EUSTON TOWER

ES Volume 1: Main Report

December 2023

British Land

Table of Contents

Chapter 1: Introduction

INTRODUCTION

1.1 This Environmental Statement (ES) has been prepared on behalf of British Land Property Management Limited ('the Applicant') in accordance with the statutory procedures set out in the Town and Country Planning (Environmental Impact Assessment) Regulations 2017, as amended (hereinafter referred to as the 'EIA Regulations')[1].

1.2 The Applicant is seeking detailed planning permission for the proposed redevelopment of an area of land located at 286 Euston Road, London, NW1 3DP, centred on National Grid Reference TQ 29192 82354 (hereinafter referred to as 'the site'). The site covers 0.8 hectares (ha) and falls within the administrative boundary of the London Borough of Camden (LBC). Figure 1.1 shows the approximate location of the site (as shown by the red outline) in the context of the surrounding area and Figure 1.2 shows the planning application redline boundary.

1.3 The scheme proposals (hereinafter referred to as the 'Proposed Development') comprise the redevelopment of Euston Tower, including the partial retention (retention of existing core, foundations and basement), disassembly, reuse and extension of the existing building, to provide a 32-storey building for use as offices and research and development floorspace (Class E(g)) and office, retail, café and restaurant space (Class E) and learning and community space (Class F) at ground, first and second floors, and associated external terraces. Provision of public realm enhancements, including new landscaping, and provision of new publicly accessible steps and ramp. Provision of short and long stay cycle storage, servicing, refuse storage, plant, and other ancillary and associated works. A detailed description of the Proposed Development is presented within **ES Volume 1, Chapter 4: The Proposed Development**.

1.4 Environmental Impact Assessment (EIA) is a process which examines available environmental information to ensure that the likely significant environmental effects of certain projects are identified and assessed before a decision is taken on whether a project is granted planning permission. This means environmental issues can be identified at an early stage and projects can then be designed to avoid or to minimise significant adverse environmental effects, and appropriate mitigation and monitoring can be put in place.

1.5 In accordance with the EIA Regulations, this ES describes the likely significant environmental effects of the Proposed Development during deconstruction and construction and on subsequent completion and occupation. The ES is designed to inform readers of the nature of the scheme proposed, the likely significant environmental and socio-economic effects and the measures proposed to protect the environment.

1.6 The ES also describes the consultation process which serves to focus the environmental studies and to identify specific issues, which may require further investigation as part of the EIA. The Applicant's consultant team has engaged with the LBC officers regarding, and prior to preparation of, this ES. In addition, summary of wider consultation prior to submission of the planning application is provided in the Planning Statement and Statement of Community Involvement.

1.7 This EIA has been carried out by Trium Environmental Consulting LLP ('Trium') and several technical specialists. The technical specialists are identified within an introductory table in each of the technical ES chapters (**ES Volume 1, Chapters: 6 to 12**), within **ES Volume 2**, and also listed in **ES Volume 3, Appendix: Introduction – Annex 1**.

SITE INFORMATION

1.8 The site is irregular in shape and currently consists of a single, ground plus 36-storey building with a basement. The existing building is predominately vacant (although some of the retail units at ground level are still occupied), accommodating retail uses at ground floor with office uses above.

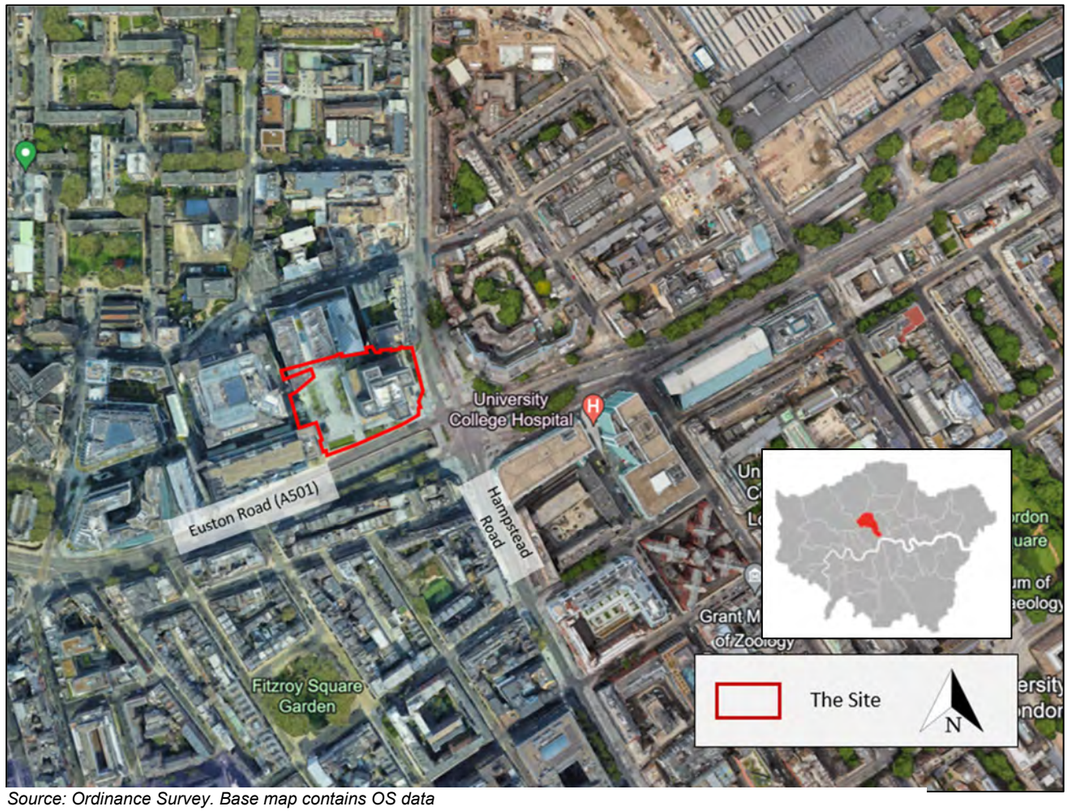
1.9 The existing basement within Euston Tower provides 102 car parking spaces and 200 cycle parking spaces. This basement is connected to the wider Regent's Campus basement, which also provides a servicing yard used by Euston Tower. The open space within Regent's Place Plaza is predominantly paved with limited greening, and this paving extends around the perimeter of the existing building.

1.10 The site is bordered by:

- Residential and commercial properties approximately 85m in height to the north, beyond which lies Drummond Street;
- Hampstead Road to the east, beyond which lies residential and commercial properties. This is followed by North Gower Street, which includes 185-191, 168 and 170, and 184-188 North Gower Street which are Grade II listed buildings;
- Euston Road (A501) to the south, beyond which lies residential and commercial properties and Warren Street London Underground Station. This is followed by Warren Street, which includes 15, 16, 17, 20, 21, 66, 58-62, and 63-68 Warren Street, all of which are Grade II listed buildings; and
- Commercial properties including Regent's Place to the west, beyond which lies commercial properties with heights of approximately 65m. This is followed by Osnaburgh Street. Additionally, Regent's Park is approximately 400m east of the site.

1.11 Figure 1.3 includes photographs of the site and the surrounding area. A detailed description of the environmental context of the site and surrounding area is provided in **ES Volume 1, Chapter 3: Alternatives and Design Evolution**.

Figure 1.1 Site Location Plan



Source: Ordinance Survey. Base map contains OS data

[1] *His Majesty's Stationery Office (HMSO) 2017. The Town and Country Planning (Environmental Impact Assessment) (England) Regulations 2017 (as amended).*

Figure 1.2 Redline Planning Application Boundary

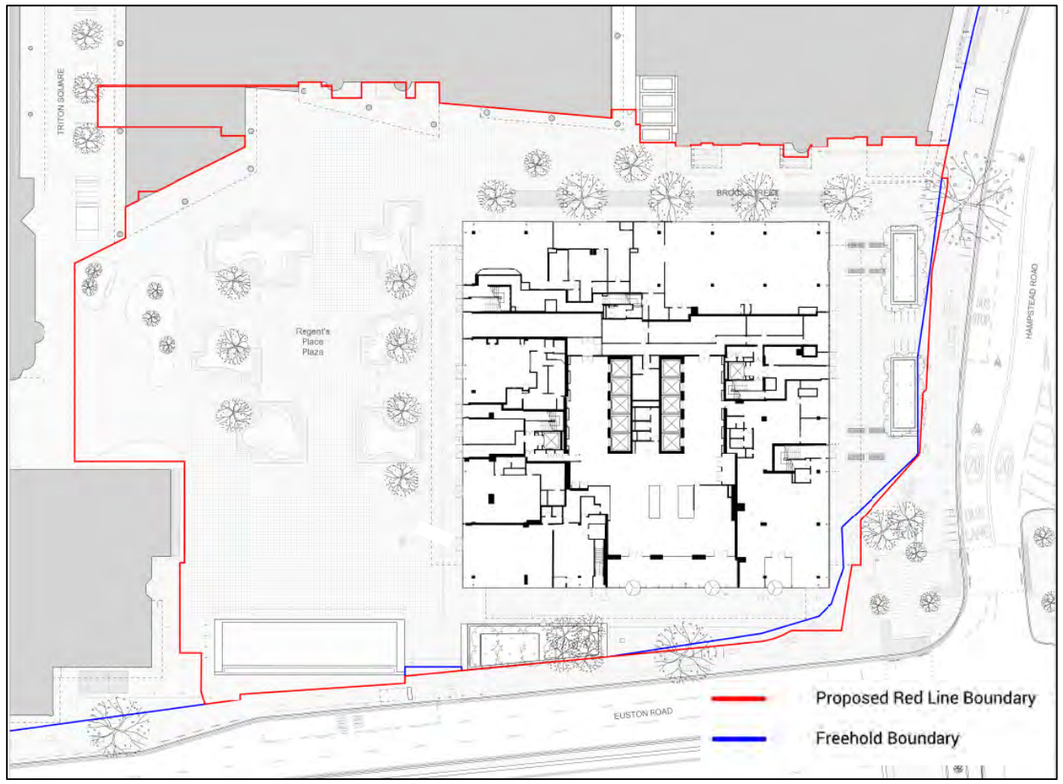


Figure 1.3 Images of the Existing Site

Euston Tower, photo taken from the junction of Hamstead Road and Euston Road.

Surrounding public realm west of the site.

THE LEGISLATIVE REQUIREMENTS FOR AN EIA

1.12 Planning applications for development/works that require an EIA, in accordance with the EIA Regulations are termed 'EIA Applications'. Development that requires an EIA under the EIA Regulations is defined as 'EIA Development'.

1.13 The requirement for an EIA is based on the likelihood of significant environmental effects arising from a Proposed Development; and EIA applications are divided into Schedule 1 and Schedule 2 applications under the EIA Regulations.

1.14 Schedule 1 developments constitute those that are likely to have significant effects on the environment, such as major chemical or petrochemical projects and construction of ground or air transport infrastructure, and for which an EIA must be undertaken. For all other developments which fall under the project descriptions in Schedule 2, the need for an EIA is determined based on set criteria as follows:

- It is within one of the classes of development stated in Schedule 2; AND
- EITHER it exceeds the applicable threshold criteria for that class of development in Schedule 2; OR it is to be carried out in part or all of a 'sensitive area'[2]; AND
- It is likely to have significant effects on the environment by virtue of factors such as its nature, size or location.

1.15 The EIA Regulations Schedule 2 Part 10(b) (Infrastructure Projects – Urban Development Projects), states that for "*urban development projects, including the construction of shopping centres and car parks, sports stadiums, leisure centres and multiplex cinemas*", the thresholds which determine when development is 'EIA development' are as follows:

"(i) the development includes more than 1 hectare of urban development which is not dwelling/ house development; OR

(ii) the development includes more than 150 dwellings; OR

(iii) the overall area of the development exceeds 5 hectares".

1.16 Given the nature of the scheme, the Proposed Development falls within the description of development in column 1 of Schedule 2, 10(b) of the EIA Regulations. However, it falls below the thresholds/ criteria set out within column 2 of Schedule 2, 10(b), given that the site area is approximately 0.8 ha (falling below the 1ha land area as defined by the EIA Regulations 2017 (as amended)) and the Proposed Development provides no "*dwellings*". The site is also not located within a 'sensitive area' as defined by the EIA Regulations.

1.17 However, taking into account the scale of the Proposed Development and the nature of the surrounding area (dense urban environment with a high concentration of tall buildings and sensitive receptors in the vicinity of the site), it is considered that there is the potential for significant environmental effects to arise.

1.18 On this basis, the Applicant has decided to undertake an EIA for the Proposed Development and prepare an ES to accompany the planning application. The EIA has been undertaken voluntarily (in agreement with the LBC), and in accordance with the requirements of the EIA Regulations.

COMPETENT EXPERTS AND RELEVANT EXPERTISE

1.19 This EIA has been carried out by Trium Environmental Consulting LLP ('Trium') and several technical specialists. Regulation 18(5) of the EIA Regulations requires an applicant to *"(a) … ensure that the environmental statement is prepared by competent experts;'* and also requires that *'(b) the environmental statement must be accompanied by a statement from the developer outlining the relevant expertise or qualifications of such experts",* to ensure the completeness and quality of the ES. In accordance with this requirement, the following statement is provided:

"Trium is an environmental consultancy specialising in urban regeneration and property development projects in the UK, with a specific focus in London. Trium's Partners and Employees have extensive experience in managing the environmental issues and impacts surrounding large scale, high profile urban regeneration development projects. The Partners and Employees of Trium have, over the course of their careers to date (including with former employers), project directed, managed, or contributed to over 500 EIAs within the commercial, retail, cultural, residential, student accommodation, leisure, infrastructure and industrial sectors.

[2] *The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (amended), 2(1) "sensitive area"*

They have particular expertise in London based development projects. Trium's lead EIA Partner for Euston Tower has over 20 years' experience of managing EIA's within the UK"

1.20 A summary of the credentials of Trium's EIA coordination team and the technical specialists who have led and authored the technical assessments that comprise this ES are provided in **ES Volume 3, Appendix: Introduction – Annex 1**.

1.21 Regulation 18(3) of the EIA Regulations, requires that an ES includes the information set out in Schedule 4 that is reasonably required to assess the environmental effects of the development and which the Applicant can, having regard in particular to current knowledge and methods of assessment, reasonably be required to compile.

LOCATION OF INFORMATION WITHIN THE ES

1.22 Regulation 18(3) of the EIA Regulations defines that an 'an environmental statement' is a statement which includes at least:

- *"a description of the proposed development comprising information on the site, design, size and other relevant features of the development;*
- *a description of the likely significant effects of the proposed development on the environment;*
- *a description of any features of the proposed development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;*
- *a description of the reasonable alternatives studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment;*
- *a non-technical summary of the information referred to in sub-paragraphs (a) to (d); and*
- *any additional information specified in Schedule 4 relevant to the specific characteristics of the particular development or type of development and to the environmental features likely to be significantly affected*".

1.23 The above information defined in Regulation 18(3) is replicated within Schedule 4 of the EIA Regulations. The location of the information within this ES is sign-posted in **ES Volume 3, Appendix: Introduction – Annex 2.**

STRUCTURE OF THE ENVIRONMENTAL STATEMENT

1.24 This volume (**ES Volume 1**) is the main body of the ES and is divided into several background and technical chapters supported with figures and tabular information for clarity of reading. A complete set of appendices are provided for reference and are contained within **ES Volume 3**. These comprise background data, tables, figures and surveys (refer to **ES Volume 1, Chapter 2: EIA Methodology** of this ES for further details).

Environmental Statement

1.25 This ES comprises three technical volumes:

- **ES Volume 1: Main Environmental Statement –** a document which forms the main body of the ES, and which comprises of the following non-technical and technical chapters:
  - Chapter 1: Introduction;
  - Chapter 2: EIA Methodology;
  - Chapter 3: Alternatives and Design Evolution;
  - Chapter 4: The Proposed Development;
  - Chapter 5: Deconstruction and Construction;
  - Chapter 6: Socio-Economics;
  - Chapter 7: Traffic and Transport;
  - Chapter 8: Air Quality;
  - Chapter 9: Noise and Vibration;
  - Chapter 10: Daylight, Sunlight, Overshadowing, and Solar Glare;
  - Chapter 11: Wind Microclimate;
  - Chapter 12: Climate Change and Greenhouse Gases;
  - Chapter 13: Effect Interactions;
  - Chapter 14: Likely Significant Effects; and
  - Chapter 15: Environmental Management, Mitigation and Monitoring Schedule.
- **ES Volume 2: Townscape, Visual and Built Heritage Assessment (TVBHA) –** a separate townscape, visual and built heritage impact assessment document that is accompanied by a full set of views and verified images.
- **ES Volume 3: Technical Appendices** – comprises background data, technical reports, tables, figures, and surveys. ES Volume 3 is comprised of the following appendices:
  - Appendix: Introduction;
    - Annex 1: Statement of Competence;
    - Annex 2: Location of Information within the ES;
    - Annex 3: Glossary of Terms and Abbreviations;
  - Appendix: EIA Methodology;
    - Annex 1: EIA Scoping Opinion Request Report;
    - Annex 2: EIA Scoping Opinion;
    - Annex 3: Cumulative Schemes List and Map;
  - Appendix: Socio-Economics
    - Annex 1: Planning Policy Context;
  - Appendix: Traffic and Transport;
    - Annex 1: Policy and Guidance Context
  - Appendix: Air Quality;
    - Annex 1: Glossary;
    - Annex 2: Legislative and Planning Policy Context;
    - Annex 3: Construction Dust Assessment Procedure;
    - Annex 4: EPUK & IAQM Planning for Air Quality Guidance;
    - Annex 5: Professional Experience;
    - Annex 6: Modelling Methodology;
    - Annex 7: No Improvement Scenario;
    - Annex 8: London Vehicle Fleet Projections;
    - Annex 9: Preliminary Air Quality Assessment;
    - Annex 10: Air Quality Positive Statement;
    - Annex 11: Construction Mitigation;
    - Annex 12: References;
  - Appendix: Noise and Vibration;
    - Annex 1: Acoustic Terminology;
    - Annex 2: Environmental Noise Survey Report;
    - Annex 3: Noise Modelling Assumptions;
  - Appendix: Daylight, Sunlight, Overshadowing, Light Spillage and Solar Glare;
    - Annex 1: Drawings;
    - Annex 2: Daylight and Sunlight Results for Neighbouring Buildings;
    - Annex 3: Without Balconies Daylight and Sunlight Results for Neighbouring Buildings;
    - Annex 4: Overshadowing (Sun on Ground);
    - Annex 5: Solar Glare Assessment;
    - Annex 6: Window Maps;
  - Appendix: Wind Microclimate;
    - Annex 1: Wind Tunnel Testing Methodology;
    - Annex 2: Planning Policy and Legislation;
  - Appendix: Climate Change;

Annex 1: GHG Policy and Legislation;
Annex 2: Extract from Whole Life Carbon Assessment;
Annex 3: Extract from Energy Strategy;
Annex 4: Professional Experience; and
Annex 5: Climate Change Technical Note.

Non-Technical Summary

1.26 A **Non-Technical Summary (NTS)** document has been prepared to provide a concise summary of the ES written in non-technical language. The NTS presents a summary of the Proposed Development, the alternatives considered by the Applicant, the residual likely significant environmental effects, and any identified mitigation or monitoring measures.

ES AVAILABILITY AND COMMENTS

1.27 The ES is viewable online at the LBC Planning Application Search: https://accountforms.camden.gov.uk/planning-search/

1.28 Comments on the planning application can be made online. Alternatively, comments can be sent via email to the LBC via the following email address: planning@camden.gov.uk or written and sent to the following postal address:

Development Management
Camden Council
5 St Pancras Square
London
NC1 4AG

1.29 Electronic Copies of the ES and NTS are available free of charge and can be provided via a downloadable file provided by email. Printed copies of the ES and NTS would incur a printing and postage charge. For further details please contact hello@triumenv.co.uk with reference in email header of 'Environmental Statement Request – Euston Tower' or Tel: +44 (0) 203 887 7118.

Chapter 2: EIA Methodology

INTRODUCTION

2.1 This chapter of the Environmental Statement (ES) sets out the overall approach to and methodology for undertaking the Environmental Impact Assessment (EIA). It details the process for identifying the environmental issues (or 'topics') to be included in the EIA and the method of assessing the likely significant effects that have the potential to arise as a result of the Proposed Development, both during the deconstruction and construction works and on completion and occupation.

2.2 The methodology is in accordance with applicable legislation, guidance, and case law and has been tailored to each topic of the EIA using industry standard methods and criteria and professional opinion where appropriate. Further detail on how the assessment methodology is applied to each topic is presented within the respective technical ES chapters of **ES Volume 1** and **ES Volume 2**.

2.3 This ES chapter is accompanied by several appendices which are presented within **ES Volume 3** and referenced as relevant throughout this chapter and the remainder of **ES Volume 1**.

EIA GUIDANCE AND POLICY

EIA Guidance

2.4 The EIA has been prepared in accordance with applicable legislation, guidance, and case law for the preparation of such documents. Specifically, this ES has been undertaken in accordance with the Institute of Environmental Management and Assessment (IEMA) Quality Mark indicator checklist and with due consideration to the following:

- At a European level, reference has been made to the European Commission's (EC) various EIA guidance documents[1];
- At a domestic level, reference has been made to the Ministry of Housing for Communities and Local Government's overarching Planning Practice Guidance[2];
- In addition, Highways England's 'Design Manual for Roads and Bridges Sustainability and Environment – LA104 Environmental Assessment and Monitoring[3]' has been referred to as applicable;
- In relation to publications from professional bodies, reference has been made to IEMA publications as these include best practice/suggested improvements to the EIA process. This includes:
  - IEMA ES Review Criteria (COM3-6)[4];
  - IEMA 'Guidelines for Environmental Impact Assessment' (2016)[5];
  - IEMA 'Special Report into the State of Environmental Impact Assessment Practice in the UK' (2011)[6];
  - IEMA 'Shaping Quality Development' (2015)[7];
  - IEMA 'Delivering Quality Development' (2016)[8];
  - IEMA 'Delivering Proportionate EIA' (2017)[9];
  - IEMA 'Materials and Waste in EIA' (2020)[10];
  - IEMA 'Climate Change Resilience and Adaption' (2020)[11];
  - IEMA 'Major Accidents and Disasters in EIA: A Primer' (2020)[12];
  - IEMA 'Assessing Greenhouse Gas Emissions and Evaluating their Significance' (2022)[13];
  - IEMA 'Assessing Greenhouse Gas Emissions and Evaluating their Significance' (2022)[14]; and
  - IEMA 'Environmental Assessment of Road Traffic' (2023)[15]
- Applicable EIA case law; and
- Topic specific guidance and assessment criteria, where appropriate.

2.5 Whilst primarily written for major infrastructure projects, reference is also made to guidance/ advice notes published by the Planning Inspectorate in relation to National Infrastructure Planning[16] where appropriate, as these can include relevant/ helpful information.

Planning Policy

2.6 The EIA has considered relevant national, regional, and local planning policy and guidance as summarised below.

National Planning Policy and Guidance

2.7 The EIA has been undertaken having regard to the National Planning Policy Framework[17] (NPPF). The NPPF sets out the Government's economic, environmental, and social planning policies for England. The policies contained within the NPPF articulate the Government's vision of sustainable development, which are intended to be interpreted at a local level, to meet the requirements of local aspirations.

2.8 As relevant to the EIA, specifically to the scope, methodology and assessment of effects for the EIA technical topics, the NPPF has been considered throughout undertaking of the EIA and preparation of the ES.

2.9 The EIA has also referred to the Planning Practice Guidance (PPG)[18], which is an online resource. The PPG aims to make planning guidance more accessible, and to ensure that the guidance is kept up to date.

Strategic Planning Policy and Guidance

2.10 As relevant to the EIA technical topic scope, methodology or assessment of effects, the ES has regard to the following key strategic planning documents:

- The London Plan: The Spatial Development Strategy for Greater London (March 2021)[19] – hereafter referred as 'the London Plan'; and
- Supplementary Planning Guidance (SPG) (i.e. further guidance on policies in the London Plan that cannot be addressed in sufficient detail in the plan itself).

Local Planning Policy and Guidance

2.11 As relevant to the EIA technical topic scope, methodology or assessment of effects, the ES has had regard for the following local planning policy and guidance documents.

Camden Local Plan / Guidance

2.12 The London Borough of Camden's (LBC) Local Plan was formally adopted by the Council in July 2017.

[1] http://ec.europa.eu/environment/eia/eia-support.htm
[2] https://www.gov.uk/guidance/environmental-impact-assessment
[3] *Highways England, 2020. Design Manual for Roads and Bridges 'Sustainability and Environment' – LA104 Environmental assessment and monitoring*
[4] *Institute of Environmental Management and Assessment, undated; EIA Quality Mark – ES Review Criteria COM 3-6.*
[5] *Institute of Environmental Management and Assessment, 2016, Guidelines for Environmental Impact Assessment.*
[6] *Institute of Environmental Management and Assessment, 2011. The State of Environmental Impact Assessment Practice in the UK.*
[7] *Institute of Environmental Management and Assessment, November 2015. Shaping Quality Development.*
[8] *Institute of Environmental Management and Assessment, 2016; Delivering Quality Development.*
[9] *Institute of Environmental Management and Assessment, 2017; Delivering Proportionate EIA.*
[10] *Institute of Environmental Management and Assessment, 2020; Materials and Waste in EIA.*
[11] *Institute of Environmental Management and Assessment, 2020; Climate Change Resilience and Adaption'*
[12] *IEMA, 2020, Major Accidents and Disasters Guidelines*
[13] *Institute of Environmental Management and Assessment, 2022, Assessing Greenhouse Gas Emissions and Evaluating their Significance'*
[14] *Institute of Environmental Management and Assessment, 2022; Assessing Greenhouse Gas Emissions and Evaluating their Significance*
[15] *Institute of Environmental Management and Assessment, 2023 'Environmental Assessment of Road Traffic'*
[16] https://infrastructure.planninginspectorate.gov.uk/
[17] *Ministry of Housing, Communities and Local Government, 2023. National Planning Policy Framework*
[18] *https://www.gov.uk/government/collections/planning-practice-guidance*
[19] *The London Plan, published by the GLA March 2021: https://www.london.gov.uk/what-we-do/planning/london-plan/new-london-plan/london-plan-2021*

- **Camden Local Plan (2017)**[20]: The Camden Local Plan (2017) provides a guiding document for development and planning within the Borough until 2031. The current Local Plan outlines the vision for the LBC, comprises policies to support the determination of planning applications and includes consideration of future socio-economic conditions and infrastructure requirements within the Borough.
  - The Camden Local Plan (2017) is undergoing review. To inform the development of the new and updated Camden Local Plan, a call for views was held from 4 November 2022 to 13 January 2023. Consultation on the Regulation 18 Draft Camden Local Plan is proposed to take place later in 2023. At the time of writing, this has yet to be undertaken.
- **Camden Site Allocations Plan (2013)**[21]: Camden Site Allocations sets out the LBCs key objectives and guidance for development of land and buildings on significant sites which are likely to be subject to development proposals during the lifetime of the Core Strategy (2010-2025). These allocations are intended to promote sustainable development and assist in delivering the priorities and objectives of the NPPF, LBCs Local Plan and the London Plan.
  - Following the adoption of the Local Plan in 2017, the Camden Sites Allocations Plan (2013) is undergoing a review. Consultations on the draft Site Allocations Local Plan took place between Thursday 13 February and Friday 27 March 2020. In response to various requests from local residents and community groups, further consultation was undertaken on the 2020 Draft Plan in December 2021 / January 2022. To inform the development of the Site Allocations Local Plan LBC also held a further call for sites from the 4 November 2022 to the 13 January 2023, as part of the engagement on the Local Plan review. Once adopted this Plan will replace policies in the 2013 Site Allocations Plan. It will be used alongside other policies in Camden's Development Plan to assess development proposals on key sites and areas. The draft site allocation document has been reviewed to ascertain whether any site's within the neighboring area to the site should be considered as part of the cumulative effects assessment.
  - **Camden Planning Guidance**[22]: Camden Planning Guidance (CPG) provides advice and information on how Camden will apply its planning policies. LBC has reviewed its CPG documents to support the delivery of the Camden Local Plan, following its adoption in 2017. The adopted CPG documents can be 'material considerations' in planning decisions. **Euston Area Plan (EAP) (2015)**[23]: The EAP creates a planning framework for regeneration of the Euston area that will benefit the local community and London as a whole. Policies propose the creation of new jobs, homes and education and health care facilities and new open spaces. The EAP is currently being reviewed, and a draft EAP for consultation[24] was published in January 2023.

2.13 Any additional local planning policy and guidance documents considered relevant to the technical assessments which are covered by the EIA have also been considered throughout this ES where relevant.

Other Guidance

2.14 In addition to any relevant planning policies that inform the scope, methodology or assessment of effects, as relevant, the technical topic chapters of the ES present a summary of any pertinent recognised industry guidance documents.

EIA SCOPING AND CONSULTATION

Consultation

2.15 Consultation is an ongoing process and has been fed back into the design of the Proposed Development. **ES Volume 1, Chapter 3: Alternatives and Design Evolution** provides a review of the consultation undertaken, as well as the alternative design options considered by the Applicant and the design evolution of the Proposed Development, noting various environmental considerations which the Applicant and Design Team have sought to address.

2.16 Consultation has also fed into and influenced the preparation of the EIA – both in regard to the scope and methodology of this ES as set out in the '*EIA Scoping*' section below. Where appropriate, separate topic-specific consultation has also been undertaken with relevant parties and is summarised in the introductory sections of **ES Volume 1, Chapter 6 to 12** and **ES Volume 2**.

2.17 The planning application is supported by a Planning Statement and Statement of Community Involvement, which summarises the wider consultation that has been undertaken with various consultees and stakeholders throughout the pre-application consultation process.

EIA Scoping

2.18 Scoping typically forms one of the first stages of the EIA process. It is through EIA scoping that the Local Planning Authority (LPA) (in this case, the LBC) and other key statutory and non-statutory consultees are consulted on environmental topics that should be included in the scope of the EIA.

2.19 The process of EIA scoping and consultation is important to the development of a comprehensive and balanced ES. Views of consultees have helped to identify specific issues that require further investigation as part of the EIA process.

2.20 The main purpose of the EIA scoping process is to establish the approach to the EIA. This includes:

- Identification of the availability of existing baseline data and appropriate baseline surveys to be undertaken;
- Identification of sensitive receptors;
- Identification of potential environmental considerations and potential environmental effects;
- Identification of the topics to be included within the scope of the EIA and the methodology for assessment, based on the potential for significant effects as a result of the Proposed Development and deconstruction and construction works;
- Identification of any topics that can be scoped out of the EIA, with justification provided as to why likely significant environmental effects are not anticipated;
- Definition of the methodology for the assessment of the likely significant environmental effects; and
- Identification of other development schemes (hereafter referred to as 'cumulative schemes') to be considered within a cumulative effects assessment.

2.21 An EIA Scoping Opinion Request Report (hereinafter referred to as the 'EIA Scoping Report') was formally submitted by Trium on behalf of the Applicant to the LBC on the 4 August 2023, to request an EIA Scoping Opinion from LBC and statutory consultees pursuant to Regulation 15[25] of the EIA Regulations. The EIA Scoping Report outlined the proposal for redevelopment, the proposed scope of the ES and of the likely significant environmental effects to be considered, topics where significant effects were not considered to be likely (and as such 'scoped out' of the ES), the methodology for assessment, and a list of cumulative schemes.

2.22 The EIA Scoping Report underwent review by the LBC's EIA advisors, CBRE. A pre-application meeting was held with CBRE on the 6 September 2023 which focused on the EIA Scoping Report and scope of the ES. Following this, a draft of the 'EIA Scoping Report Review' was issued to Trium on 4 October 2023, and a final EIA Scoping Opinion was subsequently issued on the 16 November 2023. The EIA Scoping Report submitted to LBC and the EIA Scoping Opinion received are presented in **ES Volume 3, Appendix: EIA Methodology – Annex 1** and **ES Volume 3, Appendix: EIA Methodology – Annex 2**, respectively.

2.23 The EIA Scoping Opinion broadly confirmed acceptance of the proposed scope of the ES, and agreed the scope was generally adequate. Comments made as part of the EIA Scoping Opinion have been considered throughout the EIA process and the preparation of the ES. Where relevant, key points for

[20] *London Borough of Camden Local Plan, 2017: https://www.camden.gov.uk/documents/20142/4820180/Local+Plan.pdf*
21 https://www.camden.gov.uk/documents/20142/4820180/Site+Allocations+Plan+2013.pdf/fee9b22c-ac6f-900f-6d78-28f42d4bf084
22 https://www.camden.gov.uk/camden-planning-guidance
[23] *Euston Area Plan: A New Plan for the Euston Area (2015).*
[24] *Draft EAP Update for Consultation: January 2023.*
[25] *His Majesty's Stationery Office (HMSO) 2017. The Town and Country Planning (Environmental Impact Assessment) (England) Regulations 2017 (as amended).*

consideration as outlined within the EIA Scoping Opinion have been signposted within the introductory table of each respective technical ES chapter. A summary of the key scoping consultation undertaken, and the subsequent outcomes, are also presented within the introductory table of each technical ES chapter of **ES Volume 1 (Chapters 6 – 12)**, where relevant.

'Scoped-In' Topics

2.24 The environmental issues where the potential for likely significant effects was identified during the EIA Scoping process and that have been assessed within this EIA are listed below:

- Deconstruction and Construction (**ES Volume 1, Chapter 5**);
- Socio-Economics (**ES Volume 1, Chapter 6**);
- Traffic and Transport **(ES Volume 1, Chapter 7**);
- Air Quality (**ES Volume 1, Chapter 8**);
- Noise and Vibration (**ES Volume 1, Chapter 9**);
- Daylight, Sunlight, Overshadowing and Solar Glare (**ES Volume 1, Chapter 10**);
- Wind Microclimate (**ES Volume 1, Chapter 11**);
- Climate Change and Greenhouse Gases (**ES Volume 1, Chapter 12**); and
- Townscape, Visual and Built Heritage Assessment (**ES Volume 2**).

'Scoped-Out' Topics

2.25 The EIA Scoping process also identified the environmental topic areas which are not likely to give rise to significant environmental effects and therefore were not assessed further as part of the EIA process. The EIA Scoping Report is provided at **ES Volume 3, Appendix: EIA Methodology – Annex 1** and includes the justification for why significant effects in relation to these topics is not likely and why they are therefore 'scoped out' of the ES. The scope of the ES and topics which are scoped out were agreed with the LBC and forms part of their Scoping Opinion (**Annex 2**) The 'scoped out' topics include:

- Archaeology;
- Ecology and Biodiversity;
- Geoenvironmental (Ground Conditions, Groundwater, Land Take and Soils)[26];
- Health;
- Light Spill;
- Project Vulnerability, Major Accidents and Natural Hazards;
- Waste and Materials; and
- Water Resources, Flood Risk and Drainage.

2.26 Any necessary mitigation measures relating to these topics detailed within the EIA Scoping Report are included in **ES Volume 1, Chapter 15: Environmental Management, Mitigation and Monitoring Schedule,** for completeness.

ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

General EIA Methodology

2.27 The method behind the EIA process generally considers the existing conditions of the area into which the development is being introduced (**the baseline**), providing a future baseline context for assessments where relevant, and makes reasonable predictions of the likely change (**the impact – in terms of magnitude**) that may occur, during both its deconstruction and construction and when the development is completed and operating as proposed. The predicted impact is considered in terms of key environmental and social aspects (**receptors**) found within the surrounding area, and based on their sensitivity to change, the scale of the resulting change experienced by the receptor/ resource (**the effect**) is then determined along with a statement on whether the effect is significant or not.

2.28 Any mitigation measures required to reduce or eliminate adverse effects are then considered and assessed, with the resulting residual effect scale being determined as significant or not.

2.29 Effects resulting from a combination of the Proposed Development and other surrounding schemes (**cumulative schemes**) are also assessed. All the likely effects of the Proposed Development are reported (**within the ES**) and the likely significant effects are specifically highlighted.

Baseline Conditions

2.30 The purpose of the EIA is to predict how environmental conditions may change as a result of the Proposed Development. The assessment of the nature and scale of a predicted change is undertaken against a reference condition, known as the baseline. In most cases, the baseline represents the environmental condition of the site and the surrounding area at the time of assessment.

2.31 Baseline assessments utilise any existing and available information, as well as new information either collected through baseline surveys undertaken during the course of the EIA process or additional information provided as part of the EIA Scoping and consultation process. This information has been used to present an up to date description of the baseline conditions of the site and surrounding area within the ES for each of the individual technical ES chapters (**ES Volume 1, Chapters 6 to 12** and **ES Volume 2**).

2.32 For most technical disciplines, the baseline has been taken as the existing conditions within the site and the surrounding area, at the time of assessment (i.e. in the assessment year of 2023), although in defining the baseline conditions, data from preceding years may be used where the data remains relevant (e.g. with regards to air quality).

2.33 Cumulative schemes are set out in the *'Cumulative Effects and Effect Interactions'* section of this ES chapter and are shown in Figure 2.1. In some instances, where schemes are under construction and the works are sufficiently progressed or where early phases are occupied, these schemes have been factored into the baseline conditions (as a future baseline). The approach taken for each assessment is set out in the respective technical ES chapters in **ES Volume 1, Chapters: 6 to 12**.

Future Baseline

2.34 The Traffic and Transport, Air Quality and Noise and Vibration assessments include a projected future environmental condition (specifically in relation to future road traffic flows to account for any background growth in road traffic between the baseline and the future opening year of the Proposed Development). The anticipated opening year (and so future baseline year) for the Proposed Development is 2030 (**ES Volume 1, Chapter 5: Deconstruction and Construction**). Further details on the methodology for defining the future baseline conditions in respect of road traffic are provided within **ES Volume 1, Chapter 7: Traffic and Transport, ES Volume 1, Chapter 8: Air Quality** and **ES Volume 1, Chapter 9: Noise and Vibration.**

Evolution of the Baseline

2.35 In accordance with the requirements of the EIA Regulations, consideration is given as to how the existing baseline conditions may evolve in the future, in the absence of the Proposed Development. The EIA Regulations state that (Schedule 4(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".

[26] ***ES Volume 3, Appendix: EIA Methodology – Annex 1 (Ground Conditions Topic Sheet)*** *identified that a Preliminary Risk Assessment would be prepared as a standalone planning deliverable. Following subsequent conversations with the Council, it was agreed that this was not required as the relevant information in relation to ground conditions is covered in the Basement Impact Assessment.*

2.36 This requirement is presented within each of the individual technical ES chapters under the heading *'Evolution of the Baseline'*. The evolved baseline is a baseline condition at an indeterminate point in the future, for a scenario which assumes all of the cumulative schemes are built in the surrounding environment and that the surrounding environment, including the site, has naturally evolved in the absence of the Proposed Development being implemented. In most cases a qualitative approach is taken (professional opinion), but in some instances this may be quantitative.

Potentially Sensitive Receptors

2.37 When undertaking an EIA, it is important to identify key potential receptors from the surrounding baseline context which may be impacted by the Proposed Development and may need to be considered as part of the assessment. The EIA process has included the identification and assessment of impacts to and effects on potentially sensitive receptors resulting from deconstruction and construction activities and from the completed and operational Proposed Development.

2.38 Within each of the technical ES chapters (**ES Volume 1, Chapters 6 to 12** and **ES Volume 2**), a list of sensitive receptors is presented which are considered to have the potential to be affected by the Proposed Development.

2.39 The receptors addressed within the technical ES chapters have been identified from a review of the available information collected as part of the description of the surrounding environmental context for each technical assessment, from historic and currently available information relating to the site itself and through EIA Scoping Consultation. Potentially sensitive receptors have also been identified from a review of the description of the Proposed Development (**ES Volume 1, Chapter 4: The Proposed Development**) sought for approval and the potential impacts and resultant effects which may occur as a result of newly introduced receptors of the Proposed Development.

Identification of Impacts, Effects and Effect Significance

Terminology and Definitions

Reference to 'Impact' and 'Effect'

2.40 It is noted that the terms 'impact' and 'effect' are distinctly different. Having gained an understanding of the likely impact it is then important to know whether the change in environmental conditions results in a significant environmental effect. The impacts of the Proposed Development may or may not result in significant effects on the environment, depending on the sensitivity of the receptor and possible other factors (such as duration). The assessment of the likely significant effects of the development is a requirement identified by Schedule 4 of the EIA Regulations.

Receptor Sensitivity and Magnitude of Impact

2.41 To achieve a consistent approach across the different technical disciplines addressed within the ES **(ES Volume 1)**, assessments have broadly defined the sensitivity of the receptors that could be affected by the Proposed Development and the magnitude of impact or change from the baseline conditions in order to derive the resultant effect. Technical specialists have used their own approach or amended the approach stated below based on what is appropriate for their assessments.

2.42 Terminology to describe the sensitivity of receptors and magnitude of impact or change from the baseline conditions is broadly as follows:

- High;
- Medium;
- Low; or
- Negligible.

2.43 Where there is no impact/change, no assessment is required due to there being no potential for significant effects.

2.44 Each of the technical assessment chapters of the ES **(ES Volume 1)** have provided further detail on the definition of each of the above terms specific to the topic in question and also provide the criteria, including sources and justifications, for quantifying the different levels of receptor sensitivity and 'impact magnitude'. Where possible, this has been based upon quantitative and accepted criteria (for example, national standards for air quality and noise), together with the use of value judgement and expert interpretation.

Likely Effects

Identification of a Resultant Effect

2.45 The basis for determining the resultant effect generally takes into account the sensitivity of the receptor and magnitude of impact or change from the baseline conditions. A generic matrix that combines the sensitivity of the receptor and the magnitude of impact to identify the resultant effect is provided within Table 2.1 (although where this differs for a technical ES topic, this has been clearly stated in the topic's methodology).

Table 2.1 Resultant Effects

Receptor Sensitivity	Magnitude of Impact			
	High	Medium	Low	Negligible
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Negligible	Negligible	Negligible

Identification of Scale of Effect

2.46 The categories and definitions of the 'scale' of the resultant effect (i.e. definitions of Major, Moderate, Minor and Negligible effects) have been adjusted to suit the technical topic in question; where this is the case, revised definitions of effect scale are presented in the technical assessment chapters of **ES Volume 1** and in **ES Volume 2**.

2.47 Where there is no impact to a receptor and therefore no effect, this has been stated.

Effect Nature

2.48 Table 2.2 provides definitions of the 'nature' of the resultant effect i.e. definitions of Adverse and Beneficial.

Table 2.2 Definition of the Nature of the Resultant Effect

Type of Effect	Description
Adverse	Detrimental or negative effects to an environmental resource or receptor. The quality of the environment is diminished or harmed.
Beneficial	Advantageous or positive effect to an environmental resource or receptor. The quality of the environment is enhanced.

2.49 In addition to Table 2.2, **ES Volume 2** has used the term 'neutral' when describing the nature of effects. The definition of a 'neutral' effect is: '*on balance, the effect is considered neither beneficial nor adverse overall, having made a 'net equation' judgment that takes into account both beneficial and adverse impacts*'.

Geographic Extent of Effect

2.50 The ES **(Volumes 1 and 2)** has identified the geographic extent of the identified effects. At a spatial level, 'site' or 'local' effects are those affecting the site and neighbouring receptors, while effects upon receptors in LBC beyond the vicinity of the site and its neighbours are considered to be at a 'district/ borough' level. Effects affecting Greater London are considered to be at a 'regional' level, whilst those

which affect different parts of the country, or England as a whole, are considered being at a 'national' level.

Effect Duration

2.51 For the purposes of the ES, effects that are generated as a result of the deconstruction and construction works (i.e. those that last for this set period of time) are classed as 'temporary'; these may be further classified as either 'short term' or 'medium-term' effects depending on the duration of the deconstruction and construction works that generate the effect in question. Effects that result from the completed and operational phases of the Proposed Development are classed as 'permanent' or 'long-term' effects.

Direct and Indirect Effects

2.52 The ES identifies whether the effect is 'direct' (i.e. resulting without any intervening factors) or 'indirect' or 'secondary' (i.e. not directly caused or resulting from something else).

Significance of Effect

2.53 Following identification of an effect and the implementation of mitigation measures, the residual effect's scale, nature, geographic extent, and duration and whether the effects are direct or indirect, using the above summarised terminology, has been summarised in a clear statement within **ES Volume 1** and **ES Volume 2** and used to ascertain whether the residual effect is significant or not significant. Each technical assessment determines at what scale an effect is deemed to be significant, as this varies depending on the topic.

2.54 As a general rule, the following applies (although where this differs for a technical topic, this has been clearly stated in the topic's methodology):

- 'Moderate' or 'Major' effects are deemed to be '**Significant**';
- 'Minor' effects are considered to be 'not significant', although they may be a matter of local concern; and
- 'Negligible' effects are considered to be 'not significant' and not a matter of local concern.

2.55 Where mitigation measures are identified to either eliminate or reduce likely adverse effects, these have been incorporated into the ES, for example either through the design, or translated into deconstruction and construction commitments; or operational or managerial standards/ procedures. It should be noted that mitigation is not required for effects that are deemed to be Negligible.

2.56 The ES then highlights the 'residual' effects (those effects which remain following the implementation of suitable mitigation measures) and classifies these in accordance with the terminology defined above.

Impact Assessment – General Methodology

2.57 Detailed methodologies for the assessment of each of the environmental topic areas scoped into the EIA are provided within each technical ES chapter of **ES Volume 1** and in **ES Volume 2**, however, in general terms, the assessments have been based upon (as appropriate):

- Desk-top studies;
- Site surveys;
- Consideration of relevant legislation;
- Consideration of relevant planning policies (national, regional and local);
- Consideration of potentially sensitive receptors that could be affected by the Proposed Development;
- Identification of likely environmental impacts, with an evaluation of their likely magnitude, and resultant effects in terms of their nature, scale, geographic extent, duration and whether they are direct or indirect or transboundary;
- Consideration of the requirement for any specific mitigation;
- Expert opinion;
- The use of technical guidance and best practice; and
- Specific consultations with appropriate organisations.

2.58 Mitigation is the term used to refer to the process of avoiding where possible and, if not, minimising, controlling and/or off-setting potentially significant adverse effects of a development. Mitigation measures can relate to the design stage; the deconstruction and construction stage; or the activities associated with the operation of the completed Proposed Development.

2.59 As part of the EIA, an iterative approach has been adopted where significant environmental effects have been avoided where possible in the first instance through design refinements and iterations, as reported upon within **ES Volume 1, Chapter 3: Alternatives and Design Evolution.** Where adverse environmental effects were identified through early assessment work, opportunities to reduce or control impacts and effects have been identified and incorporated into the Proposed Development. In addition, opportunities to enhance the beneficial environmental effects of the Proposed Development have also been sought and incorporated into the Proposed Development.

2.60 Within each technical chapter of this ES, the assessment of the potential effects that are likely to arise because of a potential impact/ change to receptors from the Proposed Development is initially presented. If any mitigation measures are required, further to that already integrated into the Proposed Development ('embedded mitigation') throughout its evolution, these are incorporated, and the Proposed Development is reassessed to ascertain the likely residual effects and any which are significant. This is reported on within each technical chapter of this ES **(ES Volume 1** and **Volume 2)**.

2.61 How the Proposed Development might affect the environment relies on predictions about what impact a certain action will have. Some predictions can be made using mathematical or simulation models. Other impacts are less easy to predict in quantitative terms. In such cases, the EIA attempts to quantify the anticipated scale of impact using professional judgement.

Assessment Scenarios

2.62 Each of the technical assessments have considered the following scenarios, as relevant:

- The deconstruction and construction works of the Proposed Development;
- The completed and operational Proposed Development; and
- Cumulative assessment – the Proposed Development with other surrounding development schemes, often referred to as 'cumulative schemes'.

Deconstruction and Construction

2.63 **ES Volume 1, Chapter 5: Deconstruction and Construction** provides an outline of the anticipated deconstruction and construction programme, and related activities and aspects (i.e. deconstruction and enabling works, substructure works, superstructure works etc., deconstruction waste volumes and construction material quantities, HGV movements and HGV routing). In addition, the standard environmental controls required under legislation and best practice guidance (including relevant codes of construction practice) are presented.

2.64 The peak periods of daily HGV movements, and annual averages, associated with the deconstruction and construction works have also been undertaken. This information informs the deconstruction and construction impact assessments of each technical ES chapter. Throughout the deconstruction and construction impact assessments, the assumption has been made that the standard environmental controls required under legislation and best practice guidance are met as a matter of course.

2.65 The assessment of the potential likely significant effects arising during the deconstruction and construction works is addressed within each of the individual technical ES chapters. The deconstruction and construction assessments presented within the technical ES chapters identify the need for any additional or bespoke environmental management or mitigation measures in order to avoid, prevent, reduce or off-set any significant adverse effects identified.

2.66 Where relevant and required, a description of any proposed monitoring arrangements is also presented and defines (where appropriate) the procedures regarding the monitoring of the relevant significant adverse effects, the types of parameters to be monitored and the monitoring duration.

2.67 All the measures proposed within the technical ES chapters have been compiled and presented in a mitigation and monitoring schedule (for ease of reference, this is located in **ES Volume, Chapter 15: Environmental Management, Mitigation and Monitoring Schedule**).

2.68 It is anticipated that any required deconstruction and construction related environmental management/ mitigation and monitoring measures would be secured and controlled through an appropriate Construction Management Plan (CMP), and it is proposed that the requirement for this be secured by a suitably worded planning condition attached to the consent of the planning application. Key mitigation and management controls that would form part of a CMP are presented in the relevant ES chapters and **ES Volume 1, Chapter 15: Environmental Management, Mitigation and Monitoring Schedule**.

Completed and Operational Development

2.69 This ES presents a description of the Proposed Development in order to provide suitable context to enable the assessment of the potential and likely significant environmental effects. Sufficient information regarding the key aspects of the Proposed Development (as listed below) is presented in **ES Volume 1, Chapter 4: The Proposed Development** to allow understanding of the Proposed Development, in order to enable the assessment of potential and likely significant environment effects of the completed and operational development.

2.70 Information on the details of the Proposed Development sought for approval include (but are not limited to):

- Layout – building footprint;
- Scale – the massing (including the height of the building);
- Quantum – floor areas and use classes;
- Appearance – architectural detail and materiality;
- Access and egress – vehicular, pedestrian and cyclist accessibility into, out of and around the site;
- Deliveries and servicing strategy – including overview of estimates of the types and quantities of waste anticipated and strategy for waste storage, handling and collection;
- Proposed energy strategy; and
- Landscaping.

Lab-Enabled Floorspace

2.71 The Proposed Development will provide up to 74,791m^2 Gross Internal Area (GIA) / 80,630m^2 Gross External Area (GEA) of Use Class E(g) floorspace, which will comprise the following uses:

- Use Class E(g)(i) – an office to carry out operational or administrative functions; and / or
- Use Class E(g)(ii) – the research and development of products or processes.

2.72 Of the above total Use Class E(g) floor area, the Proposed Development will provide up to 19,939m^2 GIA / 24, 380m^2 GEA of lab-enabled workspace (Use Class E(g)(ii)).

2.73 Therefore, the following two land use options have been considered, where relevant, throughout the ES:

- A maximum life science (19,939m^2 (GIA) / 24,380m^2 (GEA)) and office (46,465m^2 (GIA) / 56,250m^2 GEA); and
- Maximum office (80,630m^2 GEA).

2.74 Detail on the reasonable worst-case scenarios assessed in relation to these uses is set out in the *'Impact Assessment Methodology'* sections of the respective technical chapters of **ES Volume 1, Chapters 6 to 12** and **ES Volume 2:**

Cumulative Effects and Effect Interactions

2.75 The EIA Regulations require that, in assessing the effects of a particular development proposal, consideration should also be given to the likely significant effects arising from the *"cumulation with other existing and/ or approved projects"* (Schedule 4, 5I).

2.76 Cumulative effects can occur as interactions between the effects associated with a number of projects in an area which may, on an individual basis be insignificant, but together (i.e. cumulatively), result in a significant effect. Cumulative effects arising from the Proposed Development in combination with other development schemes ('cumulative schemes') has been considered through the ES. The potential for cumulative effects arising during the construction works and once the Proposed Development is complete and operational is considered.

2.77 Each individual technical ES chapter presents an assessment of cumulative effects on the Proposed Development coming forward in isolation alongside other surrounding cumulative schemes as agreed with the LBC.

2.78 The EIA identifies the potential for the following, which is described below:

- Inter Cumulative Effects – Cumulative Effects with Other Developments; and
- Intra Cumulative Effects – Effect Interactions of the Proposed Development.

Inter Cumulative Effects – Cumulative Effects with Other Developments

2.79 Cumulative effects arising from the Proposed Development in combination with other surrounding development schemes or 'cumulative schemes' during the deconstruction and construction works and also once the Proposed Development is complete are considered by the EIA. The EIA Regulations require an assessment of potentially significant cumulative effects of the Proposed Development along with other developments. There are no legislative or policy requirements which set out how a cumulative impact assessment should be undertaken.

2.80 The cumulative schemes that are considered within the ES are typically located within a 1km radius from the boundary of the site as this spatial extent is considered appropriate for determining cumulative effects in this locality based on experience and professional judgement. This catchment area has been set to provide a reasonable study area for the assessment of cumulative effects.

2.81 It is acknowledged that for certain topics of the EIA (specially Townscape, Visual and Built Heritage), there is a need to consider more distant schemes within the cumulative effects assessment. This is appropriate, given the view locations associated with the townscape and visual impact assessment.

2.82 The criteria for the cumulative schemes included within the cumulative effects assessment include the following:

- Development within an indicative 1k radius of the site that is:
  - subject to a planning application and is yet to be determined;
  - has a resolution to grant planning permission; or
  - has full planning consent,
- comprising either:
  - An uplift of more than 10,000 square meters GEA of mixed-use floorspace or, provide over 150 residential units; or
  - Office to residential conversions (granted under the General Permitted Development Order) giving rise to over 150 residential units; or
  - Any development / change of use adjacent to the site.

2.83 The criteria listed above has been set to allow schemes coming forward within the LBC (and adjacent boroughs of Islington and City of Westminster) to be subject to an initial screening exercise to determine the schemes that, based on the scale of redevelopment (amount and mix of uses), could potentially have a cumulative effect with the Proposed Development and should be considered further within the cumulative effects assessment of the EIA. In some instances the radius is extended to include other schemes identified by LBC as appropriate.

2.84 By applying these criteria to all the schemes coming forward, the cumulative effects assessment of the EIA becomes more focused on the schemes which, based on the scale of redevelopment (amount and mix of uses) and location relevant to the site, have more potential to interact in a cumulative manner. Each technical ES chapter is clear on the cumulative schemes that have been considered within the cumulative effects assessment of the topic in question, including a reasoning behind their inclusion. Where cumulative schemes have been 'screened out' of the cumulative effects assessment, the reasoning for doing so is presented in the relevant ES chapter.

2.85 Schemes which fall within the above criteria and are under construction, where the construction works are significantly progressed or where early phases are occupied, will be factored into the baseline conditions (as a future baseline). If relevant, this will be clearly set out within each individual topic's cumulative assessment methodology text.

2.86 The following 7 cumulative schemes are considered within the EIA:

- London Borough of Camden;

1. Land to the North of the British Library (2022/1041/P);
2. Central Somers Town (2015/2704/P);
3. Eastman Dental Hospital (2018/5715/P);
4. Royal National Throat, Nose and Ear Hospital (2020/5593/P
5. 247 Tottenham Court Road (2020/3583/P);
6. Network Building (2020/5624/P); and
7. Belgrove House (2020/3881/P).

2.87 High Speed Rail Phase 1[27] is a rail connection from London to the Midlands that is currently under construction, with an anticipated completion year of 2029-2033. Phase 1 will connect London to Birmingham with its London terminal located at Old Oak Common. The proposed link to Euston Station, which lies approximately 500m east of the site, is due to open between 2031 and 2035. The cumulative effect of the Proposed Development and HS2 has been considered, where relevant, within each of the technical ES chapters (**ES Volume 1, Chapters 6 to 12**).

2.88 The locations of the above identified cumulative schemes in relation to the Proposed Development are presented in Figure 2.1 and presented in **ES Volume, Appendix: EIA Methodology – Annex 3**. The consideration of 'Inter Cumulative Effects' is provided in each of the technical ES chapters (**ES Volume 1, Chapters 6 to 12** and **ES Volume 2**).

Intra Cumulative Effects

2.89 Intra-project cumulative effects from the Proposed Development itself on surrounding sensitive receptors during the deconstruction and construction works and once the Proposed Development is completed are considered within **ES Volume 1, Chapter 13: Effect Interactions**. Effect interactions occur as interactions between the effects of different topics associated with just one project, i.e. the combination of individual effects arising as a result of the Proposed Development, for example effects in relation to noise, airborne dust or traffic on a single receptor.

2.90 Effect interactions from the Proposed Development itself on particular receptors at the site and surrounds has been considered during the deconstruction and construction works and also once the Proposed Development is completed and operational. Dependent on the relevant sensitive receptors, the assessment focuses either on key individual receptors or on groups considered to be most sensitive to potential effect interactions. The potential interaction of residual effects that are of Minor, Moderate or Major scale (see *'Identification of Impacts, Effects and Effect Significance'* above for further details) are considered within this assessment. Residual effects which are 'Negligible' are excluded from this assessment as by virtue of their definition are considered to be imperceptible, therefore the combination of any imperceptible effects with other effects should not result in any increased level of effect.

2.91 There is no established methodology for assessing the impact of cumulative effects on a particular receptor. Therefore, a scale of effect will not be applied to the combination of individual effects (such as Minor, Moderate or Major). However, the European Commission has produced guidelines to assist EIA practitioners in developing an approach which is appropriate to a project. These guidelines[28] have been used to develop an approach which uses the defined residual effects of the Proposed Development (as presented within the technical ES chapters) to determine the potential for effect interactions. Therefore, relevant effect interactions are discussed, and professional judgement has been applied to determine whether the effect interaction is considered 'significant'[29].

2.92 Consideration of effect interactions is presented within the ES in a separate ES chapter titled 'Effect Interactions' (**ES Volume 1, Chapter 13: Effect Interactions**).

[27] *His Majesty's Stationery Office (HMSO) 2017. High Speed Rail (London – West Midlands) Act 2017.*
[28] *European Community (1999); Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions.*
[29] *The methodology for determining a significant in-combination effect has been defined by the HS2 Phase 2a: West Midlands – Crewe Scoping and Methodology Report (July 2017) and the published HS2 Phase 2a Environmental Statement Volume 1 Introduction and Methodology and Volume 2 Community Area Reports (July 2017). The methodology for assigning significance to in combination effects has been specifically included in this ES to assess if there are any combination effects would result in a significant effect.*

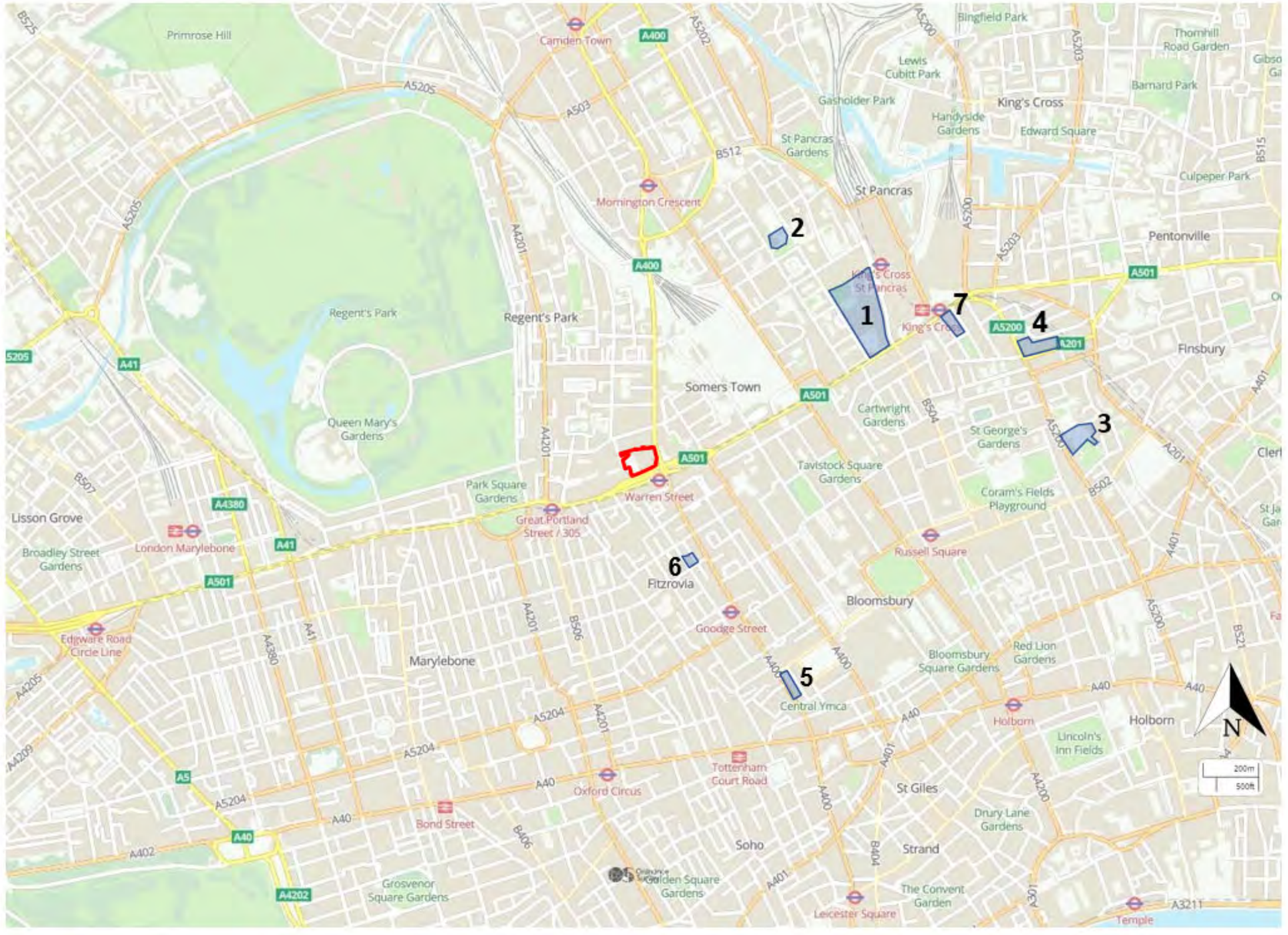
Figure 2.1 **Cumulative Schemes Map**

Euston Tower Cumulative Schemes

London Borough of Camden

1. Land to the North of the British Library
2. Central Somers Town
3. Eastman Dental Hospital
4. Royal National Throat, Nose And Ear Hospital
5. 247 Tottenham Court Road
6. Network Building
7. Belgrove House

Key:
- The Site
- Cumulative Schemes



STRUCTURE OF TECHNICAL ASSESSMENTS

2.94 This ES reports on the potential (before mitigation) and residual (after mitigation) environmental effects of the Proposed Development during deconstruction and construction works and on subsequent completion and operation. The ES also concludes with a summary of the likely significant beneficial, neutral and adverse environmental effects of the Proposed Development (**ES Volume 1, Chapter 14: Likely Significant Effects**).

2.95 Each of the technical environmental topics considered in the EIA have been assigned a separate ES chapter in **ES Volume 1**. Within each of the technical ES chapters, the assessment is presented and reported in the following format:

- An Introductory Table – setting out the author of the technical topic assessment, identification of relevant appendices, key topic related considerations and the consultation undertaken;
- Assessment Methodology – an explanation of the approach to defining the baseline conditions, assessment scenarios, evolved and cumulative baseline conditions, undertaking the impact assessment (deconstruction and construction and operation, and any key assumptions made including inherent mitigation) and the definitions of the nature and scale of effect and what effects are deemed to be significant;
- Baseline Conditions – a description of the baseline conditions of the site and surrounding area (as relevant to the technical topic in question);
- Receptors and Receptor Sensitivity – identification of the existing and introduced (new) receptors on the site and in the surrounding area that may be affected by the Proposed Development and identification of their sensitivity;
- Potential Effects – an assessment of the likely significant effects of the Proposed Development during deconstruction and construction and on completion, setting out the impacts and effects associated with each aspect of the assessment and an evaluation of their significance against defined criteria without the implementation of mitigation;
- Mitigation Measures, Monitoring and Residual Effects – a description of the mitigation measures that are being committed to and a summary of the residual effects of the Proposed Development. Any monitoring that is required is also stated;
- Assessment of Future Environment – a description of the likely evolution of the baseline (as relevant) and an assessment of the likely significant effects of the Proposed Development in relation to any 'in combination' effects with cumulative schemes; and
- Likely Significant Effects – a short statement confirming which residual effects are considered to be significant.

TVBHA Structure

2.96 **ES Volume 2**, comprised of the Townscape, Visual and Built Heritage Assessment, is structured as follows:

- Introduction – setting out the purpose of the volume;
- Planning Policy Context – relevant heritage, townscape and visual legislation and planning policy;
- Assessment Methodology – an explanation of the assessment framework, in accordance with guidance relevant to heritage, townscape and visual;
- Baseline Conditions – assessment of the current site conditions;
- Visual Characteristics of the Proposed Development – a description of the design of the Proposed Development;
- Assessment of Effects – an assessment of the heritage, townscape and visual receptors, and assessment of likely significant effects of the Proposed Development;
- Conclusions – the remaining effects following the inclusion of outlined mitigation measures; and
- References.

ASSUMPTIONS AND LIMITATIONS

2.97 The principal assumptions that have been made, and any limitations that have been identified, in undertaking the EIA are set out below. Assumptions specifically relevant to each technical topic have been set out in each technical chapter of the ES.

- Baseline conditions have been established from a variety of sources, including historical data and site visits, and are accurate at the time of writing;
- It is assumed that information received from third parties is accurate, complete and up to date;
- The assessments contained within each of the **ES Volume 1** technical ES chapters and in **ES Volume 2** are based on an assumption that the application drawings and description of development, regulatory regimes and management controls as set out in **ES Volume 1, Chapter 4: Proposed Development**; **ES Volume 1, Chapter 5: Deconstruction and Construction;** and **ES Volume 1, Chapter 15: Environmental Management, Mitigation and Monitoring Schedule**, are implemented;
- Deconstruction and construction works across the site would take place substantially in accordance with the programme of works described in **ES Volume 1, Chapter 5: Deconstruction and Construction** and measures agreed through the outline CMP*;*
- Where detailed information has not been available, reasonable assumptions have been made, and have been clearly set out, based on experience of developments of a similar type and scale to enable assessment of likely significant effects; and
- Consented or reasonably foreseeable cumulative schemes will be implemented substantially in accordance with information that is publicly available and subject to the same regulatory regimes and good practice management controls as this Proposed Development.

Chapter 3: Alternatives and Design Evolution

INTRODUCTION

3.1 This chapter of the Environmental Statement (ES) summarises the reasonable alternatives considered by the Applicant and details the environmental considerations that have influenced the design of the Proposed Development. Following this, a narrative is provided on the evolution of the selected option for the site, focusing on key design modifications that were made during the design process. Environmental considerations which have influenced the design evolution process are discussed where relevant.

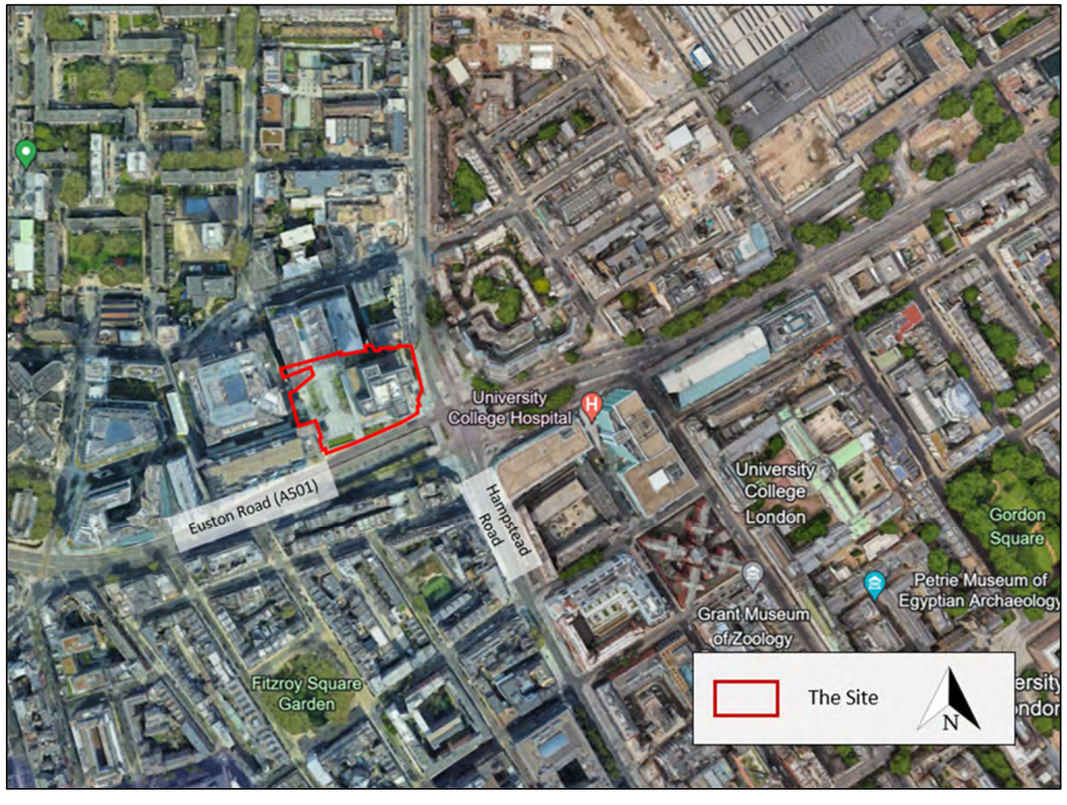
SITE AND SURROUNDING CONTEXT

Exiting Site and Surrounds Description

3.2 The site currently comprises a single, ground plus 36-storey building with a basement. The ground level comprises retail space with office space and associated supporting uses (including plant space) above. The existing Euston Tower was developed in stages between 1962 and 1972. The current basement within Euston Tower provides 102 car parking spaces and 200 cycle parking spaces. This basement is connected to the wider Regent's Campus basement, which also provides a servicing yard used by the existing Euston Tower. The ground floor is commercially occupied by a Starbucks, Pret A Manger and Amazon Fresh. Above ground, the existing building is predominately vacant, having previously accommodated office use. The open space within Regent's Place Plaza is predominantly paved with limited greening, and this paving extends around the perimeter of the existing building.

3.3 The site is designated within the Knowledge Quarter Innovation District ('KQID'), home to world-class clusters of scientific and knowledge-based institutions and companies specialising in life-sciences, data and technology and creative industries.

Figure 3.1 Site Location



3.4 The surrounding area comprises the following:

- North – immediately to the north of the site is the Triton Building (retail and residential) and 10 Brock Street (offices);
- East – immediately to the east is Hampstead Road; beyond which is University College Hospital (UCH) Education Centre, followed by North Gower Street which features multiple Grade II listed buildings, 185-191, 168 and 170, and 184-188 North Gower Street;
- South – Euston Road (A501) borders the south of the site, beyond which lies residential and commercial properties and Warren Street London Underground Station; followed by Grade II listed buildings 15, 16, 17, 20, 21, 66, 58-62, and 63-68 Warren Street; and
- West – Regent's Place Plaza and Regent's Place (commercial) lie to the west, beyond which are further commercial properties with heights of approximately 65m. Regent's Park is also located approximately 420m northwest of the site.

Figure 3.2 The Existing Site

Existing Tower from Hamstead/Euston Road junction

Ground-level planters at the eats of the site

Ground-level planters in Regent's Place Plaza

Modified grassland in Regent's Place Plaza

Local Environmental Context

Air Quality

3.5 The site is located within the borough wide Air Quality Management Area (AQMA), as declared by the London Borough of Camden (LBC) in September 2002. It is designated for exceedances of the 24-hour mean objective value for particulate matter (PM_{10}) and the annual mean objective value nitrogen dioxide (NO_2).

3.6 The Proposed Development is also located within one of the Greater London Authority's (GLA) Air Quality Focus Areas (Marylebone Road from Marble Arch / Euston / King's Cross Junction); these are locations with high levels of human exposure where the annual mean limit value for NO_2 is exceeded.

3.7 The LBC operates five automatic monitoring stations within its administrative area, with one monitoring site ('CD9') located within the study area. The LBC also operates a number of NO_2 monitoring sites using diffusion tubes prepared and analysed by Gradko International Ltd (using the 50% TEA in acetone method), with 15 diffusion tube monitoring sites located within and in close proximity to the study area.

3.8 Given that the site is located within central London, the site is also located within the Congestion Charge (CC) zone, the Low Emission Zone (LEZ) and the Ultra Low Emission Zone (ULEZ).

Archaeology

3.9 The site is not located within any Archaeological Priority Areas (APA). The closest APA is Regent's Park Tier 3 APA approximately 330m west from the site.

3.10 There are no scheduled monuments on the site; the closest being a Subterranean Commercial Ice-well, Park Crescent West, approximately 600m west of the site.

Built Heritage

3.11 The site is not within a designated Conservation Area (CA). However, within the 500m study radius, there are seven conservation areas that lie within both LBC and, to the west, the City of Westminster (CoW): Fitzroy Square Conservation Area (LBC); approximately 60m to the south of the site; Bloomsbury Conservation Area (LBC); Regent's Park Conservation Area (LBC); Charlotte Street Conservation Area (LBC); Regent's Park Conservation (CoW); Cleveland Street Conservation Area (CoW); and Harley Street Conservation Area (CoW).

3.12 The site and proximity to the surrounding CA is presented in Figure 3.3.

3.13 There are no statutory or locally listed buildings on the site. Within a 500m radius of the site, there are 132 listed buildings, 13 of which are Grade I listed, eight which are Grade II* listed buildings and 111 are Grade II listed. The closest listed buildings to the site are Nos.48-52 Stanhope Street (Grade II) to the north and Nos.15, 16, 17, 20, 21, 56, 58-62, 63-68 Warren Street (all Grade II) and Nos.159-161 Whitfield Street (Grade II), to the south, which are all within 150m of the site boundary.

3.14 There are three Registered Parks and Gardens within a 1km radius of the site, including Regent's Park approximately 480m west, Russell Square approximately 860m southeast, and Bedford Square Garden approximately 870m southeast of the site.

Ecology and Biodiversity

3.15 The site currently comprises one building and the open space within Regent's Place Plaza, which is predominantly paved with limited greening; this paving extends around the perimeter of the existing building. Habitats on-site are considered to be of low ecological value.

3.16 The site is not subject to any European or national ecological designation (statutory or non-statutory). Furthermore, the site is not within a 1km radius of any of the following designated sites: Areas of Outstanding Natural Beauty (AONB), Biosphere Reserves, National Nature Reserves (NNR), Ramsar Sites, Site of Special Scientific Interest (SSSI), Special Areas of Conservation (SAC) or Special Protection Areas (SPA).

3.17 The nearest designation is a Metropolitan Site of Importance for Nature Conservation (SINC) at Regent's Park approximately 450m west of the site, which is connected to a Borough II SINC in park square, immediately south of Regent's Park, approximately 420m west.

Noise and Vibration

3.18 Noise at the site is dominated by road traffic along Euston Road (A501) and Hampstead Road. Furthermore, sources of vibration at the site comprise London Underground trainlines that pass close to the site; these include Circle, Hammersmith & City, Metropolitan, Northern and Victoria underground lines.

Townscape and Visual

3.19 The area surrounding the site is comprised of a mixture of use classes, including (but not limited to) commercial uses, residential dwellings, retail, and open spaces. The existing building is tall in the context of its surroundings, making it highly visible to surrounding viewpoints.

3.20 The existing building is visible within London View Management Framework ('LVMF') London Panoramas from Parliament Hill to Westminster, LVMF London Panorama from Primrose Hill to Westminster, and LVMF River Prospects from Lambeth Bridge. The images presented in Figure 3.3 provide a brief analysis of the existing building and the surrounding context.

Transport

3.21 The site has a Public Transport Accessibility Level (PTAL) rating of 6b (where 0 is the worst and 6b is the best) and is therefore considered to be highly accessible via public transport.

3.22 The site is served by the following London Underground stations within close proximity: Warren Street - Victoria and Northern lines (approximately 100m South); Euston Square - Circle, Hammersmith & City and Metropolitan lines (approximately 280m east); Regent's Park – Bakerloo (550m west); Euston – Northern Line (600m east); and Kings Cross St Pancras Station – Circle, Hammersmith & City, Metropolitan, Northern, Piccadilly, and Victoria lines (1.2km east)

3.23 Euston Rail Station is located approximately 600m east of the site and is serviced by Avanti West Coast, West Midlands Trains, Caledonian Sleeper, and London Overground rail services. King's Cross and St Pancras Stations are also situated approximately 1.2km to the east of the site. King's Cross is served by Great Northern, Grand Central, London North Eastern Railway (LNER) and Hull Trains. St Pancras International is served by Thameslink and East Midlands Railway (EMR) as well as high speed routes to Kent. In addition, Eurostar services to Europe are also available from this station.

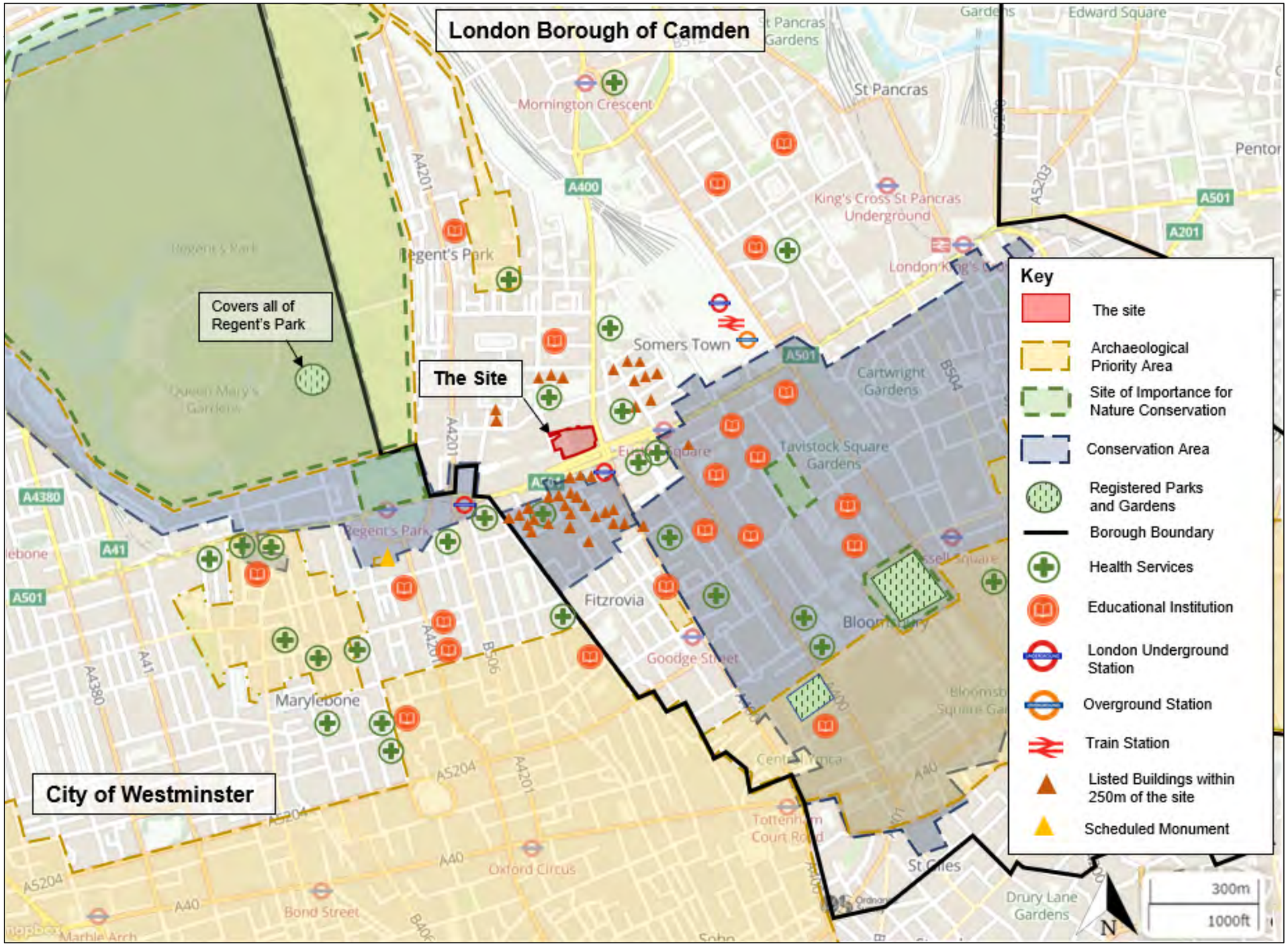
3.24 The site benefits from its close proximity to a number of different bus stops and bus services. The nearest bus stops are located adjacent to the site to the east, on Hampstead Road (A400) and to the south, on Euston Road (A501). Warren Street Station (Stop KA) bus stop is located immediately south of the site, serviced by Bus Routes 18, 30, 205 and N205. Warren Street Station (Stop V) bus stop is located approximately 50m south and is serviced by bus routes 18, 27, 30, 205, N27 and N205. Drummond Street (stop S) bus stop is located approximately 20m north-east, serviced by bus routes 24, 29, N29 and N279. Warren Street Station Euston Road (Stop U) bus stop is located approximately 30m east, serviced by bus routes 24, 27, 29, 134, N27, N29 and N279. University College Hospital Warren Street Station (Stop W) is located approximately 120m east, serviced by bus routes 18, 30, 73, 205, 390, N5, N20, N73 and N205.

3.25 Euston Tower is part of Regent's Place Campus, which offers a pedestrian friendly environment with largely pedestrianised streets, walkways, and plazas. Euston Road, bordering the south of the site, and Hampstead Road, bordering the east of the site, have comprehensive footway provision along both sides of the carriageway; around the site there are wide footways, signalised pedestrian crossings with dropped kerbs and tactile paving.

3.26 A London Cycle Network route runs along Hampstead Road east of the site. Cycleway 27 (C27) is located approximately 280m south of the site running between North Acton and Lower Clapton.

3.27 The existing basement within Euston Tower provides 102 car parking spaces and 200 cycle parking spaces.

Figure 3.3 Site and Surrounding Context Map



PRE-APPLICATION CONSULTATION

3.28 An extensive programme of consultation has been undertaken throughout the design evolution of the Proposed Development. This included meetings, workshops, and exhibitions for a variety of stakeholder groups and local residents in order to create a scheme which is inclusive, and which has been informed by the public.

Statutory Stakeholder Consultation

3.29 The Proposed Development has been subject to a number of statutory consultee and stakeholder consultation meetings with the LBC in order to evolve and refine the emerging design. Since February 2022, the Applicant team have been developing the proposal through an intensive, collaborative process with the planning officers and wider stakeholders. Through a series of pre-application meetings, workshops and design sessions and review panels, strategic panels and developer's briefings, opportunity for feedback and discussion has been created, the result of which is reflected in the Proposed Development.

3.30 The following key statutory stakeholders have been engaged with to date: London Borough of Camden (LBC) (including the Environmental Health Officer (EHO) and Designing Out Crime Officer); Greater London Authority (GLA); Transport for London (TFL); London Underground Limited (LUL); Crossrail 2; and Historic England (HE).

Public Consultation

3.31 In addition to the above statutory stakeholder consultation, a series of public consultation events were conducted to obtain public feedback to inform the evolution of the design. This engagement took the form of Co-Design Workshops and Panel Discussions, whereby the local community were invited to share their thoughts and discuss and shape the design proposals. The series of workshops and panel discussions were grouped into 3 key themes: Inclusivity in the Public Realm, Interior Public Spaces & Programming, and Exterior Public Spaces & Programming.

3.32 The Applicant undertook a comprehensive programme of engagement on the plans for Euston Tower, which was comprised of three phases:

- First stage of engagement – December 2022-June 2023. Targeted engagement sessions with local groups and organisations to shape the emerging designs for Euston Tower;
- Second stage of engagement – July 2023. Presenting the emerging designs and gaining feedback from the wider public; and
- Third stage of engagement – October 2023. Presenting the developed designs for Euston Tower ahead of the submission of the application.

3.33 In total, the project team engaged with over 570 people through the pre-application process.

3.34 A summary of the public consultation events undertaken are presented below:

- 21 March 2023 - Inclusivity in the Public Realm Co-Design Workshop;
- 4 April 2023 - Inclusivity in the Public Realm Panel Discussion;
- 28 April 2023 - Interior Public Spaces & Programming Co-Design Workshop;
- 2 May 2023 - Interior Public Spaces & Programming Panel Discussion;
- 12 May 2023 – Design Review Panel 1;
- 16 May 2023 - Exterior Public Spaces & Programming Co-Design Workshop;
- 30 May 2023 - Exterior Public Spaces & Programming Panel Discussion;
- 4 July 2023 – Sustainability Event;
- 8 July – 16 July 2023 – Public Exhibition 1;
- 29 September 2023 – Design Review Panel 2; and
- 13 October 2023 – 20 October 2023 – Public Exhibition 2.

3.35 Key comments and themes raised from the public consultation events and explored in the design review panels are as follows:

- Development of a scheme which is adaptable to future needs without the need for extensive demolition;
- Ensuring a balance between a robust building with a strong base and encroachment into the public realm as a result of the increased building size;
- Reflection of the surroundings as influences for the façade treatment and colour palette and detailed consideration of the townscape impacts;
- Supportive of the landscape-led approach and maximising green spaces within the public realm and ensure these spaces are fully accessible to all;
- Reflecting the lower-level landscaping at the upper levels;
- Encouraging material reuse and securing ambitious sustainability goals through the planning process and managing embodied carbon through detailed studies; and
- Support the relationship between the building and the public realm through microclimate analysis.

ALTERNATIVES ANALYSIS

3.36 The following sections review the alternatives to the Proposed Development that have been considered by the Applicant including:

- The Do-Nothing/ No Development Alternative;
- Alternative Sites; and
- Alternative Designs / Design Evolution.

Do-Nothing/ No Development Alternative

3.37 The Do-Nothing / No Development Alternative refers to an option of leaving the site in its current state, with the existing building remaining present at Euston Tower. The building has been largely vacant since 2021 and has been stripped out, as it is inadequate for use by modern occupiers in its current form.

3.38 The Do-Nothing / No Development Alternative is not a viable option. A feasibility study was initially conducted to investigate the current condition of the existing Euston Tower, with the aim to bring the disused building back to life, minimise wate and carbon emissions, and create a world leading science, technology and innovation building and public realm for Camden and the Knowledge Quarter. After considering the planning policy and market requirements for continued commercial use of the Tower, the investigation concluded that the cost and carbon impact of upgrades required for continued office use and the quality of the space delivered would make viability very challenging, and the resulting product would be compromised in the leasing market.

3.39 The Do-Nothing / No Development Alternative would not be desirable as the new modern and fit-for-purpose facilities proposed as part of the Proposed Development would not be delivered. At present, the existing building remains largely unused; the Proposed Development therefore presents an opportunity redevelop the site to provide a leading science, technology and innovation building and public realm for Camden and the Knowledge Quarter.

3.40 Additionally, existing green space on-site is limited. The Proposed Development offers the opportunity to redevelop the site to provide extensive urban greening that is situated within a heavily urbanised and high-rise area of low ecological value in London.

3.41 For the above reasons, the Do-Nothing / No Development Alternative would not deliver the significant planning, public, energy efficiency and ecological benefits offered by the Proposed Development, and as such has not been considered further.

Alternative Sites

3.42 No alternatives sites were considered for the location of the Proposed Development given that the Applicant has ownership of the site. The site is deemed an appropriate location for the redevelopment of an office-led, lab-enabled commercial scheme given it is situated within the Central Activities Zone in Camden, and moreover

within The Knowledge Quarter.

Alternatives Designs

3.43 The Design Evolution section of this chapter sets out the key design considerations, the design brief, and the framework principles which have guided the evolution of the Proposed Development. The design has evolved as a result of these starting framework principles. No entirely alternative designs have been developed, which differ from these starting framework principles, however the design of the Proposed Development has emerged and evolved in response to feedback from the pre-application consultation process (both in terms of the public consultation process and the pre-application discussions with LBC) as well as design development, and input in relation to the technical and environmental design aspects of the scheme. Further detail on the design evolution for the scheme is available in the Design and Access Statement (DAS) submitted alongside the planning application.

3.44 Where design options have been influenced by environmental considerations and assessment work, this has been discussed within the Design Evolution section of this chapter as relevant.

DESIGN EVOLUTION

3.45 The following sub-sections of this ES chapter describe the design evolution processes undertaken by the Applicant's design team and is structured around the key design constraints and opportunities, design principles, the key design changes, and the consultation activities that have led to the final design of the Proposed Development.

3.46 The design of the Proposed Development has emerged and evolved in response to feedback from the pre-application consultation process, both in terms of the public consultation process and the pre-application discussions with the LBC, as well as design development, and input in relation to the technical design aspects of the scheme.

Initial Land Use Considerations

3.47 A series of studied considering various options for "alternative uses" for the existing tower within its current footprint were undertaken as part of feasibility investigations. These included continued commercial uses, residential, student accommodation, hotel, as well as combinations of these uses. Mixed use scenarios were identified to be especially challenging as they require separate, diversified fire escapes which erodes usable area within the final building envelope. The following options were studied as part of the feasibility investigations.

3.48 Commercial-led schemes:

- Commercial office only; and
- Commercial office with laboratory (life sciences / innovation).

3.49 Residential-led mixed use:

- Residential with commercial office;
- Residential with laboratory; and
- Residential with hotel.

3.50 Hotel/Student Housing developments:

- Hotel only; and
- Hotel with student housing.

3.51 Notwithstanding the policy protection for commercial land use associated with the site, the abovementioned options underwent technical analysis and presented similar challenges, i.e. that fundamental issues with respect to the existing building (including building regulations, fire safety, and energy performance) need to be addressed before the building can be brought back into use.

3.52 The existing structural loading capacity was shown to be sufficient for any of the alternative uses with the exception of the laboratory spaces, which require a more extensive structure. The dynamic response of the structure (i.e. how much it vibrates at a microscopic scale) was shown to be more challenging, especially for uses with bedrooms where users are likely to be more sensitive to vibrations.

3.53 Fire safety was identified as a challenge for the mixed uses as, in addition to providing dual fire escapes, each separate use requires independent firefighting provisions and fire escape routes. Practically, this precludes combining more than two distinct uses as the efficiency of the floor layout (ratio of the area which is usable compared to the overall area) would be severely eroded with the additional space required for independent fire safety requirements.

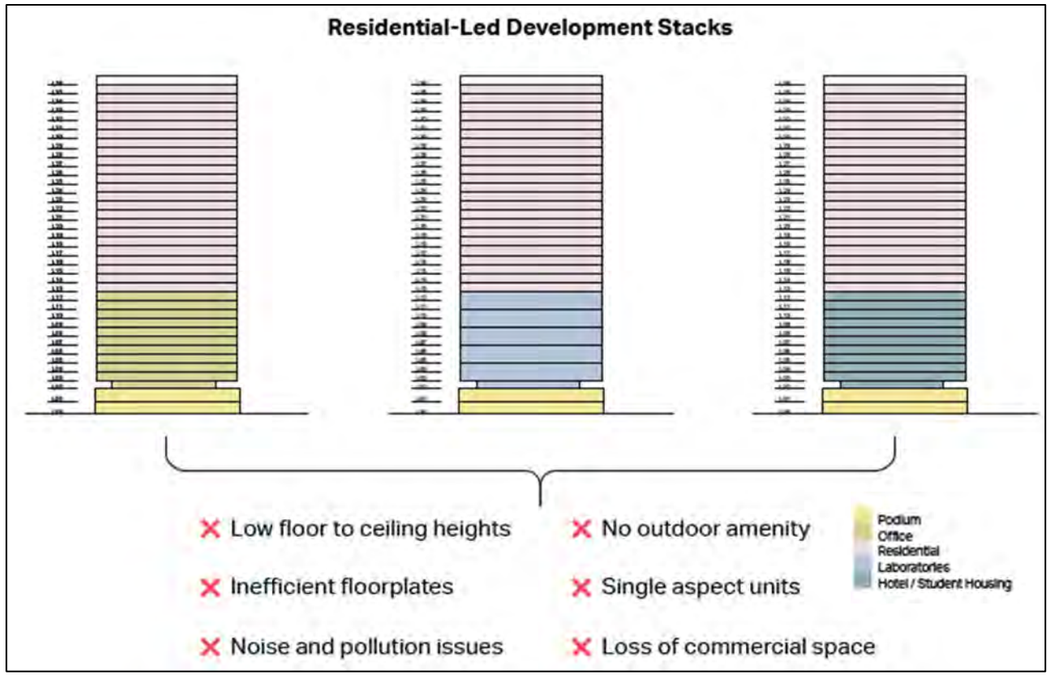
3.54 The ceiling zone required to accommodate modern, energy-efficient building services was also challenging to fit within the height between the existing storeys (currently 3.2m) while also delivering the clear ceiling heights recommended by the GLA.

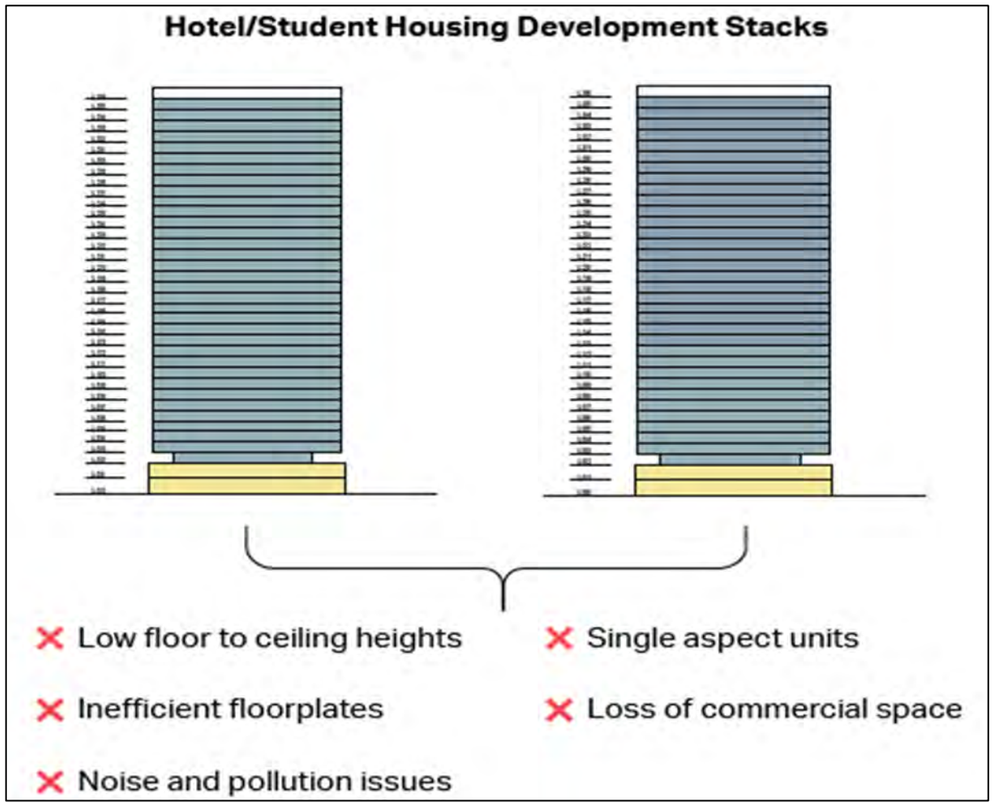
3.55 This junction of Euston Road and Hampstead Road experiences relatively poor air quality and high noise levels, and therefore is not ideal for residential accommodation, a hotel or student accommodation. In addition, and due to the aforementioned challenges layouts for residential accommodation, a hotel or student accommodation are compromised due to the following:

- Several single-aspect units (and some north-facing facing units);
- Some self-shaded units due to overshadowing from the shape of the existing building;
- Several narrow and inefficient units with lots of wasteful circulation space;
- Instances of long corridors with no daylight; and
- No private outdoor amenity space due to wind conditions.

3.56 Consequently, it was determined that continuing a commercial use on the site was the most suitable use to be taken forward as it not only aligned with the current policy allocation and surrounding land uses, but also provided opportunities to retain and reuse the existing building (including parts of the structure and core) where possible.

Figure 3.4 Alternative Uses Studied for Euston Tower





Design Brief and Principles

3.57 The aim of the Proposed Development was to redevelop the disused and mostly vacant building, minimise waste and carbon emissions, and create a world leading science, technology and innovation building and public realm for Camden and the Knowledge Quarter. The existing tower consists of poor quality and inflexible floorplates, an insular, and reflective façade, and an uninviting podium with limited connection to the public realm. This warranted exploration into opportunities for retention, reuse, and recycling to transform the existing building into a building fit for the future.

3.58 As described above, the existing building is considered increasingly unsuitable for modern use. The Applicant therefore set an aspiration for the creation of an iconic building that would be fit for purpose for the next 100 years and that inspires, connects and creates opportunities for local people and businesses.

3.59 Consideration was given as to whether the building could be refurbished to modern commercial and sustainability standards, and subsequently the feasibility of redevelopment that could deliver best in class lab-use and office floorspace alongside outstanding public benefits.

