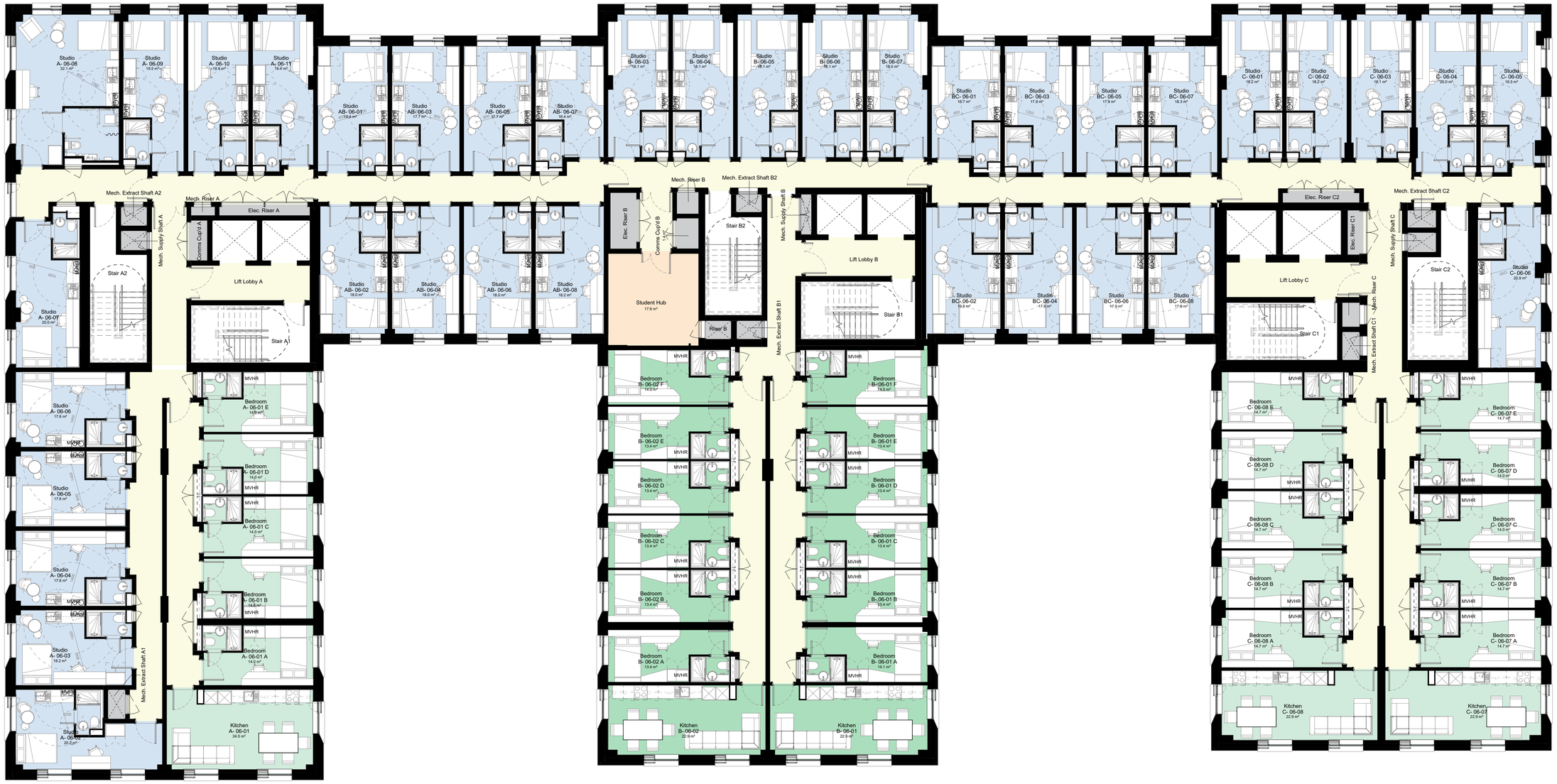
PROJECT
Echo Street
General Arrangement
Level 05 Floor Plan

Stage 2

SR NO. **7054**

DRAWING NO. **ECHO- SRA- ZZ- 05- DR - A - 02105**

REV. **P06**



1 Level 06 Floor Plan

02106

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P06	14/04/23	Planning Issue

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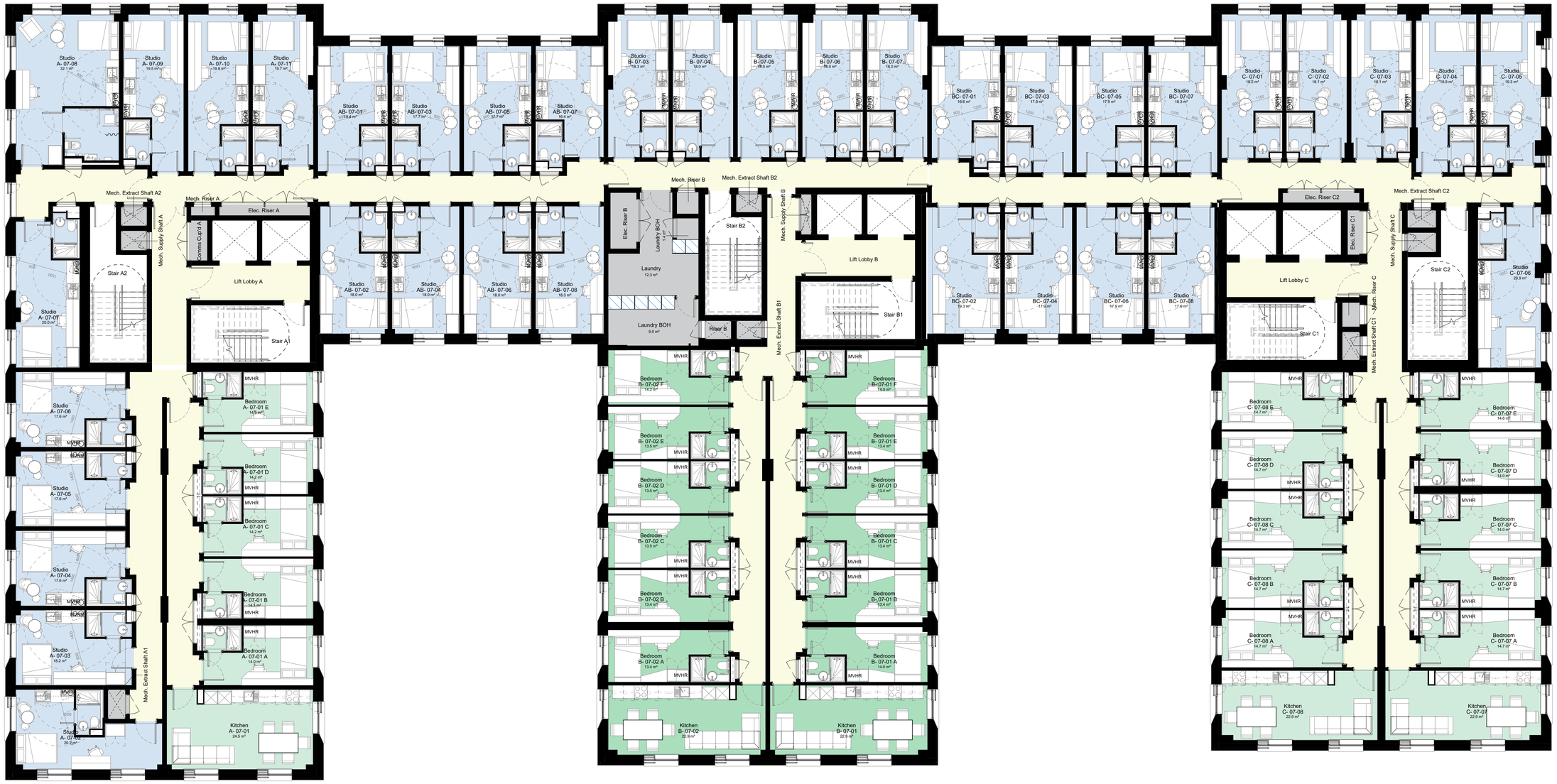
PROJECT
Echo Street
General Arrangement
Level 06 Floor Plan

Stage 2

SR NO. **7054**

DRAWING NO. **ECHO- SRA- ZZ- 06- DR - A - 02106**

REV. **P06**



1 02107 **Level 07 Floor Plan**
1 : 100

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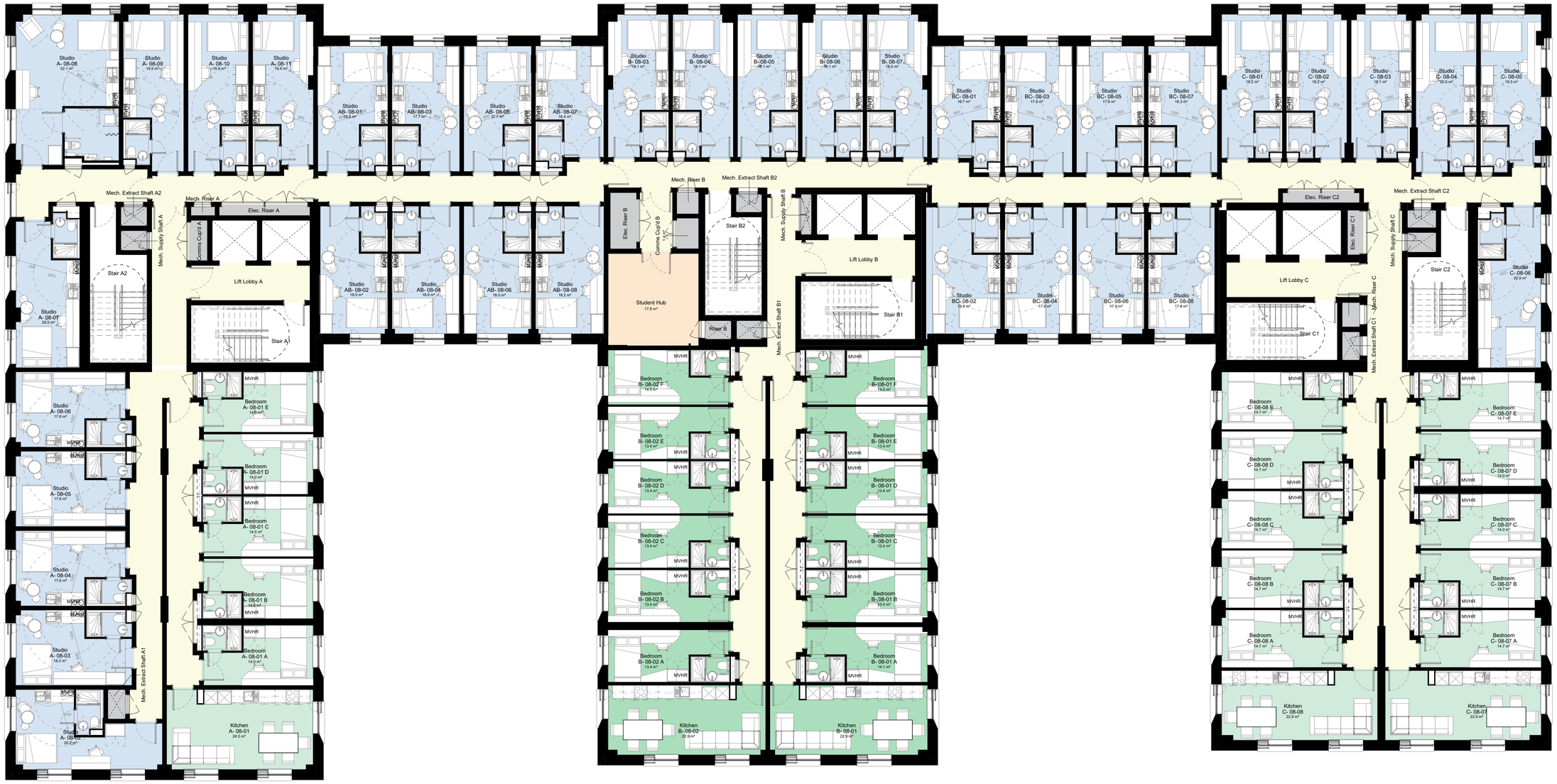
PROJECT
Echo Street
General Arrangement
Level 07 Floor Plan

Stage 2

SR NO. **7054**

DRAWING NO. **ECHO- SRA- ZZ- 07- DR - A - 02107**

REV. **P06**



1 Level 08 Floor Plan

02108 1 : 100

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- 6 Bedroom Cluster (incl Kitchen / Living)
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- Circulation
- Preferred Structural Column Locations (WIP / Indicative only and subject to change)

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P06	14/04/23	Planning Issue

KEYPLAN

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IQ Student Accommodation

STATUS **S2**

PURPOSE FOR ISSUE **Planning**

SHEPPARD ROBSON
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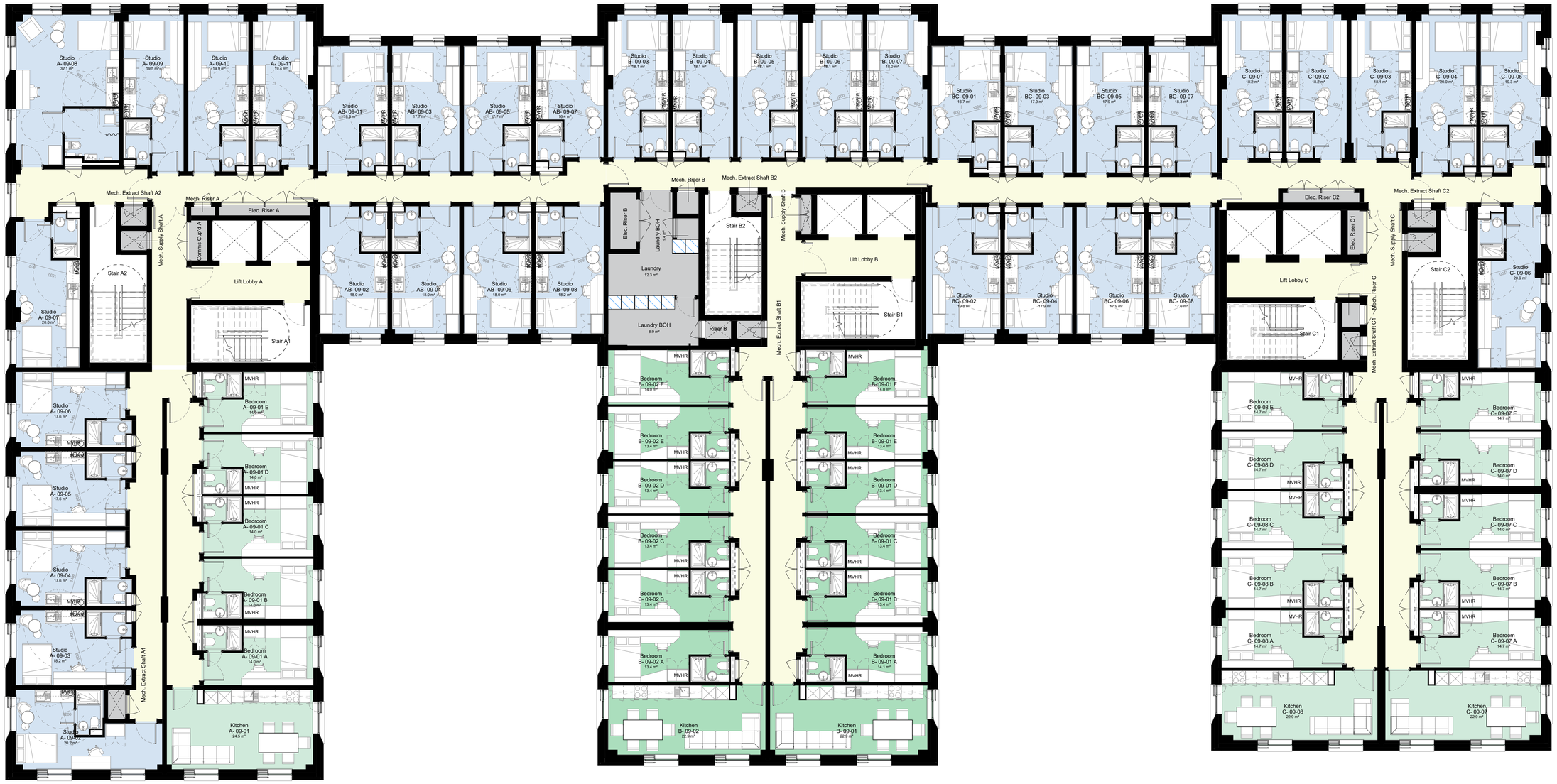
SCALE@A1	DATE	ORIGINATOR	CHECKED	AUTHORISED
1 : 100	14/04/23	LK	VC	RG

PROJECT
Echo Street
General Arrangement
Level 08 Floor Plan
Stage 2

SR NO. **7054**

DRAWING NO. **ECHO- SRA- ZZ- 08- DR - A - 02108**

REV. **P06**



1 Level 09 Floor Plan

02109 1 : 100

N

0 1 2 3 4 5 10 m

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1 : 100	14/04/23	LK	VC	RG

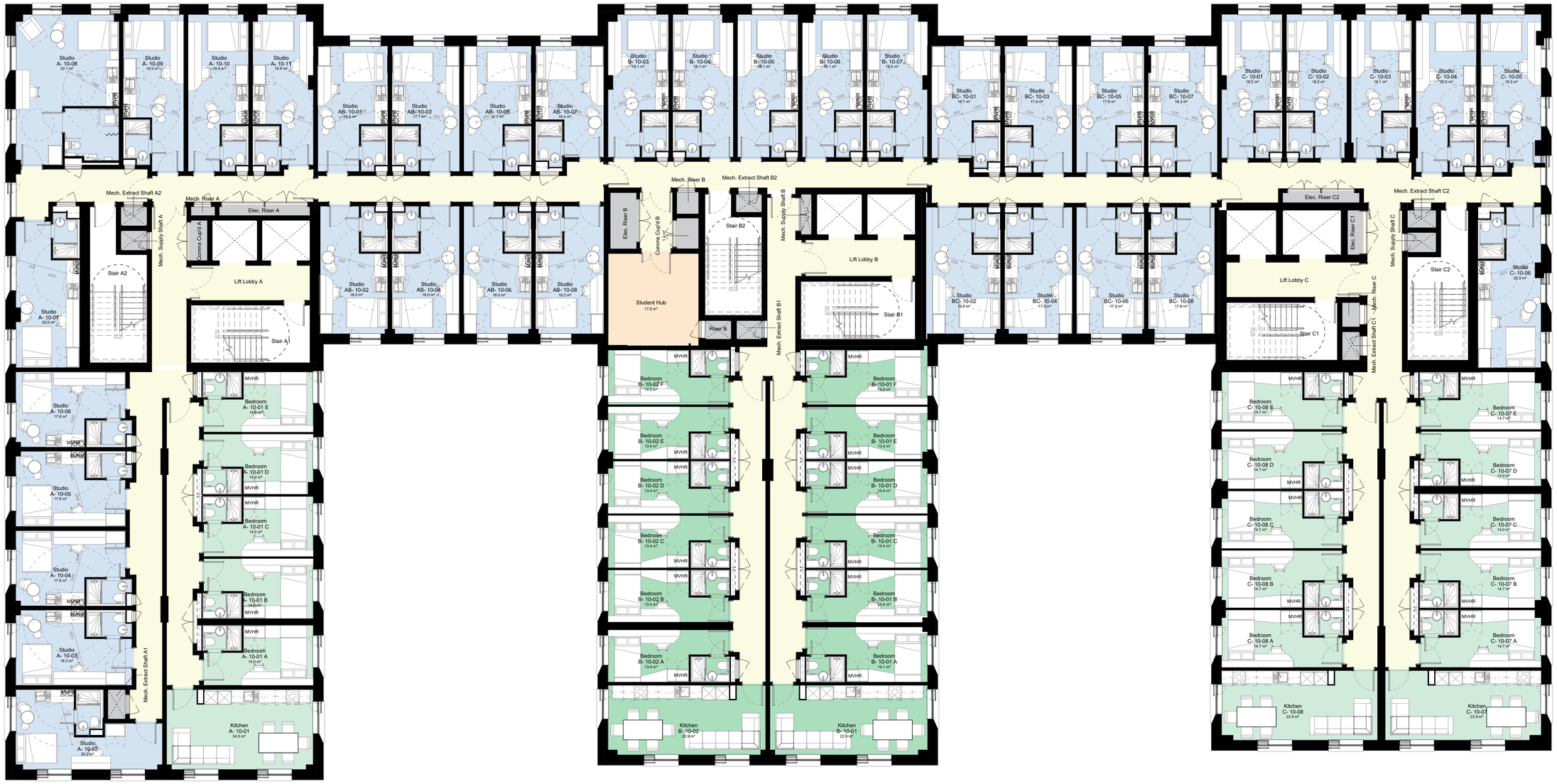
PROJECT
Echo Street
General Arrangement
Level 09 Floor Plan

Stage 2

SR NO. **7054**

DRAWING NO. **ECHO- SRA- ZZ- 09- DR - A - 02109**

REV. **P06**



1 Level 10 Floor Plan

02110 1 : 100

N

0 1 2 3 4 5 10 m

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1 : 100	14/04/23	LK	VC	RG

PROJECT
Echo Street
General Arrangement
Level 10 Floor Plan
Stage 2

SR NO. **7054**

DRAWING NO. **ECHO- SRA- ZZ- 10- DR - A - 02110**

REV. **P06**



1 Level 11 Floor Plan
02111 1 : 100

0 1 2 3 4 5 10 m

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P06	14/04/23	Planning Issue

KEYPLAN

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IQ Student Accommodation

STATUS **S2**

PURPOSE FOR ISSUE **Planning**

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1 : 100	**14/04/23**	**LK**	**VC**	**RG**

PROJECT
Echo Street
General Arrangement
Level 11 Floor Plan

Stage 2

SR NO. **7054**

DRAWING NO. **ECHO- SRA- ZZ- 11- DR - A - 02111**

REV. **P06**



1 Level 12 Floor Plan

02112 1 : 100

N

0 1 2 3 4 5 10 m

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KEYPLAN

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IQ Student Accommodation

STATUS **S2**

PURPOSE FOR ISSUE **Planning**

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1 : 100	14/04/23	LK	VC	RG

PROJECT
Echo Street
General Arrangement
Level 12 Floor Plan

Stage 2

SR NO. **7054**

DRAWING NO. **ECHO- SRA- ZZ- 12- DR - A - 02112**

REV. **P06**



1 Level 13 Floor Plan
02113 1 : 100

N

0 1 2 3 4 5 10 m

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1 : 100	14/04/23	LK	VC	RG

PROJECT
Echo Street
General Arrangement
Level 13 Floor Plan

Stage 2

SR NO. **7054**

STATUS **S2**

PURPOSE FOR ISSUE **Planning**

DRAWING NO. **ECHO- SRA- ZZ- 13- DR - A - 02113**

REV. **P06**



1 Level 14 Floor Plan

02114 1 : 100

0 1 2 3 4 5 10 m

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1 : 100	**14/04/23**	**LK**	**VC**	**RG**

PROJECT
Echo Street
General Arrangement
Level 14 Floor Plan
Stage 2

SR NO. **7054**

DRAWING NO. **ECHO- SRA- ZZ- 14- DR - A - 02114**

REV. **P06**

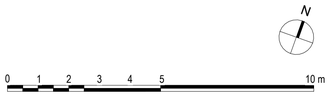




1 Level 15 Floor Plan

02115

1 : 100



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P06	14/04/23	Planning Issue

KEYPLAN

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IQ Student Accommodation

STATUS **S2**

PURPOSE FOR ISSUE **Planning**

SHEPPARD ROBSON
27th Floor City Tower Piccadilly Plaza Manchester M1 4BT
T: +44 (0)161 233 8900 E: enquiries@sheppardrobson.com

SCALE@A1	DATE	ORIGINATOR	CHECKED	AUTHORISED
1 : 100	14/04/23	LK	VC	RG

PROJECT
Echo Street
General Arrangement
Level 15 Floor Plan

Stage 2

SR NO. **7054**

DRAWING NO. **ECHO- SRA- ZZ- 15- DR - A - 02115**

REV. **P06**



1 02116 **Level 16 Floor Plan**
1 : 100

N

0 1 2 3 4 5 10 m

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STATUS **S2** PURPOSE FOR ISSUE **Planning**

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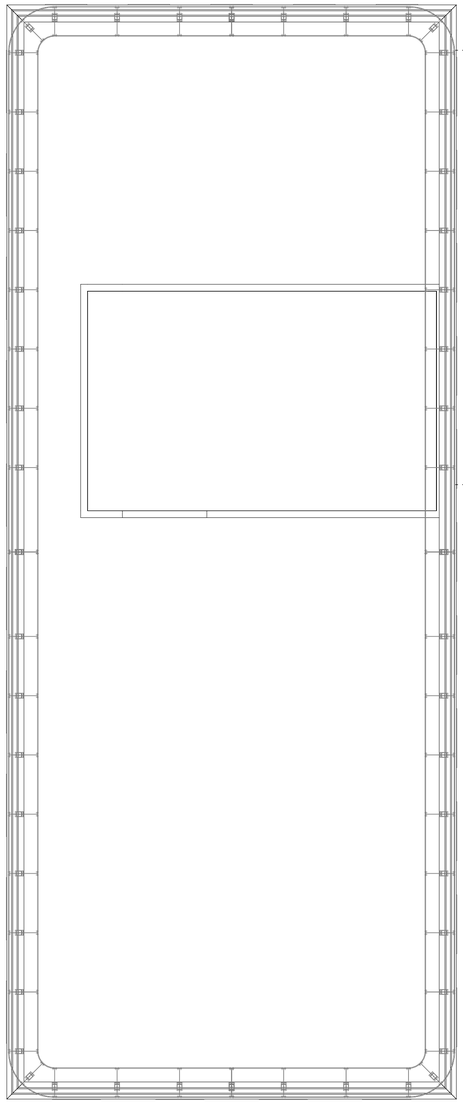
PROJECT
Echo Street
General Arrangement
Level 16 Floor Plan

Stage 2

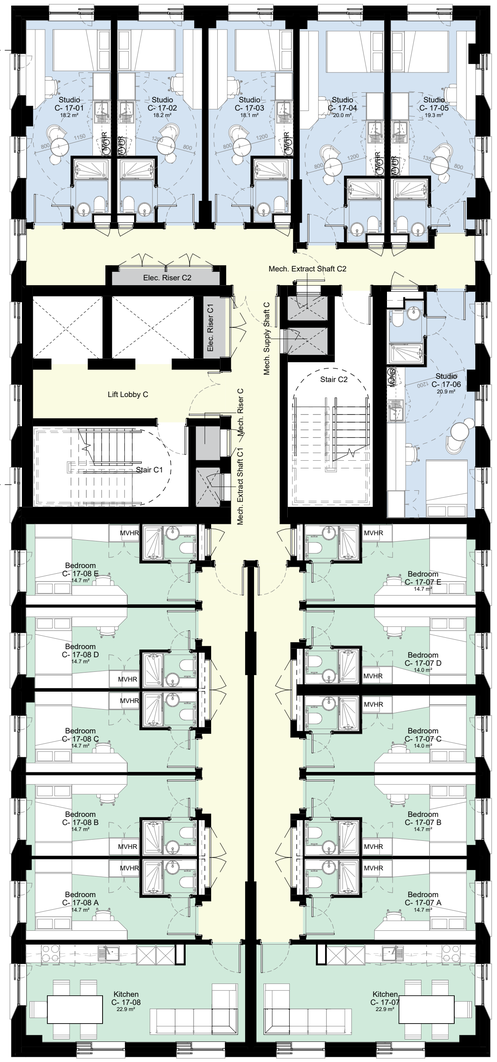
SR NO. **7054**

DRAWING NO. **ECHO- SRA- ZZ- 16- DR - A - 02116**

REV. **P06**



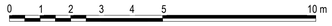




1 02117 **Level 17 Floor Plan**

1 : 100





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PROJECT
Echo Street
General Arrangement
Level 17 Floor Plan

Stage 2

SR NO. **7054**

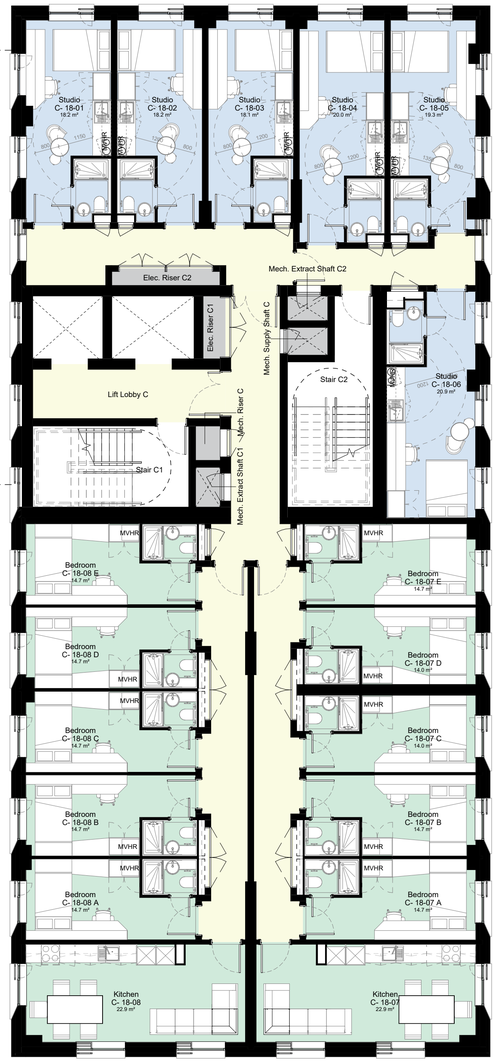
STATUS **S2**

PURPOSE FOR ISSUE **Planning**

DRAWING NO. **ECHO- SRA- ZZ- 17- DR - A - 02117**

REV. **P06**



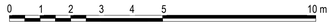


1 02118

Level 18 Floor Plan

1 : 100





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STATUS **S2**

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PROJECT
Echo Street
General Arrangement
Level 18 Floor Plan

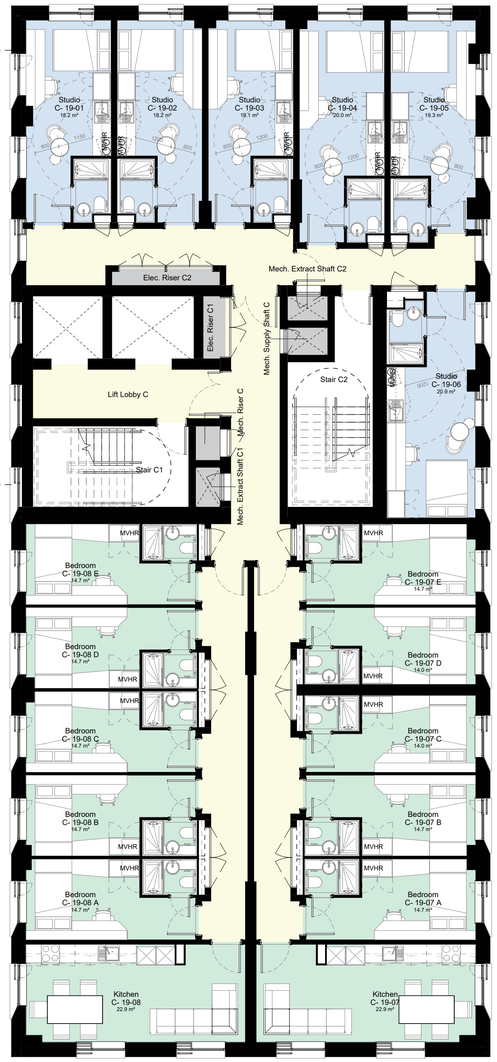
Stage 2

SR NO. **7054**

DRAWING NO. **ECHO- SRA- ZZ- 18- DR - A - 02118**

REV. **P06**





1 Level 19 Floor Plan

02119 1 : 100

N

0 1 2 3 4 5 10 m

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PROJECT
Echo Street
General Arrangement
Level 19 Floor Plan

Stage 2

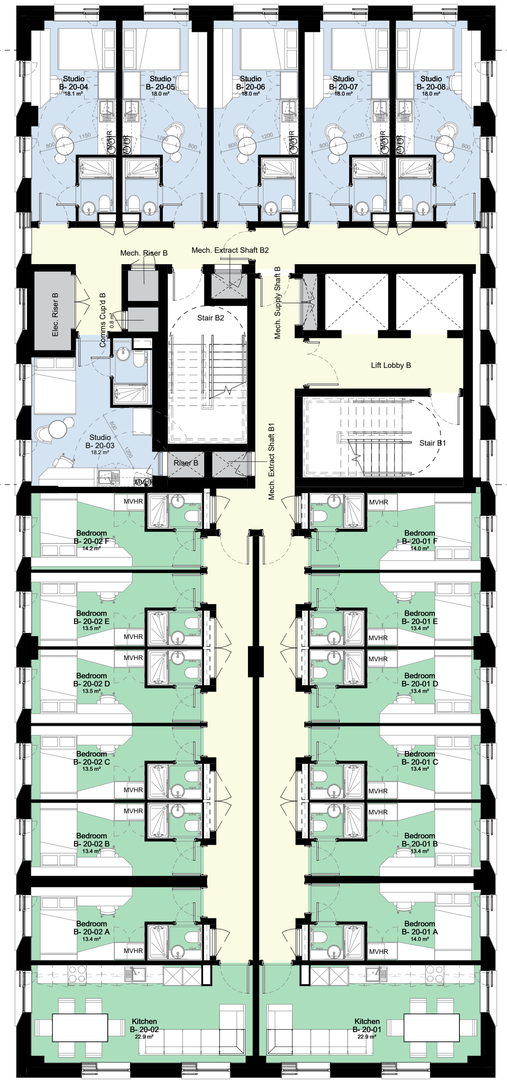
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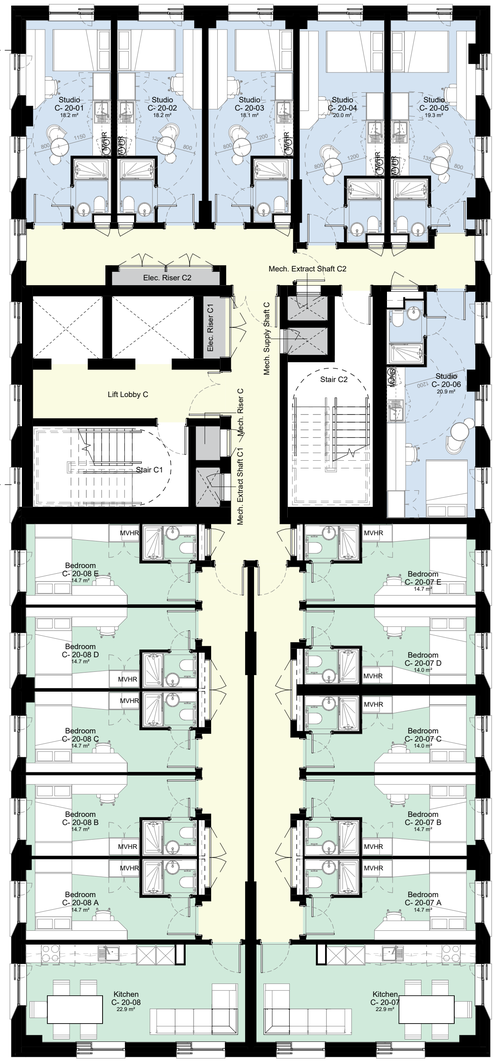
STATUS **S2**

PURPOSE FOR ISSUE **Planning**

DRAWING NO. **ECHO- SRA- ZZ- 19- DR - A - 02119**

REV. **P06**





1 Level 20 Floor Plan
02120 1 : 100

N

0 1 2 3 4 5 10 m

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STATUS **S2**

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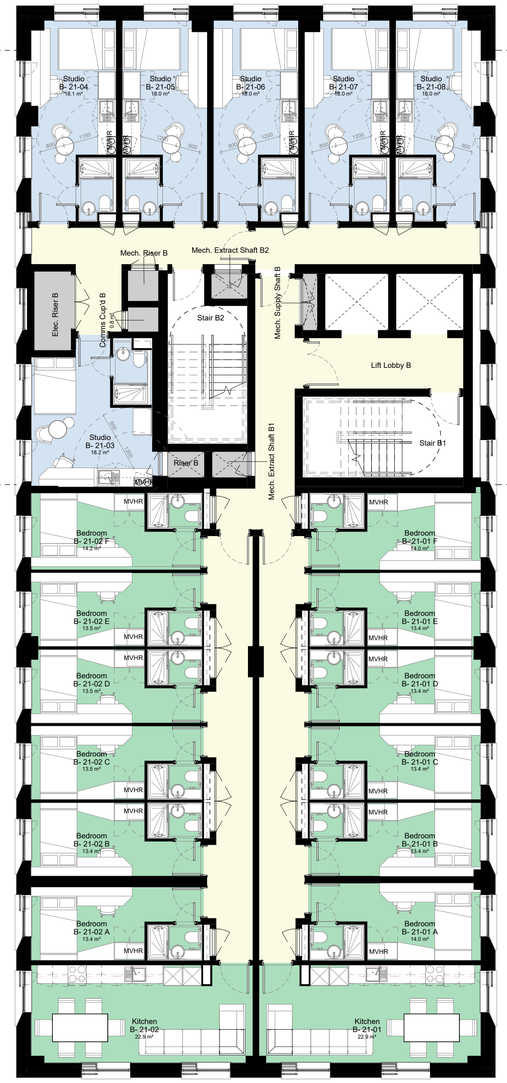
PROJECT
Echo Street
General Arrangement
Level 20 Floor Plan

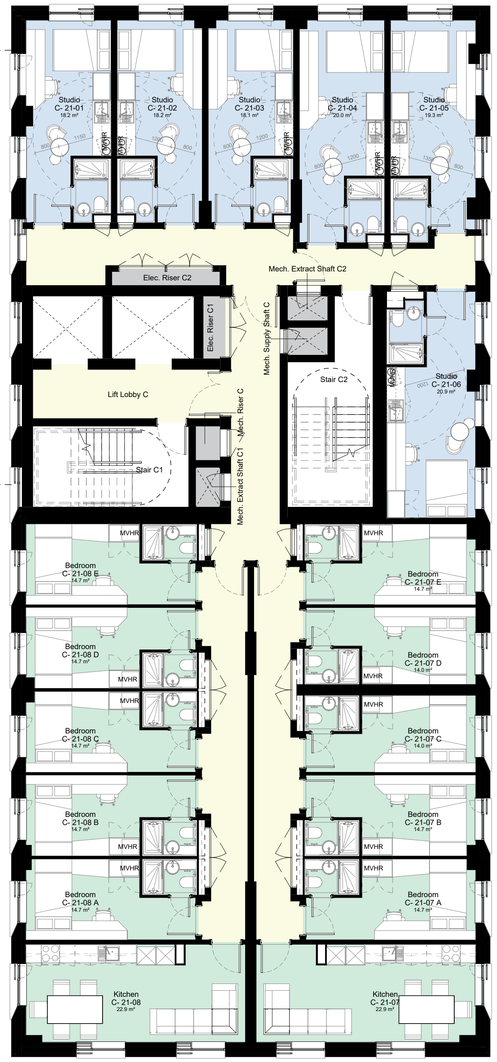
Stage 2

SR NO. **7054**

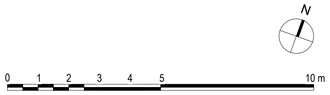
DRAWING NO. **ECHO- SRA- ZZ- 20- DR - A - 02120**

REV. **P06**





1 Level 21 Floor Plan
02121 1 : 100



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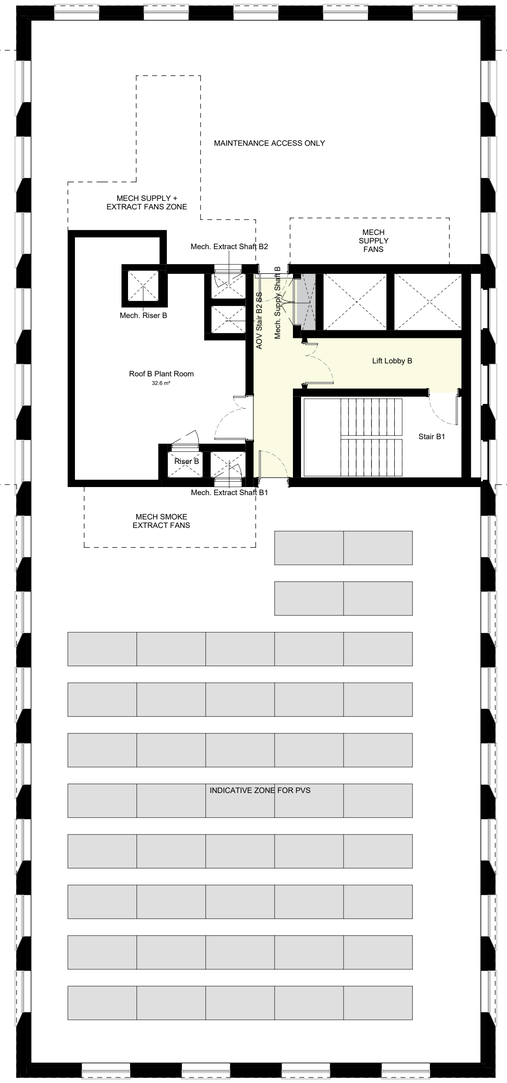
SR NO. **7054**

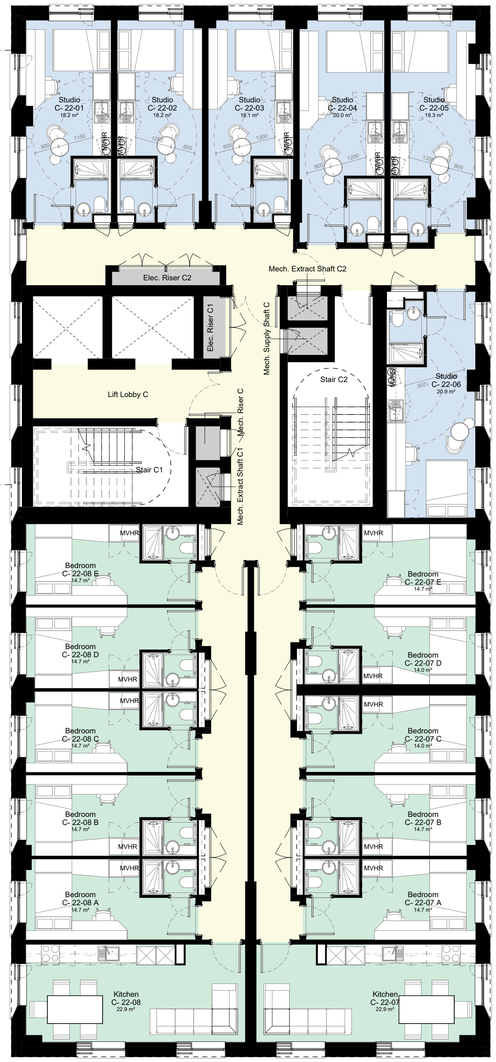
STATUS **S2**

PURPOSE FOR ISSUE **Planning**

DRAWING NO. **ECHO- SRA- ZZ- 21- DR - A - 02121**

REV. **P06**





1 02122 **Level 22 Floor Plan**
1 : 100

N

0 1 2 3 4 5 10 m

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Department Legend

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- 6 Bedroom Cluster (incl Kitchen / Living)
- BOH Areas (incl Plant, Services, Stores etc)
- Circulation
- Preferred Structural Column Locations (WIP / Indicative only and subject to change)

REV.	DATE	AMENDMENT
P01	18/01/23	First Issue - Issued for Information
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P05	24/03/23	Draft Issue for Planning (Incl. minor updates)
P06	14/04/23	Planning Issue

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SCALE@A1	DATE	ORIGINATOR	CHECKED	AUTHORISED
1 : 100	**14/04/23**	**LK**	**VC**	**RG**

PROJECT
Echo Street
General Arrangement
Level 22 Floor Plan

Stage 2

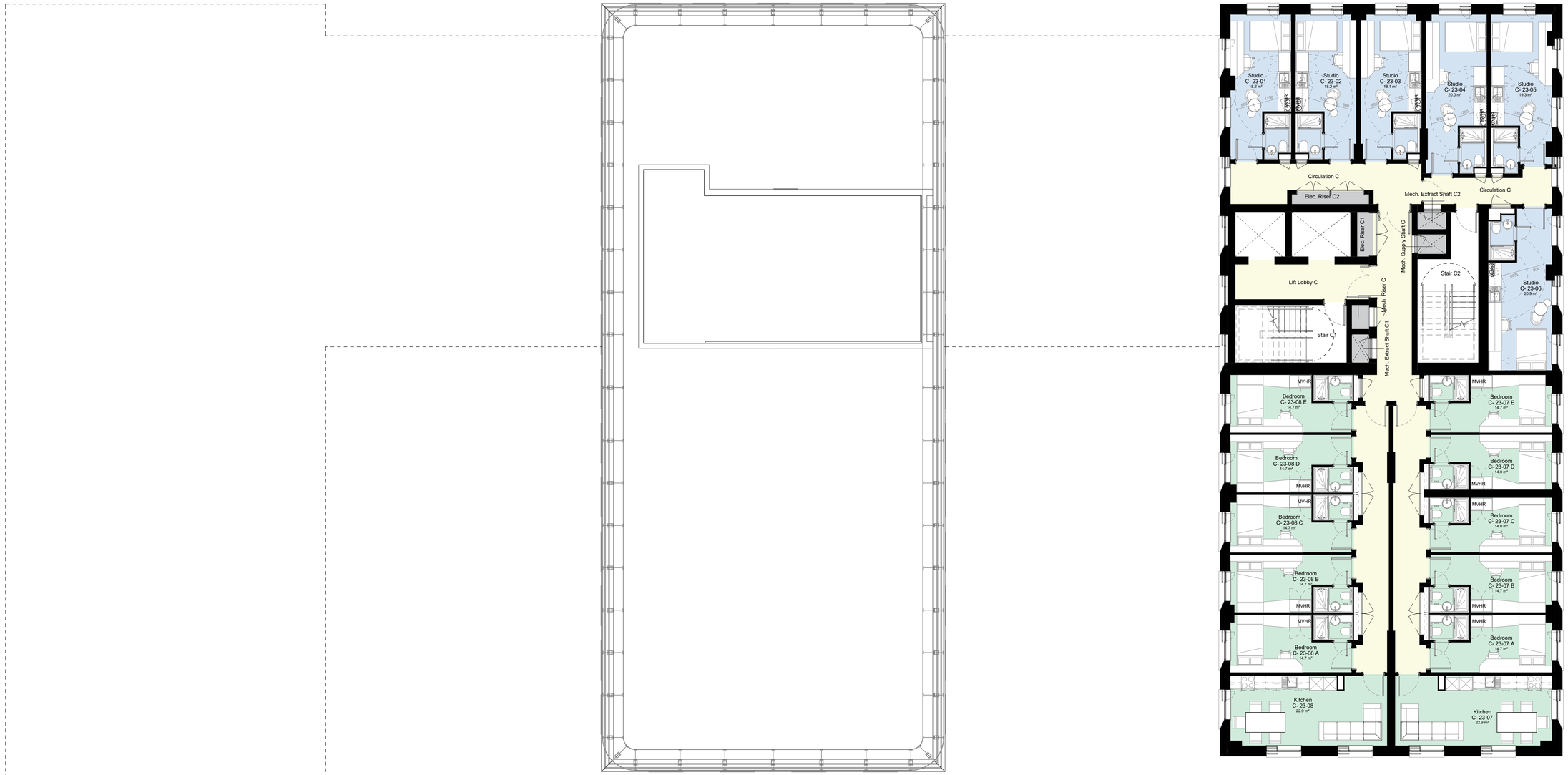
SR NO. **7054**

STATUS **S2**

PURPOSE FOR ISSUE **Planning**

DRAWING NO. **ECHO- SRA- ZZ- 22- DR - A- 02122**

REV. **P06**



1 Level 23 Floor Plan
02123

1 : 100

N

0 1 2 3 4 5 10 m

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1 : 100	14/04/23	LK	VC	RG

PROJECT
Echo Street
General Arrangement
Level 23 Floor Plan

Stage 2

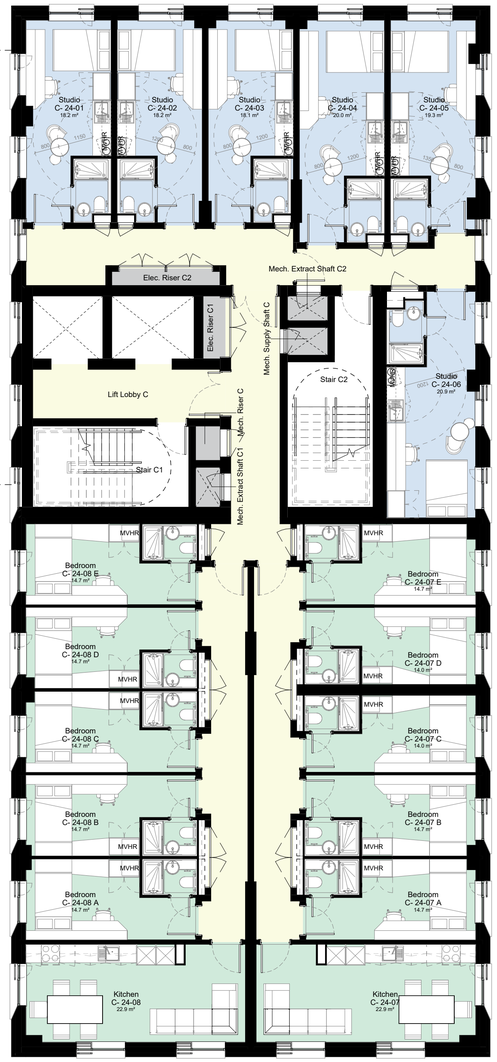
SR NO.
7054

STATUS
S2

PURPOSE FOR ISSUE
Planning

DRAWING NO.
ECHO- SRA- ZZ- 23- DR - A - 02123

REV.
P05



1 Level 24 Floor Plan

02124

1 : 100

N

0 1 2 3 4 5 10 m

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P06	14/04/23	Planning Issue

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PROJECT
Echo Street
General Arrangement
Level 24 Floor Plan

Stage 2

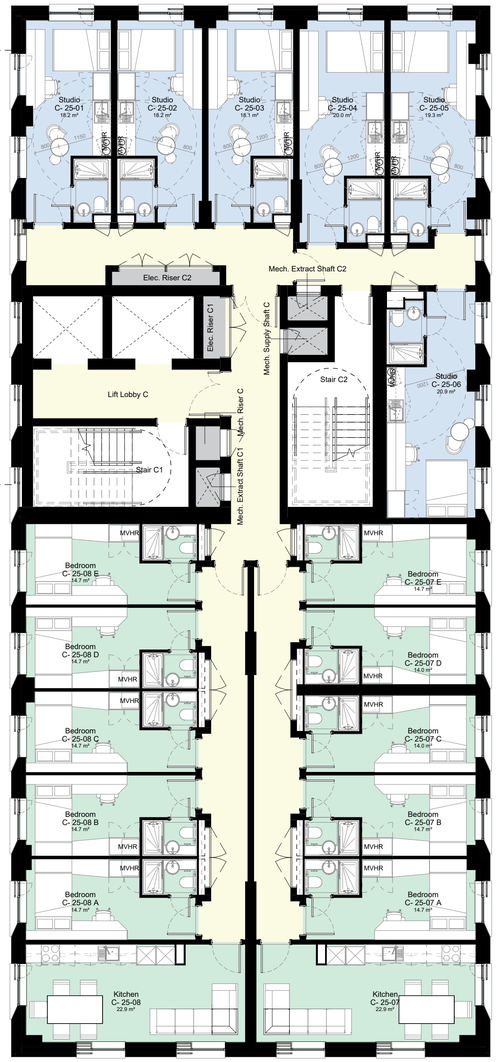
SR NO. **7054**

STATUS **S2**

PURPOSE FOR ISSUE **Planning**

DRAWING NO. **ECHO- SRA- ZZ- 24- DR - A - 02124**

REV. **P06**



1 Level 25 Floor Plan

02125

1 : 100

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0 1 2 3 4 5 10 m

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- 6 Bedroom Cluster (incl Kitchen / Living)
- BOH Areas (incl Plant, Services, Stores etc)
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1 : 100	**14/04/23**	**LK**	**VC**	**RG**

PROJECT
Echo Street
General Arrangement
Level 25 Floor Plan

Stage 2

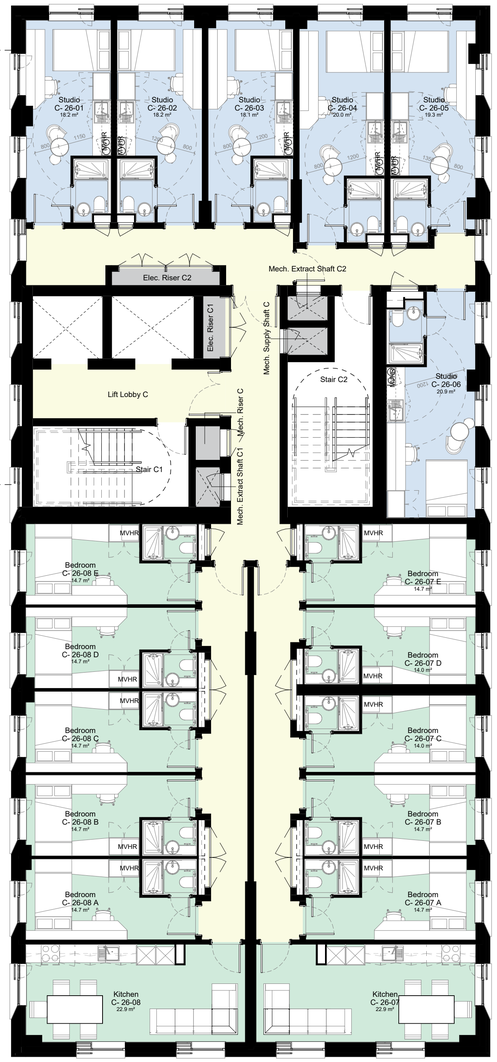
SR NO. **7054**

STATUS **S2**

PURPOSE FOR ISSUE **Planning**

DRAWING NO. **ECHO- SRA- ZZ- 25- DR - A - 02125**

REV. **P06**



1 Level 26 Floor Plan
02126

1 : 100

N

0 1 2 3 4 5 10 m

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P06	14/04/23	Planning Issue

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STATUS **S2** PURPOSE FOR ISSUE **Planning**

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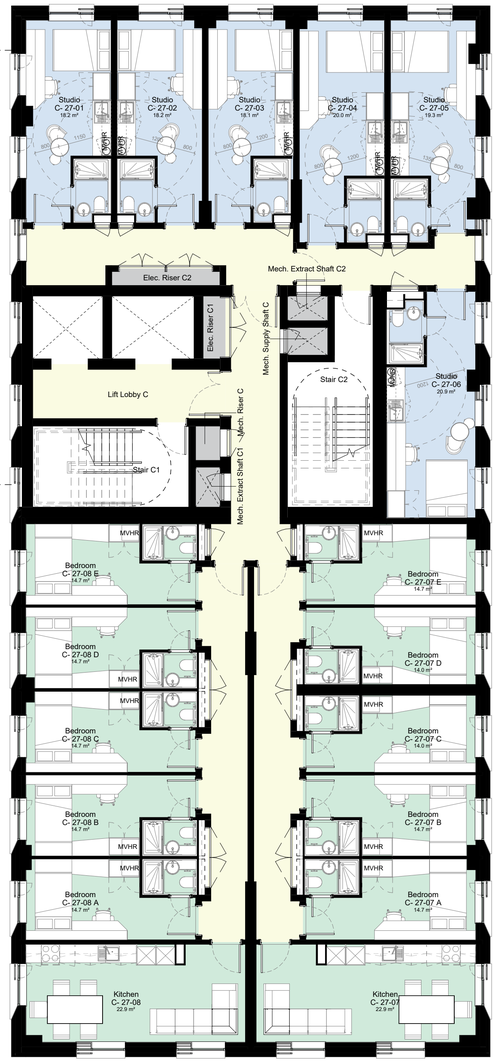
PROJECT
Echo Street
General Arrangement
Level 26 Floor Plan

Stage 2

SR NO. **7054**

DRAWING NO. **ECHO- SRA- ZZ - 26 - DR - A - 02126**

REV. **P06**



1 Level 27 Floor Plan
02127

1 : 100

N

0 1 2 3 4 5 10 m

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STATUS **S2**

PURPOSE FOR ISSUE **Planning**

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1 : 100	14/04/23	LK	VC	RG

PROJECT
Echo Street
General Arrangement
Level 27 Floor Plan

Stage 2

SR NO. **7054**

DRAWING NO. **ECHO- SRA- ZZ - 27 - DR - A - 02127**

REV. **P06**



1 / 02130 **Combined Roof Plan**
1 : 100

N

0 1 2 3 4 5 10 m

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REV.	DATE	AMENDMENT
P01	24/03/23	Draft Issue For Planning
P02	14/04/23	Planning Issue

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PROJECT
Echo Street
General Arrangement
Combined Roof Plan

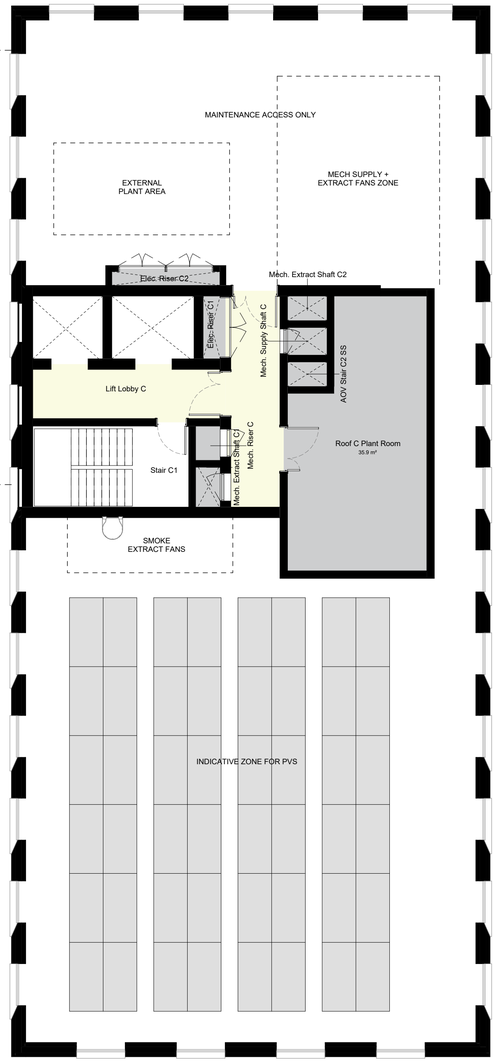
Stage 2

SR NO.
7054

STATUS **S2** PURPOSE FOR ISSUE **Planning**

DRAWING NO. **ECHO- SRA- ZZ- RF- DR - A - 02130**

REV. **P02**



1 02128 **Block C Roof Plan**
1 : 100

N

0 1 2 3 4 5 10 m

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PLEASE NOTE:

1. The measured areas shown for all en-suite clusters, studios and kitchens do not yet account for any protruding columns and will therefore reduce accordingly to account for these once locations and sizes are fully known.