3.60 The design of the Proposed Development has evolved in response to a number of design principles including:

- Transforming the existing Euston Tower ensuring it is fit for the future by adopting cutting-edge sustainability targets and reusing, recycling, and offsetting, where necessary, to reach net zero at completion and in operation;
- Putting social impact at the heart of the project from the start and ensuring that communities play a key role in shaping new spaces which meet local needs;
- Creating pioneering workspaces in the Knowledge Quarter for businesses of all sizes to prosper, including flexible incubator and accelerator spaces, to support start-ups, scale-ups and knowledge sharing;
- Ensuring that the future use of Euston Tower is built upon identified need and contributes to a thriving local, regional and national economy for our ever-changing world; and
- Reimagining the public spaces of Regent's Place Campus, creating safe, inclusive, connected and sustainable spaces for Camden's communities.

Sustainability and Minimising Embodied Carbon

3.61 From the outset it was established that sustainability is an important design consideration with the following objectives:

- Deliver a highly sustainable tall building and explore the potential of delivering a climate positive building;
- Minimise Embodied Carbon & Carbon in Use with a target of delivering a Net Zero Carbon building;
- Optimise the design to improve end user productivity by for example enhancing air purity etc.;
- Deliver an all-electric building which minimises energy consumption and achieves UK Green Building Council 2030 targets;
- Develop a market leading Circular Economy strategy to ensure that 50% of the building material is re-usable at the end of the buildings life;
- Document and re-use elements of the existing building where possible;
- Encourage green behaviours through the design e.g. integrating live feedback on energy use and options such as reduced speed lift journeys;
- Explore the use of innovative low carbon materials both internally and externally; and
- Minimise vehicle movements associated with building use.

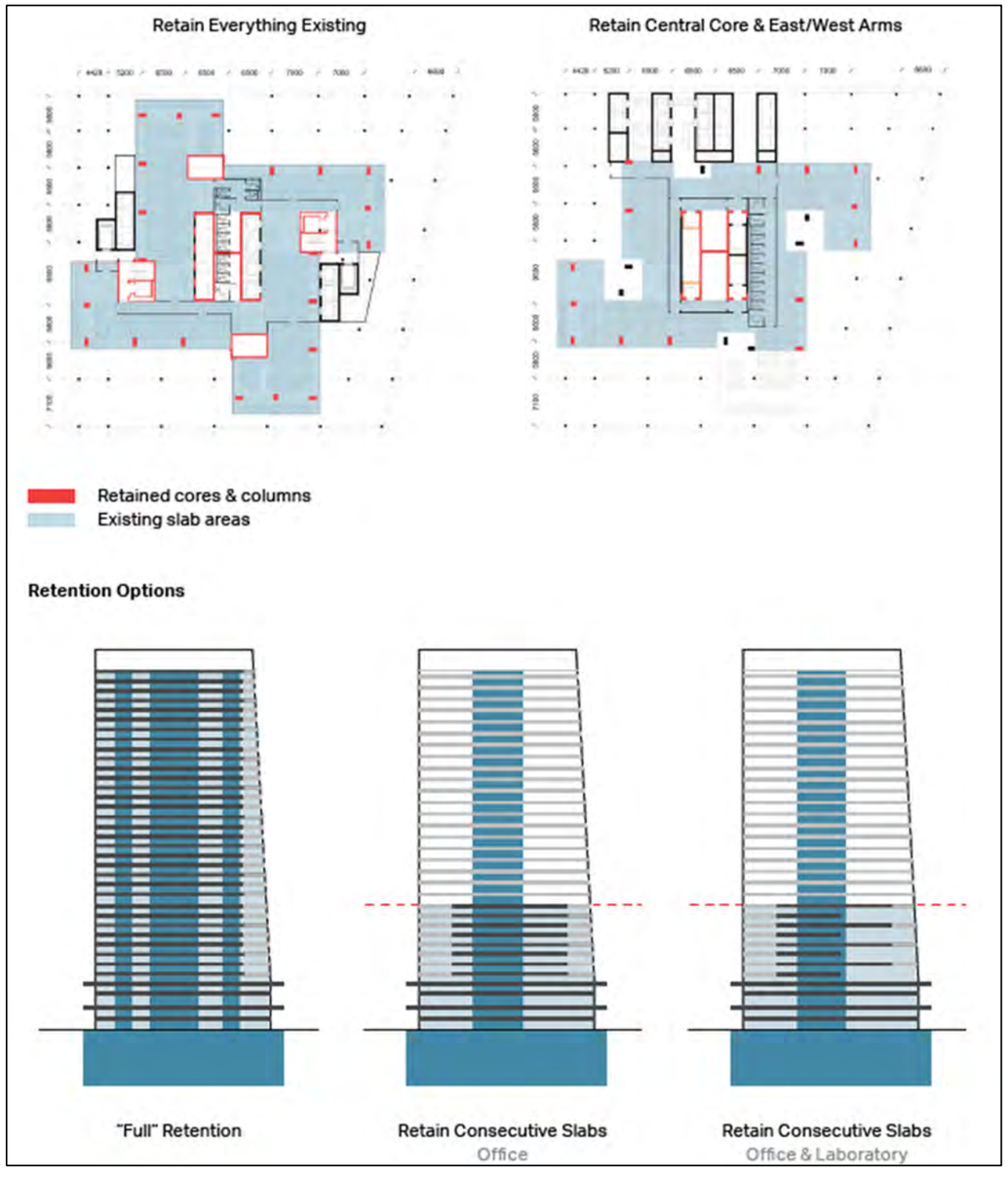
3.62 In accordance with the design objectives in terms of sustainability, an initial exercise to consider the potential for retaining and refurbishing the existing building was undertaken as presented in Figure 3.5.

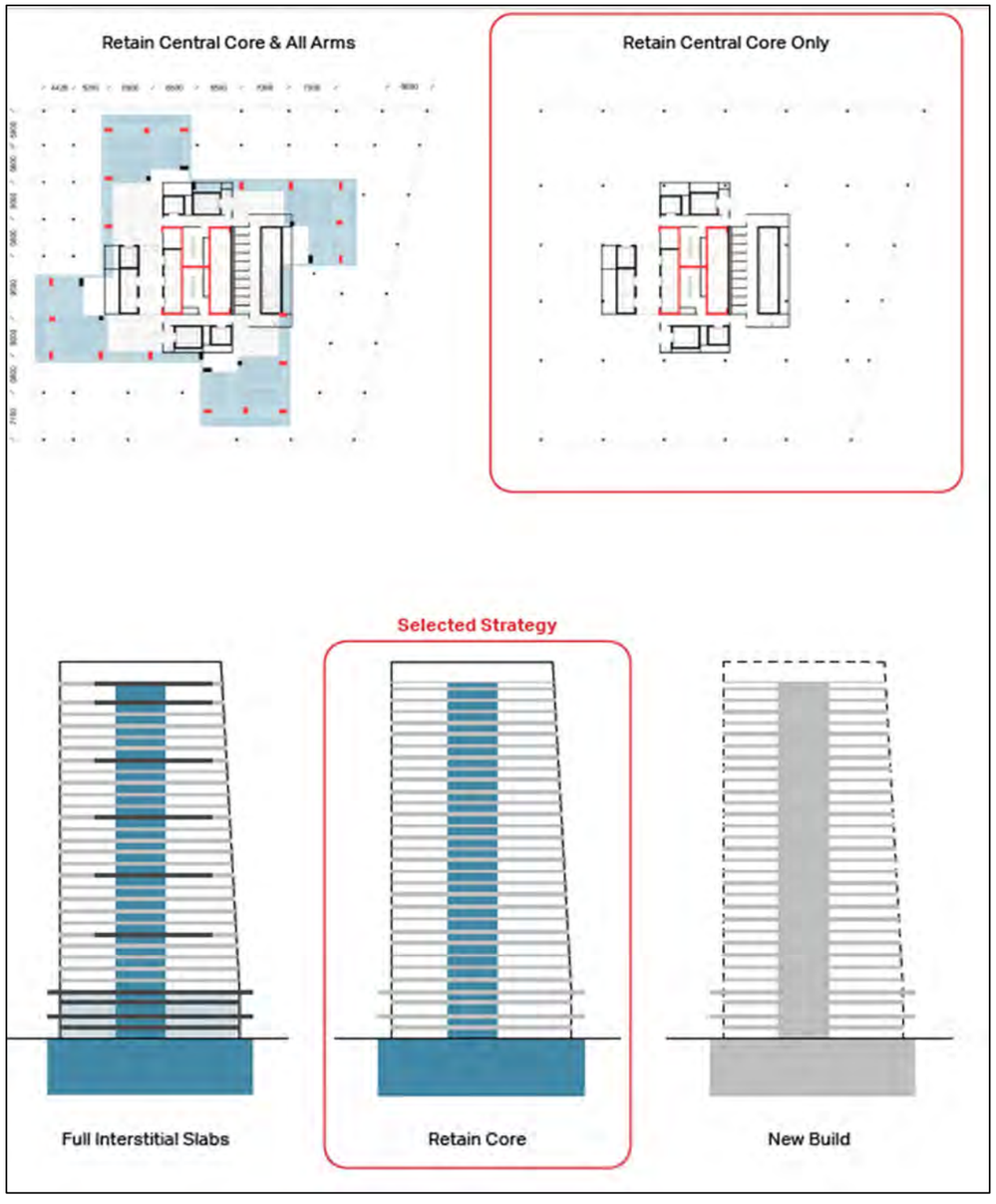
3.63 Five main options were considered:

- Major Refurbishment – this was not considered feasible due to the constraints of the floorplate and the existing building;
- Retention and Partial Extension – resulting in maximum retention of the building;
- Retention and Extension – resulting in 'full retention' of the building;
- Partial Retention and Extension (Disassemble and Reuse) – comprising retention of the consecutive and interstitial slabs and the core; and
- New Build – completely new building.

3.64 Following a review of all the options, it was determined that the retention of the central core option was the optimal solution as it aligned with the design objectives to achieve sustainable outcomes, by retaining the optimal amount of embodied carbon in the existing building and minimising the operational carbon in the future life of the building (Figure 3.5). Accordingly, the option that retains the foundation, basement, and central core was chosen as the proposal as it presents the best balance of retention, carbon, quality, future-proofing, and health & safety, whilst allowing the new structure to be flexible and meet the needs of a modern commercial development.

Figure 3.5 Overview of Structural Options Studied





Massing Evolution

3.65 Once it was determined that the optimal solution was to retain the foundation, basement, and central core of the existing building, a number of massing options were considered as shown in Figure 3.6.

Figure 3.6 Initial Massing Studies

3.66 The initial studies surrounding massing on-site suggested that the site could accommodate a building of significant mass and scale, commensurate with the height and massing of the existing Euston Tower and its prominence on Euston Circus.

3.67 The pinwheel floor plate shape of the existing Euston Tower inspired a four quadrants approach to the tower massing of the Proposed Development; the concept was seen as central to the idea of challenging the conventional tower typology and ensuring that the Proposed Development will be a landmark in Camden.

3.68 The four quadrant concept was therefore further explored, as presented in Figure 3.7, and opportunities for massing development were investigated, as presented in Figure 3.8.

Figure 3.7 Initial Massing and Articulation Explorations

Figure 3.8 Massing Concept Development

3.69 Expanding the floor plate from the pinwheel shape increases usability and future flexibility of programme for tower levels by ensuring that the floor plate is more connected.

3.70 Angling the expanded tower floor plate towards the east provides a continuity in the streetscape experience along Hampstead Road and adds additional space around the busy intersection of Hampstead Road and Euston Road.

3.71 Pushing in the four quadrants provides a vertical separation of each side of the tower so that each face is split into two. This separation gives the tower a verticality which can be appreciated from long range views and also up close as a passerby.

3.72 The initial tower massing has an angled east façade face. This tapering element was introduced in order to create a more streamlined building that would mitigate the adverse wind condition and relate to the neighbouring buildings along Hampstead Road, providing a more generous public space at the junction with Euston Road.

Tower Massing Evolution

3.73 Following the above refinements to the massing of the main tower, this proposal was tested against the protected views within which the site fell. There was a slight encroachment on the protected view as discussed in the *Key Environmental Considerations – Townscape and Visual Impact* section of this ES chapter and resulted in a slight reduction in the massing as shown in Figure 3.9.

3.74 The podium and tower massing were reduced by approximately 2.8m from the west side of the development due to interference with a LVMF viewing corridor from Parliament Hill that is framed by the existing Euston Tower and the BT Tower.

3.75 The development of the Proposed Development's Mechanical, Electrical and Plumbing (MEP) strategy required a considerable amount of louvres to support the amount of air required for the building's systems. Breathing spines were introduced at the junction of each quadrant, and massing adjusted accordingly, making this element both functional and consistent with the overall architectural concept.

3.76 The angle of the eastern quadrant changed from 12° to 9°; this change ensured that the BT Tower would be properly addressed when travelling south along Hampstead Road, retaining its character as an important local landmark.

3.77 A series of two-storey 'cuts' were added throughout each of the quadrants of these buildings providing space for amenity such as external terraces and winter gardens. These cuts also help further reduce the massing, creating a series of stacked boxes that allow the building to function as a 'vertical campus' to complement the character of Regent's Place.

Podium Massing Evolution

3.78 Initial podium designs featured a single box massing for the upper levels of the podium. This design evolved into a series of four floating boxes for the upper levels with a push and pull of their front faces so that the boxes stood apart from one another. The proposed design for the podium features a massing where the upper floor boxes are aligned on their front faces and lifted up on the northeast corner at Hampstead Road and on the northwest corner facing Regent's Place Plaza. In addition, the ground floor glass is pushed in strategically at entrances along both Euston Road and Hampstead Road.

3.79 The podium massing principles shown in Figure 3.10 were developed to guide the design of the lower levels of the building.

3.80 Large grills and thick façade elements were introduced, creating areas of interest and framed views up to the tower in the podium soffit when experienced from ground level. These features were integrated into the façade design to also operate as wind mitigating baffles and were optimised through iterative Computational Fluid Dynamics (CFD) and wind tunnel testing to ensure improved microclimate conditions in the public realm.

3.81 A regular 3m spacing for the podium façade module was developed to ensure visual consistency with the 3m tower façade planning module. Through adopting a consistent approach between podium and tower façades, the proposal as a whole was read more coherently.

3.82 Mini-Breathing Spines were introduced to reflect the vertical louvres that signify the integrated ventilation strategy in the tower façade. The mini-breathing spines helped break down the scale of the regular 3m rhythm of the proposed podium façade and allowed for a consistent approach to articulating the ventilation strategy across the design.

3.83 A terraced landscape was developed to create an active connection between Regent's Place Plaza and multiple levels of the podium, in line with the concept of creating a welcoming, inviting, and permeable public podium space and improving biodiversity / greening. This planted, sloped pathway and stairs provide access to the level 01 cafe terrace and has been significantly influenced through both the co-design and LBC pre-application workshops with the ambition of creating a fully accessible, engaging, and immersive green landscape that encourages entry and access through the public podium. A further external staircase is proposed to give access between the level 01 and level 02 terraces.

3.84 The co-design process highlighted the significance of Hampstead Road and the north-south route for the local community. A strategy was therefore developed whereby the main entrance to the public use in the podium was located at the north-east corner of the site at ground floor.

3.85 Following the reductions in the tower massing in the north-east corner to improve the proposals' setting within its context and the wider townscape, the podium and ground floor façades were also pushed in to provide more public realm space at this public corner.

3.86 To reflect the importance of the public use within the podium and inspired by the conversations and co-design consultation with the local community members, a flexible, 'demonstration space' was moved from level 02 to the ground floor to improve access and awareness of the public offerings. Additionally, as an architectural gesture, the podium was pushed up in this corner to create a generous and exciting triple height entrance space that provides visibility through and up the building.

3.87 Internally, a large social stair at the main public entrance and associated accessible lift were proposed to provide a clear public route up to level 01, through the podium and out towards the café terrace and Regent's Place Plaza beyond, thereby improving access and permeability through the podium and site. A series of varied public spaces along this route were proposed to help create a framework for a vibrant and engaging public programme that appeals to the local community.

Figure 3.9 Tower Massing Evolution

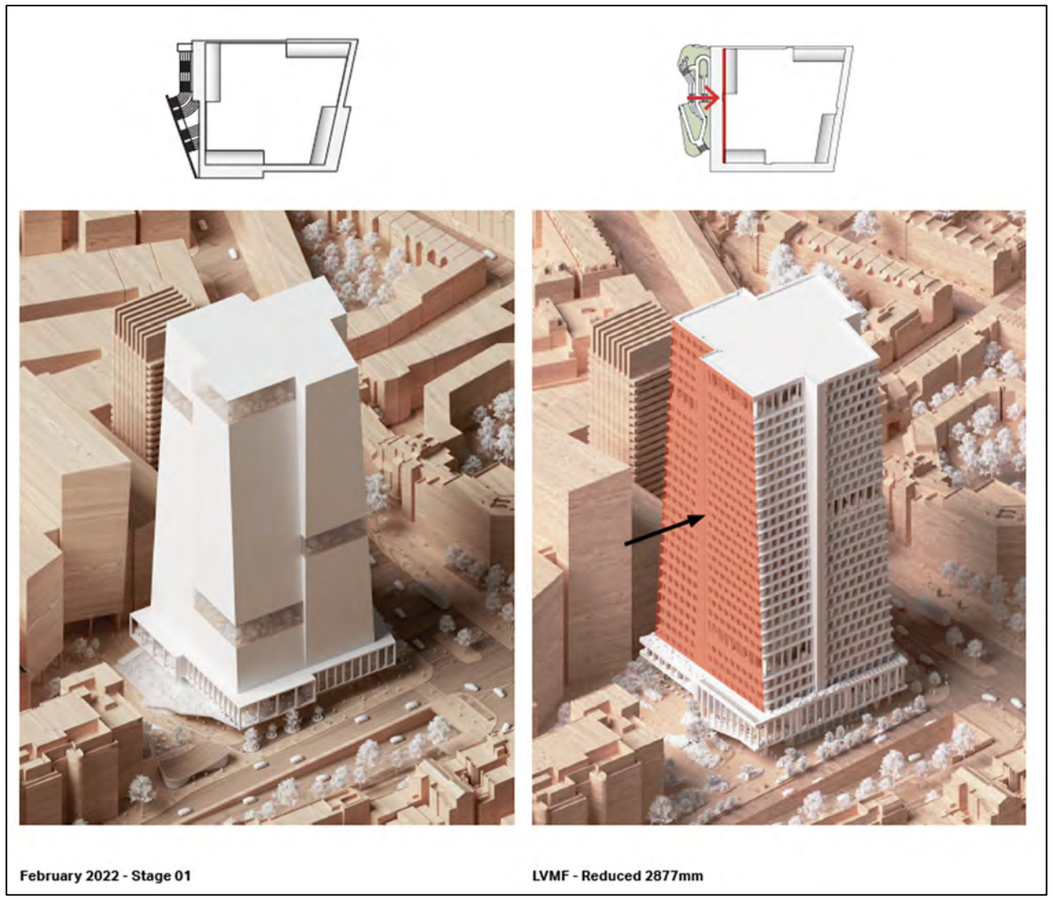
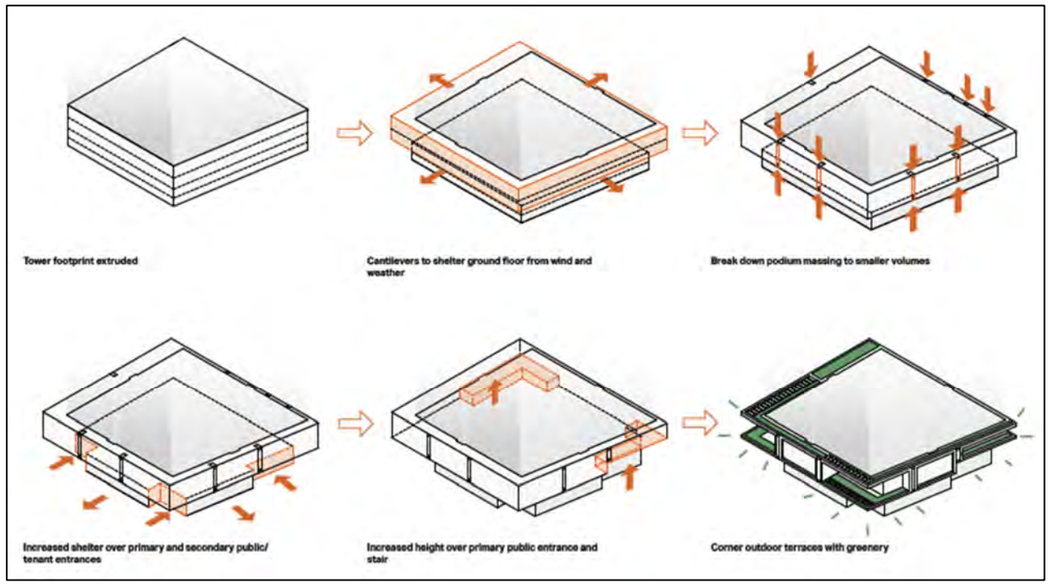


Figure 3.10 Podium Massing Principles



Key Environmental Massing Design Considerations

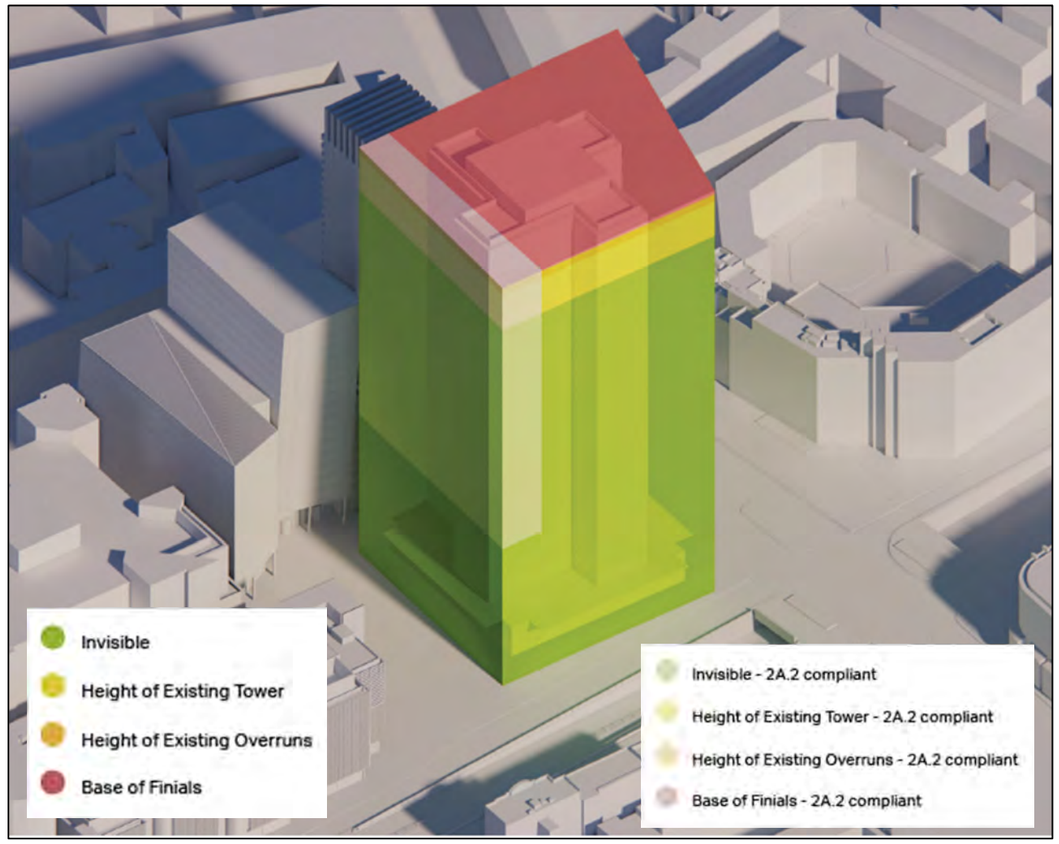
Townscape and Visual Impact

3.88 The London View Management Framework (LVMF) provided the visual context which defined the massing for the Proposed Development. The views and vistas from which the proposed scheme can be seen, as it relates to the protected LVMF viewing corridors, establishes the Zone of Visual Influence.

3.89 These key views, both distant and more locally, are one of the most important factors considered as part of the design process and have helped to define the overall architectural approach.

3.90 The Kinetic view from Lambeth Bridge over Houses of Parliament (LVMF View 19A) limits the height of the development. The massing to the west and south is also restricted by the view from Parliament Hill to the Houses of Parliament (LVMF View 2A.2) and limited to the east and south due to the ability to appreciate the BT Tower at points along Hampstead Road.

Figure 3.11 Townscape Considerations on Height and Massing



Daylight, Sunlight and Overshadowing

3.91 In order to minimise daylight and sunlight impacts to the surrounding existing and emerging sensitive receptors, the Proposed Development has undergone an iterative process of massing optimisation which has informed the final massing proposed.

3.92 These measures include the tapering in of the massing, setting back the building edge along Hampstead Road and not increasing the existing tower building height.

3.93 These measures ensure that the proposed scheme does not generate a continuous obstruction to the neighbours, and therefore maximises sky visibility and access to daylight and sunlight to the neighbouring properties.

3.94 Furthermore, in evolution of façade design, daylight simulations were used to explore factors such as direct sunlight hours, daylight factor and glazing ratios, in regard to concerns around solar gain and façade depth. This design process investigated a balanced solution that provides adequate daylighting factor, direct sunlight hours, and solid to glazing ratio.

Wind Microclimate

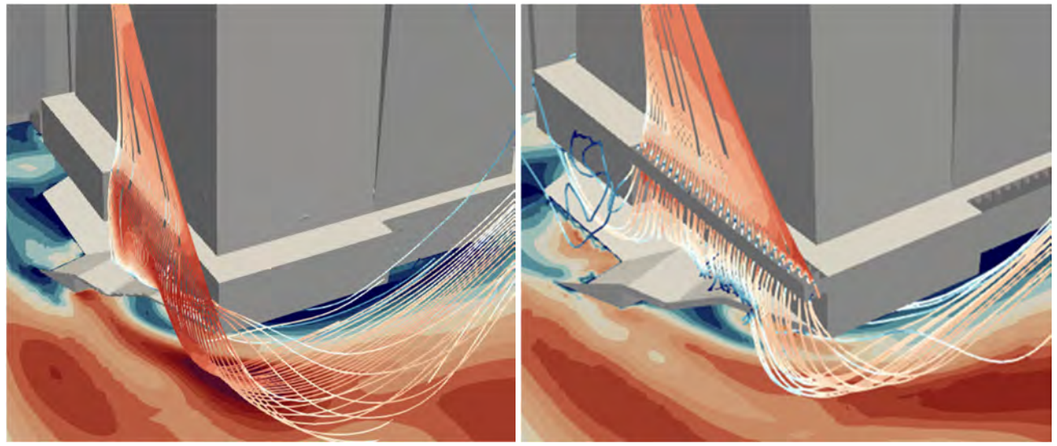
3.95 The wind microclimate both within and surrounding the site has been carefully considered throughout the design evolution process. Utilizing both Wind Tunnel and Computational Fluid Dynamics approach, the wind engineers have worked collaboratively with the architects to design inherent features (examples in Figure 3.12 and Figure 3.13) into the scheme and carefully consider the impacts on the local surrounding sensitive uses with the introduction of the Proposed Development.

3.96 Extensive design and testing of the Proposed Development showed direct links between specific architectural elements and calmer wind conditions at ground level. Many of these were incorporated where possible and include:

- Podium overhangs and ground floor setback to disrupt down drafting and create a sheltered public realm underneath;
- Porous fin arrays and oversized grills integrated within the façade articulation of the podium south-west and south-east corners (to create an intentional 'air-curtain' that disrupts direct ground level accelerations);
- Recessing main entrances facing Euston Road (to create local shelter) and Hampstead Road;
- Double-height amenity spaces up the tower façade provide some disruption to the downdrafting effects;
- External structural elements disrupt wind and microclimate locally, both at ground and on the terraces; and
- An integrated wayfinding totem creates localised improved conditions around the main south-west entrance.

3.97 All embedded mitigation features were iteratively tested using high-level CFD (steady state RANS for select wind directions) and confirmed with boundary layer wind tunnel testing. Examples of the CFD outputs and design iterations are shown in Figure 3.12 below.

Figure 3.12 3D Visualisation of Simplified Wind Streamlines

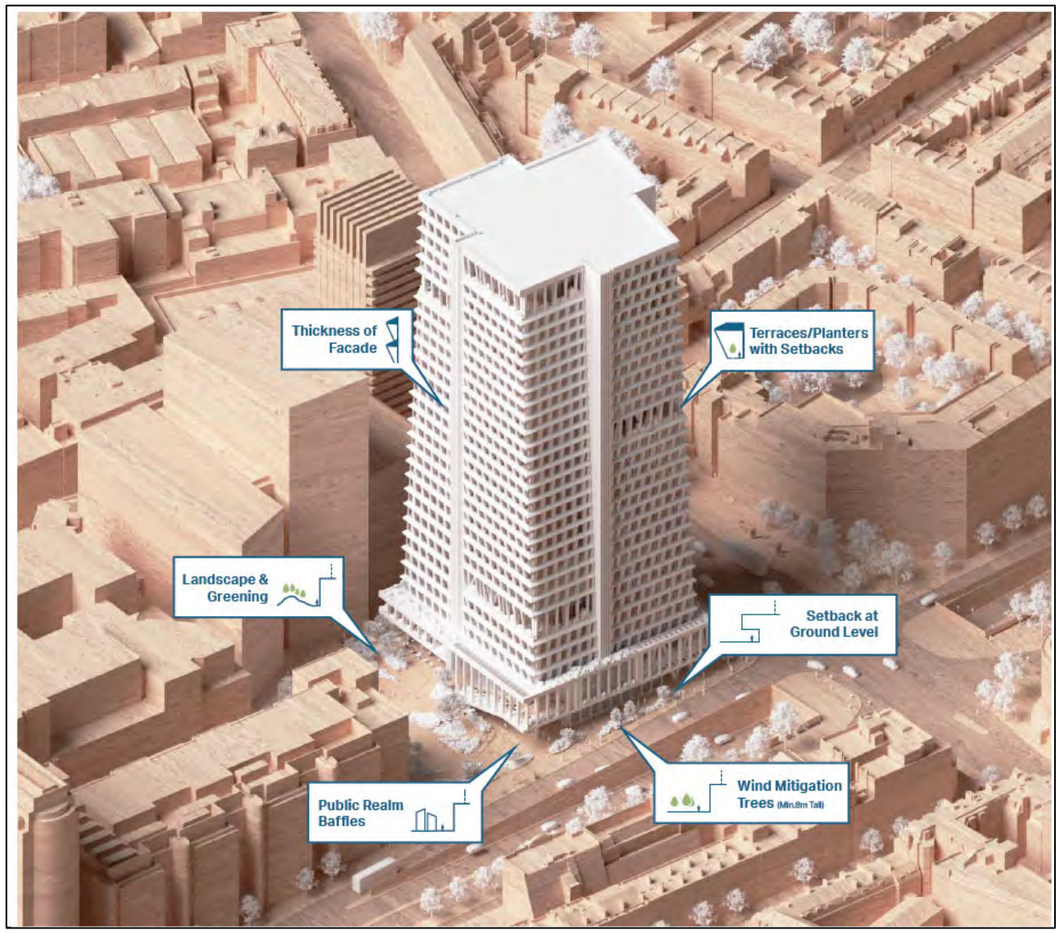


Note: wind streamlines interacting with early versions of the south-west corner of the Proposed Development, (left) without porous fin arrays and (right) with an early version of the porous fin array that was developed into the final design. Colours are qualitative and show areas of relative acceleration (red) and sheltering (blue) and are not directly comparable to Lawson conditions.

3.98 Key wind mitigation measures, as presented in **ES Volume 1, Chapter 11: Wind Microclimate** include:

- Pockets/Setbacks at Ground Level;
- Terrace Façade Articulation & External Structure;
- Wind Mitigation Trees;
- Landscaping Mounds & Greening; and
- 1no. Public Realm Wayfinding Totem.

Figure 3.13 Design Considerations for Wind



Key Environmental Design Considerations – Air Quality

Air Quality

3.99 The following design principles to reduce exposure to air pollution and improve air quality have been considered in the design:

- Ensuring that any ventilation air intakes, where proposed, are distanced appropriately from sources of air pollution;
- The exhaust flue of the proposed life-safety generator is located at the podium level with appropriate odour and contamination controls to ensure adequate dispersion and minimise the impact of emissions upon surrounding sensitive properties, as well as minimising the impact upon the Proposed Development itself;
- Maximise access to public transport options, prioritisation of cycle parking, as well as cycle and walking routes (mainly via the south-eastern corner of Hampstead Road, the southwestern corner of Euston Road and the Regent's Place public realm), to minimise private car trips to and from the site;
- Provision of cycle storage facilities at basement level, which are easily accessible either by a bike ramp accessed in the southwest corner of the building or via a set of steps and a lift located to the east of the

building, as well as provision of showers / changing facilities for commercial uses to enable staff to cycle to work;

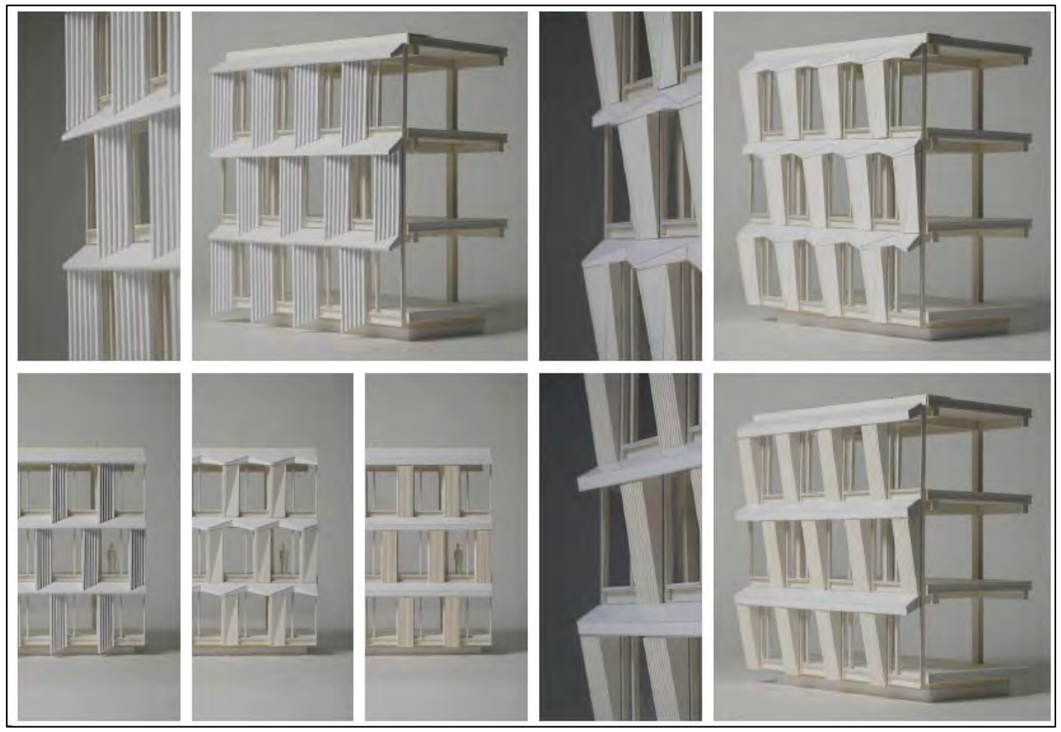
- Incorporating the Healthy Streets Approach into the scheme to reduce the need to travel, or to promote sustainable transport opportunities; and,
- Limiting car parking provision to only two blue-badge car parking spaces, in line with the London Plan requirements.

Façade Design Evolution

3.100 In the evolution of the façade design, a comprehensive approach was employed, harnessing various tools - from daylight simulations, physical models, 2D drawings, and digital 3D models - to refine and articulate the final vision.

3.101 Simulations and models, as presented in Figure 3.14, of various façade depths and geometry offered tangible insights into the interplay of light and shadow across the façade. The models facilitated a deeper understanding of the potential for integrating natural ventilation into solid façade elements, contributing to both aesthetic and functional considerations in the design evolution.

Figure 3.14 Façade Optimisation Models



3.102 Amenity spaces have been strategically placed across the building, taking advantage of key views and maximising exposure to natural daylight. These areas were initially distinguished by a clear glazed façade type which differed from the typical tower façade elements. Further refinements were made to the façade of the amenity spaces including:

- Very open and glass dominant amenity spaces were used as a gap in the façade, without solid divisions and solar shading;
- With the introduction of the spines the amenity spaces were adjusted, and different open terraces explored;
- Breaking up and experimenting with solidity, extending the main façade at amenity locations in various ways;
- Moving the amenity façade in and out to provide a variation in the expression and making space for a terrace and greenery; and
- A variation of push-ins creates a calm continuation of the main façade dynamic façade expression.

3.103 Following the above design process, amenity façades have been pushed back to create terraces, spaces for greenery and social outdoor interaction. By adding double high amenity façade elements, the tower now has a coherent expression and frames the view of the city from the inside.

Materiality and Colour Evolution

3.104 A key element of the Proposed Development's design is to tie in the new Euston Tower more closely with its immediate context and the architectural character of Camden. Whilst there is a broad range of typology, materiality and architectural approach visible in Camden, there are also some common threads, for example, red brick, warm natural stones and vertical proportions.

3.105 Throughout the design development the façade elements have been adjusted both in material, finishes and colour. This have been done to strengthen the relationship between the context around Euston. The façade colour aims to harmonise with the natural tones of Fitzroy Square Conservation Area and the landscape of Regent's Park. The façade materiality and colour of the Proposed Development evolved as follows:

- Perforated metal and terracotta - To achieve openness for air flow the sides of the façade was painted metal and the front in an energetic red terracotta. These two would appear different also over time with weathering;
- All terracotta - Along with moving away from metal façade elements the color of the building was also toned down with a lighter frame around the glazing;
- Introduction of aggregate - GRC was chosen as the façade material and more options were possible, both in color and finishes. Aggregates in a slightly darker color were studied with the aim of having a lighter perception on distance and an even lighter frame to differentiate the façade viewed from an angle;
- A monochrome façade - Changing the façade modules removed the frames and simplified the façade, as part of this, only one material and color was chosen for all elements in the façade; and
- Desaturated façade colour - To reduce the contrasts to the context, Fitzroy Square Conservation Area, and the landscape of Regent's Park a more desaturated terracotta color was chosen to draw further upon the most immediate context.

Landscaping and Public Realm

3.106 The following environmental objectives were set in relation to landscaping, public realm, urban greening and biodiversity:

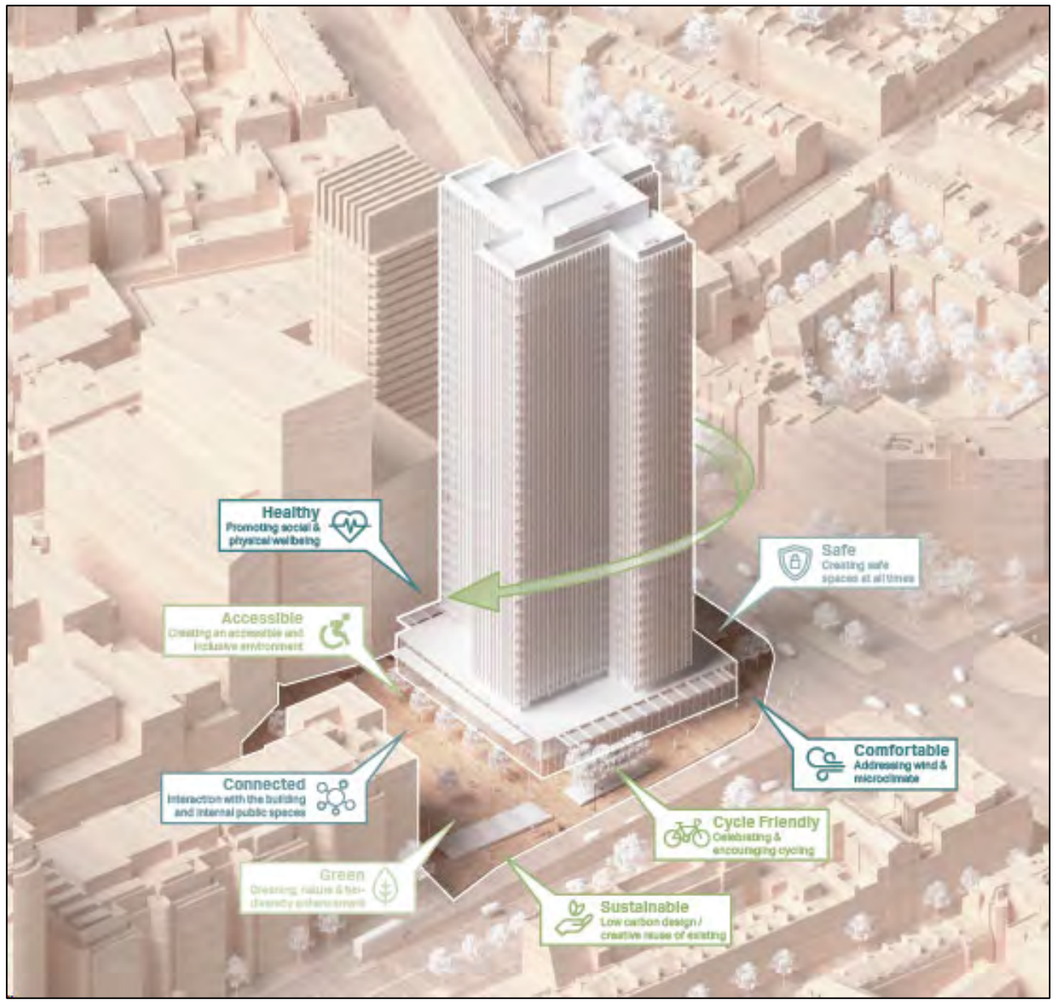
- Enhance biodiversity and link to the network of existing green spaces; and
- Encourage active travel through enhanced cycling.

3.107 The initial sketch for the connection to Regent's Place Plaza was an amphitheatre staircase which extended out from the shifted boxes and framed a rounded plaza at ground level. However, the design of the terraced landscape evolved through the design process:

- Discussions around accessibility and incorporating greenery into the staircase enabled the design to evolve to a wider stair and a ramp that wove between large green planters;
- Curvilinear Edges - The organic design of the landscape mounds begins to be reflected in the curvilinear edges of the staircase;
- Terraced Landscape Mounds - The landscape mound concept is expanded up and onto the stairs creating a terraced landscape that connects ground floor public realm to upper levels; and

- The proposed design for the terraced landscape finds the balance between green landscape elements embedded in the space and clear and accessible connections to upper levels of the podium.

Figure 3.15 Sustainable Design Principals



3.108 The spatial organisation and character of the public realm has been designed with reference to Hampstead Heath, a greenspace within the borough and one that was historically linked to the site through water. The design uses principles found in the natural ecosystem to create lasting greenspace in an urban centre.

3.109 The development of the spatial design took inspiration from fluvial patterns and imagined pedestrian flows as water courses that defined the landforms. Therefore, pedestrian movement determined the location and size of landscape features, with a central clearing located at the base of the stairs. This principle allows for the configuration of a flexible use space within the plaza that does not hinder the anticipated movement throughout Regent's Place.

3.110 Four key habitats were highlighted and studied for their character, ecosystem functions, and site suitability:

- Heathland: Found at the highest elevation in sandy, nutrient-poor, well-drained soils. Plants are often robust, drought tolerant species;
- Grassland: Similar soil profiles to heathlands, grasslands are found at lower elevations and comprise of a variety of wildflower meadows and tall grasses punctuated with fast-growing pioneer tree species;
- Woodland: Successive from older heath and grasslands, increased nutrient availability in the soils allow for larger plant species to root. Characterized by ancient tree canopies that create ideal conditions for shade-tolerant understorey planting; and
- Wetlands: Habitats that are periodically wet or flooded and are home to a variety of grasses, and hydrophilic tree species.

3.111 The proposed design for Regent's Place Plaza revolves around a strategically arranged array of landscape elements encircling a civic square.

3.112 The eastern side integrates podium stairs into the landscape, extending the public realm and connecting the ground floor with the first-floor podium through dense planting beds. The stairs work to extend the functionality of the civic square by providing additional seating opportunities or a back drop for performances. The ability to fully drain the water feature allows the entirety of the space to be used for public programming.

3.113 The inclusion of tree planting along the stairs further extends the site's green potential vertically. At the core of the plaza concept lies a shallow waterplay feature serving as both a splash pad and reflective pool. This feature, may be programmable to adapt to changing climates and user preferences, can is proposed to be fully drained to create open space in the square.

3.114 Situated to the north-west are proposed to be two wetland beds, each equipped with accessible boardwalk crossings. The freshwater wetland, positioned to the north, maintains a permanent body of water, while the riparian wetland to the south allows for periodic flooding during storm events. Both beds are designed with submergent and emergent vegetation to foster biodiversity. The main entrance to the public space and cafe on level 01 is accessed via stairs or a ramp from the plaza, while to the south, the primary cycle store is conveniently reachable through a cycle ramp beneath the central staircase.

Key Environmental Landscape and Public Realm Design Considerations

Ecology and Biodiversity

3.115 Sustainability is a key principle of the Proposed Development and hence biodiversity enhancement is a priority. A site walkover was undertaken in January 2023 to establish the ecological baseline conditions at the site, as well as provide recommendations for measures to improve biodiversity as part of the Proposed Development. These include:

- Incorporation of bird boxes into the façade of the Proposed Development and planting native species including berry-bearing plants to support birds;
- Design and implement a lighting strategy in accordance with the Bat Conservation Trust (BCT) and Institution of Lighting Professionals (ILP) guidance including installation of low-level LED bulbs with directional, downward facing and shielded lights pointed away from key green features such as wildlife friendly landscaping;
- A green roof planted with biodiverse and nectar-rich wildlife friendly herbaceous / shrub mix in limited roof space.
- Provision of extensive, substrate-based biodiverse roofs on all available flat roof spaces;
- SUDS features such as rain gardens and attenuation basins;
- Nectar-rich wildlife planting at terrace and ground level within the planters (such as those listed on the Royal Horticultural Society Plants for Sect 41 and UKBAP pollinators);
- Retention of existing trees where possible as well as street tree planting should be incorporated into the public realm areas;
- Hedge planting acting as a buffer to Euston Road A501 with a diverse mix of native species;
- Invertebrate habitat features including bee houses / log piles to be incorporated into the public realm;
- Bird boxes for swift, house sparrow, black redstart and peregrine falcon; and
- Bat boxes targeting crevices-dwelling species.

3.116 The introduction of new green spaces and a fully accessible public realm has been a key design objective from the outset, to create a space for future users and visitors, as well as existing users in the surrounding area to interact with nature.

3.117 The current site has a low potential to support nesting birds and negligible potential to support other notable and / or protected species as detailed in the Biodiversity Net Gain Assessment.

Traffic and Transport

3.118 Due to the site's proximity to a number of key transport interchanges, including Euston Station, Warren Street Station and Great Portland Street Station pedestrian and cyclist permeability and access were key considerations in the design development.

3.119 Pedestrian flow data was collected in April 2023 to establish the existing baseline for pedestrian flows which was accompanied by a Pedestrian Comfort Level assessment to consider the current pedestrian experience. The results of these initial studies indicated that current pedestrian comfort levels were high, and therefore maintenance of this was a key consideration in the evolving design.

3.120 Cyclist facilities have also been a key consideration from the outset of the design proposals, as the site is located in proximity to a number of key cycle routes, including Cycleway 27 which connects Hammersmith and Clapton via Paddington, Angel, Islington and Hackney. There are currently 78 cycle stands in the public realm surrounding Euston Tower as well as Brompton lockers within Regent's Square. The existing provision will remain and will be relocated within the new public realm. An additional 12 short stay cycle parking will be provided bringing it to a total of 90 parking spaces. Further cycle parking for the Proposed will also be provided in the basement, as detailed in **ES Volume 1, Chapter 4: The Proposed Development**.

SUMMARY

3.121 This ES chapter demonstrates that the Proposed Development has been subject to a detailed design evolution process, holistically considering and evaluating environmental constraints and opportunities throughout. Through an extensive consultation process, the Proposed Development has significantly evolved, with the consideration of key environmental and socio-economic effects (both beneficial and adverse).

3.122 The final design of the Proposed Development (discussed in Chapter 4 of this ES) has been informed by key environmental considerations, including whole life carbon and greenhouse gas emissions, townscape and visual effects, daylight, sunlight and overshadowing, wind microclimate, air quality, ecology, biodiversity, and social infrastructure, becoming key drivers for the design of the Proposed Development. The design evolution of the Proposed Development has responded to stakeholder and public concerns and balanced the environmental considerations to create a development with minimised environmental impacts while delivering high quality design.

Chapter 4: The Proposed Development

INTRODUCTION

4.1 This chapter of the ES presents a description of the Proposed Development, for which full (detailed) planning permission is being sought. It provides sufficient information on the Proposed Development to aid the identification and assessment of potential environmental impacts and likely environmental effects across the technical topic areas addressed by the EIA as presented in **ES Volume 1, Chapters: 6 to 12** and **ES Volume 2, Townscape, Visual and Built Heritage Impact Assessment (TVBHIA)**.

DESCRIPTION OF THE PROPOSED DEVELOPMENT

Overview of the Proposed Development

4.2 The Proposed Development, illustrated in Figure 4.1, comprises the partial deconstruction of the existing building on-site (with the central core, basement and foundations retained) which forms the basis of a new commercial scheme in a single tower building of ground plus 32 storeys with a three-storey podium and two basement levels. The description of development is as follows:

"Redevelopment of Euston Tower, including the partial retention (retention of existing core, foundations and basement), disassembly, reuse and extension of the existing building, to provide a 32-storey building for use as offices and research and development floorspace (Class E(g)) and office, retail, café and restaurant space (Class E) and learning and community space (Class F) at ground, first and second floors, and associated external terraces. Provision of public realm enhancements, including new landscaping, and provision of new publicly accessible steps and ramp. Provision of short and long stay cycle storage, servicing, refuse storage, plant and other ancillary and associated works"

General Arrangement, Site Layout, Quantum, and Scale

Site Layout

4.3 The site is irregular in shape and covers an area of 0.8 hectares. The 32-storey tower is located towards the eastern end of the site, with Regent's Place Plaza located to the west and additional areas of landscaping provided to the north, east and south of the building at ground level and across the four podium levels. There are two levels of basement, the first of which comprises the existing basement and covers the majority of the site area, beneath both the building and Regent's Place Plaza. The second level of basement occupies a significantly smaller footprint comprising further plant rooms.

Land Use and Quantum of Development

4.4 Table 4.1 details the floorspace schedule for the Proposed Development, broken down by use class.

Table 4.1 Floorspace Schedule by Use Class

Land Use Class	Indicative Land Use	GIA (m^2)	GEA (m^2)
E(g)	Lobby	3,830	80,630
	Lab Enabled Workspace	21,603	
	Accelerator Lab Workspace	2,893	
	Commercial Office	46,465	
	Total E(g)	**74,791**	
E	Office, Retail, Café and Restaurant	748	774.9
E/F	Learning and Community Space	2,003	2,136.1
TOTAL		**77,542**	**83,541**

Figure 4.1 Illustration of the Proposed Development

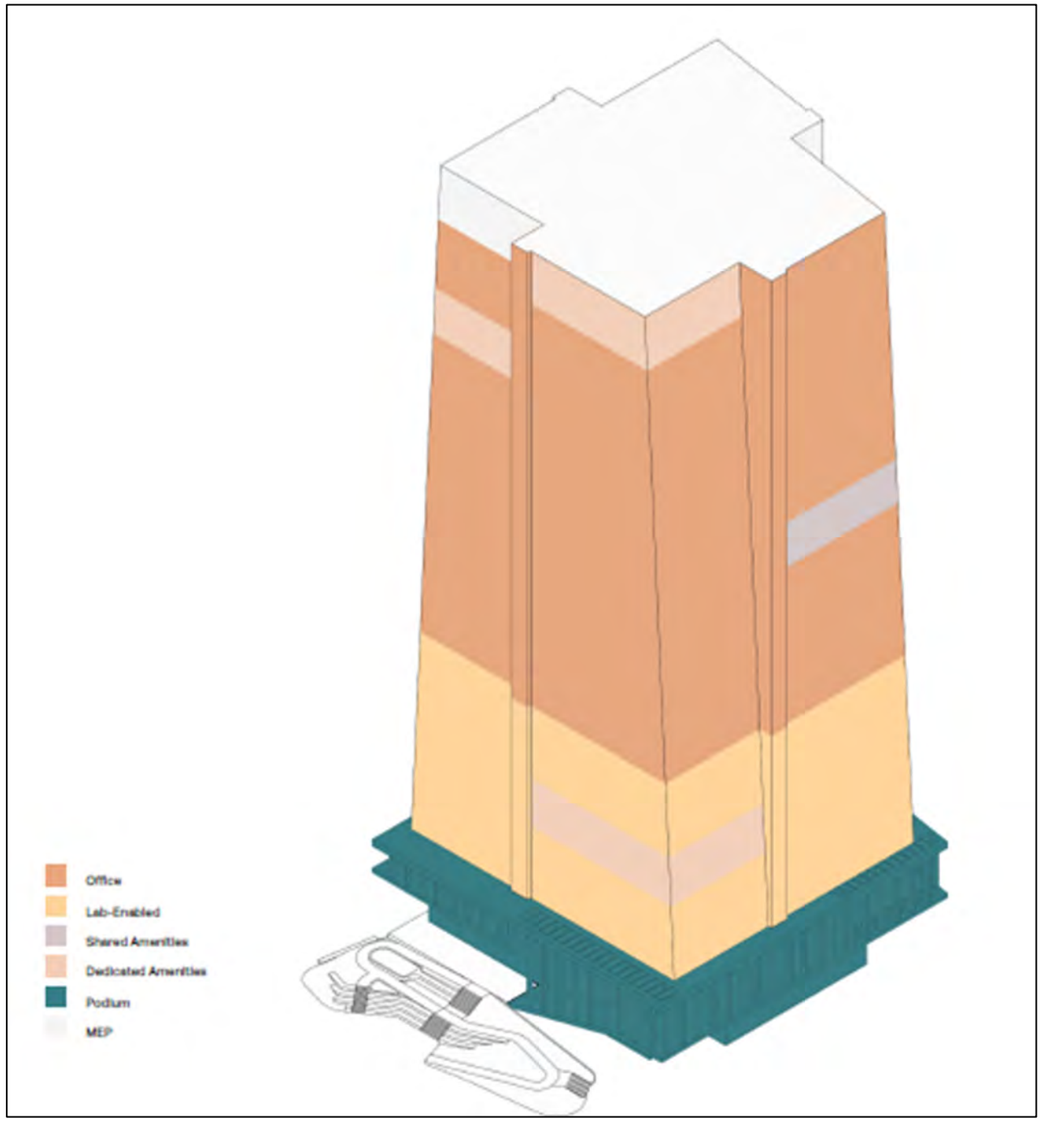
General Arrangement

4.5 The 32 storey building has a maximum height of 153.300 metres Above Ordnance Datum (mAOD) and is arranged as follows:

- Two basement levels accommodating lobby, ancillary space associated with the Class E / F spaces, plant space and cycle parking with associated end of trip facilities;
- Ground Level to Level 02 (the Podium) comprising lobby space, office (Class E(g)) space and flexible Class E / F space. Two outdoor terraces are provided along the southern elevation of Level 02; and
- Level 03 to 11 comprises Class E(g) uses including office and lab-enabled spaces; and
- Level 12 to 32 comprises office (Class E(g)) with plant facilities on Levels 30 and 31.

4.6 The arrangement of land uses throughout the Proposed Development is shown in Figure 4.2.

Figure 4.2 Arrangement of Land Uses (Ground Level and Above)



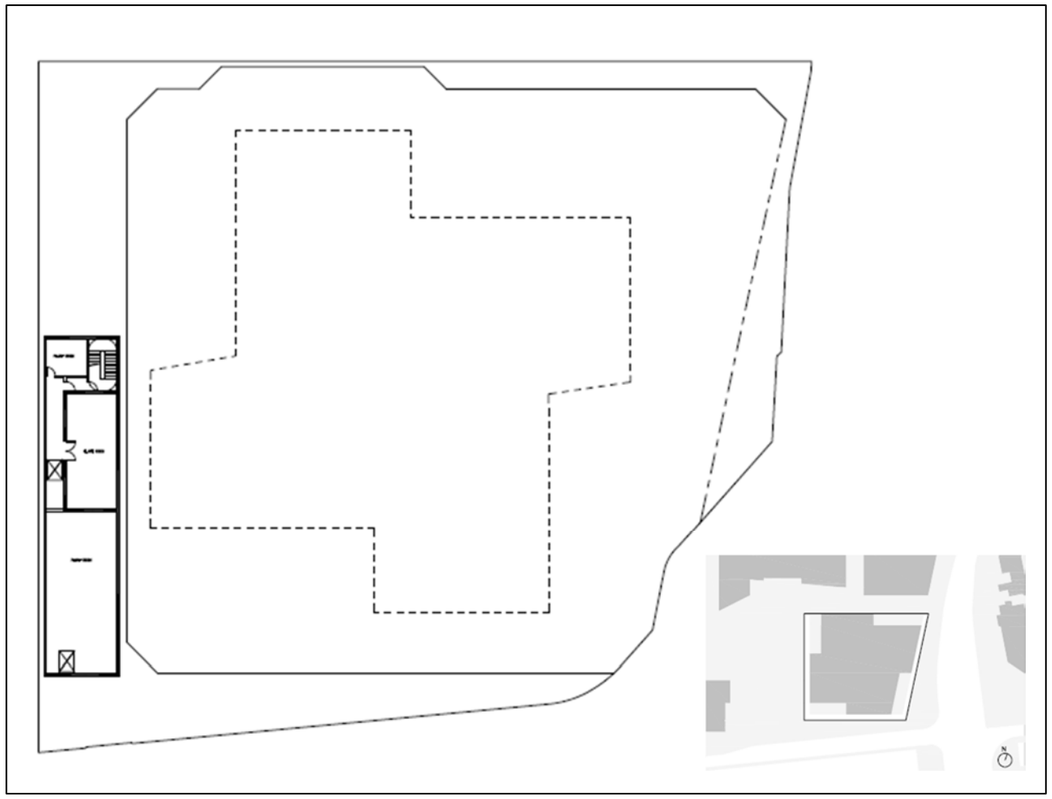
Basement 01 and 02

4.7 The Proposed Development includes the retention of the existing basement (Basement Level 01) of Euston Tower that serves the surrounding Regent's Place. The basement is split over two levels down to a maximum depth of -8.06m below ground level (bgl).

4.8 Basement Level 01 contains cycle parking, changing rooms, showers, lockers, maintenance facilities and plant rooms. The existing loading bay and servicing area will also remain in the basement, as well as the adequate waste storage facilities, that are detailed further in this ES chapter.

4.9 Basement Level 02 offers an additional 246m^2 of basement to accommodate a water tank and plant room, (as shown in Figure 4.3.

Figure 4.3 Basement Level 02 Plan



Ground Level to Level 02

4.10 The ground floor of the Proposed Development comprises flexible office (Class E(g)) space along the southern elevation including an entrance lobby space used to provide access to the tower, and flexible commercial / community (Class E / F) spaces in the north-east corner. Entrances to these spaces are provided from the public realm adjacent to Euston Road and Hampstead Road respectively. There is an additional public entrance to the flexible commercial / community space from Brock Street to the north as well as an accessible lift entrance. Supporting and back of house (BOH) uses are located along the western edge of the building, along Regent's Place Plaza, and situated bellow the external stair and slopped terrace that are used to access level 01. Lifts and supporting facilities are located in the retained and expanded central core of the building.

4.11 Level 01 follows a similar arrangement to the ground floor, with office space and associated lobby space (Class E(g)) located along the southern section of the building, with flexible commercial (Class E) uses along the western side including a separate entrance accessed via a terrace, sloped landscaping, external staircases and external accessible lift, and flexible commercial / community uses (Class E / F) along the northern and

eastern portion. Lifts and supporting facilities are located in the retained central core of the building, although external stairs are provided along the southern edge.

~~4.12~~ Level 02 provides flexible commercial / community space (Class E / F) and associated lobby space in the northern and eastern areas of this floor, with office space (Class E(g)) in the southern section. Two outdoor terraces are provided along the southern elevation, the western terrace accessible from the Class E space and the eastern terrace accessible from the Class E(g) space.

Level 03 to 11

4.13 Levels 03 to 11 comprise flexible office (Class E(g)) space organised around a central core. Level 03 will be designated as 'accelerator space' which will be fitted out lab spaces and let out to scale-up companies to encourage the growing industry by removing the barrier of high fit-out costs. This level forms the top of the podium.

4.14 The remaining levels (Levels 04-11) will provide specialist lab-enabled floorspace with 4.080m floor-to-floor heights.

4.15 The lab-enabled spaces will be designed to accommodate both dry and wet lab activities. Activities include mechanical, electrical, software and hardware engineering, prototyping workshops and low-grade optical physics. These spaces will also be designed to accommodate Containment Levels CL1-2 which covers the use of non-hazardous and low-to-medium risk hazardous biological agents.

4.16 Double-height shared amenity spaces for the tenants are also provided at Level 07 and 08 and Level 11 and 12. Further details on amenity spaces are provided at the 'Landscape, Public Realm and Amenity Spaces' section of this ES chapter.

4.17 Indicative layout options for the lab-enabled floorspace are provided in Figure 4.7.

Level 12 to 30

4.18 Level 12 to 30 also comprise flexible office (Class E(g)) space organised around the central core. These spaces have been designed to retain maximum flexibility in terms of floorplate to accommodate multiple tenancies as required. An indicative layout for a single tenant, as well as for two or three tenants is shown in Figure 4.8.

4.19 Double-height amenity space is provided at Level 12, as well at Levels 19 and 20, and Levels 25 and 26. Further details on amenity spaces are provided at the *'Landscape, Public Realm and Amenity Spaces'* of this ES chapter.

Level 31 to 32

4.20 Level 30 comprises a mixture of plant and office (Class E(g)) space. A double height amenity space is also provided at Level 30 and 31. Level 31 is a plant level, principally the Air Source Heat Pumps (ASHP) for the building, as well as the Building Maintenance Unit (BMU) and 100m^2 of Photovoltaic (PV) panels. Level 32 comprises the roof level and includes a biodiverse green roof.

Scale and Massing

4.21 The Proposed Development comprises a 32-storey building (with a two storey-basement) with a trapezium podium at Level 02 and Level 03 that is inset at ground floor and Level 01. The massing of the single tower is sub-divided into four vertical tower quadrants which taper inwards from the podium to the roof and slightly offset as shown in Figure 4.4.

4.22 The Proposed Development will reach a maximum height of 153.300mAOD, with the podium reaching 44.210mAOD at its highest point.

Figure 4.4 Massing of the Proposed Development

Figure 4.5 Basement Level 01 Plan

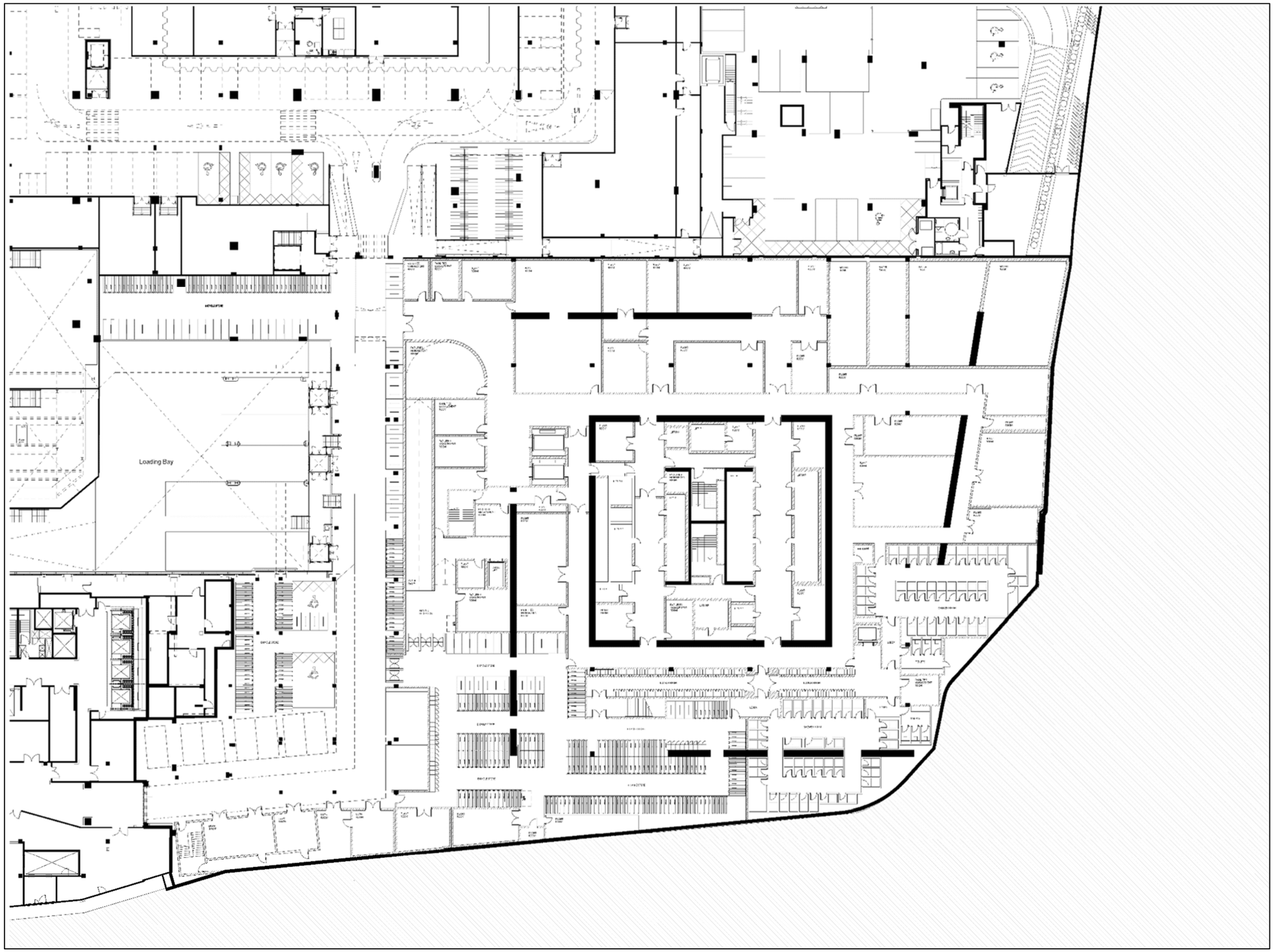


Figure 4.6 Proposed Ground Floor Layout

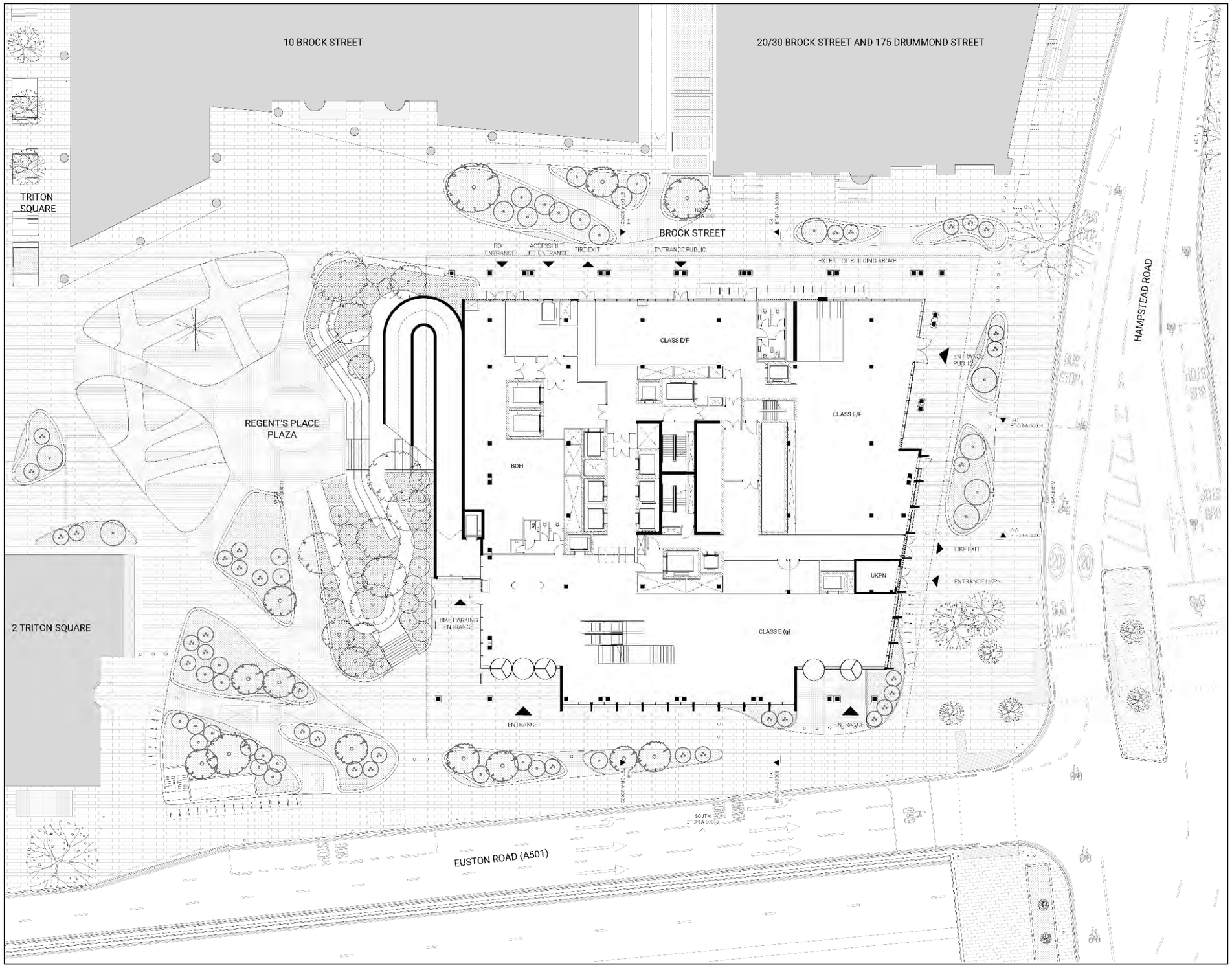


Figure 4.7 Indicative Layout – Lab-Enabled Floorspace

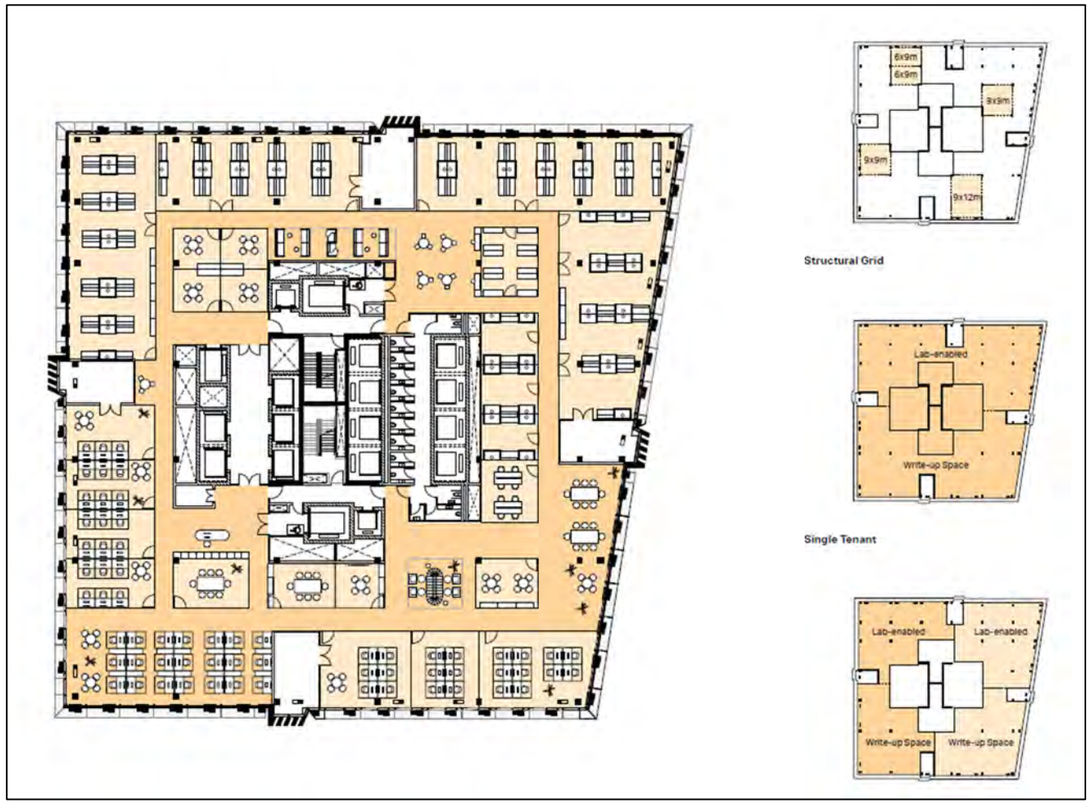
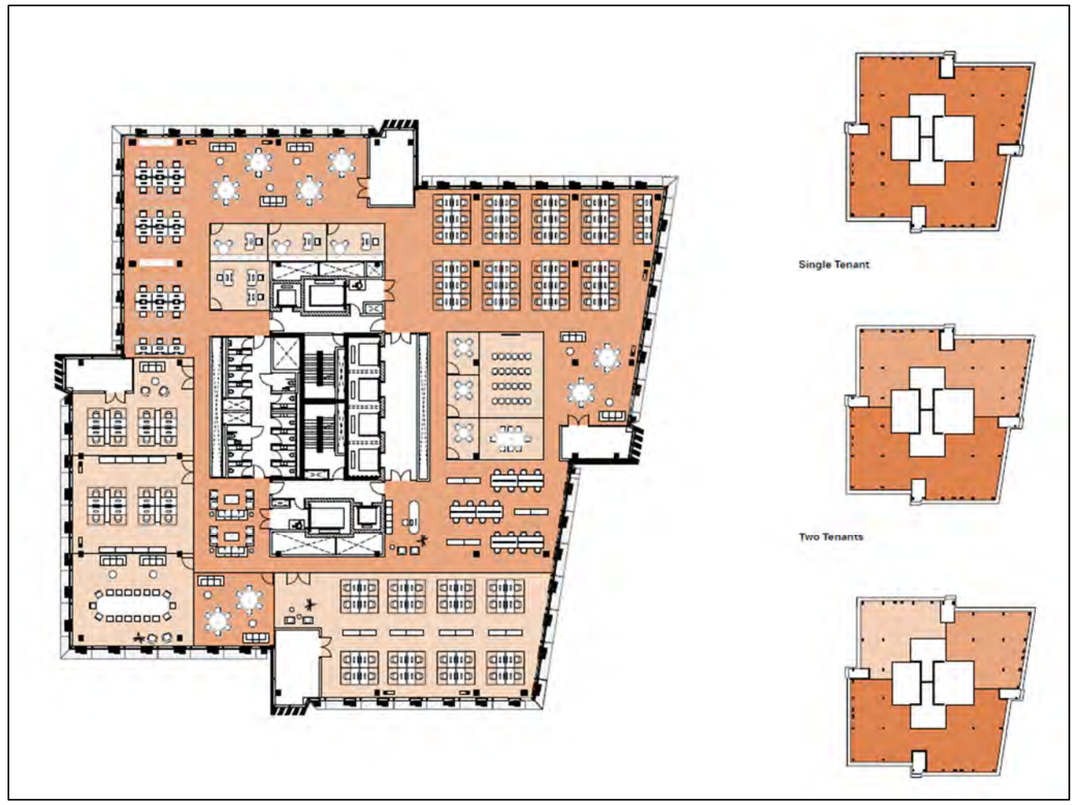
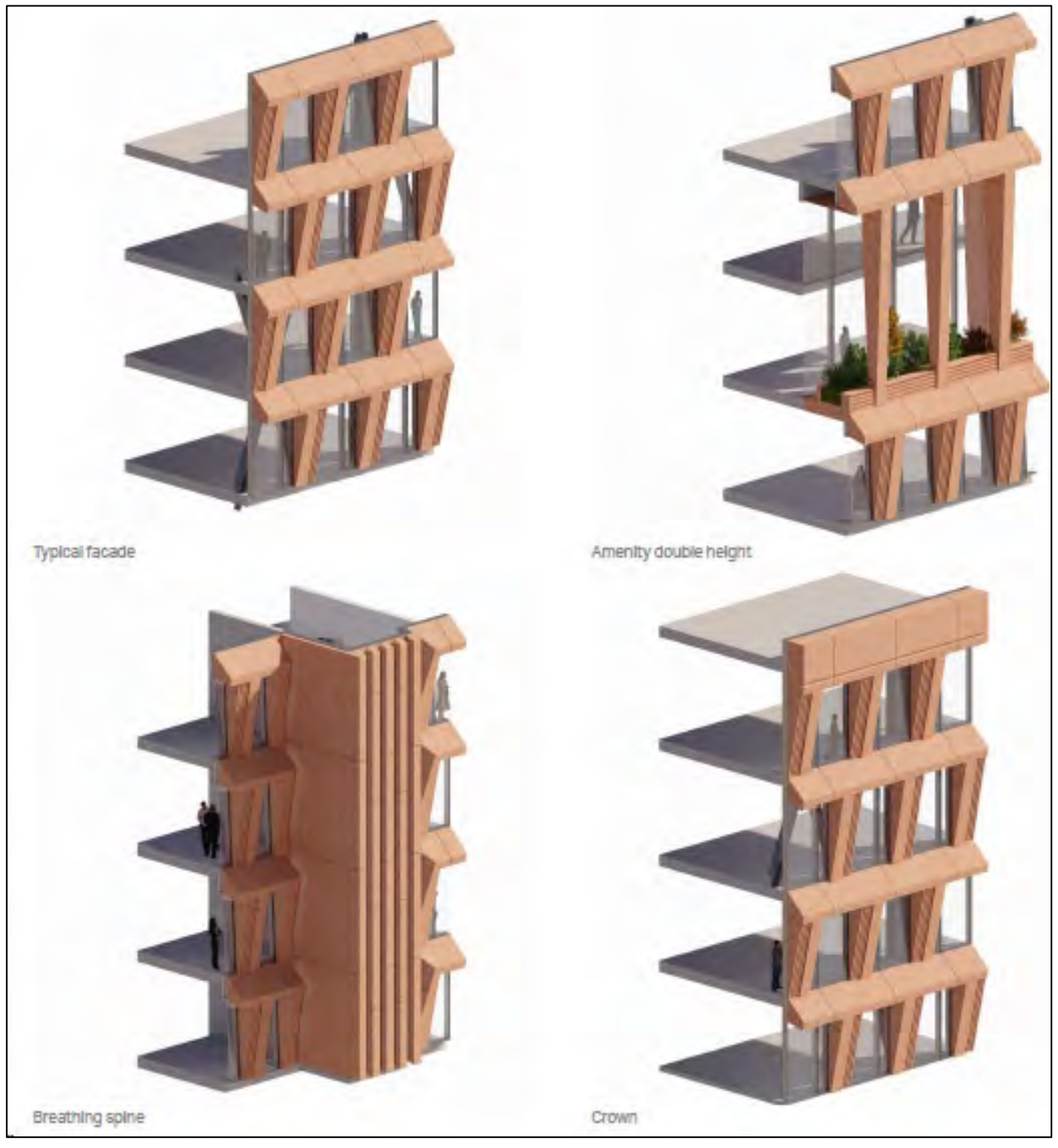


Figure 4.8 Indicative Layout – Office Space



Appearance of the Proposed Development

Figure 4.9 Consistency in Façade Elements



4.23 The vertical and sloping façade of the tower are the majority of the façade. Both the staggered pattern of the vertical façade and the vertically aligned pattern of the sloping façade contribute to its dynamic aesthetic. Additionally, the façade features four amenity planters, one amenity terrace, prominent breathing spines, and a tower crown. Consistent materiality, colour tone, and vertical elements throughout the six façade types, reinforces the strength of the whole design (Figure 4.9).

4.24 The design of the tower façade includes five key design features:

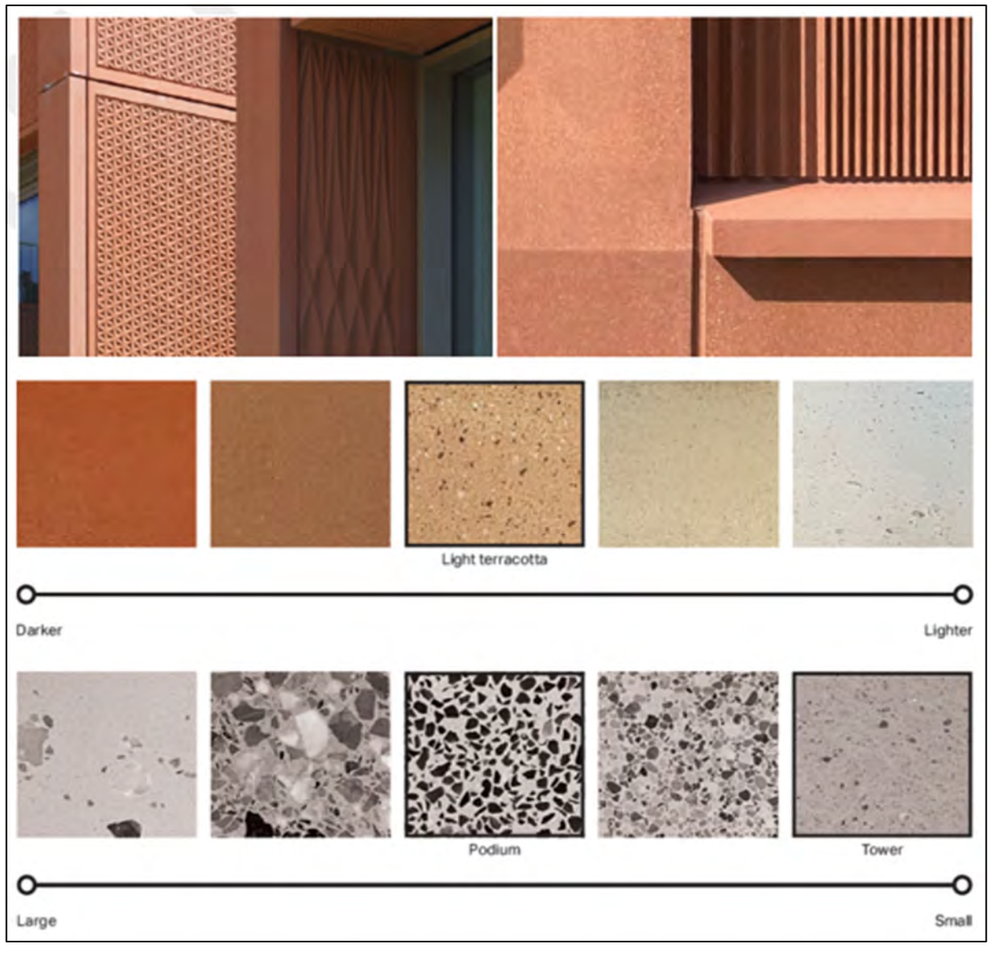
- The geometry of the cladding is three-dimensional, functioning both aesthetically and technically;
- The materiality of the cladding reinforces the sense of solidity. Glass Reinforced Concrete (GRC) with a light terracotta color provide the tower with a warmth contextually sensitive appearance;
- The expression of the ‘breathing spine’ highlights its importance both in terms of the functionality of the space and to separate the sloping and vertical elevations;
- The façade treatment of the double height amenity spaces provides a relief from the typical tower façade, helping to break down the scale of each of the four towers. The vertical façade elements here provide architectural expression and contrast with the opaque panels of the typical tower façade; and
- An integrated panel for natural ventilation in the opaque portion of the façade affords building users access to fresh air. The vertical expression of these panels relates to that of the breathing spine - a consistency that reinforces the design of each element.

4.25 The choice of GRC (or similar) for the façade cladding contributes significantly to the desired sense of solidity and robustness. It also relates to many of the brick buildings in Camden in the immediate context, in terms of both colour and texture.

4.26 The light terracotta tone of the GRC (or similar) façade represents a balance between the natural materials inherent to Camden’s aesthetic and a lighter hue typical of tower structures. Cityscape’s verified views reflect a cohesive approach to colour, seamlessly blending with and paying homage to the local built environment.

4.27 To maintain a cohesive visual language throughout the building, both the podium and the tower are clad in the same light terracotta coloured GRC (or similar) (Figure 4.10). However, subtle differences are introduced by varying the aggregate size and surface finish, subtly distinguishing the tower from the podium while preserving a strong and consistent aesthetic connection between the two.

Figure 4.10 Indicative Material Palette



LANDSCAPE, PUBLIC REALM AND AMENITY SPACES

Landscape and Public Realm

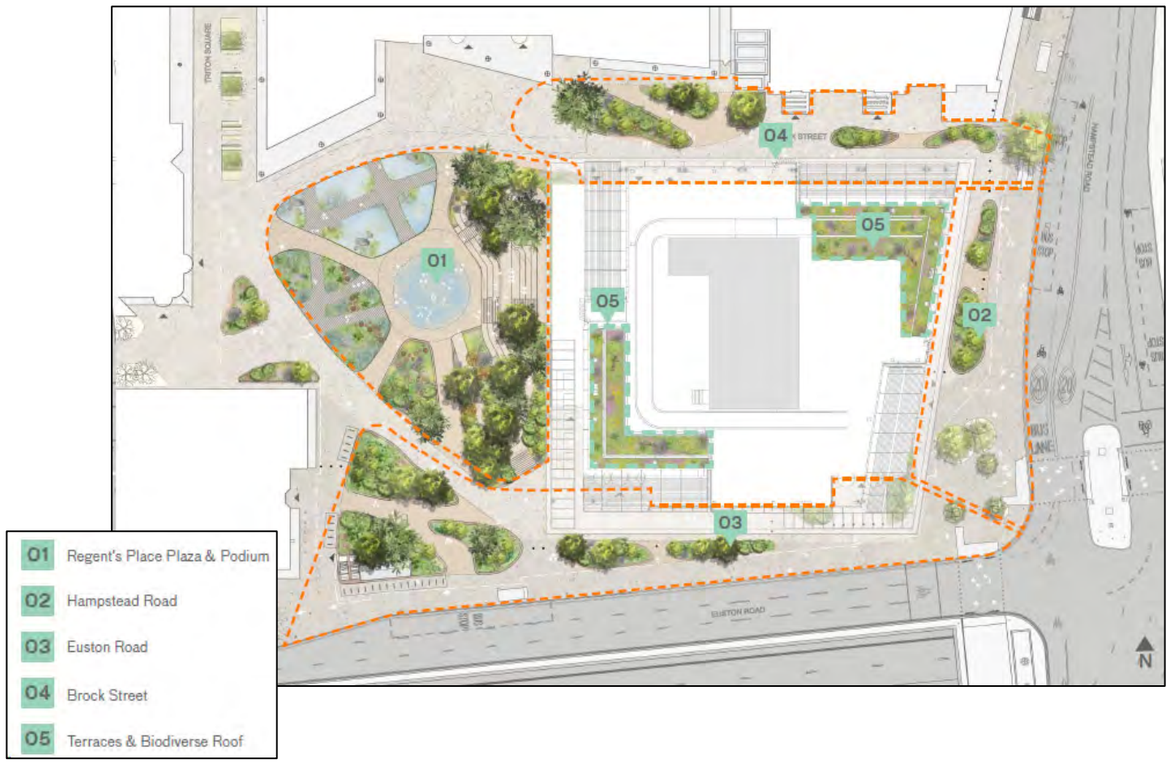
4.28 The Proposed Development will have a large impact on the surrounding Regent's Place Plaza and as such result in a number of opportunities to make significant public realm improvements to the site and its immediate context. The majority of the site will be publicly accessible and at multiple points, enhanced public entrances into the east and west side of the tower will be created.

Ground Level

4.29 The ground level landscape and public realm of the Proposed Development, as presented in Figure 4.11, is split into the following areas:

- Regent's Place Plaza;
- Terraced Landscaping;
- Euston Road;
- Hampstead Road; and
- Brock Street.

Figure 4.11 Key Areas of the Proposed Site Plan



Hard Landscaping Strategy

4.30 The aspiration is to use the hardscape to link together the public spaces surrounding Regent's Place. The strategy aims to create a transition between the existing dark granite paving along Euston Road and Hampstead Road and the yellow limestone along the Triton developments.

4.31 The paving will be used to signpost different zones of public space, including denoting public entrances but with transitional spaces to avoid the creation of barriers between public and private space. The colours and materials selected compliment those used on the tower to bring these aspects together.

4.32 Natural materials will be selected where possible for their ability to change appearance when wet, creating a visual link to the concept of water on-site. Wooden material will be used to construct boardwalks over the wetland features, evoking the traditional elements found in these habitats. All hardscape materials will be selected for their durability and non-slip qualities. Re-used materials will be prioritized where available, following additional design exploration in the next stages. Figure 4.12 highlights the different hard landscaping materials proposed.

Figure 4.12 Hard Landscaping Proposals

Soft Landscaping Strategy

4.33 The ground level planting scheme is broken into four distinct character areas, corresponding to different types of ecosystems:

- Woodland (618m^2) – concentrated around the southwest and northeast corners of the site, along Euston Road and Hampstead Road;
- Grassland (299m^2) – located in the western area of Regent's Place Plaza and along Euston Road;
- Heathland (325m^2) – located within the Terraced Staircase area; and
- Wetland (250m^2) – located within Regent's Place Plaza.

4.34 In the woodland areas, a range of British native trees have been selected which will be planted at a variety of heights and sizes to imitate a more natural environment. These include *Pinus sylvestris* (Scots pine), *Ilex aquifolium* (common holly), *Sorbus aucuparia* (rowan), *Crataegus monogyna* (common hawthorn), *Betula pubescens* (downy birch), *Betula pendula* (silver birch), and *Malix sylverstris* (European crab apple).

4.35 The grassland planting mix will use a mixture of evergreen ornamental grasses combined with a selection of perennial and bulb species that offer an interesting winter structure to extend the colour and display through the winter months before the cycle of growth in early spring.

4.36 The heathland areas will embody a more diverse planting mix through the inclusion of flowering perennials and ornamental grasses and a wider mix of subshrubs to create a rich tapestry of colour, texture and winter form.

4.37 Within the wetland planting areas, the conditions and profiles will be created to support the various aspects of wetland habitats: meadow, bog, marginal, and submergent layers will be replicated.

Figure 4.13 Ground Floor Landscaping Proposals

Figure 4.14 Ground Level Planting Areas

Regent's Place Plaza

4.38 Regent's Place Plaza features a series of activated landscape elements around a civic square clearing with the external terraced landscaping located at the eastern edge.

4.39 Dense planting beds with a heathland palette bridge the gap between the ground floor and the publicly accessible first floor podium. Tree planting along the stairs is used to vertically extend the site's greening potential whilst responding to conditions of the microclimate.

4.40 A feature for shallow waterplay is located within the centre of the Plaza. In addition to use for play or relaxation, this pool can be programmed to respond to changing climate conditions as well as user need, including being fully drained to provide additional open space.

4.41 Wetland areas are located on the west side of the site and include a series of accessible boardwalk crossings: one of which is a fixed aquatic habitat with a permanent body of water; and a second riparian wetland to allow for periodic flooding during storm events. Both beds will be planted with submergent and emergent vegetation to promote biodiversity.

Terraced Landscaping

4.42 The terraces at the east of Regent's Place Plaza provide access to the Level 01 terrace via a number of staircases as well as a gently sloping accessible pathway that meanders upwards through a proposed new planted landscape.

4.43 Alongside the sloped pathway, an externally accessed lift is provided at the western end of Brock Street for a fully accessible route to the Level 01 terrace.

4.44 The terraced landscape also provides approximately 100 linear metres of seating within the greening, the majority of which faces the centre of Regent's Place Plaza, allowing for informal audience set-ups facing towards the waterplay feature in the civic square clearing.

4.45 At the top of the stairs and slope, the Level 01 terrace has the possibility to allow the flexible commercial uses (Class E) to occupy this space, thereby creating further seating opportunities.

4.46 Further access to terraces and green spaces is provided at the Level 02 terrace, accessed via an external and internal terraced stair that runs southward from the Level 01 terrace and expressed via the rising colonnade on the West Elevation. The Level 02 terrace is also accessed internally through the public lift on Brock St., which will be operating in accordance with opening and closing times of the tower's interior public spaces

Euston Road

4.47 The landscape along Euston Road has been designed to accommodate a wide range of users while responding to a number of critical conditions. The area hosts two of the buildings main entrances including the ramped entrance to the cycle store in the basement. Eastbound cycle lanes and a bus stop border the site along Euston Road.

4.48 A 4.5m clear width has been introduced as a shared pedestrian and cycle lane, connecting from the south-east corner and running north-west towards Triton Street. The east-west footway was maintained and the narrow condition around the bus stop to the west was improved.

4.49 Large, landscaped mounds have been strategically placed to increase planting and seating opportunities without hindering access to the public realm. Steep edges have been created along the southern edge to conceal basement utilities and double as hazardous vehicle mitigation. Internal edges with reduced grades allow for stepped access to landscape features or seating away from the busy Euston Road.

4.50 The dispersed arrangement of the mounds creates a uniform wall of vegetation, effectively shielding the central plaza from the noise, pollution, and windy conditions to the south.

Hampstead Road

4.51 This area is located along the eastern edge of the site and is one of the major pedestrian footways for Regent's Place. A minimum clear width of 6m was maintained to accommodate existing and anticipated pedestrian movements. The pedestrian footway is divided by a series of central mounds, allowing for two choices of routes along the pavement.

4.52 Landscape mounds have been placed to respond to micro-climatic conditions and work to buffer pedestrians from the adjacent traffic. The mounds are fragmented to provide breaks for retail entrances along the eastern façade, with emphasis around framing the Community Corner to the north.

4.53 Generous setbacks around the anticipated Transport for London (TfL) bus shelter were included along with planter edge seating in order to provide safe and comfortable spaces for commuters.

Brock Street

4.54 Careful consideration was made to accommodate the anticipated increase of pedestrian connections along Brock Street whilst also improving its landscape character.

4.55 Brock Street was envisioned as a gateway to the Plaza with landscape mounds acting as bookends to the street. The increased setback of the tower provides additional space, allowing for the implementation of valuable greening opportunities. Grassland and woodland planting palettes respond to the desire for brighter colours and seasonal interest for both the public and residents along the street. The mounds increase in size and scale as they move towards the plaza to draw interest to the public space within.

4.56 Two mounds at the western end of Brock Street act as a safety measure during gas deliveries. Trucks are able to be parked between the façade and southern mound, with pedestrian flow temporarily re-directed north.

4.57 Seating opportunities were incorporated away from the entrance to 20 Brock Street in order to increase privacy for the residential entrance.

Upper Levels

Landscaping

4.58 Areas of biodiverse roofs are located at Levels 02, 03, 04, 07, 11, 19, 25 and 30 comprising a variety of native and non-native heathland species at a density of 11 plants per m^2. In addition, Level 32 (the roof) will comprise

of a biodiverse roof which will be planted with a variety of native species and plants on the Royal Horticultural Society (RHS) Plants for Pollinators list at a density of 30 plants per m^2. The roof area will also include invertebrate features such as logs, stone piles and liners for temporary water bodies.

Amenity Spaces

4.59 Double height amenity spaces for the tenants are located at Levels 07 to 08, 11 to 12, 19 to 20, 25 to 26 and 30 to 31, expressed on the façade as the setback double-height colonnaded spaces with a planted edge, reflecting the different nature of these spaces internally.

4.60 Level 19 and 20 comprises amenity space intended to be shared across all tenants of the proposed tower and features an accessible external terrace space in addition to provide outdoor amenity within the tower.

4.61 The additional double-height amenity spaces at Levels 07 to 08, 11 to 12 and 25 to 26 are intended to be accessed by the tenant who occupies the specific floorplate allowing for the opportunity to create double height spaces and internal vertical connections through soft spots along the double height façade.

Figure 4.15 Upper Level Amenity Spaces

Site Wide Biodiversity and Greening

Biodiversity Net Gain

4.62 In accordance with the National Planning Policy Framework (NPPF)[1], a Biodiversity Net Gain (BNG) assessment of the Proposed Development was prepared by Greengage on behalf of the Applicant. The BNG was calculated using the Natural England Biodiversity Metric 4.0[2]. The assessment found that the Proposed Development will provide 0.66 Habitat Units (HU), resulting in a net gain of 26.9%.

Urban Greening Factor

4.63 The Urban Greening Factor (UGF) has been calculated using the Greater London Authority (GLA) calculator in accordance with Policy G5 of the London Plan. The Proposed Development achieves a score of 0.386 which is policy compliant, as the target score for commercial developments is an UGF of 0.30. This score is achieved through a combination of semi-natural vegetation and planting, wetland features, green roofs and tree planting.

Lighting Strategy

4.64 The lighting design for the Proposed Development will be further developed at detailed design stage to provide a positive contribution to the night time experience of this prime central London location and encourage evening use of the amenity spaces.