2. Wall lining has been allowed for to solid core walls, shears walls and other strucutral items however depth of wall lining subject to change dependent on acoustic requirements. This may result in room sizes reducing.

3. Areas of ensuite bedrooms and studios include the area of the bathroom and the separating wall between bedroom and pod, but exclude the riser.

4. Cluster kitchens will require a riser to provide drainage etc and will reduce the area stated accordingly. The location of this is as yet unknown until full fit outs have been progressed.

5. Studio layouts shown are design intent only and follow Clients brief. Escape routes' distance from hobs to be tested and validated by Fire Strategy with fire suppression measures as necessary. Studio layouts in abeyance until signed-off by Building Safety Regulator (HSE), Building Control Officer, and Building Insurer.

REV.	DATE	AMENDMENT
P01	18/01/23	First Issue - Issued for Information
P02	03/02/23	Layouts amended following client + design team comments
P03	27/02/23	Layouts updated following client + design team comments. Preliminary internal fitout layouts included
P04	24/03/23	Draft Issue for Planning (Incl. minor updates)
P05	14/04/23	Planning Issue

KEYPLAN

CLIENT

IQ Student Accommodation

STATUS **S2**

PURPOSE FOR ISSUE **Planning**

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SCALE@A1	DATE	ORIGINATOR	CHECKED	AUTHORISED
1 : 100	**14/04/23**	**LK**	**VC**	**RG**

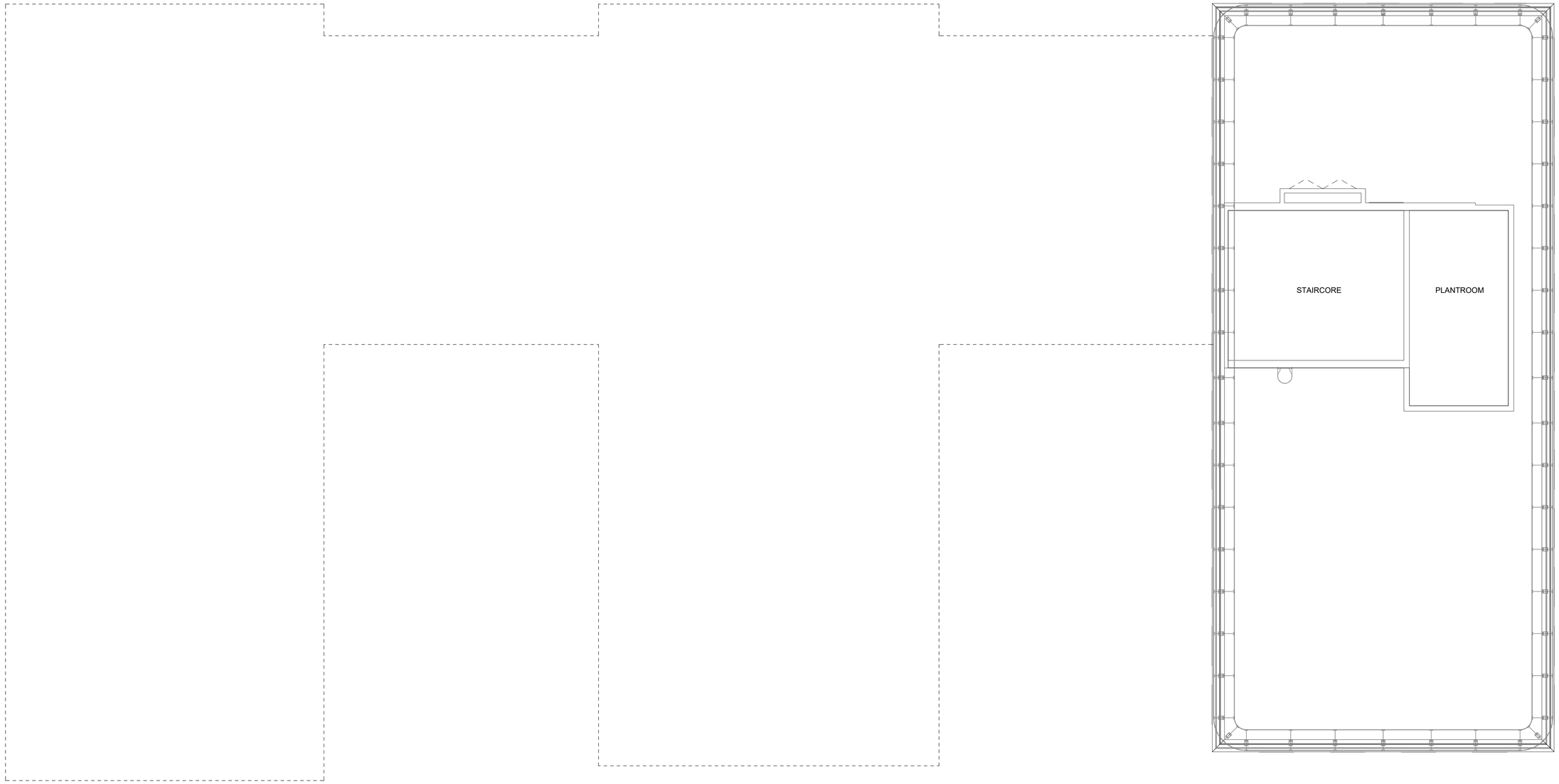
PROJECT
Echo Street
General Arrangement
Block C Roof Plan

Stage 2

SR NO. **7054**

DRAWING NO. **ECHO- SRA- ZZ- RF- DR - A - 02128**

REV. **P05**



1 / 02129 **Block C Upper Roof Plan**
1 : 100

N

0 1 2 3 4 5 10 m

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P01	24/03/23	Draft Issue For Planning
P02	14/04/23	Planning Issue

KEYPLAN

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1 : 100	**14/04/23**	**LK**	**VC**	**RG**

PROJECT
Echo Street
General Arrangement
Block C Upper Roof Plan

Stage 2

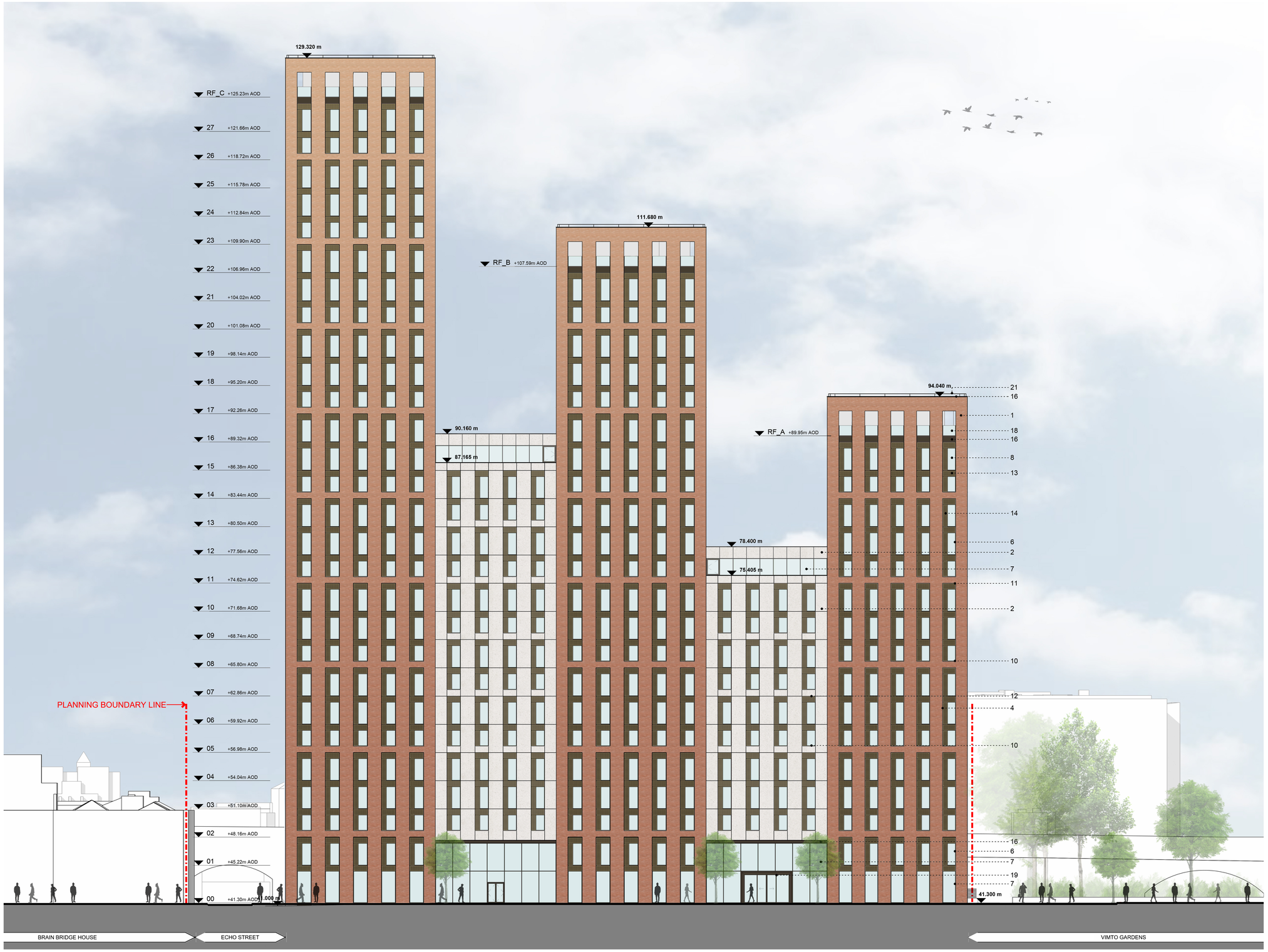
SR NO.
7054

STATUS
S2

PURPOSE FOR ISSUE
Planning

DRAWING NO.
ECHO- SRA- ZZ - RF- DR - A - 02129

REV.
P02



1 / 02201 **North Elevation - Granby Row**
1 : 200

0 2 4 6 8 10 m

A1

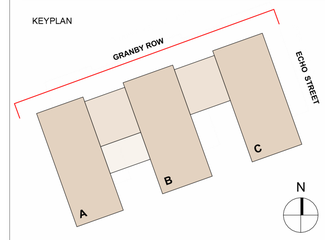
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KEYPLAN



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P01	23/01/2023	First Issue- Issue for Information
P02	03/02/2023	Issued for Information- Elevations Updated
P03	27/02/2023	Elevations Updated following client+ Design team comments
P04	24/03/2023	Draft Issue for Planning (Incl. minor updates)
P05	14/04/2023	Planning Issue

MATERIAL KEY

1. Brick Tile Cladding
2. Glass Reinforced Concrete (GRC) Cladding
3. Brick Tile Chamfered Window Reveal
4. Brick Tile 90º Window Reveal
5. Glass Reinforced Concrete (GRC) 90º Window Reveal
6. Anodised Aluminium Window System in Dark Bronze
7. Anodised Aluminium Curtain Walling System in Dark Bronze
8. Transparent Window Glazing
9. Back- Painted Look-alike Window Glazing
10. Anodised Aluminium Window Sill in Dark Bronze
11. Brick Tile Window Soffit
12. Glass Reinforced Concrete (GRC) Soffit
13. Anodised Aluminium Perforated Spandrel Panel (over Louvred Panel) in Medium Bronze
14. Anodised Aluminium Perforated Vent Panel (over Inward Opening Solid Panel) in Medium Bronze
15. Anodised Aluminium Perforated Panel (over Fixed Solid Panel) in Medium Bronze
16. Anodised Aluminium Flashing in Dark Bronze
17. Anodised Aluminium Louvres in Dark Bronze
18. Glazed Balustrade
19. Entrance Canopy in Anodised Aluminium in Dark Bronze
20. PPC Steel Gate in Dark Bronze
21. Track for Roof Trolley System

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PROJECT
Echo Street PBSA

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As indicated	14/04/2023	JX	VC	RG

General Arrangement
North Elevation

Stage 2

STATUS	PURPOSE FOR ISSUE	SR NO.
S2	Planning	7054

DRAWING NO. REV.
ECHO-SRA-ZZ-XX-DR-A-02201 **P05**



1 02202 **South Elevation - Viaduct**
1 : 200

0 2 4 6 8 10 m

A1

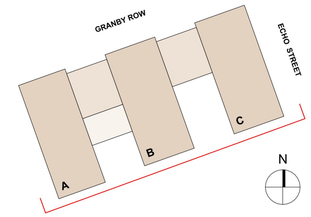
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KEYPLAN



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P02	03/02/2023	Issued for Information- Elevations Updated
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P04	24/03/2023	Draft Issue for Planning (Incl. minor updates)
P05	14/04/2023	Planning Issue
P06	26/04/2023	Planning Issue (Minor Amendments)

MATERIAL KEY

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PROJECT
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As indicated	**26/04/2023**	**JX**	**VC**	**RG**

General Arrangement
South Elevation

Stage 2

STATUS	PURPOSE FOR ISSUE	SR NO.
S2	**Planning**	**7054**

DRAWING NO. REV.
ECHO-SRA-ZZ-XX-DR-A-02202 **P06**



1 / 02203 **West Elevation - Block A**
1 : 200

0 2 4 6 8 10 m

A1

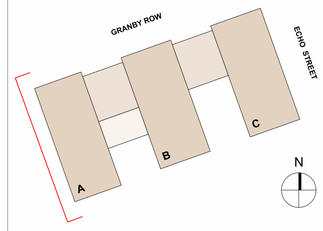
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General Arrangement
West Elevation

Stage 2

STATUS	PURPOSE FOR ISSUE	SR NO.
S2	**Planning**	**7054**

DRAWING NO. — REV.
ECHO-SRA-ZZ-XX-DR-A-02203 — **P05**



1 02204 **East Elevation - Block C**
1 : 200

0 2 4 6 8 10 m

A1

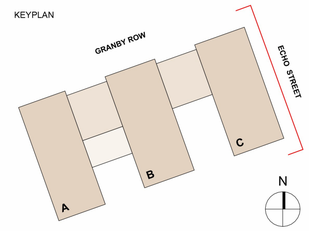
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PROJECT
Echo Street PBSA

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As indicated	26/04/2023	JX	VC	RG

General Arrangement
East Elevation

Stage 2

STATUS	PURPOSE FOR ISSUE	SR NO.
S2	Planning	7054

DRAWING NO.	REV.
ECHO-SRA-ZZ-XX-DR-A-02204	P06

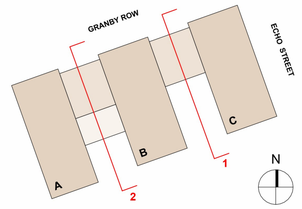
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Echo Street PBSA

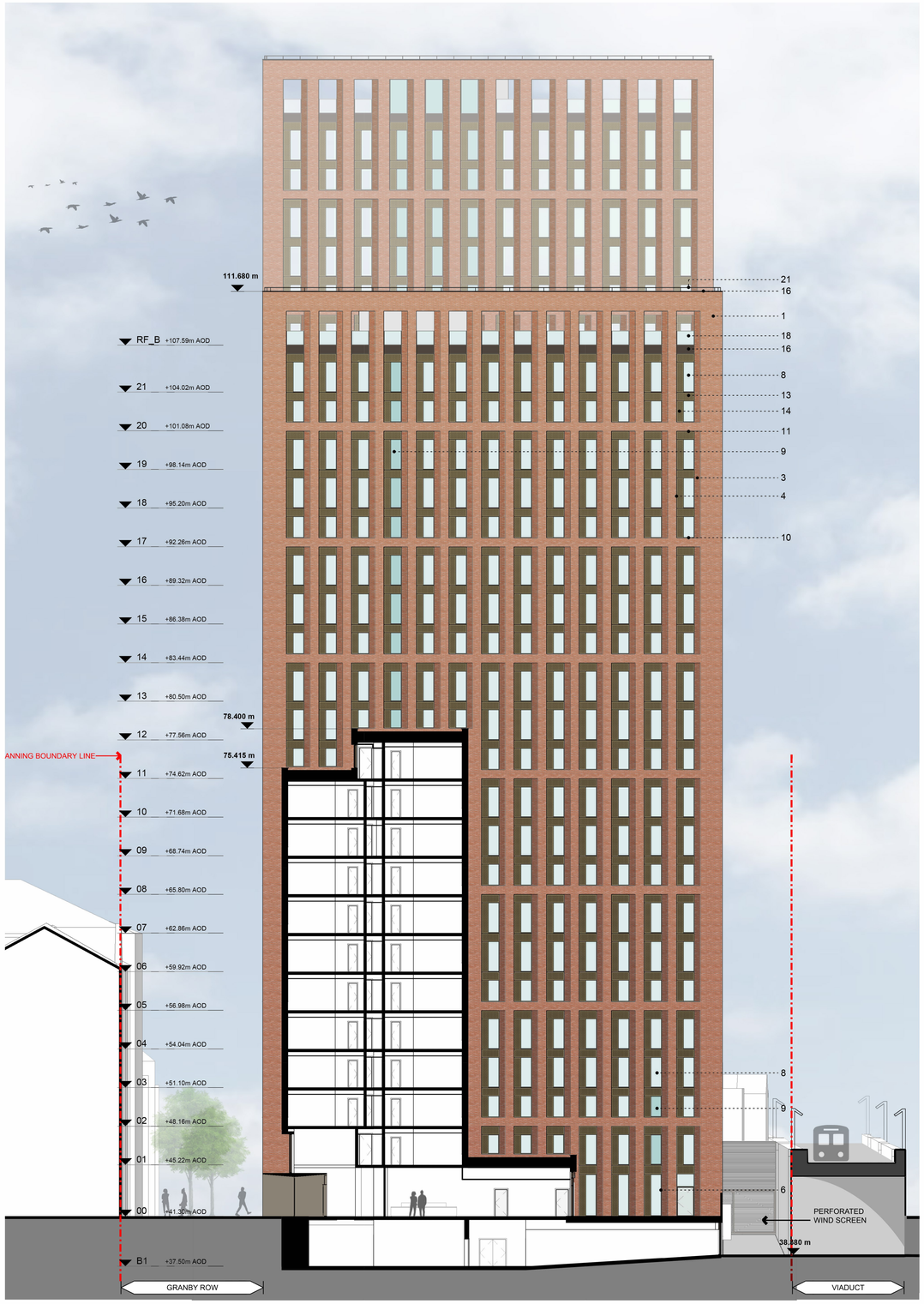
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As indicated	**26/04/2023**	**JX**	**VC**	**RG**

General Arrangement
Inner West Elevations

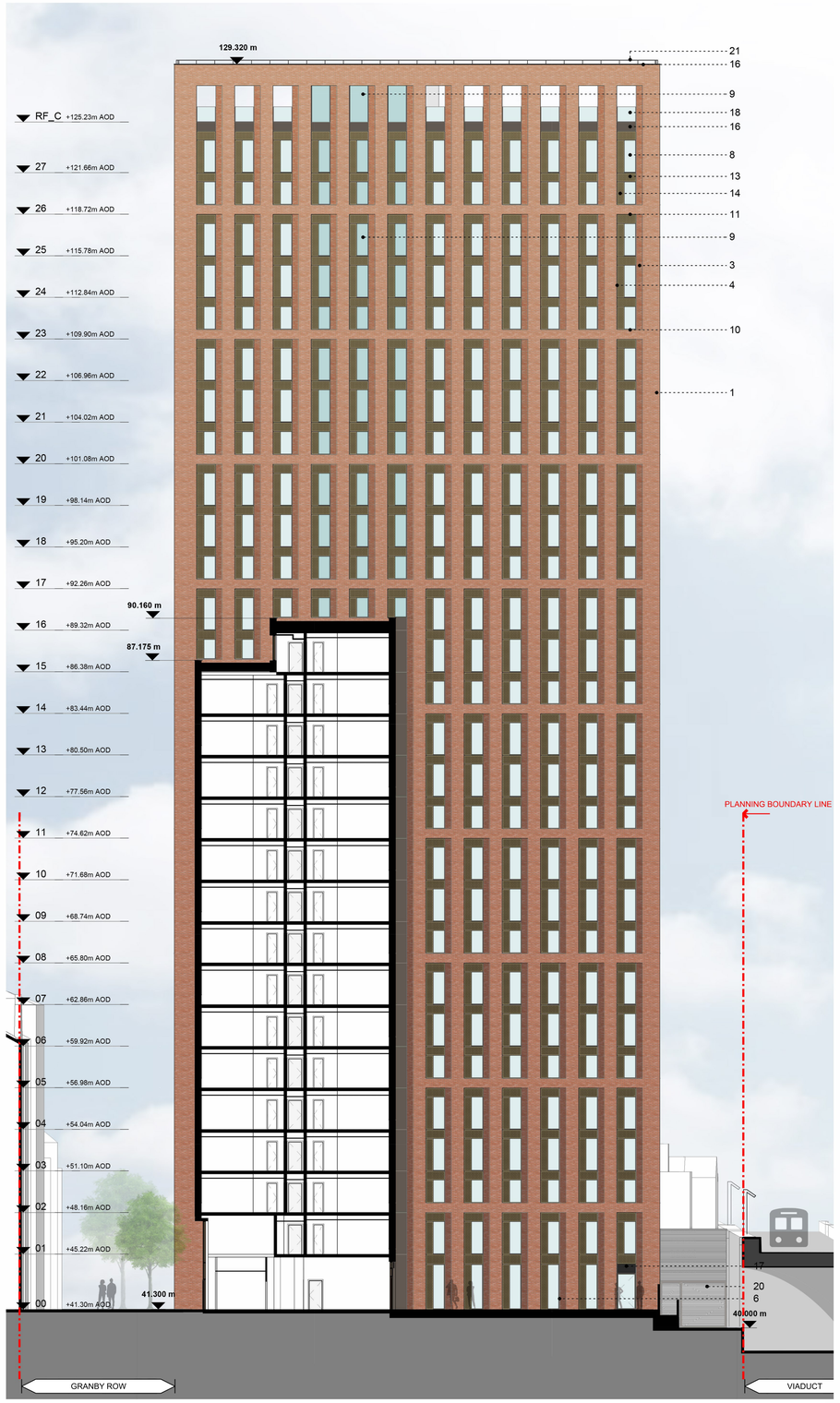
Stage 2

STATUS	PURPOSE FOR ISSUE	SR NO.
S2	**Planning**	**7054**

DRAWING NO. REV.
ECHO-SRA-ZZ-XX-DR-A-02205 **P06**

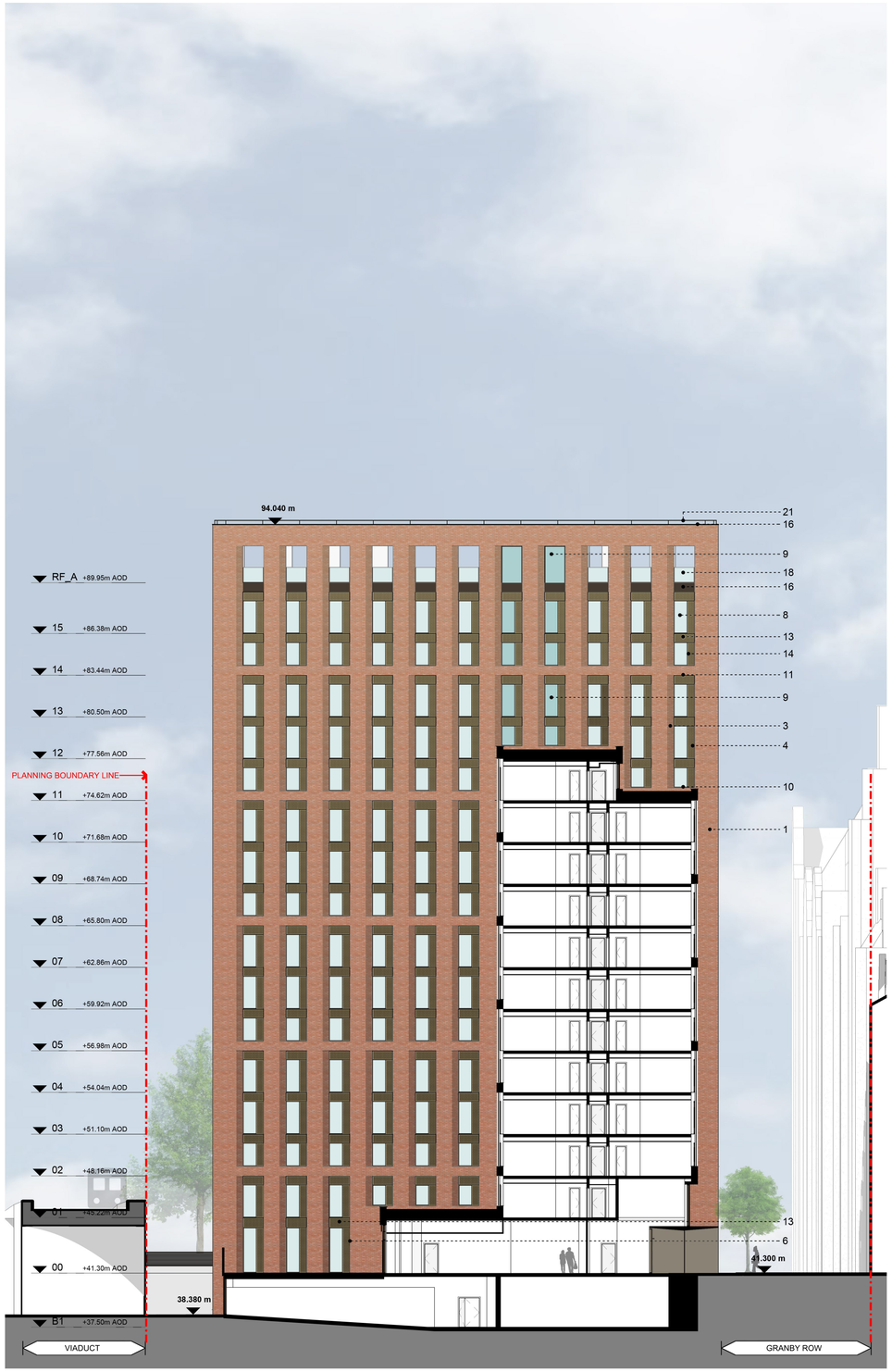


2 02205 **West Elevation - Block B**
1 : 200

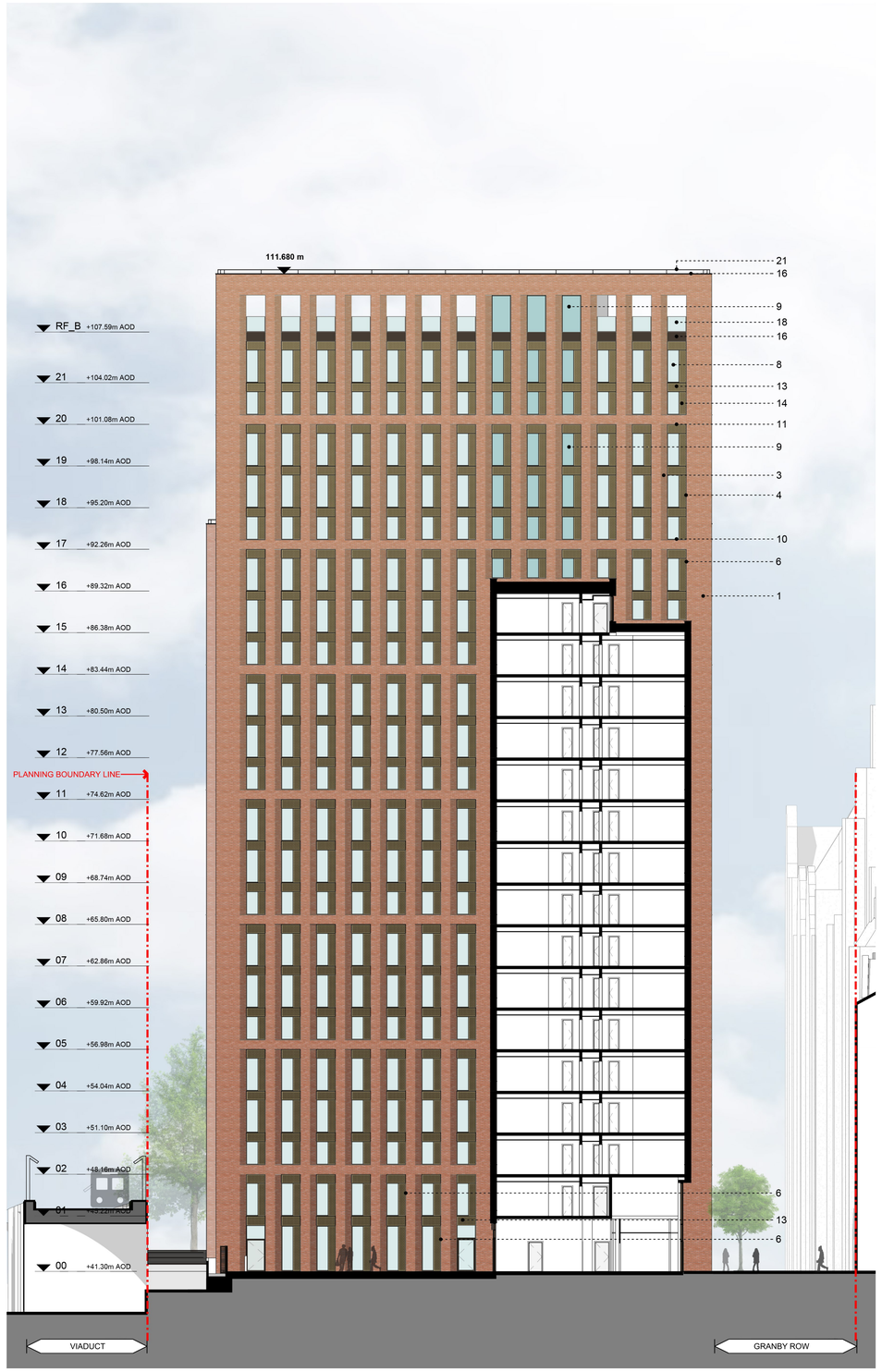


1 02205 **West Elevation - Block C**
1 : 200

0 2 4 6 8 10
m



1 02206 **East Elevation - Block A**
1 : 200



2 02206 **East Elevation - Block B**
1 : 200

0 2 4 6 8 10
m

A1

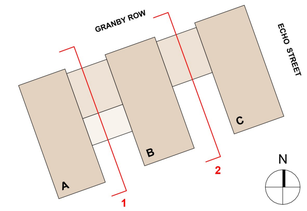
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KEYPLAN



REV.	DATE	AMENDMENT
P01	23/01/2023	First Issue- Issue for Information
P02	03/02/2023	Issued for Information- Elevations Updated
P03	27/02/2023	Elevations Updated following client+ Design team comments
P04	24/03/2023	Draft Issue for Planning (Incl. minor updates)
P05	14/04/2023	Planning Issue
P06	26/04/2023	Planning Issue (Minor Amendments)

MATERIAL KEY

1. Brick Tile Cladding
2. Glass Reinforced Concrete (GRC) Cladding
3. Brick Tile Chamfered Window Reveal
4. Brick Tile 90º Window Reveal
5. Glass Reinforced Concrete (GRC) 90º Window Reveal
6. Anodised Aluminium Window System in Dark Bronze
7. Anodised Aluminium Curtain Walling System in Dark Bronze
8. Transparent Window Glazing
9. Back- Painted Look-alike Window Glazing
10. Anodised Aluminium Window Sill in Dark Bronze
11. Brick Tile Window Soffit
12. Glass Reinforced Concrete (GRC) Soffit
13. Anodised Aluminium Perforated Spandrel Panel (over Louvred Panel) in Medium Bronze
14. Anodised Aluminium Perforated Vent Panel (over Inward Opening Solid Panel) in Medium Bronze
15. Anodised Aluminium Perforated Panel (over Fixed Solid Panel) in Medium Bronze
16. Anodised Aluminium Flashing in Dark Bronze
17. Anodised Aluminium Louvres in Dark Bronze
18. Glazed Balustrade
19. Entrance Canopy in Anodised Aluminium in Dark Bronze
20. PPC Steel Gate in Dark Bronze
21. Track for Roof Trolley System

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PROJECT
Echo Street PBSA

SCALE@A1	DATE	ORIGINATOR	CHECKED	AUTHORISED
As indicated	**26/04/2023**	**JX**	**VC**	**RG**

General Arrangement
Inner East Elevations

Stage 2

STATUS	PURPOSE FOR ISSUE	SR NO.
S2	**Planning**	**7054**

DRAWING NO.	REV.
ECHO-SRA-ZZ-XX-DR-A-02206	**P06**

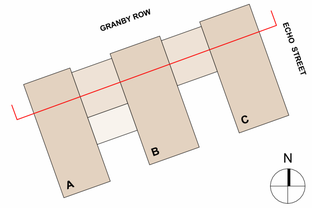
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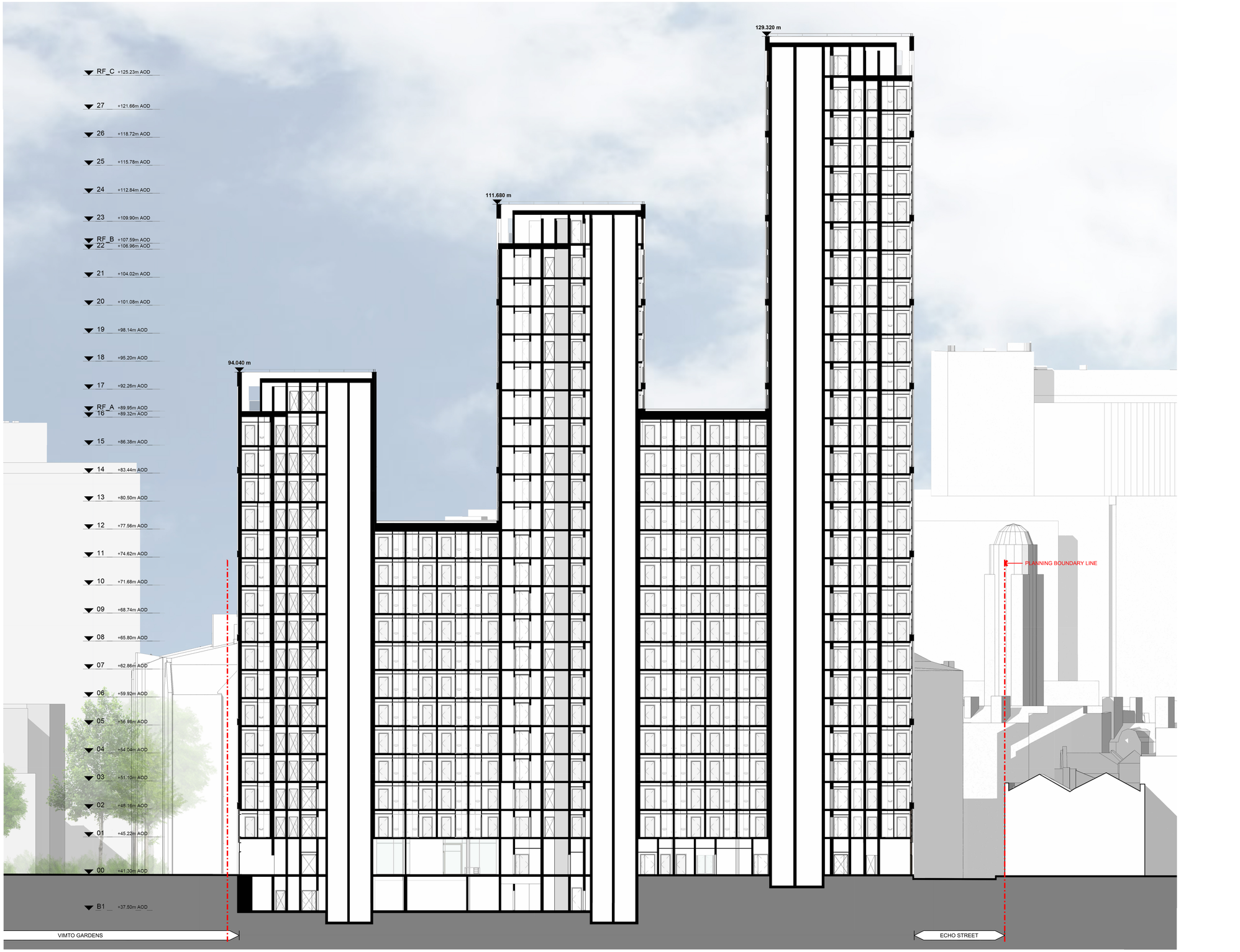
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KEYPLAN



REV.	DATE	AMENDMENT
P01	24/03/2023	Draft Issue for Planning
P02	14/04/2023	Planning Issue



AA 02301 **Section AA**
1 : 200

0 2 4 6 8 10 m

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SCALE@A1	DATE	ORIGINATOR	CHECKED	AUTHORISED
1 : 200	14/04/2023	JX	VC	RG

General Arrangement
Section AA

Stage 2

STATUS	PURPOSE FOR ISSUE	SR NO.
S2	Planning	7054

DRAWING NO.	REV.
ECHO-SRA-ZZ-XX-DR-A-02301	P02

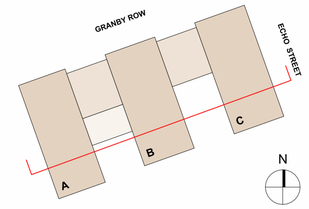
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KEYPLAN



REV.	DATE	AMENDMENT
P01	24/03/2023	Draft Issue for Planning
P02	14/04/2023	Planning Issue



BB 02302 **Section BB**
1 : 200

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1 : 200	14/04/2023	JX	VC	RG

General Arrangement
Section BB

Stage 2

STATUS	PURPOSE FOR ISSUE	SR NO.
S2	Planning	7054

DRAWING NO. REV.
ECHO-SRA-ZZ-XX-DR-A-02302 **P02**

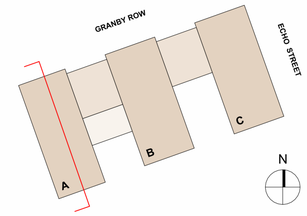
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KEYPLAN



REV.	DATE	AMENDMENT
P01	24/03/2023	Draft Issue for Planning
P02	14/04/2023	Planning Issue



1 / 02303 **Section CC - Block A1**
1 : 200

0 2 4 6 8 10 m

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1 : 200	14/04/2023	JX	VC	RG

General Arrangement
Section CC- Block A

Stage 2

STATUS	PURPOSE FOR ISSUE	SR NO.
S2	Planning	7054

DRAWING NO. — REV.
ECHO-SRA-ZZ-XX-DR-A-02303 — **P02**



A1

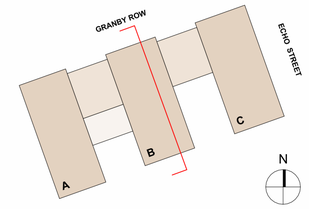
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KEYPLAN



REV.	DATE	AMENDMENT
P01	24/03/2023	Draft Issue for Planning
P02	14/04/2023	Planning Issue

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SCALE@A1	DATE	ORIGINATOR	CHECKED	AUTHORISED
1 : 200	14/04/2023	JX	VC	RG

General Arrangement
Section DD- Block B

Stage 2

STATUS	PURPOSE FOR ISSUE	SR NO.
S2	Planning	7054

DRAWING NO. REV.
ECHO-SRA-ZZ-XX-DR-A-02304 **P02**

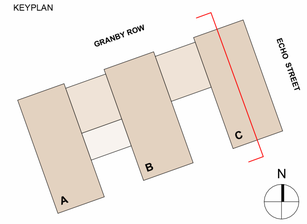
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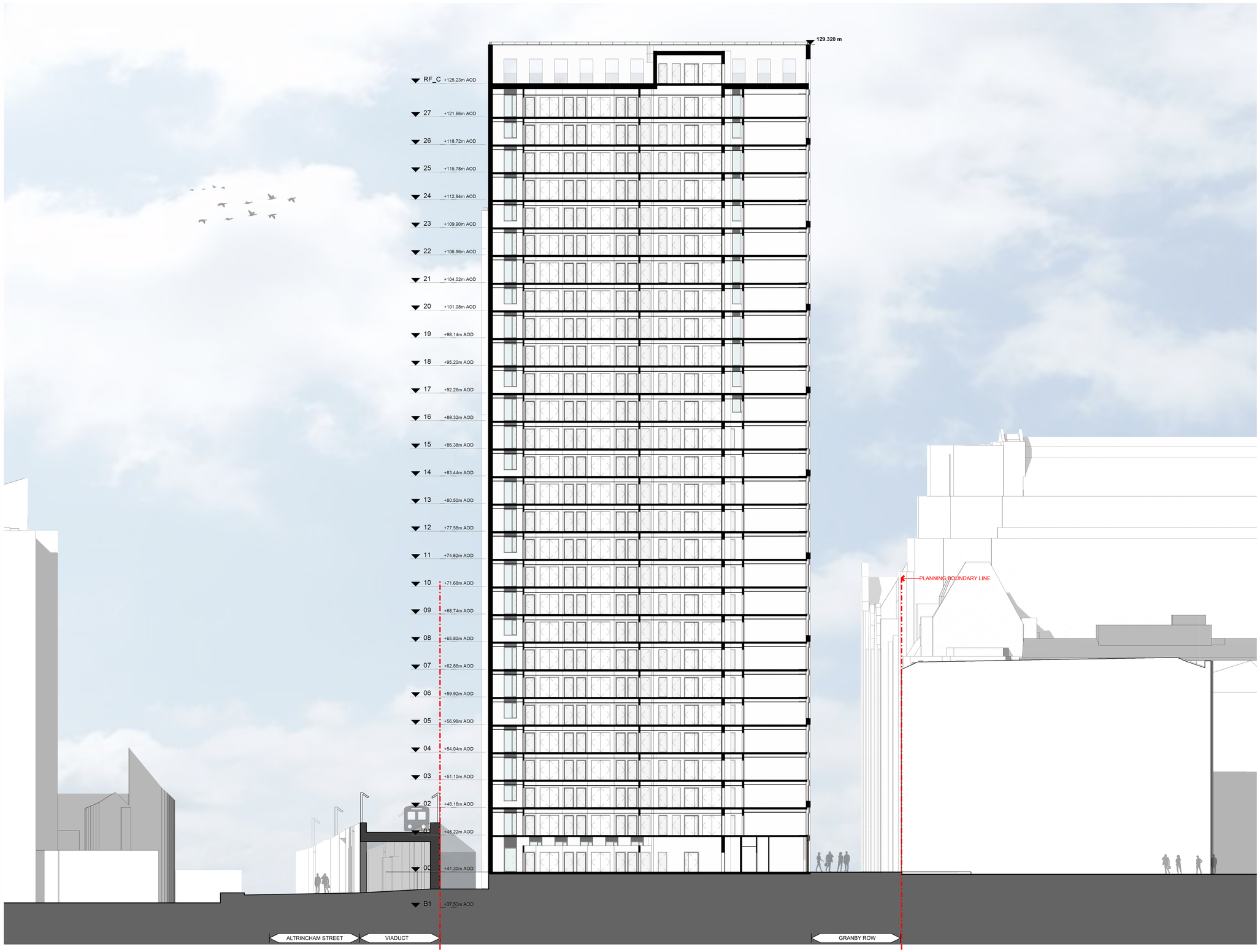
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KEYPLAN



REV.	DATE	AMENDMENT
P01	24/03/2023	Draft Issue for Planning
P02	14/04/2023	Planning Issue



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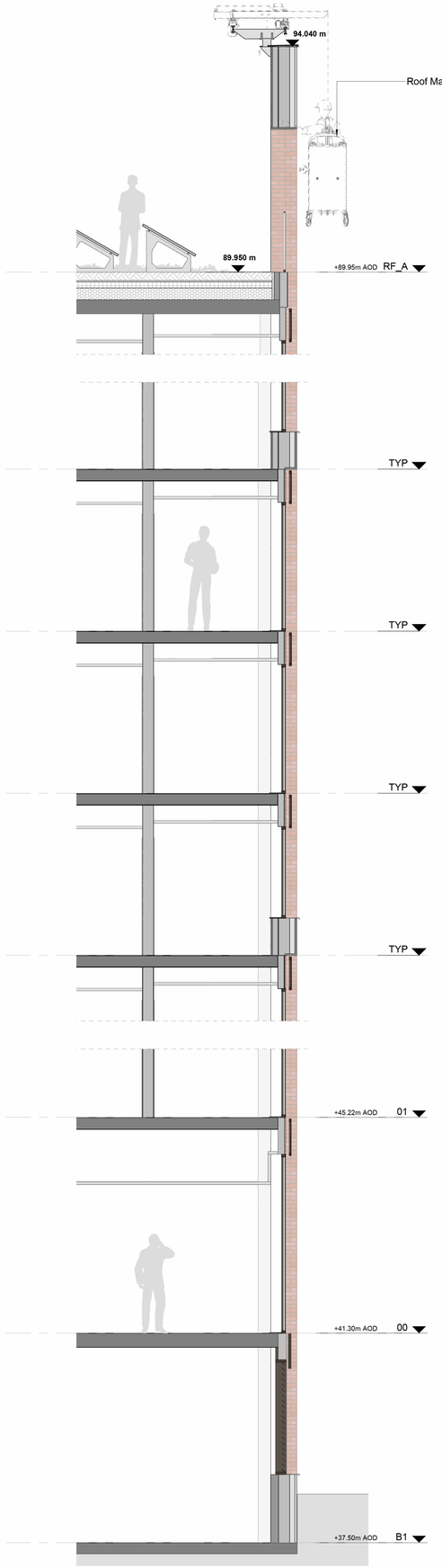
General Arrangement
Section EE

Stage 2

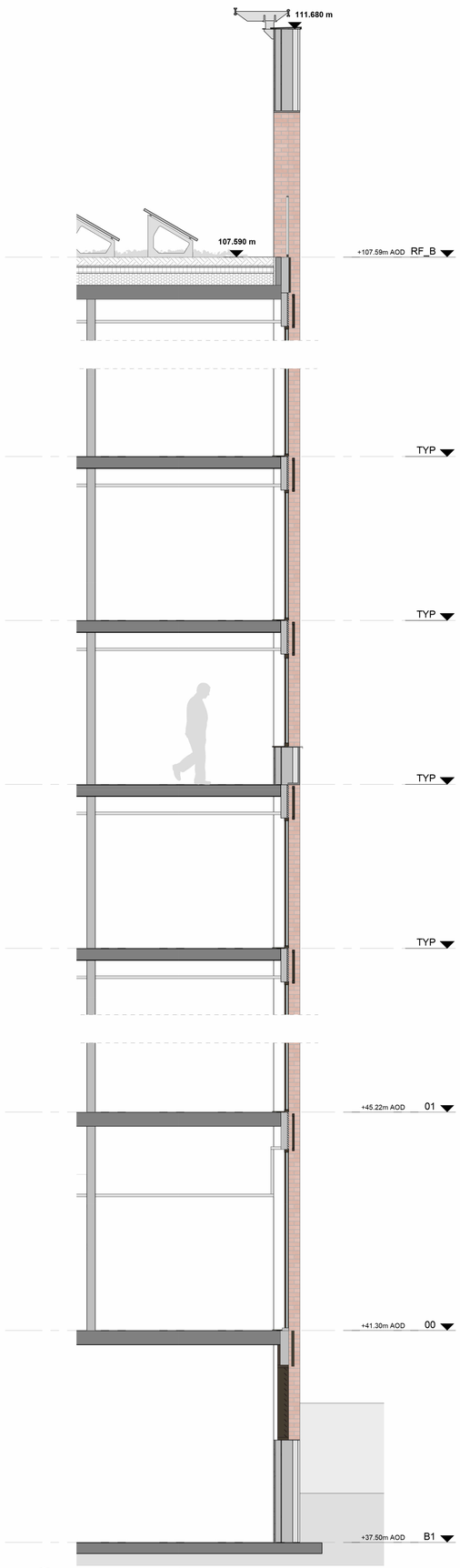
STATUS	PURPOSE FOR ISSUE	SR NO.
S2	**Planning**	**7054**

DRAWING NO. REV.

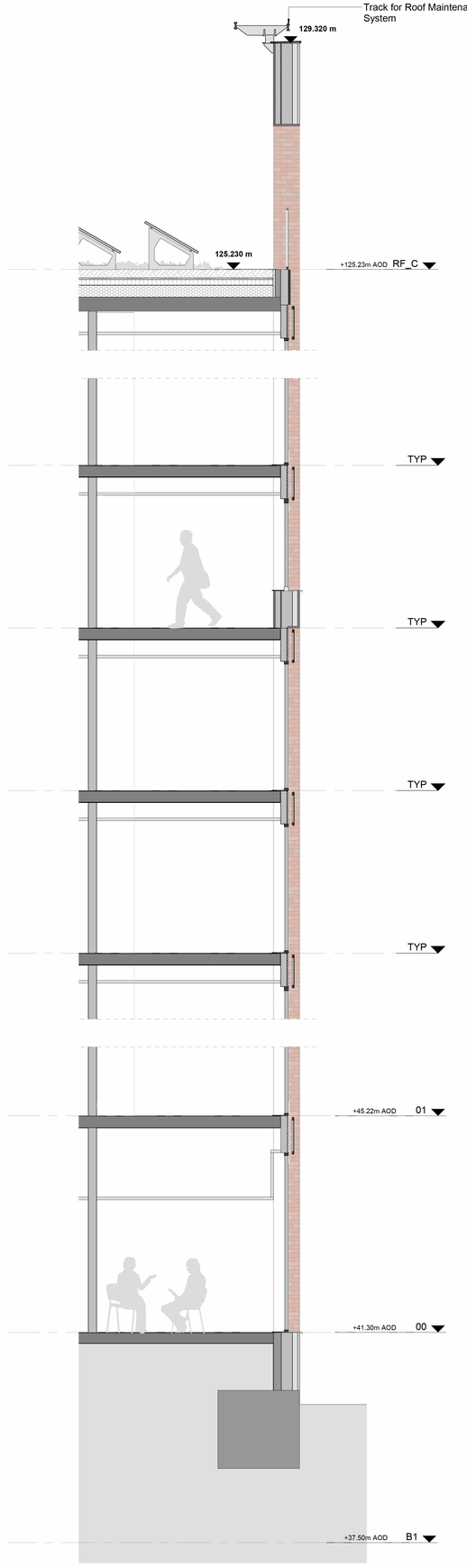
ECHO-SRA-ZZ-XX-DR-A-02305 **P02**



1 02401 **Strip Section 1- Block A**
1 : 50



2 02401 **Strip Section 2- Block B**
1 : 50



3 02401 **Strip Section 3- Block C**
1 : 50

A1

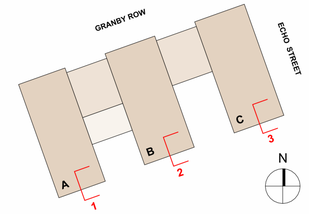
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KEYPLAN



REV.	DATE	AMENDMENT
P01	24/03/2023	Draft Issue for Planning
P02	14/04/2023	Planning Issue

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1 : 50	14/04/2023	LA	VC	RG

Strip Sections

Stage 2

STATUS	PURPOSE FOR ISSUE	SR NO.
S2	Planning	7054

DRAWING NO. REV.
ECHO-SRA-ZZ-XX-DR-A-02401 **P02**



1 / 02402 **Strip Section All**
1 : 50

A1

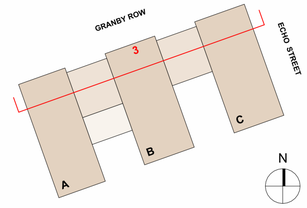
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KEYPLAN



REV.	DATE	AMENDMENT
P01	24/03/2023	Draft Issue for Planning
P02	14/04/2023	Planning Issue