4.65 The following considerations define the overall lighting approach:

- Safety - creating a safe environment through positive lighting after dark. This includes ensuring that appropriate light levels are provided along routes, as well as ensuring that people's faces are well illuminated, and that changes of levels or other hazards are clearly identifiable;
- Identity - meeting the functional lighting requirements in a way that also creates a memorable and attractive identity with a pedestrian neighbourhood character after dark;
- Legibility - balancing light intensity and distribution to create an environment that is intuitively legible after dark; and
- Movement - using light to encourage movement into and through the site by clearly identifying entrances, framing routes and highlighting destinations.

4.66 The Lighting Strategy will also be sensitive to the landscape and ecological constraints of the site.

ACCESS, PARKING AND SERVICING

Pedestrian and Cycle Access

4.67 Pedestrian access to the Proposed Development will be provided via a number of access points at ground level. Public access points are located along Brock Street and Hampstead Road. A further public access point is located via Regent's Place Plaza at Level 01.

4.68 Pedestrian entrances to the office and life science elements of the Proposed Development are located via Euston Road at the south of the building.

4.69 A dedicated cycle entrance is also provided from Euston Road which provides access to the basement cycle store via a dedicated cycle ramp or lift. The cyclist lift is sized to accommodate larger bicycle types. Access controls for cyclists will be located in the basement so that cyclists do not need to dismount when travelling between the local roads and the basement.

Figure 4.16 Proposed Pedestrian and Cyclist Access Routes

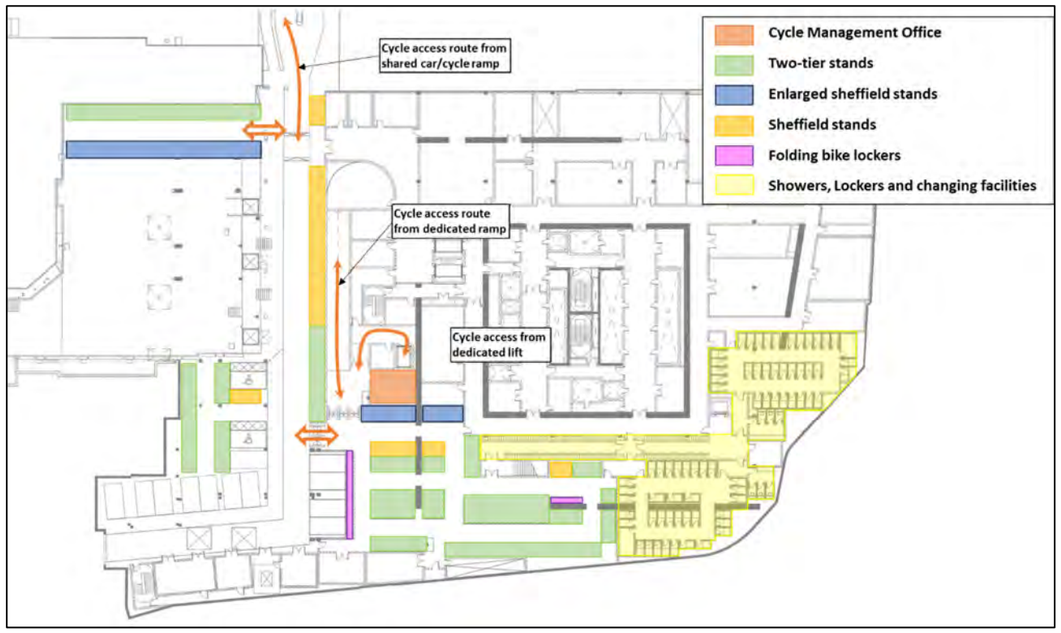
[1] *NPPF (2023) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019*

[2] *Defra (2021) Biodiversity Metric 4.0*

Vehicle Access

4.70 The existing vehicle access ramps along Longford Street and Drummond Street to the north are to be retained to enable vehicle access to the basement servicing areas.

Figure 4.17 Basement Cycle Parking Layout



Vehicle and Cycle Parking

4.71 The Proposed Development is car-free and removes 102 spaces, in accordance with London Plan[3] and Camden Local Plan[4] policy requirements. Two blue-badge parking spaces are proposed within the Euston Tower basement demise and located as close as possible to the accessible access.

4.72 The Proposed Development will provide a total of 861 long-stay cycle parking spaces at basement level. They consist of 646 two-tier parking (75%), 86 foldable bicycle parking (10%), 86 Sheffield stands (10%), and 43 Enlarged Sheffield stands (5%). Male and female changing rooms will be located adjacent to the long-stay cycle parking and will provide 574 lockers (two lockers per three parking spaces), 72 showers including two accessible showers (one shower per 12 cycle parking spaces) and six toilets including two accessible WCs. As well as showering and changing facilities, it is proposed to include cycle maintenance facilities and water dispensers.

4.73 There will be 90 short-stay cycle parking spaces provided within the surrounding public realm. Twelve spaces are proposed to be located to the south of the dedicated cycle access and will include a number of enlarged spaces to accommodate all types of cycle, including 2 cargo bike stands located next to the entrance of the basement cycle store. The remaining short-stay cycle parking spaces will be located within the public realm close to the building.

Deliveries and Servicing

4.74 Vehicle access for servicing vehicles is via the existing ramp along Longford Street; the basement ramp provides access to a number of servicing areas which serve all buildings within the Regent's Place Campus. The service yard area for Euston Tower is located towards the eastern side of the basement and is shared with Brock Street as presented in Figure 4.18.

4.75 The existing access and vehicle route to the servicing area will be retained for Euston Tower and Brock Street and Regent's Place Management will continue to manage the entire basement area. The proposed basement servicing arrangement is shown in Figure 4.19.

Figure 4.18 Existing Regents Place Basement Area

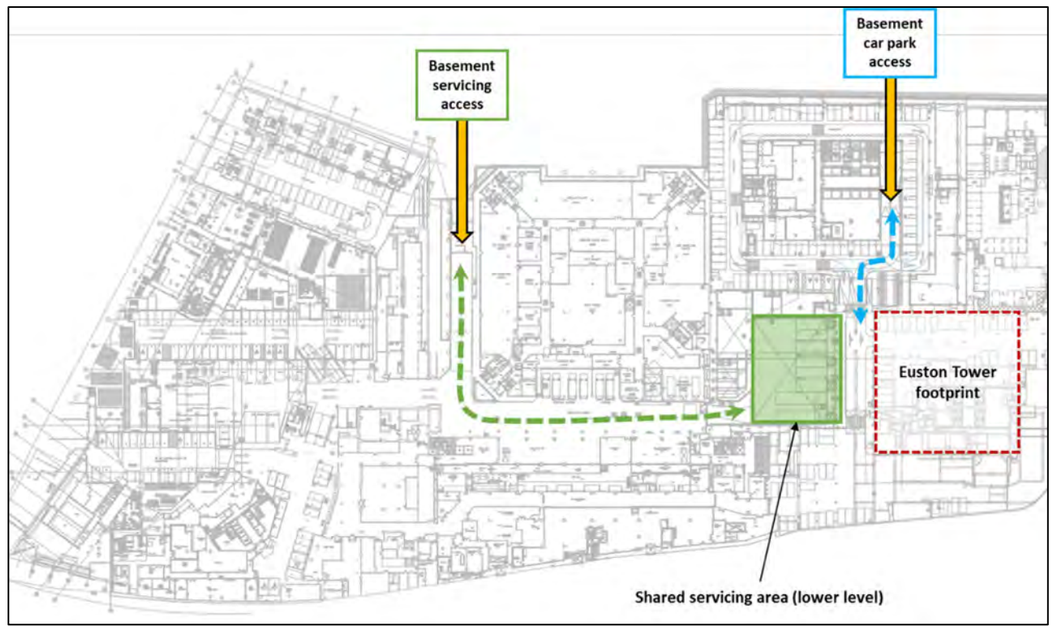
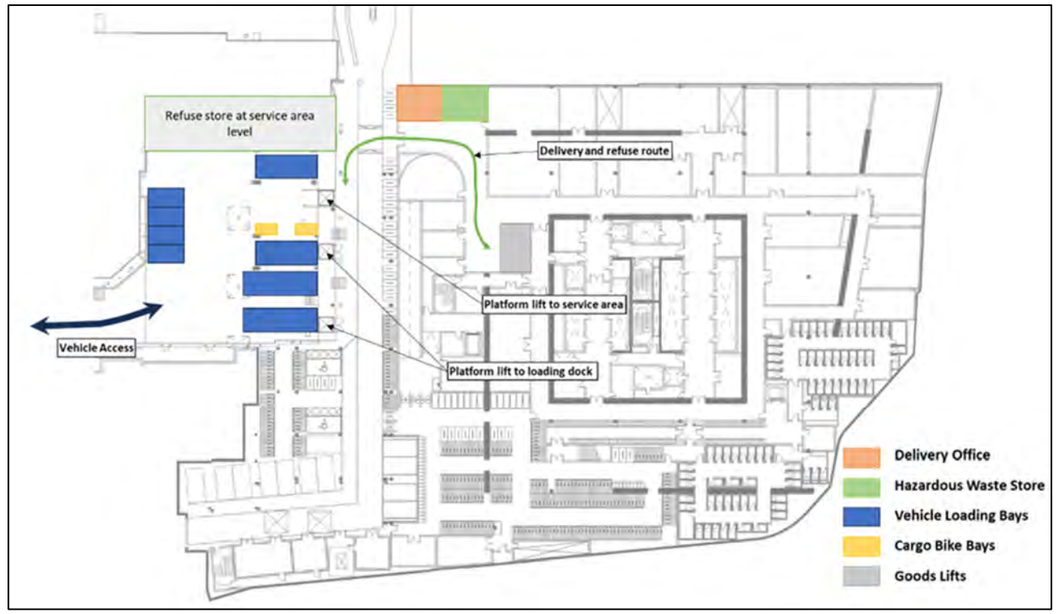


Figure 4.19 Proposed Basement Servicing Arrangements



4.76 The service area provides eights loading bays in total, comprising two 10m loading bays, two 8m bays and four 6m bays. The loading bays are located at a lower level than the Euston Tower and Brock Street back-of-house

[3] *Greater London Authority (GLA), (2021); The London Plan.*

[4] *London Borough of Camden (LBC), (2017); Camden Local Plan*

accesses and platform lifts are provided to move goods and bins between the two levels. All vehicles[5] will enter and exit the service area in forward gear.

4.77 Deliveries made by larger cargo bikes or quadricycles will service the Proposed Development via the existing basement ramp and loading area. Within the basement loading area, two cargo bike parking bays will be provided. Deliveries will be received by a member of on-site staff.

Specialist Life Science Deliveries

4.78 The requirements for specialist deliveries are highly dependent upon the tenants. At this stage it is therefore necessary to design flexibly to allow for different volumes, types and delivery methods of liquids/ gases.

4.79 Life sciences require several additional specialist bottled/liquid gas deliveries along with the regular deliveries expected to a lab-type building. The liquid and bottled gas deliveries cannot take place within the basement and need to be at ground level with blue-sky above them. All specialist delivery activity is proposed to be at ground-level to the northwest corner of the building.

4.80 The proposed delivery location will enable quick deliveries over a short distance directly into the ground level gas store. The specialist vehicle will access the delivery bay from Drummond Street via Triton Square and Brock Street and stop in an area close to the gas store with landscaping to the north which will allow the vehicle to be temporarily 'fenced off' to stop pedestrians walking past when the vehicle is delivering. A pedestrian route is maintained to the north.

4.81 All vehicle movements across the Regent's Place Plaza and the delivery process will be fully managed by trained staff.

4.82 Once the servicing vehicle has arrived, the delivery can be transferred from the vehicle into the building.

4.83 For liquid nitrogen (LN_2) deliveries, it may be that a hose is extended from the vehicle directly to an inlet connected to the on-site LN_2 store, located on the Brock Street frontage, so that liquid nitrogen can be pumped directly to an on-site tank. If a dewar solution is adopted, dewars will be transported between the vehicle and the LN2 store via Brock Street.

4.84 Gas bottles would also be brought to the site from delivery vehicles using trollies and directly to the gas store at ground level.

CLIMATE CHANGE, ENERGY AND SUSTAINABILITY

Whole Life Carbon

4.85 As the operational energy use and associated carbon emissions of new buildings declines, the relative importance of the embodied carbon emitted during their construction increases. For contemporary high performance buildings in London, embodied carbon emitted up until their practical completion can be greater than the operational carbon emissions due to their energy use throughout their life time.

4.86 Emitted during an intense period of manufacture and construction even before the building is occupied, this embodied carbon can also lead to a more immediate and greater damage than the operational carbon emitted gradually over long periods.

4.87 In response to this emerging challenge, and in line with the GLA's policies, the potential whole life-cycle carbon emission impact of the Proposed Development was assessed.

4.88 A Sustainability Statement is submitted as part of the planning application which sets out the circular economy principles to reduce the embodied carbon of the Proposed Development during the construction and operational stages. In order to reduce embodied carbon, the Proposed Development includes the following:

- Retention of the existing foundation, substructure, and central concrete core;
- Optimisation of structural, façade, and Mechanical, Electrical and Plumbing (MEP) designs to reduce material intensity;
- Improved concrete specification and higher quantities of cement replacements;
- High recycled content aluminium and glass in façades;
- Reduction of emissions associated with transport (e.g. electric vehicles, consolidation centres, local sourcing); and
- Reduction of emissions associated with site operations (e.g. electric site plant, HVO fuel for site plant, REGO-backed renewable energy).

Circular Economy

4.89 A circular economy statement has been prepared in support of the planning application. This confirms that the following key commitments and targets have been prepared in order to comply with the requirements of the London Plan:

- Maximising utility of existing buildings; achieved by strategically retaining as much as possible of the existing building, reducing waste and the need for new materials;
- A thorough and transparent Feasibility Study studying the condition of the existing building, and assessing options for redevelopment;
- Retention of 31% of the existing structure, following a third-party reviewed feasibility study (pre-redevelopment audit), the report of which has been issued to LBC;
- Minimising waste in deconstruction and construction through a transparent approach to handling deconstructed materials and identifying opportunities to put them to best use;
- A pre-deconstruction audit has been undertaken;
- A detailed assessment of opportunities for on-site and off-site deconstruction waste reuse/ upcycling/recycling are considered and captured in the Circular Economy Statement;
- Prototyping innovative approaches for structural reuse of concrete and recycling of building glass at scale, with ambition to publish the findings;
- Following this approach, 98% of the construction and deconstruction waste will be diverted from landfill, and 95% of excavation waste will be put to beneficial use;
- In order to minimise waste in operation and end of life, the overall strategic design approach is to design a building for adaptability and longevity, reducing waste and preventing premature obsolescence;
- Particular focus is applied to the structure as it is the most carbon-intensive element, and is seen as foundational meaningful long-term adaptability;
- Considering the different building elements in layers to enable maintenance and replacement that minimises destructive impacts on other building elements (especially structure);
- Designing a modular façade and utilising off-site manufacturing to reduce waste;
- Dedicated storage areas for waste recycling;
- The Proposed Development will contribute to achieving the GLA's municipal waste target of 65% recycling by 2030;
- Improving end of life reusability by committing to capture useful data for key building elements in material passports;
- Committing to submitting a post-construction report to report as-built circular economy performance;
- Using reused and/or high recycled content materials where possible, targeting 25% recycled content by value; and
- Driving innovation by upcycling/transforming materials from the deconstruction to reduce waste and the reliance on virgin materials, captured in the material strategy as part of this statement.

[5] *The loading bays are used for servicing the wider Regent's Place Campus as well as Euston Tower itself.*

Energy and Sustainability

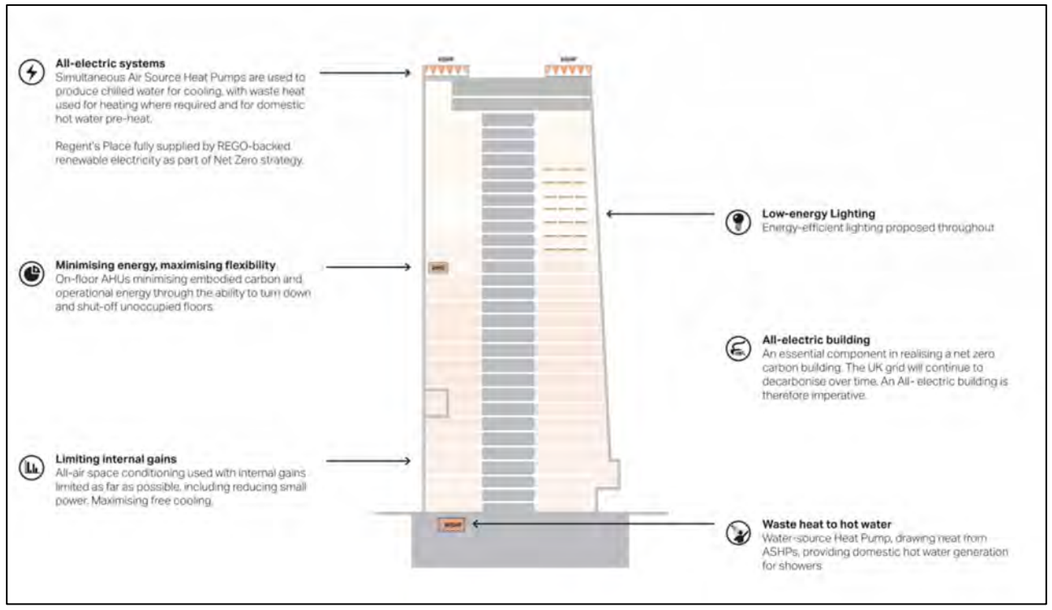
4.90 The Energy Strategy for the Proposed Development has followed the energy hierarchy principles set out in the London Plan and the Camden Local Plan.

4.91 The proposed energy strategy has been demonstrated to achieve an annual 14% on-site reduction in regulated carbon dioxide emissions (10% at the Be Lean stage and 4% at the Be Green stage).

4.92 The carbon off-set contribution required has been calculated on the remaining regulated carbon emissions post Be Green stage. The carbon offsetting price of £95/tonne of CO_2 has been used in line with recommendations from The London Plan; a carbon shortfall payment of £795,581 will be made for the to meet the zero carbon requirement.

4.93 An overview of the proposed MEP and energy strategy is provided in Figure 4.20.

Figure 4.20 Proposed MEP and Energy Strategy



4.94 The following measures have been implemented to minimise energy use at each stage of the energy hierarchy:

- Be Lean
  - Optimised glazing percentages to maximise daylight penetration but minimising overheating. G-value limits specified for glazing elements aims to limit excessive solar gain on to the floor plate.
  - Façade elements that project horizontally and vertically adjacent to glazing are optimised to provide solar shading during peak scenarios but also allows for beneficial solar gain during winter months.
  - An underfloor ventilation system avoids the need for active cooling for large periods of the year through free cooling provided by largely un-tempered fresh air supplied by the on-floor Air Handling Units (AHUs), with cooling by the high efficiency heat exchanger. The underfloor system also avoids the need for additional high-level mechanical services, significantly reducing embodied carbon.
  - A high-performance curtain wall façade has been specified to reduce space heating demand in winter and minimise the risk of summertime overheating. Embodied carbon has bene considered in the analysis of the façade to provide a solution that reduces operational carbon but is also expected to be a lower embodied carbon solution when compared to other façade types.
- Be Clean
  - The Proposed Development follows the GLA heating hierarchy first considering district systems followed by zero emissions or local heat sources. There are no proposed district heat networks in the local area for connection on day one, therefore on-site communal network is proposed using low carbon heat generation.
  - The Proposed Development is designed to avoid all on-site emissions, using an all-electric heating and cooling strategy, therefore no gas boilers or Combined Heat and Power (CHP) units are proposed.
  - The Proposed Development will be enabled for future connections into any local heat networks if available.
- Be Green
  - Heating and cooling will be provided to the Proposed Development by central heating and cooling plant consisting of air source heat pumps (ASHPs) and air-cooled to maximise the ability to share heat between spaces within the building. This will be served by a low temperature hot water (LTHW) and chilled water (CHW) system emanating from high efficiency air source heat pumps (ASHP) capable of providing simultaneous heating and cooling, supported with air-cooled chiller/ heat-pump(s) to meet peak demands, located at roof level.
  - Simultaneous heating and cooling heat pumps can utilise free cooling to maximise efficiency through mid-seasons.
  - Domestic hot water (DHW) for use in high demand areas such as the basement showers will be generated by a water source heat pump (WSHP) which will boost rejected heat from space cooling provided by the ASHPs to provide DHW at appropriate supply temperatures.
  - The installation of Photovoltaic (PV) panels is included within the scheme to contribute to the reduction of the on-site carbon emissions. Approximately 100m^2 is planned to be included spread across appropriate areas at Level 31.
- Be Seen
  - The GLA's 'Be Seen' spreadsheet with performance indicators including contextual data, building energy use and carbon emissions for the Proposed Development will be submitted as part of the wider planning application.
  - The energy performance of the Proposed Development has been assessed using a CIBSE TM54 compliant methodology to provide an assessment of regulated and non-regulated energy consumption.
  - A comprehensive NABERS Design for Performance assessment will be carried out during RIBA Stage 3.

Flood Resilience and Drainage Strategy

4.95 The Flood Risk Assessment (FRA) has identified the site as lying in Flood Zone 1 (an area of very low (less than 1 in 1,000 annual probability of) flood risk from rivers and seas). Flood risk from tidal/fluvial sources, pluvial sources, groundwater, artificial sources, and infrastructure failure are all considered to be low.

4.96 The public realm drainage strategy, as presented in Figure 4.21, is a combination of the existing perimeter drainage with an integrated Sustainable Drainage Systems (SuDS) system in order to align with the hierarchy set out in Policy SI. 13 of the London Plan. Where possible, surface flow will be directed into two open planter features; the freshwater and riparian wetland. Surface flows outside the overland catchment area will be directed into a series of drainage channels along the perimeter and contained in a detention tank. All surface water flows from within the site boundary will be directed from the detention tank and used to feed the wetland system. Water treated from the wetland system will then be retained and re-used for planter irrigation in the public realm. The concept aims to imitate the ecosystem services of wetlands found in Hampstead Heath but adapted to the realities of an urban space above impermeable surfaces. Where natural infiltration cannot occur, the detention basins coupled with natural wetland processes mimic the benefits of water retention and filtration while retaining all stormwater on-site.

Figure 4.21 Drainage Strategy

4.97 A number of preferred SuDS options are not available due to the site's location and so the strategy is based around reducing the discharge of rainwater to the sewers. Currently a blue roof and attenuation tank in the basement are the most appropriate means of attenuating surface water, with a combined rainwater harvesting and surface water attenuation tank at basement level. The strategies that comprise the proposed SuDS will reduce the discharge rate from the existing 11.9l/s to 3.0l/; all calculations include an allowance of 40% for climate change in all in line with the Environment Agency's guidance.

Foul Drainage

4.98 There are no adoptable Thames Water assets located within the development parcel and therefore foul water is thought to currently drain via private connection from Euston Tower into the adjacent combined sewer.

4.99 It is proposed that foul flows from the building will be discharged to the TWUL (Thames Water Utilities Limited) combined sewer with Hampstead Road. Due to the change in building use, there will be an increase in the foul discharge from the building. The rate of discharge will be agreed with TWUL prior to connection; a pump system will be required to discharge flows into a demarcation chamber which then drains under gravity to the proposed point of connection.

Water Consumption

4.100 Policy CC2 of the Camden Local Plan (2017) expects all non-residential development of at least 500m^2 to achieve BREEAM "Excellent" certification. The Proposed Development is targeting BREEAM "Outstanding" certification for offices, exceeding local planning policy requirements.

4.101 The Proposed Development will be provided with water efficient fixtures, fittings and appliances and will include measures to encourage efficient water use, including:

- Installation of water meters with pulsed or other open protocol communication output to enable connection to a utility monitoring and management system;
- A leak detection system on the mains water supply between the building and the utilities water meter; flow control devices will be fitted to minimise water leaks and wastage from sanitary fittings; and
- Greywater and rainwater harvesting systems are proposed as a further means of reclaiming non-potable water and reducing potable water demand.

4.102 The water demand volumes of the Proposed Development have been calculated and are outlined below. The water consumption has been calculated using an average of 90 litres per person per day for the commercial uses: Commercial uses – 90L X 5,512 (maximum jobs) = 496,080 litres per day.

4.103 Table 4.2 sets out the minimum performance requirements of the water-efficient fixtures and fittings that will be installed in the proposed WCs, shower rooms, etc.

Table 4.2 Minimum Water Performance Requirements

Water fitting – Non-Domestic Areas	Capacity / flow rate	Units
WC, dual flush (effective)	4.5 (full flush) or 3 (low flush)	Litres
Wash hand basin taps	5	Litres/minute
Showers	7	Litres/minute
Dishwashers	10	Litres/cycle
Kitchen sink taps	4.5	Litres/minute

Waste Storage and Management

Operational Waste Management

4.104 An Operational Waste Management Strategy has been prepared for the Proposed Development, which will be adopted to manage the waste generated from the Proposed Development once operational. The strategy sets out the proposed waste storage, management, and collection arrangements for the Proposed Development.

4.105 The estimated waste generation from the Proposed Development is provided in Table 4.3.

Table 4.3 Estimated Weekly Waste Generation

Commercial Use	Litres per Week				
	Residual Waste	Dry Mixed Recyclable Waste (DMR)	Food Waste	Glass Waste	Total
Office / Life Science / Learning	62,528	175,077	10,004	2,501	247,609
Class E Flexible Retail	2,291	5,956	733	184	8,980
Total	**64,819**	**181,033**	**10,737**	**2,685**	**256,589**

4.106 All waste facilities will be designed to British Standard BS5906:2005 Waste Management in Buildings – Code of Practice standards. In summary, the waste facilities will include the following:

- A suitable water point in close proximity to allow washing down;
- All surfaces will be sealed with a suitable wash proof finish (vinyl, tiles etc.);
- All surfaces will be easy to clean;
- Suitable floor drain; and
- Suitable lighting and ventilation.

4.107 In line with the existing operation of the Regent's Place, the commercial tenants will provide temporary internal waste storage within their communal areas for segregation of waste at source. An on-site Facilities Management (FM) contractor will be appointed to collect the internally segregated waste from as part of standard cleansing operations. The on-site FM team will collect the waste in suitable trolleys as separate waste streams. Using the service lifts and access corridors, the on-site FM team will transfer the segregated waste to a commercial waste store.

4.108 A commercial waste store will be provided in the basement service yard (Basement Level 01), where all bagged waste streams will be deposited by the on-site FM team.

4.109 Based on the estimated weekly waste generation detailed in Table 4.3, the proposed waste storage provisions, (appropriate to the capacity of the commercial waste store) are detailed in Table 4.4.

Table 4.4 Estimated Waste Storage Requirements

Waste Stream	Container Type	No. of Containers	No. of Days Storage
Residual Waste	1,100-Litre Eurobins	12	1
DMR		33	
Food Waste	240-Litre Wheeled Bins	9	
Glass Waste		3	

4.110 The proposed waste strategy will maintain the same principles of consolidation and collection for each waste stream. On collection days, the commercial waste collection contractor accesses the basement service yard to attend the individual waste streams. The food waste and glass waste bins are collected directly from each tenant waste area.

4.111 Each waste stream will continue to be collected multiple times a week in accordance with the LBC approved servicing hours for the Proposed Development. Additional waste collections could be implemented as necessary to accommodate the waste generated by the Proposed Development.

Laboratory Waste Management

4.112 Space within laboratory areas on each tenant floor will be provided for the temporary storage of specialist waste materials that meet all requirements in accordance with prevailing guidance and legislation. Due to the range of potential tenants for the laboratory areas, the exact requirements for the temporary waste storage areas will be determined during the fit-out phase as they will be informed by the specific activities of the tenants.

Specialist and Hazardous Waste

4.113 It is anticipated that a level of specialist waste will be generated by the Proposed Development once operational, which is anticipated to potentially include flammable, chemical and biohazard waste.

4.114 A specialist waste storage area has been provided at Basement Level 01.

4.115 This facility will be designed in accordance with requirements determined by their physical and chemical properties and all prevailing legislation. The exact design of the storage facilities will also be dictated by the specific requirements of the commercial tenants and their business activities.

4.116 As necessary the on-site FM team will transfer the specialist waste from each tenant floor to the specialist waste store at Basement Level 01. On an agreed schedule appropriately licensed specialist waste contractors will be appointed to collect directly from the specialist waste store and tenanted areas.

Clinical Waste

4.117 It is expected that a level of clinical waste will be generated by the lab areas within the Proposed Development which will be stored in 770-litre clinical waste bins. It is anticipated that the clinical waste bins will be stored within a nominated area within the commercial waste store at basement.

4.118 As necessary, the on-site FM team will transfer clinical waste bins which collect hazardous waste from tenanted areas and transfer it to the commercial waste store. The number of clinical waste bins required to service the Proposed Development will vary based on the precise business activities of the tenants.

4.119 Based on experience from similar operational developments, it is anticipated that approximately four to six 770-litre Eurobins may be required to service the Proposed Development.

4.120 A suitably licenced clinical waste contractor will be appointed to collect the clinical waste bins directly from the commercial waste store on an agreed schedule.

Chapter 5: Deconstruction and Construction

INTRODUCTION

5.1 This chapter of the Environmental Statement (ES) describes the proposed programme of deconstruction and construction works, specifically the key activities that will be undertaken prior to the completion and operation of the Proposed Development. This chapter of the ES provides a description of the deconstruction and construction works for the purposes of identifying and assessing the potential deconstruction and construction related environmental impacts and resultant environmental effects of the Proposed Development. The identification and assessment of these impacts and effects is reported within each technical topic chapter of this ES (**ES Volume 1, Chapters: 6 to 12** and **ES Volume 2**).

5.2 Planning for deconstruction and construction is broad at this stage in the planning process and will be subject to refinement during the detailed planning of these works, particularly following appointment of a contractor and throughout preparation of the Construction Management Plans (CMP) at deconstruction and construction stages. The information presented within this ES chapter is therefore based on reasonable assumptions made by the Applicant, the design team and the appointed Construction Advisor for the planning application, specifically for projects which have involved consideration and management of complex issues such as working near to existing residential property, to busy main roads and in proximity to underground constraints and surface utilities and other infrastructure.

5.3 Various environmental management controls will form the basis of a CMP that will be implemented over the duration of construction works. An outline CMP is submitted alongside the planning application. Construction related management, mitigation and monitoring measures on a topic by topic basis are described within the relevant chapters of this ES, as well as summarised in **ES Volume 1, Chapter 15: Environmental Management, Mitigation and Monitoring**. The outline CMP defines, amongst other things, the hours of operation, dust control measures, vehicle emission controls, and a schedule of all plant, non-road and road mobile vehicles. In addition to the environmental management measures and procedures (such as noise control, protection of ecology and water reserves (etc.)), consideration shall also be given to construction materials quantities and best practice environmental standards for construction sites.

5.4 In addition to the outline CMP, other supporting management plans have been drafted and submitted in support of the planning application, specifically a framework Construction Logistics Plan (CLP).

5.5 It is anticipated that the implementation of the CMP and CLP and any other required management plans required by those (e.g. dust management plan) will be secured through appropriately worded planning conditions. It is intended that the CMP (including other plans which that identifies are required, as relevant) will be 'live working' documents, and that the Principal Contractor's appointed representative will update the documents accordingly with any amended construction environmental management measures as the scheme progresses.

5.6 In addition, the site will be registered with the UK's Considerate Constructors Scheme.

ANTICIPATED WORKS AND PROGRAMME

Summary of Anticipated Works

5.7 The Proposed Development has taken a holistic approach to sustainability, with a strong focus on carbon, resources, energy, and wellbeing. The Proposed Development is targeting best in class sustainability credentials including achieving Net Zero Carbon in construction. To reduce waste and avoid carbon emissions, the Proposed Development retains a significant proportion of the exiting building, where it is technically and feasibility possible to do so. These proposals are based on a thorough feasibility assessment, which considered several options for existing building retention. It found that the optimal option was to retain the foundation and basement in their entirety, and the central concrete core. This result is the retention of 31% of the existing structure (by volume). The remaining structural and façade elements are generally outdated, no longer performing, do not meet current Building Regulations, and/or are not readily adaptable to suit modern requirements.

5.8 The anticipated works are summarised as:

- Deconstruction of existing 36 story tower, with the central core and existing foundations retained;
- Enabling works and substructure, including the excavation of a small area of new B2 level basement, new foundations and new raft beyond the existing basement slab;
- Superstructure of structural steel frame with pre-cast concrete planks and / or in-situ composite metal deck;
- Envelope comprising unitised cladding panels; and
- Fit Out, comprising:
- Full fit out of all landlord areas;
- The installation of mechanical and electrical riser services and the Air Handling Unit's (AHU) on each floor; and
- Cat A fit out of 4 office floors and 2 'lab enabled' spaces.

5.9 The targeted commencement of the deconstruction works on-site is Q2 2025.

Programme of Works

5.10 The current expectation is that the deconstruction and construction works would take approximately 65 months, or 5 years and 5 months, which breaks down as 4.5 years of construction preceded by 12 months of enabling and works, including an overlapping period of deconstruction and new build of around 10 months (See Table 5.1 and Figure 5.1).

Table 5.1 Indicative Deconstruction and Construction Timetable

Construction Task/ Activity	Duration	Start Date (Quarter and Year)	Completion Date (Quarter and Year)
Site Set up & Deconstruction Works	24 months	Q1 2025	Q4 2026
Piling & Basement Walls	14 months	Q1 2026	Q2 2027
Superstructure (slabs and steelwork)	27 months	Q2 2027	Q3 2029
Cladding	31 months	Q3 2027	Q2 2030
Landscape (public realm)	8 months	Q2 2029	Q4 2029
Finishes & Fitout	36 months	Q2 2027	Q1 2030
Testing and Commissioning	11 months	Q3 2029	Q2 2030

5.11 Figure 5.1 shows the indicative deconstruction and construction programme.

5.12 The indicative programme has been produced by an experienced construction manager and is representative of a programme that is reasonable and achievable based the RIBA Stage 2 information and reasonable assumptions in terms of the sequencing of works and site logistics.

5.13 Figure 5.2 to Figure 5.4 provide indicative logistics planning for the key stages of deconstruction, substructure, and superstructure construction.

DESCRIPTION OF WORKS

Enabling Works

5.14 The principal function of the enabling works will be to prepare the site area to allow deconstruction to start whilst safeguarding existing amenities. These works will include, but will not be limited to:

- The installation of temporary hoardings and site gates to service the works;
- The installation of vehicle crossovers to the Euston Road and Hampstead Road footpath as necessary to service the works;
- Ensuring that all incoming services have been isolated where deconstruction works have been undertaken by preceding construction contract, soft strip and surveys of the existing building;
- Diverting existing basement utilities that are required to service other buildings within the estate, including sprinkler main, high voltage and low voltage power provisions;

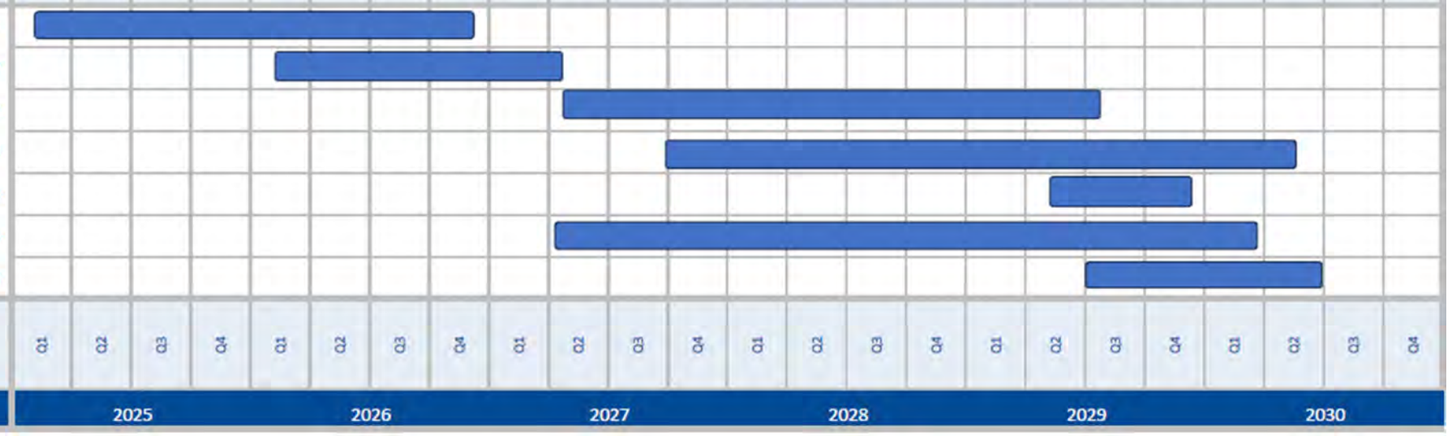
- Preparing existing ground level paving for temporary use as site accesses i.e. protect and / or preserve;
- Installing all perimeter and vehicular approach signage etc.;
- Installing basement perimeter wall temporary propping;
- Preparing basement pile mat for substructure works; and
- Designing and installing Euston Road, Hampstead Road and Brock Street pedestrian protection gantries and removing all necessary street furniture or existing access porticos to facilitate the required width of access to maintain fire safety compliance.

5.15 A number of surveys and investigations will need to be undertaken prior to the commencement of works on site. The following surveys and investigations are envisaged:

- Survey/recording and subsequent adaptation of the existing structure;
- Condition survey of perimeter roads;
- Condition survey of adjacent buildings;
- Unexploded ordnance survey;
- Geotechnical investigation (soil type, contamination and ground conditions); and
- Service infrastructure works e.g. abandonment, re-routing and reinforcement of the utility networks.

Figure 5.1 Indicative Enabling (Including Deconstruction) and Construction Programme

MILESTONE/ACTIVITY	Dates		Weeks	
	Start	Completion	Start	Completion
Site Set Up & Deconstruction Works	3-Feb-25	23-Nov-26	Week 1	Week 96
Substructure - Piling & Basement Walls	16-Feb-26	1-Apr-27	Week 54	Week 117
Superstructure (slabs & steelwork)	2-Apr-27	6-Jul-29	Week 117	Week 235
Cladding	6-Sep-27	15-Apr-30	Week 141	Week 275
Landscape (public realm)	8-May-29	4-Dec-29	Week 226	Week 258
Finishes & fitout	2-Apr-27	5-Mar-30	Week 117	Week 268
Testing and commissioning	1-Aug-29	26-Jun-30	Week 238	Week 285



5.16 All statutory, including Local Planning Authority (LPA) and Transport for London (TfL), consents and licences required to commence on-site activity will be obtained ahead of the works commencing and give the appropriate notice period(s). These will include but not necessarily be limited to:

- Notices for works on the highway in accordance with the Road Traffic Regulation Act 1994 and the Traffic Management Act 2004;
- Hoarding and scaffold licences for works on the perimeter boundary;
- Construction Phase Plan under CDM Regulations;
- Health and Safety Executive (HSE) F10 Notification;
- Deconstruction Method Statements (DMS) and Risk Assessments;
- Construction Method Statement (CMS) and Risk Assessments;
- Section 80 (Deconstruction Notice) Application;
- Section 61 (Noise Control) Application;
- Construction notices;
- Connections to existing statutory services and main sewers;
- Licence for discharge of water from the site into the public sewer;
- Party wall act notices and agreements; and
- Approval of relevant deconstruction and construction related environmental management plans and other supporting documents).

Site Establishment & Welfare Facilities

5.17 Construction site areas will be made safe and secure prior to works commencing and the general public will be separated from the works, with the use of solid and well maintained, 2.4m high hoardings. It is anticipated that these will be provided to the site boundaries to Euston Road and Hampstead Road as well as to estate elevation to Brock Street and Triton Square. These are also likely to incorporate vehicle gates to the south elevation from Euston Road and to the east elevation from Hampstead Road. The approach to vehicle entrance and exit locations to the site will be determined through the CLP and discharged via a planning condition in advance of any works commencing on-site.

5.18 During the structural phase of the works, pedestrian gantries will be installed in order to allow for safe passage of pedestrians at the site boundary.

5.19 Accommodation will be provided as part of the site establishment phase. It is anticipated that the main accommodation during deconstruction will initially be located in the ground and first floor levels of the existing tower structure while the main works are enabled to Regent's Place Plaza. Once these are established, it is expected that all accommodations within the existing building will be removed in order to allow for the removal of the podium levels. During the Substructure, Superstructure and Envelope and fitout works, the main accommodations are likely to be situated outside of the footprint of the building. These would be able to provide accommodation which is sufficient for the works. It is therefore anticipated that the accommodations will be relocated to within the ground level and first floor level retail units of the new building in order to allow for the demobilisation of the main accommodations and restoration of the Regent's Place Plaza. The final details on the site accommodation approach is subject to the final logistics plans, to be approved prior to the commencement of any works on-site.

5.20 A canteen and welfare facilities will also be provided as part of the site accommodation. The following details how the site welfare facilities are intended to be arranged; however, this is subject to the final logistics plans to be prepared and approved pre-commencement of any works on site. A main site welfare office will be located within the site and, as necessary, supporting satellite offices. These facilities are expected to be adjacent to Regent's Place pedestrian plaza. Like the accommodation, the welfare facilities will initially be located in the ground and first floor levels of the existing structure. Once the site set up period is complete and the works have commenced, the main welfare facility will be located on Regent's Place Plaza, adjacent to, yet remote from, the workforce for deconstruction and removal of the ground level slab. Access to the facilities will be provided from Triton Square to keep the workforce from congregating on the public footway to the south of the building. Once the works approach completion and the hoardings are removed, the main welfare facilities will be dismantled. As the workforce will be reduced considerably at this stage, the ground level retail space of the new building will be utilised in the short term. Furthermore, access to these facilities will be by permanent doorways provided in the design.

Deconstruction

5.21 Initially, it is envisaged that the principle temporary works required for deconstruction will be installed and set up, namely, the tower crane located on top of the existing reinforced concrete lift core structure. This early period in the deconstruction programme could also include the installation of a sliding screen or scaffolded solution, the strategy for which is to be determined ahead the commencement of any works on-site.

5.22 It is envisaged that, although subject to final approach to be determined prior to the commencement of any works on-site, during the deconstruction phase, the existing 36 storey reinforced concrete frame structure and ground level slab will be deconstructed. The existing building foundations, central reinforced concrete core (to full height), basement slab and retaining walls are intended to be permanently retained.

5.23 The deconstruction is anticipated to occur from top down whilst the lower podium levels up to level 2 are reduced in size to the same as the upper floors. The remaining ground floor slab would be removed once the podium has been deconstructed to ground level. This would allow for enabling works and substructure works to commence in parallel with deconstruction.

5.24 The product of the deconstruction work would be moved to the ground level and basement levels for removal from site, as the works commence. Arisings from deconstruction would be transported to the basement level through an existing satellite lift shaft, fitted with baffles. Demounted glass and metal mullions are expected to be transported to ground level via a hoist. Deconstruction arisings are likely to then be removed from the basement via 8 wheeled tipper vehicles that access the area from the Regent's Place Service Yard entrance located on Longford Street. The demounted cladding and the like will be transported from site via ground level access from the Euston Road exist slip road entrance.

Earthworks, Piling and Foundations

5.25 At the beginning of this phase, the ground level slab will be removed. The main aim of this phase will be to prepare for the installation of new bearing piles to be installed to the perimeter of the new building footprint whilst the existing basement retaining wall is supported to prevent ground movement.

5.26 The initial part of this phase will also involve enabling the new structural works. This will involve the decommissioning and relocation of existing services and utilities within the basement level of the site. This will permit the removal of the ground level structural slab without impacting the wider Regent's Place campus.

5.27 The enabling works are anticipated to consist of the installation of a temporary works propping scheme to the basement retaining wall and the removal of the existing basement level slab in the location of new piles and pile caps or a raft structure.

5.28 Once the ground level slab is removed, a ramp from ground level and a piling working platform will be constructed to the southeast corner of the site. This will provide access from the A501 exit slip road. Access for piling equipment, including but not limited to a piling rig, attendant service crane and material deliveries such as concrete will result from this.

5.29 The ground to second floor supplementary structure of the building will be removed once the deconstruction works progress. The 'cross' shape foundations of the of the original building (known as the pinwheel) will be retained. The ground level slab will then be moved once the 'podium' structure is removed, in order to open the existing basement to blue sky.

Substructure Construction Methodology

5.30 As part of the substructure works, new bearing piles will be installed along the façade, as well as associated new pile caps or raft, a small area of new B2 level basement outside of the existing foundation zone and a transfer beam / wall structure from a new basement level reinforced concrete slab to a new ground level reinforced concrete suspended slab.

5.31 The substructure works (and enabling works) will also include an element of works necessary for the installation of tower cranes in order to construct the superstructure and envelope phases of the works. The scope of this phase will be to return a ground floor slab to the development.

5.32 It is likely that the basement wall to the south and east elevations will require support in the temporary condition. Once the ground floor slab and the grubbing out of the existing basement slab construction are removed, a piling mat will be installed from which new piles will be installed. Piles for tower crane bases and the like will be included. Pile cap / raft construction will follow once the piling works are completed and as the deconstruction works of the existing pinwheel to basement level concludes.

5.33 The construction of vertical elements to the underside of the proposed ground level slab and the ground level slab itself will follow on as the pile cap / raft works continue.

5.34 Furthermore, it is likely that an element of enabling works for the proposed steelwork substructure will be incorporated into the central core as the deconstruction lowers the existing building, namely the installation of plates into the core, to which the superstructure steel and stairways and the like will be attached.

Superstructure

5.35 The superstructure steelwork and precast floor plank installation will commence once the ground floor is complete.

5.36 To accommodate the fascia bracing the structure, steelwork will be installed over the three levels, followed by three levels of plank installation. This will provide the floor structure. The building will continue to rise up through this process, utilising the tower cranes for installation.

5.37 Perimeter Bracing will supplement the central core structure as the building progresses upwards. It is anticipated that some in situ concrete works will exist within the core structures and on top of some of the newly installed precast planks.

5.38 As the additional core elements will be launched from basement level ahead of the structural work front, the substructure works, and superstructure works will have an element of concurrence. The envelope and fitout works will also overlap with the superstructure works as the building progresses upwards.

5.39 The superstructure work front will likely be four storeys deep and is expected to need an additional element of separation for health and safety reasons. It is therefore likely that the façade panels will be installed approximately 5 storeys below the superstructure leading edge.

5.40 Given that the main core is of the structure is being retained and amended, climbing formwork systems are unlikely to be employed on the project.

5.41 A beam riding mobile elevating working platform will likely be used to steelwork over three floors at once. Tower cranes are also expected to be used to install the structural steel members before the concrete planking panels are laid to the beams. In doing so, a permanent concrete floor slab will be provided.

5.42 Safety nets, netting fans and exclusion zones will be used to segregate working levels from the area below.

5.43 It is anticipated that, if vertical construction such as columns and walls are required (excluding within the central core), they will be formed by non-structural framing such as shaft wall.

5.44 Dedicated tower cranes and passenger/goods hoists will be used to service the superstructure of the building.

5.45 As early as possible in the programme, stairs will be installed while the works progress vertically in order to provide operative vertical access to reduce reliance on hoists whilst maintaining compliance with fire escape regulations.

Envelope / Cladding

5.46 As stated, the envelope and fitout works are likely to overlap with the superstructure works as the building progresses upwards.

5.47 The envelope works are anticipated to continue from the completion of the precast concrete slabs and any additional in situ work that this activity entails prior to handover.

5.48 The installation of the unitised cladding panels to the outer face of the superstructure, from within the superstructure, is likely to comprise the envelope and fitout works. The installation of the unitised cladding panels is anticipated to commence once the superstructure (steelwork structure and concrete floors) has reached an appropriate height.

5.49 It is expected that a practical and safe separation is maintained between the structural works above that involve lifting, as the steelwork leading edge is three storeys deep. As such, a minimum of two completed floors is likely to be kept between the trailing edge of the structural works and the uppermost activities of the cladding works. To allow for hoist access to climb to meet the completed works, it is anticipated that the envelope works will commence some four storeys below the concrete works.

Fit-Out and External Works

5.50 Elements of the fitout works, such as the installation of mechanical and electrical riser services and the MEP to each floor, can commence once the superstructure has reached an appropriate height.

5.51 The superstructure and cladding works will occur concurrently with mechanical and electrical installation, and the fitout work will follow after a floor is enclosed and weathertight.

5.52 Cladding panels will be delivered to the floor for fitting by manipulator or spider crane once the hoist is complete to a floor. Panels will be launched locally to the point of being fitted and installed from within the floor plate edge protection.

5.53 As the works progress, it is expected that temporary waterproofing will be required to allow for fit out works to progress once a floor has been substantially enclosed by the cladding works.

5.54 As soon as the roof structure is completed, roof waterproofing systems will be installed to achieve the earliest watertight date for the building.

5.55 To reduce reliance on traditional in situ practices and reduce carbon emissions and improve efficiency, it is anticipated that, where possible, the fit-out design will promote the use of modular and off-site techniques.

5.56 All fit out works and finishing trades sequences will be serviced by external hoists and beneficial use of lifts in the building.

5.57 Once the lift cars are placed into beneficial use and the remaining cladding panels installed prior to removal of the final tower crane, it is anticipated that the hoists will be dismantled.

LANDSCAPING AND PUBLIC REALM

5.58 All materials will be delivered to site in advance of works commencing. All trees, shrubs, plants and lawn will arrive to site immediately prior to planting. There will be ongoing maintenance and repair services for hard and soft landscaping to ensure damage and plant failure are rectified immediately.

EMBEDDED CONSTRUCTION RELATED MITIGATION FOR EIA

5.59 For the purposes of the technical assessments provided as part of this ES, the following construction related mitigation measures are taken as ‘embedded’ and so factored into the technical assessments to define the potential for likely significant effects:

- Use of 2.4m high solid construction hoardings;
- Signposting the access to the development from the major trunk roads to direct vehicles along the designated routes;
- Employing a security logistics company to operate the site entrance with responsibility to monitor the public highway and facilitate the entry and exit of vehicles from the site; and
- Recycling of all removed existing cladding and glass back to primary producers or recycling specialists.

5.60 All other construction related mitigation that has been identified as being required to reduce the scale and so significance of residual effects or render residual effects insignificant is ‘additional mitigation’.

Figure 5.2 **Indicative Deconstruction (Phase 1)**

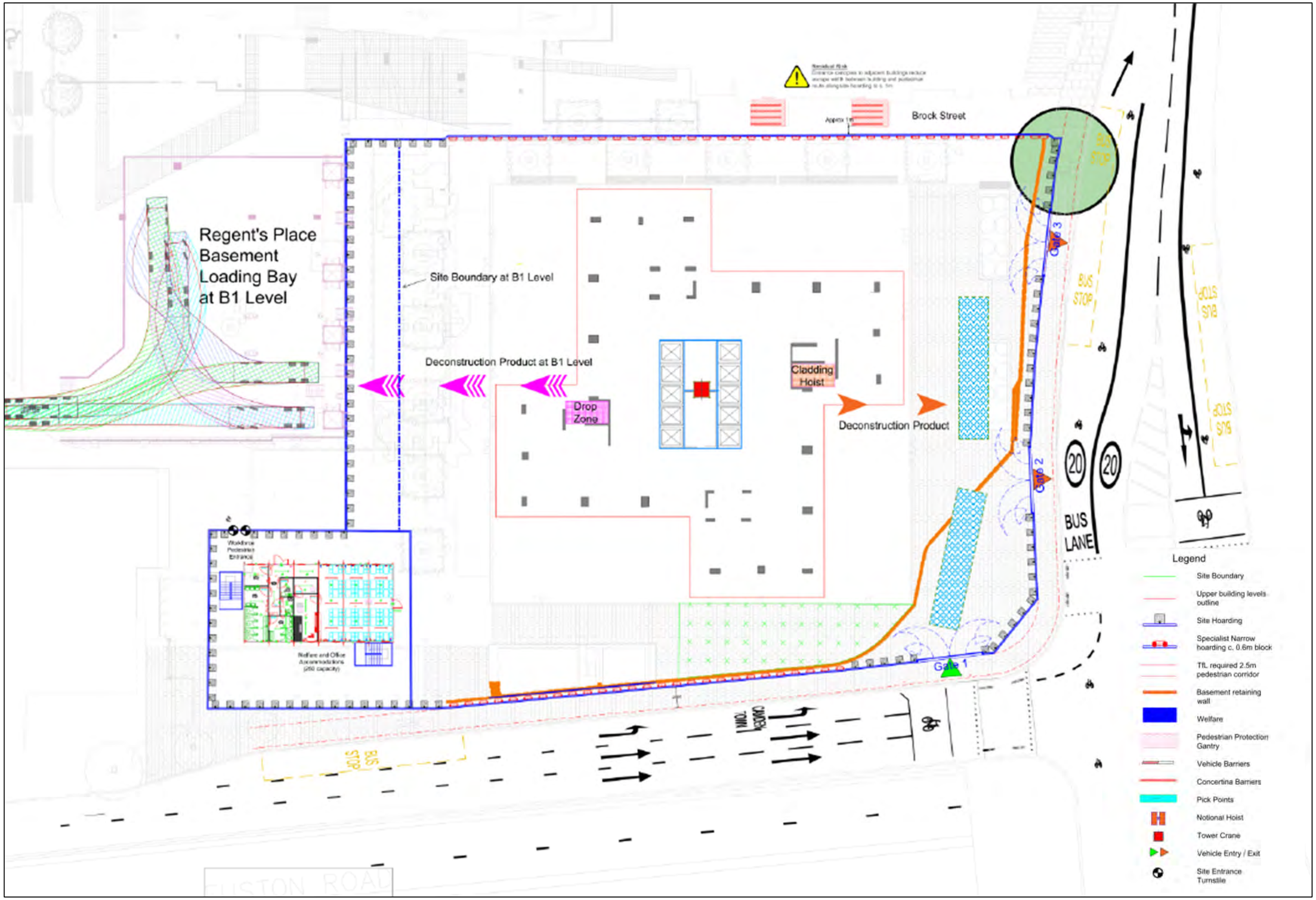


Figure 5.3 **Indicative Enabling and Substructure (Phase 2)**

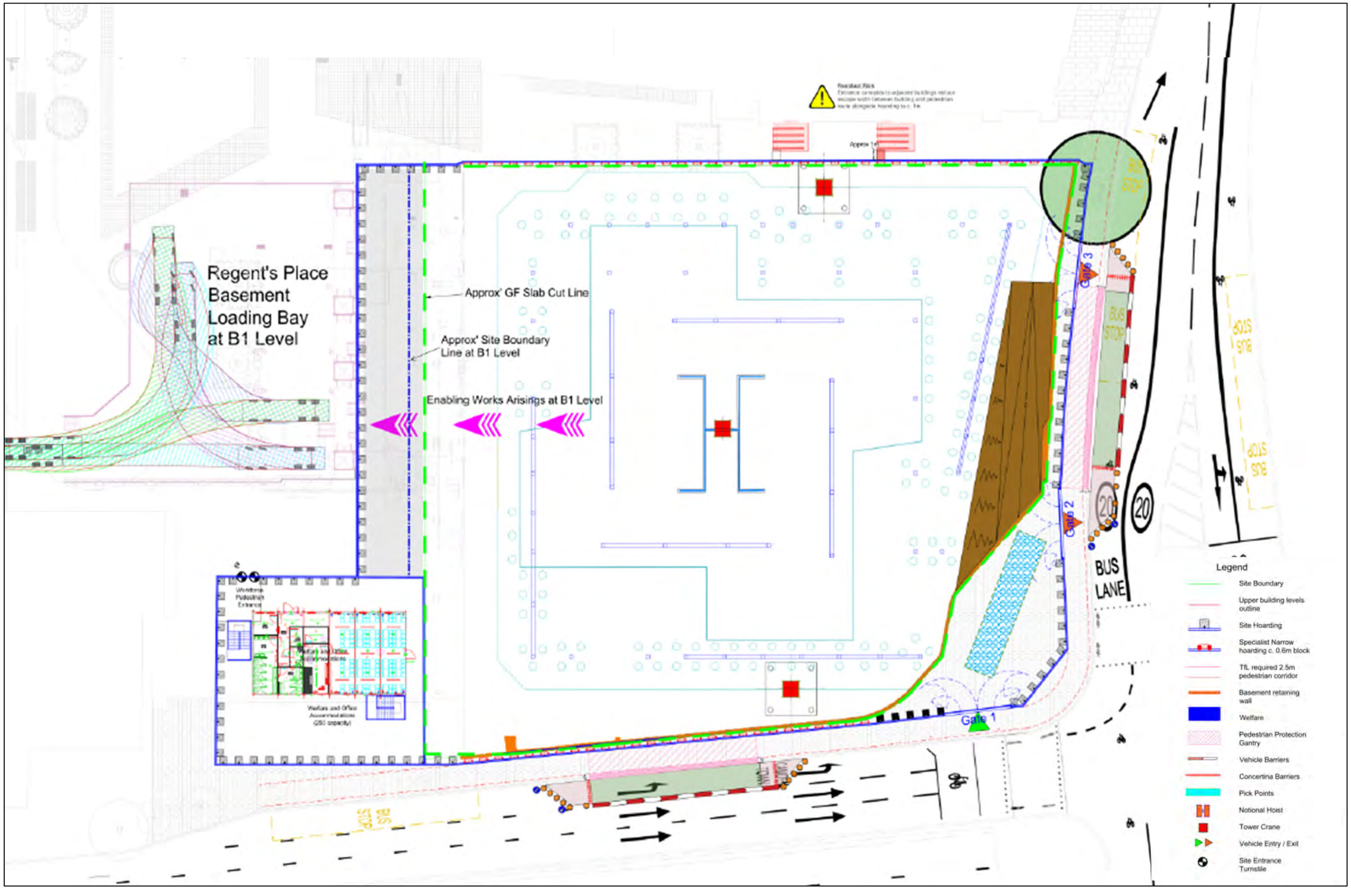
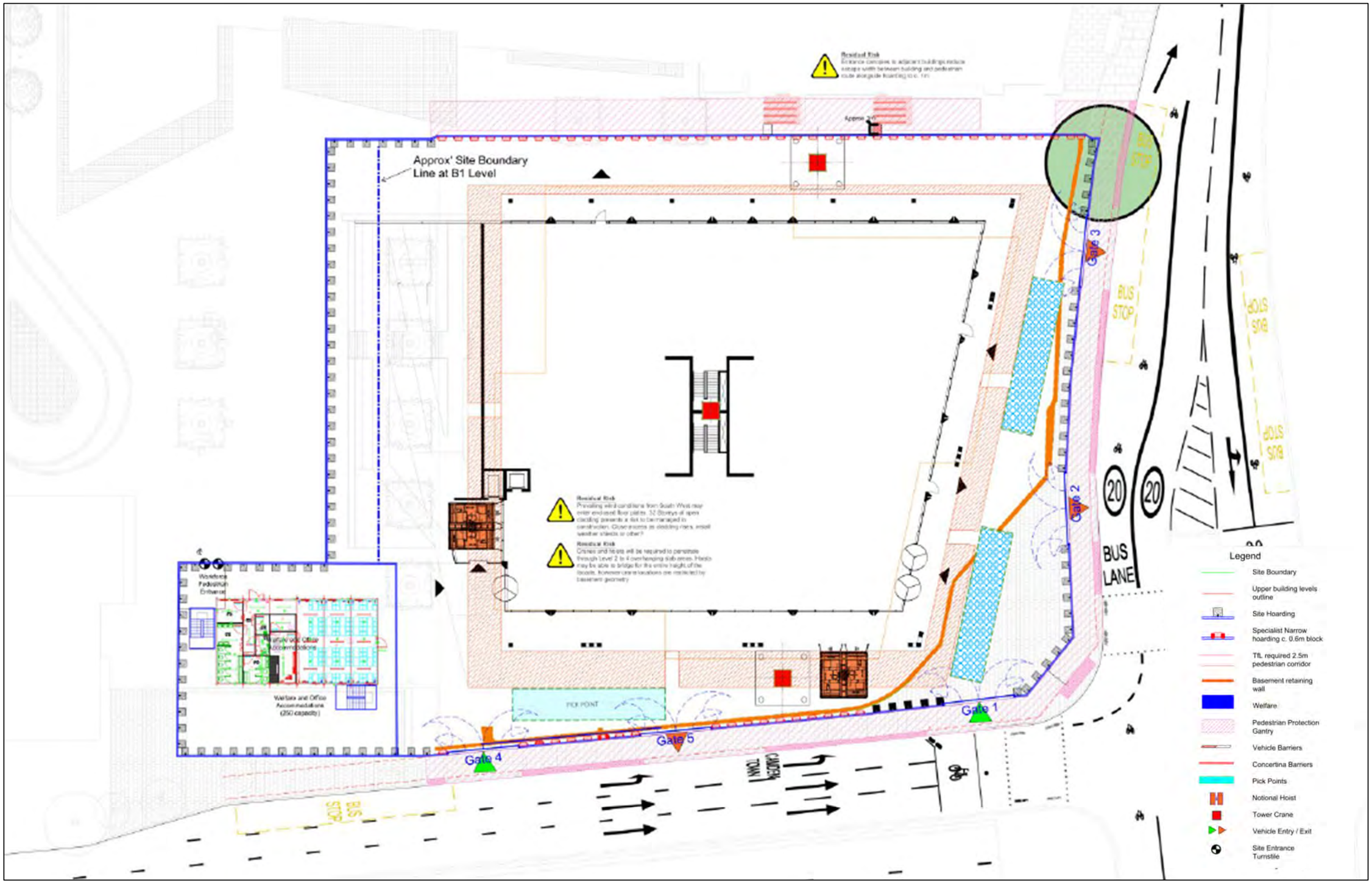


Figure 5.4 **Indicative Superstructure, Cladding and Fitout Works (Phase 3)**



DECONSTRUCTION QUANTITIES

5.61 Table 5.2 provides an estimate of the quantities of material likely to be generated as a result of the deconstruction works.

Table 5.2 Deconstruction Quantities

Deconstruction Material Type	Estimated Deconstruction Quantities
Concrete	15,548m^3
Rebar in concrete	3,110 tonnes
Steel	93m^3
Glass	151m^3
Aluminium	140m^3
Brick	229m^3
PVC	48m^3
Gypsum	137m^3
Softwood	69m^3
Ceramic	7m^3
Chipwood	17m^3
Fibreboard	10m^3
Aggregate	4m^3
Insulation	89m^3
Vinyl	1m^3

5.62 It is anticipated that the deconstruction contractor will identify and preserve existing façade glass, mullions and reinforced concrete slabs and reinforcement steel to be re-used or recycled where possible, i.e. new flat glass, drinks containers, aluminium recycling, and recycled aggregate.

CONSTRUCTION QUANTITIES

5.63 Table 5.3 presents estimates of key construction materials associated with the construction of the Proposed Development.

Table 5.3 Estimates of Key Construction Quantities

Materials Delivered	Quantities
Excavated material	13,322m^3
Substructure concrete	12,670m^3
Substructure rebar	2,851 tonnes
Core concrete (stairs)	234m^3
Concrete slabs	14,475m^3
Rebar in slabs	2,171 tonnes
Steelwork	8,761 tonnes
Facades	26,198m^2
Fitout materials	79,769m^2

CONSTRUCTION WASTE

Excavated Material

5.64 Arisings from excavations of foundations and groundworks are estimated to be in the order of 13,322m^3.

Waste

5.65 Construction waste volumes have been estimated based on the pre-redevelopment and pre-deconstruction audit of Euston Tower (April 2022[1]) and information provided by the project team.

5.66 Based on this information, the Proposed Development is likely to generate approximately 5,993 tonnes[2] of construction waste over the whole development. Construction waste will be separated into recyclable waste streams before removal from site for disposal.

5.67 The design ethos is founded on the minimisation of products to landfill, recycling as much material as possible and the design of the building itself is very carbon conscious. It is intended that the existing cladding and glass that will be removed will be recycled through primary producers. As stated previously, the existing main lift core of the building itself and the existing 'pinwheel' foundations will be retained, reducing the steel and concrete requirements on site.

5.68 From the start, the basic strategy for construction waste management will involve methods of waste elimination and reduction. These materials may have alternative uses elsewhere on the site and will mostly be inert or environmentally benign. Any opportunities to maximise the recycling potential of construction materials will be investigated.

5.69 Initiatives to reduce other waste streams include as far as practically possible:

- Undertaking sustainability workshops setting targets for recycled content in concrete and steel, promoting off site manufacture and reuse of materials in the design stage;
- Minimising raw material waste through analysing design and construction techniques where possible;
- A commitment to developing waste minimisation opportunities by maintaining a role in the management of the supply chain during construction. Measures such as bulk buying will be utilized to facilitate this;
- Liaison with suppliers to enable packaging material to be sent back for reuse, the use of off-cuts where possible and the recycling of off-cut material by the supplier;
- Engaging contractors in the process of maximizing the use of recycled aggregates for hard-core and cement replacements according to application;
- To ensure compliance with legislative requirements, only Environment Agency licensed waste hauliers, waste management contractors and landfill sites will be used;
- Suitable protection measures will be incorporated in the design of the waste management area to prevent pollution and regular inspections carried out to ensure that stored waste is covered by present accidental spillage and from being blown away;
- Movement of waste by haul road and public highways will avoid, where possible, the use of access routes through residential areas. When leaving site, vehicles will be sheeted/covered to prevent any escape of materials onto the public highway;
- Waste transfer notes will be retained and will fully describe the waste terms of type, quantity and containment in accordance with relevant regulations. Information regarding the type and quantity of material returned to the supplier and the contractor or contractors will also hold copies of all waste documentation; and
- Materials stored on-site for disposal (e.g. spoil arising) will be subject to the provisions of the duty of care and may require a waste management permit. Where this is identified the permit of any exemption will be managed by the Principal Contractor.

[1] *This is the most recent information available and there has been no change since this was undertaken.*

[2] *Lendlease, (2023); Resource Management Plan (Rev 02)*

5.70 Contamination and risk to the environment and personnel will be avoided by segregating and storing hazardous waste separately from other waste fractions and disposed of as required by the Hazardous Waste Regulations.

5.71 During construction, BREEAM Wst 01 Construction Waste Management will be followed in order to achieve an Excellent with aspiration for Outstanding rating on practical completion. This entails an evaluation of the risks (on-site and off-site), planning and implementing actions to minimise the identified risks, covering the following, where appropriate:

- Preparation of a compliant Resource Management Plan (RMP) covering non-hazardous waste materials including deconstruction and excavation waste and accurate data records on waste arisings and waste management routes;
- Meeting or improving upon the benchmarks for non-hazardous construction waste, excluding deconstruction and excavation waste. To attain BREEAM Excellent, it is recommended to target ≤ 3.4 m^3 of waste generated per 100m^2 (GIA) or ≤ 6.5 tonnes; and
- Meeting the diversion from landfill benchmarks for non-hazardous construction waste and deconstruction and excavation waste generated. To attain BREEAM Excellent, it is recommended to target at least one credit which corresponds to the following benchmarks in Table 5.4.

Table 5.4 BREEAM Excellent Benchmarks

Type of Waste	Volume	Tonnage
Non-deconstruction	70%	80%
Deconstruction	80%	90%

5.72 Full details of the circularity strategy and actions for each element of the design are contained within the Circular Economy Statement and within the Sustainability Statement accompanying the planning application.

SITE ACCESS AND EGRESS

Access and Egress

5.73 Adjacent properties which remain occupied during the construction works will be provided with safe access and egress.

5.74 The three main routes during deconstruction and construction are as follows:

- Euston Road;
- Hampstead Road; and
- Drummonds Street / Longford Street.

5.75 The main pedestrian access to the works will be the footpath to the north of Euston Road.

5.76 The existing road network on the A501 Euston Road, the A400 Hampstead Road or Albany Street, Longford Street and Drummond Street are expected be used for vehicle access and egress from the site and storage areas, subject to final pre-commencement agreement.

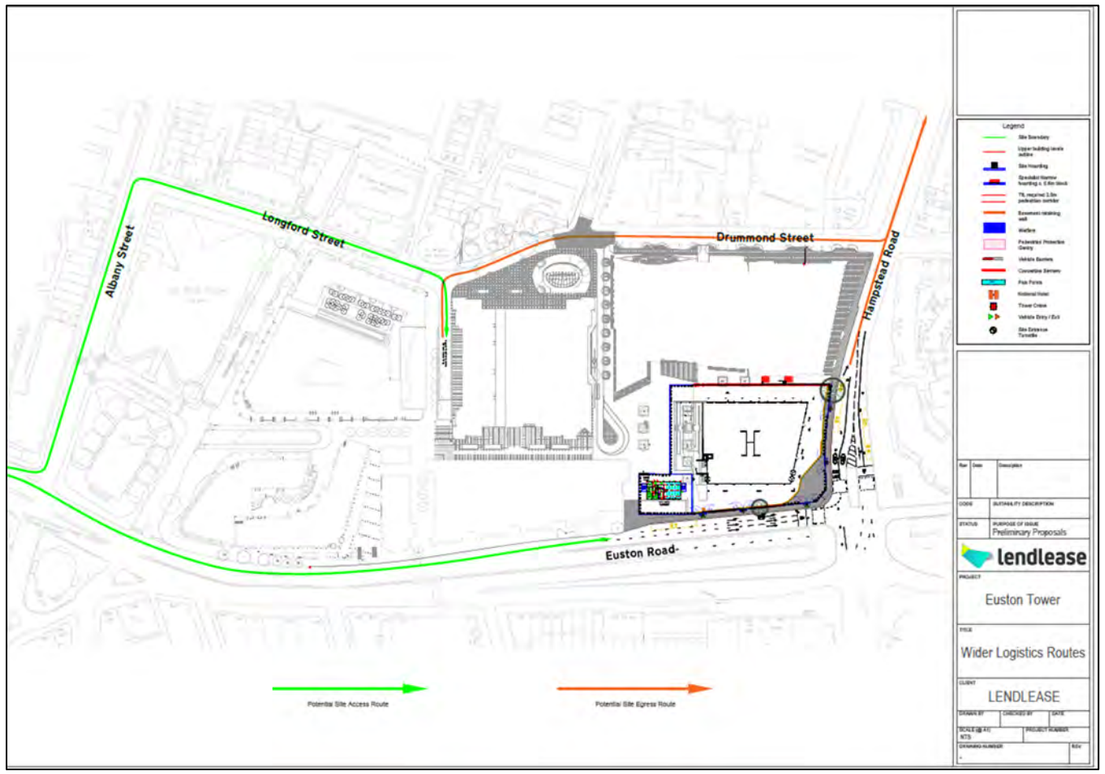
Main Access Routes

5.77 The London Borough of Camden (LBC), TfL and other necessary authorities will agree on the routes for construction traffic involved in the delivery of goods and materials to and from the site before each application for a construction phase.

5.78 It is proposed that the construction vehicle movements are to remain within the Strategic Road Network where possible. However, it is anticipated that some minor residential roads, such as Drummond Street and Longford Street, will be required for access to works (Figure 5.5).

5.79 Consultation on the most appropriate routes will take place between LBC Highways, TfL and adjacent London Boroughs prior to the commencement of construction.

Figure 5.5 Construction Vehicle Routing



Road Vehicle Numbers

5.80 Throughout the duration of the works, the number of Heavy Goods Vehicles (HGVs) required to service construction has been calculated. The results show peaks in HGV trips will coincide with the site set up, deconstruction, piling and basement walls periods of the construction programme.

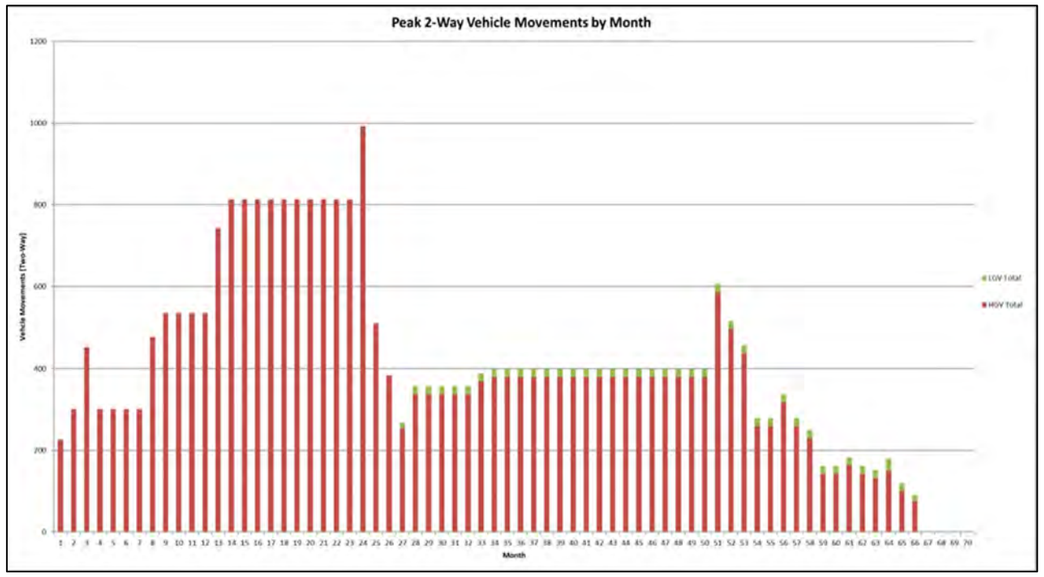
5.81 The LBC, other relevant highway authorities and the Police will address movements of large or abnormal loads in advance in order to ensure compliance with regulations and advance notification for local residents.

5.82 Table 5.5 and Figure 5.6 has identified the anticipated average number of daily HGV and LGV vehicles for each year over the duration of the indicative deconstruction and construction programme. The anticipated average daily number of vehicles is expected to peak during Year 2 of the deconstruction and construction period. This peak equates to 27 HGVs per day, with no forecast Light Goods Vehicle (LGV) movements. Therefore, the absolute daily peak is estimated to be 27 HGV arrivals or 54 two-way HGV movements.

Table 5.5 Construction Vehicle Forecast (HGV and LGV) – Average Vehicles per Day

Vehicle Type	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
HGV	13	27	12	12	11	2
LGV	0	0	1	1	1	0
TOTAL	13	27	13	13	12	2

Figure 5.6 Monthly Vehicle Movements



PLANT AND EQUIPMENT

5.83 Consideration has been given to the types of plant that are likely to be used during the enabling, deconstruction and construction works. The plant and equipment associated with the enabling and deconstruction works, and construction process is set out in Table 5.6.

HOURS OF WORKS

5.84 The anticipated core working hours for construction will be as follows:

- 08:00 – 18:00 hours on weekdays;
- 08:00 – 13:00 hours on Saturdays; and
- No Sunday or Bank Holiday working unless prior approval for specific works by the LBC i.e. Mobile crane for deconstruction plant installation and removal, or tower crane installation and removal activities.

5.85 It is not currently the intention to instate 'quiet periods' (e.g. 10:00 – 12:00 and between 14:00 – 16:00 Monday to Fridays), as periods where noisy activities are reduced.

5.86 Works that take place outside of those working hours are anticipated to be within noise limits set by LBC. Prior to noisy activities taking place outside normal hours of operation, consultation with LBC will be required. The only exception will be in cases of emergency work which may need to take place.

Table 5.6 Plant and Equipment Associated with the Works

Plant	Deconstruction Works	Piling	Substructure	Superstructure	Fit Out	External Works
Dumpers/ Spoil Trucks	✓	✓	✓	✓		
Mobile Cranes						
Crawler Cranes						
Tower Cranes	✓	✓	✓	✓	✓	
Platform Hoists	✓		✓	✓	✓	
Mast climber Platforms						
Cutters, drills and small tools	✓	✓	✓	✓	✓	✓
Crushers						
360° excavators	✓	✓	✓			✓
Floodlights	✓	✓	✓	✓	✓	✓
Forklift truck	✓	✓	✓	✓	✓	✓
Generators	✓	✓	✓	✓	✓	
Compressors	✓	✓	✓	✓	✓	
Hydraulic benders and cutters		✓	✓	✓	✓	
Conveyor Belt						
HGVs/ lorries/ vans	✓	✓	✓	✓	✓	✓
Piling rigs		✓				
Scaffolding and mobile hydraulic access platforms	✓	✓	✓	✓	✓	✓
Ready-mix concrete lorry		✓	✓	✓		
Concrete pump		✓	✓			
Water Pump	✓	✓	✓	✓		✓
Temporary Supports	✓	✓	✓	✓		
Power Tools	✓	✓	✓	✓	✓	✓
Hand Tools	✓	✓	✓	✓	✓	✓

5.87 In order to maintain the above core working hours, the Principal Contractor may require at certain times a period of up to one hour before and after core working hours for start and close down activities (this will not include works that are likely to exceed any pre agreed maximum construction works noise levels). Specialist construction operations and deliveries may also be required to be carried outside these core hours in agreement with the LBC and other relevant parties.

Community Liaison

5.88 The Principal Contractor will aim to contact LBC's Highway division and the pollution control team prior to the works commencing on-site in order to agree on a scope of the 'scheme of protective works' to be submitted, and to identify the scope of community liaison and consultation.

5.89 The Principal Contractor will also carry out 'best practicable means' (BPM) and a 'scheme of protective works for protecting neighbours. The scheme will involve liaising and consulting with neighbours to minimise the environmental impact of the works.

5.90 To keep the LBC, residents, businesses, and other stakeholders informed of progress on-site and forthcoming activities which may affect them, liaisons with the appointed Logistics and Neighbourhood Liaison Relationship Manager have been planned.

5.91 The construction process will incorporate meetings between the Principal Contractor, the LBC Environmental Health and Highway representatives and key members of the local community to fine tune methods of working and the measures to minimise disruption. This liaison will also involve regular meetings to ensure that they are kept informed of the progress and any comments will be received, logged and actioned as a result of the works in a timely manner.

5.92 All residential properties and other sensitive occupiers in close proximity to the site will be identified by the Principal Contractor in advance of the works commencing on-site in order to mitigate disturbances. The start date, the duration, and the nature of the project will be communicated to all occupiers in the vicinity of the site, as will the principal stages of the project. Hand delivered mailed project newsletters with the contact names and numbers of appropriate personnel will also be provided.

5.93 Throughout the duration of the works, progress and forthcoming activities, particularly those which may cause disturbance, access difficulties and the like, will be communicated monthly via newsletters which will be hand delivered to adjoining occupiers and other neighbouring occupiers who may be affected by the works.

5.94 Key personnel, contact addresses and telephone numbers will be identifiable through a display board outside the site. The board will also include a full copy of the planning permissions and any forthcoming activities relating to the works.

Complaints Procedure

5.95 A permanent record of the performance of the project will be provided through the establishment of a complaints register. Complaints from residents or other parties will be taken seriously and will be logged and be a cause for investigation.

5.96 Complaints will be analysed and will allow for the implementation of procedures to avoid any re-occurrence.

MITIGATION AND MONITORING CONTROLS

5.97 **ES Volume 1, Chapter 15: Environmental Management, Mitigation and Monitoring Schedule** presents the environmental management, mitigation and monitoring measures that the Applicant is committed to implementing throughout the deconstruction and construction works to, either eliminate, or reduce the significance of any likely environmental effects. These measures form part of the CMP that has been prepared and is submitted as part of the planning application.

Chapter 6: Socio-Economics

SOCIO-ECONOMICS	
AUTHOR	Trium Environmental Consulting LLP
SUPPORTING APPENDIX	**ES Volume 3, Appendix: Socio-Economics** Annex 1: Planning Policy Context
KEY CONSIDERATIONS	This ES chapter presents an assessment of the socio-economic effects of the Proposed Development. In particular, this ES chapter presents an assessment of effects related to employment generation (during deconstruction / construction and operation), and indirect economic effects (i.e. employee expenditure).
CONSULTATION	A formal EIA Scoping Report was prepared and submitted to the London Borough of Camden (LBC) on 4 August 2023 to confirm general acceptance on the proposed scope of the EIA. The formal EIA Scoping Report is appended to this ES in **ES Volume 3, Appendix: EIA Methodology – Annex 1**). A draft EIA Scoping Opinion was issued by LBC on 4 October 2023, and a final EIA Scoping Opinion was issued by LBC on 16 November 2023, which broadly agrees with the proposed scope and methodology of the socio-economics chapter. This ES chapter has been produced in line with the EIA Scoping Opinion comments, including clarity on the vacancy status of existing office space as it relates to the site's baseline contribution of commercial space and associated employment.

ASSESSMENT METHODOLOGY

Defining the Baseline

6.1 The baseline assessment considers current social and economic conditions at varying spatial levels from the site based on an initial review of the local area, professional experience and feedback from the EIA Scoping Opinion.

6.2 The Proposed Development comprises a commercial scheme, including office and research and development enabled lab space (Use Class E(g)), office, retail, café and restaurant space (Use Class E) and learning and community space (Use Class F), and associated external terraces, public realm enhancements and associated works. The assessment has therefore considered the following:

- Creation of temporary employment during the deconstruction and construction works and associated spending by this workforce;
- Creation of permanent employment opportunities once operational and spending effects associated with these employees; and
- Contribution to open space and public realm within LBC.

6.3 An assessment of impacts on housing and social infrastructure, including healthcare, educational facilities, and play space, has been scoped out of this ES as neither the existing site nor the Proposed Development provide residential dwellings and accordingly no significant effects are likely in respect of these matters.

Current Baseline Conditions

6.4 Baseline socio-economic conditions that are of relevance to the assessment contained within this ES chapter have been established through analysis of nationally recognised research and survey information including:

- Office for National Statistics (ONS) and NOMIS;
- Census 2021;
- English Indices of Deprivation (IoD)[1];
- Office for Health Improvement and Disparities (OHID) and NHS Digital data wherever available; and
- LBC, Greater London Authority (GLA) and UK Government data (latest available).

Future Baseline Conditions

6.5 Due to the current availability of reliable data, the assessment is based on the existing baseline rather than a future baseline. Wherever possible data from 2023 has been used; however, in some instances earlier data has been used where more up-to-date information has not yet been published.

Evolution of the Baseline

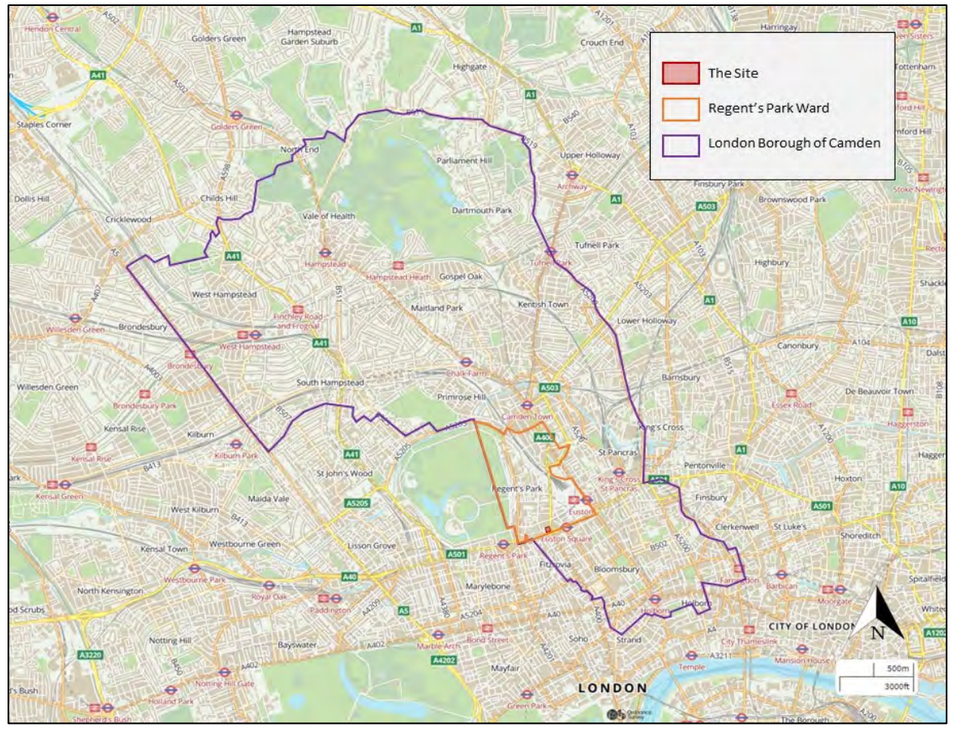
6.6 As it is not possible to definitively quantify future conditions for socio-economics, a qualitative rather than quantitative review has been presented to demonstrate how the socio-economic baseline may evolve in the future. This is based on a review of nearby cumulative schemes coming forward (detailed within **ES Volume 1, Chapter 2: EIA Methodology** and **ES Volume 3, Appendix: EIA Methodology – Annex 3**) and considers the potential change in the baseline conditions in the absence of the Proposed Development.

Geographical Study Areas

6.7 The baseline assessment considers current social and economic conditions at different spatial levels (i.e., study areas), as defined below and as illustrated in Figure 6.1:

- Site level – the site as defined by the redline boundary (where data is available);
- Local level – Regent's Park ward;
- Borough level – London Borough of Camden (LBC);
- Regional level – Greater London (London); and
- National level – England.

Figure 6.1 The Site Location in Relation to Relevant Geographical Boundaries



Base map source: OS (2023)

[1] *Ministry of Housing, Communities & Local Government (MHCLG) (2019). English Indices of Deprivation.*

Impact Assessment Methodology

Geographic Scale of Assessment and Corresponding Baselines

6.8 Potential effects of the Proposed Development on existing socio-economic conditions vary by geographic level. This is due to the sensitivity of conditions at differing scales, with more local geographies typically being more sensitive to effects brought on by change, such as the introduction of the Proposed Development.

6.9 An outline of the spatial scales at which the socio-economic conditions included in this assessment are most sensitive is provided in Table 6.1. It is unlikely the Proposed Development would result in significant effects beyond the geographic levels defined in this table.

Table 6.1 Geographical Areas of Assessment for Socio-economic Effects

Condition	Spatial Level	Justification
Local Economy		
Construction Employment	Regional	Construction employment will be derived from the Office for National Statistics (ONS) Business Population Estimates[2] and other ONS sources and Homes and Communities Agency (HCA)[3] guidance as relevant. Given the mobility of this industry, it is best considered at the regional level.
Operational Employment	Local, Borough	The gross number of operational jobs that could be generated on site will be calculated by applying the standard job density ratios based on the HCA Employment Density Guide[4]. The HCA Additionality Guide[5] will then be used to establish net employment, accounting for wider local additionality factors such as displacement and economic multipliers. This also allows for the estimation of wider indirect and informal employment facilitated through the Proposed Development.
Additional Expenditure	Local, Borough, Regional	Additional spending by construction workers and end-use employees of the Proposed Development will occur at varying distances from the site and be calculated based on thresholds set in the HM Revenue & Customs (HMRC) Employment Income Manual[6] and HCA finance.
Social Infrastructure		
Open Space	Site, Local	According to the LBC's Public Open Space Planning Guidance[7], public amenity open space should be maximum of 280m from the Proposed Development.

Deconstruction and Construction

Local Economy

Employment

6.10 To estimate the number of jobs likely to be generated as a result of the deconstruction and construction phases of the Proposed Development, labour coefficients (i.e. person years of employment per £1 million spend) from the HCA guidance have been applied to the forecasted costs associated with the construction and deconstruction programme[8]. Person years of employment have then been divided by the expected construction period (65 months) to provide the average number of Full-Time Equivalent (FTE) jobs supported each year. It should be noted that this methodology produces an estimate of construction employment and has been used for assessment purposes rather than formal construction requirements, which are not available at this stage.

Additional Expenditure

6.11 It is acknowledged that whilst some construction workers may live locally and thus their expenditure on household goods and services would support induced employment locally, others could be expected to be drawn from the wider region, depending on their role. On this basis, an estimate of construction supply chain effects, or indirect employment, and induced effects, or local expenditure, are considered at a high level, quantitative manner, through the use of an estimated additionality factor of 33%, as specified within the HCA Additionality Guide.

Completed Development

Local Economy

Employment

6.12 The gross number of jobs that would be lost or generated by non-residential floorspace have been calculated by applying the standard job density ratios based on the HCA's Employment Density Guide. This guidance is the latest available and as such, does not relate to the latest use classes (i.e., Use Class E) published in 2020. Therefore, although the Proposed Development includes the provision of Use Class E and F floorspace, the correlating previous use classes have been used for the purposes of assessing operational employment creation, namely Use Classes B1a (offices), B1b (R&D space) and A1 (retail) / A3 (restaurants and cafes). In the reasonable worst-case scenario for employment, it is assumed that there would be no jobs associated with the community (Class F) uses.

6.13 The HCA guidance sets out expected FTE employment created per m^2 of floorspace for varying use classes, depending on how efficiently the floorspace can be used. For example, office use mainly requiring desktop work will allow for a higher density of employment than industrial use which requires floorspace for large machinery as well as space for employees. As well as considering spatial requirements, the employee density of other uses may be dependent on labour intensity. For example, a retail or other customer experience-oriented business would require more staff on-site than a gym or cinema requiring less employee oversight.

6.14 Net employment is calculated in part by subtracting the gross number of jobs lost or created by the Proposed Development from existing employment on-site, if any. The HCA Additionality Guide has also been used to establish net employment from the Proposed Development by accounting for wider additionality factors such as displacement and economic multipliers. A low displacement level of 25% has been assumed in line with the HCA Additionality Guidance. This is considered suitable for this assessment as the Proposed Development is expected to have *"some displacement effects, although only to a limited extent*". In addition, a composite ready reckoner local multiplier of 1.21 has been used. This is in line with the HCA Additionality Guidance for retail uses and is considered the most appropriate multiplier for the purposes of this assessment as it allows for the estimation of indirect and informal employment facilitated through the Proposed Development.

6.15 In line with the HCA Additionality Guide, a leakage value of 0 has been assumed for the outline employment calculation as no specific groups are targeted by the employment floorspace at this stage, and it is therefore not possible to reliably predict this level of effect.

6.16 The Proposed Development includes the provision of 77,542m^2 GIA of Use Class E and F floorspace. For completeness, both the minimum and maximum employment scenarios associated with the Proposed Development have been modelled and presented within this ES chapter. Although it is unlikely that proposed floorspace would come forward in these extremes (i.e. solely that which would generate the lowest number or the highest number of jobs), the assessment of effects has been based on the reasonable worst-case scenario to present a reasonable worst-case effect. The effect for the highest employment generating (i.e. maximum) scenario is also stated within the assessment but is not carried through to the residual effects.

[2] *ONS (2021). Business population estimates for the UK and regions 2021: statistical release.*
[3] *HCA was replaced by Homes England in January 2018. However, its guidance remains the most up to date and relevant for UK figures and is therefore still used as part of standard practice.*
[4] *HCA (2015). Employment Density Guide, 3rd Edition.*
[5] *HCA (2014). Additionality Guide, 4th Edition.*
[6] *HMRC (2023). Employment Income Manual.*
[7] *LBC (2021). Camden Planning Guidance: Public open space.*
[8] *HCA (2015). 'Calculating Cost Per Job – Best Practice Note, 3rd Edition'.*

Additional Expenditure

6.17 To estimate spending by net additional employees, an average spend per day of £10 per employee has been applied, based on the thresholds set out within the HMRC Employment Income Manual for daily meal allowances. A range of spend has also been calculated, to align with the range in potential employment figures[9].

Social Infrastructure

Open Space

6.18 The amount of public amenity open space required by the Proposed Development has been calculated based on guidance provided in the Camden Planning Guidance: Public Open Space. This document stipulates that commercial developments providing over 1,000m^2 of Use Class B floorspace must also provide 0.74m^2 of public amenity open space per worker.

6.19 As this guidance does not reflect the latest changes to use classes published in 2020, the correlating current use classes as set out above have been used for the purposes of assessing operational employment creation (as described above) and therefore also assessing open space requirements.

6.20 In this case, the highest employment generating scenario during the operation of the Proposed Development would result in a worst-case scenario for the amount of public amenity open space required. Or, in other words, the likely maximum number of employees generated by the Proposed Development would result in the likely maximum amount of open space required by the Council. Thus, the open space assessment is based on the likely maximum number of employees which could be generated by the Proposed Development. Although it is unlikely that proposed floorspace would come forward in these extremes (i.e. solely that which would generate the lowest number or the highest number of jobs), the assessment of effects has been based on the reasonable worst-case scenario to present a reasonable worst-case effect.

Cumulative Effects

6.21 A cumulative scenario has also been considered whereby the effects of the identified cumulative schemes have been considered in combination with those for the Proposed Development. This section utilises information available for the cumulative schemes to inform these effects, such as additional provisions for housing, social infrastructure or employment. Where schemes (or parts of schemes) have already been built out and are operational, these are considered within the baseline.

6.22 The assessment of cumulative effects will follow the same methodology as the assessments for *'Deconstruction and Construction'* and the *'Completed Development'* for the Proposed Development alone.

Assumptions and Limitations

6.23 There are no specific significance criteria relating to the assessment of socio-economic effects. Therefore, the assessment is made against a benchmark of current socio-economic baseline conditions prevailing at and within relevant study areas, using professional judgement and best available information, and are considered accurate at the time of writing.

6.24 As with any dataset, baseline data will change over time. The most recent published data sources have been used in this assessment wherever possible. However, it should be noted that in some instances this data may not be up-to-date or may be based on modelled forecasts. This is an unavoidable limitation, but it is not expected to affect the magnitude of impacts or significance of effects in any material way.

6.25 The employment expected to be accommodated by the completed and operational commercial floorspace of the Proposed Development has been calculated by applying the standard job density ratios from the HCA Employment Density Guide. The Proposed Development includes provision of flexible Use Class E and F space, which is likely to deliver a mix of uses. As the exact nature of the future occupiers is unknown, an assessment of the best- and worst-case employment densities has been applied to provide a reasonable range for potential employment generation, and employee expenditure. It is expected that once the final occupiers of this space are known, then the actual employment generated by the Proposed Development, as well as associated employee expenditure, will fall within this range.

[9] *HelloSafe (2023). Working Days Calculator. Available at: https://hellosafe.co.uk/business-insurance/tools/working-days-calculator.*

Methodology for Defining Effects

6.26 The scale of impact attributed to each socio-economic effect has been determined based on the receptor sensitivity and magnitude of change resulting from the Proposed Development. Professional judgement and experience have been drawn upon to assess the scale, and thus significance, of the socio-economic effects.

Receptors and Receptor Sensitivity

6.27 Receptor sensitivity is based on a scale of:

- **High:** local population, employment and economy; social infrastructure with no surplus or a deficit in capacity; high levels of unemployment;
- **Medium:** borough and regional populations, employment and economy; social infrastructure operating close to or with limited surplus capacity; average levels of unemployment; and
- **Low:** national population, employment and economy; social infrastructure with surplus capacity; lower than average unemployment.

Magnitude of Impact

6.28 The magnitude of impact is based on a scale of:

- **High:** substantial change to one or more of the following receptors: local economy, employment, demand for social infrastructure;
- **Medium**: noticeable change to one or more of the following receptors: local economy, employment, demand for social infrastructure;
- **Low**: little change to one or more of the following receptors: local economy, employment, demand for social infrastructure; and
- **Negligible**: no perceptible change to one or more of the following receptors: local economy, employment, demand for social infrastructure.

Defining the Effect

6.29 The significance of each effect has been determined by reference to the:

- Nature of effect; and
- Scale of effect

Nature of Effect

6.30 In terms of effect nature, effects are defined as either:

- **Adverse**: detrimental effects on a socio-economic receptor within the defined study area; and
- **Beneficial:** advantageous effects on a socio-economic receptor within the defined study area.

Scale of Effect

6.31 The scale of each effect, which is based on the identified receptor sensitivity and magnitude of impact has been defined as:

- **Major:** considerable significant effects**;**
- **Moderate**: notable significant effects;
- **Minor:** slight or highly localised, but not significant, effects; and

- **Negligible**: effects which are largely beneath levels of perception.

6.32 Determining the scale of effect has been based on existing best practice guidance where available. Where not available, professional judgement has been applied, considering the receptor sensitivity and magnitude of impact. Table 6.2 presents the matrix which determines the scale of effect. Where two scales have been provided within the table, this is to allow for professional judgement.

Table 6.2 Scale of Effects Matrix

Receptor Sensitivity	Magnitude of Impact			
	High	Medium	Low	Negligible
High	Major	Major or Moderate	Moderate or Minor	Negligible
Medium	Major or Moderate	Moderate	Minor	Negligible
Low	Moderate or Minor	Minor	Negligible	Negligible

Geographic Extent

6.33 The geographic extent of potential impacts is the same as the assessment area, as defined in Table 6.1 above.

Duration of Effect

6.34 Effects which are defined temporally, and generally occur during construction, are classed as 'short term' or 'medium term', or 'temporary'. Effects which do not have a defined timeline, and general occur during operation, are classed as 'long term', or 'permanent'.

Direct and Indirect Effects

6.35 Effects resulting without any intervening factors are classed as 'direct' and effects which are not directly caused by or resulting from something else are classed as 'indirect' or 'secondary'.

Categorising Likely Significant Effects

6.36 Based on the above methodology, effects considered to be moderate or major in scale are classed as '**significant'**, whilst negligible or minor effects are considered as 'not significant'.

6.37 Following identification of the significance of the likely effects, the requirement for any mitigation to either eliminate or reduce significant adverse effects is considered. Where mitigation measures have been identified to either eliminate or reduce significant adverse effects, these have been incorporated into the Proposed Development. This assessment then highlights the residual effects and clarifies whether these effects are significant or not.

BASELINE CONDITIONS

Current Site Conditions

6.38 The site is located within the Regent's Park ward in the LBC and covers an area of 8,079m^2. It comprises an existing single, ground plus 36-storey tower (Euston Tower) and Regent's Place Plaza. The tower comprises 54,826m^2 of floorspace across office (Use Class E(g)(i) and retail (Use Class E) uses at ground level. The site currently employs approximately 56 FTE across its retail spaces, with the office space vacant since 2021 and since stripped out.

Local Profile

Population Demographics

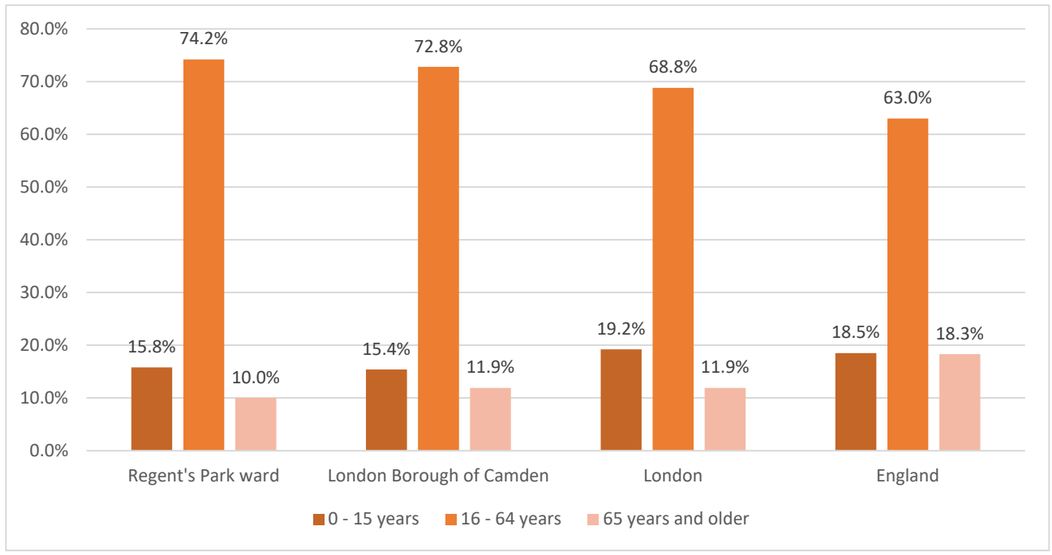
6.39 Approximately 12,000 people live in Regent's Park ward, which is about 5.7% of LBC's population (210,000) and about 0.1% of London's population (8.8 million)[10].

6.40 Regent's Park ward is densely populated with about 8,800 people per square kilometre[11]. LBC has a marginally higher density with approximately 9,600 people per square kilometre, while London's average density is lower at about 5,600 people per square kilometre. In contrast, England's average density is only 430 people per square kilometre.

6.41 Regent's Park ward's population is predominantly comprised of working age residents (16 – 64 years), with a larger proportion of this demographic in Regent's Park ward (74.2%) than in the rest of the LBC (72.8%), London (68.8%), and England (63.0%)[12].

6.42 As a result, Regent's Park ward also has a relatively small population of children and young people (0 – 15 years) and older residents (65 years and older). As illustrated in Figure 6.2, these figures are in proportion to rates seen across the local area and region, with children and young people generally outpacing older residents, although England tends to see more equal rates of children and young people and older people.

Figure 6.2 Population by Age



Deprivation

6.43 The English Indices of Deprivation (IoD)[13] is the official measure of relative deprivation in England. It is based on seven distinct domains of deprivation, which are weighted and combined to form the overall index. These seven domains include:

- Income;
- Employment;
- Education and skills training;
- Health deprivation and disability;
- Crime;

[10] *Office for National Statistics (ONS) (2022). Census 2021: Dataset ID TS008 – Sex.*
[11] *ONS (2022). Census 2021: Dataset ID TS006 – Population density.*
[12] *ONS (2022). Census 2021: Dataset ID TS007 – Age by single year.*
[13] *MHCLG (2019). English Indices of Deprivation 2019.*

- Barriers to housing and services; and
- Living environment.

6.44 IoD scores are assessed at the Lower Layer Super Output Area (LLSOA) level and ranked to provide a relative score for each LSOA. The lower the decile score, the worse off a LSOA is in that domain, with scores of 1 indicating a ranking in the first decile, or amongst the 10% most deprived LSOAs in the country.

6.45 LSOAs comprise 400 to 1,200 households or 1,000 to 3,000 people. Regent's Park ward includes eight LSOAs, listed in Table 6.3 below, which face relatively high levels of deprivation across the seven domains[14]. The site is situated within Camden 021B, which covers Regent's Place Plaza and the wider Regent's Campus, as well as the eastern portion of Regent's Park.

Table 6.3 Deprivation (IoD Decile Scores)

	Overall Deprivation	Income	Employment	Education, Skills and Training	Health Deprivation and Disability	Crime	Barriers to Housing and Services	Living Environment
Camden 021B	**6**	4	7	7	8	9	5	2
Camden 021C	**4**	4	4	8	5	3	3	2
Camden 021D	**3**	4	4	8	6	1	4	2
Camden 023A	**4**	3	4	3	7	7	5	3
Camden 023B	**3**	3	3	5	3	5	4	1
Camden 023C	**5**	4	4	5	5	9	6	4
Camden 023D	**2**	1	2	2	3	5	4	2
Camden 023E	**2**	1	2	4	4	4	5	2

1 2 3 4 5 6 7 8 9 10

6.47 Generally, the Regent's Park ward is very deprived, with all eight LSOA amongst the 60% most deprived neighbourhoods in the country in terms of overall deprivation and poor scores across all domains. The most deprived LSOA, Camden 023D and Camden 023E, are amongst the 20% most deprived in the country.

6.48 Within Camden 021B, which contains the site, overall deprivation is neither notably decent nor poor with an overall deprivation score in the 6th decile, or amongst the 60% most deprived LSOAs in England. As with other LSOAs in the ward, deprivation scores for Camden 021B are poorest in terms of living environment (2nd decile), income (4th decile) and barriers to housing and services (5th decile). However, unlike most other LSOA in the ward, Camden 021B sees relatively good scores in terms of employment (7th decile), education, skills and training (7th decile), health deprivation and disability (8th decile), and crime (9th decile).

6.49 Within the domain of 'health deprivation and disability', scores are scattered, ranging from the 3rd to the 8th decile. However, little health-specific data is available at this spatial level, and some figures have been supressed to preserve the anonymity of respondents. It is therefore not possible to come to a well-founded conclusion as to the reasons behind the poorer scores within this domain in this particular geography.

Local Economy

Job Market

6.50 Approximately 418,000 FTE jobs exist within LBC at a density of 2.73 roles per working age resident, compared to a density of only 1.02 across London[15]. In LBC, 77.1% of these positions are full-time, while 74.1% are full-time across London.

6.51 The most common Standard Occupational Classification (SOC) 2020 in LBC, and in London, is Group 1-3, which includes managers, directors, senior officials, and professional occupations. 70.4% of workers in LBC are in this category, compared to 63.7% of workers in London.

6.52 The largest industry in LBC in terms of workforce is Professional, Scientific and Technical Activities, which supports 20.5% of jobs, compared to only 14.2% of jobs across London. The next largest industries are Information and Communication (12.9%) and Human Health and Social Work Activities (12.9%), both of which hold a larger share of the job market within LBC than within London overall (8.4% and 12.9% respectively).

6.53 2.4% of jobs in LBC are within the Construction industry (9,000 roles), compared to 3.5% of jobs in London (188,000 roles).

Economic Activity

6.54 Within the working age population, 74.6% of LBC residents are economically active, which is slightly less than the level of economic activity seen across all London residents (79.8%)[16].

6.55 Based on modelled estimates provided by the ONS, of those who are economically active 3.2% are unemployed in the LBC, which is also lower than across London (4.3%). These figures are slightly lower than the number of claimants registered within both the LBC (4.3%) and London (4.7%) during the same period, however the trend depicting higher unemployment across London than the LBC holds in both scenarios.

Local Expenditure

6.56 Gross weekly pay for full time workers in the LBC is £851.40, which is higher than the London average of £804.9 per week, and likely linked to the high proportion of jobs in the Professional, Scientific and Technical Activities industry[17].

6.57 LBC's annual gross domestic product (GDP) is approximately £3.5 billion or £168,278 per head[18], compared to approximately £500 billion for London[19].

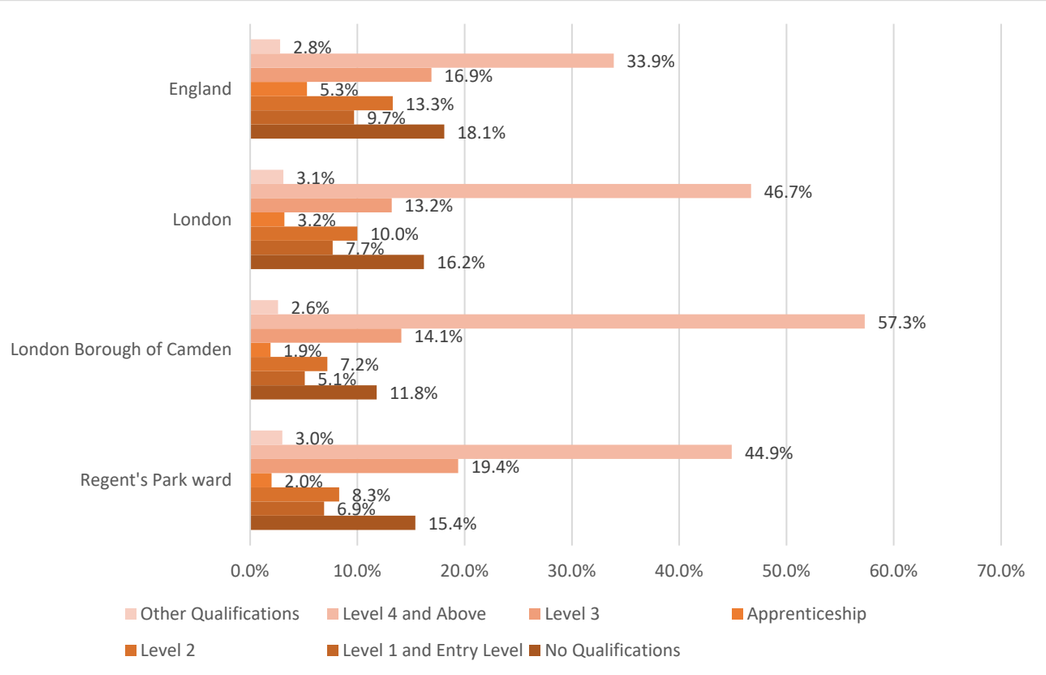
Education and Skills

6.58 Approximately 57.9% of working age LBC residents have Level 4 qualifications or above, which is higher than both the proportion of residents with such qualifications across London (46.7%) and England (33.9%)[20]. This also is reflective of the prevalence of professional occupations within the Borough and the higher-than-average weekly pay.

6.59 LBC residents are also less likely to have no qualifications (11.8%) or to hold an apprenticeship (1.9%), as their highest level of qualification, compared to their regional and national counterparts.

[14] *MHCLG (2019). English Indices of Deprivation 2019. File 2: Domains of deprivation.*
[15] *ONS (2021). Labour Market Profile – Camden. Available at: https://www.nomisweb.co.uk/reports/lmp/la/1946157246/report.aspx. Accessed 20/10/2023.*
[16] *ONS (2021). Labour Market Profile – Camden. Available at: https://www.nomisweb.co.uk/reports/lmp/la/1946157246/report.aspx. Accessed 20/10/2023.*
[17] *ONS (2021). Labour Market Profile – Camden. Available at: https://www.nomisweb.co.uk/reports/lmp/la/1946157246/report.aspx. Accessed 20/10/2023.*
[18] *ONS (2023). Regional economic activity by gross domestic product, UK: 1998 to 2021.*
[19] *European Union (2020). EuroStat News Release: GDP per capita in EU regions (38/2020).*
[20] *ONS (2022). Census 2021: Dataset ID TS067 – Highest level of qualification.*

Figure 6.3 Highest Level of Qualification amongst Working Age Residents



Social Infrastructure

Open Space

6.60 Regent's Place Plaza sits within the redline boundary for the site and comprises a hardscaped plaza with both integrated and moveable seating as well as some tree cover around the perimeter of the space. This is the only open amenity space within 280m of the Proposed Development.

6.61 The site is within reasonable walking distance (within 800m) of several public open and green spaces, as outlined in Table 6.5 and shown in Figure 6.4.

Table 6.4 Local Public Open Space

Map Ref	Name	Distance from Site	Description of Facilities
1	Munster Square	290m	Gardens and playground within Regent's Park Estate
2	Fitzroy Square Garden	450m	Small, private, neighbourhood-administrated garden occasionally open to the public
3	Clarence Gardens	550m	Gardens and playground within Regent's Park Estate
4	Regent's Park	650m	Large public park including formal gardens, sports pitches, a running track, a sports centre, cafes, playgrounds, an open-air theatre and public toilets
5	Cumberland Market	700m	Gardens, playground and basketball court within Regent's Park Estate
6	Gordon Square Gardens	700m	Small public park with seating
7	Tavistock Square Gardens	800m	Small public park with seating

Figure 6.4 Local Public Open Space

Base map source: OS (2023)

RECEPTORS AND RECEPTOR SENSITIVITY

Existing

6.62 Table 6.5 below sets out existing receptors likely to be impacted by the Proposed Development, as well as their corresponding sensitivity, in line with the sensitivities set out in paragraph 6.27.

Table 6.5 Receptors and Receptor Sensitivity

Receptor		Sensitivity
Local Economy	Employment (deconstruction / construction and operational phases)	Low
	Additional Expenditure	Low
Social Infrastructure	Open Space	Low

Introduced

6.63 No new receptors relevant to the assessment will be introduced with the Proposed Development.

EMBEDDED MITIGATION

6.64 No embedded mitigation relevant to socio-economics specifically and which impacts the assessment of socio-economic effects is included within the Proposed Development.

POTENTIAL EFFECTS

Deconstruction and Construction

Employment

6.65 It is anticipated that 5,815-person years of employment could be supported by the deconstruction and construction phase, including a broad range of job types and occupations for roles both on- and off-site. With an anticipated 65-month programme (5 years and 5 months), an average of 1,057 jobs could be supported in each year of this phase.

6.66 Construction employment is highly mobile and therefore consideration of the deconstruction and construction works is best considered at the regional level. As set out in the baseline, the construction industry currently supports about 188,000 jobs across London, so annual employment supported by the Proposed Development during the deconstruction and construction phase would be approximately 0.56% of annual employment in London's construction sector.

6.67 The introduction of 1,057 direct FTE roles each year during the deconstruction and construction programme is beneficial to the local economy. However, within the existing local construction sector this is expected to have a low magnitude of impact on the construction industry and wider economy (low sensitivity receptor) in London. This results in a direct, short term, Negligible (not significant) effect at the regional level.

Additional Expenditure and Supply Chain

6.68 The Proposed Development would result in indirect benefits including supply chain effects and spending by construction workers in retail outlets near to the site. However, as the number of construction workers on-site will fluctuate over the course of the construction programme, it is not possible to quantify the precise level of spending captured locally.

6.69 The HCA Additionality Guide provides an additionality ratio of 33% for FTE Construction employment to estimate the number of indirect and informal jobs associated with the main deconstruction and construction works. This results in an additional 349 FTE per year employed as result of the Proposed Development. However, this is an estimate, and actual supply chain and procurement effects can vary widely, even effecting international spatial levels, depending on the supply and sourcing of construction materials and other supplies.

6.70 The introduction of an estimated 349 indirect FTE roles each year during the deconstruction and construction programme is expected to have a negligible magnitude of impact on the construction industry and wider economy (low sensitivity receptor) in London. This results in a direct, short term, Negligible (not significant) effect at the regional level.

Completed Development

Employment

6.71 The site currently employs approximately 56 FTE across its retail spaces, with the office space across the rest of the site vacant since 2021.

6.72 The Proposed Development includes the provision of 77,541m^2 GIA of flexible Use Class E and F which has the potential to generate employment opportunities. This includes 74,791m^2 GIA of office and laboratory space (Class E(g)), 748m^2 GIA of retail space (Class E), and 2,003m^2 GIA of flexible commercial / community space (Class E / F).

6.73 As the precise end use of these spaces is not yet known, the anticipated employment generation figures set out below have been based on the reasonable highest and lowest employment densities falling under Use Classes E and F[21]. Likewise, given the flexibility in uses associated with community space, and the lack of a correlating classification under HCA guidance, it is assumed that space allocated entirely to community uses will not generate any additional employment.,

6.74 It is considered unlikely that this space would be used for very low employment density categories such as industrial, storage, distribution, cultural or entertainment uses.

[21] *Formerly Use Classes A1, A2, A3, B1, D1(a-b) and 'indoor sport' from D2(e).*

Table 6.6 Proposed Development Employment Generation (Best-Case Scenario)

Anticipated Use	HCA Classification	Type	Floorspace (m^2) (NIA)	Jobs Created (FTE)
Office Use Class E(g(i))	B1a Offices Finance & Insurance	10m^2 NIA per FTE	48,062	4,806
Retail Use Class E	A1 Retail High Street, Foodstore	15m^2 NIA per FTE	585	39
Commercial / Community Use Class E / F	A1 Retail High Street, Foodstore A3 Restaurants & Cafes	15m^2 NIA per FTE	1,541	103
Gross Employment			4,948	
Less Existing FTE (56)				
Net Employment			4,892	
Displacement (25%)				
Total Direct Employment			3,669	
Economic Multiplier (1.21)				
Total Indirect Employment			770	
TOTAL Net Employment			**4,439**	

Source: Trium Calculations

6.75 Under a best-case scenario, the Proposed Development would result in a net employment gain of 4,439 FTE roles, or 1.1% of the LBC's current job market. This includes 3,669 roles resulting from direct employment and 770 roles resulting from indirect employment.

6.76 A reasonable worst-case scenario involves a split between office and laboratory use, as well as total community use across the flexible Use Class E / F space, as described within **ES Volume 1, Chapter 4: The Proposed Development** and outlined below in Table 6.7.

Table 6.7 Proposed Development Employment Generation (Most Likely Worst-Case Scenario)

Anticipated Use	HCA Classification	Type	Floorspace (m^2) (NIA)	Jobs Created (FTE)
Office Use Class E(g(i))	B1a Offices Finance & Insurance	13m^2 NIA per FTE	31,575	2,429
Laboratory Use Class E(g(ii))	B1b R&D Space	60m^2 NIA per FTE	16,487	275
Retail Use Class E	A1 Retail High Street, Foodstore	20m^2 NIA per FTE	585	29
Commercial / Community Use Class E / F	N/A	-	1,541	0
Gross Employment			2,733	
Less Existing FTE (56)				
Net Employment			2,677	
Displacement (25%)				
Total Direct Employment			2,008	
Economic Multiplier (1.21)				
Total Indirect Employment			422	

Anticipated Use	HCA Classification	Type	Floorspace (m^2) (NIA)	Jobs Created (FTE)
TOTAL Net Employment			**2,429**	

Source: Trium Calculations

6.77 Under this more realistic worst-case scenario, the Proposed Development would result in a net employment gain of 2,429 FTE roles, or 0.1% of the LBC's current job market. This includes 2,008 roles resulting from direct employment and 422 roles resulting from indirect employment.

6.78 The worst-case gain of 2,429 net FTE opportunities within the context of 418,000 existing roles across LBC is expected to have a minor magnitude of impact on the local economy (low sensitivity receptor). This results in a direct and indirect, long term Negligible (not significant) effect at the local and Borough level.

Additional Expenditure

6.79 Under the best-case scenario, the direct employment of 3,669 FTE at the Proposed Development is expected to generate approximately £9.2 million annually. Under the worst-case scenario, the direct employment of 2,008 FTE at the Proposed Development is expected to generate approximately £5.1 million annually.

6.80 The spending impact of new employment on-site is expected to have a negligible magnitude of impact on the local economy (low sensitivity receptor). This results in a direct, long term Negligible (not significant) effect at the local and Borough level.

Open Space

6.81 Based on the LBC guidance requiring 0.74m^2 of open space per FTE, the new workforce of 2,008 to 3,669 FTE within the Proposed Development will require 1,486m^2 to 2,715m^2 of open and amenity space. The Proposed Development will include 5,832m^2 of publicly accessible open space at the ground level and Level 02, which represents an uplift of 438m^2 from existing and is also above the provision requirement.

6.82 It is acknowledged that this provision of open space is above the LBC requirement, even in the best-case employment scenario, and is expected to have a low magnitude of impact on the availability of open space (low sensitivity receptor) in the study area. This results in a direct, long term Negligible (not significant) effect at the site and local level.

MITIGATION, MONITORING AND RESIDUAL EFFECTS

Deconstruction and Construction Mitigation

6.83 No adverse socio-economic effects have been identified due to the deconstruction and construction of the Proposed Development; therefore no additional mitigation is required to lessen negative impacts on relevant receptors.

Completed Development Mitigation

6.84 No adverse socio-economic effects have been identified due the operation of the Proposed Development; therefore no additional mitigation is required to lessen negative impacts on relevant receptors.

Residual Effects

6.85 All of the residual effects resulting from the Proposed Development are presented in Table 6.8, identifying whether the effect is significant or not.

Table 6.8 Residual Effects

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
Deconstruction and Construction							
Employment	Generation of an average of 1,057 FTE jobs per annum	Negligible	Not Significant	R	D	T	Mt
Additional Expenditure	Generation of an average of 349 FTE jobs per annum	Negligible	Not Significant	R	I	T	Mt
Completed Development							
Employment	Creation of a minimum of 2,429 FTE	Negligible	Not Significant	L, B	D, I	P	Lt
Local Expenditure	Generation of a minimum £5.1 million per annum	Negligible	Not Significant	L, B, R	I	P	Lt
Open Space	Provision of 5,832m^2 of publicly accessible open space	Negligible	Not Significant	S, L	D, I	P	Lt

Notes:
Residual Effect Scale = Negligible / Minor / Moderate / Major Nature = Beneficial or Adverse Geo (Geographic Extent) = Local (L), Borough (B), Regional I, National (N) D = Direct / I = Indirect P = Permanent / T = Temporary St = Short Term / Mt = Medium Term / Lt = Long Term N/A = not applicable / not assessed

ASSESSMENT OF THE FUTURE ENVIRONMENT

Evolution of the Baseline Scenario

6.86 If the Proposed Development is not delivered, the site will remain in its existing use as a vacant, and largely stripped out, office building, and the opportunity to deliver new commercial and community floorspace and public realm will not be realised.

6.87 The future baseline of the surrounding area will continue to evolve, with a range of uses including residential, commercial and office floorspace coming forward, particularly from consented cumulative schemes. Taking into account these schemes, the future baseline of the surrounding area is expected to experience a rise in population due to increased housing provision, which could result in additional demand for social infrastructure and community facilities and a rise in employment given the additional employment generating floorspace, as part of the cumulative schemes identified in **ES Volume 3, Appendix: EIA Methodology – Annex 3**. Further detailed analysis of these changes is provided in the *'Cumulative Effects Assessment'* section below.

Cumulative Effects Assessment

6.88 The EIA considers a total of eight cumulative schemes. However, not all of these schemes are relevant to the assessment of socio-economics or provide the data needed to assess them in a cumulative manner for this chapter. Thus, Table 6.9 lists out the cumulative schemes and whether they are suitable for inclusion within the assessment of cumulative socio-economic effects. Further information on the cumulative schemes, including their status at the time of writing, is included within **ES Volume 3, Appendix: EIA Methodology – Annex 3**.

6.89 Given that the Proposed Development is commercial in nature and the main effects concluded within the main assessment relate to the increase in employment and associated spending, it is not considered necessary to assess the cumulative effects of schemes that are predominantly residential in nature. This includes effects on the availability of housing and additional population within the study area, especially as it relates to the capacity of local heath and social infrastructure. Any residential schemes without a commercial element are therefore scoped out of the socio-economic cumulative effects assessment.

6.90 Wherever possible, socio-economic information is pulled directly from assessments or reports included in the relevant planning application documents. However, in some cases, only limited or no socio-economic information is provided, or calculations are based on outdated data, such as the Census 2011. In these cases, estimates have been made where possible, such as estimates of potential employment from floorspaces provided.

6.91 The schemes excluded from the socio-economic cumulative effects assessment are shaded in grey in Table 6.9 below.

Table 6.9 Cumulative Schemes

Ref	Name	Planning Application Ref	Relevant Scheme Details	Reasons for Inclusion / Exclusion
1	Land to the North of the British Library	2022/1041/P	77,046m^2 of commercial space (Use Class E); 15,015m^2 of new British Library space; 558m^2 of retail space; 7,739m^{2}of infrastructure at basement level for Crossrail 2	Included – employment generating commercial element
2	Central Comers Town	2015/2704/P	Demolition of existing buildings and the provision of 2,190m^2 replacement school (Use Class D1); 1,765m^2 of community facilities (Use Class D1); 207m^2 of flexible Use Class A1/A2/A3/D1 floorspace; 136 residential units (Use Class C3); 11,765m^2 of public open space	Excluded – possible some employment generating commercial space but insufficient scheme details to undertake a meaningful assessment
3	Eastan Dental Hospital	2018/5715/P	Substantial demolition of the Former Royal Free Hospital and provision of 17,450m^2 of medical research floorspace;, a neurological outpatient facility; 13,160m^2 of academic floorspace	Included – employment generating commercial element
4	Royal National Throat, Nose and Ear Hospital	2020/5593/P	Provision of 14,021m^2 of flexible office and lab space; 9,425m^2 of 4* hotel space including 182 keys and a café / restaurant; a 1,476m^2 gym; 72 residential units	Included – employment generating commercial element
5	247 Tottenham Court Road	2020/3583/P	Demolition of existing buildings and provision of mixed-use, office led scheme	Included – employment generating commercial element
6	Network Building	2020/5624/P	Demolition of existing buildings and provision of 17,746m^2 commercial business and service floorspace	Included – employment generating commercial element
7	Belgrove House	2020/3881/P	Provision of office, laboratory and research space; flexible café, retail and office space; and auditorium	Included – employment generating commercial element
8	High Speed 2 Rail Phase 1	High Speed Rail (London – West Midlands) Act 2017	Delivery of the first phase of the High Speed 2 rail link	Excluded – no employment generating floorspace and insufficient scheme details to undertake a meaningful assessment

Deconstruction and Construction

Employment and Additional Expenditure

6.92 As stated within paragraph 6.66 the construction industry is typically mobile with resources pooled from a wide geographic area. As such, it is considered that the employment generated through the cumulative construction phases would only have a marginally higher impact than the Proposed Development alone. Thus, the cumulative schemes are expected to have a medium magnitude of impact on the construction industry and wider economy (low sensitivity receptor) in London.

6.93 This results in a direct, short term, Minor Beneficial (Not Significant) effect at the regional level, better than for the Proposed Development alone.

Completed Development

6.94 For many of the cumulative schemes considered, employment figures are not included in available application documents. Therefore, an estimate of employment has been made to assess the potential FTE jobs created from these developments. Where employment types and floorspace are provided, a worst-case assumption of FTE per m^2 has been made as a worst-case assessment. This is based on the HCA Employment Density Guide, in line with the assessment of the Proposed Development. Where employment figures are available for an application these have been used within this cumulative assessment, with a worst-case assumed if a range of possible employment was outlined.

Employment

6.95 Under a worst-case scenario, and based on the assumptions made above, approximately 6,590 net FTE jobs will be created through the cumulative schemes. As there are approximately 418,000 FTE jobs currently located within the LBC, this equates to an increase of about 1.6%, which is expected to have a negligible magnitude of impact on the local economy (low sensitivity receptor).

6.96 This results in a direct and indirect, long term Negligible (not significant) effect at the local and Borough level, the same as for the Proposed Development alone.

Additional Expenditure

6.97 The net addition of approximately 6,590 FTE jobs across the cumulative schemes will generate approximately £16.8 million annually, in line with the assessment of the Proposed Development. The spending impact of new employees as introduced by the cumulative schemes is expected to have a low magnitude of impact on the local economy (low sensitivity receptor).

6.98 This results in a direct, long term Negligible (not significant) effect at the local and Borough level, the same as for the Proposed Development alone.

Open Space

6.99 The cumulative schemes will create an additional demand for open and amenity space for employees. However, based on other schemes' available socio-economic ES chapters and local and regional planning policy, it is expected that each cumulative scheme would either provide the required provision of open space and public realm within individual design plans, or provide a financial contribution to the relevant local authority in lieu of this. As such, the cumulative schemes are expected to have a low magnitude of impact on open space (low sensitivity receptor).

6.100 This results in a direct, long term Negligible (not significant) effect at the site and local level, the same as for the Proposed Development alone.

LIKELY SIGNIFICANT EFFECTS

6.101 The Proposed Development is not expected to have a significant adverse effect on any of the receptors assessed within this chapter, nor are there likely to be any significant adverse effects as a result of the wider cumulative schemes. As such, no further mitigation is required.

Chapter 7: Traffic and Transport

TRAFFIC AND TRANSPORT	
AUTHOR	Velocity Transport Planning
SUPPORTING APPENDIX	**ES Volume 3, Appendix: Traffic and Transport** Annex 1: Policy and Guidance Context In addition, Velocity Transport Planning have prepared a Transport Assessment (TA) which is submitted alongside the planning application.
KEY CONSIDERATIONS	This chapter of the Environmental Statement (ES) reports the likely significant effects of the Proposed Development on the surrounding transport networks. This chapter describes how the Proposed Development will affect existing and future patterns of travel. The effects are assessed during deconstruction and construction works and once the Proposed Development is completed and in full operation. The assessment has been undertaken in accordance with discussions with Transport for London (TfL) and the London Borough of Camden (LBC) in respect of the TA. The assessment presented within this chapter should be considered in the context of the TA, which provides a comprehensive assessment of the traffic and transport effects. The assessment considers the potential for the Proposed Development to affect Severance, Delay (bus and driver delay), Amenity, Fear and Intimidation and Hazardous Loads in accordance with the Institute of Environmental Assessment (IEMA) Guidance. Where appropriate, it also identifies proposed mitigation measures to prevent, minimise or control likely negative congestion effects arising from the Proposed Development and the subsequent anticipated residual effects.
CONSULTATION	An EIA Scoping Report was prepared and submitted to LBC in August 2023, requesting a formal EIA Scoping Opinion from LBC on the scope of the EIA. A copy of the EIA Scoping Report is provided in **ES Volume 3, Appendix EIA Methodology – Annex 1** and the Scoping Opinion in **ES Volume 3, Appendix EIA Methodology – Annex 2**. This chapter and associated transport-related deliverables for this planning application adhere to the relevant sections of the Scoping Opinion. The Proposed Development is the subject of a planning application referable to the Mayor of London, and pre-application discussions were undertaken in May 2023 with relevant officers of LBC. Further pre-application discussions were held with Transport for London (TfL) in July 2023 and September 2023. These pre-application meetings were to agree on the scope of the TA and supporting documents. LBC and TfL requested/or confirmed the following items to be addressed in the assessments: 1. Healthy Streets TA to be produced in line with TfL's TA Guidance; 2. Trip generation methodology to be verified based on a TRICS assessment of the likely flexible Use Class E(g) space proposed and include an assessment of delivery and servicing trips; 3. Manual assignment of public transport trips to each sub-mode (i.e., rail, London Underground, London Overground, bus); 4. Warren Street Station Assessment; 5. Active Travel Zone assessment; 6. Pedestrian Comfort Level (PCL) assessment; 7. A Travel Plan; 8. A Car Parking Design and Management Plan 9. A Draft Construction Management Plan (CMP); and 10. An Outline Construction Logistics Plan (CLP)

ASSESSMENT METHODOLOGY

Defining the Baseline

Background

7.1 This Environmental Statement (ES) chapter summarises the transport-related impacts that have been fully assessed within the Transport Assessment (TA). All transport modes have been considered, including changes to traffic volumes and public transport accessibility. This ES chapter also includes a summary of the proposed mitigation measures.

7.2 This ES chapter has been prepared fully considering the Institute of Environmental Management and Assessment (IEMA) Guidelines[1] and current national, regional, and local policies, as outlined in **ES Volume 3, Appendix: Traffic and Transport – Annex 1**.

Study Area

7.3 In accordance with the IEMA Guidelines[2], the 'study area' has been defined by identifying any link or location where it is considered that significant highways or transport-related effects may occur as a result of the Proposed Development.

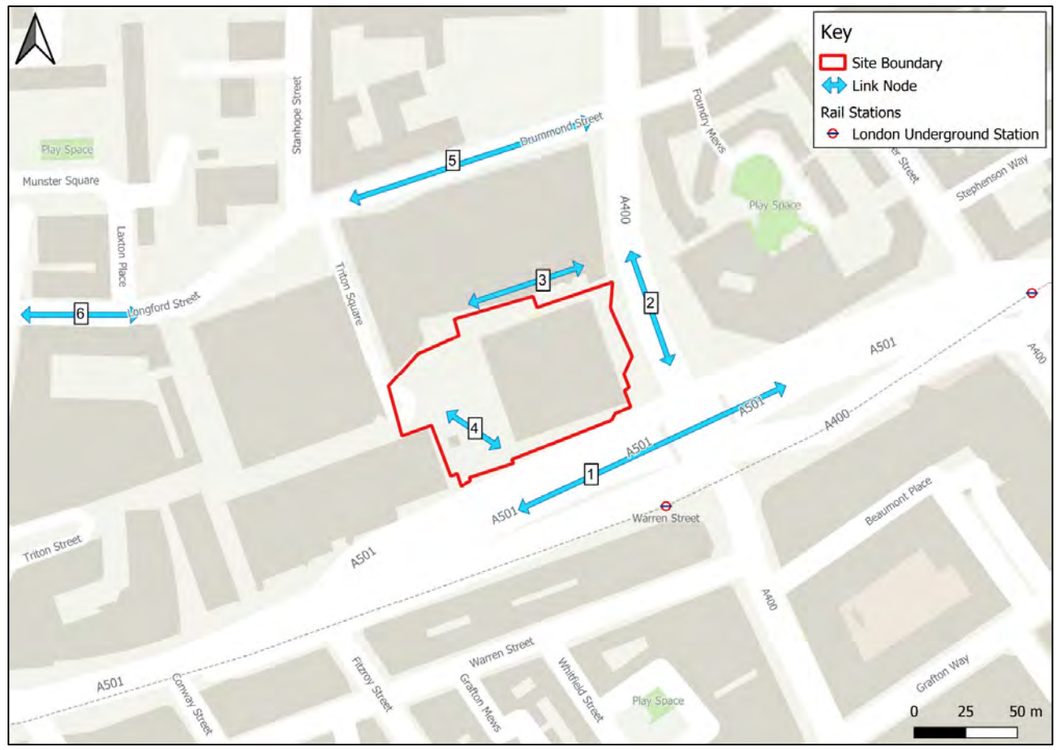
7.4 The IEMA Guidelines state the following two broad rules-of-thumb are to be used to establish which highway links are to be assessed:

- Rule 1: include highway links where the traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%); and
- Rule 2: include any other specifically sensitive areas where the traffic flows have increased by 10% or more.

7.5 Although the Proposed Development does not generate traffic flows above those set out above, the study area focuses on the accessibility of the site for non-motorised users to the surrounding transport connections.

7.6 The study area, shown in Figure 7.1 and Table 7.1, forms the site's immediate surrounding highway and pedestrian network for site access and egress in the assessment scenarios.

Figure 7.1 Transport Links Across Study Area



[1] *New IEMA Guidance: Environmental Assessment of Traffic and Movement (July 2023)*

[2] *New IEMA Guidance: Environmental Assessment of Traffic and Movement (July 2023)*

Table 7.1 Study Area – Transport (Highway and Pedestrian) Link References

Link Reference	Link Name
1	Euston Road off-slip
2	Hampstead Road
3	Brock Street
4	Regent's Place Plaza (west of the site)
5	Drummond Street
6	Longford Street

Existing Baseline Conditions

7.7 The baseline conditions have been characterised utilising desktop research, Geographic Information System (GIS) analysis, site visits and survey data. In particular:

- The transport networks have been assessed based on a scope that was discussed and agreed upon with the London Borough of Camden (LBC) and Transport for London (TfL) during the pre-application process;
- The pedestrian and cycle network surrounding the site and pedestrian desire lines were reviewed during site visits in February and May 2023;
- Pedestrian survey data for Hampstead Road, Euston Road, Brock Street and the adjacent pedestrian crossings were recorded on 19 April 2023 using video surveys and summarised in 15-minute intervals by direction;
- Existing traffic flow data was recorded on the roads in the study area for a period of seven days between 16 – 22 April 2023 using Automatic Traffic Count (ATC) and Artificial Intelligence (AI) speed surveys. The traffic flows have been used to establish the magnitude of the transport impacts of the Proposed Development. Full results of the traffic surveys are presented in the TA, along with a plan showing the locations of the ATC and AI speed surveys. The ATC and AI speed surveys recorded data 24 hours a day for a minimum of seven days and, therefore, provide a sufficiently robust baseline against which to assess changes in traffic flow;
- A series of site visits were undertaken between December 2022 and June 2023 to review the baseline conditions and observe the operation of the local network;
- An evaluation of the existing conditions for pedestrians and cyclists along the key journeys identified and agreed upon with the LBC and TfL during the pre-application stage is provided within the Active Travel Zone chapter (Section 5) of the TA;
- A Public Transport Access Level (PTAL) assessment of the site was undertaken using TfL's Web-based Connectivity Assessment Toolkit (WebCAT)[3];
- The level of public transport accessibility surrounding the site has been analysed within Section 6 of the TA, particularly the London Underground, rail and bus networks, including timetable information;
- Accident data for the local road network over a three-year period has been analysed within the Active Travel Zone chapter (Section 5) of the TA;
- Forecast travel mode share data has been obtained from a combination of the 2011 Census data and the Trip Rate Information Computer System (TRICS) database, which is detailed within the TA. The 2011 Census has been used as the 2021 Census took place during national lockdown due to COVID-19 and is not comparable with the 2011 data. The relevant mode share data is contained within the TA;
- An evaluation of the capacity of local footways and crossings has been undertaken with reference to TfL's Pedestrian Comfort Level (PCL) guidance[4]. TfL's guidance sets out pedestrian levels of service relating to the densities of pedestrian movements, with scores ranging from 'A+' (highest possible score and representative of comfortable conditions) to 'F-' (lowest possible score and representative of uncomfortable conditions). For office and retail uses, PCL ratings of C+ and above are generally considered acceptable, with PCL B+ preferred and considered comfortable according to the TfL PCL guidance[4].

7.8 With the exception of a very small number of vehicles associated with the operational retail within the existing building on site, the building is vacant and as such no operational vehicles have been assessed as part of the baseline conditions. Other buildings within Regent's Place are occupied or partly occupied and all share the existing basement which provides both servicing and deliveries to the Plaza along with existing car parking.

Evolution of the Baseline

7.9 In terms of traffic volumes, there has been a downward trend over the last 15 years, reflecting TfL's policy[5] to redesignate road space in favour of cyclists and public transport over private vehicles. Based on current policies, it is expected that this trend will continue, and therefore, any surveys undertaken post-2008 remain valid as the current baseline condition and will also remain valid as the future baseline condition. Therefore, any assessment on the future baseline is likely to be robust based on the downward trend of traffic volumes.

7.10 It is anticipated that any trips arising from the cumulative schemes in the surrounding area (**ES Volume 1, Chapter 2: EIA Methodology**) would account for public transport and active modes, given the car-free nature of development within the LBC. The future baseline scenarios defined within this ES chapter are therefore considered to represent no change in line with general trends regarding decreased car ownership and attitudes towards travel and working from home.

Future Baseline

7.11 Changes in the use of transport infrastructure have been considered in the future baseline (2030), including the following planned improvements:

- The introduction of the High Speed 2 rail link at Euston Station and
- The introduction of Cross Rail 2 at Euston Station.

7.12 The future scenario does not consider growth in the use of the highway network, as data[6] indicates that traffic volumes have been falling in Camden over the past two decades, and trends suggest this will continue.

7.13 No changes are expected to be made to the bus, cycle or walking network near the Proposed Development in the near future, and hence, the future baseline for bus, cycling and walking services remains the same as the current baseline for the purposes of the assessment within this ES chapter.

Land Use Scenarios

7.14 As both the proposed office and life science spaces fall under the same land use classification (Class E (g)), the following two land use options have been considered:

- A maximum life science (24,380m^2 Gross External Area (GEA)) and office (56,250m^2 GEA); and
- Maximum office (80,630m^2 GEA).

7.15 The maximum office scenario would have a higher occupancy of future employees and, therefore, generate the highest person trip generation. Taking a robust approach, the maximum office scenario has been used to assess the effects of the Proposed Development on the walking, cycling and public transport networks.

[3] *TfL (2010); Measuring Public Transport Accessibility Levels*
[4] *TfL (2010); Pedestrian Comfort Guidance for London: Guidance Document*
[5] *TfL (2021) The Mayors Transport Strategy*
[6] *https://roadtraffic.dft.gov.uk/local-authorities/145*

Assessment Scenarios

7.16 The assessment scenarios which are assessed within this ES chapter are consistent with those in the TA and as set out in the EIA Scoping Report, which include:

- **Scenario 1:** Existing Baseline (2023) – Existing Transport Conditions;
- **Scenario 2:** Future Baseline (2030) – This includes the Scenario 1 data plus any changes which are committed to take place to existing conditions by the future design year (2030), without the Proposed Development but with all cumulative schemes; and
- **Scenario 3:** Future Baseline (2030) plus the Proposed Development and cumulative schemes.

7.17 All cumulative schemes have been reviewed, and all relevant transport-generating schemes have been included and added to the existing baseline (Scenario 1) for the purpose of calculating the Future Baseline (Scenario 2 – without Proposed Development and Scenario 3 – with Proposed Development) traffic generation.

7.18 Due to the location of the cumulative schemes, they are not expected to have a direct effect on the pedestrian network around the site. The cumulative schemes are located to the east or south, with the closest located approximately. 600m south on Tottenham Court Road, opposite Goodge Street Station.

Impact Assessment Methodology

7.19 This section sets out how the IEMA Guidelines have been applied in this assessment to determine the traffic and transport-related effects during both the deconstruction and construction works associated with the Proposed Development as well as when it is complete and operational.

7.20 The assessments within this ES chapter have determined the scale and significance of the effect of traffic and transport impacts based on the sensitivity of the receptor (as defined in Table 7.3) and the magnitude of the impact (as defined in Table 7.4). These two factors combine to create a scale of effect, which depends on the sensitivity of the receptor and the magnitude of the impact.

7.21 The effects set out in the IEMA Guidelines relate to different stages of the Proposed Development (i.e., during deconstruction and construction and when it is complete and operational). Those which related to this assessment are:

- Severance;
- Pedestrian and Cyclist Delay;
- Vehicle and Bus Delay;
- Tube and Rail Delay;
- Amenity, Fear and Intimidation;
- Accidents and Safety; and
- Hazardous Loads.

7.22 The consideration of these impacts as part of the traffic and transport assessment within this ES chapter has been agreed with the LBC through the EIA scoping process. The EIA Scoping Report and EIA Scoping Opinion can be found in **ES Volume 3, Appendix: EIA Methodology – Annex 1**.

Deconstruction and Construction

7.23 The effects of deconstruction and construction traffic have been determined by assessing the impact of the estimated worst-case traffic flows during the deconstruction and construction period against the baseline traffic flows during the deconstruction and construction period based on the likely vehicle routing and construction information provided in **ES Volume 1, Chapter 5: Deconstruction and Construction**. In line with this, and for the purpose of the assessment of deconstruction and construction impacts in this ES chapter, it has been assumed that construction routing would be via the A501 Euston Road before exiting via Hampstead Road.

7.24 Deconstruction and construction traffic generation estimates have been provided by the construction advisor. An Outline Construction Logistics Plan (CLP) has been prepared and is included within the TA. A draft Construction Management Plan (CMP) has also been prepared to accompany the planning application as a standalone deliverable. Further details of the construction programme and phases, vehicle numbers and the proposed access route are discussed in detail in **ES Volume 1, Chapter 5: Deconstruction and Construction.**

7.25 For robustness, it has been assumed that the peak in traffic generation will run across the entire deconstruction and construction programme, which has been identified as requiring 27 daily HGVs (54 two-way HGV trips) each day to visit the site across the length of the entire deconstruction and construction programme.

7.26 It has been assumed that the majority of staff trips during the deconstruction and construction works will be undertaken through walking, cycling and public transport trips. It is not considered that an assessment of staff travel is needed as the primary effects in relation to the deconstruction and construction works will be associated with the HGV traffic.

7.27 The forecasted daily HGV movements have been assessed against the baseline traffic data for each transport link (Figure 7.1 and Table 7.1) in accordance with the IEMA Guidelines. Where the change in traffic flow is less than 30% (10% on sensitive receptors), the environmental effects have been assessed to be negligible, as the IEMA Guidelines recommend that these limits should be used as a screening process to delimit the scale and extent of the assessment.

7.28 The IEMA Guidelines note that traffic forecasting accuracies greater than 10% cannot be expected and that the DfT has assumed 30%, 60%, and 90% changes in traffic levels should be considered as 'slight', 'moderate', and 'substantial' impacts, respectively. The IEMA Guidelines also note that increases in traffic of as little as 5% may be significant in terms of the capacity criteria of the highway but not its environmental impacts, and the criteria set out within the IEMA Guidance make the higher thresholds more relevant to the assessment of the environmental impacts of traffic increase.

7.29 Where these thresholds are exceeded, the following paragraphs explain the methodologies which have been used for assessment purposes.

Severance

7.30 Severance is defined by the IEMA Guidance in paragraph 3.13:

"Severance is the perceived division that can occur within a community when it becomes separated by major transport infrastructure. The term is used to describe a complex series of factors that separate people from places and other people. Severance may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by infrastructure."

7.31 The IEMA Guidance note that the Department for Transport has assumed 30%, 60% and 90% changes in traffic levels should be considered as "slight", "moderate", and "substantial" impacts, respectively, on severance. For consistency with the EIA terminology used in this ES, these are defined as 'low', 'medium' and 'high' magnitude impacts, respectively, in this ES chapter. This can be used as a benchmark when considering whether or not severance should be scoped in or scoped out.

7.32 Construction vehicles are expected to arrive at the site using Euston Road (A501) and depart the site via Hampstead Road, which both form part of the Strategic Road Network (SRN) and TfL Road Network (TLRN). These roads already carry high volumes of HGVs. However, construction vehicles will also use local streets for access and egress, primarily Longford Street and Drummond Street. These roads have lower levels of existing traffic, and the construction traffic may have a perceptible effect in terms of severance. Severance is therefore scoped in for the deconstruction and construction assessment.

Vehicle and Bus Delay

7.33 During the deconstruction and construction phase, the Proposed Development is not expected to result in changes which would significantly affect perceptions of vehicle and bus delay, as the addition of 27 daily HGV trips (54 two-way daily HGV trips) is not considered substantial enough to cause any noticeable change. However, the proximity of the existing bus stops to the construction site vehicle access points may cause bus delays as a result of construction vehicles entering and exiting the site.

7.34 In light of the above, the assessment of impacts on vehicle and bus delay is scoped in for the deconstruction and construction phase assessment.

Underground and Rail Delay

7.35 During the deconstruction and construction phase, the Proposed Development is not expected to result in changes which would significantly affect perceptions of the London Underground and Rail capacity. No on-site car parking will be provided for construction operatives and a Construction Travel Plan will encourage the use of sustainable and active travel. It is therefore assumed that the majority of construction operatives may travel via Public Transport (London Underground, Rail services) to the site, this will likely be outside of peak hours, and the impact would be minimal when compared to typical daily fluctuations in flows.

7.36 On that basis, the assessment of impacts on Underground and Rail delays during the deconstruction and construction phase is therefore scoped out of the assessment.

Pedestrian and Cyclist Delay

7.37 The IEMA Guidelines make reference to potential delays to drivers and pedestrians. Users of other modes can also experience delays, such as cyclists and those travelling by public transport.

7.38 There are no specific thresholds for the assessment of delay, and a range of factors need to be considered, such as changes in traffic speed/flows, network capacities, pedestrian activity and comfort, visibility, and physical conditions. These factors have been reviewed based on professional judgment and in the context of the Proposed Development and their perceived importance.

7.39 Pedestrian and cyclist delays may change as a result of layout changes, including modified streets, changes to pedestrian volumes, or where temporary construction vehicle crossovers are provided.

7.40 On that basis, the assessment of impacts on pedestrian and cyclist delay during the deconstruction and construction phase is therefore scoped in to the assessment.

Amenity, Fear and Intimidation

7.41 During the deconstruction and construction phase, there is scope for the Proposed Development to result in changes which could impact amenity, fear and intimidation. Using the IEMA Guidelines, changes in amenities, fear and intimidation are linked to at least two of either a change in total vehicles, a change in the number of HGVs or changes in vehicle speeds, which could occur in the enabling works and construction phase.

7.42 The assessment of impacts on amenity, fear and intimidation is therefore scoped in for the deconstruction and construction phase.

Accidents and Road Safety

7.43 During the deconstruction and construction phase, the construction traffic will be managed and mitigated through the CLP, which would include measures that will require contractors to use the safest construction vehicles and best practices in terms of road safety.

7.44 On that basis, the assessment of impacts on accidents and road safety is scoped out for the deconstruction and construction phase assessment.

Hazardous Loads

7.45 Hazardous and Large Loads are discussed in paragraph 3.49 of the IEMA Guidance:

"Some developments may involve the transportation of dangerous or hazardous loads by road, and this should be recognised within any traffic and movement assessment. Such movements should include specialist loads that might be involved in the construction or decommissioning phases of the development, in addition to movements associated with the operation of the establishment."

7.46 Hazardous loads could include, for example:

- Explosives;
- Gases;
- Flammable liquid;
- Flammable solids;
- Oxidising substances;
- Toxic substances;
- Radioactive material; and
- Corrosive substances.

7.47 It is expected that waste generated from construction activities would consist of typical construction waste and be transported by standard construction vehicles. Therefore, given the limited potential for hazardous or large loads during the enabling and construction works, the assessment of effects on Hazardous and Large Loads is scoped out of the deconstruction and construction phase assessment.

Completed Development

7.48 The potential effect of the completed and operational Proposed Development has been determined by comparing the Future Baseline (Scenario 2 – without Proposed Development) with the Future Baseline (Scenario 3 – with Proposed Development).

7.49 The operational assessments have been undertaken for 2030 when it is predicted the Proposed Development will initially open (i.e., Opening Year). Cumulative schemes are included in scenario assessments, as set out earlier in this chapter.

7.50 The vehicle activity is forecast for the year of opening (2030) for when the Proposed Development is complete and operational. This forecast has been assessed against the baseline traffic data for each transport link in accordance with IEMA Guidelines. Where the change in traffic flow is less than 30% (10% for sensitive receptors), the environmental effects have been assessed to be negligible. Where those thresholds are exceeded, the following paragraphs explain the methodologies which have been used for assessment purposes.

Mode Share

7.51 The existing permitted use employee mode share was derived from Census WP703EW - Method of Travel to Work (workplace) data.

7.52 The future use mode share was revised due to the site being car-free, with the exception of disabled parking. The car mode share was reduced to zero and redistributed across the public transport and cycle modes. Similarly, the taxi and motorcycle mode share were amended to zero.

7.53 Table 7.2 provides the future mode share assumed for employees and visitors travelling to and from the Proposed Development.

Table 7.2 Mode Share

Mode	Permitted Mode Share - Existing	Revised Mode Share - Proposed
Pedestrians	7%	7%
Cyclists	5%	10%
Bus	11%	10%
Underground	42%	40%
Rail	33%	33%
Car drivers	2%	0%
Car passengers	0%	0%
TOTAL	100%	100%

Trip Generation

7.54 In terms of environmental effects, the primary effect of the completed Proposed Development in accordance with the IEMA criteria is typically associated with a change in traffic volume.

7.55 The effects of operational traffic associated with the completed Proposed Development have been determined by assessing the effects of the estimated worst case against the Future Baseline.

7.56 In order to quantify the impact of the Proposed Development once operational, trip generation has been calculated for the following individual uses within the Proposed Development:

- Class E Commercial:
  - Class E(g) – Flexible Use
  - Class E (a/b) - Flexible Retail Use
- Class F1 – Learning Use

7.57 Although the Proposed Development provides flexible Class E space, for the purposes of trip generation, two assessments have been undertaken for Class E(g).

- Maximum life science (24,380m^2 GEA) and office (56,250m^2 GEA); and
- Maximum office (80,630m^2 GEA).

7.58 The maximum office scenario would have a higher occupancy of future employees and, therefore, generate the highest person trip generation. Taking a robust approach, the Maximum office scenario has been used to assess the effects of the Proposed Development on the walking, cycling and public transport networks.

7.59 As the Proposed Development is to be car-free (excluding disabled person's car parking), there will be a very minor level of vehicular activity associated with the site, which will mainly be limited to servicing and delivery activity.

7.60 The trip generation methodology has been agreed upon with LBC and TfL prior to the submission of the planning application.

7.61 As the traffic impacts from the completed Proposed Development are associated primarily with servicing activity, there is less of an impact on the typical morning (08:00-09:00) and evening (17:00-18:00) peak hours, with vehicular activity distributed across the day. The assessment of the operational traffic impacts will, therefore, focus on the daily changes in traffic flow (assumed as the Annual Average Daily Total 'AADT'), which is in accordance with the suggested thresholds set out within the IEMA guidance.

7.62 The total multi-modal trip generation associated with the Completed Development is presented in Table 7.3.

Table 7.3 Completed Development Trip Generation Summary

Mode	Daily Trips Generated		
	Arrivals	Departures	Total
Pedestrians	521	516	1,038
Cyclists	755	748	1,503
Bus	808	800	1,608
Underground	3,056	3,027	6,083
Rail	2,479	2,455	4,934
Car drivers*	0	0	0
Car passengers	0	0	0
Total	**7,619**	**7,546**	**15,165**
Delivery and Servicing			
LGV	92	92	184
HGV	10	10	20
Total	**102**	**102**	**204**

**Excludes servicing. Note numbers may not sum due to rounding.*

Highway Network

7.63 This assessment has been carried out by looking at future year baseline traffic flows (including committed developments) and future year traffic flows following completion of the Proposed Development.

7.64 The Proposed Development aims to be car-free with the exception of accessible parking on-site for disabled visitors and staff. Vehicle trips will be generated from delivery and servicing activities associated with the Proposed Development.

7.65 To assess the impact of the additional forecast vehicle trips on the local highway network, vehicle trip generation has been assigned and distributed to links in the study area to determine the future traffic flows with the Proposed Development in operation. This enables a comparison between the "future baseline" and the "future baseline plus development" (Scenario 2 and Scenario 3).

7.66 This methodology is then used to quantify the potential effects of the Proposed Development. Thereafter, locations where the predicted changes may cause significant adverse effects are identified and assessed to investigate whether any mitigating measures are necessary to offset or reduce such predicted effects.

Severance

7.67 Severance has been assessed by comparing the with and without development for the future year scenarios.

7.68 To assess the impact of the Proposed Development towards the highway network, the IEMA Guidelines advise that changes in traffic flow or HGV flow by 30%, 60% or 90% can be considered as having a low, medium or high impact, respectively. Less than a 30% change is a negligible impact magnitude.

7.69 The impact of the completed development flows would not lead to any discernible change in severance and has therefore been scoped out.

Pedestrian and Cyclist Delay

7.70 Pedestrian and cyclist delay assesses the changes in "volume, composition or speed" of pedestrian and cycle traffic, which also depends on the density of pedestrian and cyclist activity in a specific location, visibility and the general physical conditions surrounding the site and the quality of pedestrian footways and cycle facilities provided.

7.71 The IEMA Guidelines do not suggest any thresholds for judging the significance of absolute or actual changes in levels of delay for pedestrians and cyclists and state that *"Given the range of local factors and conditions which can influence pedestrian delay, it is not considered wise to set down any thresholds but instead, it is recommended that assessors use their judgement to determine whether the pedestrian delay is a significant impact."*

7.72 The Proposed Development could result in changes which affect perceptions of pedestrians and cyclist delays during operation because the volume of pedestrians and cyclists is expected to increase. However, as there are no planned material changes to the existing highway network, a qualitative assessment of pedestrian and cyclist delays is scoped in. A detailed quantitative review is scoped out to assess the development in operation, instead being supplemented by a qualitative discussion.

Vehicle and Bus Delay

7.73 The completed Proposed Development will not result in changes which would significantly affect perceptions of vehicle and bus delays.

7.74 The IEMA Guidance states that vehicle delays are only likely to be significant when the traffic surrounding the site is already at, or close to, maximum capacity of the system. It is therefore considered that delay could only be significant during the AM and PM peak.

7.75 Discussions with TfL in regard to bus service capacity noted that no detailed assessments were required.

7.76 The total vehicle trips generated by the Proposed Development are expected to be imperceptible on the road network and have a negligible impact. Therefore, assessments of operational vehicle and bus delay have been scoped out.

London Underground and Rail Delay

7.77 London Underground and Rail delays could be influenced by changes to service frequency or changes to the number of passengers boarding and alighting from each service.

7.78 Following pre-application discussions with TfL, a station capacity assessment for Warren Street station was undertaken. TfL accepted that the current station has capacity to accommodate the Proposed Development without creating delay for underground passengers.

7.79 In line with the above, an assessment of the completed Proposed Development of the London Underground and Rail delay is scoped out of the ES chapter.

Amenity, Fear and Intimidation

7.80 Using the IEMA Guidelines and as stated earlier in this chapter, changes in amenities, fear and intimidation are linked to at least two of either a change in total vehicles, a change in the number of HGVs or changes in vehicle speeds, which could occur due to the completed Proposed Development.

7.81 The impact of the completed development flows would not lead to any discernible change in total vehicles, HGVs or vehicle speeds.

7.82 The assessment of the completed Proposed Development effects on amenity, fear and intimidation is therefore scoped out the assessment in this ES chapter.

Accidents and Safety

7.83 The potential for changes to accidents and safety can relate to the increased use of the transport network; however, the greatest potential for changes relates to more fundamental street and junction layout changes, such as a new access or pedestrian/cyclist crossing.

7.84 No changes to the highway network are proposed as part of the development, and therefore, accidents and safety are scoped out of the assessment.

Hazardous Loads

7.85 The completed Proposed Development is not expected to generate or warrant the delivery of any hazardous loads, and therefore, no significant effects associated with hazardous loads are expected. On that basis, the assessment of hazardous loads is scoped out of the assessment.

Assessment Summary

7.86 Table 7.4 provides a summary of the assessments scoped in and scoped out of this ES chapter.

Table 7.4 Summary of Scoped In / Scoped Out Assessments

Effect	Receptor	Deconstruction and Construction of the Proposed Development	Completed and Operational Development
Severance	Pedestrians, cyclists	Scoped In	Scoped Out
Pedestrian and Cyclist Delay	Pedestrians, cyclists	Scoped In	Scoped In
Vehicle and Bus Delay	Car drivers and passengers, bus passengers	Scoped In	Scoped Out
London Underground and Rail Delay	Rail passengers	Scoped Out	Scoped Out
Amenity, Fear and Intimidation	Pedestrians, cyclists	Scoped In	Scoped Out
Accidents and Safety	All modes	Scoped Out	Scoped Out
Hazardous Loads	All modes	Scoped Out	Scoped Out

Assumptions and Limitations

7.87 The following assumptions have been made in relation to the assessment in this ES chapter:

- The impacts of the deconstruction and construction works associated with the Proposed Development have been based on forecasted vehicle trips and the indicative construction programme. The average number of construction vehicles during peak months has been used to assess the deconstruction and construction impacts;
- The peak in deconstruction and construction traffic has been assumed to be generated across the length of the programme, and thus, there is no requirement for an interim assessment, as the assessment already considers the most intensive period in traffic and transport terms;
- As is common across London, it has been assumed that there is no growth in baseline traffic flow for the future year of opening, excluding new delivery and servicing trips generated by cumulative schemes; and
- Although the Proposed Development provides flexible Class E space for both life sciences and office uses, for the purposes of trip generation, two assessments have been undertaken as the maximum office scenario would have a higher occupancy of future employees and therefore generate the higher person trip generation.

7.88 The following limitations are relevant to this assessment:

- The assessment of the completed Proposed Development is based on the latest data available at the time of submission of the planning applications for both the Proposed Development and the cumulative schemes.

Methodology for Defining Effects

7.89 The IEMA Guidelines were reviewed in order to identify appropriate significance criteria applicable to the assessment in this ES chapter.

7.90 Paragraph 4.5 of the IEMA Guidelines states that:

"For many effects, there are no simple rules or formulae which define thresholds of significance, and there is, therefore, a need for interpretation and judgement on the part of the assessor, backed up by data or quantified information wherever possible".

7.91 The effects are described as either:

- Beneficial – meaning that the changes produce benefits in terms of transportation and access (such as reduction of traffic, travel time or patronage, or provision of a new service, access, or facility); or
- Adverse – meaning that changes produce disbenefits in terms of transportation and access (such as an increase in traffic, travel time, patronage or loss of service or facility); or

7.92 The IEMA Guidelines recommend two rules to be considered when assessing the impact of development traffic on a highway link:

- Rule 1: Include highway links where traffic flows would increase by more than 30% (or the number of heavy goods vehicles would increase by more than 30%); and
- Rule 2: Include any other specifically sensitive areas where total traffic flows will increase by 10% or more. Rule 2 also states that normally, it would not be appropriate to consider links where traffic flows have changed by less than 10% unless there are significant changes in the composition of traffic, e.g., a large increase in the number of heavy goods vehicles.

7.93 Therefore, the guidance considers that projected changes in the total traffic flow of less than 10% create no discernible environmental effect.

7.94 In terms of transport, receptors include people who are living in and using facilities and transport networks in the area.

Receptors and Receptor Sensitivity

7.95 The potential receptors are the users of transport networks within the relevant study area for each mode. The criteria that have been used to assess receptor sensitivity are described in Table 7.5.

Table 7.5 Receptor Sensitivity and Description

Sensitivity	Typical Description
High	Road and transport users are more exposed and, as a result, are affected significantly by changes in traffic levels, the road network, public realm or road safety.
Medium	Road and transport users feel moderate effects as a result of changes in traffic levels, the road network, public realm or road safety.
Low	Road and transport users are more protected and, as a result, are not significantly affected by most changes in traffic levels, the road network, public realm or road safety.
Negligible	Road and transport users feel little to no effect as a result of changes in traffic levels, the road network, public realm or road safety.

Magnitude of Impact

7.96 The magnitude of impact is the level of change caused by the Proposed Development. An overview of the different magnitudes of impact is set out in Table 7.6.

Table 7.6 Magnitude of Impact

Impact	Source	Negligible	Low	Medium	High
Severance	IEMA EATM 2023 Guidance	Change in total traffic or HGV flows of up to 30%	Change in total traffic or HGV flows of 30% to 60%	Change in total traffic or HGV flows of 60% to 90%	Change in total traffic or HGV flows over 90%
Pedestrian and Cyclist Delay	Professional judgement	Changes which are unlikely to be perceptible (based on professional judgement).	Changes which are likely to be perceptible but not to the extent that it would materially change conditions which would otherwise prevail.	Changes which are likely to be perceptible and which would materially change conditions which would otherwise prevail to the extent that it may affect travel behaviour to a measurable degree.	Changes which are likely to be perceptible and which could change conditions which would otherwise prevail to the extent that it would significantly affect travel behaviour.
Bus Delay					
Vehicle Delay					
Amenity, fear and intimidation	IEMA EATM 2023 Guidance	Change causes link to experience average traffic 18h flow per hour of circa 600, a daily HGV flow of circa 1,000 or an average speed of 20mph or less where it did not in the Future Baseline.	Change causes link to experience average traffic 18h flow per hour of 600-1,200, a daily HGV flow of 1,000-2,000 or an average speed of 20mph-30mph where it did not in Future Baseline.	Change causes link to experience average traffic 18h flow per hour of 1,200-1,800, a daily HGV flow of 2,000-3,000 or an average speed of 30-40mph where it did not in Future Baseline.	Change causes link to experience average traffic 18h flow per hour of 1,800+, a daily HGV flow of 3,000+ or an average speed of 40+mph where it did not in Future Baseline.

Defining the Effect

Effect Scale

7.97 In accordance with the IEMA Guidelines, the assessments have been based upon the relative change between the baseline conditions and the future year assessment scenarios for each phase of the scheme.

7.98 The scale of a likely effect has been derived by considering both the sensitivity of the receptor and the magnitude of impact in Table 7.7.

Table 7.7 Scale of Effect Criteria Matrix

Sensitivity	Magnitude of Impact			
	High	Medium	Low	Negligible
High	Major	Major	Moderate/Minor	Negligible
Medium	Major	Moderate	Minor	Negligible
Low	Moderate/Minor	Minor	Minor	Negligible

Effect Nature

7.99 The nature of effects is described as either:

- Beneficial - effects that produce positive effects in terms of Traffic and Transport or
- Adverse - effects that produce a negative effect in terms of Traffic and Transport or

Geographic Extent of Effect

7.100 The spatial extent of the effects is considered based on the following thresholds:

- 'Site' or 'Local' - affecting receptors in the site and immediate surroundings;
- 'District' or 'Borough' - affecting receptors in the LBC;
- 'Regional' - affecting receptors in the Greater London area; and
- 'National' - affecting receptors in different parts of the country or England as a whole.

7.101 Direct effects result without any intervening factors, whilst indirect or 'secondary' effects are not directly caused by an action or trigger or result from something else.

Effect Duration

7.102 The duration of effects has been reviewed based on the following criteria:

- Temporary: Short term - less than 12 months.
- Temporary: Medium term - 12 months - 5 years.
- Temporary: Long-term - more than 5 years; and
- Permanent - effects that are considered to be 'irreversible' or extremely long-lasting.

7.103 For the Completed Development, the effects are permanent, whereas for the Deconstruction and Construction period, the effects are expected to be temporary and long-term.

Direct and Indirect

7.104 The assessment also identifies whether the effect is 'direct' (i.e., resulting without any intervening factors) or 'indirect' or 'secondary' (i.e., not directly caused or resulting from something else).

Categorising Likely Significant Effects

7.105 In terms of effect significance, moderate and major effects are considered to be 'significant'.

7.106 Effects that are minor and negligible are not significant. This is the case for all effects, irrespective of whether they are beneficial, adverse or neutral.

BASELINE CONDITIONS

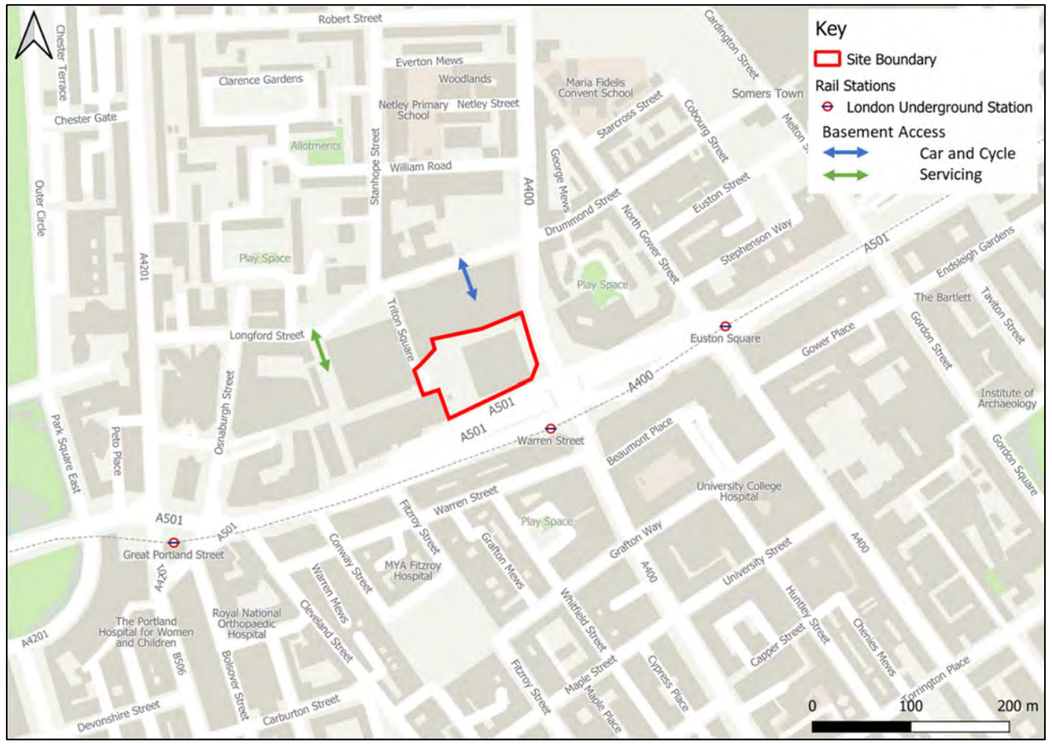
7.107 The following sub-sections of this ES chapter provide an overview of the current baseline traffic and transport conditions within the study area, considering pedestrian and cycle facilities and access, public transport accessibility, and the operation of the existing highway network. Consideration has also been given to the existing baseline flows where available. This analysis has provided the baseline context against which the transport movements and accessibility of the complete and operational Proposed Development have been assessed.

7.108 A full summary of the baseline conditions is provided within Sections 5 and 6 of the TA.

Highway Network

7.109 **Figure 7.2** presents the local highway network and vehicular access points within the study area of this assessment.

Figure 7.2 Local Highway Network and Existing Vehicle Access Points



7.110 Euston Tower is bounded by the pedestrianised Brock Street to the north and Regent's Place Plaza to the west. To the east, the building is bounded by Hampstead Road and to the south is A501 Euston Road, both of which form part of the Transport for London Road Network (TLRN).

7.111 Longford Street and Drummond Street provide access to the separate service vehicle ramp and the separate car and cycle ramp to access these facilities at the basement level.

7.112 Longford Street continues as Drummond Street to the east and intersects with Hampstead Road north-east of the site. Hampstead Road is a section of the A400 that runs from Charring Cross to Archway in north London.

7.113 A501 Euston Road and Hampstead Road form a signalised junction at the eastern boundary of the site. Both are distributor roads that carry relatively high volumes of traffic.

Euston Road (A501)

7.114 Euston Road is a 20mph dual carriageway road located south of the site that forms part of the London Red Route and the London Inner Ring Road. It runs in a generally east-west direction, from Marylebone in the west to King's Cross in the east. It is noted that in accordance with 'Vision Zero' and as part of the planned changes by TfL to the London Red Routes, the speed limit of Euston Road will be changed from 30mph to 20mph.

7.115 In the vicinity of the site, it also forms the northern boundary of the London Congestion Charge (LCC) zone, but the road itself is not part of it.

7.116 Footpaths provided on either side of Euston Road are wide, and signalised pedestrian crossings are provided at its junction with Hampstead Road, allowing for easy and safe pedestrian movement. Adjacent to the southern boundary of the site, Euston Road also features a bus stop.

Hampstead Road (A501)

7.117 Hampstead Road is a 20mph two-way single-carriageway located east of the site that forms part of the London Red Route. It runs in a north–south direction, connecting Tottenham Court Road south of the site to Camden High Street in the north.

7.118 Hampstead Road features a dedicated cycle route and advanced stop lines, allowing cyclists to be segregated from general traffic at junctions. In addition, wide footways are provided on either side of the carriageway, as well as numerous signalised pedestrian crossings provided at regular intervals along the road.

7.119 The road features numerous mixed-use residential and commercial buildings fronting onto the carriageway.

Drummond Street

7.120 Drummond Street is a 20mph two-way single-carriageway road located north of the site that runs in an east–west direction connecting to Euston Road at its eastern end and Longford Street at its Western End.

7.121 The road features no parking restrictions aside from single white lines along the northern side of the carriageway. The southern side of the carriageway features inset parking bays, allowing vehicles to park on either side of the road without obstructing traffic.

7.122 Well-maintained footpaths are provided on either side of the carriageway; however, pedestrian crossing locations are few and far between.

Longford Street

7.123 Longford Street is located northwest of the site and is a 20mph two-way single-carriageway road running in an east–west direction. It connects to Albany Street at its western end and Drummond Street at its eastern end.

7.124 The northern side of the carriageway features single yellow line parking restrictions, whilst the southern side of the carriageway features on-street parking bays. The road is fronted by a mixture of residential and commercial properties and provides a zebra crossing at its junction with Laxton Place and an uncontrolled crossing at its junction with Albany Street to assist pedestrian movement in the area.

Baseline Traffic Flows

7.125 The baseline traffic flows on the local highway network have been derived from ATCs and AI speed surveys undertaken in April 2023, as well as 2022 TfL manual count data. The results are summarised in Table 7.8, and more detail is provided within the TA. The number of HGVs is shown as a percentage of the total flow.

Table 7.8 Baseline Traffic Flows

Location	AM Peak		PM Peak		Daily 24hrs	
	Two-way Flow	HGV %	Two-way Flow	HGV %	Two-way Flow	HGV %
Euston Road off-slip	663	7%	675	6%	8983	9%
Hampstead Road	660	21%	812	12%	14589	14%
Drummond Street	188	12%	175	3%	3032	6%
Longford Street	214	12%	228	5%	3263	7%
Euston Road Underpass	1886	5%	2071	2%	41501	3%
Tottenham Court Road	263	15%	325	20%	7514	13%

Collisions and Road Safety

7.127 As part of the TA supporting the planning application, the Active Travel Zone (ATZ) assessment includes a review of the Killed or Serious Injury (KSI) records within the local area. A summary of the collisions is provided in this chapter.

7.128 KSI information was obtained from TfL for the most recent three-year period for the extent of the ATZ in the TA, in accordance with the Healthy Streets methodology.

7.129 The KSI data received from TfL highlighted a total of 29 KSI records to vulnerable road users within the latest three-year period, with the vast majority located along the A501 Euston Road in general or outside the transport hubs of Euston Station, Tottenham Court Road station or Great Portland Street Station.

7.130 Two fatalities (pedal cyclist and bus/coach passenger) were recorded in the Neighbourhood Active Travel Zone study area over the three-year period at the following location:

- Euston Road/Melton Street: one bus or coach (17 Or More Passenger Seats), one motorcycle over 500cc and one pedal cycle, resulting in a fatal injury to the pedal cyclist.
- Eversholt Street/Lancing Street: one bus or coach (17 Or More Passenger Seats), resulting in a fatal injury to a passenger.

7.131 Of the 27 serious collisions recorded in the study area, 12 (45%) involved pedestrians, 9 (33%) involved cyclists and 6 (22%) involved motorbikes.

7.132 Further discussion on the KSI information and full records obtained from TfL is included in Section 5 of the supporting TA.

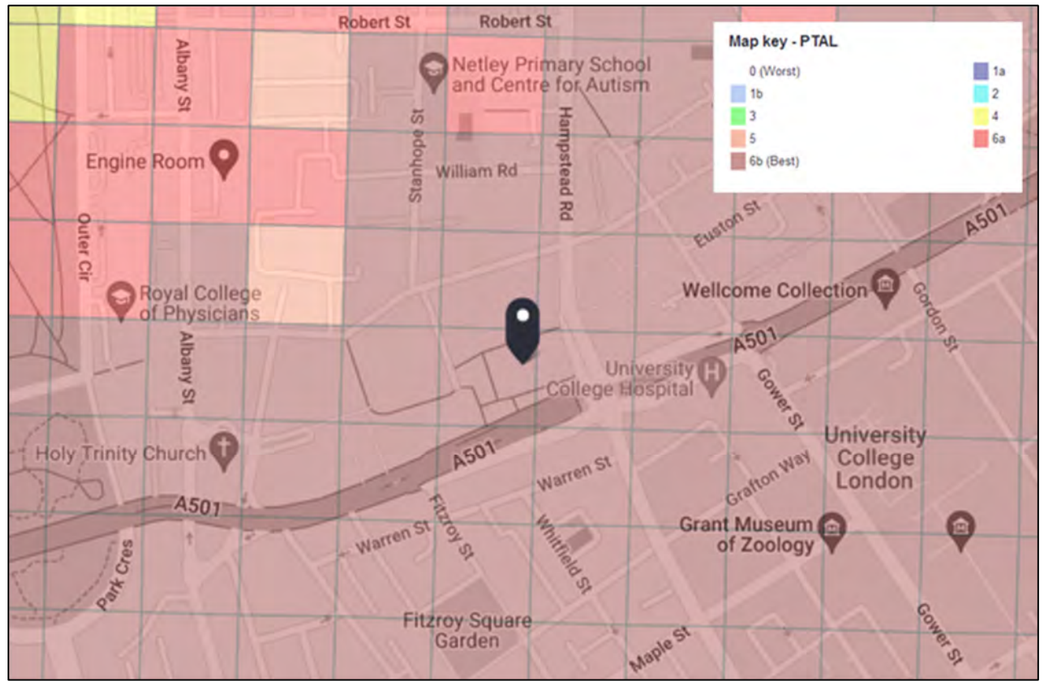
Public Transport

Public Transport Accessibility Level (PTAL)

7.133 PTAL is used to assess the connectivity of a site to the public transport network in consideration of the access time and frequency of services. It considers rail stations within a 12-minute walk (960m) of the site and bus stops within an eight-minute walk (640m) and is undertaken using the AM peak hour operating patterns of public transport services. An Access Index (AI) score is calculated that is used to define a PTAL score.

7.134 TfL's online WebCAT tool shows the site AI is 85.4, indicating a PTAL of 6b (excellent). The WebCAT PTAL output is summarised in Figure 7.3.

Figure 7.3 Site PTAL map



Bus Services

7.135 The site is located in close proximity to a comprehensive level of bus provision. The closest bus stops are situated on Hampstead Road, to the east of the site, which provides access to bus routes 24, 27, 29 and 134. Euston Road bus stop to the south of the site provides access to bus routes 18, 30 and 205.

7.136 The local bus services and average frequency are summarised in Table 7.9.

Table 7.9 Existing Bus Services

Service Number	Bus Stop	Route	Peak Hour Frequency (by Direction)
18	Euston Road	Sudbury & Harrow Road Station – Euston Station	15
24	Hampstead Road	South End Green - Pimlico	6
27	Hampstead Road	Chalk Farm – Hammersmith Grove	6
29	Hampstead Road	Lordship Lane – Trafalgar Square	12
30	Euston Road	Hackney Wick – Marble Arch	6
73	Euston Square	Stoke Newington – Oxford Circus	10
134	Hampstead Road	North Finchley – Warren Street	7
205	Euston Road	Bow Church - Paddington	6
390	Euston Square	Archway - Victoria	7
Total			**75**

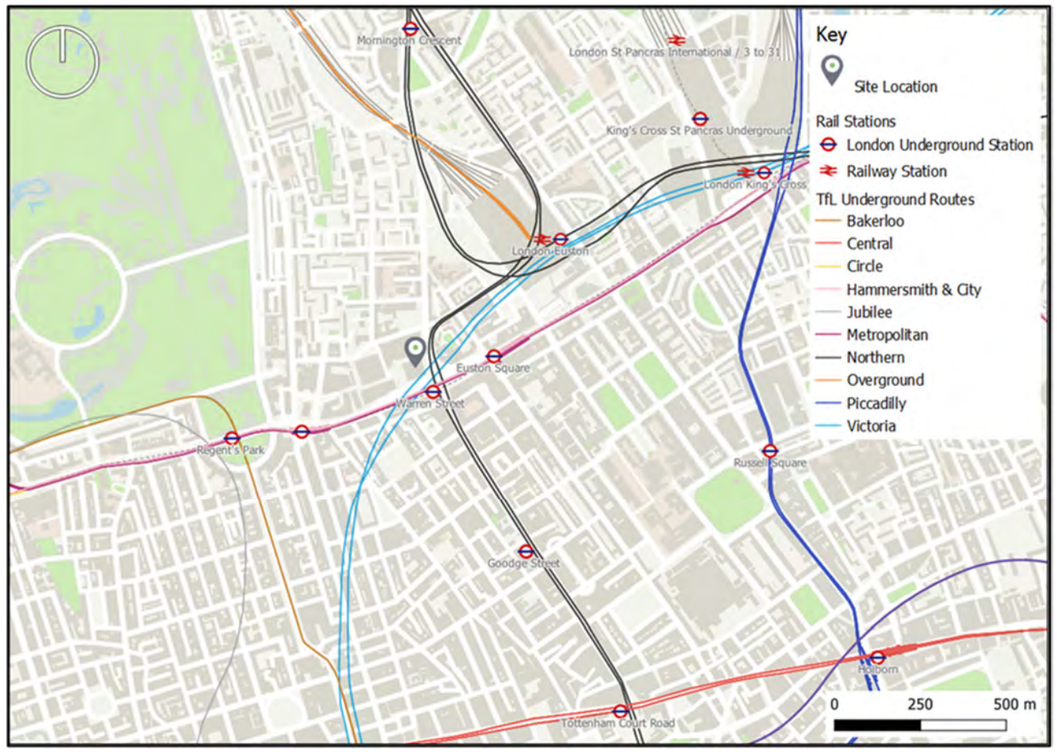
London Underground and Rail Services

7.137 Figure 7.4 shows the nearest London Underground and rail networks within proximity (i.e., approximately 20-minute walk/10-minute cycle) of the site.

7.138 The site is situated within close proximity to a number of TfL Underground routes, making it a highly accessible location within London.

7.139 The site is also close to major stations such as Euston, St Pancras International and Kings Cross, which provide journeys to the rest of the UK and internationally via the Eurostar.

Figure 7.4 Underground and Rail Networks within Proximity of the Site



London Underground

7.140 **Tabe 7.11** shows the peak hour frequencies of Underground services from Warren Street, Euston Square and Regent's Park Stations.

Table 7.10 Underground services and frequencies

Station	Service	Direction	Peak Hour Frequency	
			AM	PM
Euston Square	Circle	Inner Rail	6	6
		Outer Rail	6	6
	Metropolitan	Northbound	15	15
		Southbound	16	16
	Hammersmith and City	Inner Rail	6	6
		Outer Rail	6	6
Warren Street	Victoria	Northbound	36	36
		Southbound	36	36
	Northern	Northbound	22	23
		Southbound	23	24
Regent's Park	Bakerloo	Northbound	22	21
		Southbound	22	21
Total			**216**	**216**

Warren Street

7.141 Warren Street station is located adjacent to the site on the opposite side of Euston Road to the south. The station is approximately 100m away and a two-minute walk. The station is served by the Victoria and Northern line and within TfL fare Zone 1.

Euston Square

7.142 Euston Square station is located to the east of the site on the southern side of Euston Road. The station is approximately 280m away and a four-minute walk. The station is served by the Metropolitan, Circle Hammersmith and City lines and is within TfL fare Zone 1.

Regent's Park

7.143 Regent's Park station is located 550m to the west of the site along the A501 Euston Road, approximately a seven-minute walk. The station is served by the Bakerloo line and is located within TfL fare Zone 1.

Euston

7.144 Euston station is located 600m to the east of the site along the A501 Euston Road, approximately a nine-minute walk. The station is served by the Northern line. The station provides accessible access and is located within TfL fare Zone 1.

Kings Cross Station

7.145 Kings Cross station is located 1.2km to the east of the site along the A501 Euston Road, approximately a 15-minute walk. The station is served by the Circle, Hammersmith & City, Metropolitan, Northern, Piccadilly, and Victoria lines. The station provides accessible access and is located within TfL fare Zone 1.

National Rail

Euston Station

7.146 Euston Station is the terminus station for the Avanti West Coast, Caledonian Sleeper, and West Midlands Trains lines. The station provides services to destinations including Birmingham, Milton Keynes, Manchester, Edinburgh, and Glasgow.

7.147 The station is also served by the London Overground, which provides services to Watford via Willesden Junction and Wembley.

Kings Cross Station

7.148 Kings Cross station provides services operated by Grand Central, Great Northern, Hull Trains, LNER, and Lumo. The station provides services to destinations including Kings Lynn, Letchworth Garden City, Leeds, Bradford, and Sunderland.

7.149 Thameslink operations from Kings Cross station provide services to Peterborough and Cambridge via Stevenage.

St Pancras International

7.150 St Pancras International is located adjacent to Kings Cross station and provides services operated by EMR, Eurostar and Thameslink. The station provides services to UK destinations, including St Albans City, Ramsgate, Brighton, Sheffield, Gatwick Airport, Nottingham and Bedford.

7.151 The station also provides destinations in Europe, including Paris, Amsterdam and Brussels.

TfL Overground Network

7.152 Euston station is located 600m to the east of the site along the A501 Euston Road, approximately a nine-minute walk. It is a terminus station of London Overground and provides access to key destinations such as Wembley and Watford.

7.153 The Overground provides four services per hour in each direction.

Pedestrian and Cycle Network

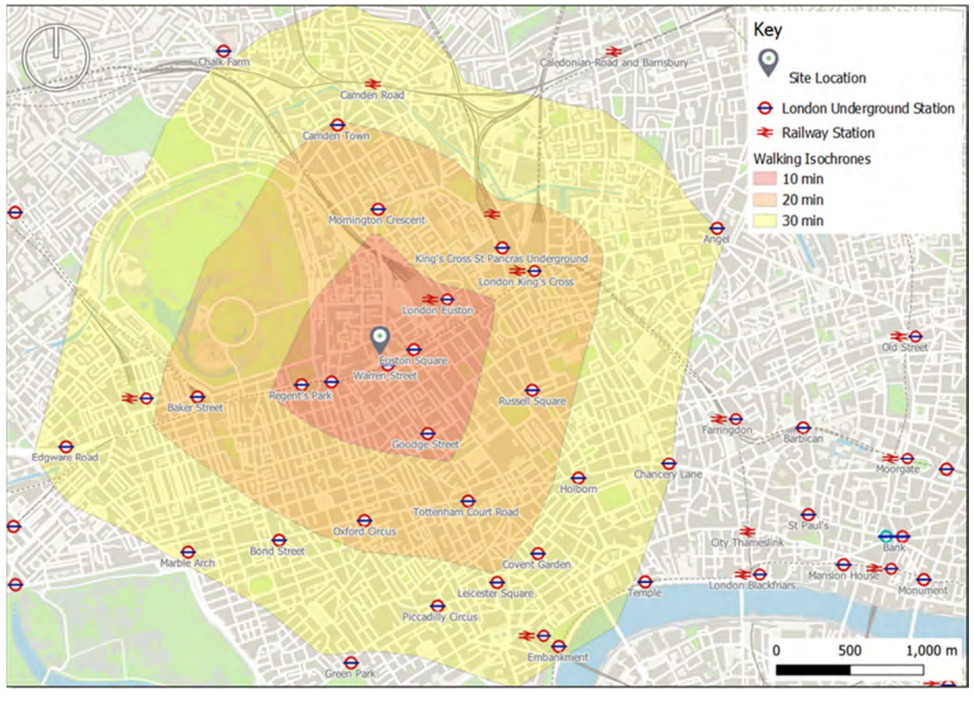
Pedestrian

7.154 The local streets have an established network of footways typical of a city environment that provide access to the site, nearby facilities and amenities, local bus stops and Warren Street and Euston Square Underground stations, as well as Euston and Kings Cross stations further to the east. All local roads in the area have footways on either side of the carriageway.

7.155 The Hampstead Road/Euston Road signalised junction is provided with straight-across controlled crossings at each arm. Each crossing is provided with dropped kerbs and tactile paving with large islands for people crossing to wait.

7.156 Pedestrian isochrones from the site are provided within Figure 7.5 at 10-minute intervals up to a 30-minute walking distance. The figure shows that nearby stations such as Warren Street and Euston are accessible within a 10-minute walk. Kings Cross and St Pancras International are within a 20-minute walk from the site.

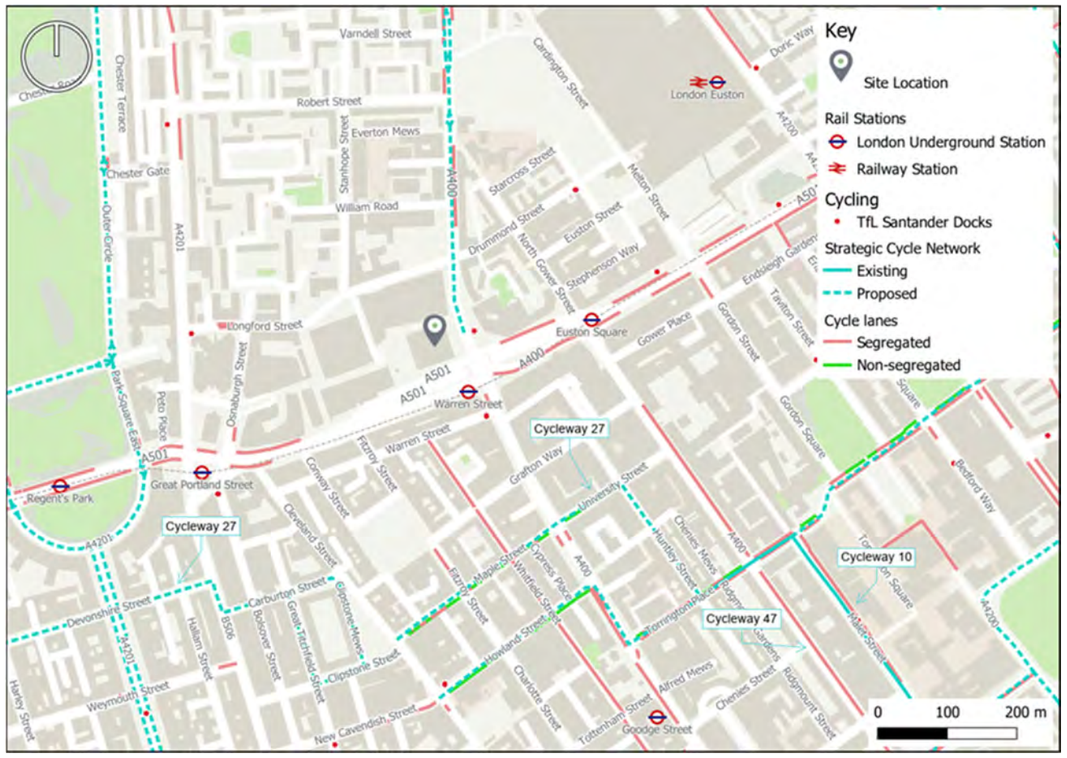
Figure 7.5 Walking Isochrone Plan



Cycle

7.157 The cycle network in the area surrounding the site is shown in Figure 7.6.

Figure 7.6 Local Cycle Network



7.158 Many roads near the site are marked as suitable or signed for cyclists and include lanes and advanced stop lines (ASLs) at each arm of the Hampstead Road junction / A501 Euston Road signalised junction.

7.159 Hampstead Road provides cycle lanes, whilst Longford Street / Drummond Street are quieter local roads recommended for cyclists. In addition, to the south, there is a network of routes that are signed or marked for cyclists and connect the site with Marylebone, Fitzrovia and central London.

7.160 Quietway 3 (Q3) is located 2.9km northwest of the site and begins at Regent's Park and connects to St. John's Wood, Hampstead, Kilburn, Willesden Green and Dollis Hill.

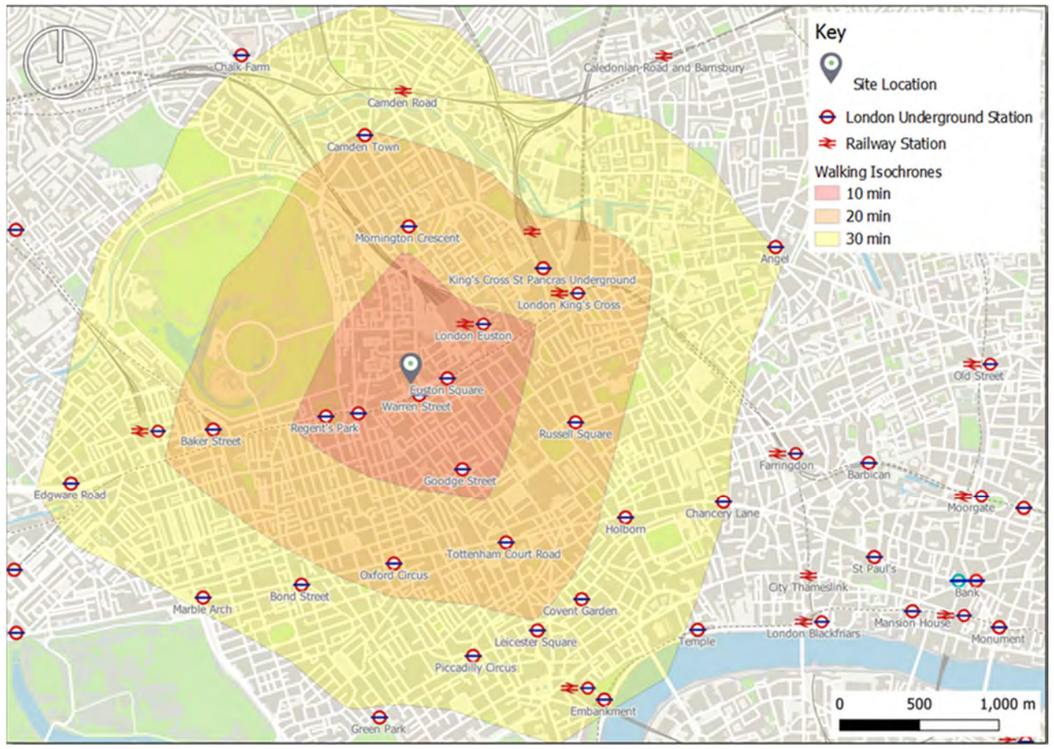
7.161 The north-south Cycle Superhighway (CS6) located approximately 1.4km east of the site, runs between Elephant & Castle to the south and King's Cross to the north.

7.162 Figure 7.6 shows that there are a number of local cycle routes within proximity of the site, the nearest being Cycleway 27, which provides connections between Hammersmith in the west to Clapton and Homerton in the east via Paddington, Angel, Islington and Hackney. The development is conveniently located in terms of cycle accessibility, with a number of local facilities and amenities accessible by cycle using the network of cycle routes in the vicinity of the site.

7.163 Cycling has the potential to substitute for short car trips, particularly those less than five kilometres in length; however, many people will cycle longer distances.

7.164 A cycling isochrone showing areas that can be reached from the site within a 20-minute cycle is provided in Figure 7.7.

Figure 7.7 Cycling Isochrone Plan



7.165 It can be seen in Figure 7.7 that the many key destinations within Central London, such as Liverpool Street, Waterloo and London Bridge stations and Oxford Street, can be reached within a 20-minute cycle.

RECEPTORS AND RECEPTOR SENSITIVITY

7.166 Receptors are defined as the users of the transport network, i.e., vehicle drivers, pedestrians, cyclists, or public transport users. The criteria used to assess the sensitivity of receptors are presented in Table 7.5. The receptors which are considered within the assessment are those people making journeys within the study area and include:

- Pedestrians – High Sensitivity;
- Cyclists – High Sensitivity;
- Public Transport Users – Medium Sensitivity; and
- Vehicle Drivers and Passengers – Low Sensitivity.

7.167 The receptors noted above are already within the study area at present, although the completed Proposed Development will likely increase the proportions of each receptor, as outlined earlier within this ES chapter (paragraph 7.62 - 7.84).

7.168 The link sensitivities presented in Table 7.11. take into consideration both the inherent sensitivity of the receptor groups as outlined above, as well as the anticipated usage volumes of those receptors on each link. Where links are anticipated to have low volumes of highly sensitive receptors, the link sensitivity will not directly correlate to the high sensitivity of the receptor group.

7.169 As such, professional judgement has been applied to define the link sensitivities by accounting for both the inherent sensitivity of receptors and their anticipated usage volumes on each link.

7.170 The assessments during the deconstruction and construction works and completed Proposed Development are undertaken as follows:

- Severance: assessed against the sensitivity of each link (see Table 7.11).
- Delay, Amenity, Fear and Intimidation and Road Safety: assessed against the sensitivity of each receptor (paragraph 7.166).

7.171 This methodology is in accordance with paragraph 3.16 of the IEMA Guidelines which states the significance of severance on a link can be assessed based on traffic flow changes of 30%, 60% and 90% as shown in Table 7.6.

Table 7.11 Study Area Link Sensitivity

Link ID	Description	Sensitivity		Justification
		Construction Works	Completed Development	
1	Euston Road	High	High	During the construction phase, the volume of pedestrians and cyclists will be moderate to high whilst the surrounding land uses and presence of a footway on the northern side of the road mean there is unlikely to be much interaction between vehicles and pedestrians and cyclists. The signalised pedestrian crossing will be unaffected during the construction works. Once the Completed Development is operational, Euston Road will have moderate to high volumes of pedestrian and cyclists who are of high sensitivity, there are wide and improved footways present to avoid conflict with vehicles and there are signalised pedestrian crossings in place on the key desire line.
2	Hampstead Road	High	High	During the construction phase, the volume of pedestrians and cyclists will be moderate, whilst the surrounding land uses and presence of a footway on the western side of the road mean there is little interaction between vehicles and pedestrians and cyclists. The signalised pedestrian crossing which provide a key desire line will be unaffected during the construction works. Once the Completed Development is operational, Hampstead Road will have moderate volumes of pedestrians who are of high sensitivity and there are improved footways present to avoid conflict with vehicles and there are signalised pedestrian crossings in place on the key desire line.
3	Brock Street	Low	Low	During the construction phase, the volume of pedestrians and cyclists will be low. Brock Street will remain pedestrianised and there will be no interaction between vehicles and pedestrians and cyclists. Once the Completed Development is operational, Brock Street will remain pedestrianised with low to moderate volumes of pedestrians and who are of high sensitivity. There will be no interaction between vehicles and pedestrians and cyclists.
4	Regent's Plaza	Low	Medium	During the construction phase, parts of Regent's Plaza will remain fully pedestrianised with no interaction between vehicles and pedestrians and cyclists. Once the Completed Development is operational, the Plaza will accommodate a very small number of specialist gas delivery vehicles. These vehicles will be manged by a banksman to minimise any interaction with pedestrians.
5	Drummond Street	Low	Low	In both the construction phase and once completed, there are footways on both sides of the carriageway and crossing points provided. There will be very little interaction between vehicles and pedestrians and cyclists.
6	Longford Street	Low	Low	In both the construction phase and once completed, there are footways on both sides of the carriageway and crossing points provided. There will be very little interaction between vehicles and pedestrians and cyclists.