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PROJECT
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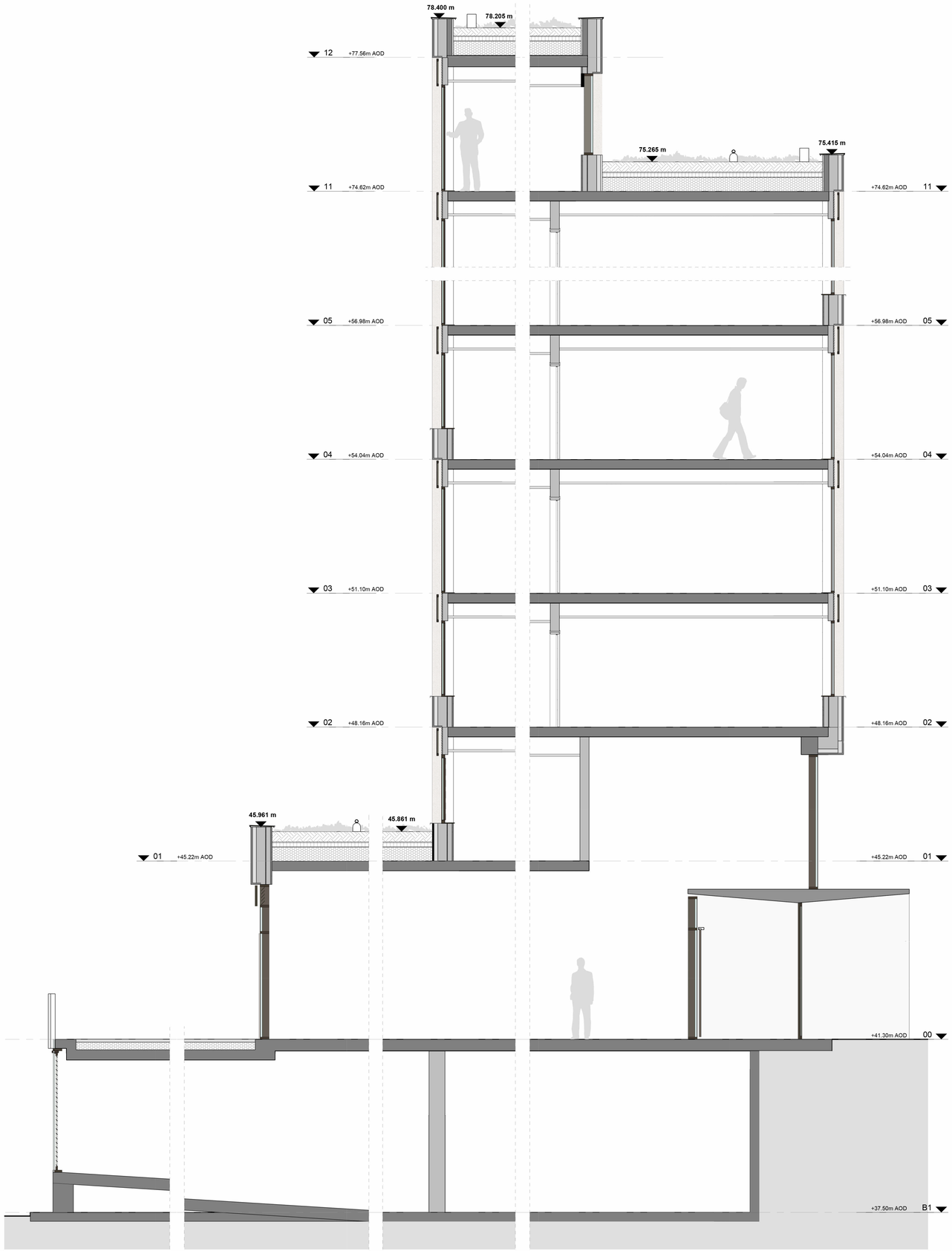
SCALE@A1	DATE	ORIGINATOR	CHECKED	AUTHORISED
1 : 50	14/04/2023	LA	VC	RG

Strip Sections

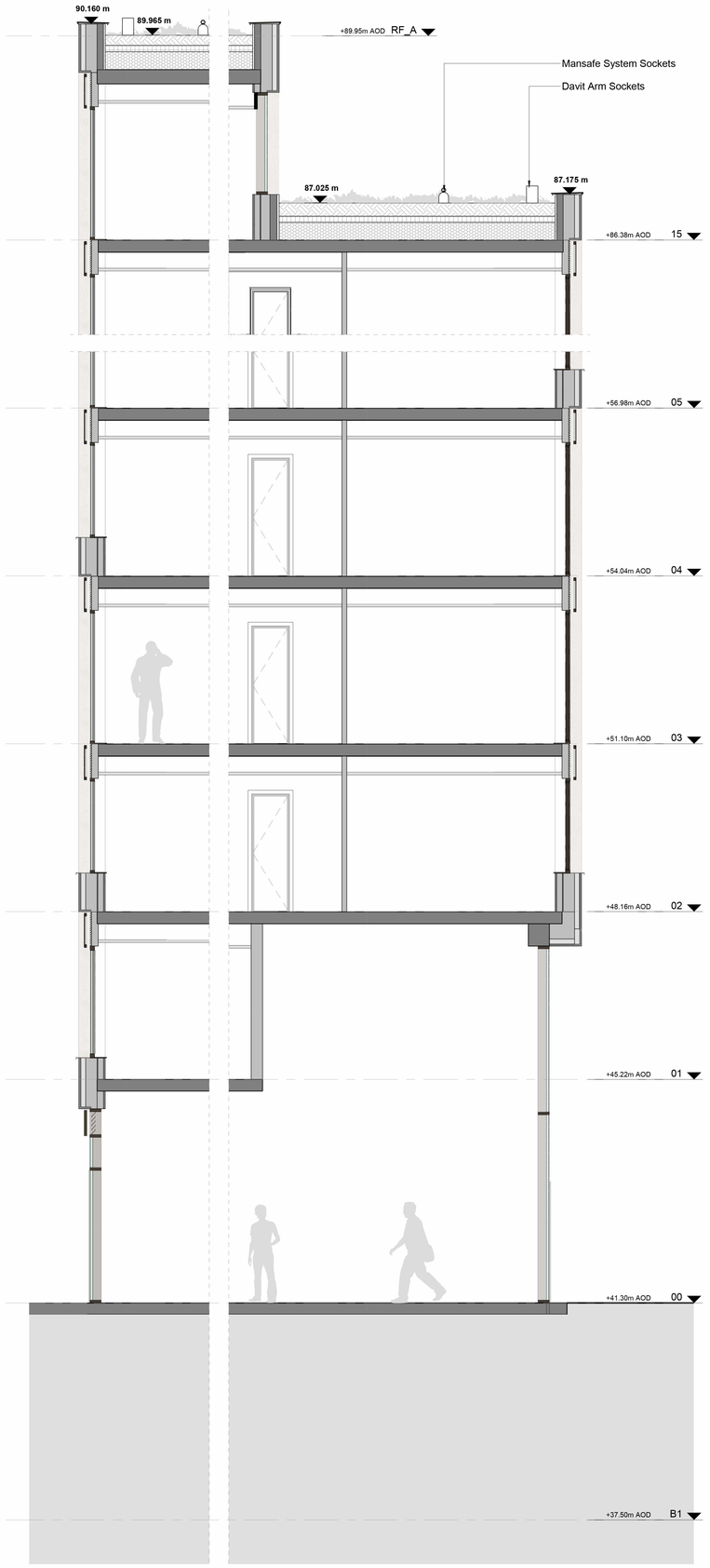
Stage 2

STATUS	PURPOSE FOR ISSUE	SR NO.
S2	Planning	7054

DRAWING NO.	REV.
ECHO-SRA-ZZ-XX-DR-A-02402	P02



1 02403 **Strip Section 4**
1 : 50



2 02403 **Strip Section 5**
1 : 50

A1

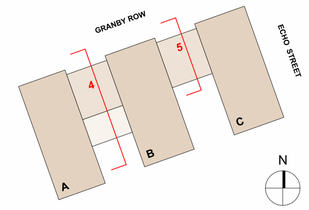
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KEYPLAN



REV.	DATE	AMENDMENT
P01	24/03/2023	Draft Issue for Planning
P02	14/04/2023	Planning Issue

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PROJECT
Echo Street PBSA

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1 : 50	14/04/2023	LA	VC	RG

Strip Sections

Stage 2

STATUS	PURPOSE FOR ISSUE	SR NO.
S2	Planning	7054

DRAWING NO. REV.
ECHO-SRA-ZZ-XX-DR-A-02403 **P02**

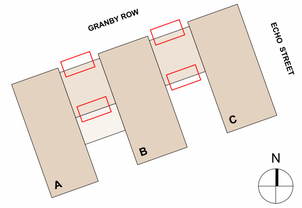
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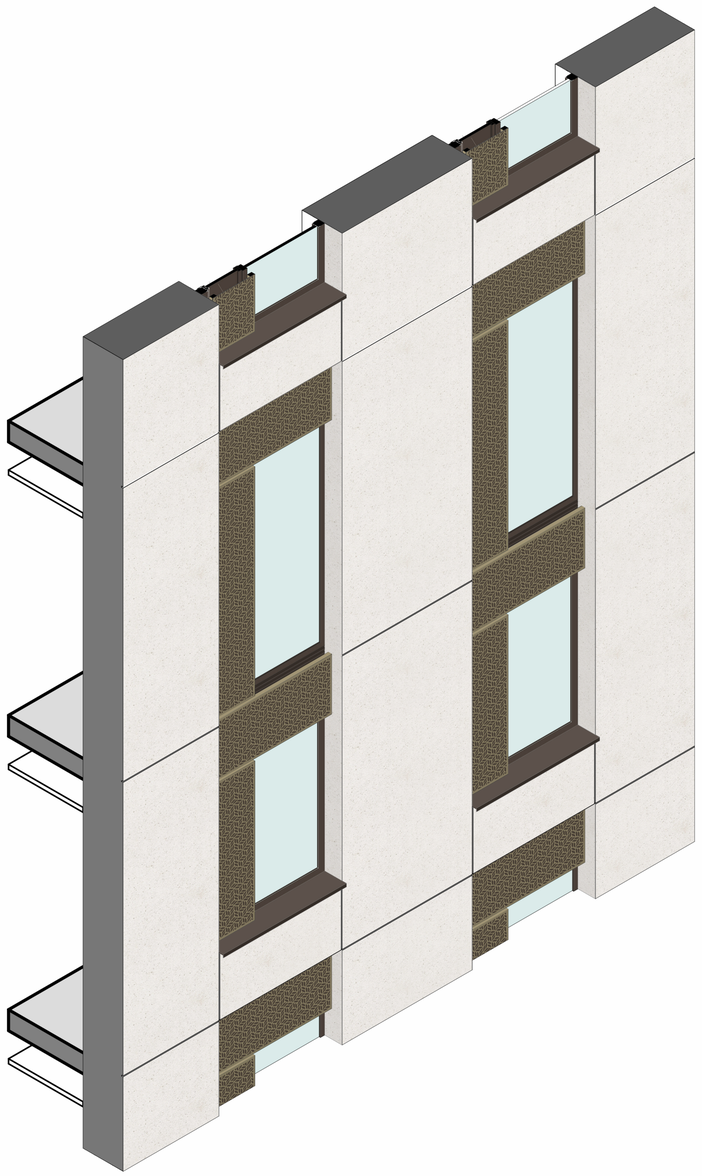
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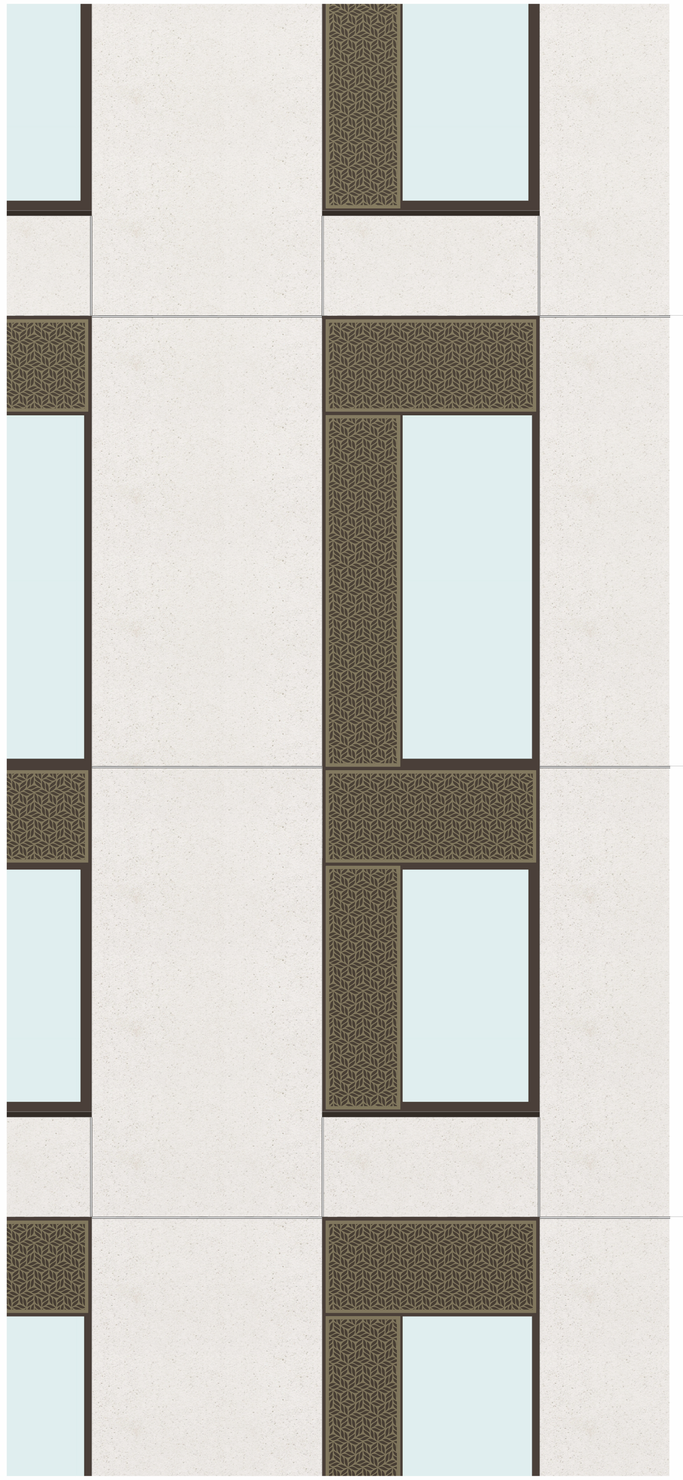
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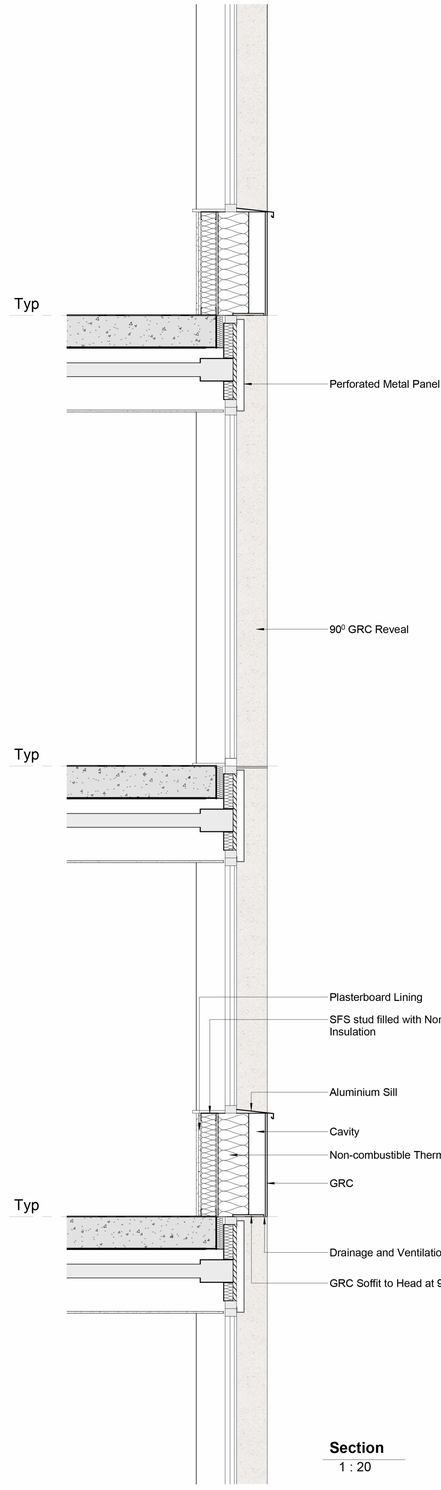
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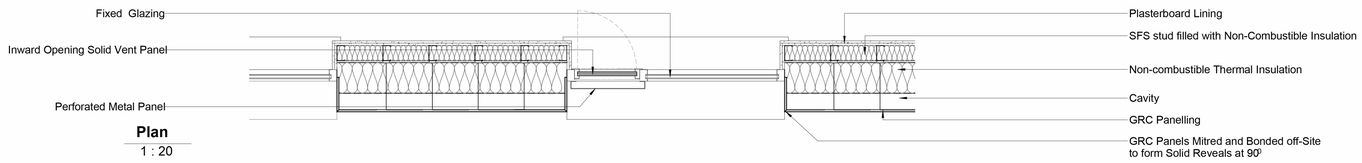
Axonometric View



Elevation
1 : 20



Section
1 : 20



Plan
1 : 20

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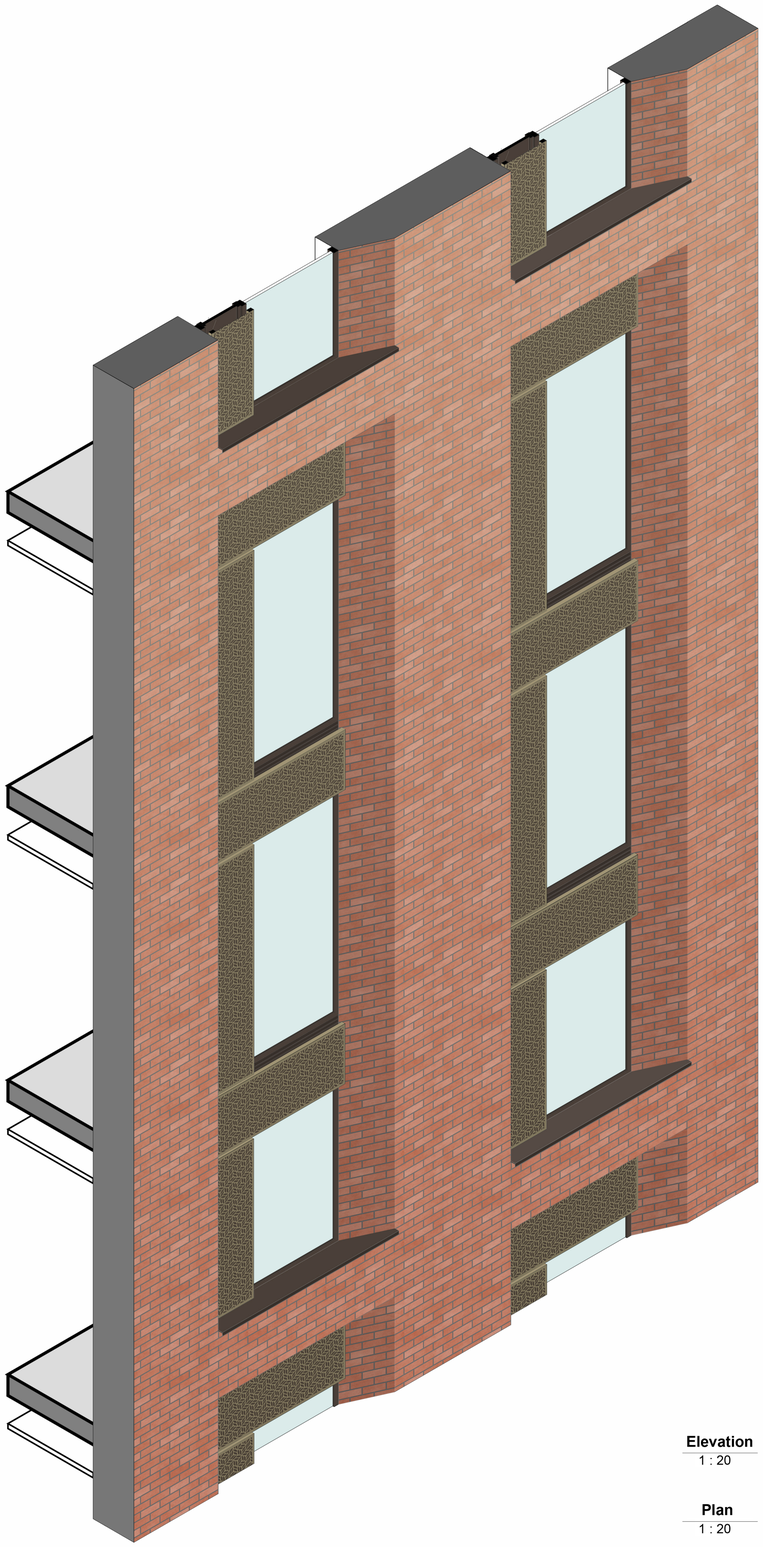
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GRC Façade Bay Study 1

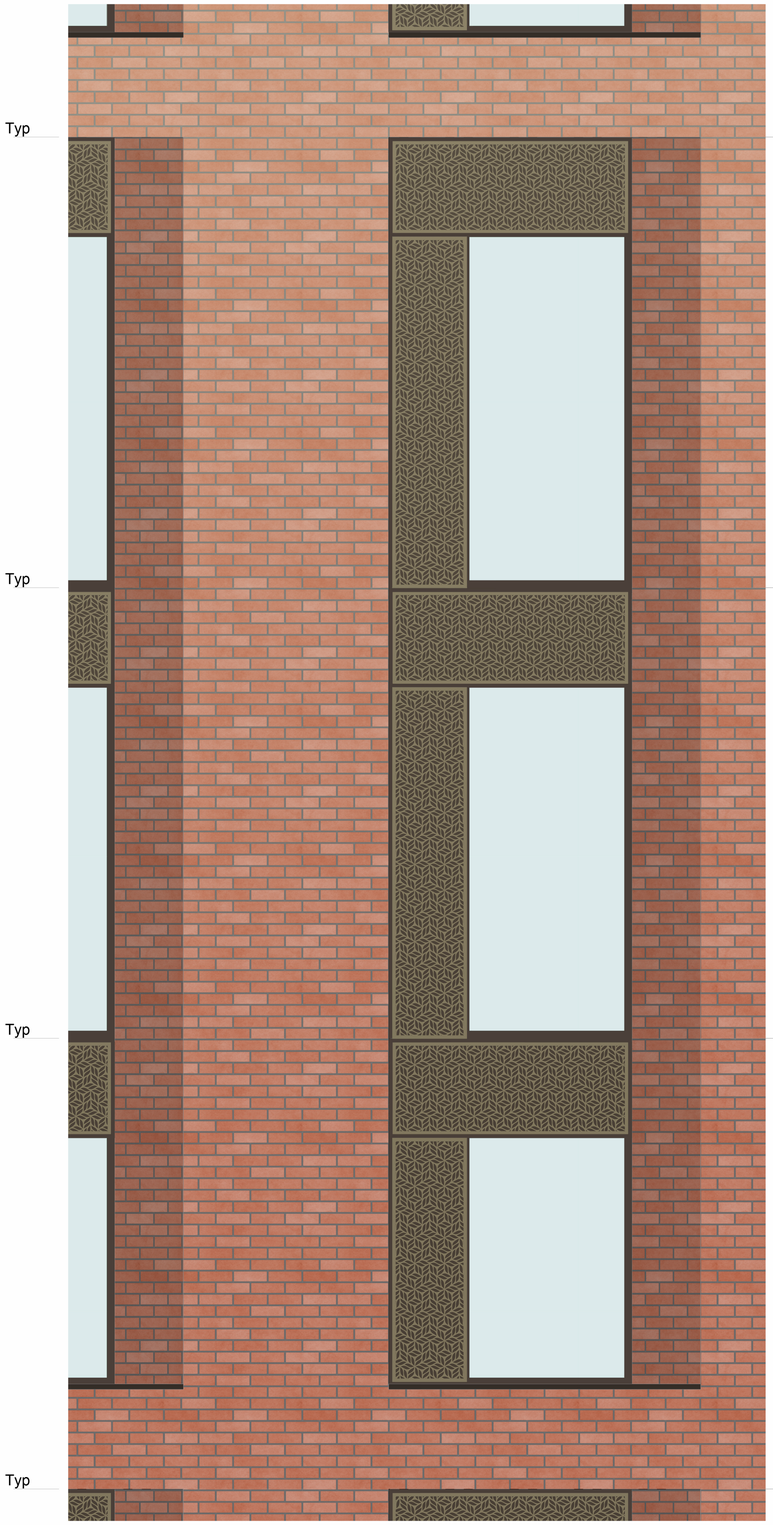
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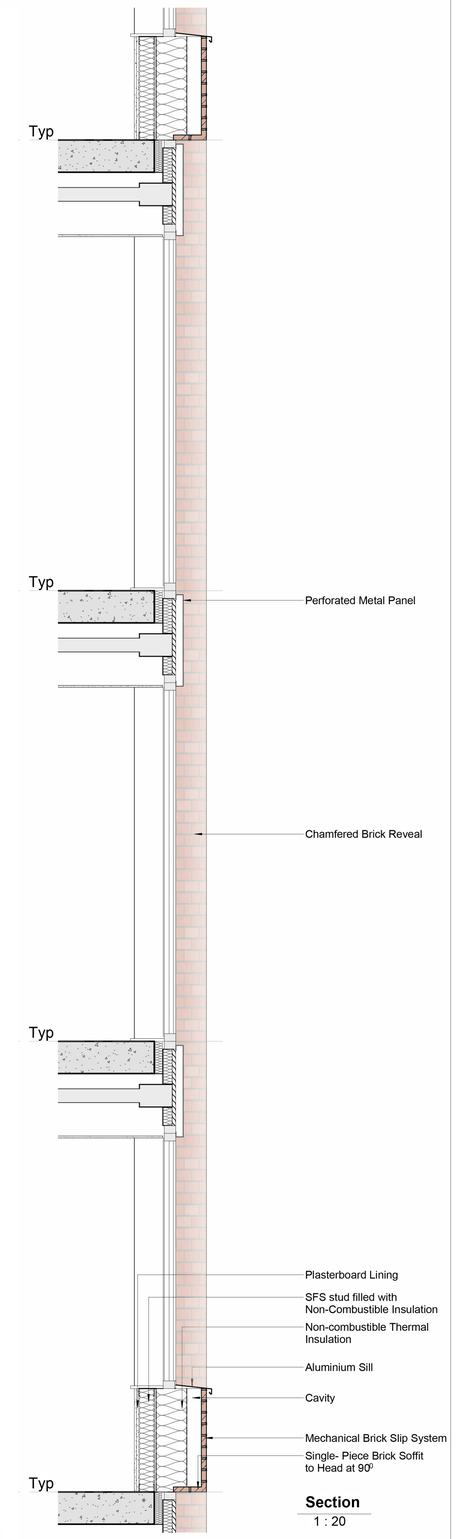
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Axonometric View

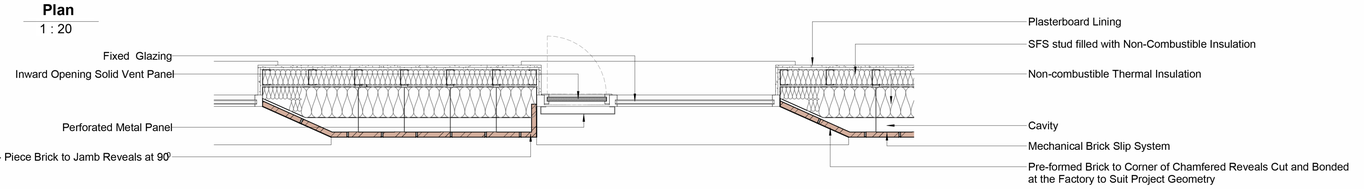


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Section
1 : 20

Plan
1 : 20



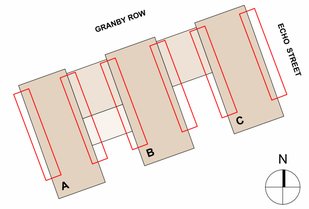
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P02	14/04/2023	Planning Issue