EMBEDDED MITIGATION

Deconstruction and Construction

7.172 An Outline CLP has been submitted with this planning application as part of the TA. A detailed CLP will be secured by planning conditions and will minimise adverse impacts resulting from the deconstruction and construction phase of the Proposed Development.

7.173 The CLP will include information relating to operational hours, on-site mitigation measures such as wheel washing, monitoring and reviewing the construction programme, the hoarding position and how it affects pedestrian comfort levels and any other potential issues raised during the enabling works and construction period.

7.174 The Outline CLP will incorporate the following measures:

- Safety and environmental standards;
- Adherence to designated routes;
- Delivery scheduling;
- Re-timing for out-of-peak deliveries;
- Re-use of material on-site;
- Smart procurement;
- Collaboration with other sites in the area; and
- Implement a staff travel plan.

Completed Development

7.175 The embedded mitigation measures relevant to the Proposed Development are summarised below:

- Improved circulation and permeability for pedestrians and cyclists;
- Provision of high-quality cycle facilities; and
- Car-free development.

POTENTIAL EFFECTS

Deconstruction and Construction

7.176 This section of the assessment considers the potential effects that would arise during the deconstruction and construction phases of the Proposed Development. Measures to mitigate identified impacts are set out later in this chapter (Mitigation and Monitoring).

7.177 A detailed programme of works would be put together prior to the start of works and would be included within a full Construction Management Plan (CMP). The draft CMP has been submitted alongside the CLP in support of the planning application**,** which includes detailed construction phases, together with their duration and anticipated start and end dates.

7.178 The proposed construction programme, as set out in **ES Volume 1, Chapter 5: Deconstruction and Construction**, is set to begin in early 2025, lasting for approximately five years, with construction predicted to be completed during 2030. The key construction activities and expected durations are shown in Table 7.13.

7.179 Construction traffic estimates have been provided by Velocity and the construction advisor. The CMP contains details of the indicative construction programme from which an estimate of the likely number of vehicle movements has been calculated.

Table 7.12 Indicative Deconstruction and Construction Timetable

Construction Task/ Activity	Duration	Start Date (Quarter and Year)	Completion Date (Quarter and Year)
Site Set up & Deconstruction Works	24 months	Q1 2025	Q4 2026
Piling & Basement Walls	14 months	Q1 2026	Q2 2027
Superstructure (slabs and steelwork)	27 months	Q2 2027	Q3 2029
Cladding	31 months	Q3 2027	Q2 2030
Landscape (public realm)	8 months	Q2 2029	Q4 2029
Finishes & Fitout	36 months	Q2 2027	Q1 2030
Testing and Commissioning	11 months	Q3 2029	Q2 2030

Vehicle Movements

7.180 **ES Volume 1, Chapter 5: Deconstruction and Construction** includes an indicative construction programme. For robustness and for the purposes of the assessments in the ES, it is assumed that the anticipated peak in construction vehicles will be operational throughout the entire construction programme.

7.181 On average, there would be 215 vehicles per month during the construction phase (five years and five months), of which 205 (95%) would be HGVs.

7.182 Access to the site by construction vehicles would be restricted to the following times, as specified in LBC's CMP Pro Forma as standard working hours for construction sites:

- 08:00 - 18:00 hours Monday to Friday; and
- 08:00 - 14:00 hours Saturday and Sunday;
- No working on Sundays, Bank or Public Holidays.

7.183 During the busiest period of construction (Year 2), approximately 27 construction vehicles (54 two-way vehicle movements) per day are estimated to be generated at the site, equating to approximately **eight two-way construction vehicle trips per hour** over a 7-hour construction traffic period.

7.184 Construction vehicle impacts are dependent upon vehicle size and volume of trips. Generally, the larger the vehicle used; the fewer trips made. Therefore, provided that strict health and safety and environmental arrangements are in place, it is best to use larger vehicles, if possible, to limit the total number of vehicular movements.

7.185 To inform the assessment of the effects of the Deconstruction Works and Construction Phase in 2025, an overview of the impacts associated with the peak year AADT construction flows is provided below in Table 7.13.

Table 7.13 Deconstruction and Construction Phase Impact Overview

Highway Link	2023 Baseline		2023 Baseline + Deconstruction and Construction Flows		Percentage Change	
	AADT	HGV	AADT	HGV	AADT	HGV
Hampstead Road	14,589	1,974	14,616	2,001	0.2%	1.4%
Euston Road off-slip	8,983	799	8,997	813	0.2%	1.7%
Drummond Street	3,032	183	3,046	197	0.5%	7.4%
Longford Street	3,263	277	3,277	241	0.5%	6.0%

Severance

7.186 It is anticipated that construction vehicles would access and egress the site via the existing basement access on Longford Street or enter via new vehicle crossovers on Euston Road off slip and exit via vehicle crossovers on Hampstead Road.

7.187 Based on the criteria set out in this ES chapter and the changes to vehicle flows during the Deconstruction Works and Construction Phase set out in Table 7.13, the effects on severance are set out in Table 7.14.

Table 7.14 Significance of Severance Effect - Deconstruction Works and Construction

Highway Link	Link Sensitivity	Change in AADT	Change in HGV	Magnitude of Impact
Hampstead Road	High	>1%	1.4%	Negligible
Euston Road off-slip	High	>1%	1.7%	Negligible
Drummond Street	Low	>1%	7.4%	Negligible
Longford Street	Low	>1%	6.0%	Negligible

7.188 The assessment outlines a direct, temporary, long-term, Negligible Adverse (not significant) effect on all receptors with regard to severance.

Amenity, Fear and Intimidation

7.189 Amenity, fear and intimidation may be considered for pedestrians, cyclists, bus passengers and rail passengers. It is considered that amenity, fear and intimidation can be considered together as they are strongly interrelated and as identified within paragraph 4.39 of the IEMA guidance.

7.190 The IEMA Guidelines sets out clear thresholds for fear and intimidation in terms of vehicle speeds and flows. These are set as part of the '*Methodology*' section of this ES chapter in Table 7.6.

7.191 A highway link is considered to meet a fear and intimidation threshold when at least two of the three thresholds are met. For the purpose of this assessment, it has been assumed that all highway links achieve an average speed of 10mph or more.

7.192 The construction peak of the Proposed Development would not generate nearly enough general traffic or HGV traffic through the study area to reach the thresholds for fear and intimidation set out in IEMA Guidelines, with all links experiencing a negligible change in the average 18hr flow per hour, the daily HGV flow and the average speed. Through the provision of a CLP, vehicle speeds will also be managed to ensure there is no net increase in the speeds of HGVs.

7.193 Based on the high sensitivity of pedestrians and cyclists, the deconstruction and construction works would result in a direct, temporary, long-term, Negligible Adverse (not significant) change in amenity, fear and intimidation across the study area.

Delay for Drivers, Pedestrians and Cyclists

7.194 During construction, the site access would be via the existing basement access on Longford Street or via new vehicle crossovers on Euston Road off slip and Hampstead Road. Construction vehicle movements are likely to be spread throughout the day.

7.195 An increase of 54 vehicle movements per day during the peak construction period would result in an increase in total traffic flow on Longford Street, Euston Road and on Hampstead Road of less than 1%. Approximately eight construction vehicle trips are forecast per hour over a 7-hour construction traffic period during the peak construction phase, as noted previously. This is unlikely to affect traffic speeds, and hourly construction vehicle trips would be less than eight during the rest of the construction period.

7.196 There may be periods during the day when there would be increased delays for drivers, pedestrians and cyclists as a result of the general construction activity. Hoarding would be present on Hampstead Road, Euston Road and Brock Street, resulting in the narrowing of existing footways. This would have the potential to create delays for pedestrian movements on Euston Road and Hampstead Road.

7.197 The PCL assessment undertaken within the TA concludes that during construction, all links would have a comfort level of B or above. Based on TfL's 'Pedestrian Comfort Guidance Technical Note', a PCL of 'B 'is considered to be 'comfortable'.

7.198 As set out previously in this chapter, assessors use their judgement to determine whether pedestrian and cyclist delay is significant as a result of the Proposed Development. Both pedestrian and cyclist are high sensitivity receptors, and the construction works are likely to have a low impact on these high sensitivity receptors.

7.199 The effect on pedestrian and cyclists would be local in nature, and as such, there is likely to be a long-term, direct, temporary and Minor Adverse (not significant) effect on driver, pedestrian and cyclist delay.

Bus Delay Public Transport

7.200 In order to facilitate site egress via Hampstead Road by construction vehicles, the existing TfL northbound bus stop located outside the site is proposed to be relocated 15-20m north. As shown in the phasing plans of the CMP (**ES Volume 1, Chapter 5: Deconstruction and Construction**), a vehicle egress is to be provided along the western pavement of Hampstead Road directly outside of the site, and so the bus stop would need to relocate 15-20m north to remain operational.

7.201 The relocation of the bus stop would impact public transport users would result in a direct, reversible, temporary, long-term, Negligible Adverse (not significant) change.

Summary of Construction Effects

7.202 The effects of the deconstruction and construction works are summarised in Table 7.14. Measures to mitigate identified impacts are set out later in this chapter.

Table 7.15 Summary of Construction Effects

Description of Effect	Impact and Effect	Receptor
Severance	Negligible Adverse impact and long-term, direct, and temporary effect	All
Fear and Intimidation	Negligible Adverse impact and long-term, direct, and temporary effect	Pedestrians and cyclists
Delay	Minor Adverse impact and long-term, direct, and temporary effect	All
Public Transport	Negligible Adverse impact and long-term, direct, and temporary effect	Public Transport Users

Completed Development

7.203 A summary of the operational effects of the Proposed Development is provided in this section.

7.204 The location of the site within Central London results in accessibility to a good level of public transport facilities, including bus stops, underground stations and cycle hire located within close proximity to the site, as outlined previously in this chapter.

7.205 It is anticipated that the vast majority of trips to the site will be on foot, by bicycle or by public transport. These trips would be undertaken by employees and visitors. Bus stops, Underground and rail stations are located within walking distance of the site, whilst TfL is currently improving cycle links directly outside the site.

7.206 The forecast road traffic associated with the completed Proposed Development has been assessed against the Future Baseline (Scenario 2), as per the methodology set out within this chapter.

7.207 As set out in Paragraph 7.13 the maximum office scenario would have a higher occupancy of future employees and, therefore, generate the highest person and servicing trip generation. Taking a robust approach, the maximum office scenario has been used to assess the effects of the Proposed Development on the walking, cycling, public transport and highway networks.

7.208 To inform the assessment the forecast traffic has been assessed against the future baseline. A summary of the impact of the Proposed Development is presented in 0.

Table 7.16 Proposed Development Impact Summary

Highway Link	2023 Baseline		Future Baseline plus Proposed Development (Scenario 3)		Absolute Change		Percentage Change	
	AADT	HGV	AADT	HGV	AADT	HGV	AADT	HGV
Euston Road off-slip	8,983	799	9,026	802	43	3	0.5%	0.4%
Hampstead Road	12,680	1,832	12,805	1,840	124	7	1.0%	0.4%
Longford Street	3,263	227	3,371	235	108	8	3.2%	3.6%
Drummond Street	3,032	183	3,122	190	90	7	2.9%	3.6%

7.209 The effects of the Proposed Development are assessed below based on the effects scoped in as previously set out.

Pedestrian and Cyclist Delay

7.210 The IEMA Guidelines states that pedestrian delay at (uncontrolled) crossings equates to a two-way flow of around 1,400 vehicles per hour. None of the respective links within the study area come close to a total flow or change in flow of 1,400 vehicles per hour. All crossings within the study area are signalised.

7.211 The assessment of the Proposed Development in Table 7.16 shows that there would be little or no change in traffic flows on Euston Road and Hampstead Road, where the majority of pedestrians and cyclists are likely to be crossing, particularly those future users of the Proposed Development.

7.212 The assessment also shows a minor increase in traffic flow on Longford Street; this is due to it experiencing lower levels of vehicular activity at present. There are also minimal pedestrian or cyclist desire lines along this link, with the link classified as one of low sensitivity.

7.213 Similarly, Drummond Street would experience a small increase in traffic flows, although there are limited reasons for pedestrians and cyclists to cross in this area.

7.214 Notwithstanding, it is considered that the total volume of traffic on the links within the study area is not substantial enough to result in any noticeable impacts on pedestrian and cyclist delay, although minor changes are expected based on the change in traffic flow.

7.215 As set out previously in this chapter, assessors use their judgement to determine whether pedestrian and cyclist delay is significant as a result of the Proposed Development.

7.216 The results of the PCL assessment on the Proposed Development indicate the lowest score of A- on the Euston Road crossing. A PCL of B+ is considered comfortable by TfL for all footway and crossing link types. The full PCL assessment is contained within the TA.

7.217 It is considered that the completed Proposed Development will lead to local, direct, permanent, long term and Negligible Adverse (not significant) effect on pedestrian and cyclist delay for all links.

Table 7.17 Summary of Operational Effects

Description of Effect	Impact and Effect	Receptor
Delay	Negligible adverse impact and long-term, direct and permanent effect	Pedestrians and cyclists

MITIGATION, MONITORING AND RESDIDUAL EFFECTS

Deconstruction and Construction Mitigation

7.218 No significant adverse highways and transport related effects have been identified by the assessment of the enabling and construction works.

7.219 Nevertheless, a Construction Management Plan (CMP) covering aspects such as traffic routing, dust, noise, waste and working hours will be produced to minimise disruption and ensure there are no adverse impacts on pedestrians and cyclists. A Draft CMP will be submitted with the planning application, and it is expected that the Full CMP will be secured by a planning condition.

7.220 The CMP will seek to support the achievement of the following objectives:

- To demonstrate that construction materials can be delivered, and waste removed in a safe, efficient and environmentally friendly way;
- To identify deliveries that can be reduced, re-timed or even consolidated, particularly during peak periods;
- To help cut congestion on nearby roads and ease pressure on the environment;
- To encourage construction workers to travel to the site by sustainable or active travel modes;
- To improve vehicle and road user safety;
- To encourage the use of greener vehicles;
- To improve the reliability of deliveries to the site; and
- To reduce fuel costs and carbon emissions for freight operators.

7.221 Road safety will also be further managed and mitigated through the Construction Logistics and Community Safety (CLOCS) scheme and will make use of contractors registered under the Considerate Contractors Scheme.

7.222 With the CMP in place, it is expected that there will be no significant effects as a result of the enabling and construction works, and the Minor Adverse effects identified in the main assessment would be reduced to Negligible (not significant).

7.223 The CMP will also outline monitoring requirements during construction to ensure mitigation effectiveness. This may include aspects such as monitoring of deliveries to the site including adherence to designated routes.

Completed Development Mitigation

7.224 No significant adverse highways and transport related effects have been identified, and therefore no further mitigation or monitoring is required outside of the embedded mitigation.

7.225 Nevertheless, the following is proposed to be implemented for the Completed Development:

- **Travel Plan (TP):** the TP will be provided with an outline for the planning application and secured by way of condition. The TP will set out the measures to ensure that all trips to/from the operational Proposed Development are as sustainable as possible and thus have a negligible impact on the surrounding transport network;
- **Delivery and Servicing Plan (DSP):** the DSP will be provided in outline for the planning application and secured by way of condition. The DSP will seek to mitigate and minimise the impacts of all delivery and servicing activity associated with the complete and operational Proposed Development; and
- **Car Parking Design and Management Plan (CPDMP):** the CPDMP will be secured by way of the condition and seek to manage all parking associated with the complete and operational Proposed Development.

7.226 With the implementation of these mitigation measures, all effects remain as assessed above for all scenarios assessed.

Residual Effects

7.227 All of the residual effects resulting from the Proposed Development, are presented in Table 7.18, identifying whether the effect is significant or not.

Table 7.18 Summary of Residual Effects

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
Deconstruction and Construction							
Pedestrian and cyclists	Severance	Negligible	Not Significant	L	D	T	Lt
Pedestrian and cyclists	Fear and Intimidation	Negligible	Not Significant	L	D	T	Lt
Pedestrian and cyclists	Delay	Minor Adverse	Not Significant	L	D	T	Lt
Highway Links	Delay	Negligible	Not Significant	L	D	T	Lt
Public Transport Users	Bus Delay	Negligible	Not Significant	L	D	T	Lt
Completed Development							
Pedestrian and cyclists	Delay	Negligible	Not significant	L	D	P	Lt

ASSESSMENT OF THE FUTURE ENVIRONMENT

Evolution of the Baseline Scenario

Crossrail

7.229 Crossrail Two will provide even greater connectivity by providing a stop located at Euston Station (500m). Kings Cross St Pancras will also be part of the Crossrail Two stop as Crossrail trains span over several blocks. This stop provides an excellent connection with Crossrail One (Elizabeth Line), being one stop north of the Crossrail junction at Tottenham Court Road Station.

7.230 In terms of regional connectivity, Crossrail Two is proposed to serve from New Southgate and Tottenham Hale down to Wimbledon. Crossrail Two is still in the proposal stage but could be operational by the 2030s. The project is currently paused, although the land has continued to be safeguarded.

High Speed 2

7.231 High Speed 2 (HS2) is a rail connection from London to the Midlands that is currently under construction with an anticipated completion year of 2029-2033 for Phase One. The first phase will connect London to Birmingham, with its London terminal located at Old Oak Common. The link to Euston Station is due to open between 2031 and 2035. Euston Station is located 500m from the site and will be the site of a dual stop for Crossrail Two that will span from Euston to King's Cross St. Pancras.

7.232 The project is currently paused, although the land has continued to be safeguarded.

Background Traffic Growth

7.233 Background traffic growth has not been considered as part of the future highway network, as data[7] indicates that traffic volumes have been falling in Camden over the past two decades, and trends suggest this will continue.

Summary

7.234 As set out above, proposed public transport improvements have been developed to serve a wider area of the transport network and would not be dependent on the Proposed Development being implemented. These improvements would have a beneficial impact on users of the transport network.

Cumulative Effects Assessment

7.235 This section identifies the effects of the Proposed Development in combination with the effects of other cumulative schemes within the surrounding area (those schemes identified in **ES Volume 1, Chapter 2: EIA Methodology**).

7.236 The purpose of this assessment is to identify the effects of the Proposed Development in conjunction with the effects of other surrounding development schemes on the receptors identified within the assessment above that could potentially be impacted by the Proposed Development.

Deconstruction and Construction

7.237 In order to understand the programmes of other construction sites in the area of the Proposed Development, a review of relevant planning applications of cumulative developments close to the site was undertaken. Table 7.19 provides a summary of the review.

Table 7.19 Cumulative Schemes

Development Name	Year 1 Construction	Year 1 Operational	Source	Status	CMP Submitted	Forecast Construction Vehicles (two-way/hr)
Land North of the British Library	2024	2029	CMP	Resolution to grant approval at Planning	Yes	Not stated
Central Somers Tower	2016	2023	CMP	Partly built out with some plots still to be constructed	Yes	Not stated
Eastman Dental Hospital Site	Unknown	2026	CLP	Under construction	Yes	132
Royal National Throat, Nose and Ear Hospital	2021	2024	Transport Assessment	Unknown	Yes	40
247 Tottenham Court Road	2020	2024	CMP	Under construction	Yes	Not stated
Network Building	2022	2025	CMP	Under construction	Yes	40
Belgrove House	2021	2024	CMP	Under construction	Yes	130

7.238 As shown, construction has commenced on five of the committed developments with the expected completions dates to be before the start on-site date of the Proposed Development.

7.239 Based on the scale, location and completions dates of the Cumulative Schemes, there is not predicted to be a change in the deconstruction and construction effects to network capacity, severance, driver delay and stress, pedestrian delay, amenity, fear and intimidation, accidents and safety, and hazardous loads.

7.240 The impact of deconstruction and construction traffic is expected to be minimal and therefore would not have any significant effect on the local highway network. None of the sites are identified to use the same local transport network as the Proposed Development. At the point which the traffic reaches the strategic road network (SRN) the effects are considered to be negligible as all construction traffic is carried on these routes and as some sites begin construction others will cease.

[7] *https://roadtraffic.dft.gov.uk/local-authorities/145*

7.241 As such, the effect from the Proposed Development and Cumulative Schemes is direct, reversible, temporary, long-term, Negligible adverse (not significant) change.

Completed Development

7.242 Each of the Cumulative Schemes identified has been reviewed and it is not expected that any have an impact on the local network traffic flows in combination with the Proposed Development following completion. All the schemes are car-free apart from a small number of accessible parking.

7.243 The trips generated from the committed developments are within 1.5km of the Proposed Development and the trips would be dispersed across the transport network in both Camden and adjoining boroughs.

7.244 The committed developments comprise a mix of office, healthcare, residential, and education uses, and each cumulative scheme would be required to cater for their own demand to minimise impact on the local transport network. Each of the cumulative schemes considered had TAs or Transport Statements and Travel Plans supporting their planning application to the relevant planning authority, presenting the predicted trip generation and mitigation measures.

7.245 The effect of the cumulative schemes in addition to the Proposed Development is not considered to be significant on the surrounding transport network. The combined effect of the Proposed Development with the cumulative schemes would have a long-term, direct, permanent, and negligible adverse effect.

LIKELY SIGNIFICANT EFFECTS

7.246 The Proposed Development would not result in any likely significant adverse effects, both during the deconstruction and construction phase, and once complete and operational.

7.247 The CMP will be monitored and reviewed by the Contractor at regular intervals during the deconstruction and construction phase. The number and frequency of construction vehicles travelling to and from the site will be strictly monitored and controlled where necessary.

7.248 No significant effects relation to traffic and transport are anticipated during the completed development and the DSP, TP and CDMP will be regularly monitored to ensure that the identified mitigation measures are being correctly implemented.

Chapter 8: Air Quality

AIR QUALITY	
AUTHOR	Air Quality Consultants Ltd (AQC)
SUPPORTING APPENDIX	**ES Volume 3, Appendix: Air Quality** Annex 1: Glossary; Annex 2: Legislative and Planning Policy Context; Annex 3: Construction Dust Assessment Procedure; Annex 4: EPUK & IAQM Planning for Air Quality Guidance; Annex 5: Professional Experience; Annex 6: Modelling Methodology; Annex 7: No Improvement Scenario; Annex 8: London Vehicle Fleet Projections; Annex 9: Preliminary Air Quality Assessment; Annex 10: Air Quality Positive Statement; Annex 11: Construction Mitigation; and Annex 12: References.
KEY CONSIDERATIONS	The London Borough of Camden (LBC) has declared a borough-wide Air Quality Management Area (AQMA) for exceedances of the annual mean nitrogen dioxide (NO_2) and the 24-hour mean particulate matter (PM_{10}) objectives. Activities associated with the deconstruction and construction works of the Proposed Development will give rise to a risk of dust impacts at existing sensitive receptors during deconstruction[1], earthworks and construction, as well as from trackout of dust and dirt by vehicles onto the public highway. A qualitative construction dust risk assessment has thus been carried out. In addition, the potential for construction vehicles to impact upon local air quality has been considered quantitatively within the 2025 assessment scenario, which has applied traffic flows from the peak year[2] of construction for the Proposed Development to the first year of construction phase as a worst-case. The main air pollutants of concern related to construction traffic emissions are NO_2 and fine particulate matter (PM_{10} and $PM_{2.5}$). Once complete and operational, the Proposed Development will lead to changes in vehicle flows on local roads which may impact on air quality at existing residential properties. The proposed retail uses within the Proposed Development will also be subject to the impacts of road traffic emissions from the adjacent road network. The air quality assessment has considered the impacts on future receptors and the site suitability assuming a fully completed development in 2030. The Proposed Development also includes an all-electric system comprising Air-Source Heat Pumps (ASHPs), supplemented by photovoltaic panels (PVs) for the provision of heat and hot water. There are also two options under consideration for emergency power provision to incorporate either a life safety generator and future tenant generator (Option 1) or Dual Utility Supplies (Option 2), for emergency purposes. However, not enough information is available at this stage to undertake a meaningful assessment of the impacts from these options on air quality; it is therefore proposed, should planning permission be granted, that LBC include a planning condition that requires any plant with emissions to air is assessed and the results presented to LBC prior to commencement. This approach will reduce the potential for likely significant effects to occur. The Proposed Development will include allocation for fume cupboards, to allow potential end users operating research and development type activities to occupy some of the development. Although the use of such facilities requires extraction of air, there are tight regulations on the design and operation of fume cupboards. Given these strict regulations on their operation, there can be a high level of confidence that provided the air extraction system is appropriately designed, and therefore likely significant air quality effects will be avoided. In summary, in terms of the potential air quality effects, the assessment has considered: • The impacts of the deconstruction and construction works associated with the Proposed Development on dust soiling and concentrations of PM_{10} at existing sensitive receptors during the deconstruction and construction period; • The impact of the deconstruction and construction works of the Proposed Development on concentrations of NO_2, PM_{10} and $PM_{2.5}$ from construction traffic on existing sensitive receptors; • The impacts of the complete and operational Proposed Development on concentrations of NO_2, PM_{10} and $PM_{2.5}$ from road traffic, at existing local sensitive receptors, in the proposed first year of opening; • The impacts of existing and proposed emission sources of NO_2, PM_{10} and $PM_{2.5}$ on future users of the Proposed Development;

AIR QUALITY	
	• Whether or not the Proposed Development is 'air quality neutral'; • The measures included within the Proposed Development to maximise benefits to local air quality and reduce exposure (Air Quality Positive Statement); and • The cumulative impacts on air quality of the Proposed Development in combination with cumulative schemes identified in the local area.
CONSULTATION	An EIA Scoping Opinion Request Report ('EIA Scoping Report') was submitted to the LBC on 4 August 2023 (refer to **ES Volume 3, Appendix: EIA Methodology – Annex 1**) which sets out the proposed scope and method proposed for this ES chapter. A draft of the 'EIA Scoping Report Review' (prepared by CBRE, the LBC's appointed EIA advisors) was issued on 4 October 2023 (refer to **ES Volume 3, Appendix: EIA Methodology - Annex 2**), and a final EIA Scoping Opinion was subsequently issued on the 16 November 2023. The EIA Scoping Report Review accepts the proposed air quality assessment methodology set out in the EIA Scoping Report but requests clarification on: • The assumptions for vehicular movements in the baseline scenario; the assessment has assumed that the existing Euston Tower building is vacant (i.e., no operational movements which is conservative although it is acknowledged that there may be a small number associated with the retail units) but servicing and deliveries associated with the wider Regent's Campus have been considered as set out in **ES Volume 1, Chapter 7: Traffic and Transport**; and • Clarification that the traffic scenarios (predominately comprising of the 2023 Baseline, 2030 Future Baseline and 2030 Future Baseline with the Proposed Development) used for the assessment are consistent across the ES and are representative of a reasonable worst-case, this is set out in **ES Volume 1, Chapter 7: Traffic and Transport.**

ASSESSMENT METHODOLOGY

Defining the Baseline

Current Baseline Conditions

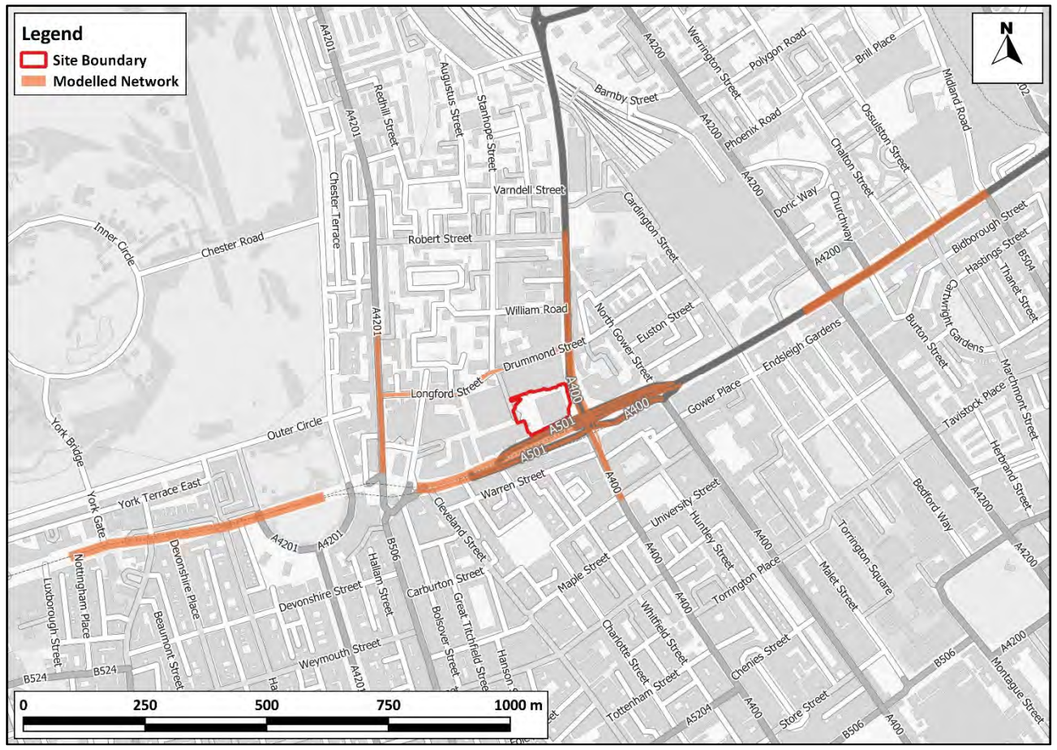
8.1 Existing sources of emissions within the study area have been defined using a number of approaches. The study area is effectively defined by the extent of the road network included in the air quality modelling assessment of the road traffic impacts from the deconstruction and construction works and the complete and operational Proposed Development (see Figure 8.1). Industrial and waste management sources that may affect the area have been identified using the Department for the Environment, Food and Rural Affairs (Defra) Pollutant Release and Transfer Register[3]. Local sources have also been identified through examination of the LBC's Air Quality Review and Assessment reports and a review of aerial mapping.

[1] 'Demolition' is the terminology used in the GLA's SPG on the Control of Dust and Emissions During Construction and Demolition and has been used in places for consistency however refers to the deconstruction phase of works.

[2] Peak year is the year with the greatest construction vehicle traffic flows (2026).

[3] Defra (2023) UK Pollutant Release and Transfer Register, [Online], Available: prtr.defra.gov.uk.

Figure 8.1 Study Area



Contains Ordnance Survey data © Crown copyright and database right 2023. Ordnance Survey licence number 100046099. Additional data sourced from third parties, including public sector information licensed under the Open Government Licence v1.0.

8.2 Information on existing air quality has been obtained by collating the results of monitoring carried out by LBC. Background concentrations have been defined using the national pollution maps published by Defra[4]. These cover the whole country on a 1x1km grid. Further details are provided in **ES Volume 3, Appendix: Air Quality – Annex 6**.

8.3 Exceedances of the annual mean European Union (EU) limit value for NO_2 in the study area has been identified using the maps of roadside concentrations published by Defra[5,6]. These are the maps used by the UK Government, together with results from national Automatic Urban and Rural Network (AURN) monitoring sites that operate to EU data quality standard, to report exceedances of the limit value to the EU. The national maps of roadside PM_{10} and $PM_{2.5}$ concentrations, which are available for the years 2009 to 2019, show no exceedances of the limit values anywhere in the UK in 2019.

8.4 Current baseline concentrations have been modelled using the ADMS-Roads dispersion model. Details of the model inputs, assumptions and the verification are provided in **ES Volume 3, Appendix: Air Quality – Annex 6**. Where assumptions have been made, a realistic worst-case approach has been adopted, as discussed in paragraph 8.59.

Future Baseline Conditions

8.5 Future baseline concentrations have been predicted using the ADMS-Roads dispersion model for the opening year of the construction period (2025) assuming the peak construction traffic flows and the first year of operation of the Proposed Development (2030). Details of the model inputs, assumptions and the verification are provided in **ES Volume 3, Appendix: Air Quality – Annex 6**, together with the method used to derive future year background concentrations. Where assumptions have been made, a realistic worst-case approach has been adopted.

Evolution of the Baseline

8.6 If the Proposed Development was not to come forward, it is expected that the site would remain as its current use (as a vacant building with some active retail elements). Air quality is generally expected to improve with time, due, for example, to more stringent emissions standards for motor vehicles and the uptake of cleaner vehicles. The likely evolution of the baseline conditions if the Proposed Development did not come forward has been considered in this assessment in the 2025 and 2030 scenarios.

Assessment Criteria

UK Criteria

8.7 The UK Government has established a set of air quality standards and objectives to protect human health. The 'standards' are set as concentrations, below which effects are unlikely, even in sensitive population groups, or below which risks to public health would be exceedingly small. They are based purely upon the scientific and medical evidence of the effects of an individual pollutant. The 'objectives' set out the extent to which the UK Government expects the standards to be achieved by a certain date. They take account of economic efficiency, practicability, technical feasibility, and timescale. The objectives for use by local authorities are prescribed within the Air Quality (England) Regulations 2000[7] and the Air Quality (England) (Amendment) Regulations 2002[8].

8.8 The objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed over the averaging period of the objective. The Greater London Authority (GLA) explains where these objectives will apply in London[9]. The annual mean objectives for NO_2 and PM_{10} are considered to apply at the façades of residential properties, schools, hospitals, and care homes etc., the gardens of residential properties, school playgrounds and the grounds of hospitals and care homes. The objectives do not apply at offices or other places of work where members of the public do not have regular access. The 24-hour mean objective for PM_{10} is considered to apply at the same locations as the annual mean objective, as well as at hotels. The 1-hour mean objective for NO_2 applies wherever members of the public might regularly spend 1-hour or more, including outdoor eating locations, pavements of busy shopping streets and hotels.

8.9 The UK-wide objectives for NO_2 and PM_{10} were to have been achieved by 2005 and 2004[7], respectively, and continue to apply in all future years thereafter. Measurements across the UK have shown that the 1-hour NO_2 objective is unlikely to be exceeded at roadside locations where the annual mean concentration is below 60 $\mu g/m^3$[3,10]. Therefore, 1-hour NO_2 concentrations will only be considered if the annual mean concentration is above this level.

8.10 For $PM_{2.5}$, the objective set by Defra for local authorities is to work toward reducing concentrations without setting any specific numerical value. In the absence of a numerical objective, it is convention to assess local air quality impacts against the limit value (see paragraph 8.17), originally set at 25 $\mu g/m^3$ and currently set at 20$\mu g/m^3$.

8.11 Defra has also recently set two new targets, and two new interim targets, for $PM_{2.5}$ concentrations in England. One set of targets focuses on absolute concentrations. The long-term target is to achieve an annual mean $PM_{2.5}$ concentration of 10$\mu g/m^3$ by the end of 2040, with the interim target being a value of 12 $\mu g/m^3$ by the

[4] *Defra (2023) Local Air Quality Management (LAQM) Support Website, [Online], Available: http://laqm.defra.gov.uk/.*
[5] *Defra (2020) 2020 NO2 projections data (2018 reference year), Available: https://uk-air.defra.gov.uk/library/no2ten/2020-no2-pm-projections-from-2018-data.*
[6] *Defra (2023) UK Ambient Air Quality Interactive Map, Available: https://uk-air.defra.gov.uk/data/gis-mapping*
[7] *The Air Quality (England) Regulations, 2000, Statutory Instrument 928 (2000), HMSO, Available: http://www.legislation.gov.uk/uksi/2000/928/contents/made.*
[8] *The Air Quality (England) (Amendment) Regulations, 2002, Statutory Instrument 3043 (2002), HMSO, Available: https://www.legislation.gov.uk/uksi/2002/3043/contents/made.*
[9] *GLA (2019) London Local Air Quality Management Technical Guidance 2019, Available: https://www.london.gov.uk/sites/default/files/llaqm_technical_guidance_2019.pdf*
[10] *Defra (2018) Review & Assessment: Technical Guidance LAQM.TG16 February 2018 Version, Defra, Available: https://laqm.defra.gov.uk/documents/LAQM-TG16-April-16-v1.pdf.*

start of 2028[11, 12]. The second set of targets relate to reducing overall population exposure to $PM_{2.5}$. By the end of 2040, overall population exposure to $PM_{2.5}$ should be reduced by 35% compared with 2018 levels, with the interim target being a reduction of 22% by the start of 2028.

8.12 Defra will assess compliance with the population exposure targets by averaging concentrations measured at its own background monitoring stations. This will not consider small changes over time to precisely where people are exposed (such as would relate to exposure introduced by a new development). Furthermore, as explained in **ES Volume 3, Appendix: Air Quality – Annex 2**, all four new targets provide metrics against which the UK Government can assess its own progress. While local authorities have an important role delivering the required improvements, these are expected to relate to controlling emissions and not to directly assessing $PM_{2.5}$ concentrations against the targets.

8.13 In March 2023, the Department for Levelling Up, Housing and Communities[13] (DLUHC) explained that the new $PM_{2.5}$ targets will:

"need to be integrated into the planning system, and in setting out planning guidance for local authorities and businesses, we will consider the specific characteristics of $PM_{2.5}$. The guidance will be forthcoming in due course, until then we expect local authorities to continue to assess local air quality impacts in accordance with existing guidance."

8.14 Defra has also provided advice[14] which explains that there is no current requirement to consider the new $PM_{2.5}$ targets in planning decisions and that guidance to local planning authorities will be forthcoming before this position changes. In the future, when planning decisions do need to consider the new targets, the expectation is that this will focus on reducing emissions from new development rather than being a direct requirement for planning-related air quality assessments to predict $PM_{2.5}$ concentrations.

8.15 For the time being, therefore, no assessment is required, and indeed no robust assessment is possible, in relation to the new $PM_{2.5}$ targets and they are not considered further.

8.16 As explained in **ES Volume 3, Appendix: Air Quality – Annex 2**, the GLA has set a target to achieve an annual mean $PM_{2.5}$ concentration of 10µg/m^3 by 2030. This target was derived from an air quality guideline set by WHO in 2005. In 2021, WHO updated its guidelines, but the London Environment Strategy[15] considers the 2005 guideline of 10µg/m^3. While there is no explicit requirement to assess against the GLA target of 10µg/m^3, it has nevertheless been included within this assessment.

8.17 EU Directive 2008/50/EC[16] sets limit values for NO_2, PM_{10} and $PM_{2.5}$, and is implemented in UK law through the Air Quality Standards Regulations (2010)[17,18]. The limit values for NO_2, PM_{10} and $PM_{2.5}$ are the same numerical concentrations as the UK objectives, but achievement of the limit values is a national obligation rather than a local one and concentrations are reported to the nearest whole number. In the UK, only monitoring and modelling carried out by the UK Government meets the specification required to assess compliance with the limit values. The UK Government does not normally recognise local authority monitoring or local modelling studies when determining the likelihood of the limit values being exceeded unless such studies have been audited and approved by Defra and DfT's Joint Air Quality Unit (JAQU).

8.18 The relevant air quality criteria for this assessment are provided in Table 8.1.

Table 8.1 Air Quality Criteria for NO_2, PM_{10} and $PM_{2.5}$

Pollutant	Time Period	Objective
NO_2	1-hour mean	200 µg/m^3 not to be exceeded more than 18 times a year
	Annual mean	40 µg/m^3
PM_{10}	24-hour mean	50µg/m^3 not to be exceeded more than 35 times a year
	Annual mean	40 µg/m^3
$PM_{2.5}$	Annual mean	20 µg/m^3 [a]
	Annual mean	10 µg/m^3 by 2030

[a] There is no numerical $PM_{2.5}$ objective for local authorities (see paragraph 8.10). Convention is to assess against the UK limit value which is currently 20µg/m^3.

LBC Criteria

8.19 LBC has committed within their Air Quality Camden Planning Guidance (CPG) and Clean Air Action Plan (CAAP) to meeting the WHO guideline limits for NO_2, PM_{10} and $PM_{2.5}$. However, the two documents quote different WHO limits; the CPG refers to the previous WHO limits to be met in 2030 while the CAAP refers to the current WHO limits to be met in 2034.

8.20 The commitment to meet the new WHO guidelines in the CAAP is described within the context of the Council's local air quality management; the CAAP states that *"We will not consider that we have achieved the WHO guideline objectives until every monitoring location at which the pollutants are measured records annual mean concentrations which meet the relevant standards"*. The purpose of the CAAP is to help fulfil their requirements under the Local Air Quality Management (LAQM) regime, rather than development control. The CAAP does not reference the WHO guidelines for planning, nor does the CAAP include any measures with respect to updating the Air Quality CPG to account for the latest WHO guidelines.

8.21 For the purpose of this assessment, the WHO guidelines outlined in the Air Quality CPG have been used as these relate to planning and are the guidelines quoted in the LBC Air Quality Proforma to be submitted to accompany planning applications. These guidelines are presented in Table 8.2 below. The target years for achievement as outlined in the Camden CAAP have also been provided.

Table 8.2 Air Quality Criteria for NO_2, PM_{10} and $PM_{2.5}$

Pollutant	Guideline target (as an annual mean)	Target achievement timeframe
NO_2	38 µg/m^3 [a]	- [b]
PM_{10}	20 µg/m^3	2026
$PM_{2.5}$	10 µg/m^3	2030

[a] While the WHO guideline is 40 µg/m^3, 38 µg/m^3 has been used in accordance with the Air Quality CPG which states that *"consideration must be paid to uncertainty in NO_2 data, therefore 38 µg/m^3 (the 40 µg/m^3 WHO limit less 5%) shall be taken as the limit for this pollutant."*

[b] *No achievement target timeframe for NO_2 as a target of 38 µg/m^{3}should have already been met.*

Construction Dust Criteria

8.22 There are no formal assessment criteria for dust. In the absence of formal criteria, the approach developed by the Institute of Air Quality Management (IAQM)[19,20] has been used (the GLA's Supplementary Planning

[11] *Meaning that it will be assessed using measurements from 2027. The 2040 target will be assessed using measurements from 2040. National targets are assessed against concentrations expressed to the nearest whole number, for example a concentration of 10.4 mg/m^3 would not exceed the 10 mg/m^3 target.*
[12] *Defra (2023) Environmental Improvement Plan 2023*
[13] *DLUHC (2023) Planning Newsletter, Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1140170/03_Chief_Planners_Newsletter_March_2023.pdf*
[14] *Defra (2023) Integrating the Environment Act air quality targets into the planning system. Edition: Proc. IAQM Routes to Clean Air conf. Manchester, 10th October 2023*
[15] *GLA (2018) London Environment Strategy*
[16] *The European Parliament and the Council of the European Union (2008) Directive 2008/50/EC of the European Parliament and of the Council, Available: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32008L0050.*
[17] *The Air Quality Standards Regulations 2010 Statutory Instrument 1001 (2010), HMSO, Available: http://www.legislation.gov.uk/uksi/2010/1001/pdfs/uksi_20101001_en.pdf.*
[18] *As amended through The Air Quality Standards (Amendment) Regulations 2016 and The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020.*
[19] *IAQM (2016) Guidance on the Assessment of Dust from Enabling works and Construction v1.1, Available: http://iaqm.co.uk/guidance/.*
[20] *The IAQM is the professional body for air quality practitioners in the UK.*

Guidance (SPG)[21] recommends that the assessment be based on the latest version of the IAQM guidance). Full details of this approach are provided in **ES Volume 3, Appendix Air Quality – Annex 3**.

Road Traffic Screening Criteria

8.23 Environmental Protection UK (EPUK) and the IAQM[22] recommend a two-stage screening approach to determine whether emissions from road traffic generated by a development have the potential for significant air quality impacts. The approach, as described in **ES Volume 3, Appendix Air Quality – Annex 4**, first considers the size and parking provision of a development; if the development is residential and is for fewer than ten homes or covers less than 0.5ha, or is non-residential and will provide less than 1,000m^2 of floorspace or cover a site area of less than 1ha, and will provide ten or fewer parking spaces, then there is no need to progress to a detailed assessment.

8.24 The second stage then compares the changes in vehicle flows on local roads that a development will lead to against specified screening criteria. The screening thresholds (described in full in **ES Volume 3, Appendix Air Quality – Annex 4**) inside an AQMA are a change in flows of more than 25 heavy duty vehicles (HDVs) or 100 light duty vehicles (LDVs) per day. Where these criteria are exceeded, a detailed assessment is required, although the guidance advises that "*the criteria provided are precautionary and should be treated as indicative*", and "*it may be appropriate to amend them on the basis of professional judgement*".

8.25 While these screening criteria are specifically intended to act as a trigger for a detailed assessment, they can also be used to identify the extent of the road network that requires assessment; where the change in traffic on a given road link is less than the relevant screening threshold, it is unlikely that a significant impact would occur, and these links can be disregarded unless there are additional sources affecting the link (e.g. emissions from a point source).

Impact Assessment Methodology

Deconstruction and Construction

8.26 **ES Volume 1, Chapter 5: Deconstruction and Construction** outlines the proposed deconstruction and construction works. Consideration has been given to the potential for significant effects from the following impacts that will occur during the deconstruction and construction of the Proposed Development:

- Deconstruction and construction dust and particulate matter emissions;
- Deconstruction and construction on-site exhaust emissions; and
- Deconstruction and construction traffic emissions.

Dust and Particulate Matter Emissions

8.27 The deconstruction and construction dust assessment has considered the potential for impacts within 350m of the site boundary; or within 50m of roads used by construction vehicles. The assessment methodology follows the GLA's SPG on the Control of Dust and Emissions During Construction and Demolition[21], which is based on that provided by IAQM[19]. This follows a sequence of steps:

- Step 1 is a basic screening stage, to determine whether the more detailed assessment provided in Step 2 is required;
- Step 2 consists of determining the risk of dust impacts for each activity (i.e., demolition[23], earthworks, construction and the trackout of material from the site onto the local road network):
  - Step 2a determines the potential for dust to be raised from on-site works and by vehicles leaving the site. The 'dust emission magnitude' is determined for each of the four activities listed above, and is defined as 'small', 'medium' or 'large';
  - Step 2b defines the sensitivity of the area to dust soiling and human health effects and is determined based on the number of receptors located within certain distances from the site, and their sensitivity. Area sensitivities are defined for each type of effect (dust soiling or human health) and are described as 'low', 'medium' or 'high'; and
  - Step 2c combines the information from Steps 2a and 2b to determine the risk of dust impacts without appropriate mitigation. Risks are defined as 'negligible', 'low', 'medium' or 'high'.
- Step 3 uses this information to determine the appropriate level of mitigation required to ensure that there should be no significant effects.

8.28 **ES Volume 3, Appendix Air Quality – Annex 3** explains the approach in more detail.

On-Site Exhaust Emissions

8.29 Deconstruction and construction plant emissions will not be explicitly modelled or assessed, as the relevant guidance from the IAQM[19] states *"experience from assessing the exhaust emissions from on-site plant (also known as non-road mobile machinery or NRMM) […] suggests that they are unlikely to make a significant impact on local air quality and in the vast majority of cases they will not need to be quantitatively assessed."* However, suitable mitigation measures for site plant, such as requiring compliance with London's NRMM emission standards and switching off machinery when not in use, are presented as part of the mitigation measures in **ES Volume 3, Appendix: Air Quality – Annex 11**, which are based on advice presented in the IAQM and GLA guidance documents, and detailed in **ES Volume 1, Chapter 15: Environmental Management, Mitigation and Monitoring Schedule**.

8.30 The use of a Construction Management Plan (CMP), notably the mitigation measures contained within it, will ensure emissions generated by NRMM are controlled. It is judged that there will be no risk of significant effects at existing receptors as a result of on-site machinery emissions.

8.31 Additionally, all NRMM will be required to meet Stage IIIA of EU Directive 97/68/EC[24] and its subsequent amendments as a minimum. From January 2025, NRMM used anywhere in London will be required to meet Stage IV, while from January 2030 the Stage V standard will apply. From January 2040 only zero emission machinery will be allowed. There will be no idling when vehicles are not in use, and machinery will be located well away from sensitive receptors as far as possible.

Deconstruction and Construction Traffic

8.32 EPUK & IAQM[22] consider that a detailed assessment is required where a development leads to an increase in HDVs of more than 25 Annual Average Daily Traffic (AADT) in an AQMA. The deconstruction and construction phase of the Proposed Development will generate 27 HGV trips (as an AADT) in the peak year[2] (2026), which will access the site from Euston Road (A501) to the west of Albany Street, with 50% entering via the basement access on Longford Street and 50% continuing to the Euston Road (A501) off-slip road to enter the site. On exit, 50% will egress via Drummond Street and 50% will egress via Hampstead Road, south of the junction with Drummond Street. All 27 HGVs will exit via Hampstead Road, north of the junction.

8.33 A quantitative assessment of construction vehicle emissions impacts has, therefore, been carried out to determine the impacts that construction traffic emissions will have on existing sensitive receptors located along the affected routes. The main air pollutants of concern related to traffic emissions are NO_2, PM_{10} and $PM_{2.5}$.

8.34 The impact of construction traffic emissions on local concentrations of NO_2, PM_{10} and $PM_{2.5}$ at existing sensitive receptors has been predicted following the methodology presented in the '*Road Traffic Impacts*' section below, for 2025, being the first year of the commencement of the deconstruction and construction works. Assuming a year of 2025 is considered to be a worst-case scenario, compared to 2026, as air quality is generally expected to improve with time.

Assumptions

8.35 The construction dust risk assessment has assumed that measures described in **ES Volume 1, Chapter 15: Environmental Management, Mitigation and Monitoring Schedule** will be in place.

8.36 Consideration is given to emissions from NRMM based on the control measures that would be implemented to ensure emissions do not result in significant effects at existing or introduced receptors.

[21] *GLA (2014) The Control of Dust and Emissions from Construction and Enabling works SPG.*
[22] *Moorcroft and Barrowcliffe et al (2017) Land-Use Planning & Development Control: Planning For Air Quality v1.2, IAQM, London, Available: http://iaqm.co.uk/guidance/.*
[23] *Refers to the deconstruction works*
[24] *The European Parliament and the Council of the European Union (1997) Directive 97/68/EC of the European Parliament and of the Council.*

Completed Development

8.37 The assessment of the complete and operational Proposed Development's air quality in this ES chapter includes:

- An assessment of road traffic emissions associated with the complete and operational Proposed Development upon existing sensitive receptors;
- The impacts of existing and proposed pollution sources upon future users of the Proposed Development in terms of site suitability;
- Consideration of the emissions from the proposed laboratory fume cupboards on existing air quality;
- Whether the Proposed Development is 'air quality neutral'; and
- The measures the Proposed Development includes to maximise benefits to local air quality and reduce exposure (Air Quality Positive Statement).

8.38 The assessment of the operational impacts that the Proposed Development will have on local air quality has been carried out following the methodologies presented below.

Road Traffic Impacts

Screening Stage

8.39 The first step in considering the road traffic impacts of the Proposed Development has been to screen the development and its traffic generation against the criteria set out in the EPUK/IAQM guidance[22], as described in **ES Volume 3, Appendix: Air Quality – Annex 4**. Where impacts can be screened out there is no need to progress to a more detailed assessment.

8.40 The following sections describe the approach to dispersion modelling of road traffic emissions, which has been required for this project, as the Proposed Development leads to an increase in traffic of 120 LDVs, which is above the screening criteria, along Longford Street. The model has also been used to determine future air quality conditions for future air quality sensitive users of the Proposed Development.

Modelling Methodology

8.41 Concentrations have been predicted using the ADMS-Roads dispersion model, with vehicle emissions derived using Defra's latest Emission Factor Toolkit (EFT) (v11.0). Details of the model inputs, assumptions and the verification are provided in **ES Volume 3, Appendix: Air Quality – Annex 6**, together with the method used to derive base and future year background concentrations. Where assumptions have been made, a realistic worst-case approach has been adopted.

Assessment Scenarios

8.42 NO_2, PM_{10} and $PM_{2.5}$ concentrations have been predicted for a base year of 2022 (the most recent full calendar year of monitoring data available unaffected by the Covid-19 pandemic) and the proposed first year of occupation (2030). For 2030, predictions have been made assuming both that the Proposed Development does proceed ('With Proposed Development') and does not proceed ('Without Proposed Development').

8.43 Predictions for 2030 are based on a return to 'typical' activity levels and assume no impact as a result of the Covid-19 pandemic in this year, to ensure a worst-case assessment (as the influence of the pandemic has generally been to reduce concentrations of the pollutants considered in this assessment).

8.44 In accordance with LBC's Air Quality CPG, concentrations have also been predicted for the proposed earliest year of operation (2030) assuming no improvement in emission factors or background concentrations from the base year (i.e., using 2022 emission factors and background concentrations with 2030 traffic data).

Traffic Data

8.45 Traffic data for the assessment have been provided by Velocity Transport Ltd, the appointed Transport Consultants for the Proposed Development. The assessment has utilised the traffic data from the 'sensitivity test' scenario undertaken by Velocity Transport Ltd, which assumes that the whole Proposed Development is commercial office space, rather than split between office and life science spaces. The traffic flows for the 'sensitivity test' scenario are marginally higher and hence are considered a worst-case. Further details of the traffic data used in this assessment are provided in **ES Volume 3, Appendix: Air Quality – Annex 6**.

8.46 The traffic data used in the assessment for 2030 includes data for all cumulative schemes (**ES Volume 1, Chapter 2: EIA Methodology – Annex 2)**, which would affect flows on the roads included in this assessment. As such, predications of future pollutant concentrations presented in this ES chapter take account of cumulative effects.

Uncertainty

8.47 There are many components that contribute to the uncertainty of modelling predictions. The road traffic emissions dispersion model used in this assessment is dependent upon the traffic data that have been input, which will have inherent uncertainties associated with them. There are then additional uncertainties, as models are required to simplify real-world conditions into a series of algorithms.

8.48 An important stage in the process is model verification, which involves comparing the model output with measured concentrations (see **ES Volume 3, Appendix: Air Quality – Annex 6**). The level of confidence in the verification process is necessarily enhanced when data from an automatic analyser have been used, as has been the case for this assessment. Because the model has been verified and adjusted, there can be reasonable confidence in the prediction of base year (2022) concentrations.

8.49 Predicting pollutant concentrations in a future year will always be subject to greater uncertainty. For obvious reasons, the model cannot be verified in the future, and it is necessary to rely on a series of projections provided by DfT and Defra as to what will happen to traffic volumes, background pollutant concentrations and vehicle emissions. Historically, Defra's EFT had a tendency to over-state emissions reductions into the future. However, analysis of the most recent versions of Defra's EFT carried out by AQC[25, 26] suggest that, on balance, these versions are unlikely to over-state the rate at which NOx emissions decline in the future at an 'average' site in the UK. In practice, the balance of evidence suggests that NOx concentrations are most likely to decline more quickly in the future, on average, than predicted by the EFT, especially against a base year of 2016 or later. Using EFT v11.0 for future-year forecasts in this report thus provides a robust assessment, given that the model has been verified against measurements made in 2022.

8.50 In spite of the large body of evidence described above indicating that the EFT vehicle projection factors are robust and LBC monitoring data indicating the concentrations have improved in the Borough since 2015 (presented in Table 8.4 and Table 8.5), the LBC Air Quality CPG requests that concentrations are predicted assuming no improvements in vehicle emissions, which is unrealistic given expected future changes in the vehicle fleet (discussed in Paragraph 8.51). The results from this scenario, which are presented in **ES Volume 3, Appendix: Air Quality – Annex 7**, are considered highly conservative; the concentrations at the Proposed Development are expected to be closer to those described for 2030 as presented in the *'Site Suitability'* section of this ES chapter. LBC's approach of disregarding expected future improvements in air quality will more than offset any other uncertainties in the assumptions.

8.51 Changes were made to the Low Emission Zone (LEZ) from 1 March 2021, and to the Ultra Low Emission Zone (ULEZ) from 25 October 2021. The changes are described in detail in **ES Volume 3, Appendix: Air Quality – Annex 2**, and can be expected to significantly reduce NOx emissions in London; however, they are not reflected in Defra's latest EFT and thus have not been considered in this assessment. An extension to the ULEZ to cover the whole of greater London was implemented on the 29 August 2023. The assessment presented in this ES chapter is, therefore, very much worst-case in this regard, and it is expected that background concentrations, baseline concentrations, and the impacts of the Proposed Development will be lower than described in this ES chapter. **ES Volume 3, Appendix: Air Quality – Annex 8** discusses uncertainties regarding the future fleet mix in London and the scale of the reduction in NOx emissions that can be expected with the adoption of these changes.

8.52 This assessment has also considered the GLA target for $PM_{2.5}$. Whilst the overall approach is essentially unchanged from an assessment against the objectives, it must be recognised that there is increased

[25] *AQC (2020) Performance of Defra's Emission Factor Toolkit 2013-2019, Available: https://www.aqconsultants.co.uk/CMSPages/GetFile.aspx?guid=7fba769d-f1df-49c4-a2e7-f3dd6f316ec1.*

[26] *AQC (2020) Comparison of EFT v10 with EFT v9, Available: https://www.aqconsultants.co.uk/CMSPages/GetFile.aspx?guid=9d6b50e1-3897-46cf-90f1-3669c6814f1d.*

uncertainty as the criteria are numerically reduced. By way of example a 0.5% increase in a PM_{10} concentration with regard to the objective is 0.2 µg/m^3, whereas a 0.5% increase in a $PM_{2.5}$ concentration with regard to the GLA target is just 0.05 µg/m^3. While such increases can be predicted (as the model will generate outputs to many decimal places), such small increases must be treated with increased caution.

Site Suitability

8.53 Site suitability has been determined using dispersion modelling, applying the same modelling methodology for road traffic, as described in paragraph 8.41.

Energy Plant Impacts

8.54 The Proposed Development will be provided with heat and hot water by an all-electric system comprising ASHPs, supplemented by PVs; as such, there will be no centralised energy plant and thus no significant point sources of emissions within the Proposed Development.

8.55 In addition, the following two options are being investigated as part of the design stages for the Proposed Development:

- **Option 1**: inclusion of a life safety generator, located at basement level, to provide standby power to a range of life safety systems in the Proposed Development; and
- **Option 2**: provision of dual utility power supplies of 11kV each to the Proposed Development, from two diverse UKPN primary substations, to provide primary and secondary supplies to life safety equipment. In addition, the space at basement level allocated for the life-safety generator (Option 1) could be used for the installation of a future tenant generator of up to 1,500 kVA.

8.56 Information on the precise sizing, emission rate and testing regime is not currently available for either option (which is common at this stage of planning) and thus it is not possible to undertake a meaningful assessment within the ES. Any assessment at this stage would rely on highly conservative, worst-case assumptions and therefore the conclusions would not be representative of the actual impacts from any generator installed. Subsequently, any assessment undertaken at this stage would need to be updated once the design had been finalised.

8.57 It is, therefore, proposed, should planning be granted, that LBC include a planning condition that requires any plant with emissions to air to be assessed and the results presented to LBC prior to commencement. This approach will ensure likely significant effects to air quality from any plant emissions are unlikely to occur.

Laboratory Fume Cupboard Impacts

8.58 The Proposed Development will include an allocation for fume cupboards to allow potential end users operating research and development type activities to occupy some of the development. Although the use of such facilities requires extraction of air, there are tight regulations on the design and operation of fume cupboards. Any such end users will need to ensure that all activities meet the requirements of various British Standards (e.g., BSEN 14175) and Health and Safety Executive (HSE) / Control of Substances Hazardous to Health (COSHH) standards for all substances handled. Any residual emissions will need to be appropriately minimised using filtration where necessary. Given the strict regulations on the operation of fume cupboards, there can be a high level of confidence that provided the air extraction system is appropriately designed, and that likely significant air quality effects will be avoided.

Assumptions and Limitations

8.59 The following key assumptions have been made in the air quality assessment set out in this ES chapter to facilitate a reasonable worst-case assessment of likely significant effects:

- The Proposed Development is complete and fully operational in 2030. In reality the development may not be fully occupied by 2030, thus it will not be generating its full traffic volumes in 2030. In this instance, the assessment will have overestimated the traffic emissions and hence the 2030 "With Proposed Development" concentrations;
- The London City Airport meteorological monitoring station appropriately represents conditions in the study area (this is discussed further in **ES Volume 3, Appendix Air Quality – Annex 6**);
- The reduction in NO_x emissions in London due to the LEZ and ULEZ expansions are not considered in this assessment as they are not reflected in Defra's latest EFT (see paragraph 8.51), which results in the prediction of higher concentrations and greater impacts; and
- That travel activity patterns in the future assessment years will return to historically normal levels (i.e., pre-pandemic) with no long-lasting changes to travel behavior.

'Air Quality Neutral'

8.60 The GLA's London Plan Guidance (Air Quality Neutral)[27] sets out guidance on how an 'air quality neutral' assessment should be undertaken. It also provides a methodology for calculating an offsetting payment if a development is not 'air quality neutral' and it is not possible to identify or agree appropriate and adequate mitigation.

8.61 **ES Volume 3, Appendix Air Quality – Annex 9** sets out the emissions benchmarks from the guidance. The approach has been to calculate the emissions from the Proposed Development and to compare them with these benchmarks.

'Air Quality Positive'

8.62 The London Plan[28] details expectations regarding 'Air Quality Positive'. The full text is quoted in **ES Volume 3, Appendix Air Quality – Annex 2**, but the expectations can be summarised as follows:

- Air quality should be considered at an early stage in the project design;
- Existing good practice measures should be drawn together in a holistic fashion to identify which options deliver the greatest improvement to air quality, both in terms of on-site exposure and off-site impacts;
- A statement should be developed setting out how air quality can be improved across the proposed area of the development;
- These measures should be incorporated into the design; and
- Delivery of an air quality positive approach is project specific and relies on the opportunities on-site or in the surrounding area to improve air quality.

8.63 AQC has been involved since early in the design process for the Proposed Development and produced a Preliminary Air Quality Assessment to inform the design (see **ES Volume 3, Appendix Air Quality – Annex 9**). The measures recommended were considered in the design and an air quality positive statement has been prepared (**ES Volume 3, Appendix Air Quality – Annex 10**), detailing which measures have been implemented and their benefits in terms of air quality, and how the Proposed Development has been designed to reduce emissions to air and reduce exposure to air pollution on-site.

8.64 The GLA has published guidance[28] on how the requirements for Air Quality Positive development should be met, which has been followed when preparing this ES chapter.

Methodology for Defining Effects

Receptors and Receptor Sensitivity

Deconstruction and Construction Dust and Particulate Matter Emissions

8.65 The IAQM, in their guidance on construction dust[19], provides criteria to define receptor sensitivity to dust soiling or health effects of PM_{10} (See Table A3.2 in **ES Volume 3, Appendix Air Quality – Annex 3**). Residential properties are considered as high sensitivity receptors to both dust soiling and health effects of PM_{10}, while places of work are defined as medium sensitivity receptors.

[27] *GLA (2023) London Plan Guidance – Air Quality Neutral.*

[28] *GLA (2023) London Plan Guidance – Air Quality Positive.*

Deconstruction and Construction Traffic

8.66 The sensitivity of receptors to construction traffic emissions is the same as presented in the *'Completed Development'* section below. However, the assessment of deconstruction and construction traffic has only considered existing sensitive receptors (receptors at the Proposed Development will not be present).

Completed Development

8.67 The 2007 Air Quality Strategy[29] explains that air quality standards and objectives were determined based on expert recommendations and represent *"levels at which no significant health effects would be expected in the population as a whole"*. As described in paragraph 8.8, the objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed over the averaging period of the objective. The GLA explains where these objectives will apply in its Technical Guidance[9].

8.68 In terms of the Proposed Development, the retail floorspace is considered to represent relevant exposure to the 1-hour mean NO_2 objective while the offices and lab floorspace do not represent relevant exposure to the national air quality objectives. For the existing residential and college properties, there is relevant exposure to both the annual mean and short-term objectives.

8.69 Within this ES chapter, all receptors where the air quality objectives apply are considered to be high sensitivity receptors. Locations where the objectives do not apply are considered to be not sensitive. Therefore, there are no medium or low sensitivity receptors within the context of this assessment.

Magnitude of Impact

Deconstruction and Construction Dust and Particulate Matter Emissions

8.70 There are no formal assessment criteria for dust. In the absence of formal criteria, the approach developed by the IAQM has been used (the GLA's SPG[21] recommends that the assessment be based on the latest version of the IAQM guidance). The magnitude of impact associated with dust generated from the deconstruction and construction activities is determined during Step 2 of the method, as described in paragraph 8.27.

8.71 Full details of this approach are provided in **ES Volume 3, Appendix Air Quality – Annex 3**.

Deconstruction and Construction Traffic

8.72 The description of the magnitude of air quality impacts and effects from the construction traffic emissions is the same as presented in Table 8.3 below.

Completed Development

8.73 There is no official guidance in the UK in relation to development control on how to describe air quality impacts and effects, nor how to assess their significance. The approach developed jointly by EPUK and the IAQM[22] has therefore been used. This includes defining descriptors of the impacts at individual receptors, which take account of the percentage change in concentrations relative to the relevant air quality objective, rounded to the nearest whole number, and the absolute concentration relative to the objective.

8.74 Table 8.3 sets out how impact descriptors have been determined within this assessment, being an adapted version of the table presented in **ES Volume 3, Appendix Air Quality – Annex 4**. For the assessment criterion the term Air Quality Assessment Level or AQAL has been adopted, as it covers all pollutants, i.e., those with and without formal standards. Typically, as is the case for this assessment, the AQAL will be the air quality objective value. Note that impacts may be adverse or beneficial, depending on whether the change in concentration is positive or negative.

Table 8.3 Air Quality Impact Scale Descriptors for Individual Receptors for All Pollutants [a]

Long-Term Average Concentration at Receptor in Assessment Year [b,c]				Change in Concentration Relative to AQAL [c,d]				
% of AQAL	Annual Mean NO_2 ($\mu g/m^3$)	Annual Mean PM_{10} ($\mu g/m^3$)	Annual Mean $PM_{2.5}$ ($\mu g/m^3$)	0%	1%	2-5%	6-10%	>10%
75% or less of AQAL	Less than 30.2	Less than 30.2	Less than 7.5	Negligible	Negligible	Negligible	Minor	Moderate
76-94% of AQAL	30.2 – 37.8	30.2 – 37.8	7.5 – 9.5	Negligible	Negligible	Minor	Moderate	Moderate
95-102% of AQAL	37.8 – 41.0	37.8 – 41.0	9.5 – 10.2	Negligible	Minor	Moderate	Moderate	Major
103-109% of AQAL	41.0 – 43.8	41.0 – 43.8	10.2 – 10.9	Negligible	Moderate	Moderate	Major	Major
110% or more of AQAL	More than 43.8	More than 43.8	More than 10.9	Negligible	Moderate	Major	Major	Major

[a] Values are rounded to the nearest whole number
[b] This is the 'without scheme' concentration where there is a decrease in pollutant concentration and the 'with scheme' concentration where there is an increase.
[c] AQAL = Air Quality Assessment Level, which may be an air quality objective, EU limit or target value, or an Environment Agency 'Environmental Assessment Level (EAL)'.
[d] Minor and Major are used as standard EIA terminology and correspond to Slight and Substantial respectively in relevant guidance[22].

Defining the Effect

Effect Scale, Nature and Significance

8.75 It is important to differentiate between the terms impact and effect with respect to the assessment of air quality. The term impact is used to describe a change in pollutant concentration at a specific location. The term effect is used to describe an environmental response resulting from an impact, or series of impacts.

Deconstruction and Construction

8.76 Guidance from the IAQM[19] is that, with appropriate mitigation in place, the effects of construction dust will be 'not significant'. This is the latest version of the guidance upon which the assessment methodology set out in the GLA guidance[21] is based (the GLA guidance advises that the latest version of the IAQM guidance should always be used). The assessment thus focuses on determining the appropriate level of mitigation to ensure that effects will normally be 'not significant'.

Deconstruction and Construction Traffic

8.77 The overall significance of the air quality effects, from the deconstruction and construction traffic emissions, is the same as presented in the *'Completed Development'* section below.

Completed Development

8.78 Within this ES chapter, the air quality assessment has used published guidance and criteria to determine the likely air quality impacts at a number of sensitive locations (see Table 8.3). The overall significance of the air quality effects is then determined using professional judgement, giving consideration to various factors including the magnitude of the predicted impacts and the presence of any objective exceedances; full details of the EPUK/IAQM approach are provided in **ES Volume 3, Appendix Air Quality – Annex 4**. The experience of the consultants who have prepared this ES chapter is set out in **ES Volume 3, Appendix Air Quality – Annex 5**.

Geographic Extent of Effects

8.79 Dust generated by the Proposed Development during the deconstruction and construction works has the potential to cause effects at a local level (up to 350m from the site boundary).

[29] Defra (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland.

8.80 The extent of effects arising from the Proposed Development will occur at a 'local' level due to emissions associated with changes in vehicle flows, during the construction and operational phases, on local roads.

Effect Duration

8.81 Dust generated by the Proposed Development during the deconstruction and construction works has the potential to cause temporary medium-term effects.

8.82 Emissions of pollutants from road traffic, from the construction and operational phases, associated with the Proposed Development have the potential to cause permanent long-term effects.

Direct and Indirect Effects

8.83 Dust generated by the Proposed Development during the deconstruction and construction has the potential to cause direct effects.

8.84 Emissions of pollutants from road traffic, from the construction and operational phases, associated with the Proposed Development have the potential to cause direct effects.

Categorising Likely Significant Effects

8.85 The screening approach developed jointly by EPUK/IAQM has been used to determine the significance of effects due to construction traffic.

8.86 Guidance from the IAQM is that, with appropriate mitigation in place, the effects of construction dust will be 'not significant'. The assessment thus focuses on determining the appropriate level of mitigation so as to ensure that effects will normally be 'not significant'.

8.87 As set out in paragraph 8.30 above, measures outlined within the CMP as well as legislative and policy controls will ensure emissions generated by NRMM are controlled to the extent that no likely significant effects are anticipated.

8.88 There is no official guidance in the UK in relation to development control on how to assess the significance of operational effects. The approach developed jointly by EPUK and the IAQM has therefore been used.

8.89 The impact assessment matrix shown in Table 8.3 has been used to define the impacts at individual receptors and the overall significance of the air quality effects is then determined using professional judgement, giving consideration to various factors including the frequency, duration and magnitude of the predicted impacts, their relationship to appropriate air quality objectives and the high sensitivity of the receptors; full details of the EPUK/IAQM approach are provided in **ES Volume 3, Appendix Air Quality – Annex 4**. The experience of the consultants who have prepared this ES chapter is set out in **ES Volume 3, Appendix Air Quality – Annex 5.**

8.90 In terms of the site suitability assessment, where the predicted concentrations are below the relevant objectives, the effect of air quality on future occupiers is judged to be 'not significant'.

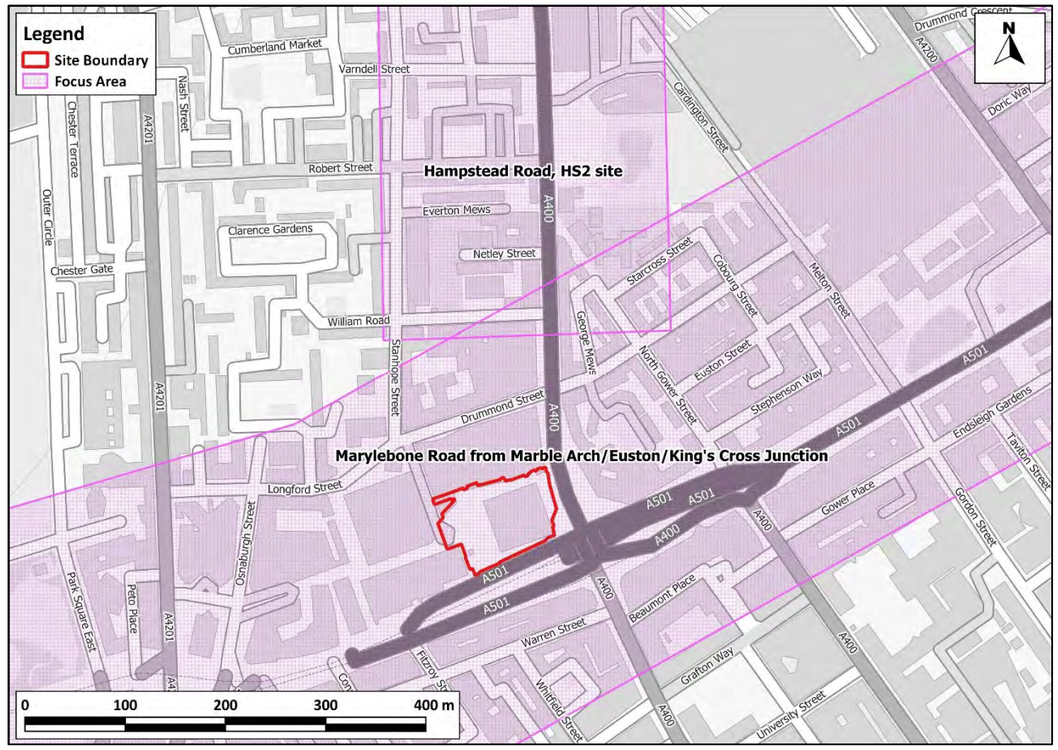
BASELINE CONDITIONS

Current Baseline Conditions

8.91 The site currently comprises the existing 36-storey Euston Tower building and is located in a predominantly commercial area and is bounded by Brock Street and commercial properties to the north, Hampstead Road to the east, Euston Road to the south and commercial properties associated with Regent's Place Plaza to the west.

8.92 The Proposed Development is located within a borough-wide AQMA declared by LBC for exceedances of the annual mean NO_2 and 24-hour PM_{10} objectives. The Proposed Development is also located within one of the GLA's Air Quality Focus Areas (*Marylebone Road from Marble Arch / Euston / King's Cross Junction)*, as shown in as shown in Figure 8.2; these are locations with high levels of human exposure where the annual mean limit value for NO_2 is exceeded.

Figure 8.2 Proposed Development and Air Quality Focus Areas



Contains Ordnance Survey data © Crown copyright and database right 2023. Ordnance Survey licence number 100046099. Additional data sourced from third parties, including public sector information licensed under the Open Government Licence v1.0.

Industrial Sources

8.93 A search of the UK Pollutant Release and Transfer Register[3] website has not identified any significant industrial or waste management sources that are likely to affect the Proposed Development, in terms of air quality or dust.

Local Air Quality Monitoring

8.94 The LBC operates five automatic monitoring stations within its administrative area, with one monitoring site ('CD9') located within the study area. The LBC also operates a number of NO_2 monitoring sites using diffusion tubes prepared and analysed by Gradko International Ltd (using the 50% TEA in acetone method), with 15 diffusion tube monitoring sites located within and in close proximity to the study area.

8.95 Annual mean and 1-hour NO_2 results for the years 2015 to 2022 are summarised in Table 8.4. Exceedances of the objectives are shown in bold. The monitoring locations are shown in Figure 8.3. The monitoring data for the LBC have been taken from the LBC's 2022 Annual Status Report (ASR)[30].

8.96 While 2020 and 2021 results have been presented in this section for completeness, they are not relied upon in any way as they will not be representative of 'typical' air quality conditions due to the considerable impact of the Covid-19 pandemic on traffic volumes and thus pollutant concentrations.

[30] *LBC (2022) Air Quality Annual Status – Report for 2022*

Table 8.4 Summary of LBC NO_2 Monitoring (2015-2022) [a, b]

Site No.	Site Type	Location	2015	2016	2017	2018	2019	2020	2021	2022
Automatic Monitor - Annual Mean (µg/m³)										
CD9	Roadside	Euston Road	**90**	**88**	**83**	**82** [c]	**70**	43	48	45
Objective			**40**							
Automatic Monitor - No. of Hours > 200 µg/m³										
CD9	Roadside	Euston Road	**54**	**39**	**25**	18	7	0	1	2
Objective			**18**							
Diffusion Tubes – Annual Mean (µg/m³)										
CAM46	Roadside	HSS Phase 35 – Netley Primary School	-	-	-	-	-	-	23.8	22.9
CAM71	Roadside	Euston Road LAQN colocation	-	-	-	-	**65.3**	**46.6**	**46.5**	**43.2** [c]
CAM79	Urban Background	Tavistock Gardens	**44.6**	39.7	**46.2**	35.4	33.9	26.8	22.2	23.9
CAM80	Roadside	Ensleigh Gardens	-	-	-	-	**49.5**	35.3	34.3	30.2 [c]
CAM203	Roadside	Torrington-Tavistock/Midland Judd 25–Duke's Road	-	-	-	**50.4**	**42.3**	31.0	-	-
CAM204	Roadside	Torrington-Tavistock/Midland Judd 26-Upper Woburn Place	-	-	-	**68.3**	**59.4**	**43.2**	37.0	37.3
CAM205	Roadside	Torrington-Tavistock/Midland Judd 27-Endsleigh Street	-	-	-	**50.7**	**44.6**	33.2	-	-
CAM206	Roadside	Torrington-Tavistock/Midland Judd 28–Gower Place	-	-	-	-	**47.9**	32.5	-	-
CAM215	Roadside	Torrington-Tavistock/Midland Judd 37–DOC	-	-	-	**44.1**	40.0	31.2	-	-
CAM216	Roadside	WEP 1 – Warren Street	-	-	-	**56.0**	**53.8**	**50.9**	31.4	-
CAM217	Roadside	WEP 2 – Grafton Way	-	-	-	**57.6**	**54.1**	**42.2**	35.1	-
CAM230	Roadside	WEP 15 – Gower Street	-	-	-	**64.3**	**55.1**	32.3	32.1	-
CAM231	Roadside	WEP 16 – Gordon Street	-	-	-	**43.7**	**40.3**	31.5	30.6	-
CAM232	Roadside	WEP 17 – Euston Road	-	-	-	**74.7**	**69.6**	**47.2**	**46.1**	-
CAM301	Roadside	Somers Town 16 – Churchway	-	-	-	-	-	-	-	27.9 [c]
Objective			**40 / 38** [d]							

[a] *Exceedances of the objectives are shown in* ***bold****.*
[b] *Exceedances of the 60 µg/m³ proxy value, indicating a potential exceedance of the 1-hour mean NO_2 objective, are shown in* ***bold and underlined****.*
[c] *Data capture for the monitoring period was less than 75%, and as such the results were annualised in accordance with LLAQM Technical Guidance.*
[d] *38 µg/m³ is the LBC Air Quality CPG target for annual mean NO_2*

8.97 The results presented in Table 8.4 show that exceedances of the annual mean NO_2 objective and the LBC Air Quality CPG target occurred at the majority of the roadside locations within close vicinity of the study area in 2019, with the exception of 'CAM79'. In 2022, only the 'CAM71' diffusion tube monitoring site exceeded the objective and the LBC Air Quality CPG target (although it is noted many of these nearby monitoring sites ceased operating in 2022 so limited data is available for this year).

8.98 Concentrations of more than 60µg/m³ was measured at one site in 2019, indicating a potential exceedance of the 1-hour mean objective. However, the 'CD9' automatic monitoring site has recorded 1-hour mean concentrations below the objective since 2019. There was an overall downward trend in NO_2 concentrations between 2015 and 2022.

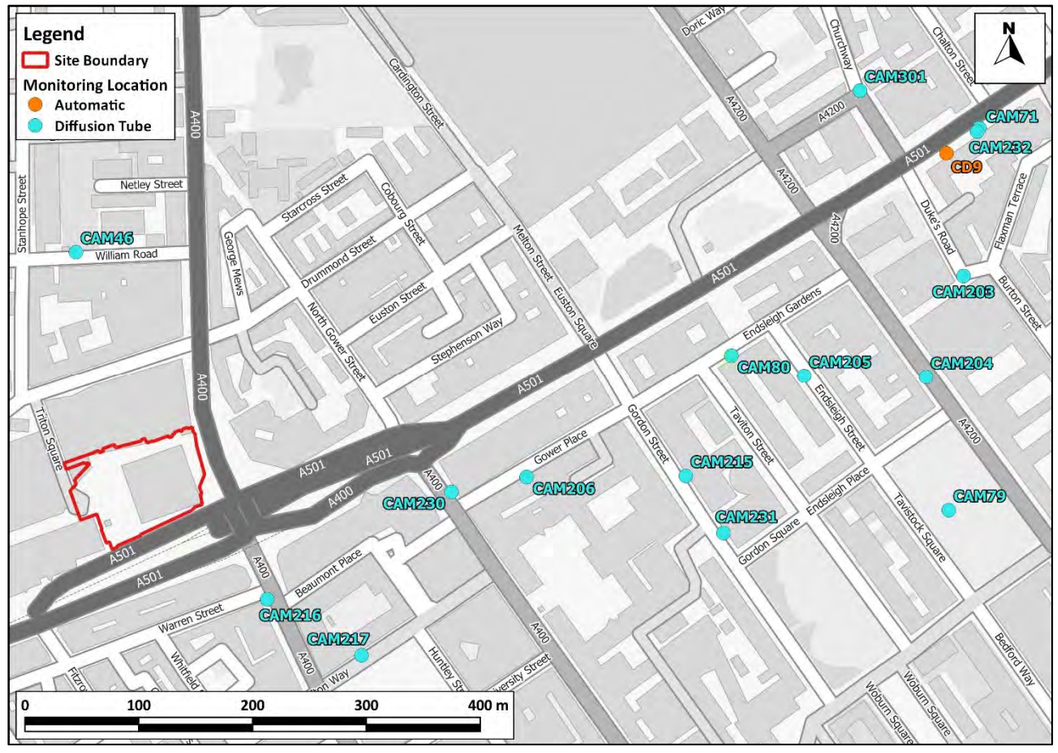
8.99 The LBC also measures PM_{10} and $PM_{2.5}$ concentrations at the 'CD9' automatic station. Measured concentration results for the years 2015 to 2021 are summarised in Table 8.5.

Table 8.5 Summary of LBC PM_{10} and $PM_{2.5}$ Monitoring (2015-2022)

Site No.	Site Type	Location	2015	2016	2017	2018	2019	2020	2021	2022
PM_{10} Annual Mean (µg/m³)										
CD9	Roadside	Euston Road	28	24	20	21	22	18	19	21
Objective			**40 / 20** [a]							
PM_{10} - No. of Days > 50 µg/m³										
CD9	Roadside	Euston Road	5	10	3	2	8	2	2	6
Objective			**35**							
$PM_{2.5}$ Annual Mean (µg/m³)										
CD9	Roadside	Euston Road	17	17	14	15	14	11	11	12
Objective/GLA target			**20/10** [a]							

[a] *20 µg/m³ is the LBC Air Quality CPG target for annual mean PM_{10}; there is no requirement to meet this until 2026.*
[b] *The 20 µg/m³ $PM_{2.5}$ objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it. 10 µg/m³ is the GLA target and the LBC Air Quality CPG target for annual mean $PM_{2.5}$; again, there is no requirement for local authorities to meet this until 2030.*

Figure 8.3 Monitoring Locations and the Site Boundary



8.100 As shown in Table 8.5, the measured annual mean and 24-hour mean PM_{10} concentrations were below their respective objectives between 2015 and 2022. However, annual mean PM_{10} concentrations exceeded the LBC Air Quality CPG target in all years except 2017, 2020 and 2021. In addition, $PM_{2.5}$ concentrations were below the objective in all years presented. However, $PM_{2.5}$ concentrations exceeded the GLA target value/ LBC Air Quality CPG target at 'CD9' monitoring station, which is common across much of London. The nationwide achievement is very unlikely to be possible before 2030, especially in London[31].

Exceedances of Limit Value

8.101 There are several AURN monitoring sites within the Greater London Urban Area that have measured exceedances of the annual mean NO_2 limit value[32]. Furthermore, Defra's roadside annual mean NO_2 concentrations[6], which are used to identify and report exceedances of the limit value, identify exceedances of this limit value in 2022 along many roads in London, including Tottenham Court Road and Euston Road (A501) adjacent to the Proposed Development. The Greater London Urban Area has thus been reported to the EU as exceeding the limit value for annual mean NO_2 concentrations. Defra's predicted concentrations for 2030[5], however, do not identify any exceedances within the study area. As such, there is considered to be no risk of a limit value exceedance in the vicinity of the Proposed Development by the time that it is operational.

8.102 Defra's Air Quality Plan requires the GLA to prepare an action plan that will "*deliver compliance in the shortest time possible*", and the 2015[33] Plan assumed that a Clean Air Zone (CAZ) was required. The GLA has already implemented a Low Emission Zone (LEZ) and an Ultra-Low Emission Zone (ULEZ); thus, the authority has effectively already implemented the required CAZ. These have been implemented as part of a package of measures including 12 Low Emission Bus Zones, Low Emission Neighbourhoods, the phasing out of diesel buses and taxis and other measures within the Mayors Transport Strategy.

Background Concentrations

8.103 In addition to the locally measured concentrations, estimated background concentrations in the study area have been determined for the baseline year 2022, as well as the future assessment year of 2025 and 2030 using Defra's 2018-based background maps. The background concentrations are set out in Table 8.4 and have been derived as described in **ES Volume 3, Appendix: Air Quality – Annex 6**. The background concentrations are all well below the objectives; however, the $PM_{2.5}$ concentrations are above the GLA target of 10µg/m^3. A range of values is presented as the study area covers multiple 1x1 km grid squares.

Table 8.6 Estimated Annual Mean Background Pollutant Concentrations in 2022 and 2030 (µg/m^3)

Year	NO_2	PM_{10}	$PM_{2.5}$
2022	29.9 – 35.4	18.6 – 19.1	11.9 – 12.2
2025	27.5 – 33.1	18.0 – 18.5	11.5 – 11.7
2030	25.9 – 31.5	18.0 – 18.5	11.5 – 11.8
Objective/GLA target	**40 /38 [a]**	**40 / 20 [b]**	**20/10 [c]**

[a] 38 µg/m^3 is the LBC Air Quality CPG target for annual mean NO_2
[b] 20 µg/m^3 is the LBC Air Quality CPG target for annual mean PM_{10}; there is no requirement to meet this until 2026.
[c] The $PM_{2.5}$ objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it. 10 µg/m^3 is the GLA target and the LBC Air Quality CPG target for annual mean $PM_{2.5}$; again, there is no requirement for local authorities to meet this until 2030.

Baseline and Future Baseline Dispersion Model Results

8.104 Baseline concentrations of NO_2, PM_{10} and $PM_{2.5}$ have been modelled at the six existing receptor locations (see Figure 8.4 and Table 8.9). The results, which cover the existing (2022), peak construction year (2025) and future year (2030) baseline (Without Proposed Development), are set out in Table 8.7 and 0. The modelled road components of NO_2 have been increased from those predicted by the model based on a comparison with local measurements (see **ES Volume 3, Appendix: Air Quality – Annex 6** for the verification methodology).

8.105 The modelled concentrations, assuming the no improvement scenario, have been presented in **ES Volume 3, Appendix: Air Quality – Annex 7.**

Table 8.7 Modelled Annual Mean Baseline Concentrations of NO_2 at Existing Receptors (µg/m^3) [a]

Receptor	2022	2025 Without Proposed Development	2030 Without Proposed Development
E1 [c]	32.8	-	27.5
E2 [c]	36.8	-	32.3
E3 [d]	29.9	35.8	-
E4 [d]	29.9	38.2	-
E5 [d]	29.9	35.0	-
E6 [d]	39.5	38.6	-
Objective		**40 / 38 [b]**	

[a] Exceedances of the objective are shown in bold.
[b] 38 µg/m^3 is the LBC Air Quality CPG target for annual mean NO_2
[c] Receptor considered in the operational traffic impacts assessment, future year of 2030 only.
[d] Receptor considered in the construction traffic impacts assessment, future year of 2025 only.

Table 8.8 Modelled Annual Mean Baseline Concentrations of PM_{10} and $PM_{2.5}$ at Existing Receptors (µg/m^3)

Receptor	PM_{10}			$PM_{2.5}$		
	2022	2025 Without Proposed Development	2030 Without Proposed Development	2022	2025 Without Proposed Development	2030 Without Proposed Development
E1 [a]	19.3	-	18.6	*12.3*	-	*11.8*
E2 [a]	19.4	-	18.7	*12.4*	-	*11.9*
E3 [b]	18.6	20.3	-	*11.9*	*12.8*	-
E4 [b]	18.6	21.0	-	*11.9*	*13.2*	-
E5 [b]	18.6	20.1	-	*11.9*	*12.7*	-
E6 [b]	19.8	19.6	-	*12.6*	*12.4*	-
Objective / GLA target	**32 [c] / 20 [d]**			**20/10 [e]**		

[a] Receptor considered in the operational traffic impacts assessment, future year of 2030 only.
[b] Receptor considered in the construction traffic impacts assessment, future year of 2025 only.
[c] While the annual mean PM_{10} objective is 40 µg/m^3, 32 µg/m^3 is the annual mean concentration above which an exceedance of the 24-hour mean PM_{10} objective is possible, as outlined in LAQM.TG22[34]. A value of 32 µg/m^3 is thus used as a proxy to determine the likelihood of exceedance of the 24-hour mean PM_{10} objective, as recommended in EPUK and the IAQM guidance22.
[d] 20 µg/m^3 is the LBC Air Quality CPG target for annual mean PM10; there is no requirement to meet this until 2026.
[e] The 20 µg/m^3 $PM_{2.5}$ objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it. 10 µg/m^3 is the GLA target and the LBC Air Quality CPG target for annual mean $PM_{2.5}$; again, there is no requirement for local authorities to meet this until 2030. Exceedances of this target are shown in italic.

8.106 The predicted annual mean concentrations of NO_2 without the Proposed Development are below the objective and the LBC Air Quality CPG target at both receptors in 2022, 2025 and 2030. The annual mean NO_2 concentrations are also below 60 µg/m^3 at both receptors in all years; it is, therefore, unlikely that the 1-hour mean NO_2 objective will be exceeded.

8.107 The predicted annual mean concentrations of PM_{10} and $PM_{2.5}$ without the Proposed Development are below the objective and the LBC Air Quality CPG target in all years at both receptors. The annual mean PM_{10} concentrations are also below 32 µg/m^3 and it is, therefore, unlikely that the 24-hour mean PM_{10} objective will be exceeded.

[31] Defra (2019) Assessing progress towards WHO guideline levels of PM2.5 in the UK
[32] Defra (2023) Defra AURN Archive, Available: https://uk-air.defra.gov.uk/interactive-map?network=aurn.
[33] Although referencing the previous version of the London Plan this limit value remains relevant in the current version.
[34] Defra (2022) Review & Assessment: Technical Guidance LAQM.TG22 August 2022 Version. Available at: https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf

8.108 The annual mean concentrations of $PM_{2.5}$ without the Proposed Development exceed the GLA target/ LBC Air Quality CPG target in all years; however, exceedances of the guideline are common, and their nationwide achievement is very unlikely to be possible before 2030, especially in London.

RECEPTORS AND RECEPTOR SENSITIVITY

Existing Receptors

Deconstruction and Construction Works

8.109 The guidance followed when carrying out the deconstruction and construction dust assessment requires the number of receptors within certain distance bands to be established in order to determine the sensitivity of the surrounding area, rather than focussing on impacts at individual receptors.

8.110 It is, therefore, not necessary to set out specific receptors for the assessment of impacts during the deconstruction and construction.

Construction and Operational Traffic

8.111 Concentrations of NO_2, PM_{10} and $PM_{2.5}$ have been predicted at six locations in close proximity to the Proposed Development. Receptors have been identified to represent worst-case exposure within these locations, being located on the façades of sensitive properties closest to the roads where the increases in traffic as a result of the construction or operation phase Proposed Development exceeded the screening criteria. When selecting roadside receptors, particular attention has been paid to assessing impacts close to junctions, where traffic may become congested, and where there is a combined effect of several road links. Each receptor location was modelled at the lowest level with relevant exposure, where road traffic impacts will be the greatest.

8.112 Receptors E1 and E2 are receptors for the operational traffic impact assessment only, as the only exceedance of the traffic screening criteria occurs along Longford Street. Receptors E3 to E6 are receptors for the construction traffic impact assessment only as Marylebone Road (A501) and Hampstead Road are the only two roads experiencing an exceedance of the traffic screening criteria.

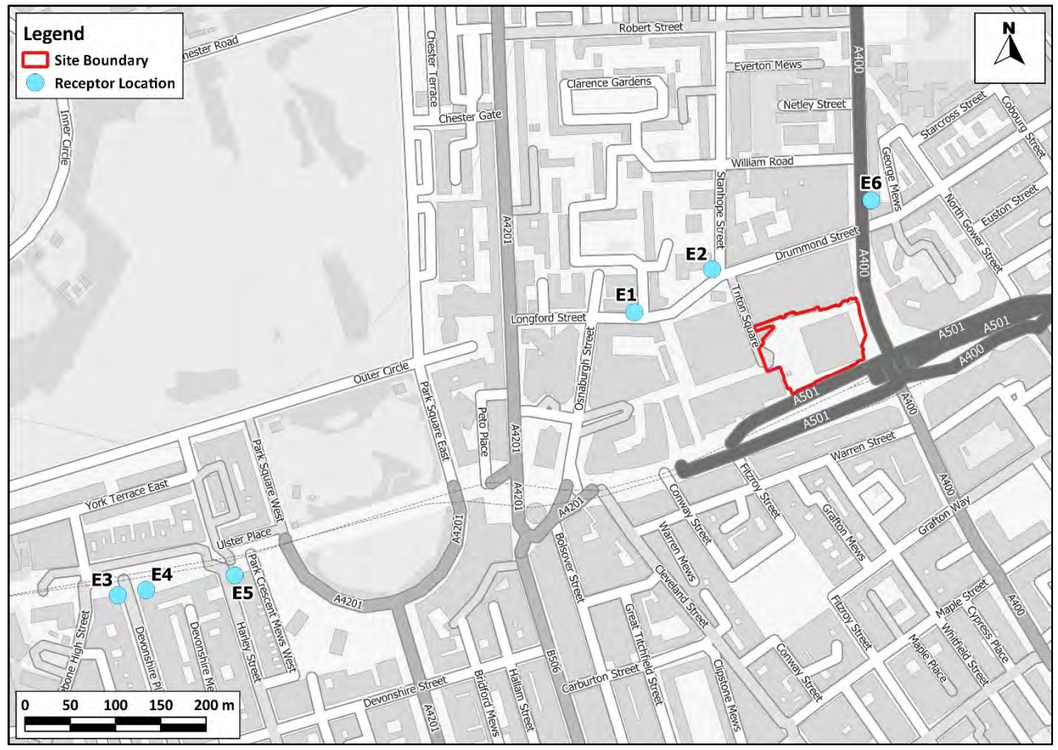
8.113 The EIA Scoping Opinion states that *'…when listing the sensitive receptors relevant to the specific AQOs, no reference has been made to hotels, nothing that the Radisson Hotel is located to the south of the site. In line with DEFRA's LAQM guidance, hotel receptors should be considered for the 1-hour mean AQO'*. The Radisson Hotel is located more than 250 m from the nearest road on which the development-generated traffic exceeds the published screening criteria for a detailed assessment. As the hotel is located more than 200 m away from the affected road (at which distance published guidance requires an assessment), it is not necessary to include it within this modelling assessment, and it is safe to assume that any potential impacts from the Proposed Development at this receptor will be negligible and the overall effects will be 'not significant'.

8.114 Selected receptor locations are presented in Table 8.9 and are shown in Figure 8.4.

Table 8.9 Description of Existing Receptor Locations

Receptor ID	Type	Description	Modelled Height
E1	Residential	26 Longford Street	1.5 m
E2	College	Capital City College Training	1.5 m
E3	Hospital	The London Clinic Duchess of Devonshire Wing	1.5 m
E4	Hospital	The Focal Therapy Clinic	1.5 m
E5	Hospital	Harley Street Vein Clinic	1.5 m
E6	Residential	67 Hampstead Road	1.5 m

Figure 8.4 Monitoring Locations and the Site Boundary



Contains Ordnance Survey data © Crown copyright and database right 2023. Ordnance Survey licence number 100046099. Additional data sourced from third parties, including public sector information licensed under the Open Government Licence v1.0.

Introduced Receptors

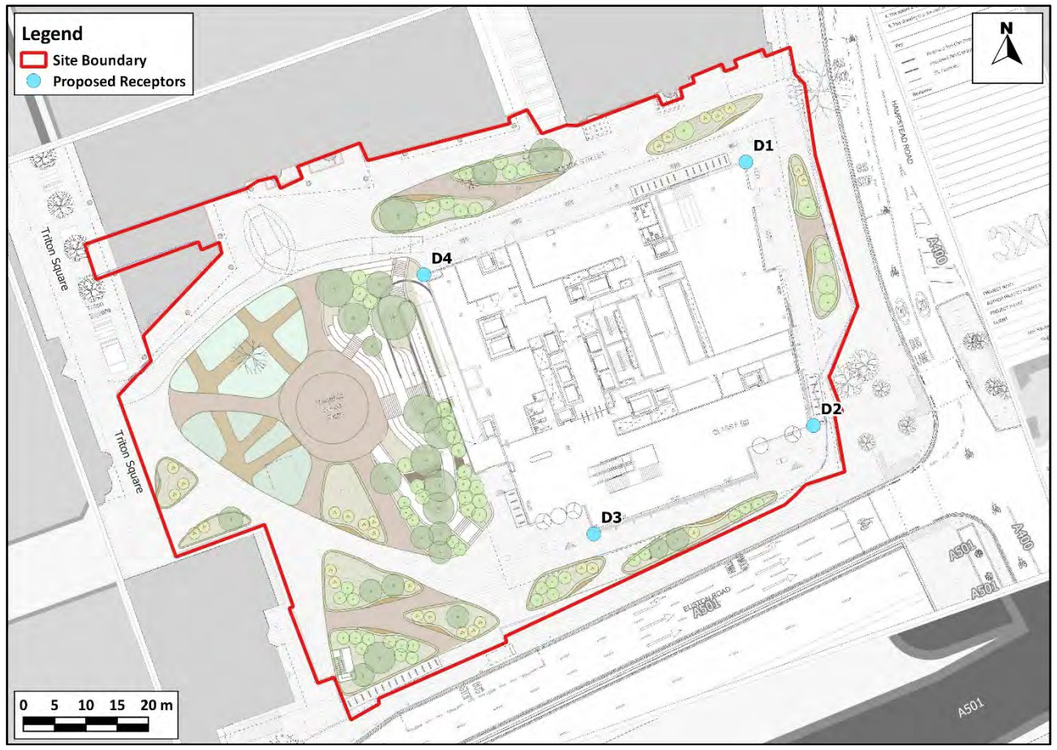
Completed Development

8.115 Four receptor locations have been identified within the Proposed Development for the site suitability assessment, which represent exposure to existing and proposed sources. These receptors represent future exposure for the retail element of the Proposed Development; as such, only the short-term (1-hour) mean nitrogen dioxide objective is relevant to these locations. The Proposed Development also comprises of office and dry laboratory uses, from fourth floor level and above; however, as discussed in Paragraph 8.8, as these are offices/places of work, they are not considered relevant receptors to the air quality objectives. Each receptor location was modelled at the lowest level with relevant exposure, where road traffic impacts will be the greatest. Selected receptor locations are shown in Figure 8.5 and presented in Table 8.10.

Table 8.10 Description of Introduced Receptor Locations

Receptor	Type	Description	Modelled Height
D1	Retail	North-east corner of Proposed Development	1.5m
D2	Retail	South-east corner of Proposed Development	1.5m
D3	Retail	South-west corner of Proposed Development	1.5m
D4	Retail	North-west corner of Proposed Development	1.5m

Figure 8.5 Proposed Receptor Locations



Contains Ordnance Survey data © Crown copyright and database right 2023. Ordnance Survey licence number 100046099. Additional data sourced from third parties, including public sector information licensed under the Open Government Licence v1.0. Contains information from 3XN, drawing no. 1312_231005_2D.

POTENTIAL EFFECTS

Deconstruction and Construction

Deconstruction and Construction Traffic

8.116 The trip generation of the Proposed Development on local roads (as provided by Velocity Transport Ltd) has been compared to the screening criteria set out in the EPUK/IAQM guidance (see **ES Volume 3, Appendix Air Quality – Annex 3**). The Proposed Development will increase Annual Average Daily Traffic (AADT) flows by more than 25 HDV vehicles along Marylebone Road and Hampstead Road; thus, a detailed assessment of construction road traffic impacts at existing receptors is required and has been undertaken. On all other roads the change in traffic flows is below the screening criteria and therefore based on the EPUK/IAQM guidance the impacts can be screened out (i.e. at Receptors E1 and E2).

8.117 Predicted annual mean concentrations of NO_2, PM_{10} and $PM_{2.5}$ in 2025 are set out in Table 8.19 to Table 8.21 for both the "Without Proposed Development" and "With Proposed Development" scenarios and take account of emissions from the adjacent road network. These tables also describe the impacts at the receptors using the impact descriptors given in Table 8.3.

8.118 The modelled concentrations, assuming the no improvement scenario, have been presented in **ES Volume 3, Appendix Air Quality – Annex 7.**

NO_2

Table 8.11 Predicted Impacts on Annual Mean NO_2 Concentrations in 2025 (µg/m³)

Receptor	Without Proposed Development	With Proposed Development	% Change [a]	Impact Descriptor
E3	35.8	35.8	0	Negligible
E4	38.2	38.2	0	Negligible
E5	35.0	35.0	0	Negligible
E6	38.6	38.6	0	Negligible
Objective	**40 / 38 [b]**		-	-

[a] % changes are relative to the objective and have been rounded to the nearest whole number.
[b] 38 µg/m³ is the LBC Air Quality CPG target for annual mean NO_2

8.119 As shown in Table 8.11 the annual mean NO_2 concentrations are below the objective at all receptors, with and without the Proposed Development. As the annual mean NO_2 concentrations are below 60 µg/m³, it is unlikely that the 1-hour mean NO_2 objective will be exceeded. At receptors E4 and E6, the LBC Air Quality CPG criteria is exceeded in both the "Without Proposed Development" and "With Proposed Development". However, the percentage change in concentrations, relative to the air quality objective (when rounded), is predicted to be zero.

8.120 Using the matrix in Table 8.3, this impact is described as Negligible, and the effects are temporary, direct, medium-term and not significant at the local level**.**

PM_{10} and $PM_{2.5}$

Table 8.12 Predicted Impacts on Annual Mean PM_{10} Concentrations in 2025 (µg/m³)

Receptor	Without Proposed Development	With Proposed Development	% Change [a]	Impact Descriptor
E3	20.3	20.3	0	Negligible
E4	21.0	21.0	0	Negligible
E5	20.1	20.1	0	Negligible
E6	19.6	19.6	0	Negligible
Objective	**32 [b] / 20 [c]**		-	-

[a] % changes are relative to the objective and have been rounded to the nearest whole number.
[b] While the annual mean PM_{10} objective is 40 µg/m³, 32 µg/m³ is the annual mean concentration above which an exceedance of the 24-hour mean PM_{10} objective is possible, as outlined in LAQM.TG22. A value of 32 µg/m³ is thus used as a proxy to determine the likelihood of exceedance of the 24-hour mean PM_{10} objective, as recommended in EPUK & IAQM guidance[22].
[c] 20 µg/m³ is the LBC Air Quality CPG target for annual mean PM_{10}; there is no requirement to meet this until 2026.

Table 8.13 Predicted Impacts on Annual Mean $PM_{2.5}$ Concentrations in 2025 (µg/m³)

Receptor	Without Proposed Development	With Proposed Development	% Change [a]	Impact Descriptor
E3	12.8	12.8	0	Negligible
E4	13.2	13.2	0	Negligible
E5	12.7	12.7	0	Negligible
E6	12.4	12.4	0	Negligible
Objective	**20 [b]**		-	-

[a] % changes are relative to the objective and have been rounded to the nearest whole number.
[b] The 20 µg/m³ $PM_{2.5}$ objective, which is to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

8.121 Table 8.12Table 8.20 and Table 8.13 show the annual mean PM_{10} and $PM_{2.5}$ concentrations are well below the respective objectives. Furthermore, as the annual mean PM_{10} concentrations are below 32µg/m³, it is unlikely that the 24-hour mean PM_{10} objective will be exceeded. The long-term average concentration at all receptors in assessment year is 75% or less of AQAL. At receptors E3 to E5, the LBC Air Quality CPG criteria is exceeded in both the "Without Proposed Development" and "With Proposed Development". However, the percentage changes in both PM_{10} and $PM_{2.5}$ concentrations, relative to the applied annual mean criteria (when rounded),

are predicted to be zero. Using the matrix in Table 8.3, these impacts are described as Negligible and therefore the effects are permanent, direct, medium-term and not significant at the local level.

GLA Target for $PM_{2.5}$

8.122 Table 8.22 8.14 presents the same $PM_{2.5}$ concentrations as Table 8.13 but assesses the impacts against the GLA target for this pollutant (which is the same as the LBC Air Quality CPG criteria).

Table 8.14 Assessment of Annual Mean $PM_{2.5}$ Concentrations in 2025 Against the GLA Target (µg/m³)

Receptor	Without Proposed Development	With Proposed Development	% Change [a]	Impact Descriptor
E3	*12.8*	*12.8*	0	Negligible
E4	*13.2*	*13.2*	0	Negligible
E5	*12.7*	*12.7*	0	Negligible
E6	*12.4*	*12.4*	0	Negligible
Objective / Guideline	**10 [b]**		**-**	**-**

[a] % changes are relative to the objective and have been rounded to the nearest whole number.
[b] 10 µg/m³ is the GLA target and the LBC Air Quality CPG target for annual mean $PM_{2.5}$; again, there is no requirement for local authorities to meet this until 2030. Exceedances of this target are shown in italic.

8.123 The annual mean concentrations of $PM_{2.5}$ exceed the GLA target and the LBC Air Quality CPG criteria with and without the Proposed Development; using the matrix in Table 8.3, the impact is described as Negligible. As discussed in paragraph 8.16, the GLA aims to achieve the GLA target for $PM_{2.5}$ of 10 µg/m³ by 2030. However, exceedances of the target are common, and based on Defra's background maps, their achievement is very unlikely to be possible before 2030[26]. As such, it is unsurprising that there are exceedances for both "With Proposed Development" and "Without Proposed Development" scenarios.

Construction Dust and Particulate Matter Emissions

8.124 The construction works will give rise to a risk of dust impacts during earthworks and construction, as well as from trackout of dust and dirt by vehicles onto the public highway.

8.125 Step 1 of the assessment procedure is to screen the need for a detailed assessment. There are receptors within the distances set out in the guidance (see **ES Volume 3, Appendix Air Quality – Annex 3**), thus a detailed assessment is required. The following section sets out Step 2 of the assessment procedure.

Potential Dust Emission Magnitude

Demolition (Deconstruction)

8.126 There will be a requirement to deconstruct the existing 36 storey tower, with the central core and existing foundations retained, with an approximate total volume of 25,000m³. The deconstruction works are anticipated to occur from top down, whilst the lower podium levels (up to level 2) are reduced in size to the same as the upper floors and are expected to occur over a 2-year period.

8.127 Based on the example definitions set out in Table A3.1 in **ES Volume 3, Appendix Air Quality – Annex 3**, the dust emission class for deconstruction is considered to be *medium*.

Earthworks

8.128 The characteristics of the soil at the Scheme site have been defined using the British Geological Survey's UK Soil Observatory website[35], as set out in Table 8.15. Overall, it is considered that, when dry, this soil has the potential to be moderately dusty.

Table 8.15 Summary of Soil Characteristics

Category	Record
Soil Layer Thickness	Deep
Soil Parent Material Grain Size	Arenaceous [a] – Rudaceous [b]
European Soil Bureau Description	River Terrace Sand / Gravel
Soil Group	Light (Sandy) to Medium (Sandy)
Soil Texture	Sand to Sandy Loam[c]

[a] grain size 0.06-2.0 mm.
[b] grain size >2.0 mm.
[c] a loam is composed mostly of sand and silt.

8.129 The site covers some 0.8ha and most of this will be subject to earthworks, involving the removal of ground level slab, installation of a temporary works propping scheme to the basement retaining wall and the removal of the existing basement level slab. Dust will arise mainly from the handling of dusty materials (such as dry soil).

8.130 Based on the example definitions set out in Table A3.1 in **ES Volume 3, Appendix Air Quality – Annex 3**, the dust emission class for earthworks is considered to be *medium*.

Construction

8.131 Construction works, including superstructure and fit-out, are anticipated to begin in Q2 of Year 3, and complete in Q1 of Year 6 (approximately 36 months). Construction quantities have been provided in **ES Volume 1, Chapter 5: Deconstruction and Construction**, including but not limited to, a total of 13,322m³ for excavation material, 20,743m³ for substructure, 234m³ for core concrete stairs, 14,475m³ for concrete slabs, 30,956m³ for steelwork, 26,198m³ for the façades and 79,769m³ for fitout materials. Dust will arise from vehicles travelling over unpaved ground, the handling and storage of dusty materials, and from the cutting of concrete.

8.132 Based on the example definitions set out in Table A3.1 in **ES Volume 3, Appendix: Air Quality – Annex 3**, the dust emission class for construction is considered to be *large*.

Trackout

8.133 The number of vehicles accessing the site, which may track out dust and dirt, will vary throughout the construction period. It is anticipated that the peak number of construction vehicles will occur in Year 2 of the construction period, with approximately 27 outward heavy vehicle movements per day. Access will be from the Euston Road (A501) to the west of Albany Road, with 50% of vehicles entering via basement access on Longford Street and 50% continuing on the Euston Road (A501) off slip.

8.134 Based on the example definitions set out in Table A3.1 in **ES Volume 3, Appendix: Air Quality – Annex 3**, the dust emission class for trackout is considered to be *medium*.

8.135 Table 8.16 summarises the anticipated dust emission magnitude for the Proposed Development.

Table 8.16 Summary of Dust Emission Magnitude

Source	Dust Emission Magnitude
Demolition (Deconstruction)	Medium
Earthworks	Medium
Construction	Large
Trackout	Medium

Sensitivity of the Area

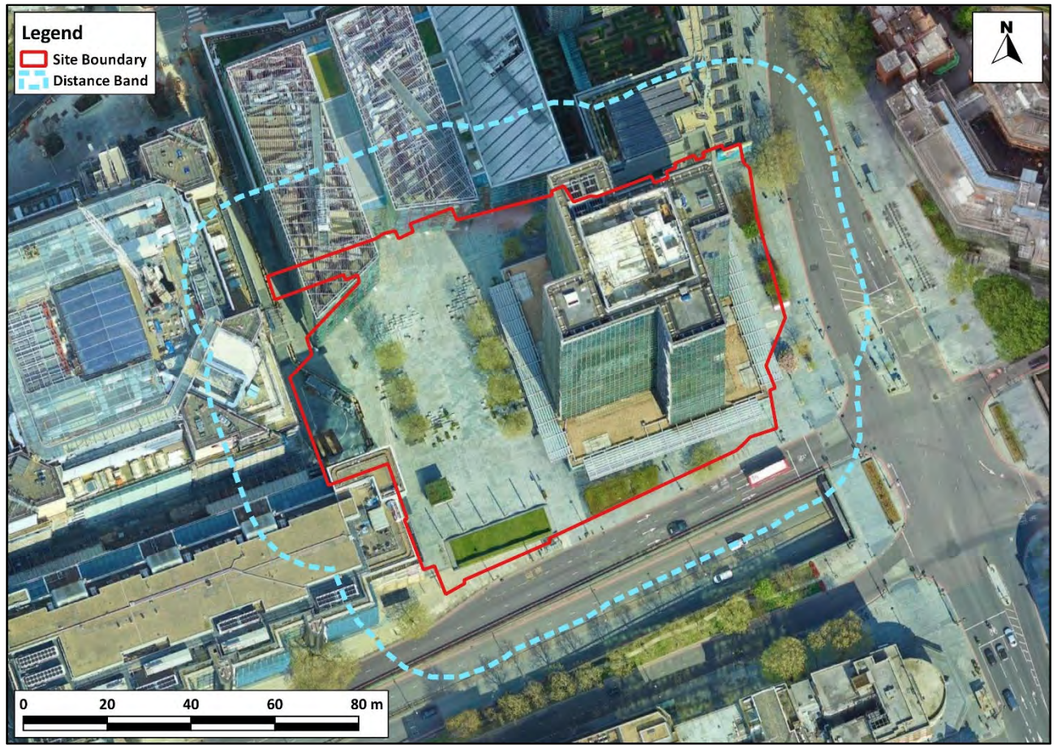
8.136 This assessment step combines the sensitivity of individual receptors to dust effects with the number of receptors in the area and their proximity to the site. It also considers additional site-specific factors such as topography and screening, and in the case of sensitivity to human health effects, baseline PM_{10} concentrations.

[35] *British Geological Survey (2022) UK Soil Observatory Map Viewer, [Online], Available: http://mapapps2.bgs.ac.uk/ukso/home.html.*

8.137 The IAQM guidance, upon which the GLA's guidance is based, explains that residential properties are 'high' sensitivity receptors to dust soiling, while places of work are 'medium' sensitivity receptors (Table A3.2 in **ES Volume 3, Appendix Air Quality – Annex 3**).

8.138 There are only four places of work off-site, within 20m of the deconstruction and construction works (see Figure 8.6).

Figure 8.6 20m Distance Bands around On-Site Works

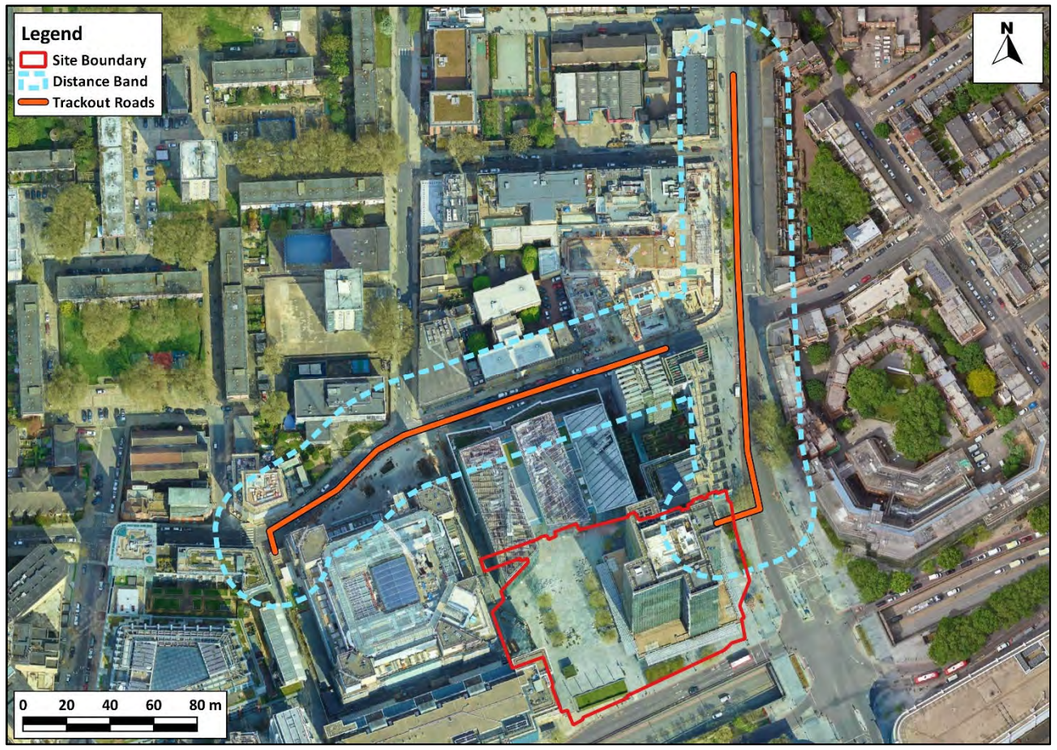


Imagery ©2023 Google, Imagery ©2023 Bluesky, Getmapping plc, Infoterra Ltd & Bluesky, Maxar Technologies, The GeoInformation Group.

8.139 Table 8.11 shows that the dust emission magnitude for trackout is medium and Table A3.3 in **ES Volume 3, Appendix Air Quality – Annex 3** thus explains that there is a risk of material being tracked 200m from the application site exits. Vehicles will egress the different construction areas using Drummond Steet and Hampstead Road.

8.140 There are more than 10 residential properties within 20m of roads which material could be tracked, as well as a college building and several places of work (see Figure 8.6).

Figure 8.7 20m Distance Bands around Roads Used by Construction Traffic Within 200m of the Site Exits



Imagery ©2023 Google, Imagery ©2023 Bluesky, Getmapping plc, Infoterra Ltd & Bluesky, Maxar Technologies, The GeoInformation Group.

Sensitivity of the Area to Effects from Dust Soiling

8.141 Using the information set out in Paragraph 8.138 and Figure 8.6 alongside the matrix set out in Table A3.3 in, **ES Volume 3, Appendix: Air Quality – Annex 3,** the area surrounding the on-site works is of 'medium' sensitivity to dust soiling. Using the information set out in Paragraph 8.140 and Figure 8.7 alongside the same matrix, the area is also of 'high' sensitivity to dust soiling due to trackout.

Sensitivity of the Area to any Human Health Effects

8.142 Residential properties are also classified as being of 'high' sensitivity to human health effects, while places of work are classified as being of 'medium' sensitivity. The matrix in Table A3.4 in **ES Volume 3, Appendix: Air Quality - Annex 3** requires information on the baseline annual mean PM_{10} concentration in the area. It is considered that the PM_{10} concentration in 2022 measured at the 'CD9' automatic monitor (21 $\mu g/m^3$) is a conservative estimate of conditions near to the site (as this is a roadside monitor adjacent to the busy Euston Road), and this value has been used. Using the information set out in Paragraph 8.138 and Figure 8.6 alongside the matrix in Table A3.4 in **ES Volume 3, Appendix: Air Quality – Annex 3**, the area surrounding the on-site works is of 'low' sensitivity to human health effects. Using the information set out in Paragraph 8.140 and Figure 8.7 alongside the same matrix the area surrounding roads along which material may be tracked from the site is of 'low' sensitivity.

Sensitivity of the Area to any Ecological Effects

8.143 The guidance only considers designated ecological sites within 50m to have the potential to be impacted by the construction works. There are no designated ecological sites within 50m of the site boundary or those roads along which material may be tracked, thus ecological impacts will not be considered further.

Summary of Area Sensitivity

8.144 Table 8.17 summarises the sensitivity of the area around the proposed construction works.

Table 8.17 Summary of the Area Sensitivity

Effects associated with:	Sensitivity of the Surrounding Area	
	On-Site works	Trackout
Dust Soiling	Medium	High
Human Health	Low	Low

Risk and Significance

8.145 The dust emission magnitudes in Table 8.18 have been combined with the sensitivities of the area in Table 8.17 using the matrix in Table A3.6 in **ES Volume 3, Appendix: Air Quality – Annex 3**, in order to assign a risk category to each activity. The resulting risk categories for the four construction activities, without mitigation, are set out in Table 8.18. These risk categories have been used to determine the appropriate level of mitigation as set out in **ES Volume 3, Appendix: Air Quality – Annex 11** (Step 3 of the assessment procedure).

Table 8.18 Summary of Risk of Impacts without Mitigation

Source	Dust Soiling	Human Health
Demolition (Deconstruction)	Medium Risk	Low Risk
Earthworks	Medium Risk	Low Risk
Construction	Medium Risk	Low Risk
Trackout	Medium Risk	Low Risk

8.146 The IAQM guidance does not provide a method for assessing the significance of effects before mitigation and advises that pre-mitigation significance should not be determined. With appropriate mitigation in place (see **ES Volume 3, Appendix Air Quality – Annex 11)**, the IAQM guidance[19] is clear that the residual effect will be not significant.

Completed Development

Operational Traffic

8.147 The trip generation of the Proposed Development on local roads (as provided by Velocity Transport Ltd) has initially been compared to the screening criteria set out in the EPUK/IAQM guidance (see **ES Volume 3, Appendix Air Quality – Annex 3**). The Proposed Development will increase Annual Average Daily Traffic (AADT) flows by more than 100 LDV vehicles along Longford Street to the north of the Proposed Development; thus, a detailed assessment of road traffic impacts at existing receptors is required and has been undertaken. On all other roads the change in traffic flows is below the screening criteria and therefore based on the EPUK/IAQM guidance the impacts can be screened out.

8.148 Predicted annual mean concentrations of NO_2, PM_{10} and $PM_{2.5}$ in 2030 are set out in Table 8.19 to Table 8.21 for both the "Without Proposed Development" and "With Proposed Development" scenarios and take account of emissions from the adjacent road network. These tables also describe the impacts at the receptors using the impact descriptors given in Table 8.3.

8.149 The modelled concentrations, assuming the no improvement scenario, have been presented in **ES Volume 3, Appendix Air Quality – Annex 7.**

NO_2

Table 8.19 Predicted Impacts on Annual Mean NO_2 Concentrations in 2030 (µg/m^3)

Receptor	Without Proposed Development	With Proposed Development	% Change [a]	Impact Descriptor
E1	27.5	27.5	0	Negligible
E2	32.3	32.3	0	Negligible
Objective	**40 / 38 [b]**		-	-

[a] % changes are relative to the objective and have been rounded to the nearest whole number.
[b] 38 µg/m^3 is the LBC Air Quality CPG target for annual mean NO_2

8.150 As shown in Table 8.19, the annual mean NO_2 concentrations are well below the objective and the LBC Air Quality CPG criteria at both receptors, with and without the Proposed Development. Furthermore, as the annual mean NO_2 concentrations are below 60 µg/m^3, it is unlikely that the 1-hour mean NO_2 objective will be exceeded.

8.151 The percentage change in concentrations, relative to the air quality objective (when rounded), is predicted to be zero. Using the matrix in Table 8.3, this impact is described as Negligible, and the effects are permanent, direct, long-term and not significant at the local level**.**

PM_{10} and $PM_{2.5}$

Table 8.20 Predicted Impacts on Annual Mean PM_{10} Concentrations in 2030 (µg/m^3)

Receptor	Without Proposed Development	With Proposed Development	% Change [a]	Impact Descriptor
E1	18.6	18.6	0	Negligible
E2	18.7	18.7	0	Negligible
Objective	**32 [b] / 20 [c]**		-	-

[a] % changes are relative to the objective and have been rounded to the nearest whole number.
[b] While the annual mean PM_{10} objective is 40 µg/m^3, 32 µg/m^3 is the annual mean concentration above which an exceedance of the 24-hour mean PM_{10} objective is possible, as outlined in LAQM.TG22. A value of 32 µg/m^3 is thus used as a proxy to determine the likelihood of exceedance of the 24-hour mean PM_{10} objective, as recommended in EPUK & IAQM guidance[22].
[c] 20 µg/m^3 is the LBC Air Quality CPG target for annual mean PM_{10}; there is no requirement to meet this until 2026.

Table 8.21 Predicted Impacts on Annual Mean $PM_{2.5}$ Concentrations in 2030 (µg/m^3)

Receptor	Without Proposed Development	With Proposed Development	% Change [a]	Impact Descriptor
E1	11.8	11.8	0	Negligible
E2	11.9	11.9	0	Negligible
Objective	**20 [b]**		-	-

[a] % changes are relative to the objective and have been rounded to the nearest whole number.
[b] The 20 µg/m^3 $PM_{2.5}$ objective, which is to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

8.152 Table 8.20 and Table 8.21 show the annual mean PM_{10} and $PM_{2.5}$ concentrations are well below the respective objectives Development. Furthermore, as the annual mean PM_{10} concentrations are below 32µg/m^3, it is unlikely that the 24-hour mean PM_{10} objective will be exceeded. The long-term average concentration at both receptors in assessment year is 75% or less of AQAL.

8.153 The percentage changes in both PM_{10} and $PM_{2.5}$ concentrations, relative to the applied annual mean criteria (when rounded), are predicted to be zero. Using the matrix in Table 8.3, these impacts are described as Negligible and therefore the effects are permanent, direct, long-term and not significant at the local level.

GLA Target for $PM_{2.5}$

8.154 Table 8.22 presents the same $PM_{2.5}$ concentrations as Table 8.21 but assesses the impacts against the GLA target for this pollutant (which is the same as the LBC Air Quality CPG criteria).

Table 8.22 Assessment of Annual Mean $PM_{2.5}$ Concentrations in 2030 Against the GLA Target ($\mu g/m^3$)

Receptor	Without Proposed Development	With Proposed Development	% Change [a]	Impact Descriptor
E1	*11.8*	*11.8*	0	Negligible
E2	*11.9*	*11.9*	0	Negligible
Objective / Guideline	**10 [b]**		**-**	**-**

[a] % changes are relative to the objective and have been rounded to the nearest whole number.
[b] 10 $\mu g/m^3$ is the GLA target and the LBC Air Quality CPG target for annual mean $PM_{2.5}$; again, there is no requirement for local authorities to meet this until 2030. Exceedances of this target are shown in italic.

8.155 The annual mean concentrations of $PM_{2.5}$ exceed the GLA target and the LBC Air Quality CPG criteria with and without the Proposed Development; using the matrix in Table 8.3, the impact is described as Negligible. As discussed in paragraph 8.16, the GLA aims to achieve the GLA target for $PM_{2.5}$ of 10 $\mu g/m^3$ by 2030. However, exceedances of the target are common, and based on Defra's background maps, their achievement is very unlikely to be possible before 2030[26]. As such, it is unsurprising that there are exceedances for both 'with Proposed Development' and 'without Proposed Development' scenarios. However, as there is no requirement for the Proposed Development to adhere to this target, this has been provided for contextual purposes only and does not alter the conclusions of the assessment.

Summary of Significance of Operational Air Quality Effects

8.156 The operational air quality effects without mitigation in 2030 are considered to be not significant. This professional judgement is made in accordance with the methodology set out in **ES Volume 3, Appendix: Air Quality – Annex 5** and takes account of the assessment that pollutant concentrations at all of the selected worst-case existing receptors along the local road network will be below the air quality objectives, and all of the impacts are predicted to be negligible.

'Air Quality Neutral'

8.157 The purpose of the London Plan's requirement that development proposals be 'air quality neutral' is to prevent the gradual deterioration of air quality throughout Greater London. The 'air quality neutrality' of a Proposed Development, as assessed in this section, does not directly indicate the potential of the Proposed Development to have significant effects on human health (this has been assessed separately in the previous section).

8.158 The air quality assessment has been undertaken using the latest GLA's London Plan Guidance (Air Quality Neutral)[27].

Building Emissions

8.159 The Proposed Development will be provided with heat and hot water via ASHPs, supplemented with PVs. As such, there will be no associated pollutant emissions and no direct building emissions. It may also include a life-safety generator, however the GLA's Air Quality Neutral guidance states that *"backup plant installed for emergency and life safety power supply, such as diesel generators, may be excluded from the calculation of predicted building emissions."*

8.160 The Proposed Development is, therefore, better than air quality neutral in terms of building emissions.

Transport Emissions

8.161 The Proposed Development is 'car-free'; there will be no car parking with the exception of two accessible spaces located at basement level. The Proposed Development is, therefore, compliant with Section 4.1.3 of the GLA's London Plan Guidance (Air Quality Neutral)[27], and is air quality neutral with regards to transport emissions.

Air Quality Positive Statement

8.162 AQC has been involved since early in the design process for the Proposed Development and issued Preliminary Air Quality (**ES Volume 3, Appendix Air Quality – Annex 9**) advice to inform the design. Air quality constraints, and measures to maximise the benefits to air quality, have been discussed throughout the design period with the Project Team. This has resulted in the current design which is the focus of this assessment. The design measures included within the Proposed Development, and their benefits in terms of air quality and exposure to air pollution, are set out in the Air Quality Positive Statement, which is provided in **ES Volume 3, Appendix Air Quality – Annex 10**. A summary of these measures is seen below:

- The masterplan has been designed to reduce exposure to emissions with receptors that are sensitive to the 1-hour NO_2 objective, located approximately 7m away from the nearest road;
- The energy strategy for the Proposed Development will comprise of an all-electric system consisting of ASHPs and PVs. High energy efficiency building fabric will be utilised to reduce carbon emissions and energy demand;
- Cycle and pedestrian access and cycle parking will be provided that meets the requirements of Policy T5 of the London Plan; and
- The Proposed Development will be 'car-free', which will assist in facilitating a move towards a car-free lifestyle and promotion of the future use of local public transport.

MITIGATION, MONITORING AND RESIDUAL EFFECTS

Deconstruction and Construction Mitigation

8.163 Measures to mitigate dust emissions will be required during the enabling works and construction works of the Proposed Development in order to minimise effects upon nearby sensitive receptors.

8.164 The site has been identified as a *Medium* Risk site during demolition (deconstruction), earthworks, construction and trackout. The GLA's SPG on The Control of Dust and Emissions During Construction and Enabling works describes measures that should be employed, as appropriate, to reduce the impacts, along with guidance on what monitoring should be undertaken during the construction phase. This reflects best practice experience and has been used to draw up a set of measures that should be incorporated into the specification for the works. These measures are described in **ES Volume 1, Chapter 5: Deconstruction and Construction** and **ES Volume 3, Appendix: Air Quality – Annex 11**.

8.165 The mitigation measures will be included in a dust management plan (DMP). The DMP is likely to be integrated into a Code of Construction Practice and/or the CMP, require monitoring, and be secured by suitably worded planning condition / planning obligation.

8.166 Where mitigation measures rely on water, it is expected that only sufficient water will be applied to damp down the material. There will not be any excessive use of water.

8.167 Assuming that the mitigation measures outlined within the guidance are implemented, the overall effect of construction dust is considered to be '**not significant**'.

8.168 Additionally, the assessment has demonstrated that the overall effect of emissions from deconstruction and construction vehicles generated by the Proposed Development is 'not significant'. It is, therefore, not considered appropriate to propose further mitigation measures with regards to enabling works and construction traffic emissions.

Completed Development Mitigation

8.169 The assessment has demonstrated that the Proposed Development will not cause any exceedances of the air quality objectives and that the overall air quality effect of the Proposed Development will be 'not significant'. As such, there is no requirement for mitigation beyond the best practice design measures highlighted in the Air Quality Positive Statement (see Paragraph 8.162), which is provided in **ES Volume 3, Appendix Air Quality – Annex 10**.

8.170 Measures to reduce pollutant emissions from road traffic are principally being delivered in the longer term by the introduction of more stringent emissions standards, largely via European legislation (which is written into UK law), and through encouragement to accelerate the take up of low emission vehicles, for example through the ULEZ.

Residual Effects

8.171 All of the residual effects resulting from the Proposed Development, are presented in Table 8.23, identifying whether the effect is significant or not.

Table 8.23 Residual Effects

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
Deconstruction and Construction							
Existing Receptors	Deconstruction and Construction Dust	Negligible	Not Significant	L	D	T	Mt
	Road traffic emissions	Negligible	Not Significant	L	D	T	Mt
Completed Development							
Existing Receptors	Road traffic emissions	Negligible	Not significant	L	D	P	Lt

Notes: Residual Effect Scale = Negligible / Minor / Moderate / Major Nature = Beneficial or Adverse Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N) D = Direct / I = Indirect P = Permanent / T = Temporary St = Short Term / Mt = Medium Term / Lt = Long Term N/A = not applicable / not assessed

SITE SUITABILITY

8.172 Predicted air quality conditions for future retail users of the Proposed Development in 2030, taking account of emissions from the adjacent road network, are set out in Table 8.24. As previously discussed, only the short-term (1-hour) mean nitrogen dioxide objective is relevant for these users. The maximum modelled annual mean NO_2 concentration within the Proposed Development is 35.8 µg/m^3. As concentrations are less than 60 µg/m^3, there are unlikely to be exceedances of the 1-hour mean objective at these locations.

8.173 Air quality for future occupants of the Proposed Development is thus considered to be acceptable.

8.174 The modelled concentrations, assuming the no improvement scenario, have been presented in **ES Volume 3, Appendix Air Quality – Annex 7.**

Table 8.24 Predicted Concentrations of NO_2 in 2030 for New Receptors in the Proposed Development

Receptor	Annual Mean NO_2 (µg/m^3)
D1	33.6
D2	35.8
D3	34.9
D4	32.6
Objective	**60** [a]

[a] *Measurements across the UK have shown that the 1-hour nitrogen dioxide objective is unlikely to be exceeded at roadside locations where the annual mean concentration is below 60 µg/m^3*

ASSESSMENT OF THE FUTURE ENVIRONMENT

Evolution of the Baseline Scenario

8.175 If the Proposed Development were not to come forward, it is expected that the site would remain as its current use (vacant with some active retail elements). Air quality is generally expected to improve with time, particularly through the introduction of more stringent vehicle emissions standards. Air quality conditions at the site would therefore be expected to improve and this is reflected in the predicted future baseline concentrations presented in Table 8.7 and 0.

Cumulative Effects Assessment

8.176 Cumulative schemes have been outlined in **ES Volume 1, Chapter 2: EIA Methodology**.

Deconstruction and Construction

8.177 The IAQM guidance[19] (upon which the GLA's guidance[21] is based) is clear that, with appropriate mitigation measures in place, any residual enabling works and construction dust effects from an individual site will be 'not significant'. The guidance also suggests that cumulative construction dust impacts are only likely where sites are within 500m of each other. Work would also have to be taking place in areas of both sites that are close to a receptor in order for cumulative effects to occur.

8.178 In accordance with the mitigation measures set out in **ES Volume 3, Appendix: Air Quality – Annex 11**, if there is concurrent construction work on sites within 500m of each other, the construction contractors should *"hold regular liaison meetings with other high risk construction sites within 500m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised"*.

8.179 Of the cumulative schemes identified within **ES Volume 3, Appendix: EIA Methodology – Annex 5**, eight are located within 1km of the site. It is anticipated that all construction sites will adopt appropriate mitigation measures to limit emissions of dust, will hold the liaison meetings recommended above and will ensure that plans are co-ordinated to minimise impacts upon the most sensitive receptors. With these measures in place, the cumulative effect of construction activities, in our professional view, are likely to be not significant.

8.180 With regards to cumulative effects from peak enabling works and construction traffic, the baseline traffic flows utilised in the assessment have included traffic generated by all nearby cumulative schemes. The predicted impact for peak enabling works and construction traffic has been shown to be not significant, thus the cumulative effect of enabling works and construction traffic will also be not significant.

Completed Development

8.181 The traffic data used in the 2030 'Without Proposed Development' and 'With Proposed Development' scenarios also incorporate traffic flows associated with all cumulative schemes which would affect flows on the roads included in this assessment. As such, predictions of future pollutant concentrations presented in this ES chapter take account of cumulative road traffic effects.

8.182 Operational impacts, which inherently include the cumulative schemes, have been shown to be not significant.

8.183 As demonstrated in Table 8.19 to Table 8.21 annual mean concentrations of NO_2, PM_{10} and $PM_{2.5}$ will be below the objectives at the modelled receptor location in 2030, and all impacts resulting from additional road traffic emissions associated with the Proposed Development will be not significant.

LIKELY SIGNIFICANT EFFECTS

8.184 The deconstruction and construction works have the potential to create dust. During deconstruction and construction works it will therefore be necessary to apply a package of mitigation measures to minimise dust emissions. Appropriate measures have been recommended and, with these measures in place, it is expected that any residual effects will be not significant.

8.185 The assessment has also shown that the effects of emissions from construction vehicles on local air quality will be '**not significant**'.

8.186 The operation of the Proposed Development is not predicted to result in any significant effects on the existing receptors considered within this assessment in relation to air quality in terms of NO_2, PM_{10} and $PM_{2.5}$ (when assessed against national air quality objectives and the GLA target for $PM_{2.5}$). In addition, the assessment has demonstrated that air quality for future occupants of the Proposed Development will also be acceptable.

Chapter 9: Noise and Vibration

NOISE AND VIBRATION	
AUTHOR	Hann Tucker Associates
SUPPORTING APPENDIX	**ES Volume 3, Appendix: Noise and Vibration** Annex 1: Acoustic Terminology Annex 2: Environmental Noise Survey Report Annex 3: Noise Modelling Assumptions
KEY CONSIDERATIONS	The following key acoustic aspects have been considered in the assessment: • Noise and vibration from construction activities at the Proposed Development; • Noise from construction traffic from the Proposed Development. (The assessment of noise from construction traffic was initially scoped out but has been included in this ES chapter to avoid any doubt in the potential noise effects); • Noise from building services plant noise from the completed Proposed Development and from completed nearby schemes; and • Noise from operational road traffic from the completed Proposed Development and from Completed nearby schemes.
CONSULTATION	A request for an EIA Scoping Opinion was prepared and submitted to the London Borough of Camden (LBC) on 4 August 2023. A copy of this Request is provided in **ES Volume 3, Appendix: EIA Methodology – Annex 1** and sets out the proposed scope and methodology for the noise and vibration assessment and this ES chapter. A draft EIA Scoping Opinion was issued by LBC on 4 October 2023 and is provided in **ES Volume 3, Appendix: EIA Methodology – Annex 3**. A summary of the key points and how they have been addressed in this ES chapter are summarised below. • Further clarity on environmental noise survey positions; • Assessment of operational road traffic noise undertaken for relevant scenarios for noise; • Inclusion of additional requested surrounding receptors; – 130 Tottenham Ct Road, retails outlets and Radisson Hotel – 50 Triton Square, commercial office building • Further clarity on assessment methodology; and • Consideration for HGV (and other construction traffic) ingress and egress points has been considered in the predictive noise modelling.

ASSESSMENT METHODOLOGY

Defining the Baseline

Current Baseline Conditions

9.1 A baseline environmental noise and survey was undertaken in November 2022 to establish the existing noise climate around the site. The full environmental noise survey report is presented in **ES Volume 3, Appendix: Noise and Vibration – Annex 2**. The site location and measurement positions are shown in Figure 9.1.

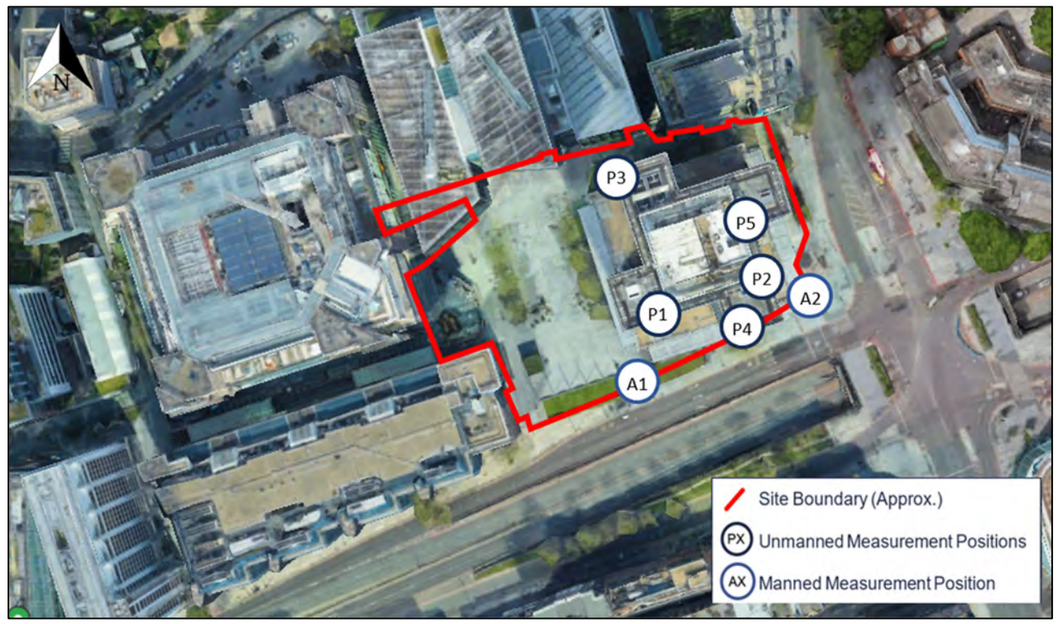
9.2 A baseline unattended noise survey was undertaken at the site from approximately 11:00 hours on 8 November 2022 for a period of 5-8 days. Further attended noise monitoring was undertaken from approximately 13:00 hours to 15:00 hours on 8 November 2022.

9.3 The noise monitoring locations were as described in Table 9.1.

Table 9.1 Attended and Unattended Noise Monitoring Locations

Position No.	Type	Description
P1	Unattended	The sound level meter was placed on the podium roof. The microphone was attached to a pole fixed along the podium roof edge overlooking Euston Road (A501), approximately 15m from roadside and 8m above ground level.
P2	Unattended	The sound level meter was placed on the podium roof. The microphone was attached to a pole fixed along the podium roof edge overlooking the road junction, approximately 14m from Euston Road, 16m from Hampstead Road and 8m above ground level.
P3	Unattended	The sound level meter was placed on the podium roof. The microphone was attached to a pole fixed along the podium roof edge overlooking Regent's Plaza and Brock Street (pedestrians only/no motor vehicles), approximately 63m from Euston Road, 70m from Hampstead Road and 8m above ground level.
P4	Unattended	The sound level meter was placed on the tower roof. The microphone was attached to a pole fixed along the tower roof edge overlooking nearby road network, approximately 120m above ground level and 1.5m above the roof.
P5	Unattended	The sound level meter was placed on Level 11 East Staircase. The microphone was attached to a pole extruding a window overlooking nearby road network, approximately 40m above ground level and 1m from façade.
A1	Attended	The sound level meter was hand-held. The microphone was positioned approximately 1.5m above ground level and 3m from Euston Road (A501).
A2	Attended	The sound level meter was hand-held. The microphone was positioned approximately 1.5m above ground level and 6m from Hampstead Road.

Figure 9.1 Noise Monitoring Locations



9.4 The results of the baseline noise survey have been used to inform the assessments in this ES chapter. During the deconstruction and construction works, noise and vibration impacts have been assessed upon nearby sensitive receptors, and once the Proposed Development is complete and operational.

Evolution of the Baseline and Future Baseline

9.5 The EIA Regulations[1] require that the likely evolution of baseline is considered in the event that the Proposed Development were not to come forward. In other words, the likely effect on the existing baseline conditions if the cumulative schemes and any relevant site designations, as listed in **ES Volume 1, Chapter 2: EIA Methodology**, were to come forward in the absence of the Proposed Development.

9.6 With regards to operational road traffic noise, there is the potential for cumulative schemes in the area to affect the flows on the local road network. Where appropriate, and particularly in relation to road traffic noise effects, future baseline scenarios have been applied accounting for traffic generated by other surrounding development schemes (otherwise known as cumulative schemes). This is to provide a robust assessment of road traffic noise effects that takes account of road traffic from other cumulative schemes in the area and not just background traffic growth or road traffic from the Proposed Development itself.

9.7 A list of cumulative schemes and approximate distances from the Proposed Development site is presented below.

Table 9.2 List of Cumulative Schemes

Site Name	App Ref(s)	Approximate Distance from Proposed Development
Land to the North of the British, Library, 96 Euston Road London NW1 2DB	2022/1041/P	900m
Central Somers Town, Covering Land at Polygon Road Open Space, Edith Neville Primary School 174 Ossulston Street and Purchese Street Open Space, London, NW1 1EE (Brill Place)	2015/2704/P 2019/5882/P 2020/4631/P 2022/2855/P	900m
Eastman Dental Hospital Site and Buildings (including the former Royal Free Hospital the Eastman Dental Clinic and the Levy Wing) WC1X 8LD	2018/5715/P	1,500m
Royal National Throat, Nose and Ear Hospital Site 330 Grays Inn Road (and fronting Swinton Street and Wicklow Street) London WC1X 8DA	2020/5593/P	470m
247 Tottenham Court Road, London, W1T 7HH; 3 Bayley Street, London, WC1B 3HA; 1 Morwell Street, London, WC1B 3AR;2-3 Morwell Street, London, WC1B 3AR; and 4 Morwell Street, London, W1T 7QT	2020/3583/P	900m
Network Building (95-100 Tottenham Court Road) 76-80 Whitfield Street and 88 Whitfield Street London W1T 4TP	2020/5624/P 2020/5624/P 2020/5631/P	350m
Belgrove St, London WC1H 8AA	2020/3881/P	1,100m

Impact Assessment Methodology

9.8 The study area for the assessment is defined by the location of surrounding receptors and the end use of the Proposed Development. Receptors are outlined within the '*Receptors and Receptor Sensitivity*' section of this ES chapter.

9.9 This section presents the methodology used to assess each type of noise and vibration impact, in terms of the application of relevant standards and guidance, along with the types of data and analysis carried out.

9.10 The assessment considers the following types of noise and vibration:

- Noise and vibration from construction activities at the Proposed Development;
- Noise from construction traffic from the Proposed Development;
- Noise from building services plant noise from the completed Proposed Development and from completed nearby schemes; and
- Noise from operational road traffic from the completed Proposed Development and from Completed nearby schemes.

Deconstruction and Construction

9.11 During the deconstruction and construction works, there is the potential for noise and vibration associated with deconstruction, earthworks, installation of necessary services and building construction to result in significant adverse effects; these impacts have therefore been assessed within this ES chapter.

9.12 As per **ES Volume 1, Chapter 5: Deconstruction and Construction**, works are proposed to be undertaken during normal working hours for construction unless otherwise agreed with LBC. These hours are typically weekdays 08:00-18:00 hours and Saturdays 08:00-13:00 hours, with no works being undertaken on Sundays.

9.13 Noise emissions from deconstruction and construction works at the surrounding noise sensitive receptors has been predicted using a 3D noise model based on the methodology outlined in BS 5228-1:2009[2] and relevant guidance presented in the Guide for Contractors Working in Camden[3] and Camden's Minimum Requirements[4].

9.14 The assumptions for plant noise levels considered in predictions are presented in **ES Volume 3, Appendix: Noise and Vibration – Annex 3**.

Deconstruction and Construction Noise

9.15 The deconstruction and construction programme is anticipated to be undertaken over the course of approximately 65 months, or 5 years and 5 months. The noise and vibration assessment has been undertaken in line with details of the proposed deconstruction and construction works, as set out in **ES Volume 1, Chapter 5: Deconstruction and Construction**.

9.16 The key deconstruction and construction stages that are to be considered for noise and vibration include:

- Deconstruction: deconstruction of the existing concrete frame structure;
- Earthworks: decommissioning and relocation of existing services and utilities within the basement level of the site;
- Substructure Construction: installation of new piles;
- Concrete superstructure construction; and
- Installation of Envelope and Cladding; installation of unitised cladding panels to the outer face of the superstructure.

9.17 Annex E of BS 5228-1 - Noise and Vibration Control on Construction and Open Sites includes the 'ABC method' for setting potential thresholds of significant effects at residential receptors. The ABC method has been used

[1] *The Town and Country Planning and Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (As amended in 2018 and 2020)*
[2] *British Standards Institute, 2009, 'Noise and Vibration Control on Construction and Open Sites. Part 1, 2 & 4. Code of Practice. BS 5228'*
[3] *Culture and Environment Directorate London Borough of Camden, 2008, 'Guide for Contractors Working In Camden'*
[4] *Culture and Environment Directorate London Borough of Camden, (publish date unknown), 'Camden's Minimum Requirements'*

in the assessment within this ES chapter to assess the potential for likely significant noise effects from the deconstruction and construction works.

9.18 This method defines category 'threshold values' which are determined by the proposed hours of operation and existing ambient noise levels (rounded to the nearest 5 dB). A significant effect is deemed to have occurred when the total noise level (including construction noise) exceeds the appropriate category threshold value. The scale and nature of the effect and whether the effects are significant or not are defined in the *'Methodology for Defining Effects'* section of this ES chapter.

9.19 Table 9.3 presents the threshold of significant effects of the BS 5228 ABC method.

Table 9.3 Threshold of Potential Significant Effects at Residential Receptors

Assessment Category and Threshold Value Period	Threshold value (dB) $L_{Aeq,T}$		
	Category A[A)]	Category B[B)]	Category C[C)]
Daytime (08:00 – 18:00) and Saturdays (08:00 – 13:00)	65	70	75
NOTE 1: A significant effect has been deemed to occur if the total L_{Aeq} noise level, including construction, exceeds the threshold level for the Category appropriate to the ambient noise level. NOTE 2: If the ambient noise level exceeds the threshold values given in the table (i.e., the ambient noise level is higher than the above values), then a significant effect is deemed to occur if the total L_{Aeq} noise level for the period increases by more than 3 dB due to construction activity. NOTE 3: Applied to residential receptors only.			
A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values B) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values. C) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category B values.			

9.20 For non-residential receptors, no specific criteria are given by the London Borough of Camden (LBC); suitable criteria have therefore been adopted from Environmental Advisory Leaflet (ADL) 72, 1976 'Noise Control on Building Sites'[5] which provides some guidance on setting appropriate construction noise limits depending on the site setting and independent of baseline noise conditions. These limits are:

- 70 dB(A) in rural, suburban and urban areas away from main road traffic and industrial noise; and
- 75 dB(A) in urban areas near main roads and heavy industrial areas.

9.21 Given the location of the site and surrounding area in relation to an urban area and nearby main roads, the 75 dB(A) limit is to be considered for non-residential receptors surrounding the Proposed Development.

Deconstruction and Construction Vibration

9.22 BS 5228 Part 2 provides guidance on human response to vibration and cosmetic damage associated with vibration. The simplified methods and historical vibration data contained within BS 5228 Part 2 have been used to predict potential annoyance alongside evaluation of cosmetic damage associated with vibration.

9.23 Table 9.4 presents the effects of vibration levels for human perception.

Table 9.4 Human Perception of Vibration Levels

Vibration Level	Effect
0.14 mm/s	Vibration might be perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.
0.3 mm/s	Vibration might be just perceptible in residential environments.
1.0 mm/s	It is likely that vibration of this level in residential environments will cause complaints but can be tolerated if prior warning and explanation has been given to residents.
10 mm/s	Vibration is likely to be intolerable for any more than a very brief exposure to this level.

9.24 BS 7358-2 also provides guidance on building vibration response limits for cosmetic damage.

Table 9.5 Guidance on Building Vibration Response Limits

Type of Building	Peak component particle velocity in frequency range of predominant pulse	
	4Hz to 15Hz	15Hz and above
Reinforced or framed structures Industrial and heavy commercial buildings	50mm/s at 4Hz and above	50mm/s at 4Hz and above
Unreinforced or light framed structures Residential or light commercial buildings	15mm/s at 4Hz increasing to 20 mm/s at 15Hz	20mm/s at 15Hz increasing to 50mm/s at 40Hz and above
NOTE 1 Values referred to are at the base of the building. NOTE 2 For line 2, at frequencies below 4 HZ, a maximum displacement of 0.6 mm (zero to peak) is not to be exceeded		

9.25 The values above in Table 9.5 refer to transient vibration events such as impact piling. BS 7358-2 notes that for continuous sources (such as vibratory compaction) these limits should be reduced by up to 50%.

Construction Traffic Noise

9.26 Changes in traffic noise as a result of the traffic associated with deconstruction and construction works, have been predicted using the Calculation of Road Traffic Noise (CRTN)[6] methodology and assessed based on the approach for noise impacts set out in Design Manual for Roads and Bridges LA 1117[7].

9.27 Traffic flow data has been provided by the Applicant's Transport Consultant (Velocity Transport Planning) and include the following scenarios for assessment in this ES chapter: Peak construction Average Annual Daily Traffic (AADT) (18hr) with cumulative schemes.

9.28 The traffic data has been used to calculate the dB L_{10} at 10m from the nearside road edge during construction works of the Proposed Development on surrounding local roads. This permitted a direct comparison of existing (baseline) road traffic noise with the expected road traffic noise during construction works to establish the likely effect.

Completed Development

Building Services Plant Noise

9.29 Noise emissions from building services plant has the potential to increase the background noise climate and impact nearby noise sensitive receptors.

9.30 As is standard at the planning stage, precise details of proposed building services plant associated with the Proposed Development are not yet known. Building services plant equipment will therefore be selected, located and attenuated such that the plant noise emission criteria agreed with LBC are satisfied. Such criteria will be agreed through appropriately worded planning conditions.

9.31 LBC's The 'Camden Local Plan'[8] stipulates that their typical noise policy is for building services plant noise to not exceed a Rating Level of 10 dB below the existing background sound level, as defined in BS 4142:2014 'Methods for Rating and Assessing Industrial and Commercial Sound'[9]

9.32 The Proposed Development may also include emergency back-up generators. These would only operate in the event of an emergency to provide backup power. LBC's Local Plan states that emergency equipment such as generators, which are only to be used for short periods of time, are required to meet the noise criteria of no more than 10 dB above the background level ($L_{A90\ 15min}$). The exact receptor location is not specified but it is assumed that this limit applies at 1m from the nearest noise sensitive receptors.

9.33 Maintenance and testing schedules of emergency plant equipment will need to be developed to avoid potential noise impacts during these periods.

[5] *DEPARTMENT OF THE ENVIRONMENT, 1976, Noise control on building sites. Advisory Leaflet 72, 3rd Edition. London: HMSO.*
[6] *Department of Transport/Welsh Office, 1988, 'The Calculation of Road Traffic Noise'*
[7] *Highways Agency, 2020, 'Design Manual for Roads and Bridges LA 1117'*
[8] *London Borough of Camden, 2017,' Camden Local Plan'*
[9] *British Standards Institute, 2014, 'Method for Rating and Assessing Industrial and Commercial Sound BS 4142'*

Complete and Operational Road Traffic Noise

9.34 An assessment has been undertaken of the change in road traffic noise which result from changes in road traffic flow on the local road network when the Proposed Development is operational. Road traffic noise has been predicted using the methods outlined in Calculation of Road Traffic Noise (CRTN)[10].

9.35 Traffic flow data has been provided by the Applicant's Transport Consultant (Velocity Transport Planning) and include the following scenarios for assessment in this ES chapter:

- 2023 Baseline AADT (18hr); and
- 2028 Future baseline AADT (18hr) with cumulative schemes and the Proposed Development.

9.36 The traffic data has been used to calculate the dB L_{10} at 10m from the nearside road edge for the scenarios above on surrounding local roads. This permitted a direct comparison of existing/future (baseline) road traffic noise with the expected road traffic noise during operation of the Proposed Development to establish the likely effect.

Site Suitability Assessment

9.37 The Proposed Development is to comprise laboratory enabled, office and flexible commercial floorspace and does not include any residential occupation, therefore, a site suitability assessment is not deemed to be required.

Assumptions and Limitations

9.38 To assess the effects of the Proposed Development, it was necessary to determine the baseline conditions. It is assumed that the baseline noise measurements, which were undertaken at the site in November 2022, are representative of the typical (long term) noise environment of the site.

9.39 It is assumed that contractors will comply with all legislation relevant to the control of noise and vibration from construction work that include:

- The Control of Pollution Act 1974 (COPA) with particular reference to part III[11];
- The Environmental Protection Act 1990[12]; and
- The Control of Noise at Work Regulations 2005[13].

9.40 The predictions of deconstruction and construction noise and vibration have been based upon the following assumptions:

- Noise emissions from deconstruction and construction plant and activities will be compliant with the historical noise data presented in Annex C of BS 5228-1;
- Levels of vibration from deconstruction and construction plant and activities will be compliant with the historical vibration data presented in Annex C of BS 5228-2[14];
- 2.4m high solid hoarding will be implemented at the boundary of the site;
- Stationary plant and hand-held tools will be adequately screened when used for prolonged periods;
- Mobile plant will manoeuvre around the site equally during deconstruction and construction; and
- Locations and routes of fixed and mobile plant items have been selected based on reasonable assumptions for the site layout and likely access and egress points.

9.41 The exact selected equipment and deconstruction and construction methodology will be dependent on the appointed contractor. Reasonable worst-case assumptions have therefore been made for predictions with regards to operations, activities, locations, mobile plant routes and the associated plant and equipment that will be used. As such, the predicted deconstruction and construction noise and vibration levels represent an upper estimate or worst-case scenario in terms of emissions from the site during works.

[10] *Department of Transport/Welsh Office, 1988, 'The Calculation of Road Traffic Noise*
[11] *The Law Library, 1974, The Control of Pollution Act 1974*
[12] *The Environmental Protection Act 1990*

Methodology for Defining Effects

Receptors and Receptor Sensitivity

9.42 Existing noise and vibration sensitive receptors that have the potential to be affected by the Proposed Development (during the deconstruction and construction works and once complete and operational) have been identified based on programme information, professional judgement, on-site surveys and observations. The sensitivity of the identified noise and vibration sensitive receptors have been defined based on the use and occupancy type of the receptor.

9.43 Table 9.6 summarises the sensitivity of various receptors, including use types relevant to the Proposed Development, and other uses for context, which is based on a mixture of professional experience and industry standards.

Table 9.6 Receptor Sensitivity

Sensitivity	Description	Examples of Receptor Usage
High	Receptors where noise will significantly affect the function of the receptor	Residential / Hotels Auditoria/studios; Specialist teaching centres; and Libraries.
Medium	Receptors where people or operations are particularly susceptible to noise	Quiet outdoor areas used for recreation; Conference facilities; Schools in daytime; and Hospitals/residential care homes
Low	Receptors of low sensitivity to noise, where it may cause some distraction or disturbance	Offices; Restaurants; and Sports grounds when spectator or noise is not a normal part of the event and where quiet conditions are necessary (e.g., tennis, golf).
Very Low	Receptors where distraction or disturbance from noise is minimal	Residences and other buildings not occupied during working hours; Factories and working environments with existing high noise levels; and Sports grounds when spectator or noise is a normal part of the event.

Magnitude of Impact

Deconstruction and Construction Noise

9.44 The significance criteria for deconstruction and construction noise relate to the level of exceedance above the thresholds presented in Table 9.3. These are defined using category A and category C of the 'ABC' method of BS 56228-1 respectively and determined by comparison to the following effect levels:

- **NOEL** – No Observed Effect Level

  This is the level below which no effect can be detected and below which there is no detectable effect on health and quality of life due to noise.

- **LOAEL** – Lowest Observable Adverse Effect Level

  This is the level above which adverse effects on health and quality of life can be detected.

- **SOAEL** – Significant Observed Adverse Effect Level

  This is the level above which significant adverse effects on health and quality of life occur.

9.45 The exceedance impact criteria are presented in Table 9.7.

[13] *Health and Safety Executive, 2005, The Control of Noise at Work Regulations*
[14] *British Standards Institute, 2009, 'Noise and Vibration Control on Construction and Open Sites. Part 2. Code of Practice. BS 5228'*

Table 9.7 Construction Noise Impact Criteria for Residential Receptors

Construction Noise Level	Effect Level	Magnitude of Impact
Assessment criterion is exceeded by 0 to 3 dBA;	NOAEL	Very Low
Assessment criterion is exceeded by 3 to 5 dBA;	LOAEL	Low
Assessment criterion is exceeded by 5 to 10 dBA; and	SOAEL	Medium
Assessment criterion is exceeded by over 10 dBA		High

Deconstruction and Construction Vibration

9.46 Based on BS 5228-2 (see Table 9.4), the table below presents the impact criteria for vibration effects on people and equipment within nearby sensitive receptors during deconstruction and construction.

Table 9.8 Vibration Effect Impact Criteria

Vibration Level (PPV)	Effect Level	Magnitude of Impact
< 0.3 mm/s	NOAEL	Very Low
0.3 mm/s – 0.9 mm/s	LOAEL	Low
1.0 mm/s to 9.9 mm/s	SOAEL	Medium
> 10.0 mm/s		High

Deconstruction and Construction Traffic Noise

9.47 The road traffic effects (of the deconstruction and construction of the Proposed Development on nearby noise sensitive receptors) can be categorised as noise associated with changes in road traffic movements around the site on local roads.

9.48 Impact criteria for assessing the deconstruction and construction road traffic effects, are presented in Table 9.9. The criteria are based on the based on the approach for noise impacts set out in Design Manual for Roads and Bridges LA 1117.

Table 9.9 Construction Traffic Noise Impact Criteria

Increase in Basic Noise Level of Closest Public Road Used for Construction Traffic (dB)	Magnitude of Impact
<1.0	Very Low
1.0 – 2.9	Low
3.0 – 4.9	Medium
≥5.0	High

Operational Building Services Plant Noise

9.49 Noise emissions from building services plant associated with the completed and operational Proposed Development would need to be controlled to ensure that it would not have an effect on nearby noise sensitive receptors relative to the existing background sound level and also achieve LBC requirements for atmospheric plant noise emissions. Criteria for the assessment are set in accordance with the Institute of Acoustics (IOA) / Institute of Environmental Management and Assessment (IEMA) 'Guidelines for Noise Impact Assessment'[15].

Table 9.10 Operational Building Services Plant Noise Effect Scale Criteria

Increase in Noise Level (dBA)	Description	Magnitude of Impact
<1.0 dB	Noise increase is unlikely to be discernible	Very Low
0.1 to 0.9 dB	A slight increase in noise levels may be perceived in affected buildings and outdoor recreational areas	Low
1.0 to 2.9 dB	Increase in noise levels is likely to be noticeable in affected buildings and outdoor recreational areas	Medium
>5.0 dB	Increase in noise levels is likely to be clearly perceptible and could have a significant effect on the continued use of a building	High

Completed and Operational Road Traffic Noise

9.50 The significance criteria for long term changes in road traffic noise (i.e., general flow) for the completed and operation development are determined using the criteria outlined in CRTN and the IOA / IEMA 'Guidelines for Noise Impact Assessment.

Table 9.11 Operational Traffic Change Effect Scale Criteria

Change in Noise Level on Surrounding Roads	Subjective Response	Magnitude of Impact
<1.0 dB	Just perceptible change in loudness	Very Low
1.0 to 2.9 dB	Perceptible change in loudness	Low
3 to 4.9 dB	Up to a doubling or halving of loudness	Medium
>5.0 dB	Increase in noise levels is likely to be clearly perceptible	High

Defining the Effect

Scale and Nature of Effect

9.51 Table 9.12 determines the scale of effects based on the sensitivity of the receptor and the magnitude of the impact, as per the IOA / IEMA 'Guidelines for Noise Impact Assessment'.

Table 9.12 Scale of Effects

Sensitivity of Receptor	Magnitude of Impact			
	High	Medium	Low	Very Low
High	Major	Moderate	Minor	Negligible
Medium	Moderate	Minor	Negligible	Negligible
Low	Minor	Negligible	Negligible	Negligible

9.52 Noise and vibration effects are typically classified as either Adverse (for Minor to Major impact) or Negligible. An Adverse effect refers to anything that can alter behaviour, attitudes, or the overall character of a location. A Negligible effect is used when there is no noticeable impact on the receptors. Beneficial noise effects are unlikely.

Geographic Extent of Effect

9.53 The effects under assessment in this ES chapter are local effects at a spatial level, such that they affect the immediate neighbouring receptors to the site. The effects on broader, more distant receptors (i.e., further from the site in relation to the receptors considered in this ES chapter) are deemed insignificant due to the reduction of noise and vibration with increasing distance and screening from intervening buildings from the site.

[15] *Institute of Environmental Management and Assessment (IEMA) and Institute of Acoustics (IOA) Guidelines for Noise Impact Assessment, 2014*

Effect Duration

9.54 Effects resulting from deconstruction and construction works are considered "temporary" for the purposes of the assessment in this ES chapter. These effects can be categorised as either "short term" (1 – 6 months) or "medium-term" (duration over 6 months) depending on the duration of the specific deconstruction and construction activities. Effects linked to the operational Proposed Development are classified as "permanent" or "long-term" effects.

Categorising Likely Significant Effects

9.55 Table 9.13 provides a contextual understanding of the magnitude of effects experienced by receptors and their probable acceptance to those effects. Guidance has been drawn from IEMA Guidelines for Environmental Noise Impact Assessment and the Planning Practice Guidance (PPG)[16]. It also establishes a correlation between the scale of effect and the ratings for LOAEL (Lowest Observed Adverse Effect Level), SOAEL (Significant Observed Adverse Effect Level) and NOAEL (No Observed Adverse Effect Level). The NOAEL (No Observed Adverse Effect Level) is equivalent to a Negligible effect rating.

Table 9.13 Classification of Noise Effects

Effect Scale	Description	Exceeds LOAEL	Exceeds SOAEL	Acceptable for Receptors?
Negligible	No discernible effect on the receptor	No	No	Yes
Minor	Non-intrusive, can be heard but does not cause any change in behaviour or attitude. Can slightly affect the character of an area but not such that there is a perceived change in the quality of life.	No	No	Yes
Moderate	Intrusive, noise can be heard and causes small changes in behaviour and/or attitude. Potential for non-awakening sleep disturbance. Affects the character of an area such that there is a perceived change in the quality of life.	Yes	No	No
Major	Disruptive, causes a material change in behaviour and/or attitude. Potential for sleep disturbance. Quality of life diminished due to change in character of the area.	Yes	Yes	No

9.56 A significant effect is an effect that is classified as being Moderate or Major in scale. Effects that are Minor or Negligible in scale are not considered to be significant effects.

BASELINE CONDITIONS

9.57 During the periods noise measurements were being taken on-site, the dominant noise sources were noted to be continuous road traffic on Euston Road (A501) and Hampstead Road. This included regular buses and heavy goods vehicles (HGVs). Regular acceleration of road vehicles was noted as they accelerated from the traffic lights on Euston Road (A501) and Hampstead Road. Passing conversing pedestrians was also noted during the attended measurements at street level.

9.58 The typical daytime $L_{Aeq(16\text{-}hour)}$, night-time $L_{Aeq(8\text{-}hour)}$, lowest daytime $L_{A90,T}$ and lowest night-time $L_{A90,T}$ noise levels measured during the unattended survey are presented in Table 9.14 below.

Table 9.14 Baseline Noise Survey Results (Unattended)

Position	Measured Noise Level (dB re 2 x 10^{-5} Pa)			
	Daytime (07:00 – 23:00) Hours, $L_{Aeq,16hr}$	Lowest Daytime (07:00 – 23:00) Hours, $L_{A90,T}$	Night-Time (23:00 – 07:00) Hours, $L_{Aeq,8hr}$	Lowest Night-Time (23:00 – 07:00) Hours, $L_{A90,T}$
P1	68	59	67	53
P2	66	53	63	47
P3	62	51	57	47
P4	60	52	57	51
P5	70	58	67	55

[16] *Department of Communities and Local Government (2014) Planning Practice Guidance*

9.59 The A-weighted (dBA) L_{90}, L_{eq} and L_{max} sound levels from the attended survey locations are presented in Table 9.15.

Table 9.15 A-Weighted (dBA) L_{90}, L_{eq} and L_{max} Sound Levels (Attended)

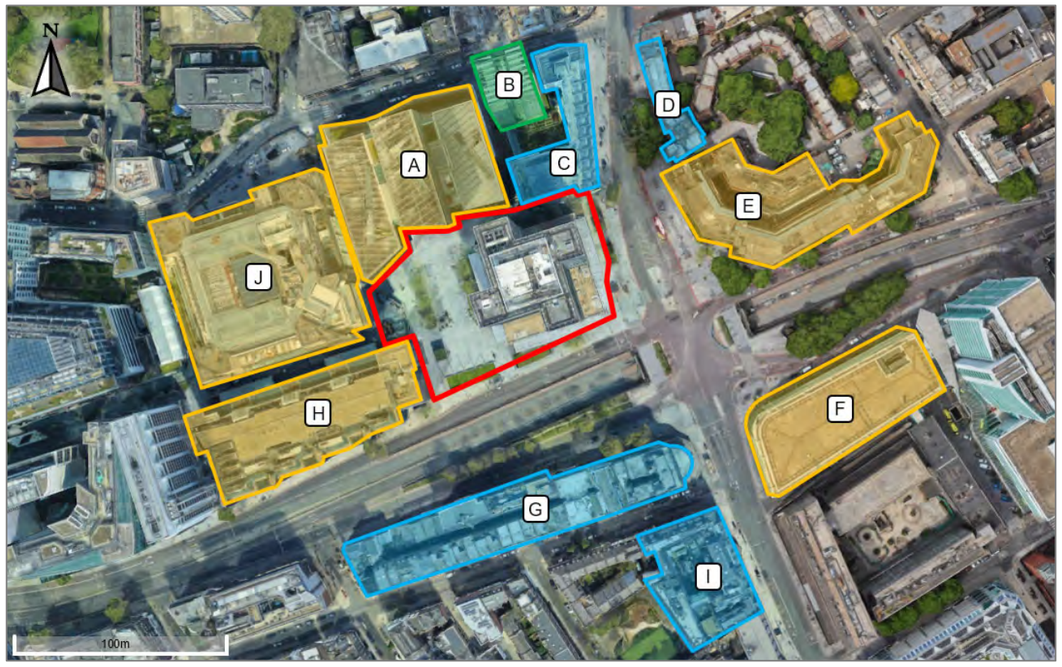
Position	Time	Sound Levels dBA		
		L_{90}	L_{eq}	L_{max}
A1	13:00 to 13:15 hours	63	69	81
A2	14:45 to 14:55 hours	66	71	85

RECEPTORS AND RECEPTOR SENSITIVITY

Existing

9.60 The existing noise and vibration sensitive receptors which could be affected by noise and vibration impacts associated with the Proposed Development are indicated in Figure 9.2, the description of these receptors are noted in Table 9.15.

Figure 9.2 Proposed Development and Sensitive Receptor Locations



9.61 Table 9.16 describes the identified nearby noise and vibration receptors.

Table 9.16 Existing Receptors

Ref	Type	Description	Sensitivity
A	Existing Commercial	10 Brock Street, commercial office building	Low
B	Existing Residential	The Triton Building, 26-storey residential tower	High
C	Existing Mixed-use	Commercial units with residential properties above on Hampstead Road	High
D	Existing Mixed-use	44 – 66 Hamstead Road, commercial and residential properties	High
E	Existing Commercial	250 Euston Road, university, and commercial office building	Low

Ref	Type	Description	Sensitivity
F	Existing Commercial	The Podium, 235 Euston Road, University College Hospital	Medium
G	Existing Mixed-use	Commercial and residential properties on Euston Road	High
H	Existing Commercial	1 Triton Square, commercial office building	Medium
I	Existing Mixed-use	130 Tottenham Ct Road, retails outlets and Radisson Hotel	High
J	Existing Commercial	50 Triton Square, commercial office building	Low

9.62 The sensitivity of The Podium, 235 Euston Road, University College Hospital is assumed to be medium as is often typical for Hospital uses and due to its location on a busy and noisy road intersection. In the event that this receptor is adversely affected by noise and vibration associated with the Proposed Development, mitigation would be through formation of a working group between the relevant University College London personnel and the contractor to ensure impacts are controlled and monitored.

9.63 Table 9.17 below indicates the applicable baseline measurement locations selected for receptors.

Table 9.17 Receptor Measurement Locations

Ref	Type	Description	Applicable Measurement Location
A	Existing Commercial	10 Brock Street, commercial office building	P3
B	Existing Residential	The Triton Building, 26-storey residential tower	P3
C	Existing Mixed-use	Commercial units with residential properties above on Hampstead Road	P3
D	Existing Mixed-use	44 – 66 Hamstead Road, commercial and residential properties	A2
E	Existing Commercial	250 Euston Road, university, and commercial office building	A2
F	Existing Commercial	The Podium, 235 Euston Road, University College Hospital	A2
G	Existing Mixed-use	Commercial and residential properties on Euston Road	A1
H	Existing Commercial	1 Triton Square, commercial office building	P1
I	Existing Mixed-use	130 Tottenham Ct Road, retails outlets and Radisson Hotel	A1
J	Existing Commercial	50 Triton Square, commercial office building	P3

Introduced

9.64 There are no residential receptors being introduced as part of the Proposed Development, as it will consist of predominantly offices and laboratory uses.

EMBEDDED MITIGATION

Deconstruction and Construction

9.65 Predictions of deconstruction and construction noise emissions includes consideration for the following measures that constitute the principles of 'Best Practicable Means (BPM)' as defined in the Control of Pollution Act 1974:

- 2.4m high hoarding around the perimeter of the site;
- Local screening of handheld tools; and
- Enclosures for fixed plant equipment such as generators and pumps.

POTENTIAL EFFECTS

Deconstruction and Construction

Deconstruction and Construction Noise Effects

9.66 Table 9.18 sets out the threshold of potential effect and significance criteria for deconstruction and construction noise. For residential receptors, the ABC criteria as stated in Table 9.3 is used. For non-residential receptors, the threshold has been identified as per the criteria set out in paragraph 9.20. The site and surrounding receptors are considered to be within an urban area with main roads.

Table 9.18 Receptors and Threshold of Potential Significance

Ref	Description	Type	ABC	Threshold of Potential Significance
A	10 Brock Street, commercial office building	Existing Commercial	-	75
B	The Triton Building, 26-storey residential tower	Existing Residential	A	65
C	Commercial units with residential properties above on Hampstead Road	Existing Mixed-use (inc. Residential)	A	65
D	44 – 66 Hamstead Road, commercial and residential properties	Existing Mixed-use (inc. Residential)	C	75
E	250 Euston Road, university, and commercial office building	Existing Commercial	-	75
F	The Podium, 235 Euston Road, University College Hospital	Existing Commercial	-	75
G	Commercial and residential properties on Euston Road	Existing Mixed-use (inc. Residential)	C	75
H	1 Triton Square, commercial office building	Existing Commercial	-	75
I	130 Tottenham Ct Road, retails outlets and Radisson Hotel	Existing Mixed-use (inc. Hotel)	C	75
J	50 Triton Square, commercial office building	Existing Commercial	-	75

9.67 Plant noise levels considered in predictions are presented in in **ES Volume 3, Appendix: Noise and Vibration - Annex 3.**

9.68 The modelled noise levels from deconstruction and construction works are pre-mitigation and align with the assumptions and limitations described in Paragraph 9.40.

9.69 The predicted noise levels at noise sensitive receptors are the dB $L_{Aeq,10hr}$ noise levels at 1m from the worst-affected noise sensitive windows of the identified receptors. Buildings, ground and roads have been modelled as reflective.

9.70 Predictions have considered 'timeslices' for the deconstruction and construction works with reference to the proposed deconstruction and construction programme set out in **ES Volume 1, Chapter 5: Deconstruction and Construction works**.

9.71 The 'timeslice' approach considers each key noisy construction phase and accounts for the potential for simultaneous works and activities that are likely to take place during each phase.

Table 9.19 Assessment Timeslices

Timeslice	Description of Works During Timeslice	Duration
1	Deconstruction: deconstruction of the existing concrete frame structure	24 Months
	Earthworks: decommissioning and relocation of existing services and utilities within the basement level of the site and piling	14 Months
2	Substructure Construction: installation of concrete superstructure	27 Months
3	Installation of Envelope and Cladding; installation of unitised cladding panels to the outer face of the superstructure	31 Months

9.72 Table 9.20 below sets out the predicted noise levels during the assessment timeslices.

Table 9.20 Predicted Deconstruction and Construction Noise Levels

Ref	Description	Noise Levels During Timeslice 1 (dB $L_{Aeq,10hr}$)	Noise Levels During Timeslice 2 (dB $L_{Aeq,10hr}$)	Noise Levels During Timeslice 3 (dB $L_{Aeq,10hr}$)
A	10 Brock Street	79	78	75
B	The Triton Building, 26-storey residential tower	71	67	49
C	Residential properties above on Hampstead Road	68	62	53
D	44 – 66 Hamstead Road	70	62	51
E	250 Euston Road	74	67	54
F	The Podium, 235 Euston Road	71	68	58
G	Residential properties on Euston Road	75	72	67
H	1 Triton Square	84	86	83
I	130 Tottenham Ct Road	71	69	66
J	50 Triton Square	77	78	75

9.73 Figure 9.3, Figure 9.4 and Figure 9.5 below show the modelled sound propagation for each timeslice.

Figure 9.3 Timeslice 1 – dB LAeq,10hr Noise Levels

Figure 9.4 Timeslice 2 – dB LAeq,10hr Noise Levels

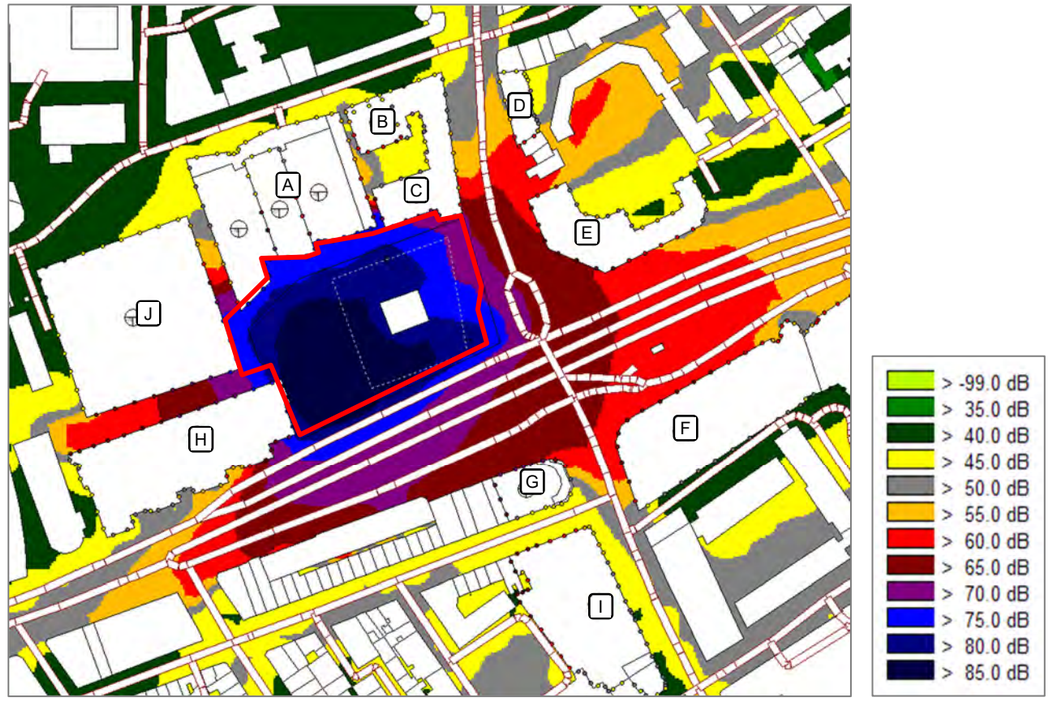
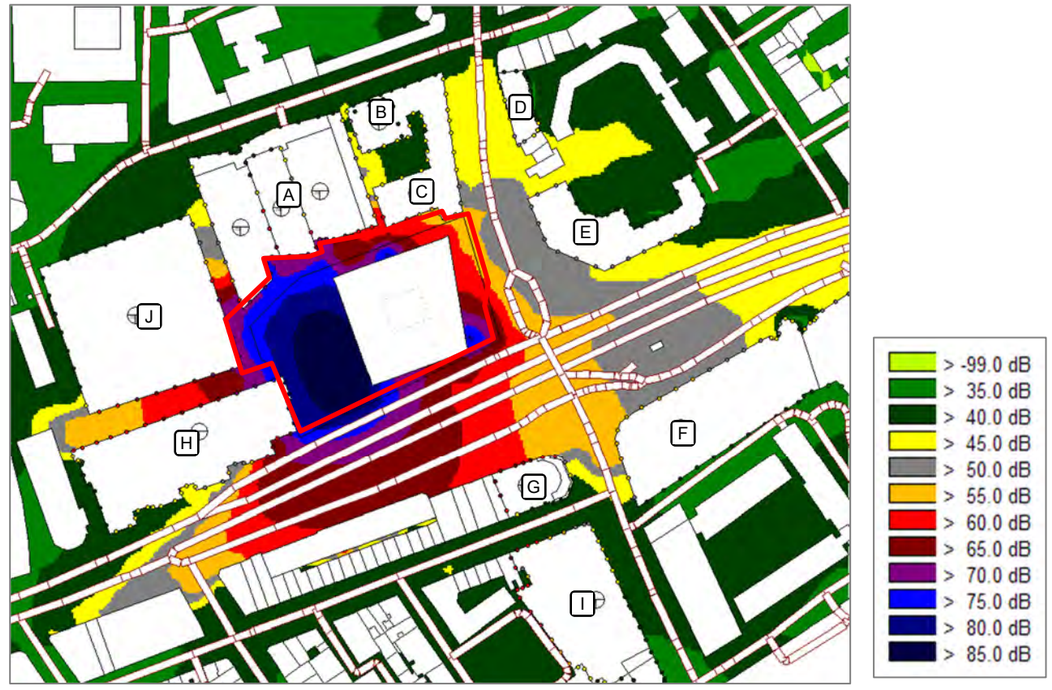


Figure 9.5 Timeslice 3 – dB LAeq,10hr Noise Levels



9.74 Table 9.21 below show presents a summary of the likely effects for at each noise sensitive receptor.

Table 9.21 Deconstruction & Construction Noise Effects

Ref	Description	Sensitivity	Timeslice 1	Timeslice 2	Timeslice 3
A	10 Brock Street	Low	Negligible	Negligible	Negligible
B	The Triton Building, 26-storey residential tower	High	**Moderate Adverse**	Minor Adverse	Negligible
C	Residential properties above on Hampstead Road	High	Minor Adverse	Negligible	Negligible
D	44 – 66 Hamstead Road	High	Negligible	Negligible	Negligible
E	250 Euston Road	Low	Negligible	Negligible	Negligible
F	The Podium, 235 Euston Road	Medium	Negligible	Negligible	Negligible
G	Residential properties on Euston Road	High	Negligible	Negligible	Negligible
H	1 Triton Square	Medium	Minor Adverse	**Moderate Adverse**	Minor Adverse
I	130 Tottenham Ct Road	High	Negligible	Negligible	Negligible
J	50 Triton Square	Low	Negligible	Negligible	Negligible

9.75 Noise Levels during Timeslice 1 (enabling works, deconstruction and piling/basement box construction) indicated that the likely effects will be Moderate Adverse **(significant)** at The Triton Building 26-storey residential tower (Receptor B) and Minor Adverse (not significant) at residential properties on Hampstead Road (Receptor C) and 1 Triton Square (Receptor H) respectively. Negligible (not significant) effects are indicated at all other noise sensitive receptors.

9.76 Noise Levels during Timeslice 2 (substructure construction) indicated that the likely effects will be Minor Adverse (not significant) at The Triton Building 26-storey residential tower (Receptor B) and Moderate Adverse **(significant)** at 1 Triton Square (Receptor H). Negligible (not significant) effects are indicated at all other noise sensitive receptors.

9.77 Noise Levels during Timeslice 3 (installation of envelope and cladding) indicated that the likely effects will be Minor Adverse (not significant) at 1 Triton Square (Receptor H). Negligible (not significant) effects are indicated at all other noise sensitive receptors.

9.78 It should be noted that the assessment of deconstruction and construction noise effects is based on a worst-case representation of assumptions for the activities over the course of a working day for each timeslice with noise sources operating simultaneously. In practice, these noise sources will likely operate for shorter periods.

9.79 To mitigate deconstruction and construction noise emissions, the principles of 'Best Practicable Means (BPM)', as defined in the Control of Pollution Act, 1974 should be used to reduce noise emissions throughout the works to a reasonable and practicable level. These measures are described in the 'Mitigation Measures, Monitoring and Residual Effects' section of this ES chapter.

Deconstruction and Construction Road Traffic Noise Effects

9.80 Baseline and future traffic flow data (AADT 18hr) on nearby public roads during peak construction has been provided by the Applicant's Transport Consultant (Velocity Transport Planning).

9.81 Table 9.22 below presents the predicted change in traffic noise on nearby worst-affected public roads as a result of the traffic associated with construction works using the CRTN methodology.

Table 9.22 Construction Traffic Noise Levels on Nearby Public Roads

Road	Traffic Noise Baseline (2023) (dB $L_{10,18hr}$ at 10m)	Traffic Noise During Peak Construction (dB $L_{10,18hr}$ at 10m)	Change in Noise Level (dB)	Magnitude of Impact
Hampstead Road	70.2	70.2	0.1	Negligible
Euston Road (underpass)	71.4	71.4	0.0	Negligible
Euston Road off-slip (EB)	67.4	67.4	0.0	Negligible
Euston Road on-slip (WB)	66.5	66.5	0.0	Negligible
Euston Road on-slip (EB)	66.4	66.4	0.0	Negligible
Euston Road off-slip (WB - two-way)	67.7	67.7	0.0	Negligible
Tottenham Court Road	66.3	66.3	0.0	Negligible
Drummond Street	61.6	61.8	0.2	Negligible
Longford Street	62.3	62.5	0.2	Negligible

9.82 Comparison of calculated baseline road traffic noise during peak construction indicates that changes in road traffic flows as a result of the Proposed Development will result in a Negligible (not significant) effect on road traffic noise on surrounding public roads.

Deconstruction and Construction Vibration Effects

9.83 BS 5228 indicates that construction activities (particularly piling) usually only generate significant vibration effects when they are located within 20m from sensitive locations. It is not possible to accurately predict the potential impact as it depends on the type of piling, ground conditions, and receptor distance.

9.84 High vibration sensitive receptors within 20m of the site boundary (and therefore potential piling locations) are residential properties on Hampstead Road (Receptor C).

9.85 Table 9.23 presents historical example vibration levels for different phases of an augered piling activity at 10m, as sourced from BS 5228.

Table 9.23 Example Piling Vibration Levels

BS 5228 Ref.	Soil	Piling Activity / Mode	Distance (m)	Peak Particle Velocity (mm/s)
103	Fill Clay	Augering	10	0.38
103	Fill Clay	Dolly casing	10	1.1
103	Fill Clay	Auger hitting base of hole	10	0.96
103	Fill Clay	Spinning off	10	0.57
100	Fill / gravel / London clay	Driving Casing	7	3.2
100	Fill / gravel / London clay	With 3 t dolly	7	1.0

9.86 The approximate distance from the nearest potential piling locations to the boundary with residential properties on Hampstead Road (Receptor C) is approximately 12-15m and therefore vibration levels at this distance are likely to be less than set out in Table 9.23 above (levels of vibration typically reduce with increased distance from the vibration source). However, given this assessment is based on historical example data and receptors are located within 20m of the nearest piling locations, there is the potential that vibration within residential properties on Hampstead Road (Receptor C) could potentially exceed 1mm/s PPV (the level at which complaints are likely to be made by residents). However, it is noted that such vibration levels can be tolerated if prior warning and explanation has been given to residents.

9.87 Effects from vibration during piling at the closest locations to residential properties on Hampstead Road (Receptor C) has the potential to occasionally approach Moderate Adverse **(significant)** but is anticipated to likely be Minor Adverse (not significant) and short term with prior warnings. For construction of piles greater than 20m from residential properties on Hampstead Road (Receptor C), effects from construction vibration are anticipated to be Negligible (not significant).

9.88 All other surrounding vibration receptors are greater than 20m from any potential piling locations or low sensitivity. As such, effects from construction vibration at all surrounding receptors, other than residential properties on Hampstead Road (Receptor C), are anticipated to be Negligible (not significant).

9.89 Predicted cosmetic damage to nearby buildings (receptors) is anticipated to be Negligible (not significant).

Completed Development

Building Services Noise

9.90 The Proposed Development will incorporate numerous items of fixed plant (at roof level and within internal plant rooms) which would have the potential to generate noise, especially when operating at night when background noise levels are at their lowest.

9.91 Building services plant equipment will be selected, located, and attenuated such that the plant noise emission criteria agreed with LBC are satisfied. Such criteria will be agreed through appropriately worded planning conditions.

9.92 LBC's 'The 'Camden Local Plan' stipulates that their typical noise policy is for building services plant noise to not exceed a Rating Level of 10 dB below the existing background sound level, as defined in BS 4142:2014 'Methods for Rating and Assessing Industrial and Commercial Sound'.

9.93 Table 9.24 presents the Rating Level limits for the identified residential noise sensitive receptors that have been established from the baseline noise monitoring data.

Table 9.24 Residential Building Services Noise Rating Level Limits

Ref	Receptor	BS 4142 Rating Level Limit (dBA)		
		Daytime (07:00 – 23:00 hours)	Night-time (23:00 – 07:00 hours)	24 hours
B	The Triton Building, 26-storey residential tower	41	37	37
C	Residential properties on Hampstead Road	41	37	37
D	44 – 66 Hamstead Road	43	37	37
G	Residential properties on Euston Road	42	41	41

9.94 Table 9.25 presents the noise emissions limits for emergency plant equipment.

Table 9.25 Emergency Building Services Plant Noise Level Limits

Ref	Receptor	Emergency Plant Noise Limit at 1m from Receptor		
		Daytime (07:00 – 23:00 hours)	Night-time (23:00 – 07:00 hours)	24 hours
B	The Triton Building, 26-storey residential tower	61	57	57
C	Residential properties on Hampstead Road	61	57	57
D	44 – 66 Hamstead Road	63	57	57
G	Residential properties on Euston Road	62	61	61

9.95 It is likely that the following best practice noise control techniques would be implemented as part of the inherent detailed design of the development to meet the plant noise limits presented above:

- Enclosing noisy plant within the building envelope;
- Selecting suitably quiet 'low noise' plant;
- Positioning air intake/discharge louvres away from noise sensitive receptors;
- Orientating air intake/discharge louvres away from noise sensitive receptors;
- Attenuation of air intake/discharge louvres with duct-mounted attenuators and/or acoustic louvres;
- Sound insulating plant housings/enclosures/rooms; and
- Anti-vibration mounts to control structure-borne noise and vibration.

9.96 Through incorporation of the design measures described above, noise generated by fixed plant would have a Negligible (not significant) effect for all noise sensitive receptors.

Operational Road Traffic Noise Effects

9.97 Baseline and future operational traffic flow data (AADT 18hr) on nearby public roads has been provided by Velocity Transport Planning. Traffic flow data is inclusive of consideration for cumulative schemes.

9.98 Table 9.26 presents the predicted change in traffic noise on nearby public roads as a result of the traffic associated with the operational Proposed Development using the CRTN methodology.

Table 9.26 Operational Traffic Noise Levels on Nearby Public Roads

Road	Traffic Noise Baseline (2023) (dB $L_{10,18hr}$ @ 10m)	Traffic Noise During Operation (Future Baseline 2028) (dB $L_{10,18hr}$ @ 10m)	Change in Noise Level (dB)	Significance
Hampstead Road	70.0	70.0	0.0	Negligible
Euston Road (underpass)	71.4	71.4	0.1	Negligible
Euston Road off-slip (EB)	67.4	67.4	0.0	Negligible
Euston Road on-slip (WB)	66.5	66.5	0.0	Negligible
Euston Road on-slip (EB)	66.4	66.4	0.0	Negligible
Euston Road off-slip (WB - two-way)	67.7	67.8	0.0	Negligible
Tottenham Court Road	66.3	66.4	0.1	Negligible
Drummond Street	61.6	61.8	0.2	Negligible
Longford Street	62.3	62.5	0.2	Negligible

9.99 Comparison of calculated baseline road traffic noise with the predicted road traffic noise during the operation of the Proposed Development (including cumulative schemes) indicates that changes in road traffic flows will result in a Negligible (not significant) effect at all surrounding public roads.

MITIGATION, MONITORING AND RESIDUAL EFFECTS

Deconstruction and Construction Mitigation

Mitigation of Deconstruction and Construction Noise

9.100 To minimise potential Moderate Adverse (Significant) effects, a Construction Management Plan (CMP) detailing measures to mitigate potential noise and vibration effects on nearby noise sensitive premises will be defined and agreed with LBC.

9.101 In accordance with modern working practices, the principles of 'Best Practicable Means (BPM)', as defined in the Control of Pollution Act, 1974 should be used to reduce noise emissions throughout the construction works to a reasonable and practicable level.

9.102 These BPMs, which are contained in the CMP, include:

- Careful selection of construction methods and plant to be used;
- Strategic placement of plant items as far from receptors as practicable possible and use of temporary acoustic barriers where appropriate and other noise containment measures such as screens and sheeting to minimise noise breakout and reduce noise levels at the potentially affected receptors.
- Switching off of plant and vehicle engines when not in use;
- Restriction of drop heights onto lorries;
- Regular maintenance and servicing of vehicles, equipment and plant;
- Vehicles and mechanical plant should be fitted with effective exhaust silencers;
- Pneumatic percussive tools should be fitted with appropriate mufflers or silencers;
- Appropriate handling and storage of materials; and

- Enforcement of restricted working hours for excessively noisy activities.

9.103 If a temporary source of noise from works within the site exceeds the relevant limits and cannot reasonably be prevented and the works being undertaken are crucial to progressing the Proposed Development, then separate liaison with LBC and the appropriate neighbours would take place.

9.104 In addition to the above, reasonable steps would be taken to keep the local community informed of proposed construction operations. The site management team will co-ordinate the dissemination of information (for example, by means of a regular newsletter) and to schedule those operations at times that would minimise the potential for disturbance. The site management team will provide a contact telephone number on the site boundary so that any concerns with construction activities can be communicated directly to a senior manager who will be able to address any concerns and control activities accordingly. This person will be responsible for logging complaints and actions.

9.105 The primary method for securing the measures which control of noise and vibration is a Section 61 consent under the Control of Pollution Act 1974 (CoPA). This consent will be sought from LBC.

9.106 A Section 61 consent under the CoPA will likely contain appropriate noise and vibration limits for construction activities at the nearby sensitive properties. These limits are recommended to be monitored (for both noise and vibration) and reported. The reports and monitoring will highlight when it is likely that the construction limits will be exceeded, so that construction activities can be effectively altered.

9.107 The potential for Moderate Adverse (significant) effects at The Triton Building 26-storey residential tower (Receptor B) have been predicted for works during Timeslice 1. To assess the effects of mitigation, it is a reasonable assumption that implementation of the principles of 'Best Practicable Means (BPM) described in paragraph 9.102 could reduce construction related noise emissions by up to approximately 5 dB. However, given this assumption, noise and vibration monitoring is recommended to confirm that the BPM are effective and permit the adjustment of works on-site to reduce noise levels, if required.

9.108 When considering this assumed approximate 5 dB reduction in noise levels during each Timeslice, the potential effects are reduced as follows:

Timeslice 1

- Negligible (not significant) at all surrounding noise sensitive receptors.

Timeslice 2

- Minor Adverse (not significant) at 1 Triton Square (Receptor H).
- Negligible (not significant) at all other surrounding noise sensitive receptors.

Timeslice 3

- Negligible (not significant) at all surrounding noise sensitive receptors

Mitigation of Construction Road Traffic

9.109 The following principles of 'Best Practicable Means (BPM)' should be adopted for minimising noise associated with construction road vehicles:

- Time slots should be adopted for deliveries to ensure that convoys of vehicles do not arrive simultaneously and avoid potential engine idling on-site; and
- Implementation of an appropriate traffic management strategy. This strategy should include controls to prevent temporary parking of construction vehicles in the vicinity of Noise Sensitive Receptors.