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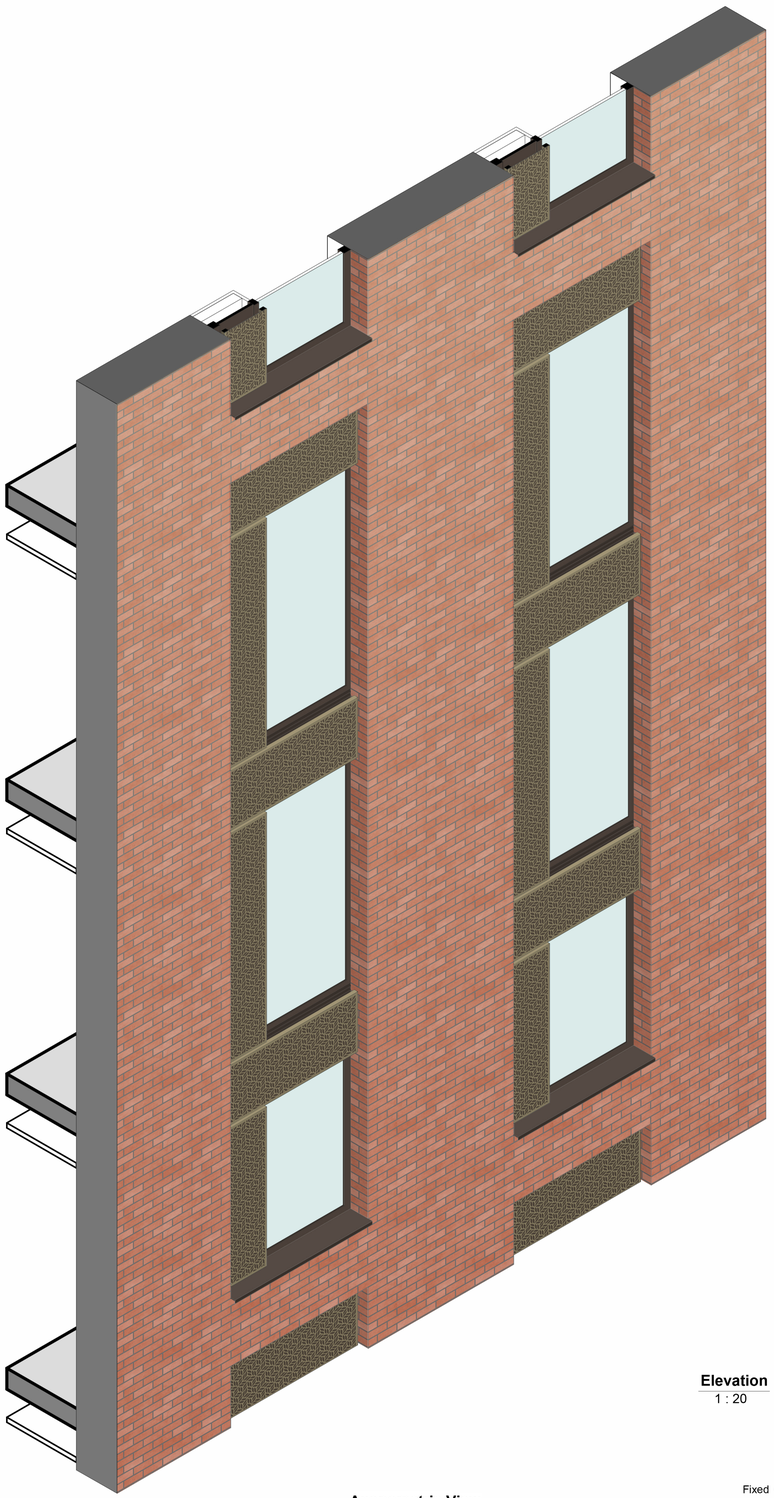
Brick Façade Bay Study 2

Stage 2

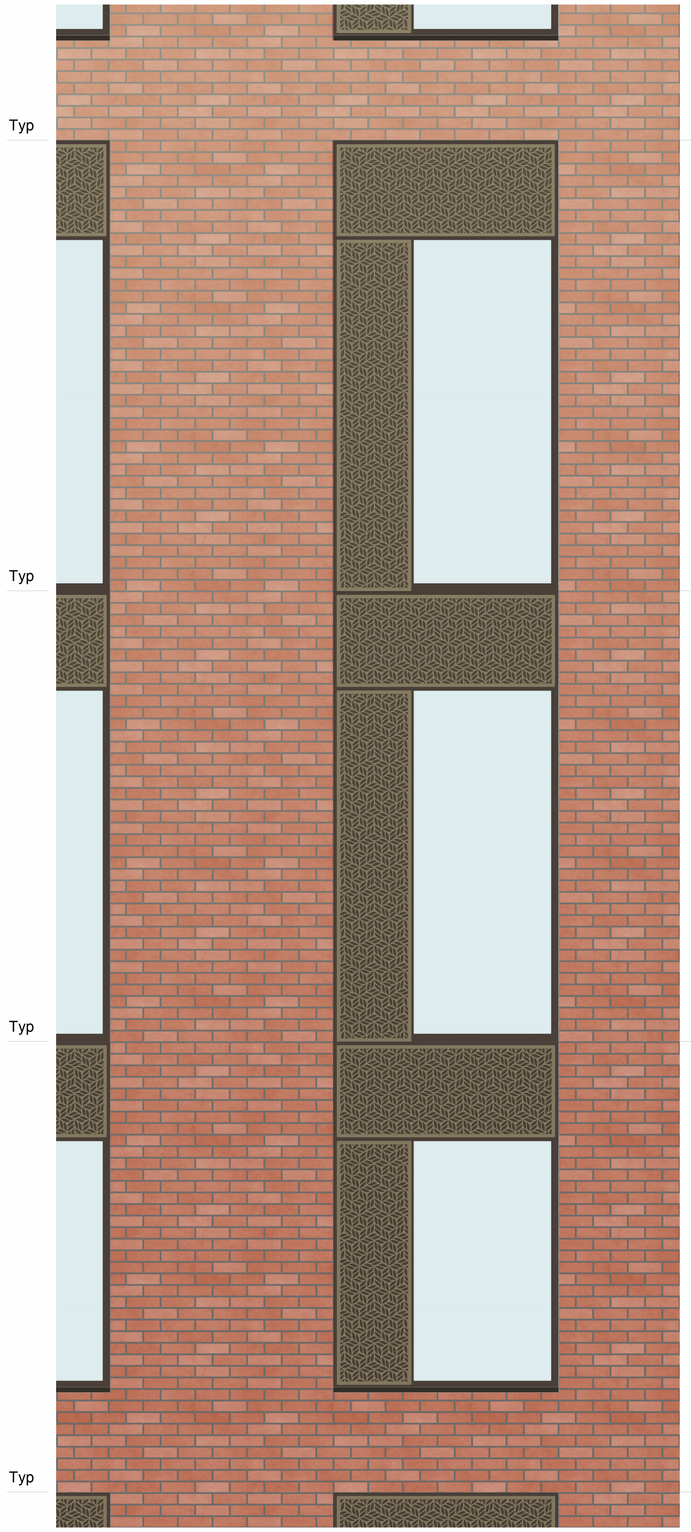
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S2	Planning	7054

DRAWING NO. REV.

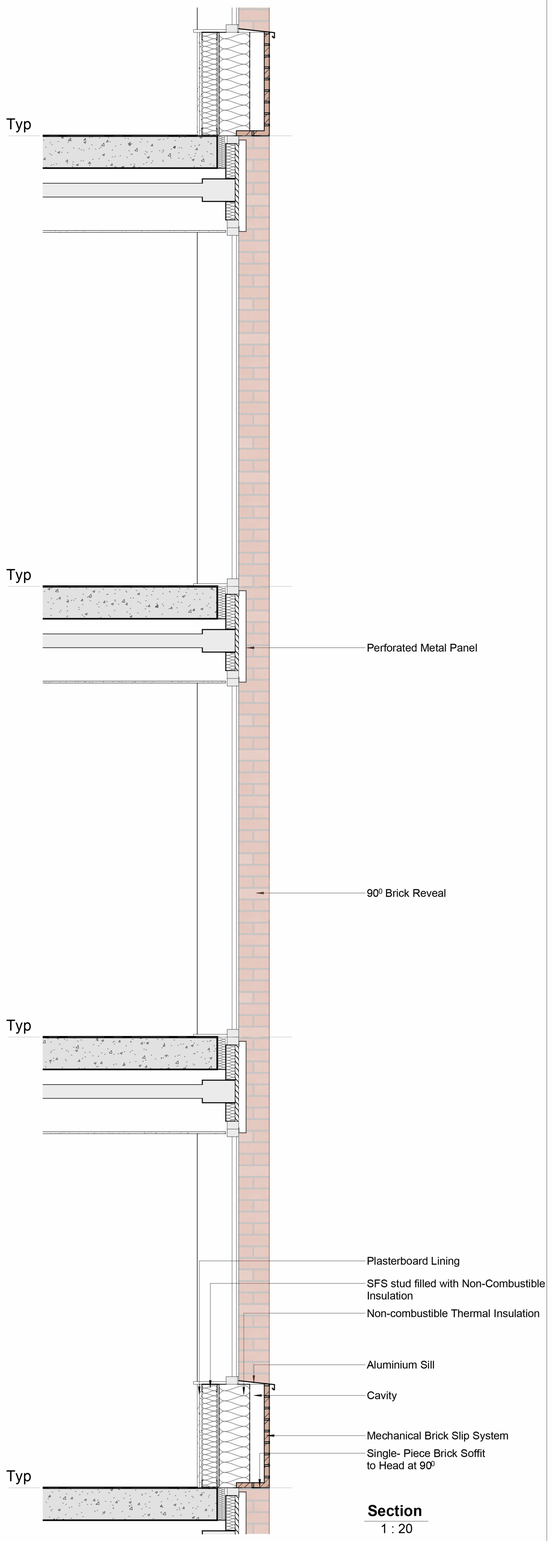
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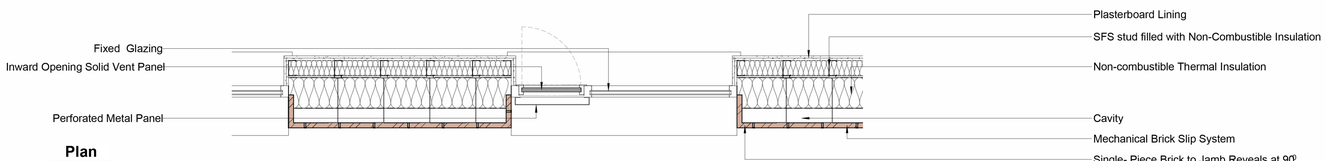
Axonometric View



Elevation
1 : 20



Section
1 : 20



Plan
1 : 20

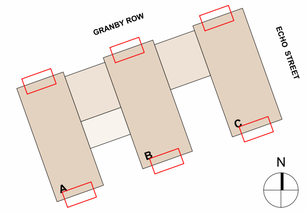
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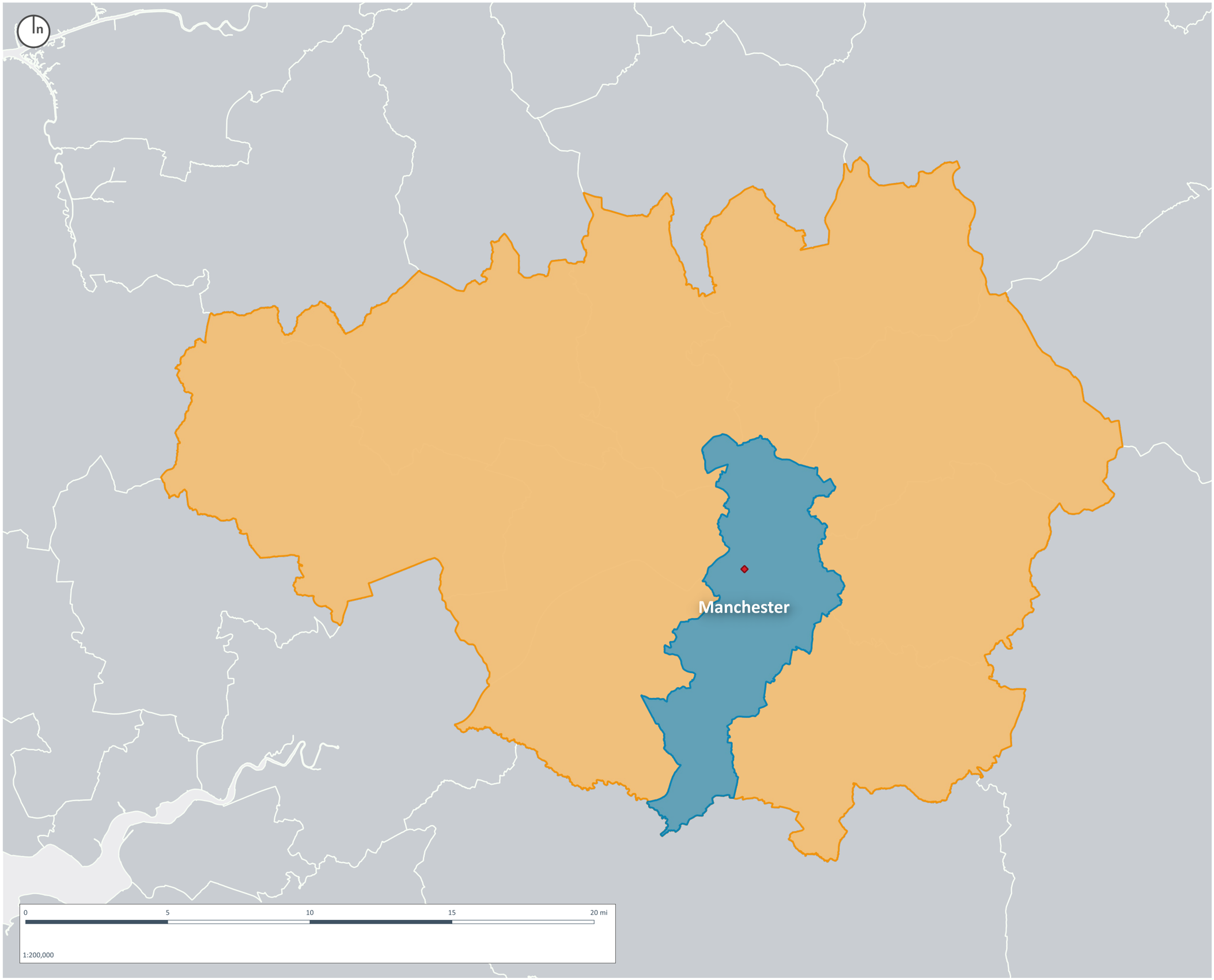
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Brick Façade Bay Study Gables

Stage 2

STATUS	PURPOSE FOR ISSUE	SR NO.
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- Site Location
- Local Impact Area (Manchester)
- Wider Impact Area (Greater Manchester Combined Authority)
- UK

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PROJECT:
Echo Street, Manchester

DRAWING:
Figure 6.1: Socio-Economics and Human Health Study Area Plan - Local and Wider Impact Areas

PROJECT NUMBER:
IQSM3015

DRAWING NUMBER:
GIS_000

CHECKED BY:
JS / TE

REVISION:
1.0

STATUS:
Final

DATE:
March 2023

SCALE:
1:200,000 @ A3

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Ref	Listed Building	Grade
1	Police And Fire Station	II*
2	Former Goods Offices To Piccadilly Station	II
3	Sculptural Wall	II
4	Orient House	II
5	Granby House	II
6	Train Shed And Undercroft At Manchester Piccadilly Station	II
7	42 And 44, Sackville Street	II
8	46, Sackville Street	II
9	Institute Of Science And Technology (university Of Manchester)	II
10	Regency House With Barclays Bank	II
11	The Shena Simon Sixth-form College	II
12	Rochdale Canal Lock Number 86, To East Of Chorlton Street	II
13	Rochdale Canal Boundary Wall To Canal Between Sackville Street And Chorlton Street	II
14	Rochdale Canal Boundary Wall To Canal Between Chorlton Street And Minshull Street	II
15	Minshull House	II
16	Mintierna House	II
17	Manchester South Junction And Altrincham Railway Viaduct	II

Ref	HER Building
18	Monroes public house (36 London Road)
19	Jackson Street Mills (UMIST Campus) (now University of Manchester)
20	Rochdale Canal

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Site Boundary

Study Area

Conservation Area

Listed Buildings

I

II*

II

HER Buildings

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IQ Student Accommodation

PROJECT:
Echo Street PBSA

DRAWING:
Heritage Asset Plan

PROJECT NUMBER:
IQSM3015

DRAWING NUMBER: GIS_100

CHECKED BY: JS

REVISION: 1.0

STATUS: Draft

DATE: January 2023

SCALE: 1:3,000 @ A3

0 100 200 m

1:3,000

Turley

Chapter 11: Wind Microclimate, Figures 11.1 - 11.20

Figure 11.1: Study Area



Figure 11.2: 3D model of the Proposed Development– Top View

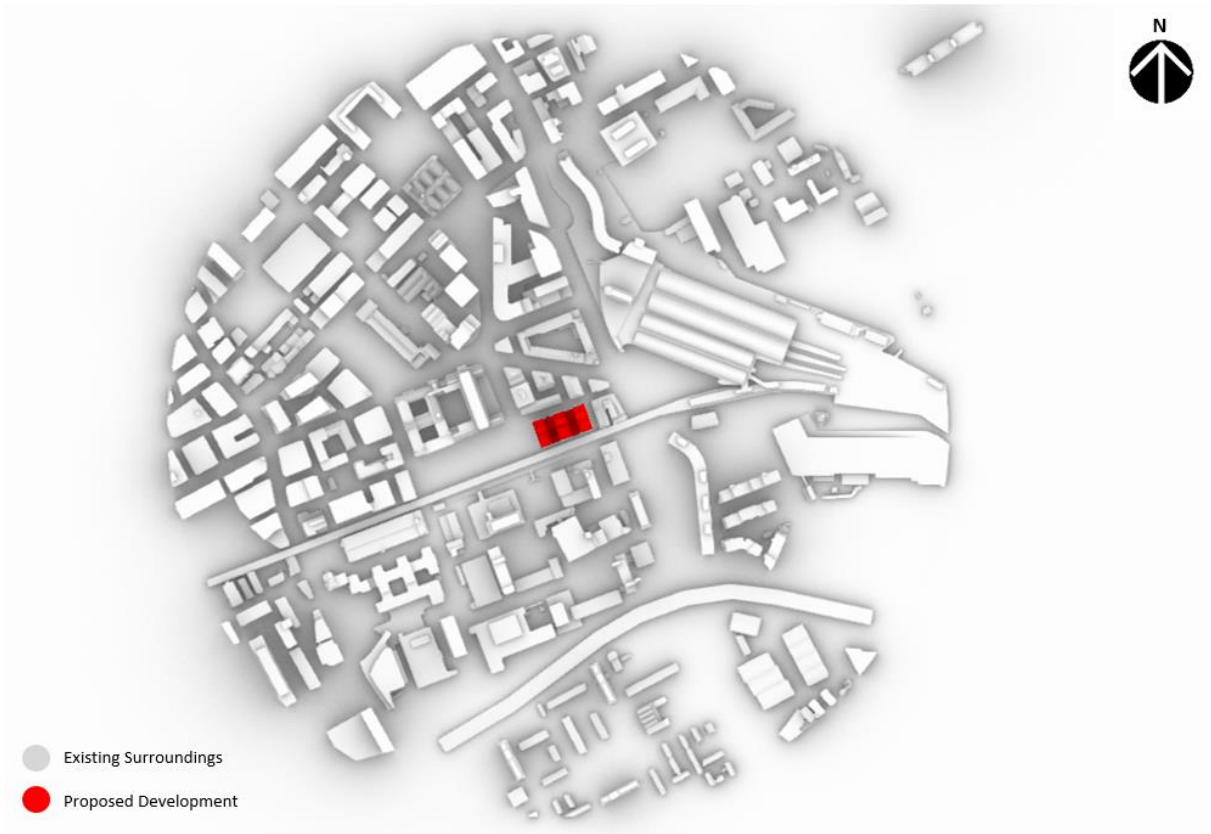


Figure 11.3: 3D Model for the Assessment – Proposed Scenario – SW View

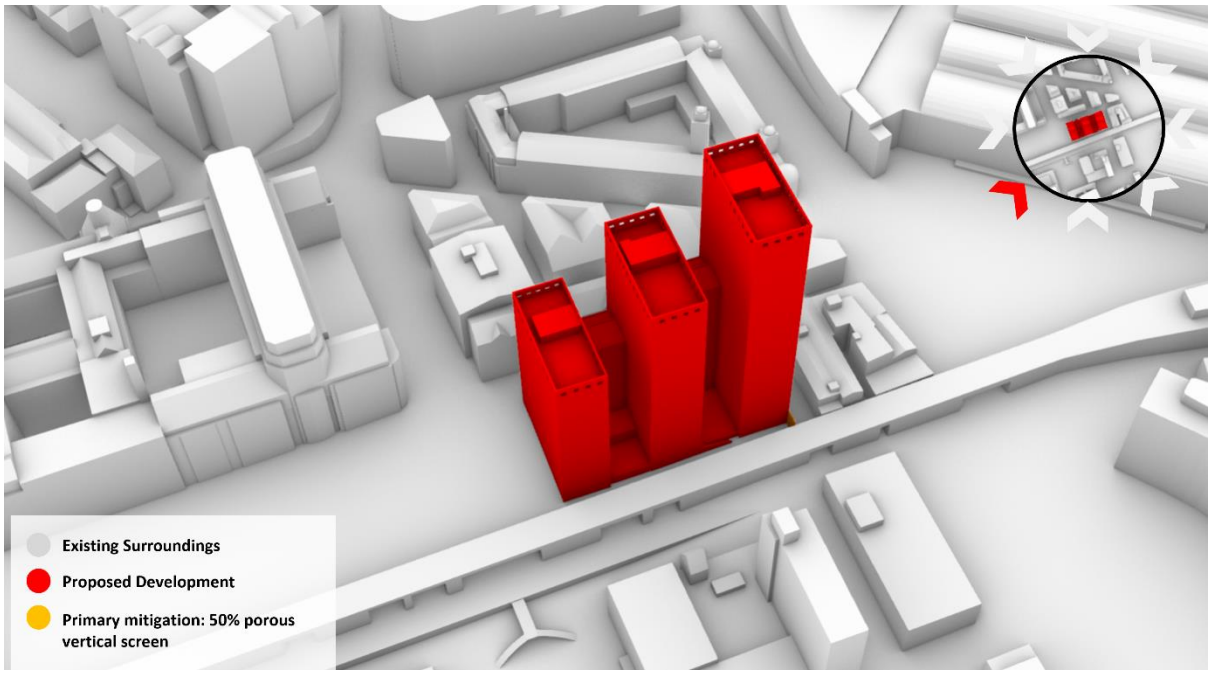


Figure 11.4: The 3D CAD model of the Proposed Scenario, showing the explicitly modelled surrounding buildings and terrain. The terrain is coloured by its relative elevation, with the building of interest at z=0.

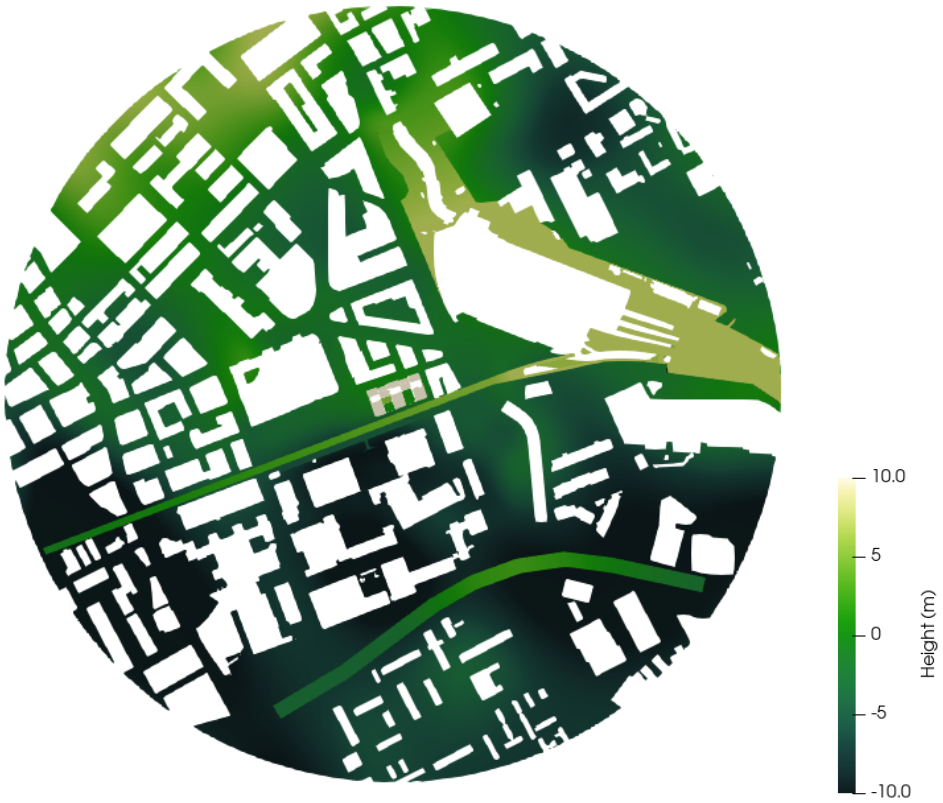


Figure 11.5: Off-Site Sensitive Receptors

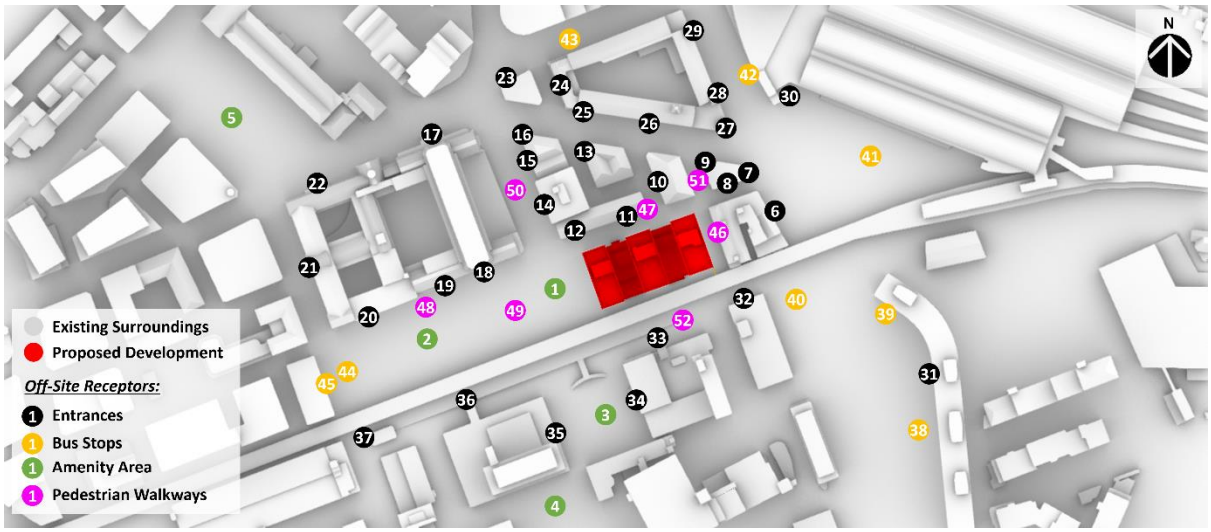


Figure 11.6: On-Site Sensitive Receptors

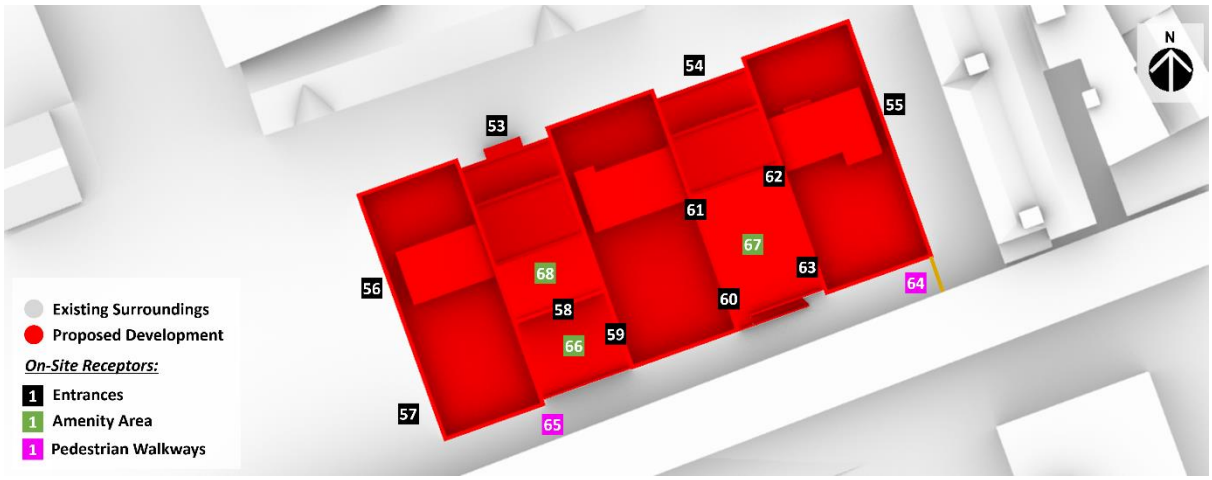


Figure 11.7: Annual wind rose at the Weather Station (Manchester Airport), showing the frequency and magnitude of mean-hourly wind speeds