Mitigation of Construction Vibration

9.110 The assessment of construction vibration indicated the potential for short term Moderate Adverse **(significant)** effects at residential properties on Hampstead Road (Receptor C) during construction of the closest piles.

9.111 Vibration limits should be set in compliance with BS 5228-2 to minimise the likelihood of Moderate Adverse (significant) effects and cosmetic building damage. Prior warning and explanations should be given to the occupiers of residential properties on Hampstead Road (Receptor C) prior to piling activities.

9.112 Agreed vibration limits should be controlled through the implementation of the CMP as set out above, along with continuous long term vibration monitoring at appropriate agreed locations to identify periods of potential exceedance and alter works, if required.

9.113 Provided the above measures are implemented during deconstruction and construction works, the likely residual vibration effects are anticipated to be Negligible (not significant) at all surrounding vibration receptors with the exception of residential properties on Hampstead Road (Receptor C) where the residual vibration effect from construction activities has the potential to be Minor Adverse (not significant) during the short term.

Completed Development Mitigation

9.114 The assessment of effects from the completed operational development do not indicate any significant effects at nearby sensitive receptors for both noise from building services plant and operational road traffic noise. As such, no additional mitigation is required to mitigate potential significant adverse effects associated with the Proposed Development.

Residual Effects

9.115 All of the residual effects resulting from the Proposed Development, are presented in Table 9.27, identifying whether the effect is significant or not.

Table 9.27 Residual Effects

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
Deconstruction and Construction							
10 Brock Street (Receptor A)	Timeslice 1 (enabling works, deconstruction and piling/basement box construction)	Negligible	Not Significant	L	D	T	Mt
The Triton Building, 26-storey residential tower (Receptor B)		Negligible	Not Significant	L	D	T	Mt
Residential properties above on Hampstead Road (Receptor C)		Negligible	Not Significant	L	D	T	Mt
44 – 66 Hamstead Road (Receptor D)		Negligible	Not Significant	L	D	T	Mt
250 Euston Road (Receptor E)		Negligible	Not Significant	L	D	T	Mt
The Podium, 235 Euston Road (Receptor F)		Negligible	Not Significant	L	D	T	Mt
Residential properties on Euston Road (Receptor G)		Negligible	Not Significant	L	D	T	Mt
1 Triton Square (Receptor H)		Negligible	Not Significant	L	D	T	Mt
130 Tottenham Ct Road (Receptor I)		Negligible	Not Significant	L	D	T	Mt
50 Triton Square (Receptor J)		Negligible	Not Significant	L	D	T	Mt
10 Brock Street (Receptor A)	Timeslice 2 (substructure construction)	Negligible	Not Significant	L	D	T	Mt

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
The Triton Building, 26-storey residential tower (Receptor B)		Negligible	Not Significant	L	D	T	Mt
Residential properties above on Hampstead Road (Receptor C)		Negligible	Not Significant	L	D	T	Mt
44 – 66 Hamstead Road (Receptor D)		Negligible	Not Significant	L	D	T	Mt
250 Euston Road (Receptor E)		Negligible	Not Significant	L	D	T	Mt
The Podium, 235 Euston Road (Receptor F)		Negligible	Not Significant	L	D	T	Mt
Residential properties on Euston Road (Receptor G)		Negligible	Not Significant	L	D	T	Mt
1 Triton Square (Receptor H)		Minor Adverse	Not Significant	L	D	T	Mt
130 Tottenham Ct Road (Receptor I)		Negligible	Not Significant	L	D	T	Mt
50 Triton Square (Receptor J)		Negligible	Not Significant	L	D	T	Mt
10 Brock Street (Receptor A)	Timeslice 3 (installation of envelope and cladding)	Negligible	Not Significant	L	D	T	Mt
The Triton Building, 26-storey residential tower (Receptor B)		Negligible	Not Significant	L	D	T	Mt
Residential properties above on Hampstead Road (Receptor C)		Negligible	Not Significant	L	D	T	Mt
44 – 66 Hamstead Road (Receptor D)		Negligible	Not Significant	L	D	T	Mt
250 Euston Road (Receptor E)		Negligible	Not Significant	L	D	T	Mt
The Podium, 235 Euston Road (Receptor F)		Negligible	Not Significant	L	D	T	Mt
Residential properties on Euston Road (Receptor G)		Negligible	Not Significant	L	D	T	Mt
1 Triton Square (Receptor H)		Negligible	Not Significant	L	D	T	Mt
130 Tottenham Ct Road (Receptor I)		Negligible	Not Significant	L	D	T	Mt
50 Triton Square (Receptor J)		Negligible	Not Significant	L	D	T	Mt
10 Brock Street (Receptor A)		Negligible	Not Significant	L	D	T	Mt
The Triton Building, 26-storey residential tower (Receptor B)	Vibration from deconstruction and construction	Negligible	Not Significant	L	D	T	Mt
Residential properties above on Hampstead Road (Receptor C)		Minor Adverse	Not Significant	L	D	T	St
44 – 66 Hamstead Road (Receptor D)		Negligible	Not Significant	L	D	T	Mt
250 Euston Road (Receptor E)		Negligible	Not Significant	L	D	T	Mt
The Podium, 235 Euston Road (Receptor F)		Negligible	Not Significant	L	D	T	Mt
Residential properties on Euston Road (Receptor G)		Negligible	Not Significant	L	D	T	Mt
1 Triton Square (Receptor H)		Negligible	Not Significant	L	D	T	Mt
10 Brock Street (Receptor A)		Negligible	Not Significant	L	D	T	Mt
The Triton Building, 26-storey residential tower (Receptor B)		Negligible	Not Significant	L	D	T	Mt
All Receptors A - J	Deconstruction and construction road traffic noise	Negligible	Not Significant	L	D	T	Mt
Completed Development							
All Receptors A - J	Building services noise	Negligible	Not significant	L	D	P	Lt
All Receptors A - J	Operational Road Traffic Noise Effects	Negligible	Not significant	L	D	P	Lt

Notes:

Residual Effect Scale = Negligible / Minor / Moderate / Major Nature = Beneficial or Adverse Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N) D = Direct / I = Indirect P = Permanent / T = Temporary St = Short Term / Mt = Medium Term / Lt = Long Term N/A = not applicable / not assessed

ASSESSMENT OF THE FUTURE ENVIRONMENT

Evolution of the Baseline Scenario

9.116 Without the Proposed Development it is likely that environmental noise levels (baseline) will remain broadly the same in the medium to long term. Road traffic noise is the dominant environmental noise source influencing the ambient noise climate around the site. A rise in road traffic movements on roads surrounding the site through natural growth (from the addition of new residences and businesses in the surrounding area) may occur in the long term but the resultant change in traffic noise levels is likely to be minimal.

Cumulative Effects Assessment

9.117 Schemes with a potential to result in cumulative effects have been identified in **ES Volume 1, Chapter 2: EIA Methodology** and listed with approximate distances from the site location in Table 9.2

9.118 All nearby major developments are required by the LBC to have accompanying noise impact reports and Construction Management Plans that incorporate and detail the general mitigation measures which will reduce these effects as far as possible to ensure compliance with the Control of Pollution Act and that compliance will be monitored by LBC.

Deconstruction and Construction

9.119 For schemes outside the scoping distance in this assessment (located beyond the noise sensitive receptors considered in this ES chapter that surround the site), the potential for cumulative impacts from deconstruction and construction noise is minimal, as the noise and vibration from the deconstruction , construction and operation of these schemes would contribute very little to the noise climate in the area of the receptors due to the intervening distance and screening from existing surrounding buildings. As shown in Table 9.2, the closest cumulative scheme approximately is 350m from the Proposed Development site with numerous building screening the site over the intervening distance. The effect of cumulative schemes on noise and vibration from deconstruction and construction is likely to be Negligible (not significant).

9.120 Due to the nature of the Proposed Development (in particular, its location within an urban context and surrounded by a comprehensive road network) construction traffic noise effects with surrounding schemes are determined to be Negligible (not significant).

Completed Development

9.121 The effect of cumulative schemes has been considered in the assessment of operational road traffic noise. The cumulative schemes listed in Table 9.2 have been considered. The assessment of cumulative effects for operational road traffic noise is determined to be Negligible (not significant).

9.122 No new or additional effects are predicted as a result of building services noise from the Proposed Development. LBC require that Rating Levels from building services plant are 10 dB below the existing background noise level when assessed in accordance with BS 4142. This should ensure that any potential increase in ambient noise levels when considering cumulative schemes is minimal and Negligible (not significant).

LIKELY SIGNIFICANT EFFECTS

9.123 No likely significant effects (after mitigation) have been identified in the deconstruction and construction noise assessments presented in this ES chapter.

9.124 There is potential for short term Minor Adverse **(not significant)** vibration effects during piling works.

9.125 Best Practicable Means (BPM) described in this ES chapter should be incorporated into a site-specific CMP (and are included in the CMP submitted with the application) to reduce any likelihood of potential Moderate Adverse (Significant) effects. Noise and vibration monitoring is recommended to confirm that the BPM are effective to reduce the likelihood of significant adverse effects.

9.126 No significant effects are likely as a result of construction road traffic movements.

9.127 No significant effects are likely as a result of the completed development from either buildings services noise or road traffic.

Chapter 10: Daylight, Sunlight, Overshadowing and Solar Glare

DAYLIGHT, SUNLIGHT, OVERSHADOWING AND SOLAR GLARE	
AUTHOR	Point 2 Surveyors Limited (Point 2)
SUPPORTING APPENDIX	**ES Volume 3, Appendix: Daylight, Sunlight, Overshadowing and Solar Glare** Annex 1: Drawings; Annex 2: Daylight and sunlight results for neighbouring buildings; Annex 3: Without Balconies daylight and sunlight results for neighbouring buildings; Annex 4: Overshadowing (Sun on Ground); Annex 5: Solar Glare assessment; and Annex 6: Window Maps.
KEY CONSIDERATIONS	The key effects considered within this chapter include the following: • The effects of the Proposed Development once completed on sensitive receptors in relation to daylight and sunlight; • The effects of the Proposed Development once completed on surrounding sensitive receptors in relation to overshadowing; and • The solar glare effects of the Proposed Development at nearby sensitive road locations.
CONSULTATION	An EIA Scoping Opinion Request Report ('EIA Scoping Report') was submitted to the London Borough of Camden (LBC) on 4 August 2023 (refer to **ES Volume 3, Appendix: EIA Methodology – Annex 1**) which sets out the proposed scope and method proposed for this ES chapter. A draft of the 'EIA Scoping Report Review' (prepared by CBRE, the LBC's appointed EIA advisors) was issued on 4 October 2023 (refer to **ES Volume 3, Appendix: EIA Methodology - Annex 2**), and a final EIA Scoping Opinion was subsequently issued on the 16 November 2023. The EIA Scoping Opinion confirms that the methodology outlined within the EIA Scoping Report is appropriate. The following point was raised as part of the EIA Scoping Opinion: *"In respect of the amenity spaces to be considered within the overshadowing assessment, the area shown for Tolmer's Square is limited to the area of green space. CBRE consider that all amenity space should be assessed, including the hardstanding. Additionally, there are areas adjacent to Tolmer's Square which are not shown in Figure 2, namely Foundry Mews which wraps around the outside of Tolmer's Square, as well as George Mews to the north. The Applicant should give consideration to these areas in the ES, clearly setting out the extent of the study area".* Therefore, the overshadowing scope was increased in response to LBC's above suggestion. The remainder of the scope set out for this ES Chapter was considered to be appropriate.

ASSESSMENT METHODOLOGY

Defining the Baseline

10.1 The assessment of daylight and sunlight amenity is governed principally by the extent that the sky is obscured by the existing and proposed structures (obstructions) which surround a sensitive receptor. Using professional judgment, the extent of the study area has been established by assessing the number of properties and open spaces within and surrounding the site which may be affected by any additional obstruction of the sky as a result of the construction of the Proposed Development.

10.2 The current baseline conditions are defined as the existing site conditions at the time of the planning submission. A detailed land survey was undertaken by Plowman Craven in October 2019 which surveyed each of the existing buildings and structures on the site, as well as the relevant surrounding buildings. Since that time the model has been updated to include relevant developments such as Stephenson House (Drummond Street) and site visits have been undertaken to confirm that there are no material changes to relevant buildings within the immediate vicinity of the Site. The model has been used for the assessment of daylight, sunlight, overshadowing and solar glare.

10.3 Stephenson House, to the north of the site on Drummond Street, has been redeveloped since the time of the survey and therefore this building has been modelled for planning drawings obtain from the LBC planning portal.

Evolution of the Baseline

10.4 In relation to the built environment, any alterations made to the properties surrounding the site in the absence of the Proposed Development (either in terms of massing, or window sizes and locations) would have the potential to change the baseline condition in relation to the altered property, and potentially certain other neighbouring properties.

10.5 The site has been qualitatively considered in the context of the Proposed Development not being delivered, and the likely/expected natural evolution of the surrounding area. Presently, there are no cumulative schemes that would have a material bearing on the baseline conditions, so no evolution from the existing conditions in the absence of the Proposed Development is assessed. Any future schemes that are proposed would be required to consider the cumulative effects of it with the Proposed Development.

Impact Assessment Methodology

Deconstruction and Construction

10.6 During the deconstruction and construction activities, the daylight, sunlight, overshadowing and solar glare potential effects would be constantly changing and therefore, they would be similar to or less than the effects of the completed Proposed Development. Accordingly, the effects to the surrounding properties and receptors during these phases have not been modelled and analysed.

10.7 In some cases, scaffolding, cranes, and hoarding may marginally increase the size of the Proposal's maximum massing, however, this would be a temporary situation and it is unlikely to result in additional noticeable effects due to the scale of these temporary structures and their transient nature. On this basis, there is no need to separately consider the daylight and sunlight effects throughout the deconstruction and construction work within this ES chapter.

Completed Development

10.8 This scenario consists of considering the completed Proposed Development in the context of the surrounding environment. This represents a worst-case scenario to assesses the potential daylight, sunlight, overshadowing and solar glare effects on the surrounding residential receptors, amenity spaces and viewpoints.

10.9 Using a 3D computer model of the site and its surrounding context, the levels of daylight, sunlight and shadow in the existing situation have been analysed and compared to the levels of light following the construction of the Proposed Development.

10.10 The results of the analysis have then been interpreted with reference to the BRE Guidelines, which are explained in detail within this ES chapter.

10.11 The BRE Guidelines provide different methods for assessing daylight for existing and proposed residential accommodation. The methods relevant to daylight (only) in this assessment are the Vertical Sky Component (VSC) and the No Sky Line (NSL).

10.12 Other methods detailed in the 2022 BRE Guidelines are of relevance to the other topics considered in this assessment (sunlight and overshadowing) which are outlined in Table 10.1 below.

10.13 An assessment of cumulative effects has not been undertaken within this ES chapter given the proximity of surrounding cumulative schemes, as the distance of the cumulative developments to the sensitive receptors is significant and thus, they will have no in combination effect with the Proposed Development.

Assessment Methodology

10.14 The criteria identified within the 2022 BRE Guidelines is shown in Table 10.1.

Table 10.1 2022 BRE Guidelines – Criteria

Topic	Method	2022 BRE Criteria
Daylight	Vertical Sky Component (VSC)	A window may be adversely affected if the VSC measured at the centre of the window is less than 27% and less than 0.8 times its former value.
	No Sky Line (NSL)	A room may be adversely affected if the daylight distribution (no sky line) is reduced beyond 0.8 times its existing area.
Sunlight	Annual Probable Sunlight Hours (APSH)	A window may be adversely affected if a point at the centre of the window receives 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

Topic	Method	2022 BRE Criteria
		hours during either period, and (for existing neighbouring buildings), if there is a reduction in total APSH which is greater than 4%.
Overshadowing	Sun on Ground	An area of amenity space or garden may be adversely affected if less than half (50%) of the area is prevented by buildings from receiving two hours of sunlight on the 21 March and the area which can receive some sun on the 21 March is less than 0.8 times its former value.

10.15 The methodology for identifying effects upon sensitive receptors (in terms of magnitude of impact, effect scale and effect significance) is discussed below.

Daylight – Vertical Sky Component

10.16 VSC is a measure of the direct skylight reaching a point from an overcast sky. It is the ratio of the illuminance at a point on a given vertical plane to the illuminance at a point on a horizontal plane due to an unobstructed sky.

10.17 For existing buildings, the BRE guideline is based on the loss of VSC at a point at the centre of a window, on the outer plane of the wall.

10.18 The BRE guidelines state that if the VSC at the centre of a window is less than 27%, and it is less than 0.8 times its former value (i.e. the proportional reduction is greater than 20%), then the reduction in skylight will be noticeable, and the existing building may be adversely affected.

Daylight – No Sky Line Method

10.19 The NSL method is a measure of the distribution of daylight at the 'working plane' within a room. In houses, the 'working plane' means a horizontal 'desktop' plane of 0.85 m in height. The NSL divides those areas of working plane in a room which receive direct sky light through the windows from those areas of the working plane 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 would be poor and supplementary electric lighting may be required.

10.20 The potential effect of the daylighting distribution in the surrounding existing buildings is established by plotting the NSL in each of the main rooms. For houses, this includes living rooms, dining rooms and kitchens. Bedrooms are also analysed although they are less important in terms of the amount of daylight received. The BRE Guidelines state that if the area of a room that does receive direct sky light is reduced to less than 0.8 times its former value, then this would be noticeable to its occupants.

Sunlight – Annual Probable Sunlight Hours

10.21 The BRE Guidelines state in Section 3.2.3 that:

"All main living rooms of dwellings and conservatories 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. Normally loss of sunlight need not be analysed to kitchens and bedrooms, except for bedrooms that also comprise a living space".

10.22 Section 3.2.5 continues:

"*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.*"

10.23 The BRE Guidelines suggest that when assessing sunlight for existing neighbouring buildings, the point at the centre of the window on the outside window face can be used. Section 3.2.6 states:

"If a room can receive more than one quarter of annual probably sunlight hours (APSH), including at least 5% of APSH in the winter months between 21 September and 21 March, then it should still receive enough sunlight. Also, if the overall annual loss of APSH is 4% or less, the loss of sunlight is small."

10.24 The BRE Guidelines go on to state that if these guidelines are not met, and a window receives less than 0.80 times its former value of total APSH or winter APSH, and if that window has a reduction in total APSH of more than 4% *"then the occupants of the existing building will notice the loss of sunlight".*

10.25 All main living rooms with a window facing within 90° of due south within residential properties surrounding the site have been assessed for sunlight. Even if all other additional windows serving the room are facing within 90º of due north.

10.26 Bedrooms and kitchens have not been analysed in accordance with paragraph 3.2.3 of the BRE Guidelines.

Balconies over Windows and Projecting Wings

10.27 The BRE Guidelines also recognises that balconies and overhangs inherently restrict the quantum of daylight and sunlight. With regards to daylight, the BRE comments on page 16, paragraph 2.2.13:

"Existing windows with balconies above them typically receive less daylight. Because the balcony cuts out light from the top part of the sky, even modest obstruction opposite may result in a large relative impact on the VSC, and on the area receiving direct skylight. One way to demonstrate this would be to carry out an additional calculation of the VSC and area receiving direct skylight, for both the existing and proposed situations, without the balcony in place. For example, if the proposed VSC with the balcony was under 0.80 times the existing value with the balcony, but the same ratio for the values without the balcony was well over 0.8, this would show that the presence of the balcony, rather than the size of the new obstruction, was the main factor in the relative loss of light."

10.28 With regards to sunlight, the BRE comments on page 25, paragraph 3.2.11:

10.29 *"Balconies and overhangs above an existing window tend to block sunlight, especially in summer above south facing windows. Even a modest obstruction opposite may result in a large relative impact on the sunlight received. One way to demonstrate this would be to carry out an additional calculation of the APSH, for both the existing and proposed situations, without the balcony in place. For example, if the proposed APSH with the balcony was under 0.80 times the existing value with the balcony, but the same ratio for the values without the balcony was well over 0.80, this would show that the presence of the balcony, rather than the size of the new obstruction, was the main factor in the relative loss of sunlight."*

10.30 Where appropriate, additional calculations were carried out that exclude the limiting effect of the balcony to quantify whether it is the presence of the balcony or the obstruction (i.e. the Proposed Development) that is the main factor in the alterations to daylight or sunlight.

Overshadowing

10.31 The BRE acknowledges, at paragraph 3.3.1 that sunlight in the spaces between buildings has an important impact on the overall appearance and ambience of a development. It states:

"…good site layout planning for daylight and sunlight should not limit itself to providing good natural lighting inside buildings. Sunlight in the spaces between buildings has an important impact on the overall appearance and ambience of a development."

10.32 The sun on ground assessment has been used to understand the overshadowing of amenity spaces.

Sun on Ground

10.33 Using specialist software, the path of the sun is tracked to determine where the sun would reach the ground and where it would not. This assessment reviews the total percentage of an area that receives at least two hours of direct sunlight on the March 21.

Solar Glare

10.34 The BRE Guidelines makes the following statement regarding the potential for reflected solar glare on a development:

"Glare or solar dazzle can occur when sunlight is reflected from a glazed façade or area of metal cladding. This can affect road users outside and the occupants of adjoining buildings. The problem can occur either when there are large areas of reflective tinted 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 for some heavily glazed (or mirror clad) buildings. Photovoltaic panels tend to dazzle because they are designed to absorb light."

10.35 The BRE Guidelines outline a brief methodology for evaluation of the scale of a solar glare issue:

"If it is likely that a building may cause solar dazzle the exact scale of the problem should be evaluated...by identifying key locations such as road junctions and windows of nearby buildings and working out the number of hours of the year that sunlight can be reflected to these points."

10.36 The assessment of solar glare is carried out using specialist software applied to a 3D AutoCAD model of the Proposed Development and its surrounding context.

Annual Sequence Analysis

10.37 The Annual Sequence Analysis identifies the times and locations of all instances of solar reflection throughout the year. The reflective elements of the façade of the Proposed Development are simulated with yellow-coloured mirrors in order to more easily identify possible incidents and locations.

10.38 The path of the sun for the entire year is then simulated around the Proposed Development in order to identify where and when instances of solar reflections may affect sensitive viewpoints, with a particular focus on road users and railways. The images from the screening exercise can be found within **ES Volume 3, Appendix: Daylight, Sunlight, Overshadowing and Solar Glare – Annex 5**.

10.39 The screening exercise creates conditions for optimal reflectance i.e., a perfect reflective (specular) material and adopts an entirely clear sky. The objective is to identify all possible times and dates where solar glare could occur, however brief, under optimal conditions. An interrogation of historic climate data would demonstrate that the number of instances of solar glare identified would be less frequent than that established in this technical analysis.

10.40 Based upon the initial screening assessments, the location of the most sensitive viewpoints (which coincide with traffic lights, crossings, and major road junctions) were identified.

10.41 In order to understand the overall solar glare effect of the Proposed Development upon the surrounding sensitive viewpoints, at each viewpoint, all of the solar reflectance instances within a year, together with their durations and viewing angles are plotted onto a grid to create a calendar graph for each sensitive viewpoint. The calendar graphs for each of the sensitive viewpoints can also be seen in ES Chapter 10: Appendix 10.5.

10.42 The calendar graphs' axes capture the 365 days of the year along the X axis and the time of day on the Y axis. The Y axis is labelled as Greenwich Mean Time (GMT) on the left, and British Summer Time (BST) on the right. The time, duration and angle from the viewers focal point can be deduced from these Glare Calendars.

10.43 Glare can be divided into two distinct categories: Discomfort Glare and Disability Glare.

10.44 Discomfort glare is a difficulty in being able to see in order to carry out a task, or a reaction to avoid looking towards a bright source of light.

10.45 Disability glare is a reduction in visibility caused by light from bright sources being scattered within the eye, across the retina. The result is that vision towards the desired direction, is impaired by the veiling effect caused by the scattered light.

Solar Reflectance Instances/Images

10.46 If the Annual Sequence Analysis exercise identifies instances of solar reflections in sensitive locations a glare calendar is calculated to show the frequency, duration, and angle from viewpoints across the whole year. The glare calendars are used to identify lengthy periods of glare and, importantly, instances where the angle of glare is close to the view direction. The views of the glare situation at representative times are then visualised using Radiance in order the better understand the severity of the issue. Concentric circles are overlaid on the resulting image to show the angle from the observers view direction ranging from 10° from the centre of the visual axis and moving out in concentric circles from 20° to 90°. This provides a reference by which to judge the severity of any potential issues.

10.47 The limits of a driver's windscreen or the possible use of driver's visor, which in reality could mitigate some glare instances, are not visible in the image nor accounted for in the assessment. Nevertheless, the visualisation allows a view to be formed on the likelihood of the use of a sun visor to mitigate the impact.

Assumptions and Limitations

10.48 The contextual model was produced from photogrammetry and updated with more accurate data from the 3D point cloud captured on-site by high-definition laser scanner.

10.49 Site and aerial photographs as well as planning drawings obtained from the LBC planning portal were used to supplement the model where necessary.

10.50 Floorplans have been obtained for the following properties from online resources and these layouts have been incorporated within the 3D model:

- 17-33 William Road;
- Schafer House, University College – Partial;
- 164-166 Drummond Street;
- The Triton Building;
- 175 Drummond Street – Outline;
- 1-6 Tolmers Square – Partial;
- Warren Court – Euston Road;
- Lizmans House – Partial;
- 56 Warren Street;
- 57 Warren Street;
- 59 Warren Street – Partial;
- 60-61 Warren Street – Partial;
- 62 Warren Street – Partial;
- 63-68 Warren Street;
- 9 – 12 Warren Street;
- 16 Warren Street – Partial;
- 17 Warren Street – Partial; and
- Duchess House, 18-19 Warren Street – Partial.

10.51 Where plans were not available, reasonable assumptions have been made on the room sizes and layouts based on external visual inspection and professional judgment.

10.52 To identify which of the buildings surrounding the site are in residential use, their post codes were checked against the Council Tax Valuation List produced by the Valuation Office Agency (VOA).

10.53 3XN (the project architect) supplied the 3D computer model of the Proposed Development, which was received on the 26 September 2023. The computer model is illustrated in the drawings in **ES Volume 3, Appendix: Daylight, Sunlight, Overshadowing and Solar Glare – Annex 1**.

10.54 For the solar glare assessment, when calculating the times when solar glare could probably be reflected to the receptor locations, the façades were assumed to act like a mirror. No account was taken of the surface reflective properties of the external envelope of the Proposed Development.

Methodology for Defining Effects

Receptors and Receptor Sensitivity

10.55 In respect of daylight and sunlight effects, the BRE Guidelines suggest that any existing residential properties including student accommodation need to be analysed and considered as sensitive receptors. These are all considered as being of high sensitivity and given equal weight.

Magnitude of Impact

Daylight and Sunlight

10.56 It is generally acknowledged that the BRE Guidelines are predicated upon a suburban environment. Therefore, a degree of flexibility should be applied when assessing the significance of daylight and sunlight effects in urban locations. Appendix H of the 2022 BRE Guidelines states:

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

10.57 In view of the above, the interpretation of the daylight and sunlight results should be assessed in terms of the quantum of light lost or gained, not purely on the percentage of change. The percentage value may well be misleading, particularly where the baseline values are small. In these situations, a small change in the quantum of light could represent a high percentage change in the overall figure, implying that there would be a significant change in daylight and sunlight whereas in reality the difference would be negligible.

10.58 The starting point for assessing the daylight and sunlight impacts is against the criteria set out in the 2022 BRE Guidelines. One must however also observe the context in which the development is taking place and how this relates to daylight and sunlight and examine the factors which place limitations on the typical numerical parameters set out within the BRE guidelines.

10.59 When determining the overall scale of effect per property for daylight and sunlight, as per Appendix I of the BRE Guidelines, consideration has been given to the proportion of rooms/ windows affected, as well as the percentage alterations, absolute changes, existing levels, and retained levels.

10.60 As such, the assessment criteria/ thresholds are not applied mechanistically, and professional judgement must be applied to all numerical analyses prior to reaching a conclusion on the likely significance of effects. For example, if a window has a very low existing VSC value, even a very small absolute change in VSC could be disproportionately represented as a percentage change, when in reality the change is immaterial and would have little if any bearing on the amenity to the room behind the window.

10.61 Finally, the VSC and NSL methodologies must be considered holistically, not in isolation. This is because the VSC tests consider a calculation spot in the centre of a window and does not account for the size of the window (i.e., the VSC could be the same with a postage stamp size window or curtain glazing, whereas the NSL calculation considers the area of a room receiving direct skylight through the whole window/ windows. A degree of professional judgement is therefore applied when categorising the impacts into the ascribed categories.

10.62 The nature of the effects may be either adverse (negative or detrimental) or beneficial (advantageous or positive).

10.63 The scale of each effect has been categorised as being:

- Major;
- Moderate;
- Minor; or
- Negligible.

10.64 More information on how the scale of effect has been determined for each type of assessment undertaken (including determining whether it is significant) is discussed in the following sections of this ES chapter.

Overshadowing

10.65 The results of the sun on ground analysis are compared against the criteria set out in the 2022 BRE Guidelines, as discussed further above.

10.66 On 21 March, which is the principle point of assessment recommended by the BRE, the sun does not rise above 40° in London. In urban environments, where buildings are taller and the obstruction angles between properties are regularly already in excess of 40°, sunlight penetration is harder to achieve, particularly in the winter months as the lower angles of sun are easily obstructed by modest obstructions. Nevertheless, the sun on ground analysis has been undertaken on the suggested March 21 date.

Solar Glare

10.67 The magnitude of impact in relation to solar glare effects is based on the scale as set out in Table 10.4.

Defining the Effect

Daylight, Sunlight and Sun on Ground

10.68 The assessment criteria specified within the BRE only suggests where a change in daylight and sunlight may be noticeable to the occupants of buildings or users of an area of amenity. It does not further define effects beyond this apart from within Appendix H – Environmental Impact Assessment paragraphs H3-H4 in which it *states that:*

"Adverse impacts occur when there is a significant decrease in the amount of skylight and sunlight reaching an existing building where it is required, or in the amount of sunlight reaching an open space.

The assessment of impact will depend on a combination of factors, and there is no simple rule of thumb that can be applied."

10.69 Appendix H (paragraph H6) states that:

"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."

10.70 The Appendix H definitions of beneficial, negligible, minor adverse and major adverse effects are shown in Table 10.2 below. Moderate adverse effects are not specifically defined in the BRE.

Table 10.2 BRE Appendix H Daylight, Sunlight and Overshadowing Criteria

2022 BRE Criteria	
Beneficial (paragraph H8)	*"…a significant increase in the amount of skylight and sunlight reaching an existing building where it is required, or in the amount of sunlight reaching an open space."*
Negligible (paragraph H5)	*"Where the loss of light is well within the guidelines, or only a small number of windows or a limited area of open space lose light (within the guidelines)"*
Minor Adverse (Paragraphs H5-H6)	*"Where the loss of skylight or sunlight does not meet the guidelines in this document…factors tending towards a minor adverse impact include:* • *Only a small number of windows or limited area of open space are affected* • *The loss of light is only marginally outside the guidelines* • *An affected room has other sources of skylight or sunlight* • *The affected building or open space only has a low level requirement for skylight or sunlight*
Major Adverse (paragraph H7)	*"Factors tending towards a major adverse impact include:* • *A large number of windows or large area of open space are affected* • *The loss of light is substantially outside the guidelines* • *All the windows in a particular property are affected"*

10.71 The scale of these effects have been described as negligible, minor, moderate or major and in all instances are considered long term as they will be caused throughout the lifespan of the completed development. The classification for the scale of effects to individual windows/rooms are based on the relative change between the existing and proposed daylight and sunlight values and applying with professional judgement, which is used to assign an overall scale of effect to each property. This is outlined in more detail below.

10.72 Where there are relative changes to individual windows/rooms based on the relative changes they are classified as follows.

Table 10.3 Magnitude of Impact Descriptors – Daylight, Sunlight and Overshadowing

Impact Magnitude	Descriptor	
Major Adverse	Impact is outside BRE Guidelines	<0.60 times former value (>40% reduction)
Moderate Adverse		0.60-0.69 times former value (31% to 40% reduction)
Minor Adverse		0.70-0.79 times former value (21% to 30% reduction)
Negligible	Impact is inside BRE Guidelines	Typically, >0.80 times former value (20% reduction or less)

10.73 Professional judgement is then used to establish the overall scale of the effect to the building. Relevant considerations include where baseline levels of daylight or sunlight were already low, for example, where the view of sky from a window was restricted by balconies or other parts of the host building, the magnitude of absolute reduction was considered when determining the significance of effect.

Solar Glare

10.74 There are no quantitative criteria within the 2022 BRE Guidelines regarding acceptable levels of solar glare. There is, however, research which suggests that the significance of a glare occurrence is largely dependent upon its angle from the line of sight, the strength of the glare and the relevance of this with respect to the human field of vision.

10.75 Glare occurrences that could encroach on the foveal view (3° from the visual axis) are likely to cause significant visual impairment or distraction. It is also likely that the viewer's line of sight would vary from the chosen view direction at each Viewpoint. To account for this, along with the likely range of movement of the eye, it is considered that lengthy occurrences within approximately 10° of the centre of the visual axis are potentially hazardous. In this scenario, the adverse effect would, dependent upon the duration and veiling luminance of the instance, be considered Major Adverse (significant) and mitigation may be required.

10.76 Between 10° and 30° corresponds to Near Periphery field of view and therefore where glare occurs between these angles, the adverse effect would be considered Minor Adverse (not significant) or Moderate Adverse (significant) depending upon the location and use of the adjacent sensitive receptor and the period of time the glare occurs for.

10.77 An angle of greater than 30° from the view direction corresponds to the Far Periphery field of view and, therefore, the risk of the reflection causing a hazard is reduced. As such, the adverse effect would be considered to be Minor Adverse or Negligible (not significant).

Table 10.4 Solar Glare Criteria

Scale and Nature	Descriptor
Major Adverse	Glare angles < 3° & a Veiling Luminance of over 500 cd m-²
Moderate Adverse	Glare angles between 3° and 10° for long period of time & a Veiling Luminance of over 500 cd m-²
Minor Adverse	Glare angles between 10° and 30° for long period of time or between 3° and 10° for short period of time
Negligible	Glare angles > 30° or between 10° and 30° for short period of time

Categorising Likely Significant Effects

10.78 Negligible or Minor Adverse / Beneficial effects are considered not to be significant. Significant effects are considered to be Moderate to Major Adverse / Beneficial. All effects defined within this chapter are considered to be local, direct and permanent.

RECEPTOR AND RECEPTOR SENSITIVTY

10.79 All receptors considered in this assessment are considered to be of high sensitivity.

Daylight, Sunlight and Overshadowing

10.80 The residential properties included within our scope of analysis are highlighted green in Figure 10.1 while the student housing block (Schafer House) is highlighted orange (with the site outlined in dotted red). The areas relevant for overshadowing are outlined in yellow.

Key

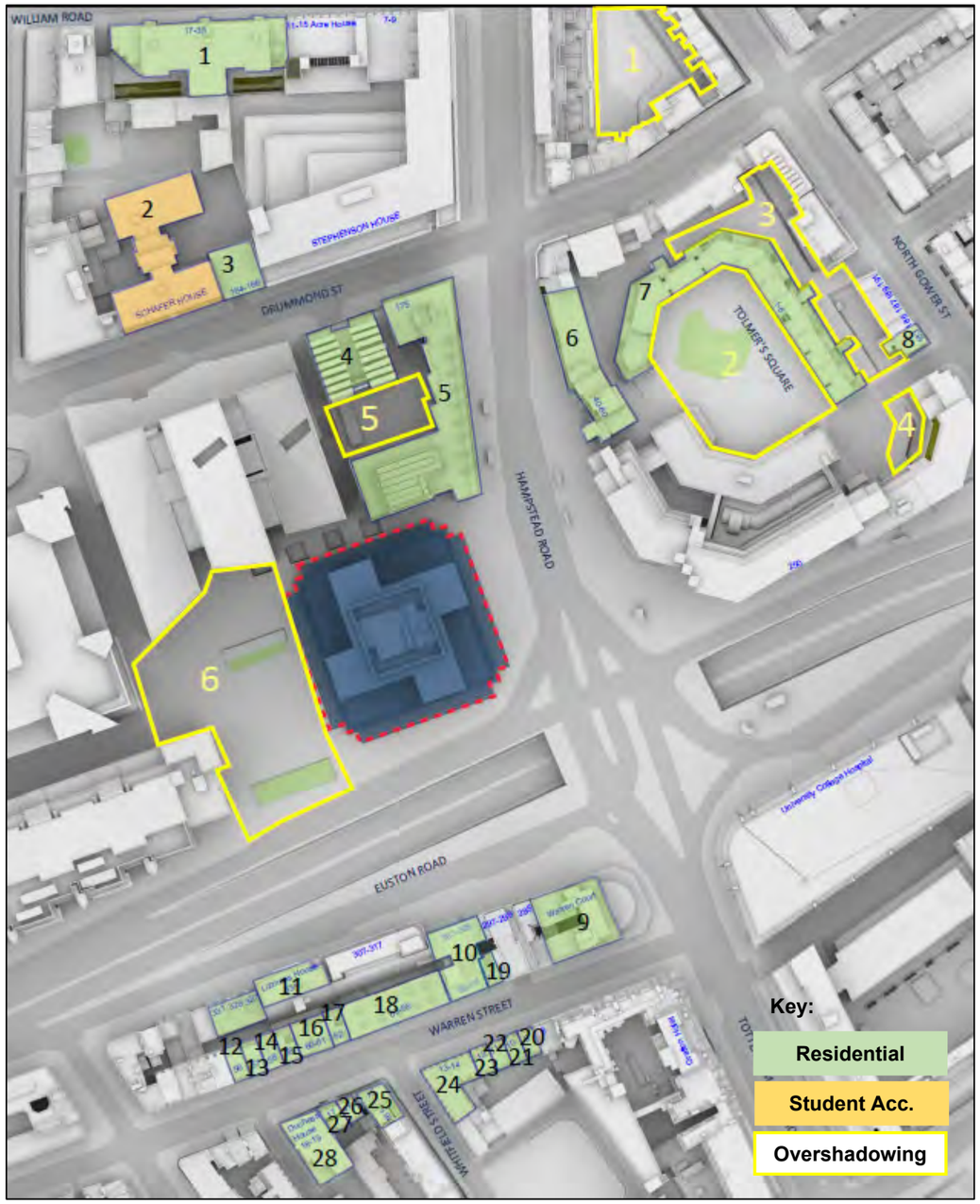
Daylight and Sunlight Receptors

1	17 to 33 William Road	**2**	Schafer House, University College	**3**	164-166 Drummond Street
4	Triton Building	**5**	175 Drummond Street	**6**	40-60 Hampstead Road
7	1-6 Tolmers Square	**8**	183 North Gower Street	**9**	Warren Court, Euston Road
10	301-305 Euston Road & 69-70 Warren Street	**11**	Lizmans House, 321 Euston Road	**12**	56 Warren Street (Assumed windows)
13	57 Warren Street (Assumed windows)	**14**	58 Warren Street (Assumed windows)	**15**	59 Warren Street
16	60-61 Warren Street	**17**	62 Warren Street	**18**	63-68 Warren Street
19	71 Warren Street	**20**	9 Warren Street	**21**	10 Warren Street
22	11 Warren Street	**23**	12 Warren Street	**24**	13-14 Warren Street & 118-120 Whitfield Street
25	15 Warren Street & 161 Whitfield Street	**26**	16 Warren Street	**27**	17 Warren Street
28	Duchess House, 18-19 Warren Street				

Overshadowing Receptors

1	George Mews	**2**	Tolmer's Square (main square)	**3**	Tolmer's Square (private amenity areas)
4	Tolmer's Square (private amenity areas)	**5**	Triton Building Courtyard	**6**	Euston Square

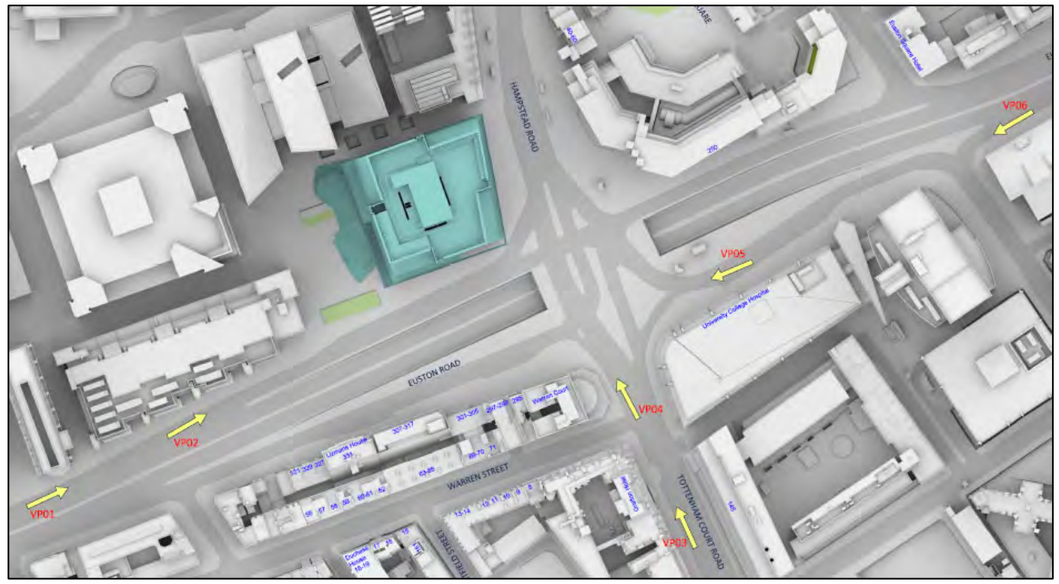
Figure 10.1 Location of Sensitive Receptors – Daylight, Sunlight and Overshadowing



Solar Glare

10.81 In relation to solar glare, the sensitive receptors include major road junctions, signals and pedestrian crossings within the immediate vicinity of the site (to the south), where drivers have the potential to be affected. The relevant areas sensitive to solar glare in the immediate vicinity of the site are identified in Figure 10.2 below.

Figure 10.2 Location of Sensitive Receptors – Solar Glare



VP01	Pedestrian crossing heading east on Euston Road (A501)	**VP02**	Changing lane to come off Euston Road (A501) heading east	**VP03**	Pedestrian crossing heading north on Tottenham Court Road
VP04	Traffic lights heading north on Tottenham Court Road	**VP05**	Traffic lights heading west on Euston Road	**VP06**	Pedestrian crossing heading west on Euston Road

BASELINE CONDITIONS

10.82 The existing buildings and structures have been modelled from 3D Point Cloud survey data which form the baseline assessment conditions.

10.83 Detailed drawings of the existing baseline scenario can be found at **ES Volume 3, Appendix: Daylight, Sunlight, Overshadowing and Solar Glare – Annex 1**. The drawings indicate the position of the existing surrounding receptors in relation to the site.

Daylight

10.84 The existing baseline VSC and NSL daylight conditions were assessed. Full detailed results can be found in **ES Volume 3, Appendix: Daylight, Sunlight, Overshadowing and Solar Glare – Annex 2.**

10.85 The baseline daylight results for VSC and NSL are summarised in Table 10.5 and Table 10.6 respectively.

Table 10.5 Summary Baseline VSC Results

BASELINE VSC SUMMARY		
Address	**No. of Windows**	**No. of Windows that meet VSC criterion (>27%)**
17 to 33 William Road	106	11
Schafer House, University College	162	0
164-166 Drummond Street	51	0
Triton Building	298	108
175 Drummond Street	14	0
40-60 Hampstead Road	62	2
1-6 Tolmers Square	95	12
183 North Gower Street	16	1
Warren Court, Euston Road	54	28
301-305 Euston Road & 69-70 Warren Street	2	0
Lizmans House, 321 Euston Road	42	0
56 Warren Street (Assumed windows)	3	0
57 Warren Street (Assumed windows)	6	0
58 Warren Street (Assumed windows)	6	0
59 Warren Street	8	0
60-61 Warren Street	15	0
62 Warren Street	11	0
63-68 Warren Street	52	0
71 Warren Street	3	0
9 Warren Street	1	0
10 Warren Street	1	0
11 Warren Street	1	0
12 Warren Street	1	0
13-14 Warren Street & 118-120 Whitfield Street	24	10
15 Warren Street & 161 Whitfield Street	19	16
16 Warren Street	16	10
17 Warren Street	17	11
Duchess House, 18-19 Warren Street	20	14
TOTAL	**1,106**	**223**

10.86 The baseline VSC results confirm that a total of 223 of the 1,106 (20%) habitable windows tested currently meet the BRE guideline target of at least 27% VSC.

10.87 It is clear from these results that a number of the surrounding properties experience lower levels of VSC in the existing condition. This is typical of a dense urban environment such as this, particularly where windows are located beneath overhangs which is the case for a number of the buildings included within the scope of analysis.

Table 10.6 Summary Baseline NSL Results

BASELINE NSL SUMMARY		
Address	**No. of Rooms**	**No. of Rooms that Receive NSL in excess of 80%**
17 to 33 William Road	83	46
Schafer House, University College	150	1
164-166 Drummond Street	17	0
Triton Building	140	95
175 Drummond Street	14	2
40-60 Hampstead Road	60	1
1-6 Tolmers Square	61	54
183 North Gower Street	16	4
Warren Court, Euston Road	37	29
301-305 Euston Road & 69-70 Warren Street	2	2
Lizmans House, 321 Euston Road	42	38
56 Warren Street (Assumed windows)	3	2
57 Warren Street (Assumed windows)	4	0
58 Warren Street (Assumed windows)	4	0
59 Warren Street	5	1
60-61 Warren Street	12	0
62 Warren Street	6	1
63-68 Warren Street	26	0
71 Warren Street	3	0
9 Warren Street	1	0
10 Warren Street	1	1
11 Warren Street	1	1
12 Warren Street	1	1
13-14 Warren Street & 118-120 Whitfield Street	9	9
15 Warren Street & 161 Whitfield Street	13	13
16 Warren Street	6	4
17 Warren Street	7	5
Duchess House, 18-19 Warren Street	9	9
TOTAL	**733**	**319**

10.88 The baseline NSL results confirm that a total of 319 of the 733 (44%) habitable rooms tested currently have daylight penetrating to in excess of 80% of the working plane. This is typical of a dense urban environment such as this, particularly where rooms are located beneath overhangs which is the case for a number of the buildings included within the scope of analysis.

Sunlight

10.89 The existing baseline APSH sunlight conditions were assessed. Full detailed results can be found in **ES Volume 3, Appendix: Daylight, Sunlight, Overshadowing and Solar Glare – Annex 2.**

10.90 The baseline results for the properties relevant for APSH are summarised in Table 10.7 below. Rooms known to be in use as bedrooms and kitchens have not been considered and are not included in Table 10.7 below.

Table 10.7 Summary Baseline APSH Results

BASELINE ROOM APSH SUMMARY		
Address	**No. of Rooms**	**No. of Rooms that Meet APSH Criteria**
17 to 33 William Road	36	13
Schafer House, University College	49	20
164-166 Drummond Street	11	0
175 Drummond Street	46	28
40-60 Hampstead Road	60	10
1-6 Tolmers Square	22	17
183 North Gower Street	16	10
13-14 Warren Street & 118-120 Whitfield Street	3	3
15 Warren Street & 161 Whitfield Street	2	2
16 Warren Street	1	1
17 Warren Street	1	1
Duchess House, 18-19 Warren Street	3	3
TOTAL	**250**	**108**

10.91 For sunlight, there are 250 main living rooms surrounding the site, which have a southerly orientation (i.e., at least one window that is orientated within 90 degrees of due south) and are therefore a consideration in sunlight terms. These have all been assessed in terms of both winter and annual APSH.

10.92 108 of the 250 rooms assessed (40%) will meet the APSH criteria in the existing condition, which is typical of a dense urban environment such as this.

Table 10.8 Summary Baseline Overshadowing Results

BASELINE OVERSHADOWING SUMMARY		
Area	**Baseline Conditions (% of Area Receiving two Hours of sun on 21 March)**	**>50% of the Area in the Existing**
1. George Mews	70.5%	Yes
2. Tolmers Square (main square)	74.7%	Yes
3. Tolmers Square (private amenity areas 1)	62.8%	Yes
4. Tolmers Square (private amenity areas 2)	0.0%	No
5. Triton Building Courtyard	0.0%	No
6. Euston Square	96%	Yes

10.93 In terms of overshadowing, four of the six areas tested will achieve 2 hours of direct sunlight to over 50% of the area on the 21 March. The other two areas achieve 2 hours of direct sunlight to 0% of the area, this is not uncommon in dense urban environments, particularly where areas are surrounded by tall buildings.

POTENTIAL EFFECTS

Completed Development

Daylight and Sunlight

10.94 There are 1,106 windows serving 733 residential habitable rooms surrounding the site which are relevant for assessment in daylight terms. These have all been assessed in terms of both VSC and NSL. Full detailed results are available with **ES Volume 3, Appendix: Daylight, Sunlight, Overshadowing and Solar Glare – Annex 2,** and the daylight results are summarised in Table 10.9 and 0 below.

10.95 Rows shaded in green demonstrate full compliance with the BRE Guidelines.

Table 10.9 Existing Baseline + Proposed Development VSC Summary

Address	Total that Meet BRE Guidelines	Below BRE Guidelines				Total No. of Windows
		20-29% Loss	30-39.9% Loss	>=40% Loss	Total	
17 to 33 William Road	106	0	0	0	0	106
Schafer House, University College	162	0	0	0	0	162
164-166 Drummond Street	**51**	**0**	**0**	**0**	**0**	**51**
Triton Building	**215**	**68**	**15**	**0**	**83**	**298**
175 Drummond Street	**7**	**7**	**0**	**0**	**7**	**14**
40-60 Hampstead Road	**53**	**0**	**2**	**7**	**9**	**62**
1-6 Tolmers Square	**91**	**3**	**1**	**0**	**4**	**95**
183 North Gower Street	16	0	0	0	0	16
Warren Court, Euston Road	54	0	0	0	0	54
301-305 Euston Road & 69-70 Warren Street	2	0	0	0	0	2
Lizmans House, 321 Euston Road	42	0	0	0	0	42
56 Warren Street (Assumed windows)	3	0	0	0	0	3
57 Warren Street (Assumed windows)	6	0	0	0	0	6
58 Warren Street (Assumed windows)	6	0	0	0	0	6
59 Warren Street	8	0	0	0	0	8
60-61 Warren Street	15	0	0	0	0	15
62 Warren Street	11	0	0	0	0	11
63-68 Warren Street	52	0	0	0	0	52
71 Warren Street	3	0	0	0	0	3
9 Warren Street	1	0	0	0	0	1
10 Warren Street	1	0	0	0	0	1
11 Warren Street	1	0	0	0	0	1
12 Warren Street	1	0	0	0	0	1
13-14 Warren Street & 118-120 Whitfield Street	24	0	0	0	0	24
15 Warren Street & 161 Whitfield Street	19	0	0	0	0	19

Address	Total that Meet BRE Guidelines	Below BRE Guidelines				Total No. of Windows
		20-29% Loss	30-39.9% Loss	>=40% Loss	Total	
16 Warren Street	16	0	0	0	0	16
17 Warren Street	17	0	0	0	0	17
Duchess House, 18-19 Warren Street	20	0	0	0	0	20
TOTAL	1,003 (91%)	78 (7%)	18 (2%)	7 (1%)	103 (9%)	1,106

Table 10.10 Existing Baseline + Proposed Development NSL Summary

Address	Total that Meet BRE Guidelines	Below BRE Guidelines				Total No. of Rooms
		20-29% Loss	30-39.9% Loss	>=40% Loss	Total	
17 to 33 William Road	83	0	0	0	0	83
Schafer House, University College	144	5	1	0	6	150
164-166 Drummond Street	12	1	1	3	5	17
Triton Building	**134**	**6**	**0**	**0**	**6**	**140**
175 Drummond Street	7	2	1	4	7	14
40-60 Hampstead Road	49	1	3	7	11	60
1-6 Tolmers Square	61	0	0	0	0	61
183 North Gower Street	16	0	0	0	0	16
Warren Court, Euston Road	37	0	0	0	0	37
301-305 Euston Road & 69-70 Warren Street	2	0	0	0	0	2
Lizmans House, 321 Euston Road	42	0	0	0	0	42
56 Warren Street (Assumed windows)	3	0	0	0	0	3
57 Warren Street (Assumed windows)	4	0	0	0	0	4
58 Warren Street (Assumed windows)	4	0	0	0	0	4
59 Warren Street	5	0	0	0	0	5
60-61 Warren Street	12	0	0	0	0	12
62 Warren Street	6	0	0	0	0	6
63-68 Warren Street	26	0	0	0	0	26
71 Warren Street	3	0	0	0	0	3
9 Warren Street	1	0	0	0	0	1
10 Warren Street	1	0	0	0	0	1
11 Warren Street	1	0	0	0	0	1
12 Warren Street	1	0	0	0	0	1
13-14 Warren Street & 118-120 Whitfield Street	9	0	0	0	0	9
15 Warren Street & 161 Whitfield Street	13	0	0	0	0	13
16 Warren Street	6	0	0	0	0	6
17 Warren Street	7	0	0	0	0	7
Duchess House, 18-19 Warren Street	9	0	0	0	0	9
TOTAL	698 (95%)	16 (2%)	6 (1%)	14 (2%)	36 (5%)	733

10.96 The VSC results confirm that a total of 1,003 of the 1,106 (91%) habitable windows tested meet the BRE guidelines so experience a Negligible effect (not significant). 78 (7%) of the remaining windows would experience a Minor Adverse (not significant) effect meaning 1,081 windows (98%) in total experience effects that are not significant.

10.97 18 (2%) would experience a potentially Moderate Adverse effect (**significant**) and 7 (0.6%) would experience a potentially Major Adverse (**significant**) effect, prior to the application of professional judgement.

10.98 The NSL results confirm that a total of 698 of the 733 (95%) habitable rooms tested meet the BRE guideline so experience a Negligible effect (not significant). 16 (2%) of the remaining rooms would experience a Minor Adverse (not significant) effect so 714 rooms (97%) in total would experience effects that are not significant. 6 (1%) rooms would experience a potentially Moderate Adverse (**significant**) effect and 14 (2%) would experience a Major Adverse (**significant**) effect prior to the application of professional judgement.

10.99 For sunlight, there are 250 main living rooms surrounding the site, which have a southerly orientation (i.e., at least one window that is orientated within 90 degrees of due south) and are therefore a consideration in sunlight terms. These have all been assessed in terms of both winter and annual APSH.

10.100 Full detailed results are available within **ES Volume 3, Appendix: Daylight, Sunlight, Overshadowing and Solar Glare – Annex 2** and are summarised in Table 10.11 below. Rows shaded in green demonstrate full compliance with the BRE Guidelines

Table 10.11 Existing Baseline + Proposed Development APSH Summary

Address	Meet BRE Guidelines	No. of rooms below the APSH stated in BRE Guidelines								Total No. Rooms
		Below Threshold for Winter APSH				Below Threshold for Total APSH				
		20-30%	30-40%	>40%	Total	20-30%	30-40%	>40%	Total	
17 to 33 William Road	36	0	0	0	0	0	0	0	0	36
Schafer House, University College	49	0	0	0	0	0	0	0	0	49
164-166 Drummond Street	11	0	0	0	0	0	0	0	0	11
Triton Building	46	0	0	0	0	0	0	0	0	46
40-60 Hampstead Road	60	0	0	0	0	0	0	0	0	60
1-6 Tolmers Square	22	0	0	0	0	0	0	0	0	22
183 North Gower Street	16	0	0	0	0	0	0	0	0	16
13-14 Warren Street & 118-120 Whitfield Street	3	0	0	0	0	0	0	0	0	3
15 Warren Street & 161 Whitfield Street	2	0	0	0	0	0	0	0	0	2
16 Warren Street	1	0	0	0	0	0	0	0	0	1
17 Warren Street	1	0	0	0	0	0	0	0	0	1
Duchess House, 18-19 Warren Street	3	0	0	0	0	0	0	0	0	3
TOTAL	250	0	0	0	0	0	0	0	0	250

10.101 The existing and Proposed Development APSH results confirm that a total of 250 of the 250 (100%) southerly orientated main living rooms tested meet the BRE guideline so experience a Negligible (not significant) effect.

10.102 Of the 28 properties assessed, the effect to the daylight amenity of the 22 properties listed within Table 10.12 would be permanent, direct, Negligible (not significant).

Table 10.12 Properties Experiencing a Negligible Daylight Effect

Address
17 to 33 William Road
183 North Gower Street
Warren Court, Euston Road
301-305 Euston Road & 69-70 Warren Street
Lizmans House, 321 Euston Road
56 Warren Street (Assumed windows)
57 Warren Street (Assumed windows)
58 Warren Street (Assumed windows)
59 Warren Street
60-61 Warren Street
62 Warren Street
63-68 Warren Street
71 Warren Street
9 Warren Street
10 Warren Street
11 Warren Street
12 Warren Street
13-14 Warren Street & 118-120 Whitfield Street
15 Warren Street & 161 Whitfield Street
16 Warren Street
17 Warren Street
Duchess House, 18-19 Warren Street

10.103 The remaining six properties experience some effects that could be considered significant and are discussed below in more detail with a conclusion drawn on the overall impact and its significance on each property, once more detailed consideration has been given on a case-by-case basis applying professional judgement as appropriate.

Schafer House, University College

10.104 This building is in use as student accommodation. It was possible to obtain partial floorplans which have been incorporated within the model.

Daylight

10.105 A total of 162 windows serving 150 rooms are understood to face the site and have been included within the technical analysis.

10.106 All 162 windows (100%) will satisfy the typical BRE Guideline recommendations in terms of the VSC form of assessment and thus experience a Negligible effect (not significant).

10.107 144 of the 150 rooms (96%) will satisfy the typical BRE recommendations in regard to the NSL assessment and thus experience a Negligible effect (not significant).

10.108 Two of the six rooms that do not meet the typical BRE recommendations for NSL are living/kitchen/dining rooms (LKD's). These rooms experience a relative change in NSL of between 21% and 24%, which is Minor Adverse and fractionally beyond the 20% criteria suggested within the BRE Guidelines.

10.109 A further three bedrooms, which face directly onto a projecting wing of the building, have a restricted outlook, experience a relative change of between 22% and 27%, which is considered Minor Adverse. It should be noted that bedrooms are considered to be 'less important' by the BRE for NSL.

10.110 The remaining room is a kitchen/diner (KD) which experiences a relative change of 36%, which is considered Moderate Adverse. It is worth noting that the window serving this room is located below a slight overhang, which restricts the view of the sky within the room.

10.111 An additional assessment has been undertaken to demonstrate the limiting effect of the overhang. In this assessment, this rooms would satisfy the BRE Guidelines for NSL demonstrating that the relative changes in daylight can be attributed to the existing architectural features of the building rather than the proposed massing itself.

10.112 The building would remain fully BRE compliant for VSC and the majority of effects that fall short of guidance for NSL would be considered Minor Adverse. There is only one instance where a Moderate Adverse effect in NSL would occur. Therefore, the overall effect to this property is considered to be permanent, direct and Minor Adverse (not significant).

Sunlight

10.113 There are 49 southernly oriented rooms that have been considered for sunlight.

10.114 All 49 rooms (100%) will satisfy the typical BRE recommendations for both winter and total APSH assessment. Therefore, the effect of the Proposed Development on the sunlight amenity to this property is considered to be permanent, direct and Negligible (not significant).

164-166 Drummond Street

10.115 This building is in use as residential accommodation. It was possible to obtain floorplans from the LBC planning portal which have been incorporated within the model.

Daylight

10.116 A total of 51 windows serving 17 rooms are understood to face the site and have been included within the technical analysis.

10.117 All 51 windows (100%) will satisfy the typical BRE Guideline recommendations in terms of the VSC form of assessment and thus experience a Negligible effect (not significant).

10.118 12 of the 17 rooms (70%) will satisfy the typical BRE recommendations in regard to the NSL assessment and thus experience a Negligible effect (not significant).

10.119 One of the five bedrooms that do not meet the typical BRE recommendations for NSL would experience a relative change of 28%, which is considered Minor Adverse. A further bedroom will experience a relative change of 36%, which is considered Moderate Adverse, while the remaining three bedrooms will experience a relative change of between 40% and 47%, which is considered Major Adverse. It should be noted that these rooms are bedrooms that are considered 'less important' in NSL terms.

10.120 The building would remain fully BRE compliant for VSC and only a handful of bedrooms which are considered by the BRE to be 'less important' fall short of guidance for NSL. Therefore, the overall effect to this property is considered to be permanent, direct and Minor Adverse (not significant).

Sunlight

10.121 There are 11 southernly oriented rooms that have been considered for sunlight.

10.122 All 11 rooms (100%) will satisfy the typical BRE recommendations for both winter and total APSH assessment. Therefore, the effect of the Proposed Development on the sunlight amenity to this property is considered to be permanent, direct and Negligible (not significant).

Triton Building

10.123 It is understood that this residential building made up of multiple flats. Layouts have been modelled from floorplans obtained from LBC planning records.

10.124 This building contains numerous, large external projecting balconies along the southern façade, directly facing the site. As explained earlier in this ES chapter, these balconies materially limit the access of skylight to the windows below making them particularly sensitive to changes in massing opposite. Subsequently, a detailed examination of the effects is required in advance of reaching a conclusion on the significance of the effects. These balconies materially limit the access of skylight to the windows below making them particularly sensitive to changes in massing opposite. Subsequently, a detailed examination of the effects is required in advance of reaching a conclusion on the significance of the effects.

Daylight

10.125 A total of 298 windows serving 140 rooms are understood to face the Site and have been included within the technical analysis.

10.126 215 of the 298 (72%) windows will satisfy the typical BRE Guideline recommendations in terms of the VSC form of assessment and thus experience a Negligible effect (not significant).

10.127 68 of the remaining 83 windows, that do not meet the BRE recommendations, experience a relative change of between 20-30% which is considered Minor Adverse. Therefore, a total of 283 out of 298 windows (95%) experience alterations in VSC that are not significant. The remaining 15 windows experience relative changes of between 31-36% which is considered Moderate Adverse. The vast majority of these windows are located beneath balconies which restricts their receipt of daylight. As outlined within the BRE Guidelines and additional assessment which negates the limiting effect of the balconies has been undertaken which is discussed further below.

10.128 In regard to NSL, 134 of the 140 rooms (95%) will satisfy the typical BRE recommendations and thus experience a negligible effect (not significant).

10.129 The remaining six rooms would experience a relative change in NSL of between 21-22% which is considered Minor Adverse and fractionally beyond guidance. It should be noted that these rooms are 'less important' bedrooms. Therefore, 100% of the rooms experience alterations in NSL that are not significant.

10.130 An additional assessment has been undertaken which negates the limiting effect of the balconies. As outlined within the BRE Guideline, additional calculations have been taken for VSC and NSL with the balconies removed.

10.131 In this assessment, 213 of the 215 windows assessed would satisfy the BRE Guidelines for VSC. The remaining two windows experience a relative change of 21% which is fractionally beyond guidance. In terms of NSL, all of the rooms would meet guidance with the balconies removed.

10.132 In accordance with the recommendations set out in the BRE Guidelines, this additional assessment demonstrates that the relative changes in VSC and NSL beyond the BRE Guideline targets, as a result of the Proposed Development, is almost exclusively attributable to the existing architectural features of the building rather than the proposed massing itself.

10.133 Overall, the daylight effect to this property is considered to be permanent, direct and Minor Adverse (not significant).

Sunlight

10.134 There are 46 southernly oriented rooms that have been considered for sunlight.

10.135 All 46 rooms (100%) will satisfy the typical BRE recommendations for both winter and total APSH assessment. Therefore, the effect of the Proposed Development on the sunlight amenity to this property is considered to be permanent, direct and Negligible (not significant).

175 Drummond Street

10.136 It is understood that this residential building is made up of multiple flats. Layouts have been modelled from outline floorplans obtained from LBC planning records.

10.137 On the basis of this information, it appears that bedrooms face towards the site with the main habitable living spaces facing away from the site towards Drummond Street.

Daylight

10.138 A total of 14 windows serving 14 bedrooms face the site and have been included within the technical analysis.

10.139 Seven of the 14 windows (50%) will satisfy the typical BRE Guideline recommendations in terms of the VSC form of assessment and thus experience a Negligible effect (not significant).

10.140 The remaining seven windows, that do not meet the BRE recommendations for VSC, experience a relative change of between 21-27% which is considered Minor Adverse.

10.141 In terms of NSL, seven of the 14 rooms (50%) will satisfy the typical BRE recommendations and thus experience a Negligible effect (not significant).

10.142 Two of the seven bedrooms that do not meet the typical BRE recommendations for NSL would experience a relative change of 21%, which is considered Minor Adverse. A further bedroom will experience a relative change of 38%, which is considered Moderate Adverse. The remaining four bedrooms will experience a relative change of between 42% and 48%, which is considered Major Adverse. It should be noted that these rooms are 'less important' bedrooms and relate to flats where the main living accommodation faces away from the site and remain unaffected by the Proposed Development.

10.143 Overall, the VSC effects that fall short of guidance would be considered Minor Adverse. There are a small number of bedrooms that experience larger alterations in NSL however, bedrooms are considered less important in NSL terms. Given there are impacts in both VSC and NSL the overall effect to this property is considered to be permanent, direct and Minor to Moderate Adverse (**significant**).

Sunlight

10.144 All of the rooms that face towards the site that serve this property are in use as a bedroom, which the BRE Guidelines state do not need to be considered for sunlight.

40-60 Hampstead Road

10.145 It is understood that this is a residential building made up of multiple flats. Room layouts/uses have been assumed in the absence of any publicly available information.

10.146 Many windows serving the front of this building are located beneath deep external walkways which heavily restrict the receipt of daylight to the windows and rooms below. This is evidenced by the average VSC level for the windows on the 1st floor being just 5% and the average VSC level for the windows on the 2nd floor being less than 1%. A number of windows on both floors (12) currently achieve a VSC level of 0%. In situations such as this, where there are very low existing values, small absolute changes in daylight levels can easily result in large relative changes however these results must be treated with caution when arriving at a conclusion on the significance of effects.

Daylight

10.147 A total of 62 windows serving 60 rooms are understood to face the site and have been included within the technical analysis.

10.148 53 of the 62 windows (85%) will satisfy the typical BRE Guideline recommendations in terms of the VSC form of assessment and thus experience a Negligible effect (not significant).

10.149 The remaining nine windows, have an existing VSC value of 1% or less with the majority of windows achieving a VSC of 0.1% or 0.2%. This is not a measurable level or a useful amount of VSC to provide internal illuminance to the rooms behind the windows. The majority of the windows experience an absolute change of less than 0.1% VSC and no more than a 0.4% change. Such fractional changes are clearly imperceptible and should effectively be discounted.

10.150 49 of the 60 rooms (81%) will satisfy the typical BRE recommendations in regard to the NSL assessment and thus experience a Negligible effect (not significant).

10.151 The remaining 11 rooms achieve sky visibility to just 18% of the room area or less in the existing condition, with the majority of rooms achieving sky visibility to between 0%-5% of the room. This is not a measurable or useful

amount of light and therefore the rooms will currently be reliant on artificial lighting for most if not all times of the year. Subsequently, the change recorded in the technical assessment will have little bearing on the light amenity within these rooms.

10.152 An additional assessment has been undertaken to demonstrate the limiting effect of the overhangs. As outlined within the BRE Guideline, additional calculations have been taken for VSC and NSL which negates the limiting effect of the balconies.

10.153 In this assessment, all of the windows and rooms would satisfy the BRE Guidelines for VSC and NSL demonstrating that the relative changes in daylight can be attributed to the existing architectural features of the building rather than the proposed massing itself.

10.154 In consideration of the above, the overall effect to this property is considered to be permanent, direct and Minor Adverse (not significant).

Sunlight

10.155 There are 60 southernly oriented rooms that have been considered for sunlight.

10.156 All 60 rooms (100%) will satisfy the typical BRE recommendations for both winter and total APSH assessment. Therefore, the effect of the Proposed Development on the sunlight amenity to this property is considered to be permanent, direct and Negligible (not significant).

1-6 Tolmers Square

10.157 It is understood that this is a residential building made up of multiple flats. It was possible to obtain partial floorplans which have been incorporated within the model. Where layouts are not known reasonable assumption have been made.

10.158 There are a number of windows and rooms within this building that are located beneath recessed balconies and therefore experience very low levels of daylight in the existing condition between 0% and 1.9% VSC. In situation such as this, small absolute changes in daylight and sunlight levels can easily result in larger relative changes than the recommended 20%.

Daylight

10.159 A total of 95 windows serving 61 rooms are understood to face the site and have been included within the technical analysis.

10.160 91 of the 95 windows (95%) will satisfy the typical BRE Guideline recommendations in terms of the VSC form of assessment and thus experience a Negligible effect (not significant).

10.161 The remaining 4 windows, that do not meet the BRE recommendations, experience a relative change of between 21% and 33%. While these alterations could be considered Minor to Moderate Adverse, the absolute change in VSC as a result of the Proposed Development does not exceed 0.1% VSC, which is an immaterial change and will not be noticeable to the occupants. Subsequently the effects are considered to be Minor Adverse.

10.162 An additional assessment has been undertaken to demonstrate the limiting effect of the balconies. In this assessment all of the windows and rooms would satisfy the BRE Guidelines, demonstrating that the relative changes in VSC can be partly attributed to the existing architectural features of the building rather than the proposed massing itself.

10.163 All 61 rooms (100%) will satisfy the typical BRE recommendations in regard to the NSL assessment and thus experience a Negligible effect (not significant).

10.164 In consideration of the above, the overall effect to this property is considered to be permanent, direct and Negligible (not significant).

Sunlight

10.165 There are 22 southernly oriented rooms that have been considered for sunlight.

10.166 All 22 rooms (100%) will satisfy the typical BRE recommendations for both winter and total APSH assessment. Therefore, the effect of the Proposed Development on the sunlight amenity to this property is considered to be permanent, direct and Negligible (not significant).

Overshadowing (Sun on Ground)

10.167 Full detailed sun on the ground assessment results can be found at **ES Volume 3, Appendix: Daylight, Sunlight, Overshadowing and Solar Glare – Annex 4**.

10.168 As discussed at paragraph 10.33, the typical date for assessing sun on ground recommended by the BRE is 21 March. A summary of the sun on ground results for the three surrounding amenity spaces relevant for assessment is presented in Table 10.13 below.

Table 10.13 Completed Development Sun on Ground summary (Surround Areas)

Area	Pre-Deconstruction Baseline Conditions (% of Area Receiving two Hours of sun on 21 March)	With Proposed Development Conditions (% of area receiving two hours of sun on 21 March)	% Alteration between Baseline and With Development Conditions	Scale of Effect
1. George Mews	70.5%	67.8%	3.8%	Negligible
2. Tolmers Square (main square)	74.7%	74.4%	0.0%	Negligible
3. Tolmers Square (private amenity areas 1)	62.8%	62.7%	0.0%	Negligible
4. Tolmers Square (private amenity areas 2)	0.0%	0.0%	0.0%	Negligible
5. Triton Building Courtyard	0.0%	0.0%	0.0%	Negligible
6. Euston Square	96%	95.8%	0.2%	Negligible

10.169 Table 10.13 shows that on the 21 March all five amenity spaces assessed will either meet the BRE criteria or experience no change and therefore will experience Negligible effects (not significant).

Solar Glare

10.170 In order to accurately understand the overall effect throughout the year at each assessment point, two assessment scenarios have been considered:

- Solar reflections as a result of the existing Euston Tower; and
- Solar reflections as a result of the Proposed Development.

10.171 As the existing building on the site is fairly substantial it is important to understand, if there is any potential for glare, how this compares to the current situation.

10.172 To understand the overall effect throughout the year at each assessment point, all of the potential instances of glare, their duration, and their relative angle as seen from the assessment point are plotted onto a grid, creating the Calendar Graphs for each point, as shown in **ES Volume 3, Appendix: Daylight, Sunlight, Overshadowing and Solar Glare – Annex 5.**

10.173 The light grey illustrates the times of daylight during each day and the dark grey illustrates the times of night. The yellow, green, orange and red colours indicate when solar glare may occur, and, depending on the colour, the angle at which it is likely to occur from the receptor. If a band of colour is tall, it means that solar glare is likely to occur for an extended period of time during that day. If the band of colour is thin and horizontal on the graph, it means solar glare may occur on each day but only for a limited time.

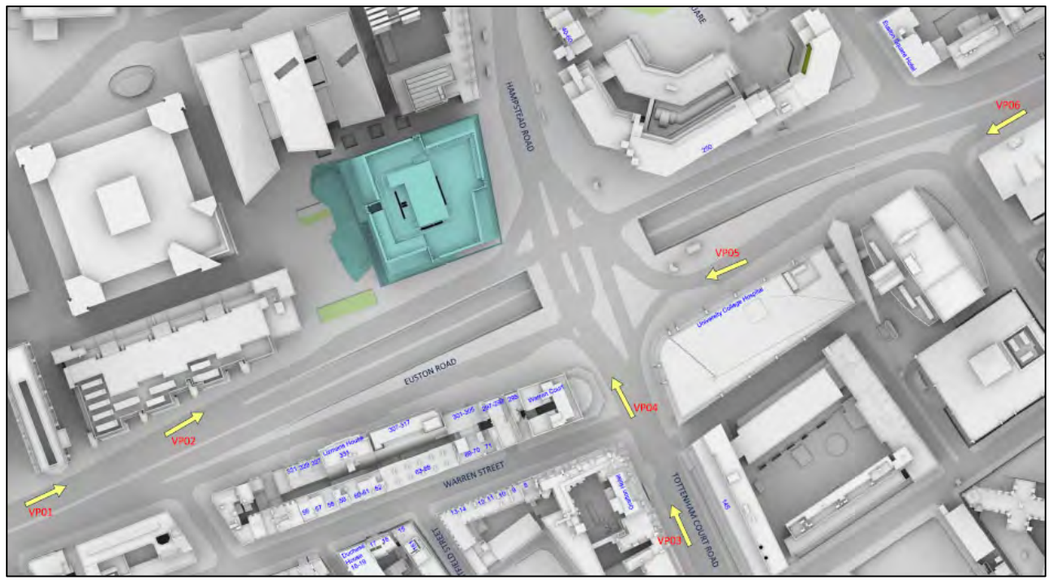
10.174 The duration of each glare occurrence as shown on the Calendar Graphs assumes a stationary viewer at the specified viewpoint. In relation to this study, however, the viewer (driver) would in fact move through the reflected beam, and this would potentially reduce the significance of the impact. Conversely the impact could be more significant if the driver is travelling along the path of a long, reflected beam.

10.175 The Calendar Graphs for the glare analysis undertaken in relation to the Proposed Development are shown in drawings P3293/GC/07-12 and the Calendar Graphs for the glare analysis undertaken in relation to the existing Euston Tower are shown in drawings P3293/GC/01-06. Both are located in **ES Volume 3, Appendix: Daylight, Sunlight, Overshadowing and Solar Glare – Annex 5**.

10.176 These Calendar Graphs illustrate that there will be some instances of reflections (less than 30 degrees from the line of view) in both the existing and proposed condition.

10.177 Visualisations have been created for each of the relevant times at the viewpoints identified in Figure 10.2 below. These visualisations are shown in drawings P3293/GI/01-06 which illustrate the existing and proposed conditions next to each other. They also include the focal point and concentric circles indicating the angle from the line of sight. These provide a reference from which potential issues can be judged.

Figure 10.3 Scope of Analysis – Solar Glare



- Viewpoint 1: Pedestrian crossing heading east on Euston Road (A501)
- Viewpoint 2: Changing lane to come off Euston Road (A501) heading east
- Viewpoint 3: Pedestrian crossing heading north on Tottenham Court Road
- Viewpoint 4: Traffic lights heading north on Tottenham Court Road
- Viewpoint 5: Traffic lights heading west on Euston Road
- Viewpoint 6: Pedestrian crossing heading west on Euston Road

10.178 The effects on each assessment viewpoint are discussed below.

Viewpoint 1

10.179 Viewpoint 1 considers the drivers view at a pedestrian crossing heading east on Euston Road (A501). It therefore considers whether the drivers view of the crossing would be affected.

10.180 The Calendar Graph shows that there will be some solar reflections between 5pm and 6pm between early April and early September in both the existing and proposed conditions. The majority of the instances will, however, occur over 30 degrees for approximately 20 minutes of the day.

10.181 In the proposed condition, there will be some very fleeting instances that occur between 10 degrees and 30 degrees intermittently between 6:45am and 6:50am in mid-April and 4:45 to 4:55pm at the end of August: however, as this is such a short period of time the effect is considered to be Negligible.

10.182 Visualisations of the views have been prepared for sample times of 5:24pm on the 10 May in the existing condition and 5:34pm on the 13 May in the proposed condition. These times have been identified from the Calendar Graphs as instances where the reflection angle is less than 30 degrees.

10.183 It can be seen from both views that the reflection of the sun is just inside of the 30 degree circle and therefore could readily be mitigated by use of the car's sun visor. Furthermore, there is unlikely to be a noticeable difference between the existing and proposed condition.

10.184 It is important to note that these views are based on optimal conditions with a clear sky whereas in reality the number of instances of solar glare identified would be less frequent than that established in this technical analysis.

10.185 Based on the scale of effect criteria given in the ''*Defining the Effect*' section, the overall effect on this assessment point is considered Minor Adverse (not significant). The position will however not materially change from the existing. As the impacts are small and could readily be mitigated by a sun visor a more detailed assessment of the intensity of the reflections is not required.

Viewpoint 2

10.186 Viewpoint 2 considers the drivers view as they change lane to come off of Euston Road (heading east). It therefore considers whether the drivers view changing lanes would be affected.

Existing

10.187 The Calendar Graph shows that there will be some solar reflections between 5:10pm and 6:30pm between early April and early September in the existing condition.

10.188 There will also be some fleeting instances of solar reflections (<30 degrees) between 6am and 7am between the end of April and the middle of August.

Proposed

10.189 The Calendar Graph shows that there will be some solar reflections between 5:15pm and 5:45pm between mid-May and the end of July however, these instances will occur at an angle of over 30 degrees.

10.190 There will be some solar reflections (<30 degrees) between 5:30pm and 6pm between mid-April and mid-May and the end of July to the end of August.

10.191 There will also be some fleeting instances of solar reflections (<10 degrees) between 6:50am and 7am in mid-April and towards the end of August; however, as this is such a short period of time the effect is considered to be Negligible.

10.192 Visualisations of the views have been prepared for sample times of 5:40pm on the 28 July in the existing condition and 5:47pm on the 24 July in the proposed condition. These times have been identified from the Calendar Graphs as instances where the reflection angle is less than 30 degrees.

10.193 It can be seen from both views that the reflection of the sun is just inside of the 30 degrees circle and therefore could readily be mitigated by use of the car's sun visor. Furthermore, there is unlikely to be a noticeable difference between the existing and proposed condition. As the impacts are small a more detailed assessment of the intensity of the reflections is not required.

10.194 Based on the scale of effect criteria given in the ''*Defining the Effect*' section, the overall effect on this assessment point is considered Minor Adverse (not significant). The position will however not materially change from the existing.

Viewpoint 3

10.195 Viewpoint 3 considers the pedestrian crossing heading north on Tottenham Court Road. It therefore considers whether the drivers view of the crossing would be affected.

Existing

10.196 The Calendar Graph shows that there will be some solar reflections between 12:00pm and 1:30pm between early October and mid-March in the existing condition.

Proposed

10.197 The Calendar Graph shows that there will be some solar reflections for a similar portion of the year between 12:20pm and 1:30pm and of a similar angle.

10.198 Visualisations of the views have been prepared for sample times of 12:05pm on the 10 February in the existing condition and 12:00 pm on the 10 February in the proposed condition. These times have been identified from the Calendar Graphs as instances where the reflection angle is less than 30 degrees.

10.199 It can be seen from both views that the reflection of the sun is between 20 and 30 degree circle and therefore could readily be mitigated by use of the car's sun visor. Furthermore, there is unlikely to be a noticeable difference between the existing and proposed condition.

10.200 The overall effect on this assessment point is considered Minor Adverse (not significant). The position will however not materially change from the existing.

Viewpoint 4

10.201 Viewpoint 4 considers the view heading north on Tottenham Court Road facing the traffic lights. It therefore considers whether the drivers view of the traffic lights would be affected.

Existing

10.202 The Calendar Graph shows that there will be some solar reflections between 12:20pm and 2:15pm between the end of August and mid-April in the existing condition.

Proposed

10.203 The Calendar Graph shows that the position wont materially change as a result of the Proposed Development.

10.204 This is further evidenced by the visualisation of Viewpoint 4 which shows no material difference.

10.205 The view has been taken looking straight down the road. The position may be slightly worsened should you look at the traffic light on the left-hand side of the road; however, there are a total of four traffic lights on this intersection, two of which are located in the central reservation which is away from the source of solar reflection.

10.206 The overall effect on this assessment point is considered Minor Adverse (not significant). The position will however not materially change from the existing.

Viewpoint 5

10.207 Viewpoint 5 considers the traffic lights heading west on Euston Road. It therefore considers whether the drivers view of the traffic lights would be affected.

10.208 The Calendar Graph shows that there will be no material change between the existing condition and the proposed condition. This is further evidenced by the visualisation of Viewpoint 5 which shows a slight change in the angle but no material difference.

10.209 The overall effect on this assessment point is considered Minor Adverse (not significant). The position will however not materially change from the existing.

Viewpoint 6

10.210 Viewpoint 6 considers pedestrian crossing heading west on Euston Road. It therefore considers whether the drivers view of the crossing would be affected.

Existing

10.211 The Calendar Graph shows that there will be some solar reflections (<30 degrees) between 5:35am and 6:00am between the end of May and mid-July in the existing condition.

Proposed

10.212 The Calendar Graph shows that there will be some solar reflections between 6:35am and 7:40am (<30 degrees)

10.213 Visualisations of the views have been prepared for sample times of 5:50am on the 8 July in the existing condition and 7:36 am on the 8 July in the proposed condition.

10.214 It can be seen from both views that the reflection of the sun is approximately. 20 degrees in the existing condition and approximately 30 degrees in the proposed and therefore could readily be mitigated by the car's sun visor. The position may be slightly worsened should you look directly at the traffic light on the right hand side of the road; however, there is also a traffic light located on the left hand side of the road away from the source of solar reflection

10.215 The overall effect on this assessment point is considered Minor Adverse (not significant). The position will however not materially change from the existing.

MITIGATION, MONITORING AND RESIDUAL EFFECTS

Residual Effects

10.216 The residual effects resulting from the Proposed Development are presented in Table 10.14, identifying whether the effect is significant or not.

Table 10.14 Residual Effects

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
17 to 33 William Road	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
Schafer House, University College	Reduction in Daylight	Minor Adverse	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
164-166 Drummond Street	Reduction in Daylight	Minor Adverse	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
Triton Building	Reduction in Daylight	Minor Adverse	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
175 Drummond Street	Reduction in Daylight	Minor to Moderate Adverse	Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
40-60 Hampstead Road	Reduction in Daylight	Minor Adverse	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
1-6 Tolmers Square	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
183 North Gower Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
Warren Court, Euston Road	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
301-305 Euston Road & 69-70 Warren Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
Lizmans House, 321 Euston Road	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
56 Warren Street (Assumed windows)	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
57 Warren Street (Assumed windows)	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
58 Warren Street (Assumed windows)	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
59 Warren Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
60-61 Warren Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
62 Warren Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
63-68 Warren Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
71 Warren Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
9 Warren Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
10 Warren Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
11 Warren Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
12 Warren Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
13-14 Warren Street & 118-120 Whitfield Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
15 Warren Street & 161 Whitfield Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
16 Warren Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
17 Warren Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
Duchess House, 18-19 Warren Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
George Mews	Reduction in Sun on Ground	Negligible	Not Significant	L	D	P	Lt
Tolmers Square (main square)	Reduction in Sun on Ground	Negligible	Not Significant	L	D	P	Lt
Tolmers Square (private amenity areas	Reduction in Sun on Ground	Negligible	Not Significant	L	D	P	Lt
Tolmers Square (private amenity areas	Reduction in Sun on Ground	Negligible	Not Significant	L	D	P	Lt
Triton Building Courtyard	Reduction in Sun on Ground	Negligible	Not Significant	L	D	P	Lt
Euston Square	Reduction in Sun on Ground	Negligible	Not Significant	L	D	P	Lt
Viewpoint 1	Solar Glare	Minor Adverse	Not Significant	L	D	T	Mt
Viewpoint 2	Solar Glare	Minor Adverse	Not Significant	L	D	T	Mt
Viewpoint 3	Solar Glare	Minor Adverse	Not Significant	L	D	T	Mt
Viewpoint 4	Solar Glare	Minor Adverse	Not Significant	L	D	T	Mt
Viewpoint 5	Solar Glare	Minor Adverse	Not Significant	L	D	T	Mt
Viewpoint 6	Solar Glare	Minor Adverse	Not Significant	L	D	T	Mt

Notes:

Residual Effect Scale = Negligible / Minor / Moderate / Major Nature = Beneficial or Adverse Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N) D = Direct / I = Indirect P = Permanent / T = Temporary St = Short Term / Mt = Medium Term / Lt = Long Term N/A = not applicable / not assessed

LIKELY SIGNIFICANT EFFECTS

10.217 There are Minor to Moderate Adverse significant effects identified to 175 Drummond Street with respect to daylight levels as a result of the implementation of the Proposed Development.

Chapter 11: Wind Microclimate

WIND MICROCLIMATE	
AUTHOR	ARUP
SUPPORTING APPENDIX	**ES Volume 3, Appendix: Wind Microclimate** Annex 1: Wind Tunnel Testing Methodology Annex 2: Planning Policy and Legislation
KEY CONSIDERATIONS	This ES chapter assesses the effects of the Proposed Development on wind microclimate and considers if the resulting changes in wind speeds would be suitable, with regards to comfort and safety, for the intended usage of sensitive locations within and around the site. Key wind microclimate considerations associated with the Proposed Development include whether any undesirable wind speeds would be created at ground level (specifically at building entrances, pedestrian thoroughfares and within amenity spaces with outdoor seating and play areas) within the site, around buildings surrounding the site and within nearby areas of offsite public open space once the Proposed Development is fully completed. The wind microclimate across the site and surrounding area has been tested for the following configurations: • Configuration 1: Existing Baseline; • Configuration 2: Proposed Development in Existing Surroundings (excluding proposed landscaping), including future schemes already under construction; and • Configuration 3a: Proposed Development in Existing Surroundings (including proposed landscaping and initial wind mitigation), including future schemes already under construction. A fourth configuration has been assessed using professional judgment and partial sensitivity runs in the wind tunnel: Configuration 3b: Proposed Development with Landscaping and **Updated** Wind Mitigation), including future schemes already under construction.
CONSULTATION	A Request for an EIA Scoping Opinion (EIA Scoping Report) was prepared and submitted to the London Borough of Camden (LBC) on 4 August 2023. A copy of this EIA Scoping Report is provided in **ES Volume 3, Appendix: EIA Methodology – Annex 1** and sets out the proposed scope and methodology for the wind microclimate assessment and this ES chapter. A Scoping Opinion was received on 4 October 2023 and is provided in **ES Volume 3, Appendix: EIA Methodology – Annex 2.** The EIA Scoping Opinion confirms that the methodology outlined within the EIA Scoping Report is appropriate. The following point was raised as part of the EIA Scoping Opinion: *'The Applicant should also give consideration to any off-site balcony locations. The ES should make clear all possible receptor locations considered for the purpose of the wind microclimate assessment.'* This is discussed in this assessment in the *section 'Off-site Private Balconies'* (starting at 11.61) All other aspects of the scope were confirmed as acceptable. A pre-app meeting was held on 16 March 2023 with members of the Arup Wind team and LBC planning officers, where the design approach and wind guidance was discussed.

ASSESSMENT METHODOLOGY

Defining the Baseline

11.1 An assessment of the existing baseline conditions has been carried out as part of the wind microclimate assessment using wind tunnel testing and professional judgement. The baseline for the wind assessment considers the wind mechanisms and conditions around the existing site in its current state. The site includes existing structures and landscaping within the site boundary as well as in the streets within the immediate surroundings within a 360m radius. The size of the study area is chosen to capture all areas that could potentially be impacted by the presence of the Proposed Development and is based on standard wind tunnel methodology and professional judgment. The impact of the wind conditions on the current users of the study area (pedestrians, cyclists and vehicle users) was carried out using both qualitative and quantitative methods. Early massing and mitigation options were iteratively tested using high-level Computational Fluid Dynamics (CFD) steady state Reynolds-Average Navier-Stokes (RANS) for select wind directions to visualise the flow patterns. The favourable options have ultimately been assessed using physical wind tunnel testing, providing a detailed, quantitative assessment.

11.2 Mean and peak wind speeds have been measured for both the windiest season (normally winter in the UK) to show the worst-case scenario, and summer season for amenity spaces (amenity spaces are assessed during the summer season as these areas are expected to be used most frequently during this period with an expectation of calmer conditions compared to other times of the year) for all locations. Measurements have been taken at locations across the existing site and at other surrounding buildings, paths, roads, bus stops and areas of open spaces for 16 wind directions in 22.5° increments within a 360m radius of the site, which is considered a large enough scale to ensure all wind effects are captured. Measurements are assessed at a full-scale height of 1.5m above the surface upon which the probe is located. Details of the tunnel test methodology are presented in **ES Volume 3, Appendix: Wind Microclimate – Annex 1**.

11.3 The results have been combined with long-term meteorological climate data for the London area (including Holborn (location of the London Weather Centre), Heathrow and London City Airports. The meteorological data shown in Figure 11.1 have been used in this assessment as this is deemed to be representative of the local wind climate for the London area.

11.4 The baseline conditions are reflected within the wind scenario 'Configuration 1: Existing Baseline'.

11.5 It is acknowledged that a direct comparison with the baseline conditions would be useful to understand changes from the existing (baseline) wind conditions across the site due to the Proposed Development. However, a comparison of the measured wind environment for the Proposed Development with the existing conditions does not take into account any change in pedestrian activity that would accompany the Proposed Development. Comparisons between the baseline scenario and 'completed development' scenarios have therefore only been made where pedestrian activity is the same in the baseline and with the Proposed Development in place.

Evolution of the Baseline

11.6 The evolution of the baseline condition assumes the cumulative schemes (see paragraph 11.21 for a description the cumulative schemes) are built in the surrounding environment and that the surrounding environment, including the site, has naturally evolved in the absence of the Proposed Development being implemented.

11.7 The only cumulative scheme identified within the wind microclimate study area is the Network Building (95-100 Tottenham Court Road), 76- 80 Whitfield Street and 88 Whitfield Street, London, W1T 4TP (2020/5624/P). This is currently under construction and has therefore been included in the existing surroundings. Therefore, the conditions in the future baseline is considered to be the same as those in the existing baseline.

11.8 The wind conditions and impact of those conditions on the users within the site and immediate surroundings streets have been assessed in the wind tunnel (see *'Impact Assessment Methodology*' and *'Methodology for Defining Effects'* sections).

Impact Assessment Methodology

Deconstruction and Construction

11.9 Assessment of the wind microclimate effects during deconstruction and construction have not been quantitatively assessed. Deconstruction and construction activities are a temporary condition and would be highly variable as the Proposed Development is constructed. Wind conditions do not fully develop until external cladding is installed on the buildings. This means that conditions will continually change as massing is removed and added and effects will be temporary and variable. The wind conditions experienced around the baseline will gradually develop into those experienced around the completed Proposed Development, as the facades are built up to their final form. Conditions during construction can therefore be assumed to be between the two ranges, with the worst case developing once the facades on the Proposed Development are installed, and before landscaping is in place.

11.10 It should be noted that the impact of large construction machinery such as cranes and piling rigs are not considered in the assessment. Such machinery is temporary and is considered too slim or open to significantly impact wind conditions.

Completed Development

Overview

11.11 The methodology for determining the wind microclimate effects around the completed Proposed Development in existing surroundings has been determined through initial qualitative CFD analysis and verified with physical wind tunnel testing.

11.12 Several wind tunnel test workshops were carried out throughout RIBA[1] Stages 1 and 2 of the design process. All workshops were held at RWDI's (an engineering and modelling consultancy company) boundary layer testing facility in Milton Keynes, UK. Workshops were attended by members of the design team including 3XN (architects), DSDHA (landscape architects), G&T (project managers) and Arup wind specialists. Various massing options were tested including tower shapes and podium configurations. The later workshops focused more on local ground level features including landscaping elements. The final wind tunnel workshop was held on the 13 November 2023 and the findings set out in this ES chapter.

Wind Tunnel Testing

11.13 Wind tunnel testing and the application of professional judgement have been used to assess the baseline wind conditions and the effect of the Proposed Development on environmental wind conditions within and around the site.

11.14 Wind tunnel testing is used to measure wind speed acceleration or reduction from all directions. This is combined with information on the London wind climate, including wind strength, duration and direction from local anemometers, to determine the wind conditions at locations around the site.

11.15 The assessment of the wind conditions requires a standard against which the measurements can be compared. The assessment of the wind tunnel results presented in this ES chapter adopts the Lawson Comfort Criteria ('the Lawson Criteria') (the London Docklands Development Corporation (LDDC) version[2]). The Lawson criteria are useful to describe windiness in terms of acceptability for particular activities. In this assessment, the words 'Sitting', 'Standing', 'Strolling' and 'Business Walking', 'general public', 'able-bodied' and 'restricted access' are used to describe safety levels of windiness as described in the Lawson criteria as set out in Table 11.2

11.16 This is subsequently compared with acceptability levels for everyday activities for pedestrians around buildings, as described in more detail in the '*Methodology for Defining Effects*' section. The Lawson Criteria used in this assessment, as set out in Table 11.2, set out four pedestrian activities (comfort categories) that reflect the fact that less active pursuits require more benign wind conditions. The 'Plot Colour' as described in Table 11.2 corresponds to the presentation of wind tunnel test results.

11.17 Further detail on the wind tunnel testing methodology can be found in **ES Volume 3, Appendix: Wind Microclimate – Annex 1**.

Testing Configurations

11.18 The assessment of the wind microclimate is based on the results from a series of tests of physical models within the wind tunnel to provide a detailed, quantitative assessment. Several configurations were tested and the surroundings modelled were all within a 360m radius from the centre of the site.

11.19 Following the final wind tunnel workshop on the 14 November 2023, details of the landscaping and mitigation elements were refined by the design team. These refinements have been qualitatively reviewed by the wind specialists using professional judgement and sensitivity tests of significant wind directions that were run during this workshop to inform the assessment conclusions.

11.20 The following configurations were tested in the wind tunnel.

Table 11.1 Configurations Tested

Configuration Number / Name	Description	Date Tested
Configuration 1: Existing Baseline	Existing site with the existing surrounding (i.e. existing site and surroundings construction at the time of testing, with existing landscaping).	10 Oct. 2019
Configuration 2: Proposed Development without Landscaping	Proposed Development without proposed landscaping in the existing surroundings, including consented schemes already under construction.	3 Oct. 2023
Configuration 3a:	Proposed Development with proposed landscaping and initial wind mitigation in the existing surroundings, including consented schemes already under construction.	14 Nov. 2023
Configuration Number / Name	**Description**	**Date Tested**
Proposed Development with Landscaping and Initial Wind Mitigation		
Configuration 3b: Proposed Development with Landscaping and Updated Wind Mitigation	Proposed Development with proposed landscaping and updated wind mitigation in existing surroundings, including consented schemes already under construction.	Sensitivity tests carried out 14 Nov. 2023

11.21 The list of cumulative schemes for consideration in this assessment (see **ES Volume 3, Appendix: EIA Methodology – Annex 3)** was reviewed to confirm if any additional testing was required. One cumulative consented scheme, the Network Building (95-100 Tottenham Court Road), 76- 80 Whitfield Street and 88 Whitfield Street, London, W1T 4TP was included in the assessment (Configuration 2 and 3) and this scheme is currently under construction, therefore it is included in the existing surroundings.

11.22 The other schemes listed in **ES Volume 3, Appendix: EIA Methodology – Annex 3** have not been included in this assessment as they were outside the study zone (more than the 360m radius from the site)

Simulation of Atmospheric Winds

11.23 The characteristics of the oncoming wind speed and turbulence are generated in the wind tunnel using distributed roughness elements and spires upwind of the wind tunnel model.