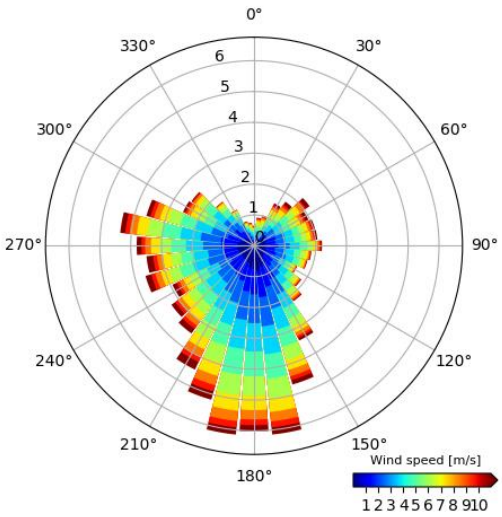
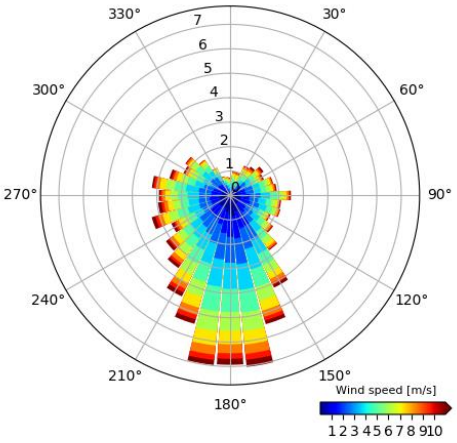
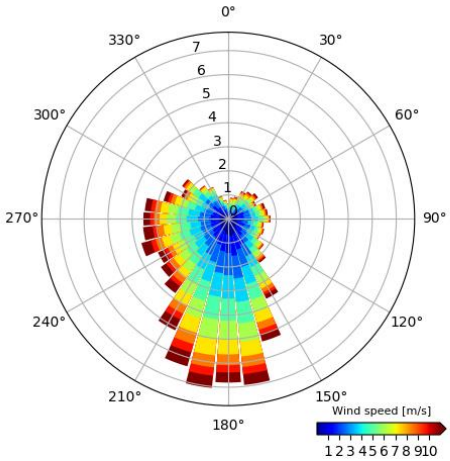


Figure 11.8: Wind Roses for each Season

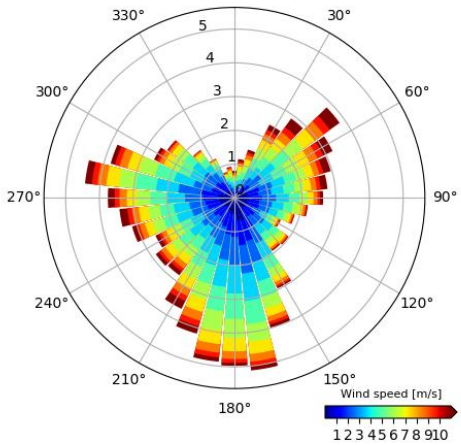
Autumn (Sep, Oct, Nov)



Winter (Dec, Jan, Feb)



Spring (Mar, Apr, May)



Summer (Jun, Jul, Aug)

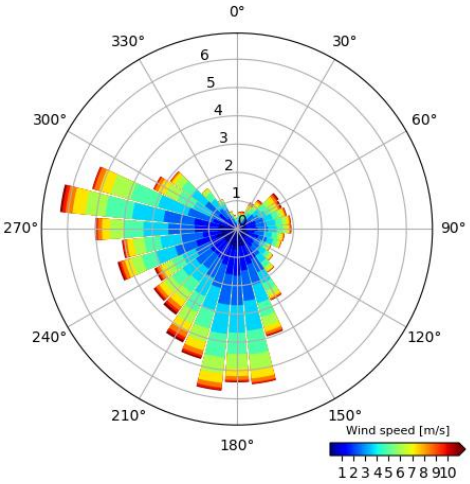


Figure 11.9: Categorisation of the Terrain Surrounding the Site

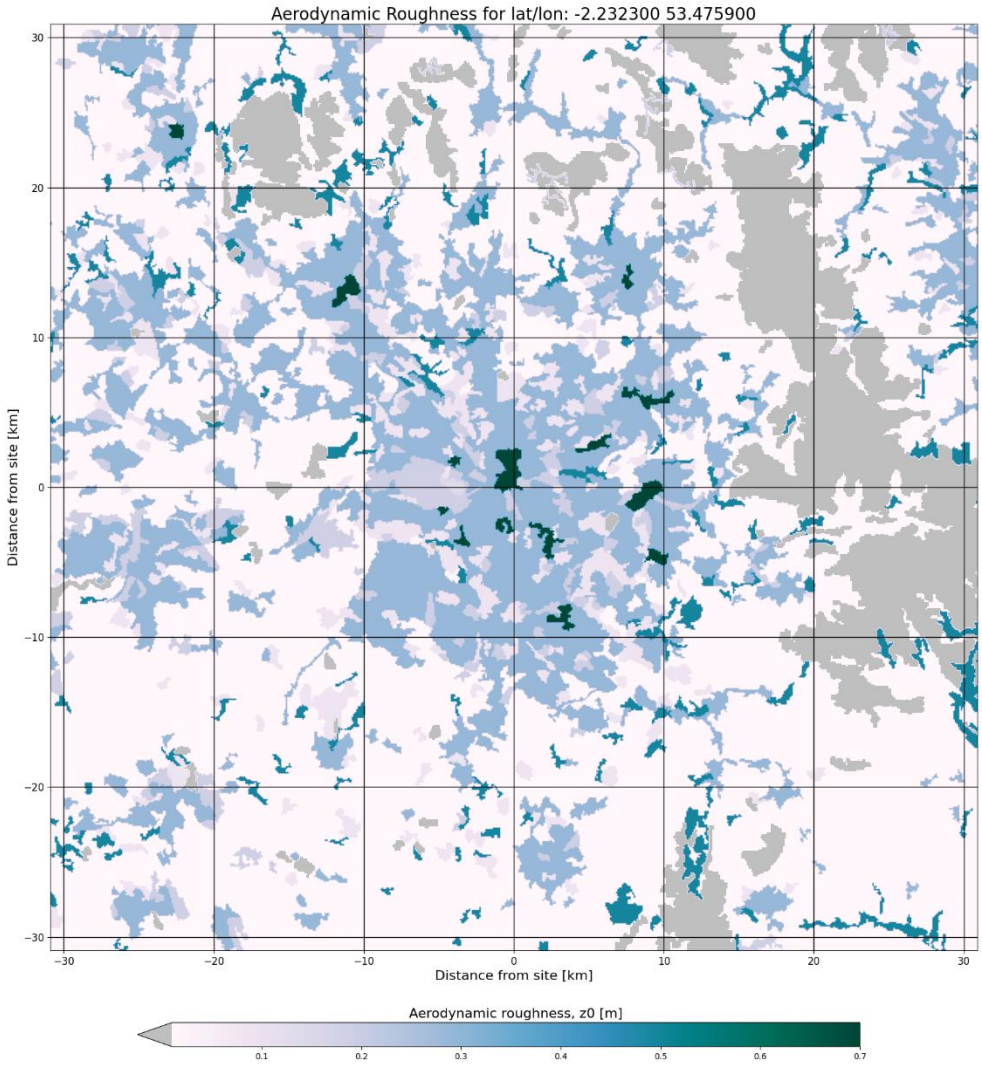


Figure 11.10: Image of the Baseline Scenario 3D Model

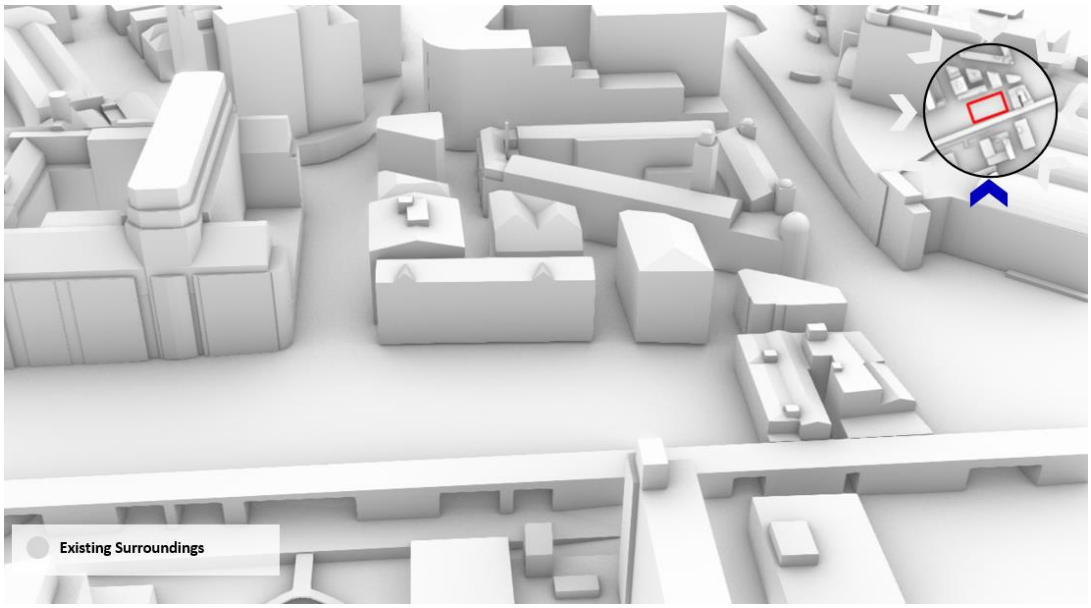


Figure 11.11: Baseline Scenario – Wind Safety Assessment



Figure 11.12: Baseline Scenario – Wind Comfort Assessment – Winter

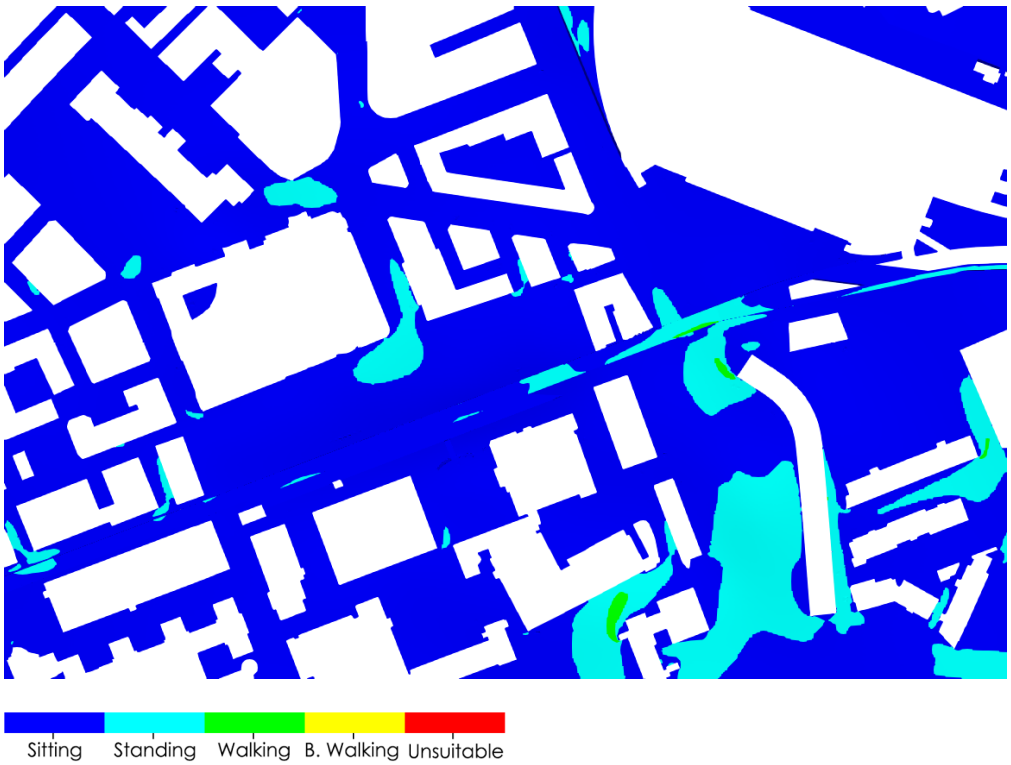


Figure 11.13: Baseline Scenario – Wind Comfort Assessment – Summer

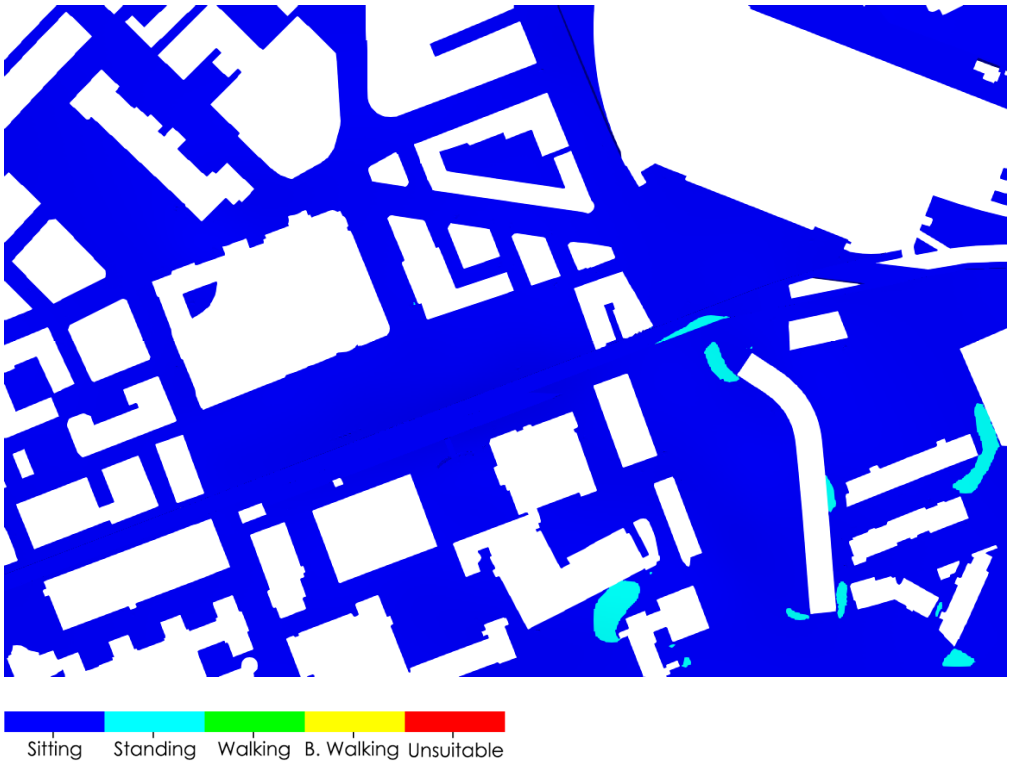


Figure 11.14: Primary Mitigation Measure - 50% Porous Vertical Screen

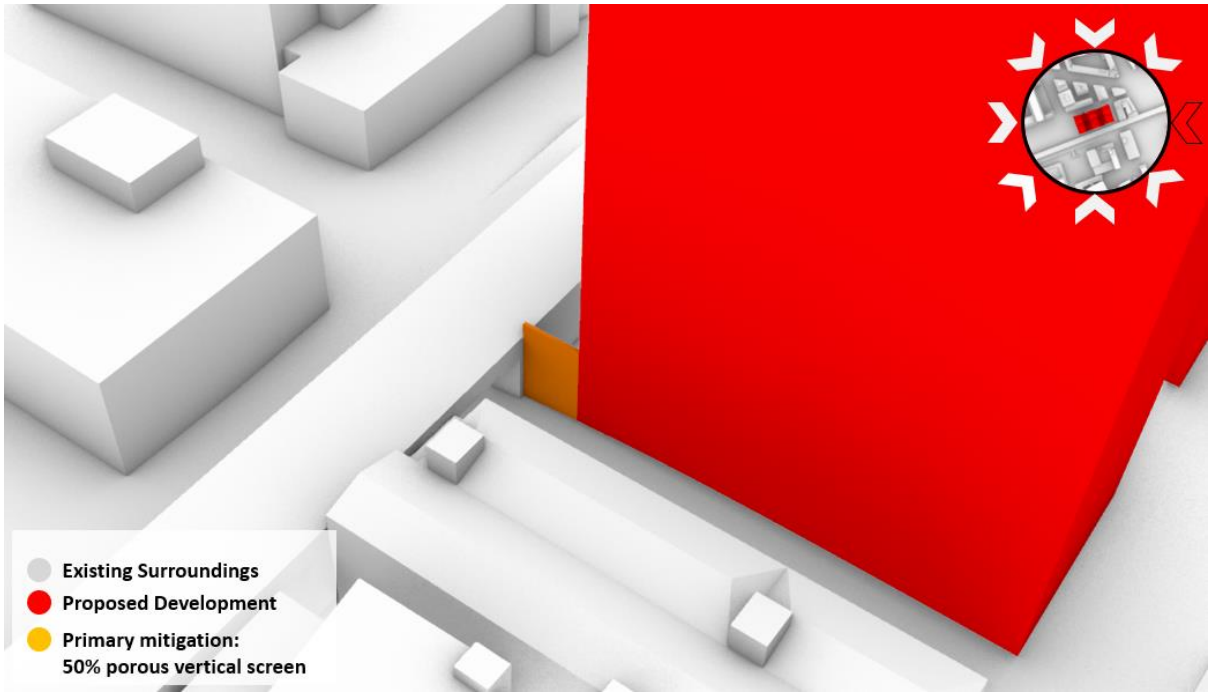


Figure 11.15: Image of the Proposed Scenario 3D Model

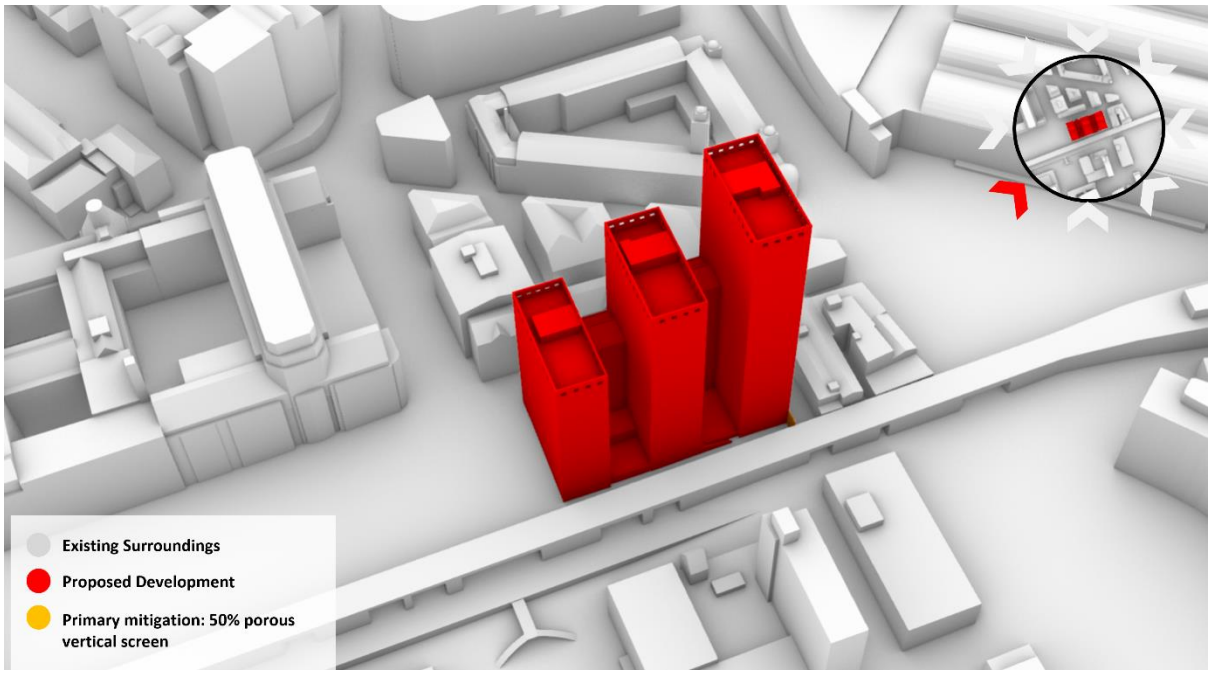


Figure 11.16: Proposed Scenario – Safety Assessment – Pedestrian Level



Figure 11.17: Proposed Scenario – Safety Assessment – Elevated levels

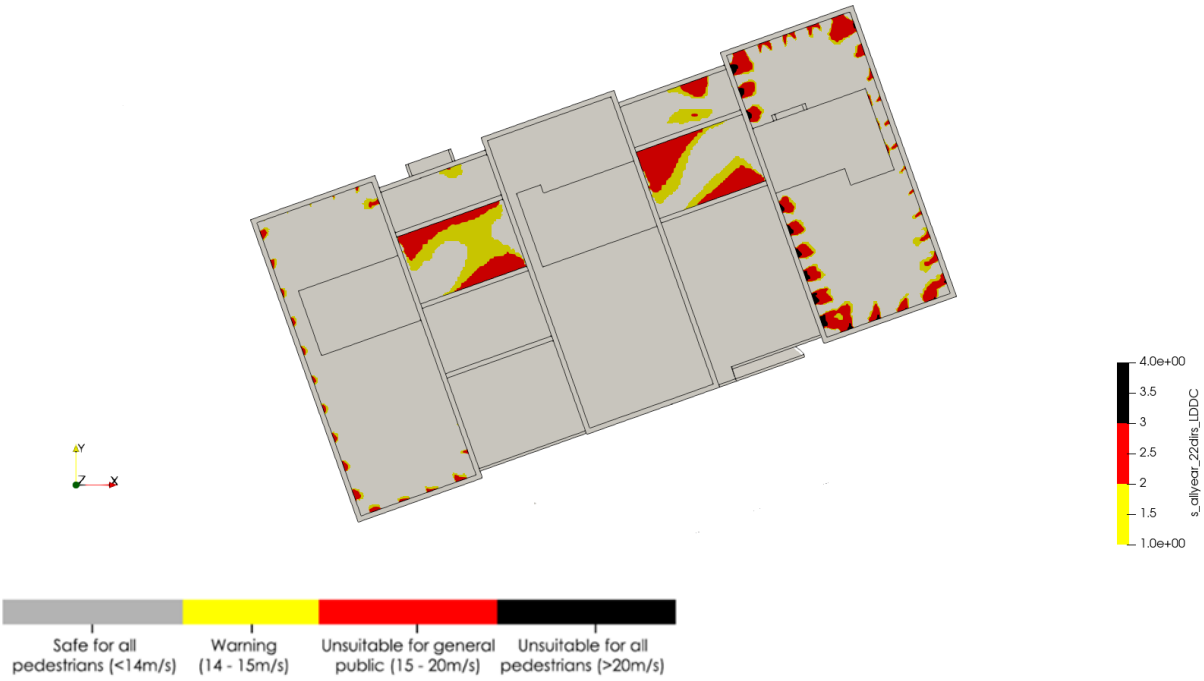


Figure 11.18: Proposed Scenario – Wind Comfort Assessment – Pedestrian Level – Winter

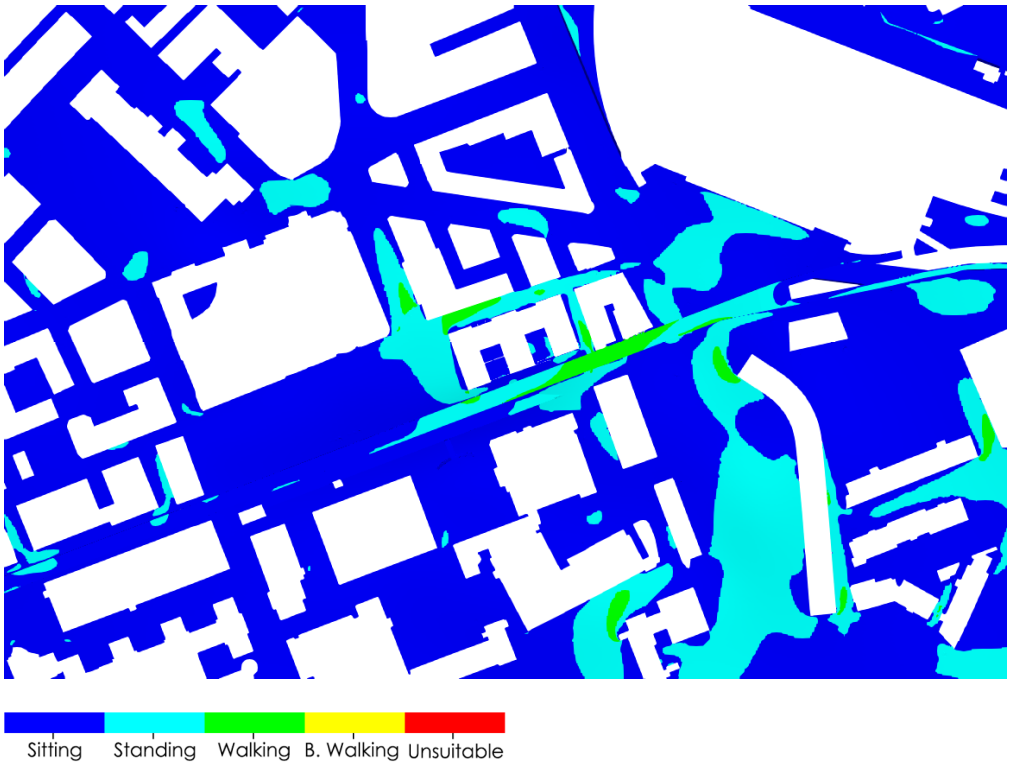


Figure 11.19: Proposed Scenario – Wind Comfort Assessment – Pedestrian Level – Summer

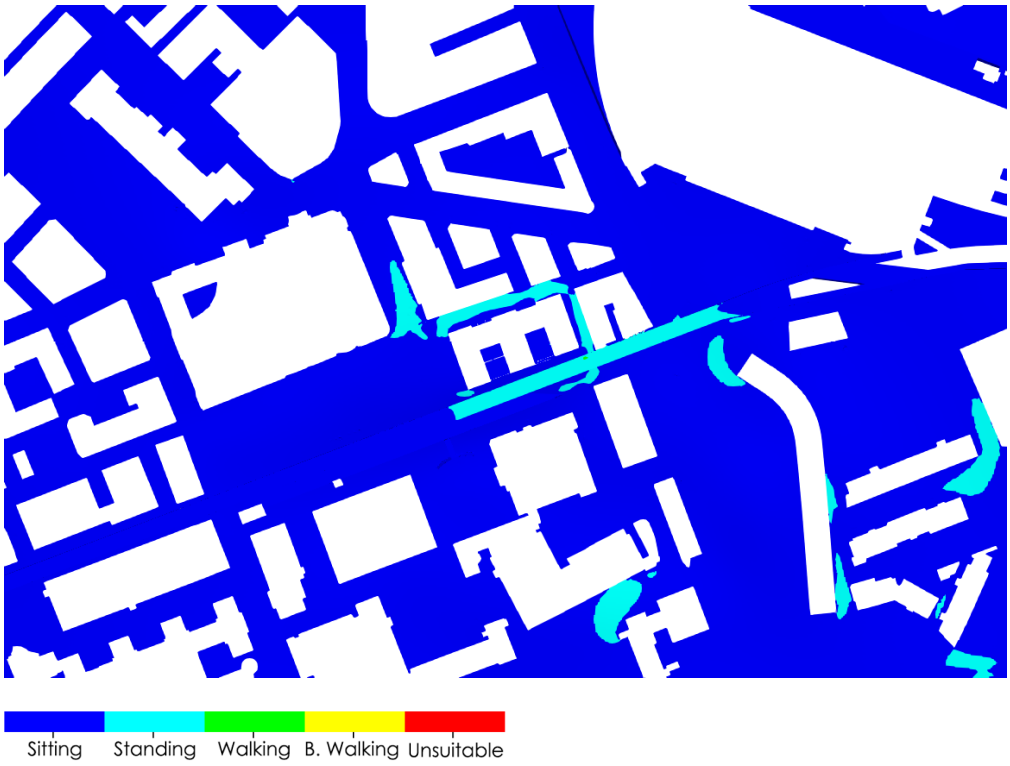
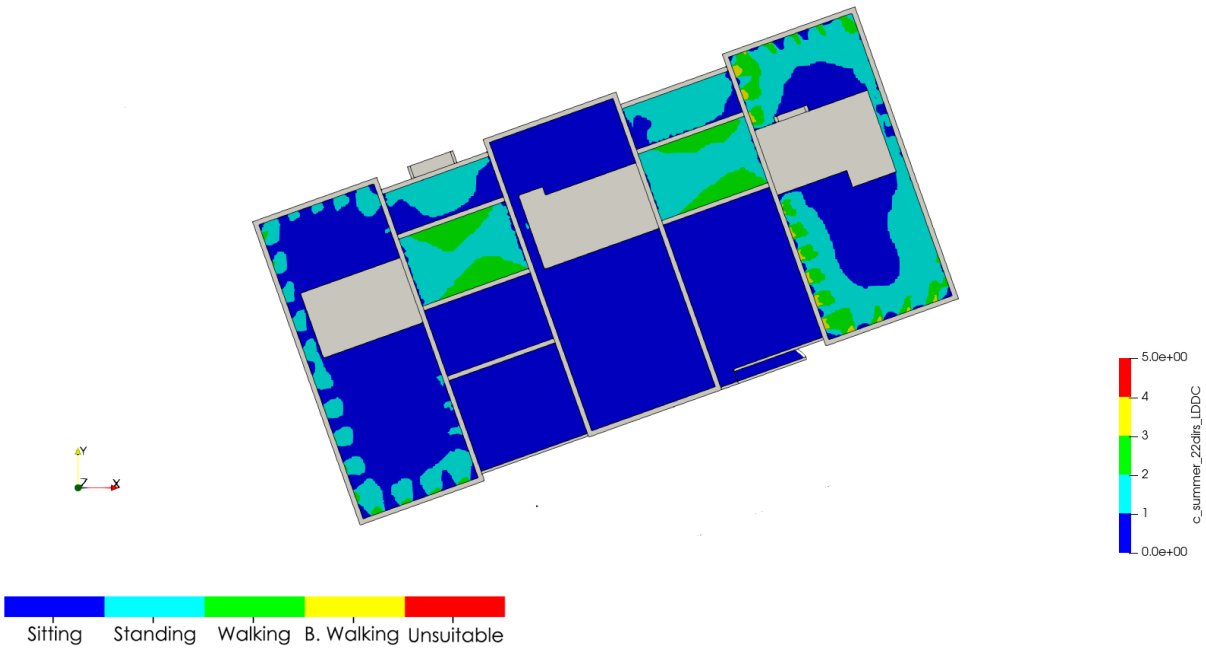
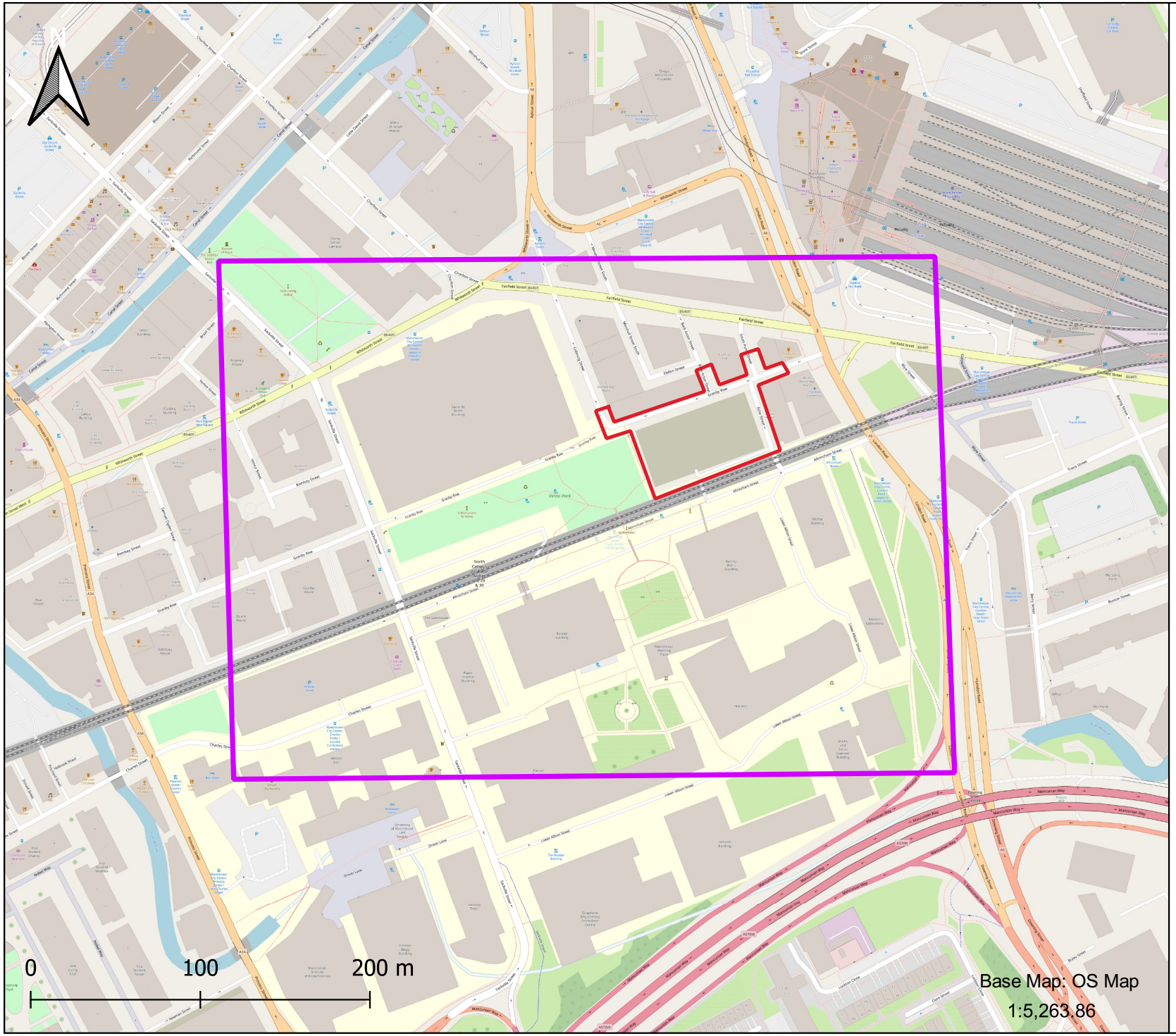


Figure 11.20: Proposed Scenario – Wind Comfort Assessment – Elevated Level – Summer





Legend

- Site
- Study Area

Drawn by: MH

Project: Chandos

Report Number: 101532-2

Disclaimer: the scale is for indicative purposes only as the map may be skewed once it is an image, for instance during printing.

MILLER GOODALL
ACOUSTICS - AIR QUALITY - LIGHTING

Date: 08/03/2023



Drawn by: MH

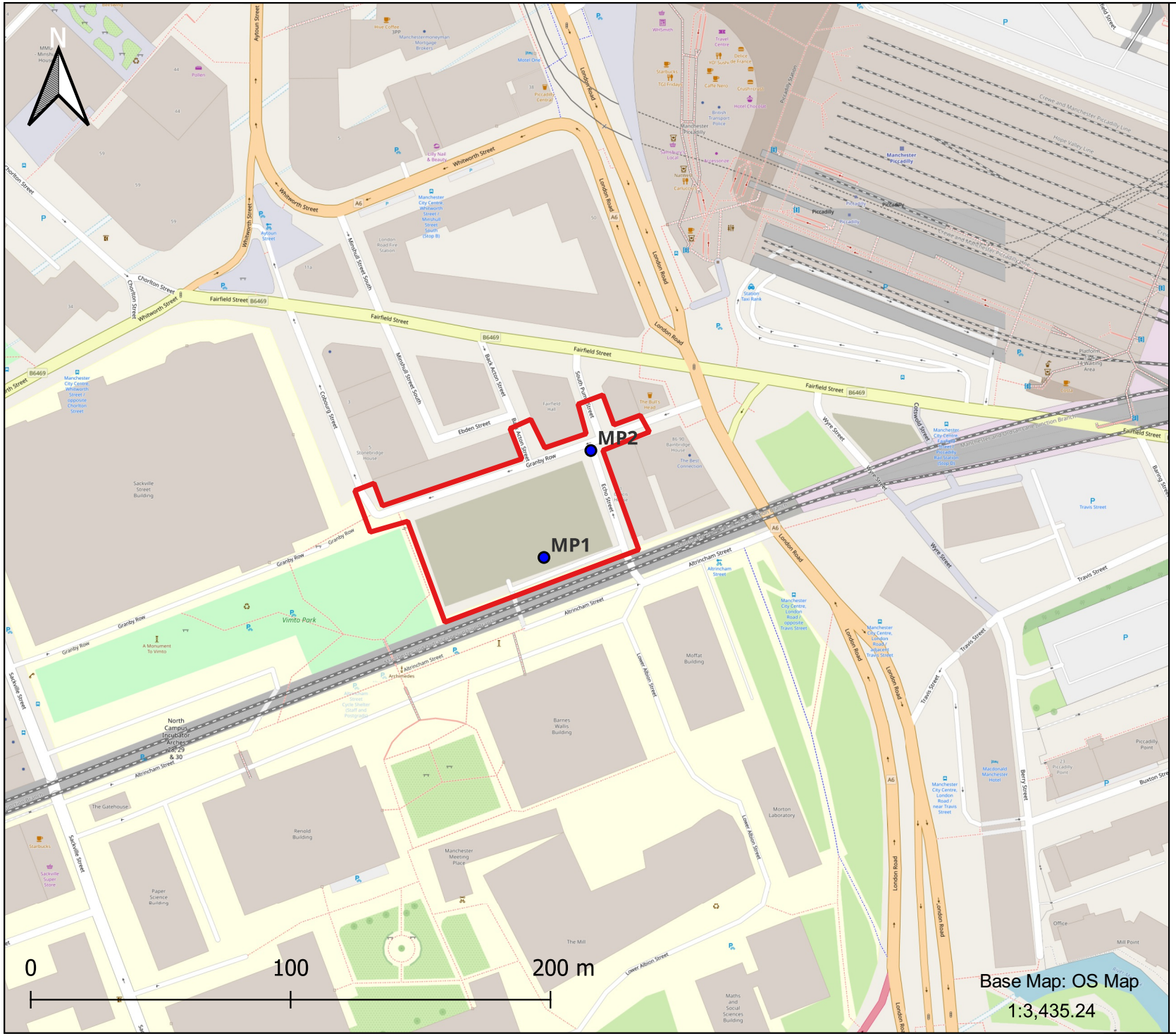
Project: Chandos

Report Number: 101532-3

Disclaimer: the scale is for indicative purposes only as the map may be skewed once it is an image, for instance during printing.

MILLER GOODALL
ACOUSTICS - AIR QUALITY - LIGHTING

Date: 30/03/2023



Legend

- Site
- Monitoring Locations

Drawn by: MH

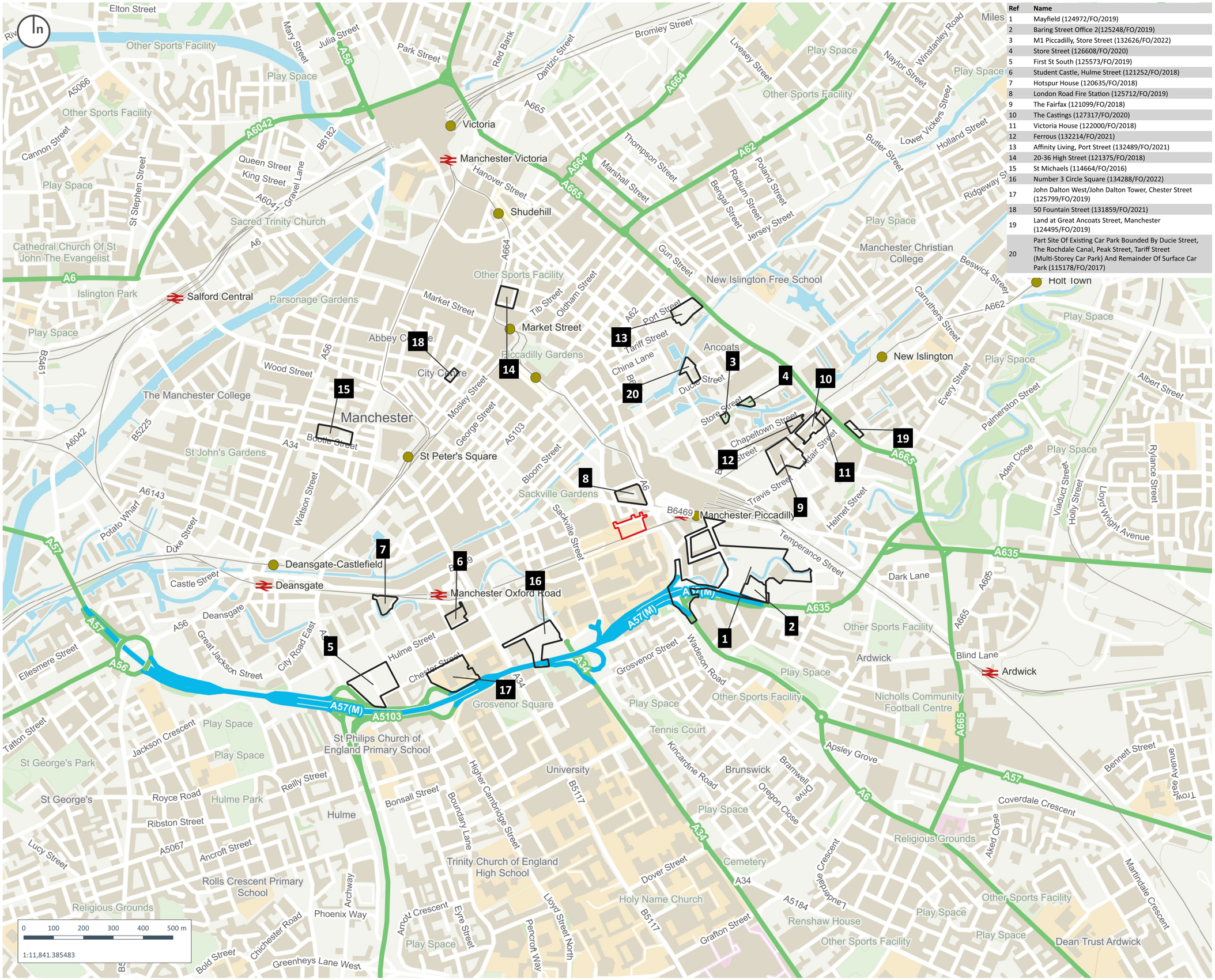
Project: Chandos

Report Number: 101532-3

Disclaimer: the scale is for indicative purposes only as the map may be skewed once it is an image, for instance during printing.

MILLER GOODALL
ACOUSTICS - AIR QUALITY - LIGHTING

Date: 30/03/2023



Ref	Name
1	Mayfield (124972/FO/2019)
2	Baring Street Office 2(125248/FO/2019)
3	M1 Piccadilly, Store Street (132626/FO/2022)
4	Store Street (126608/FO/2020)
5	First St South (125573/FO/2019)
6	Student Castle, Hulme Street (121252/FO/2018)
7	Hotspur House (120635/FO/2018)
8	London Road Fire Station (125712/FO/2019)
9	The Fairfax (121099/FO/2018)
10	The Castings (127317/FO/2020)
11	Victoria House (122000/FO/2018)
12	Ferrous (132214/FO/2021)
13	Affinity Living, Port Street (132489/FO/2021)
14	20-36 High Street (121375/FO/2018)
15	St Michaels (114664/FO/2016)
16	Number 3 Circle Square (134288/FO/2022)
17	John Dalton West/John Dalton Tower, Chester Street (125799/FO/2019)
18	50 Fountain Street (131859/FO/2021)
19	Land at Great Ancoats Street, Manchester (124495/FO/2019)
20	Part Site Of Existing Car Park Bounded By Ducie Street, The Rochdale Canal, Peak Street, Tariff Street (Multi-Storey Car Park) And Remainder Of Surface Car Park (115178/FO/2017)

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Site Boundary

Approved Project

CLIENT:
IQ Student Accomodation

PROJECT:
Echo Street, Manchester

DRAWING:
Approved Project Plan

PROJECT NUMBER:
IQSM3015

DRAWING NUMBER:
Figure 13.1

CHECKED BY:
ET

REVISION:
1.0

STATUS:
Final

DATE:
April 2023

SCALE:
1:12,000 @ A3

Turley
EIA

Figure 13.2 - 13.7: Wind Cumulative Figures

Figure 13.2: Image of the Cumulative Scenario 3D Model

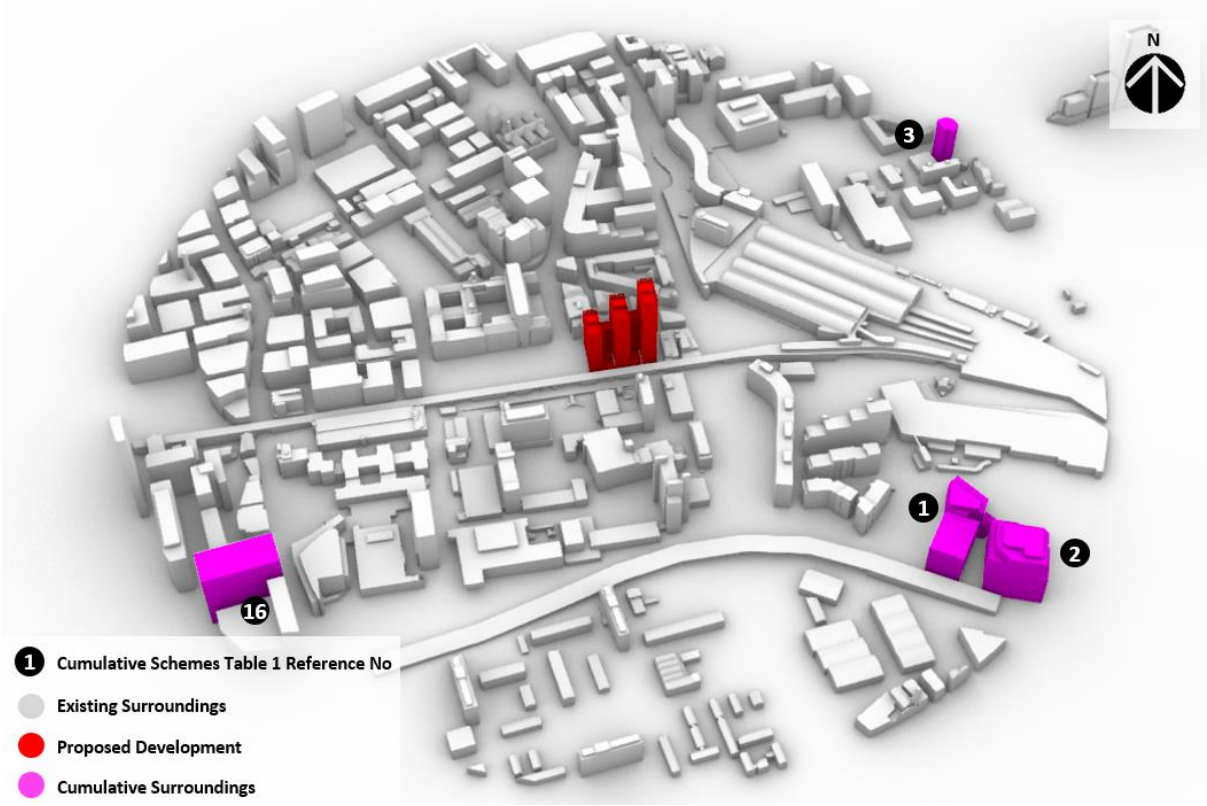


Figure 13.3: Cumulative Scenario – Safety Assessment – Pedestrian Level



Figure 13.4: Cumulative Scenario - Safety Assessment - Elevated Level

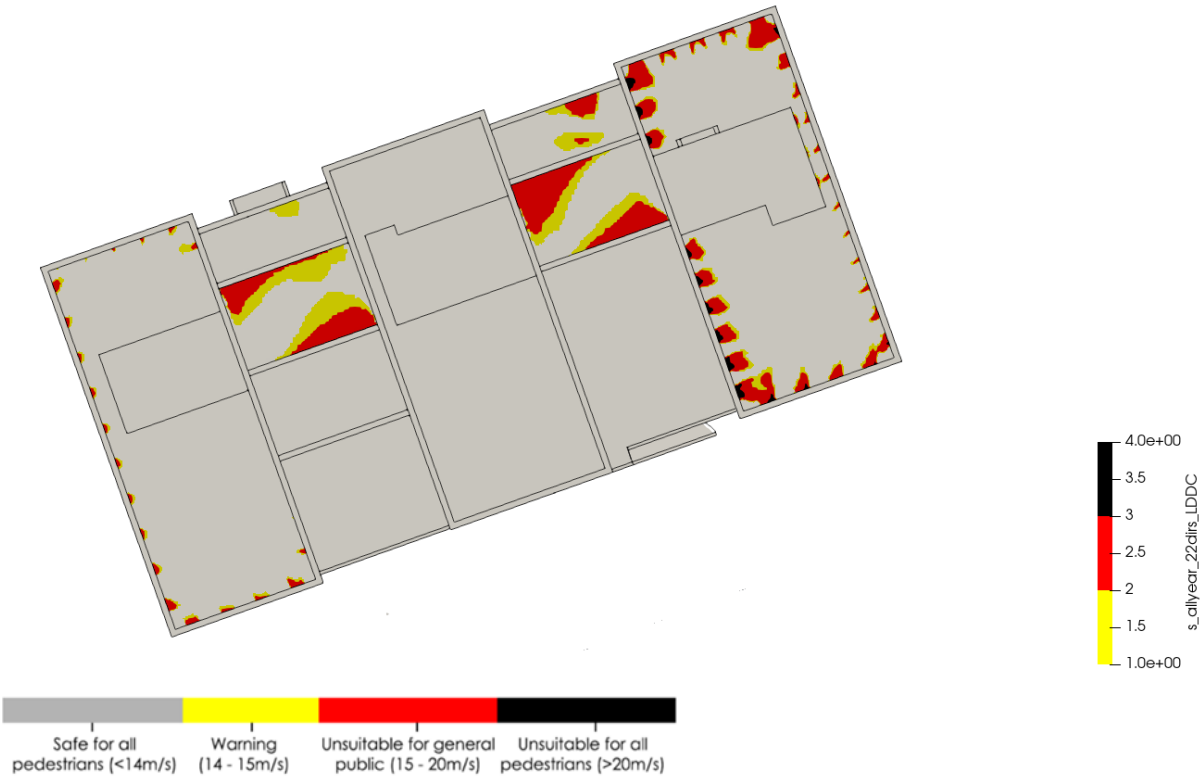


Figure 13.5: Cumulative Scenario – Comfort Assessment - Pedestrian Level - Winter

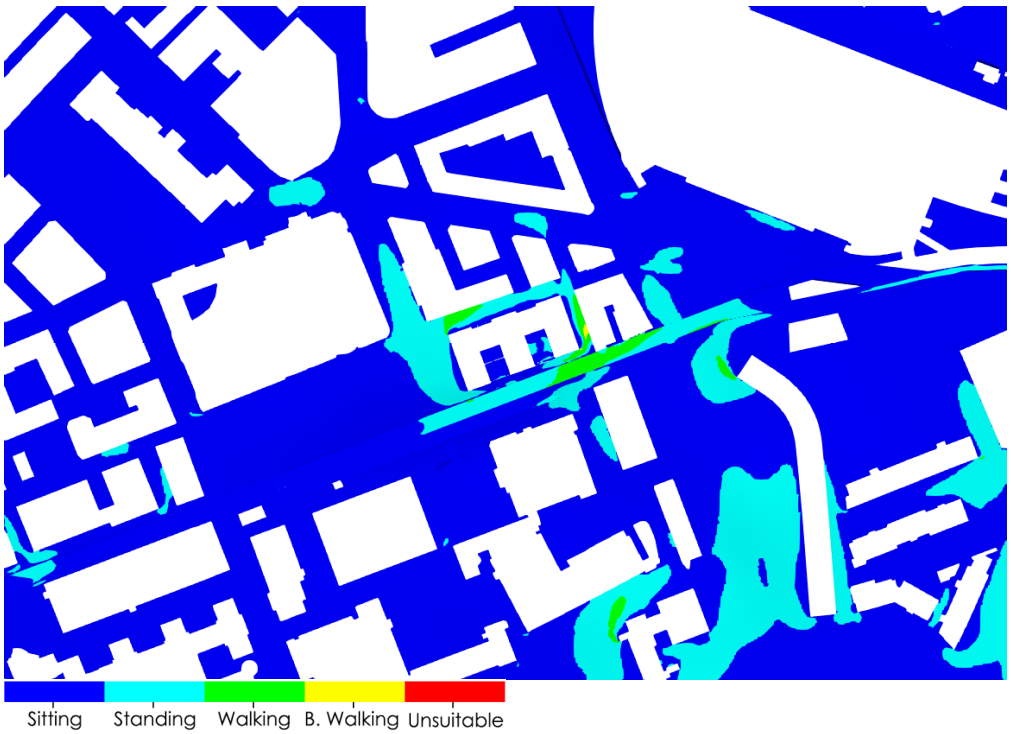


Figure 13.6: Cumulative Scenario – Comfort Assessment - Pedestrian Level – Summer

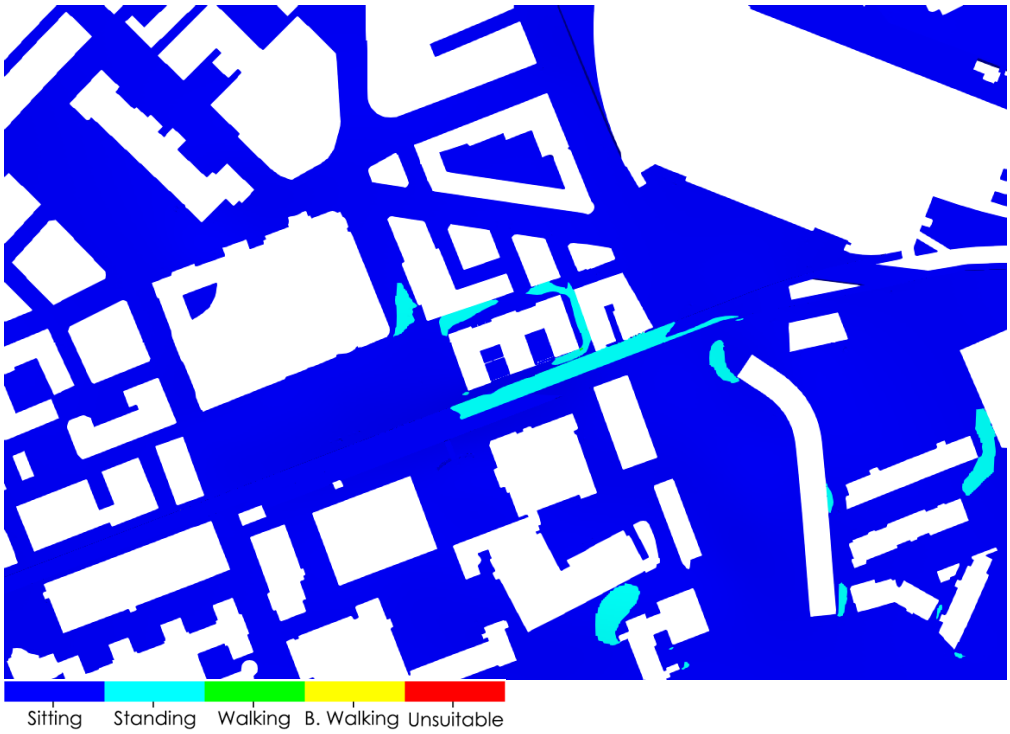


Figure 13.7: Cumulative Scenario – Comfort Assessment - Elevated level - Summer