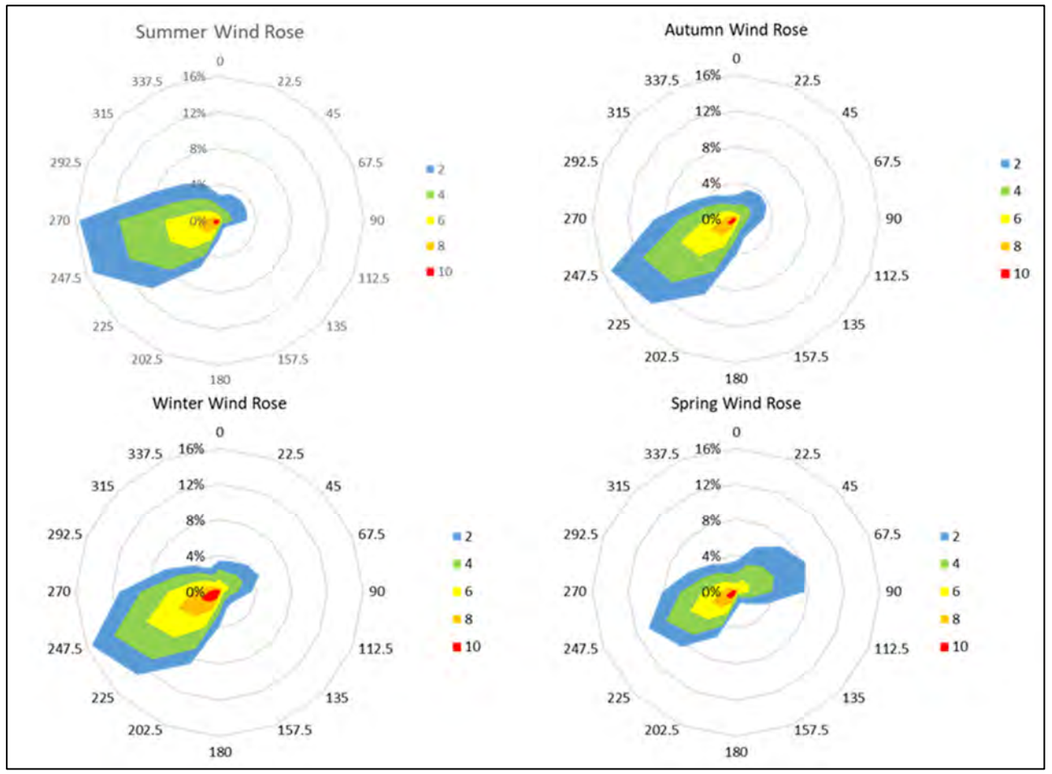
11.24 The arrangement of the roughness blocks and spires is chosen to reproduce the boundary layer profile predictions for the site obtained using the ESDU methodology[3], which is a documented methodology and a computer program used to estimate the effects of terrain on wind speeds as they approach a site. This is used to 'translate' wind speeds measured at an airport or meteorological station to the target site. ESDU methodology is the basis of the wind modelling used in the UK National Annex to EN 1991-1-4 Wind Actions[4], the UK wind loading code and is also widely used internationally.

Wind Climate

11.25 Wind conditions on the site have been assessed using the existing wind climate data in Figure 11.1. This shows statistical, mean hourly wind speeds and wind directions for London. The peer reviewed data was obtained from London Weather Centre, located in Holborn which analysed multiple sets of historical wind data from several London airports (including Heathrow and City Airport) and was peer reviewed for the Lawson LDDC criteria in 1990. This data creates a representative 'London Climate' model that is unbiased towards any particular airport. Arup have adjusted the representative climate model to the site using the ESDU methodology. These wind roses represent the wind behaviour (direction, frequency and speed) across all times of day for each season.

[1] Royal Institute of British Architects
[2] *T.V. Lawson, London Docklands Development Corporation, "The Evaluation of the Windiness of a Building Complex Before Construction"*
[3] *ESDU, IHS Markit. Accessed October 2022, <* https://www.esdu.com/cgi-bin/ps.pl?sess=unlicensed_1200422114217xsj&t=doc&p=esdu_84011d-r1*>*
[4] *Wind Actions to Bs En 1991-1-4. Available at: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.steelconstruction.info/images/archive/e/e7/20131220104934%21SCI_P394.pdf*

Figure 11.1 London Meteorological Data (London Weather Centre)



11.26 Overall, the wind climate in London is similar to the rest of the UK:

- The westerly winds are the most frequent and strongest winds in London at all times of the year. These winds are relatively warm and wet. Most cases of serious annoyance due to strong winds around buildings are caused by these winds;
- Northeastly winds are almost as common as the southwest winds during spring but are weaker. They are often associated with cold dry conditions. Northeast winds can be more unpleasant than suggested by their strength due to the lower-than-average air temperature;
- Winds from the northwest can be as strong as the southwest winds but are less frequent. They are relatively cold; and
- Southeast winds are generally warm and light and are rarely associated with uncomfortable ground level winds.

Lawson Comfort and Distress Criteria

11.27 The criteria used to describe windiness in this assessment are the Lawson Criteria, developed for the LDDC as detailed above, which are used widely in the United Kingdom (UK) and around the world. These criteria are useful to describe windiness in terms of acceptability for particular activities. The Lawson Criteria are intended for areas used regularly and are generally not considered as applicable to areas of 'good weather use'.

11.28 Acceptable comfort conditions for various activities in order of increasing windiness are described in Table 11.2.

11.29 The conditions described below are the limiting tolerable criteria for comfort. For ideal conditions, the windiness in an area with a known activity will be a category better (i.e. tolerable conditions at an entrance will be in the 'Standing' range but ideal conditions will be in the 'Sitting' range). For more sensitive activities, such as regular use for external sitting and eating, conditions should be well within the 'Sitting' category.

Table 11.2 Lawson LDDC Comfort Criteria

Criteria	5% Seasonal Exceedance Upper Threshold Speed	Description	Plot Colour
'Sitting'	4m/s	Reading a newspaper, eating and drinking (i.e. cafés)	Blue
'Standing' or short-term sitting	6m/s	Appropriate for building entrances, bus stops, window shopping and parks	Green
'Strolling'	8m/s	General areas of walking and sightseeing	Yellow
'Business Walking'	10m/s	Local areas around tall buildings where people are not expected to linger	Orange

11.30 In the assessment, the words 'Sitting', 'Standing', 'Strolling' and 'Business Walking' are used to describe comfort levels of windiness as described in Table 11.2.

11.31 There are also distress criterion. Exceedance of the distress criterion for 'General Public Access' as defined in Table 11.3 is equivalent to a mean speed of 15 m/s and a gust speed of 28 m/s (62 mph) to be exceeded less often than once a year. This is intended to identify wind conditions which less able individuals or cyclists may find physically difficult. Conditions in excess of this limit may be acceptable for optional routes and routes which less physically able individuals are unlikely to use.

11.32 There is a further exceedance of a limiting distress criterion within which even 'Able-bodied' individuals may find themselves in difficulties at times. This corresponds to a mean speed of 20 m/s and a gust speed of 37 m/s (83 mph) to be exceeded less often than once a year. Gust speed aerodynamic forces approach body weight and it rapidly becomes impossible for anyone to remain standing.

Table 11.3 Lawson LDDC Distress Criteria

Criteria	Annual Hourly-Average Exceedance Speed (once a year)	Description	Plot Key
'General public access'	up to 15m/s	Members of the general public and cyclists are expected to be able to access the area safely in normal windy weather	Grey No markings
'Able-bodied access'	Equal or Above 15m/s	Above this threshold, the less able and cyclists may at times find conditions physically difficult	A single red ring around the probe location
'Restricted access'	Equal and Above 20m/s	It may become impossible at times for an able-bodied person to remain standing	Two red rings around the probe location

11.33 In the following assessment the phrases 'general public', 'able-bodied' and 'restricted access' are used to describe distress levels of windiness as described in paragraph Table 11.3.

Assumptions and Limitations

11.34 It is assumed that there will be limited access (i.e. the site will not be accessible to the general public) to the site during the deconstruction and construction phase and as such a quantitative assessment has not been undertaken. As the area where works are underway would not typically be used by pedestrians, windier conditions would be tolerable when deconstruction and construction activities are underway.

11.35 Wind conditions in the wind tunnel can only be measured at finite locations, where the probes are installed. The conditions between probes are unknown, however, experience and expert judgement have been used to qualitatively assess areas where recordings have not been taken.

Methodology for Defining Effects

Receptors and Receptor Sensitivity

11.36 Receptors in the wind microclimate assessment are defined as regular users of the external spaces including pedestrians, cyclists and vehicular users. Probe layouts are shown in Figure 11.2 onwards.

11.37 The sensitivity of receptors is related to the intended use at each location; there are no definitions for sensitivity, as the important consideration is whether the wind conditions experienced at a particular receptor location are

suitable for the intended use (in terms of pedestrian comfort and distress thresholds) at that particular location. All receptors are highly sensitive to the local wind microclimate conditions and are given an equal weighting.

Magnitude of Impact

11.38 The magnitude of the impact corresponds to the degree of distress and suitability of on-site locations as well as the difference between the assessed comfort category and the desired category for the intended use for off-site locations.

Defining the Effect

All Receptors

11.39 The criteria used in the assessment of existing, potential and residual effects both on and off-site is based upon the relationship between the desired pedestrian use of an area (based on the categories defined by the LDDC variant of the Lawson Criteria) and the predicted wind conditions at that area. This allows for the assessment to account for any change in pedestrian activity that might arise because of the Proposed Development.

11.40 In terms of the nature of the effect, effects can either be beneficial (rectifying an existing adverse condition), adverse (windier conditions than required for the intended use), or neither (conditions are suitable for the use) and so are negligible. An adverse effect on-site implies that a location has a wind environment that is unsuitable for its intended use and mitigation would therefore be required. These are set out in Table 11.4 and are derived from professional judgement of the Lawson LDDC criteria within London.

11.41 The geographical extent of the wind microclimate is expected to be within the site and its immediate surroundings, i.e. a local impact, for all receptors. The wind tunnel model disc trace incorporates the site and all surroundings within a 360m radius of the site, as wind conditions beyond this radius are unlikely to be affected by the Proposed Development.

11.42 Wind mitigation measures are required at on-site and off-site locations with Major Adverse effects. Moderate Adverse conditions both on-site and off-site should also be mitigated where this is practical considering other desirable features of the Proposed Development.

11.43 Effects once the Proposed Development is completed are direct, local and long-term (permanent) unless there is a future change in the surroundings or future modification to the Proposed Development.

Table 11.4 Intended Pedestrian Use and Relationship to the Lawson Criteria

Intended Pedestrian Use	Areas Applicable	Description of Acceptable Conditions Defined by the Lawson Comfort and Safety Criteria	Description of Unacceptable Conditions Defined by the Lawson Comfort and Safety Criteria
Criterion for permanent outdoor café and long-term sitting spaces (i.e. all year)	Both on-site and off-site locations	'Standing' or better in winter or 'Sitting' in the summer	Exceedance of 'Standing' conditions in any season
Criterion for main entrances (i.e. The entrances expected to be used most often by all users, all year)	Both on-site and off-site locations	'Standing' or better in all seasons	Exceedance of 'Standing' at primary entrances in all seasons
Outdoor recreational spaces (i.e. parks, areas of 'good-weather' seating and bus stops)	Both on-site and off-site locations	A range of 'Sitting' and 'Standing' in the summer. Small areas of 'Strolling' may be tolerable within a larger space	Large areas of 'Strolling' in summer or exceedance of the safety criteria in any season.
Criterion for general public access and cycling	Both on-site and off-site locations	'General Public Access' in all seasons	Exceedance of 'General Public Access' distress criterion on main access routes with no reasonable alternatives.
Criterion for occasional or maintenance access	Both on-site and off-site locations	'Able-bodied Access' or better in all seasons	Exceedance of 'Able-bodied Access' criterion in any area likely to be used in windy weather.

11.44 The Lawson Criteria were not originally developed for applicability to areas of optional good weather use. They, and other similar criteria, were intended for areas of normal any-day use by the general public.

11.45 In particular, there is a developing consensus that desirable conditions for private residential balconies are similar to Lawson 'Standing' or better in summer. Therefore, all private balconies are assigned a preferred target threshold for the intended use of the area that best matches the Lawson summer conditions, i.e. Lawson 'Standing' or better in summer.

11.46 Experience and testing have shown that these conditions can often be met by either recessing, using solid balustrades or side/privacy-screens or creating winter gardens.

11.47 It should be noted that while 'Standing' conditions in summer are preferred, it is known that windiness of outdoor private terrace space may be partly mitigated by tenants, e.g. side screens or planting for local seating, or left open for more occasional use and to preserved views. Therefore, exceedance of 'Standing' in summer does not result in a significant adverse impact.

On-Site Effects

11.48 The scale of on-site measurement locations is defined by comparing the wind comfort/distress levels with the intended pedestrian activity at each location, shown in Table 11.5 below. These are derived from professional interpretation of the Lawson LDDC criteria within London.

Table 11.5 Scale of Effect – On-Site Measurement Locations

Scale of Effect	Trigger	Require Mitigation
Major Adverse	Conditions in public areas are beyond the 'Restricted Access' criteria	Yes
Moderate Adverse	Conditions are 'unsuitable' (in terms of comfort) for the intended pedestrian use	Desirable
Negligible	Conditions are 'acceptable' for the intended pedestrian use	No

Off-Site Effects

11.49 The scale of 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 Development (Configuration 1: Existing Baseline), shown in Table 11.6 below.

Table 11.6 Scale of Effect – Off-Site Measurement Locations

Scale of Effect	Trigger	Require Mitigation
Major Adverse	Conditions in public areas that were 'safe' in the baseline scenario become 'unsafe' as a result of the Proposed Development, even with wind mitigation. OR Conditions that were 'unsafe' in the baseline scenario are made worse as a result of the Proposed Development.	Yes
Moderate Adverse	Conditions in public areas that were 'acceptable' in terms of comfort in the baseline scenario become marginally 'unacceptable' as a result of the Proposed Development.	Desirable
Negligible	Conditions remain 'acceptable' for the intended use OR Conditions remain the same as in the baseline scenario.	No
Major Beneficial	Conditions in important areas that were 'unsafe' in the baseline scenario become 'safe' as a result of the Proposed Development.	No

Scale of Effect	Trigger	Require Mitigation
Moderate Beneficial	Conditions that were 'unacceptable' in terms of comfort in the baseline scenario become 'acceptable' as a result of the Proposed Development. OR Conditions that were 'unsafe' in the baseline scenario are made better as a result of the Proposed Development (but not so as to make them 'safe')	No

Categorising Likely Significant Effects

11.50 Any adverse effect either on-site or off-site is a 'significant effect' because it implies that a location, or area, has a wind microclimate that is undesirable for the use of that area. On this basis, effects that are adverse should be mitigated where possible.

11.51 Wind conditions which are negligible or beneficial of any scale would not represent a significant effect.

RECEPTORS AND RECEPTOR SENSITIVITY

11.52 This section describes where receptors have been identified both on- and off-site and how they are assessed using the above tables.

11.53 Receptors in the wind microclimate assessment are defined as regular users of the external spaces including pedestrians, cyclists and vehicular users. Main receptor locations comprise:

- On-site locations:
  - Pedestrian thoroughfares: includes areas that are immediately adjacent to the Proposed Development (i.e. within 5m of the building line). This also includes thoroughfares within the Proposed Development;
  - Entrances: includes entrances at ground level; and
  - Amenity areas: ground floor, podiums, and terraces.
- Off-site locations:
  - All receptors falling outside the definition of the boundary of the Site, such as users of roads, bus stops, station platforms, surrounding building entrances and amenity areas.

Public Realm (Ground Level)

11.54 Each measurement location is assigned a maximum target threshold for the intended use of the area, based on the acceptable comfort or safety limits. The uses are coloured as described in Table 11.7. The intended uses are based on the architectural ground floor plans[5] in each scenario as well as the proposed landscaping design.

11.55 While the maximum target thresholds represent an upper limit of the tolerable comfort design range, it is desirable to achieve better results for the most comfortable experience, where possible.

11.56 The probe layout and the maximum tolerable wind conditions for each receptor are shown in Figure 11.2 to Figure 11.6 below.

11.57 Each figure includes the locations, ID's and chosen target conditions of ground level receptors for the respective configuration.

11.58 It should be noted that with the Proposed Development in place, many of the probe locations from the baseline were rearranged or renumbered and the total quantity increased in some areas. This was done to include more detail around areas of interest such as entrances or corners with main access routes.

[5] *BLAC-FAP-ZZ-00-DR-AR-010004-PL*

Table 11.7 Target Criteria – Intended Uses of Public Areas

Lawson Comfort and Safety Criteria	Plot Colour to Identify Max Target Thresholds	Corresponding Intended Uses Associated with this Project	
		Summer	Worst-Case
'Sitting'	Blue	• Outdoor café / permanent long-term sitting spaces	• N/A
'Standing' or short-term sitting	Green	• Main entrances • Public outdoor recreational spaces (including park and bus stops)	• Main Entrances • Outdoor café / permanent long-term sitting spaces
'Strolling'	Yellow	• N/A	• Outdoor recreational spaces (including park and bus stops)
Within 'General Public Access' (i.e. no exceedances)	Grey	• All other areas regularly used by the general public and cyclists for access	• All other areas regularly used by the general public and cyclists for access

Existing Receptors

Table 11.8 Existing Receptors (Configuration 1: Existing Baseline)

Receptor Type (Season)	Receptor Reference
On-site	
Outdoor café / permanent long-term sitting spaces	60, 62, 63, 65
Main entrances	46, 70, 72, 74, 123
Public outdoor recreational spaces (including park and bus stops)	59, 61, 64, 94, 99, 100, 101
All other areas regularly used by the general public and cyclists for access	44, 47, 49-53, 55-58, 67, 68, 71, 75, 77, 87, 90-93, 96, 102, 108-111, 121-127, 129, 135
Off-site	
Outdoor café / permanent long-term sitting spaces	107
Main entrances	20, 28, 43, 48, 98, 103, 105, 134
Public outdoor recreational spaces (including park and bus stops)	25, 30
All other areas regularly used by the general public and cyclists for access	1-29, 31-42, 44, 45, 54, 76, 78-86, 88, 89, 95, 97, 104-106, 112-120, 128, 130-133, 136-141

Introduced Receptors

Table 11.9 Introduced Receptors Associated with the Proposed Development (Configuration 2 and 3)

Receptor Type (Season)	Receptor Reference
On-site	
Outdoor café / permanent long-term sitting spaces	None
Main entrances	56, 66, 121, 189, 190, 191
Public outdoor recreational spaces (including park and bus stops)	47, 53, 55, 57, 71, 87, 90, 92-94, 96, 99, 110, 122, 124, 148, 154-156, 168, 174, 175, 178-180, 186-188, 192, 197

Receptor Type (Season)	Receptor Reference
All other areas regularly used by the general public and cyclists for access	46, 49-52, 67, 68, 70, 72, 74, 77, 91, 100-102, 108, 109, 111, 125-127, 129, 140, 141, 144, 147, 153, 157, 158, 160-164, 165, 171-173, 176, 177, 181, 182, 184, 185, 193, 194
Off-site	
Outdoor café / permanent long-term sitting spaces	107
Main entrances *	20, 28, 43, 48, 98, 103, 105
Public outdoor recreational spaces (including park and bus stops)	25, 30, 44, 183
All other areas regularly used by the general public and cyclists for access	1-29, 31-42, 45, 54, 75, 76, 78-86, 88, 89, 95, 97, 104, 106, 112-120, 128, 130-133, 137-139, 142, 143, 146, 149-152, 159, 166, 167, 169, 170, 195, 196, 198-201
Upper-level Terraces	202-206

11.59 It is worth noting that due to modelling constraints, (i.e. size of measurement vs available space on scale model) one of the introduced secondary entrances on Brock Street does not have a measurement probe close by. The conditions at this entrance (Public use secondary entrance on Brock Street in Figure 11.4) have been qualitatively assessed, based on conditions recorded at nearby receptors.

Figure 11.2 Configuration 1: Existing Baseline – Ground Level Probe Layout and the Maximum Tolerable Wind Conditions (Worst-Case, Winter)

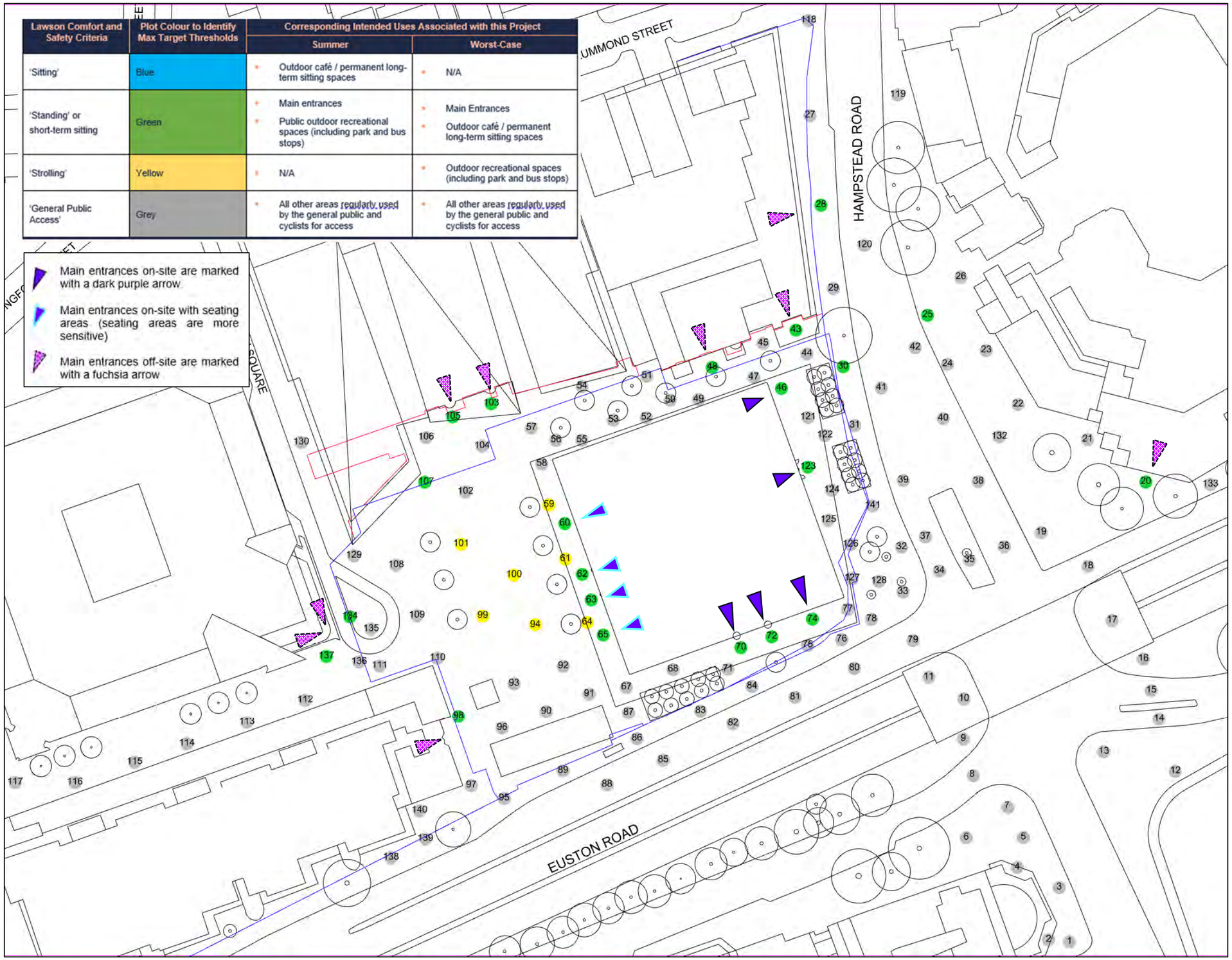


Figure 11.3 Configuration 1: Existing Baseline – Ground Level Probe Layout and the Maximum Tolerable Wind Conditions (Summer)

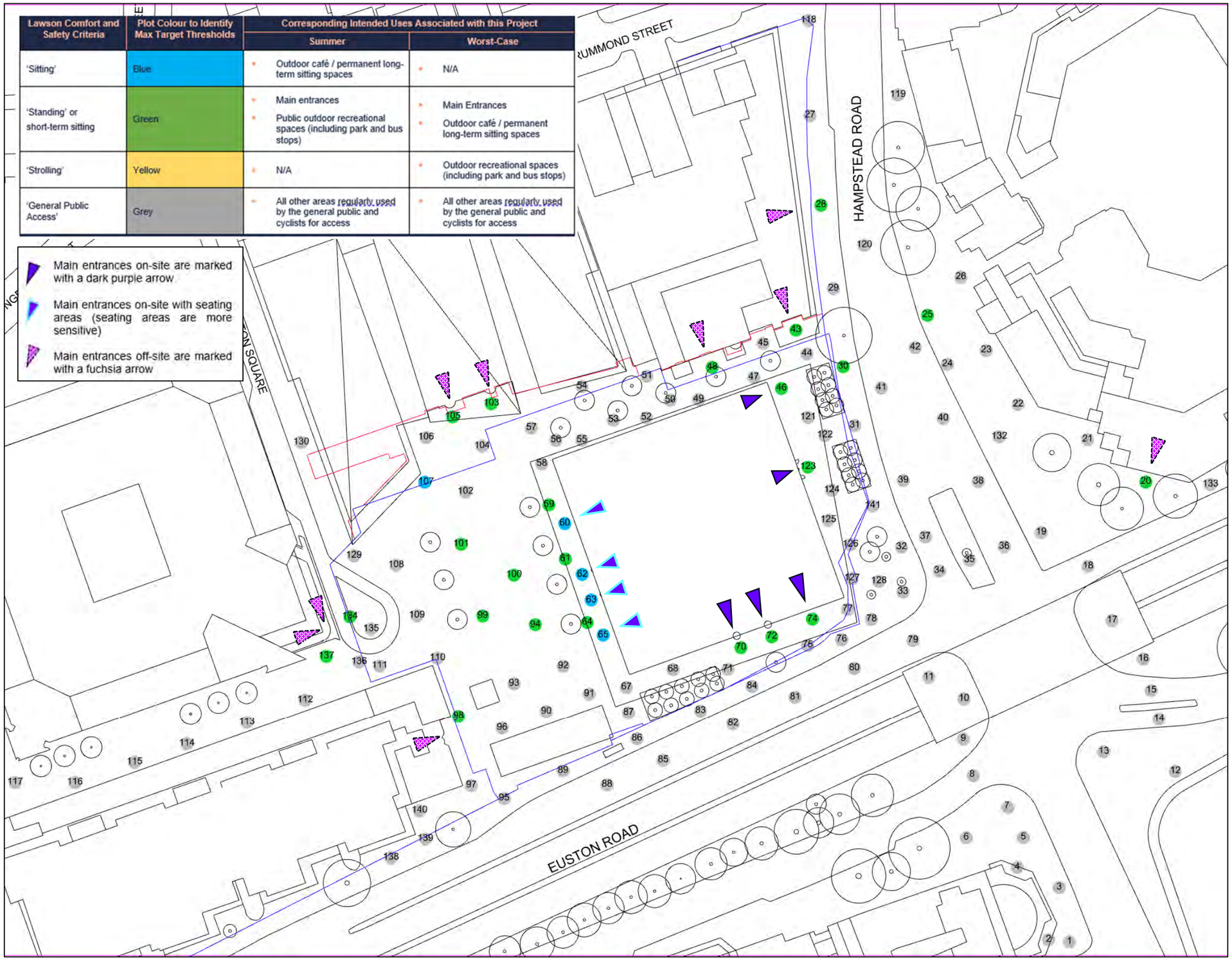


Figure 11.4 Ground floor plan of the proposed development showing the locations of entrances.

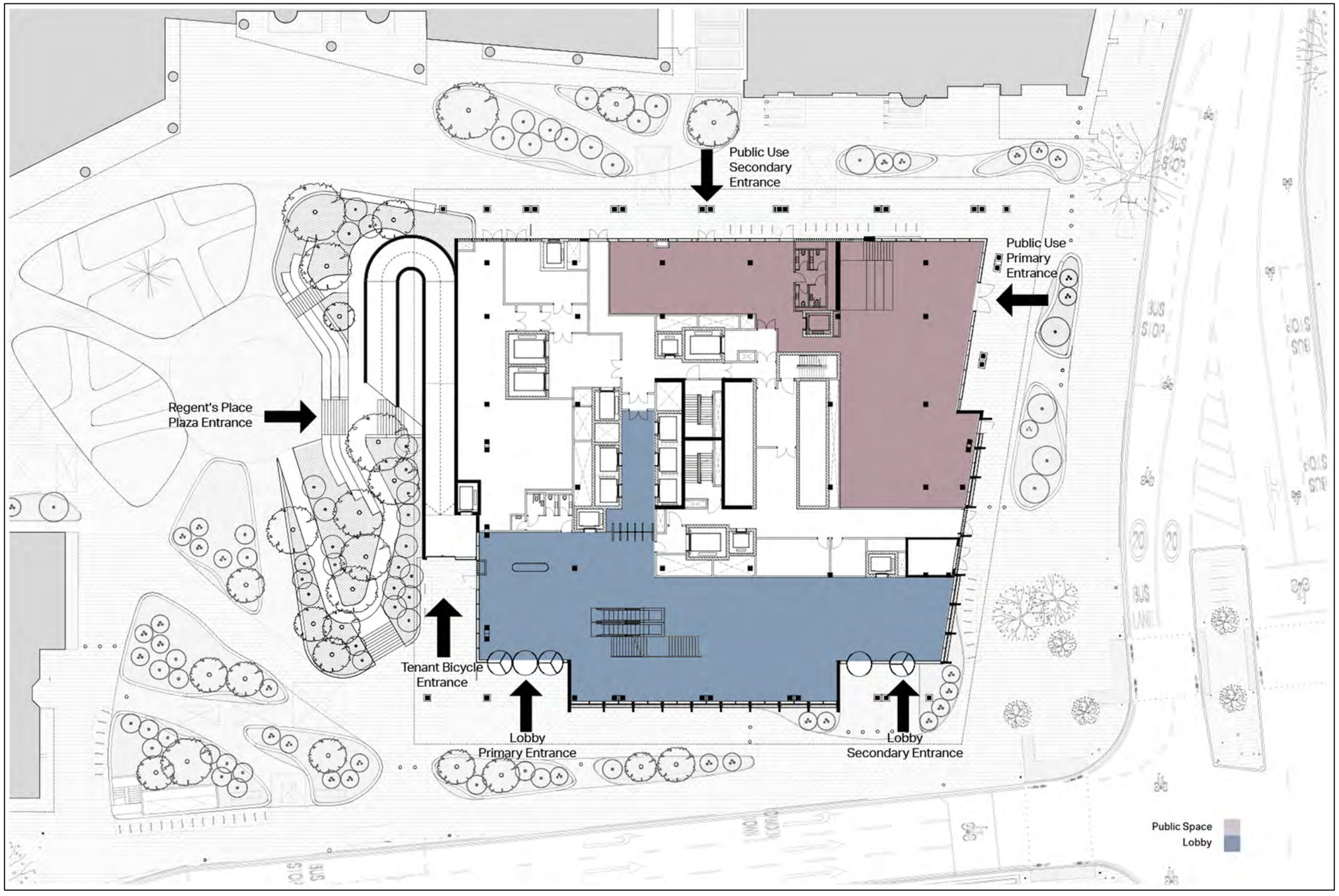


Figure 11.5 Configurations 2 and 3 – Ground Level Probe Layout and the Maximum Tolerable Wind Conditions (Worst-Case, Winter)

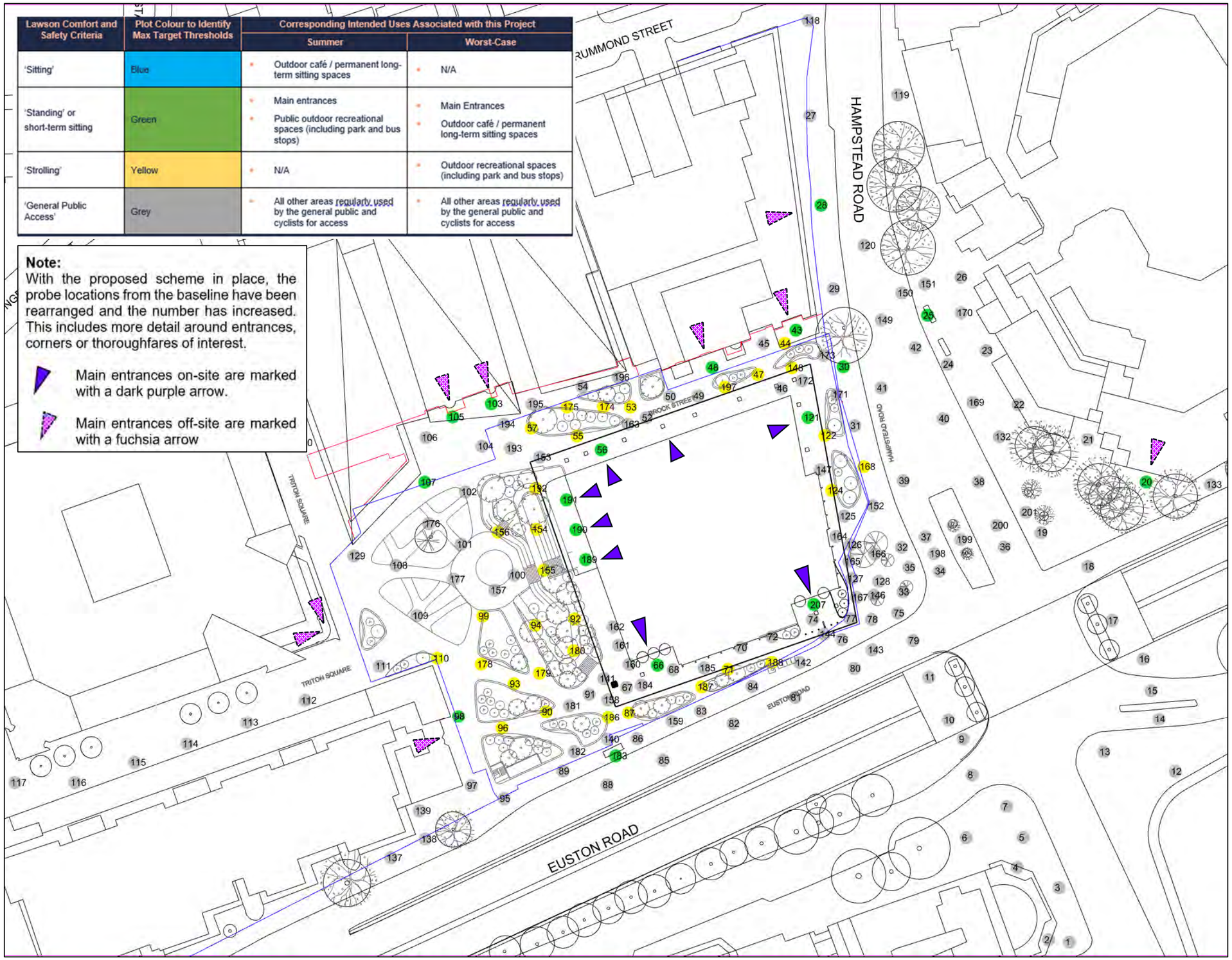
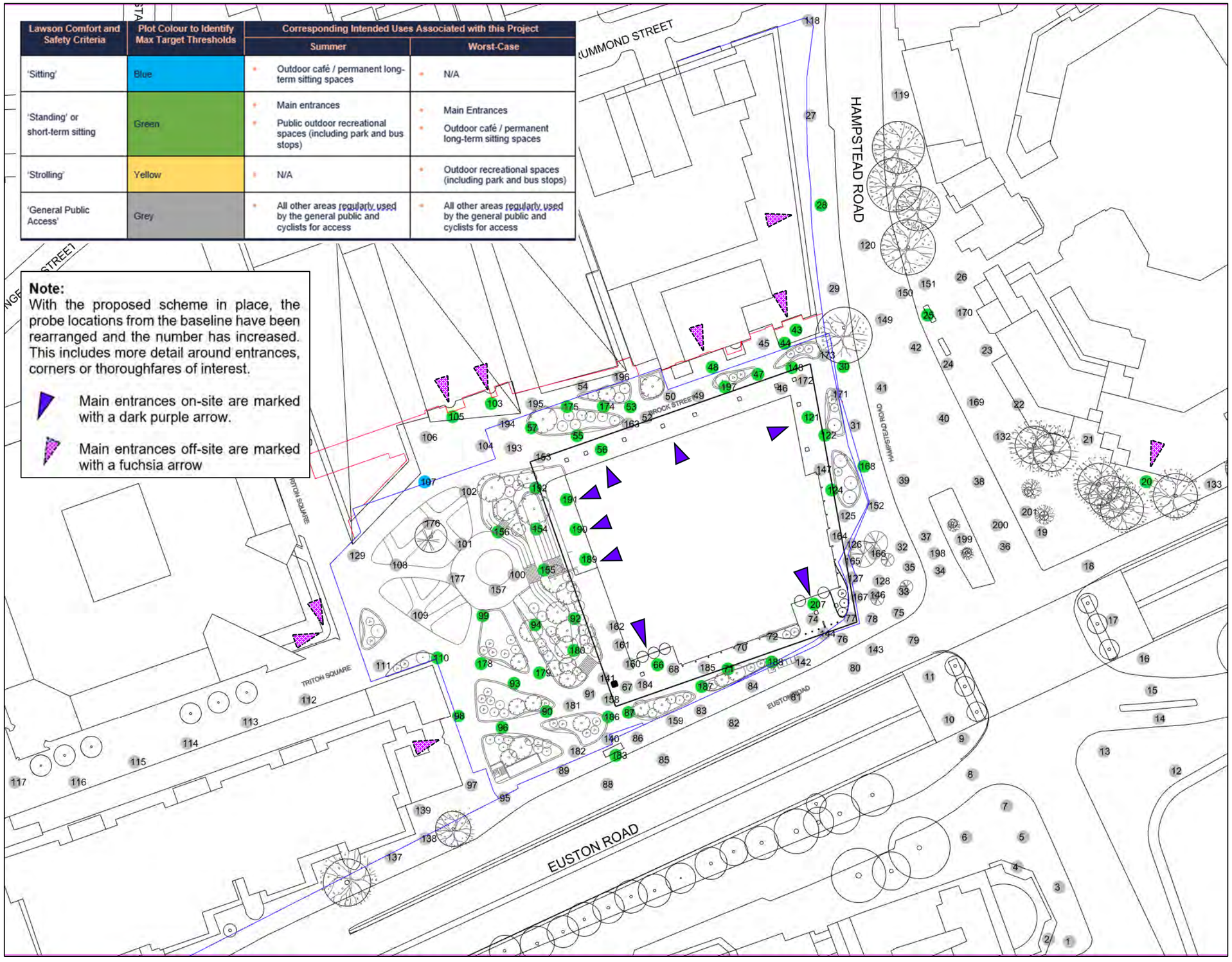


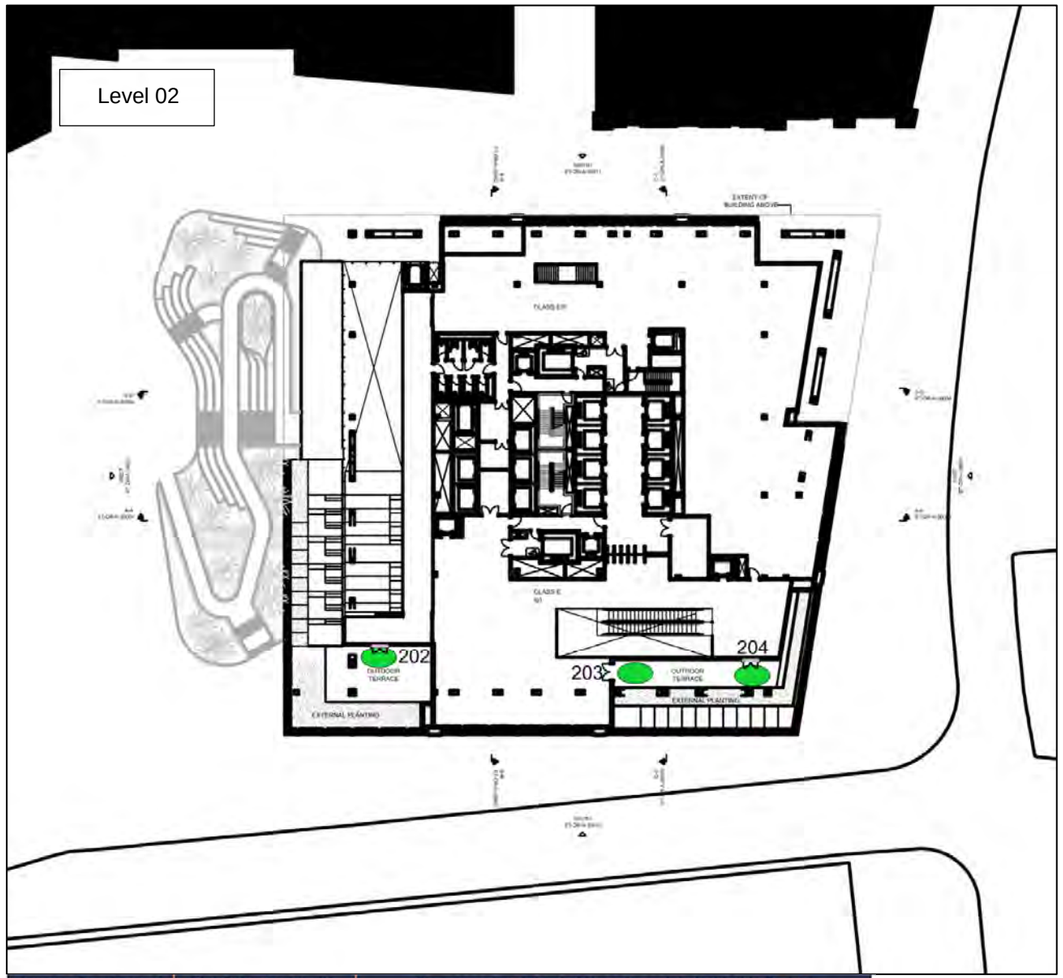
Figure 11.6 Configurations 2 and 3 – Ground Level Probe Layout and the Maximum Tolerable Wind Conditions (Summer)



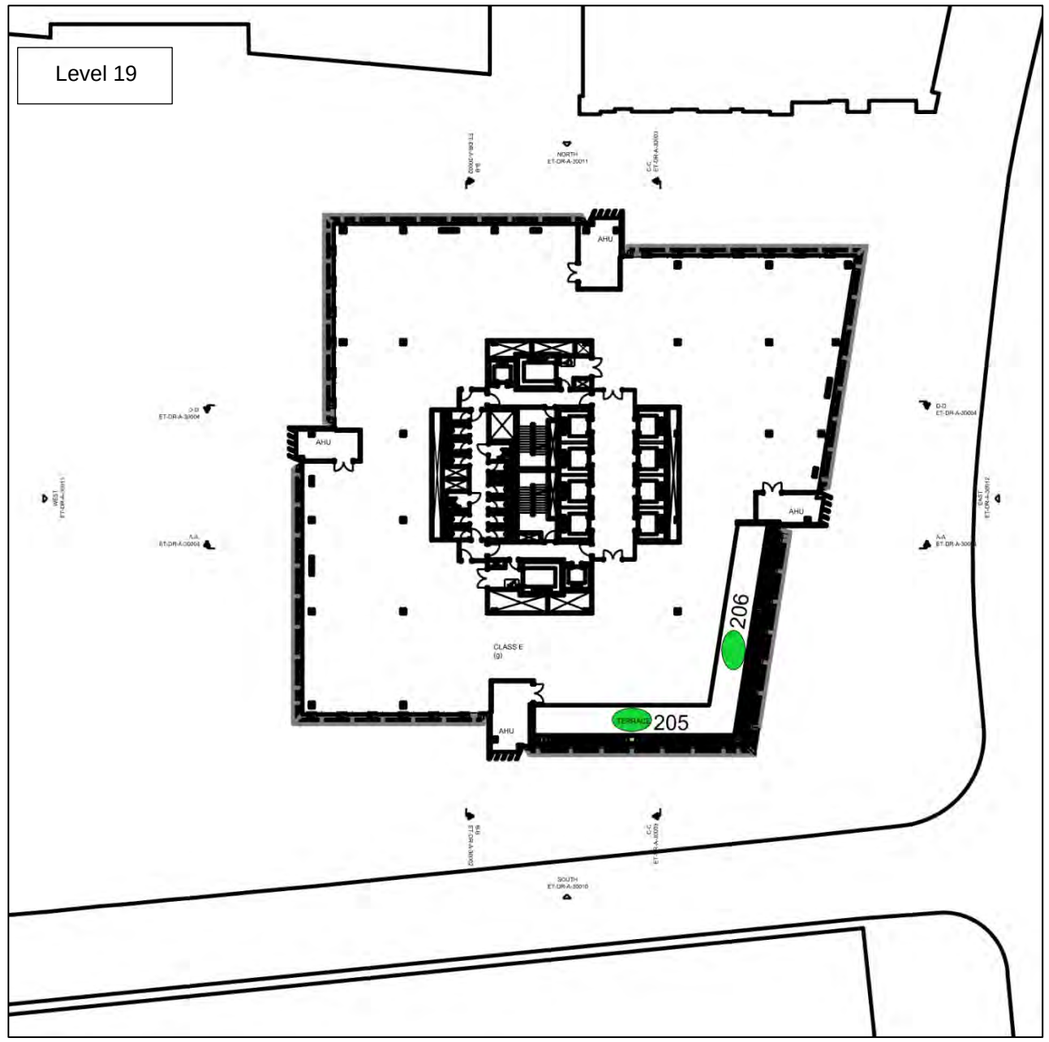
On-Site Balconies and Terraces

11.60 The probe layout and the maximum tolerable wind conditions for each receptor for on-site balconies and terraces are shown in Figure 11.7. The receptor locations measured in the wind tunnel were limited due to physical model restrictions and were chosen to best capture conditions at possible entrance locations, where users are more sensitive.

Figure 11.7 Configurations 2 and 3: Probe Locations and Maximum Tolerable Wind Conditions (Winter and Summer)



Lawson Comfort and Safety Criteria	Plot Colour to Identify Max Target Thresholds	Corresponding Intended Uses Associated with this Project	
		Summer	Worst-Case
'Sitting'	Blue	• Outdoor café / permanent long-term sitting spaces	• N/A
'Standing' or short-term sitting	Green	• Main entrances • Public outdoor recreational spaces (including park and bus stops)	• Main Entrances • Outdoor café / permanent long-term sitting spaces
'Strolling'	Yellow	• N/A	• Outdoor recreational spaces (including park and bus stops)
'General Public Access'	Grey	• All other areas regularly used by the general public and cyclists for access	• All other areas regularly used by the general public and cyclists for access



Off-Site Private Balconies

11.61 Several private balconies and terraces were identified on the surrounding buildings that could be impacted by changes to the local wind climate, as shown in Figure 11.8 to Figure 11.10. All other off-site private terraces or balconies are considered to be outside the zone of influence of the Proposed Development.

11.62 All of the balconies and terraces identified included one or more significant sheltering features. For example, Figure 11.8 below shows a solid balustrade on the private balconies of one of the units at 175 Drummond Street, and Figure 11.9**Error! Reference source not found.** shows tall porous screen elements between terraces on units along Hampstead Road, alongside solid balustrades.

11.63 Using professional judgement, the balconies with such high levels of mitigation / sheltering are expected to experience acceptably calm wind conditions and are not expected to be adversely affected by any changes created by the presence of the Proposed Development.

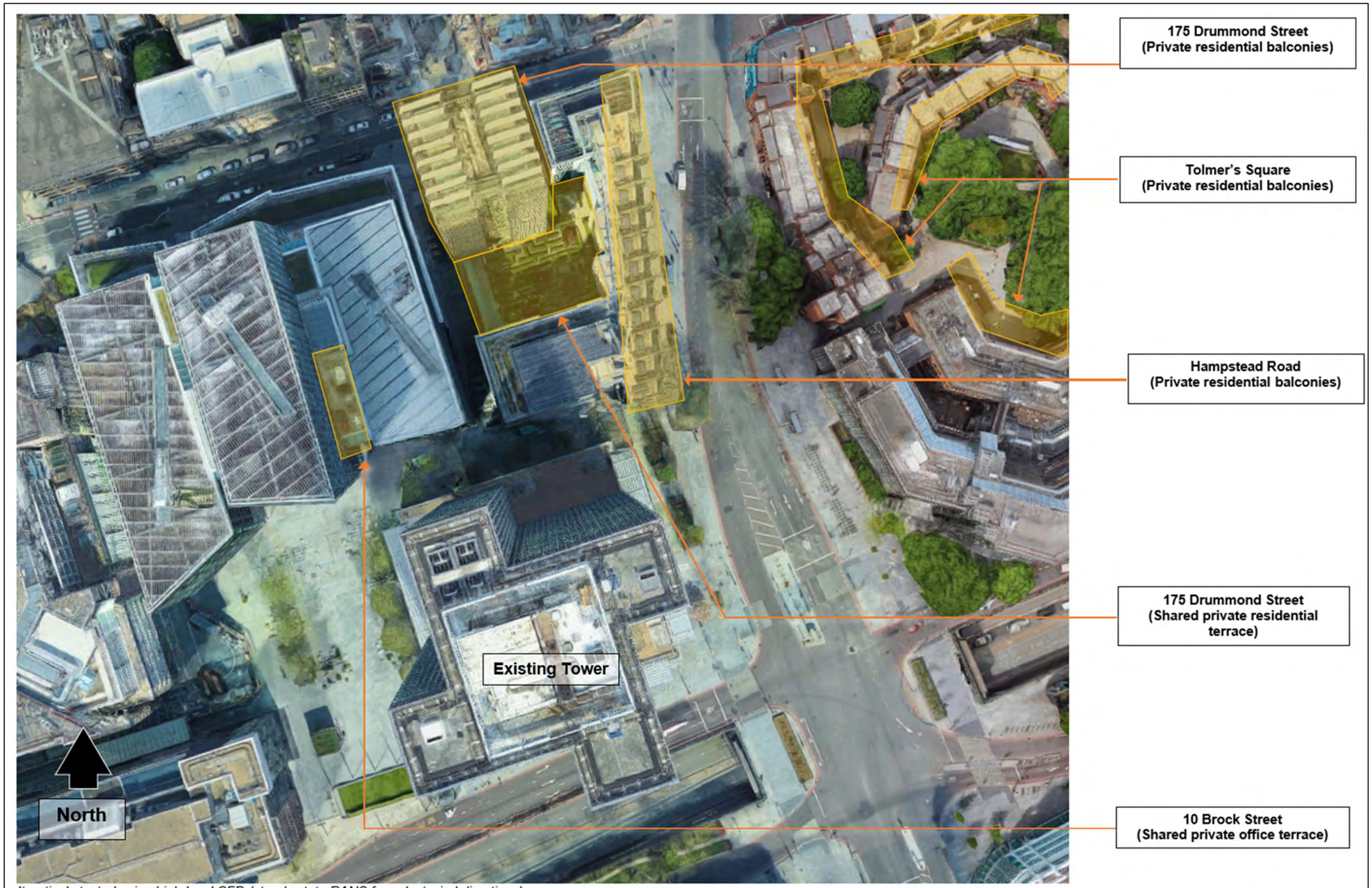
11.64 As no adverse effects are expected on the surrounding elevated levels, they have not been quantitatively measured in the wind tunnel, and therefore not considered further.

Figure 11.8 175 Drummond Street – Solid Balustrade on Private Residential Units

Figure 11.9 Hampstead Road – Street View of the Solid Balustrades and Large Porous Fins Sheltering the Private Balconies

Figure 11.10 Tolmer's Square – Street View of Residential Recessed Balconies

Figure 11.11 Off-Site Private Balconies and Terraces



Iteratively tested using high-level CFD (steady state RANS for select wind directions)

BASELINE CONDITIONS

Configuration 1: Existing Baseline

11.65 Photos of the scale model tested in the wind tunnel for Configuration 1: Existing Baseline is shown in Figure 11.13 and a plot of the wind conditions at ground level are shown in Figure 11.14 to Figure 11.17. A ground floor plan of the existing site, redline boundary and existing landscaping (including TFL trees) is shown in Figure 11.12.

11.66 The site is bounded by Euston Road (south), Hampstead Road (east), Brock Street (north) and Regent's Place Plaza (west). The site covers an area of 0.8 hectares (ha), comprised of an existing single, ground plus 36-storey tower. The tower has been largely vacant for several years, predominantly comprising office uses on the upper floors, however there are still retail uses currently in operation at ground floor level.

11.67 The site is mainly served by Warren Street Underground Station (south), Euston Square Underground Station (east) and Great Portland Street Underground Station (west). There are also several bus routes that serve the site along Euston Road (south) and Hampstead Road (east).

11.68 The land surrounding the site consists of a range of uses. The neighbouring Regent's Campus comprises commercial, office and cultural land uses, as well as pedestrianised streets and public realm incorporated into the space. The closest residential properties are located along Drummond Street (north) and Hampstead Road (east).

Figure 11.12 Existing Site and Existing Landscaping

Figure 11.13 Configuration 1: Existing Baseline Model

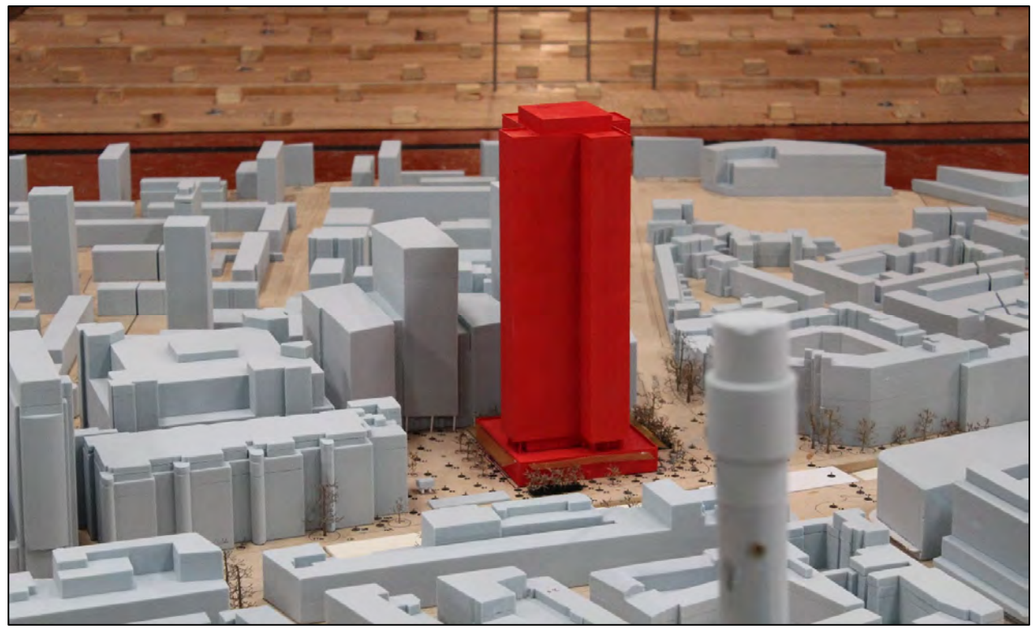


Figure 11.14 Configuration 1: Existing Baseline (Maximum Target Thresholds, Worst-Case (Winter))

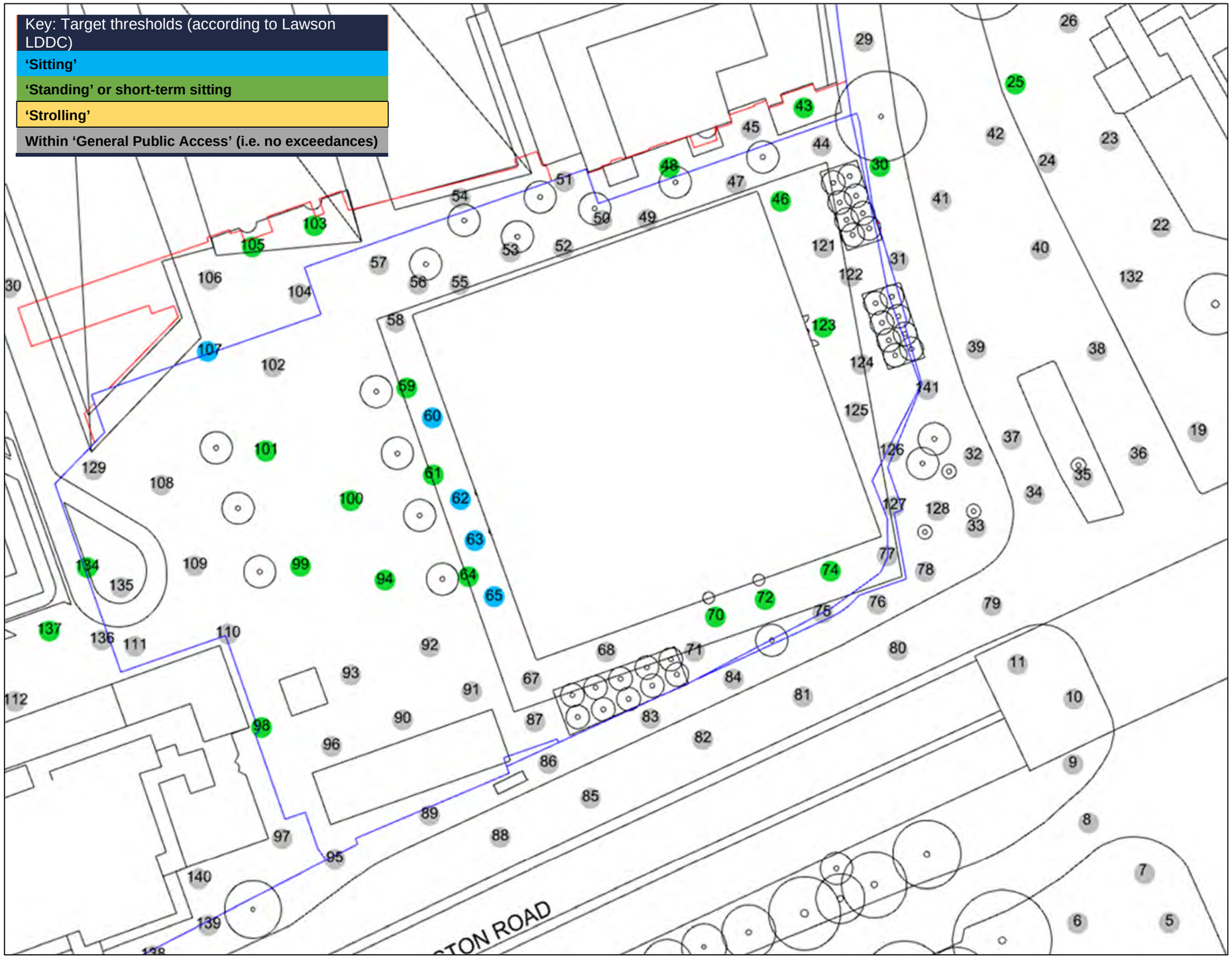


Figure 11.15 Configuration 1: Existing Baseline (Maximum Target Thresholds, Summer)

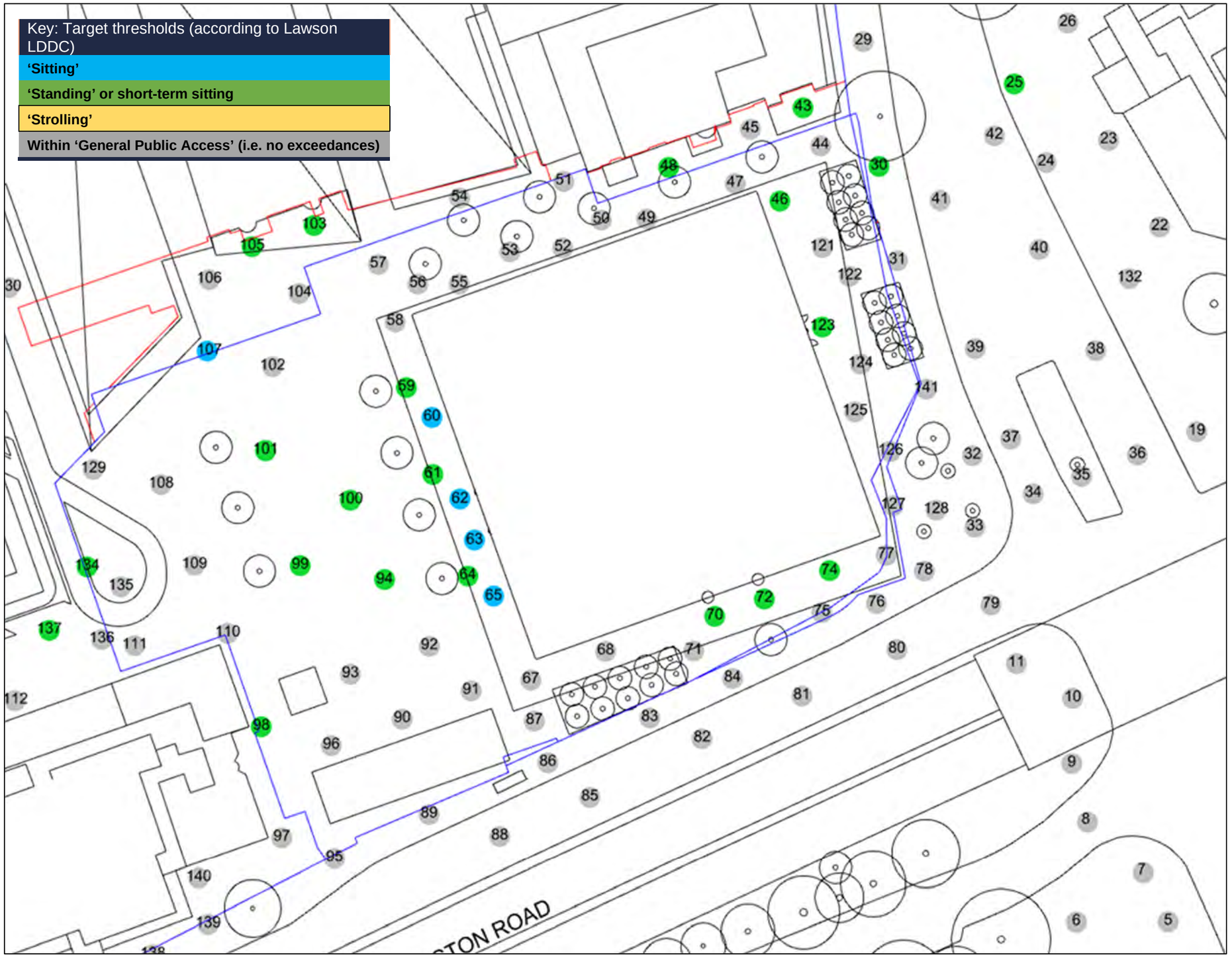


Figure 11.16 Configuration 1: Existing Baseline (Worst-Case)

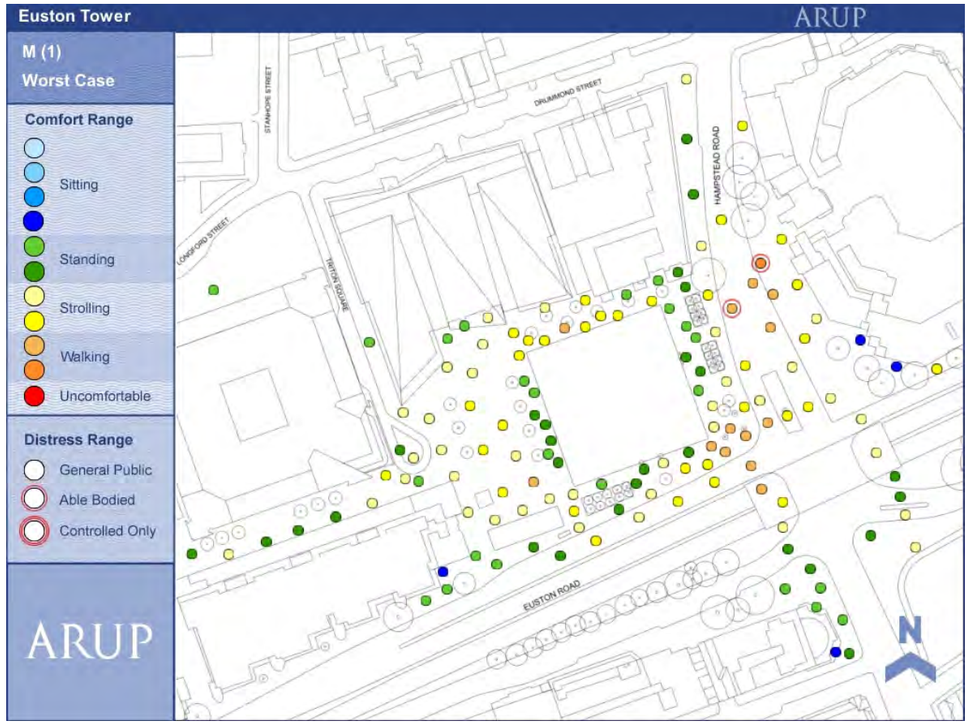
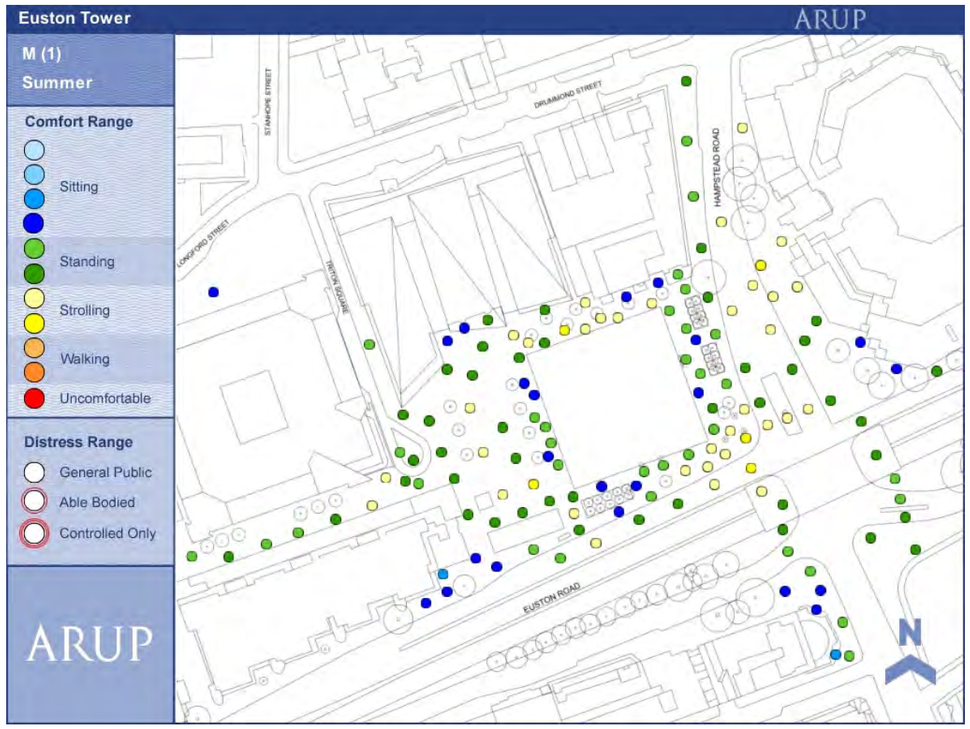


Figure 11.17 Configuration 1: Existing Baseline (Summer)



On-Site Receptors

11.69 Please refer to Figure 11.14 for the receptors numbers and locations discussed in this section.

Permanent Outdoor Café and Long-Term Sitting Spaces – Probe Locations 60, 62, 63 and 67)

11.70 Probes 62, 63, and 65 are all located on the west facade of the existing building where tables and seating are located for the ground floor retail units. These all record 'Standing' conditions, which is one category above the summer threshold for long-term sitting spaces and are therefore unacceptable in summer. However, these spaces do achieve acceptable 'Standing' conditions in the winter (worst-case).

11.71 The other on-site long-term seating location (probe 60) records acceptable 'Sitting' conditions in summer and 'Standing' in the winter (worst-case).

Main Entrances – Probes 46, 70, 72, 74, 123

11.72 Probe 72 located on the south façade, facing Euston Road, records 'Strolling' conditions in the worst-case season, which is one category above the threshold for entrances. This condition is unacceptable in the baseline.

11.73 All other on-site entrance locations (located along the northern façade, southern façade and eastern façade) record acceptable 'Sitting' to 'Standing' conditions all year round.

Outdoor Recreational Spaces and Bus Stops – Probes 59, 61, 64, 94, 99, 100, 101

11.74 Probes 99 and 101 are located in the middle of Regent's Place Plaza, to the west of the existing tower. These two probes record 'Strolling' conditions in the summer. While this is above the preferred threshold, they are located within a large space that does achieve acceptable 'Standing' conditions so users can choose to move to calmer areas if they desire. Therefore, these conditions are acceptable.

11.75 All other on-site recreational locations also located within Regent's Place Plaza) record acceptable 'Standing' conditions in the summer.

11.76 No bus stops are located on-site.

Areas for General Public Access and Cycling – Probes 44, 47, 49-53, 55-58, 67, 68, 71, 75, 77, 87, 90-93, 96, 102, 108-111, 121-127, 129, 135

11.77 All on-site locations for general public access and cycling record acceptable 'Standing' to 'Business Walking' conditions all year round.

11.78 It should be noted that one location at the south-east corner (probe 77) is marginal and very close to exceeding the Lawson general public access safety limit.

Areas for Occasional or Maintenance Access

11.79 No areas were identified as only being occasional or maintenance access. All receptors have been covered in the lower comfort categories listed above. Therefore, there is a negligible (not significant) effect.

Off-site Receptors

Permanent Outdoor Café and Long-Term Sitting Spaces – Probe 107

11.80 One café was identified as permanent off-site seating. This is measured with probe 107 and represents conditions outside the existing Refinery at Regent's Place restaurant and bar. Conditions are 'Strolling' in the worst-case and 'Standing' in the summer. These conditions are above the desired thresholds for a permanent seating area.

11.81 No other existing café spaces or long-term seating areas identified in the existing off-site surroundings.

Main Entrances – Probes 20, 43, 48, 98, 103, 105, 134

11.82 Probe 98 located at the Entrance to 2 Triton Square and probe 137 located at one of the entrances to 1 Triton Square (to the west of the site), are 'Strolling', i.e. one category above the threshold for entrances in the worst-case. This condition is unacceptable.

11.83 All other off-site entrance locations record acceptable 'Sitting' to 'Standing' conditions all year round.

Outdoor Recreational Spaces and Bus Stops – Probes 25, 30

11.84 No existing recreational spaces were identified the existing off-site surroundings.

11.85 Measurements were taken at a bus stop on the east side of Hampstead Road (probe 25). Conditions exceed the safety criteria for Able Bodied Access in the worst case, and 'Strolling' in summer. Conditions are unacceptable in both the summer and worst-case conditions. It should be noted that the bus shelter was missing from the test set-up at the time of testing for the baseline. It is included in Configurations 2, 3a and 3b.

11.86 Conditions at the bus stop on the east side of Hampstead Road (probe 30) achieve acceptable 'Standing' conditions in the summer and 'Strolling' conditions in the winter.

Areas for General Public Access and Cycling – Probes 1-29, 31-42, 44, 45, 54, 76, 78-86, 88, 89, 95, 97, 104-106, 112-120, 128, 130-133, 136-141

11.87 Probe 41 located in the middle of Hampstead Road to the east of the site, is above the Lawson safety threshold for able-bodied access in the worst-case. This condition is unacceptable.

11.88 All other off-site locations for general public access and cycling record acceptable conditions all year round.

Areas for Occasional or Maintenance Access

11.89 No obvious areas of occasional access or maintenance were found in the baseline surroundings.

POTENTIAL EFFECTS

11.90 This section presents the impact assessment once the Proposed Development is complete and in use.

Embedded Mitigation

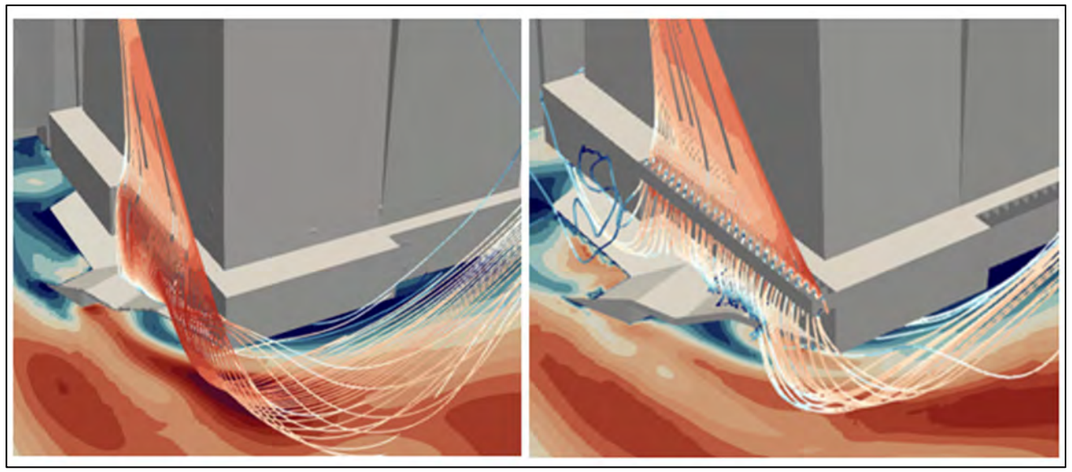
11.91 The configurations tested of the Proposed Development include existing off-site landscaping (including elements of existing TfL landscaping) as these elements were found to have an impact on the local wind conditions.

11.92 Extensive design and testing of the Proposed Development showed direct links between specific architectural elements and calmer wind conditions at ground level. Many of these were incorporated where possible and include:

- Wide podium at level 01-02 (to disrupt downdrafting);
- Porous fin arrays through the podium at the south-west and south-east corners (to create an intentional 'air-curtain that disrupts direct ground-level accelerations); and
- Recessing main entrances facing Euston Road (to create local shelter).

11.93 All embedded mitigation features were iteratively tested using high-level CFD (steady state RANS for select wind directions) and confirmed with boundary layer wind tunnel testing. Examples of the CFD outputs and design iterations are shown in Figure 11.18 below. The final design was tested on 14 November 2023 and the results are discussed in the following sections.

Figure 11.18 3D Visualisation of Early CFD Analysis of the Proposed Development



11.94 The above figure shows simplified streamlines interacting with early versions of the south-west corner of the Proposed Development, (left) without porous fin arrays and (right) with an early version of the porous fin array that was developed into the final design. Colours are qualitative and show areas of relative acceleration (red) and sheltering (blue) and are not directly comparable to Lawson conditions.

Configuration 2: Proposed Development Without Landscaping

11.95 Photos of the scale model tested in the wind tunnel for Configuration 2: Proposed Development without Landscaping is shown in Figure 11.20 and a plot of the wind conditions at ground level are shown in Figure 11.21 to Figure 11.24.

11.96 The Proposed Development includes a 32-storey tower on top of a podium and associated public realm works. The full description of the Proposed Development can be found in **ES Volume 1, Chapter 4: The Proposed Development**. The external uses include a mix of pedestrian and cycle thoroughfares, outdoor recreational space, and entrances. Configuration 2 includes existing off-site landscaping, except landscaping included within TfL owned land at the west corner of Euston Road and Hampstead Road.

11.97 A plan view of the Proposed Development, embedded mitigation and entrance locations are shown in Figure 11.19 below.

Figure 11.19 Ground Floor of the Proposed Development

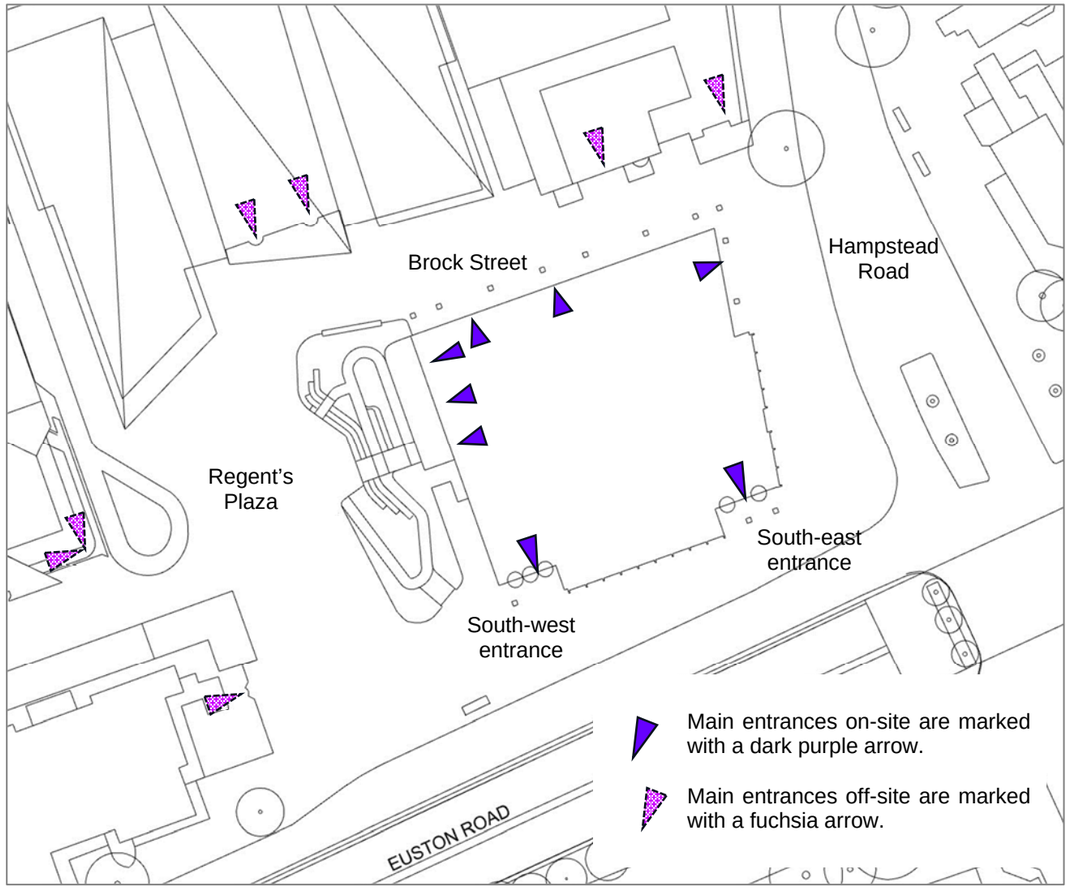


Figure 11.20 Configuration 2: Proposed Development Without Landscaping

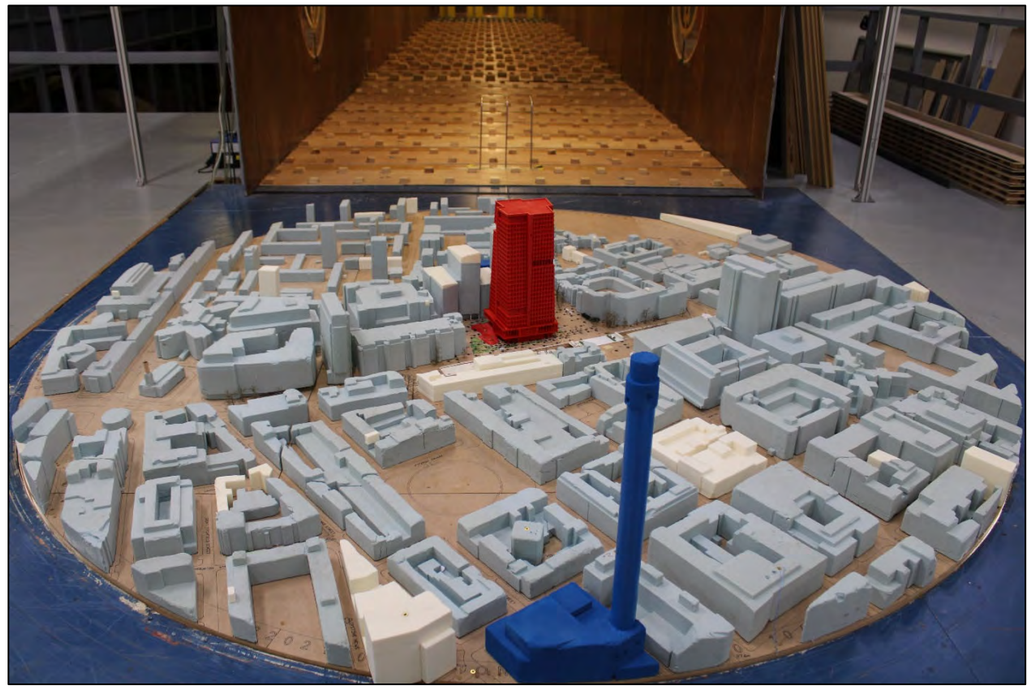


Figure 11.21 Configuration 2: Proposed Development Without Landscaping (Maximum Target Thresholds, Worst-Case (Winter))

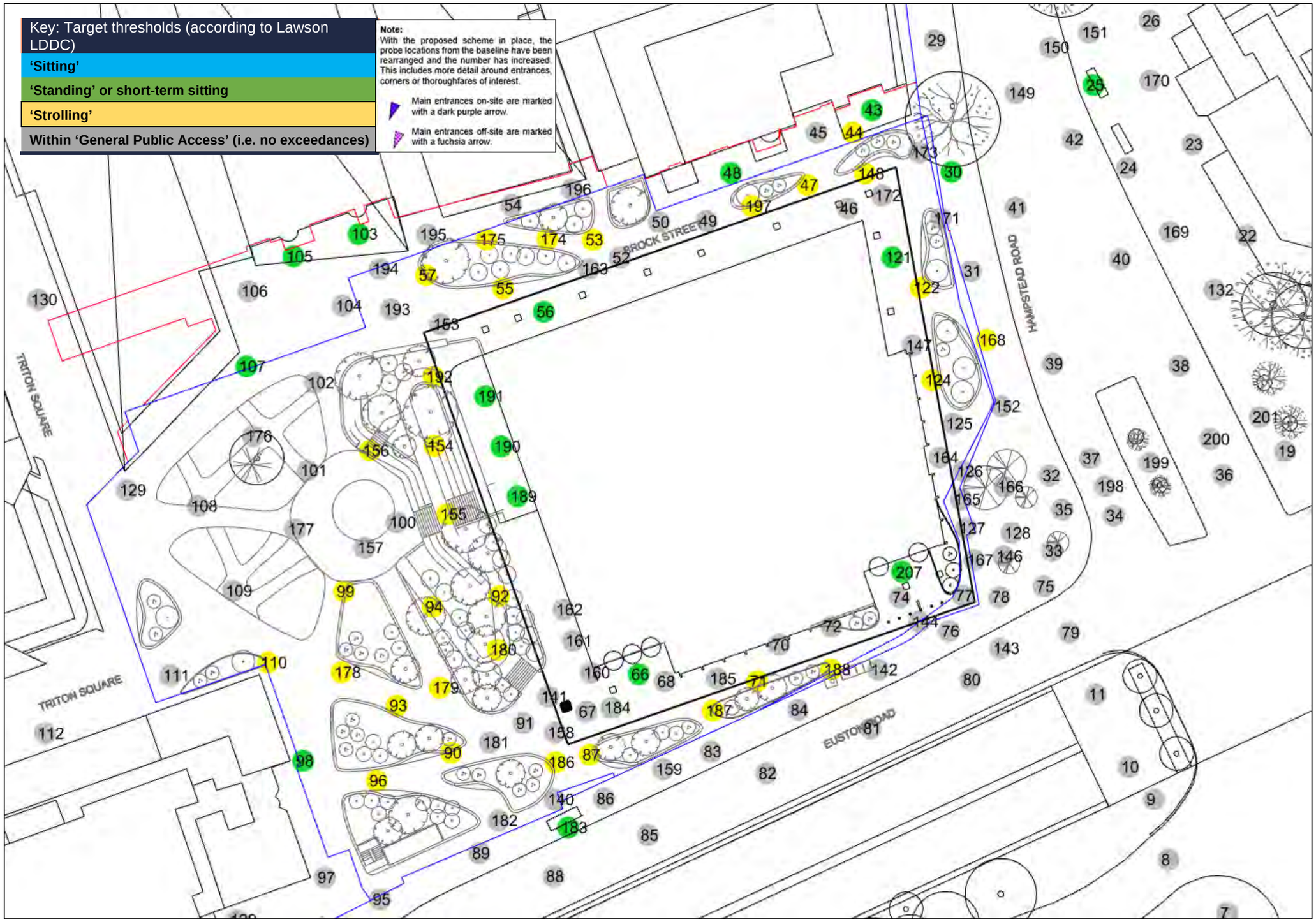


Figure 11.22 Configuration 2: Proposed Development Without Landscaping (Maximum Target Thresholds, Summer)

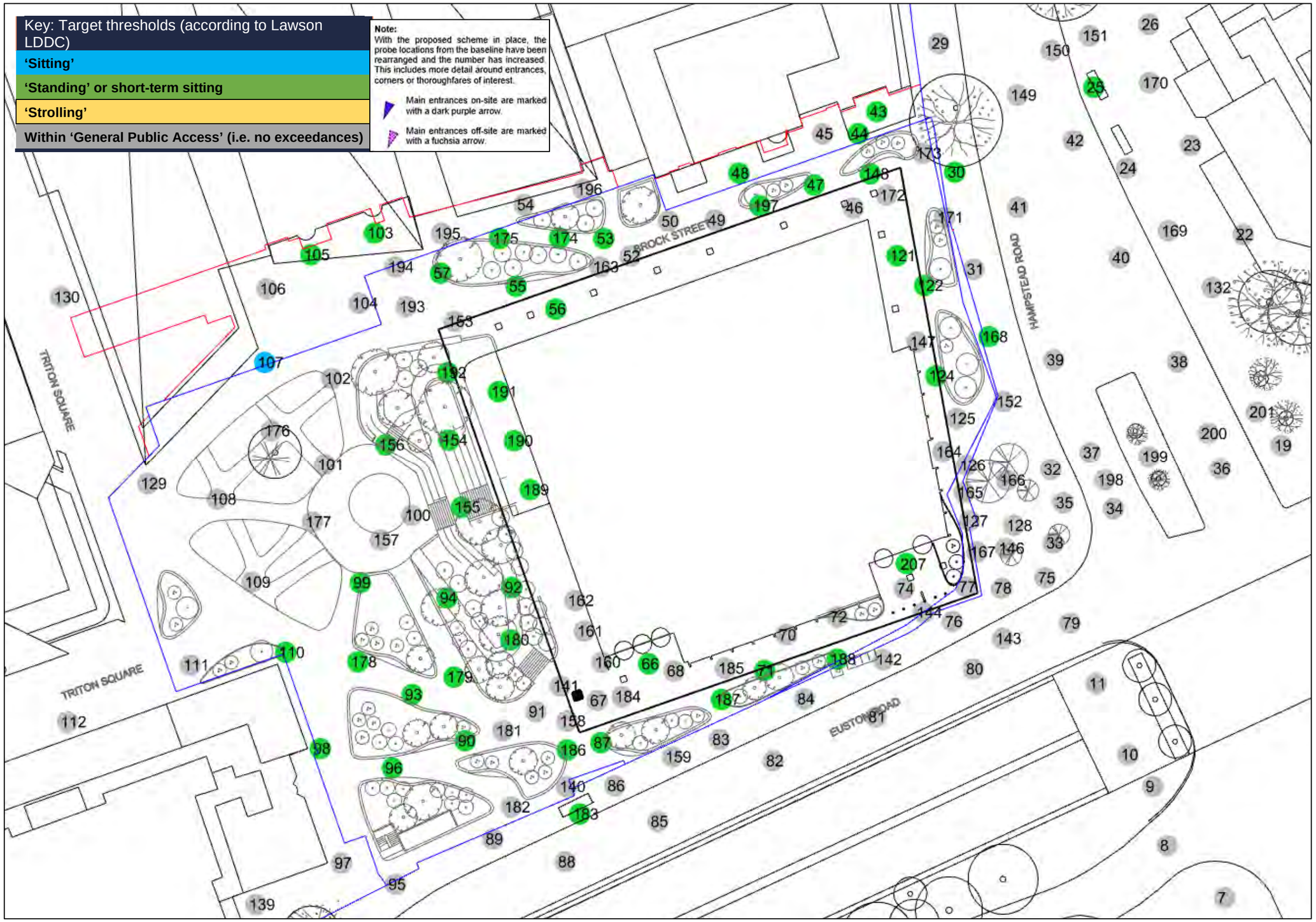


Figure 11.23 Configuration 2: Proposed Development Without Landscaping (Worst-Case)

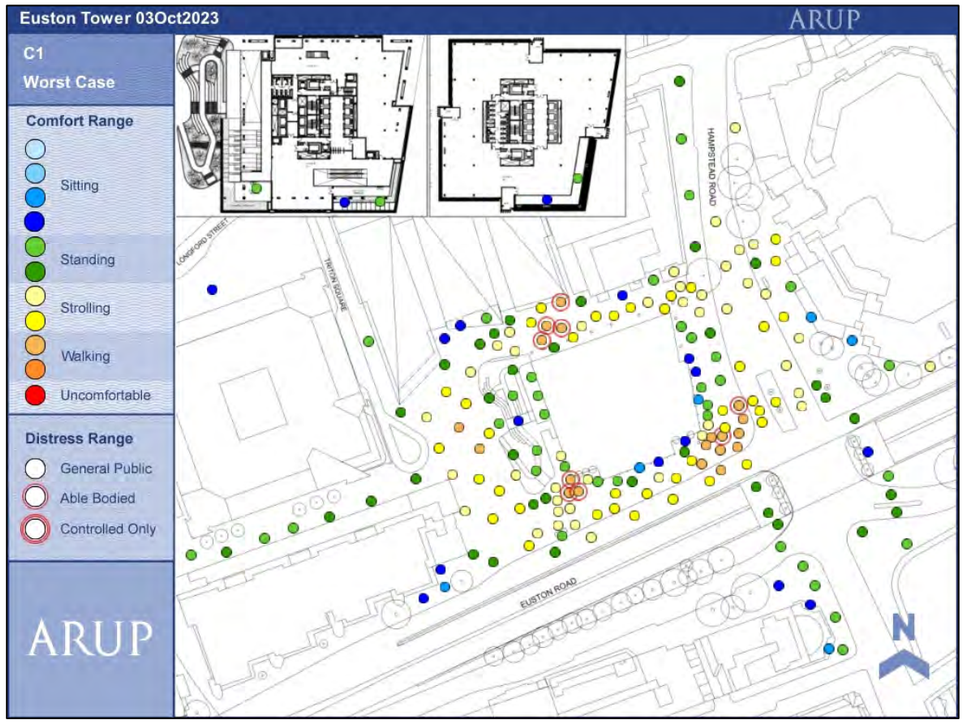
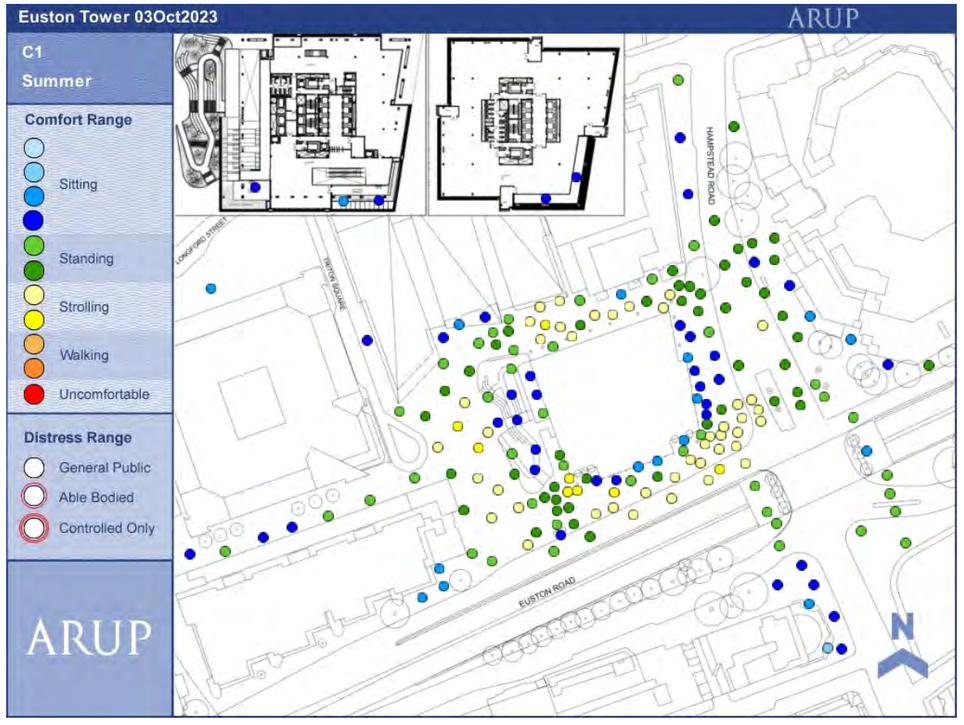


Figure 11.24 Configuration 2: Proposed Development Without Landscaping (Summer)



On-Site Receptors

11.98 Please refer to Figure 11.21 for the receptors numbers and locations discussed in this section.

Permanent Outdoor Café and Long-Term Sitting Spaces

11.99 There are no proposed permanent café spaces or long-term seating areas on-site. Areas of temporary seating for good weather (for example outside the podium) are covered under *'Outdoor Recreational Spaces and Bus Stops'*.

Main Entrances – Probes 56, 66, 121, 189, 190, 191

11.100 A receptor at the main entrance at the south-west corner (probe 66) records 'Strolling' conditions in the worst-case. This is one category above the acceptable limit for main entrances and represents a direct, permanent, long-term **Moderate Adverse (significant)** effect.

11.101 The 'Public use secondary entrance' on Brock Street (no probe at entrance) is expected to experience 'Strolling' conditions all year round, similar to the conditions recorded at nearby probes (probes 52 and 163). Therefore, it represents a direct, permanent, long-term **Moderate Adverse** (**significant**) effect.

11.102 All other on-site entrance locations record acceptable 'Sitting' to 'Standing' conditions all year round, representing a direct, permanent, long-term Negligible (not significant) effect.

Outdoor Recreational Spaces and Bus Stops – Probes 47, 53, 55, 57, 71, 87, 90, 92-94, 96, 99, 110, 122, 124, 148, 154-156, 162168, 174, 175, 178-180, 186-188, 192, 197

11.103 No bus stops are located on-site.

11.104 Three probes in Brock Street (north side of the site) record conditions above the Lawson safety threshold for General Public Access (probes 55, 175, 53) and two probes (148 and 197) record conditions 'Strolling' conditions in the summer. All of these conditions represent a direct, permanent, long-term **Moderate Adverse (significant)** effect.

11.105 Several probes in an area to the south of Regent's Place Plaza (probes 90, 93, 96, and 178), records 'Strolling' conditions in the summer. These conditions are above the desired threshold for outdoor recreational spaces and covers a large area. Therefore, it represents a direct, permanent, long-term **Moderate Adverse** (**significant**) effect.

11.106 All other on-site recreational locations record acceptable 'Sitting' to 'Standing' conditions in the summer. This represents a direct, permanent, long-term Negligible (not significant**)** effect.

Areas for General Public Access and Cycling – Probes 46, 49-52, 67, 68, 70, 72, 74, 77, 91, 100-102, 108, 109, 111, 125-127, 129, 140, 141, 144, 147, 153, 157, 158, 160-164, 165, 171-173, 176, 177, 181, 182, 184, 185, 193, 194

11.107 Three probes clustered around the south-west corner (probes 67, 160 and 184) record conditions above the Lawson safety threshold for General Public Access. This represents a direct, permanent, long-term **Moderate Adverse (significant)** effect.

11.108 All other on-site locations for general public access and cycling record acceptable 'Standing' conditions all year round. This represents a direct, permanent, long-term Negligible (not significant) effect.

Areas for Occasional or Maintenance Access

11.109 No areas were identified as only being occasional or maintenance access. All receptors have been covered in the lower comfort categories listed above. Therefore, there is a direct, permanent, long-term Negligible (not significant) effect.

Upper Level Terraces – Probes 202-206

11.110 All receptors on the upper terraces record acceptable ‘Sitting’ to ‘Standing’ conditions in the summer. These represent a direct, permanent, long-term Negligible (not significant) effect.

Off-Site Receptors

Permanent Outdoor Café and Long-Term Sitting Spaces – Probe 107

11.111 The one identified off-site permanent seating location (north side of Regent’s Place Plaza) records ‘Standing’ conditions in both the worst-case and the summer conditions. This represents a direct, permanent, long-term Negligible (not significant) effect in the summer and a direct, permanent, long-term Moderate Beneficial (not significant) effect for the worst-case.

Main Entrances – Probes 20, 28, 43, 48, 98, 103, 105

11.112 Probe 98 located at the Entrance to 2 Triton Square (to the west of the site), remains consistent with the existing baseline (Configuration 1) and is still recording ‘Strolling’ conditions for entrances in the worst-case. This represents a direct, permanent, long-term Negligible (not significant) effect.

11.113 The previous probes 134 and 137 located at the of the entrances to 1 Triton Square were removed and renumbered from the testing of Configuration 1 (tested in 2019) to Configuration 2 (tested in 2023). Using professional judgment, the conditions across this area of the disc trace generally improve by half a category. Therefore, it is expected that conditions at 1 Triton Square will now be experiencing acceptable ‘Standing’ conditions for entrances and would represent a direct, permanent, long-term Moderate Beneficial (not significant) effect.

11.114 One location at the north-east corner of the site (probe 43) records ‘Strolling’ conditions in the worst-case. This is one category above the acceptable limit for main entrances and represents a direct, permanent, long-term **Moderate Adverse (significant)** effect.

11.115 All other on-site entrance locations (probes 20, 48, 103, and 105) record acceptable ‘Sitting’ to ‘Standing’ conditions all year round and represents a direct, permanent, long-term Negligible (not significant) effect.

Outdoor Recreational Spaces and Bus Stops – Probes 25, 30, 44, 183

11.116 Conditions at all three off-site bus stops (probe 25 located on the east side of Hampstead Road, probe 30, located on the west side of Hampstead Road and probe 183 located along the north side of Euston Road) recorded acceptable conditions in all seasons. Probes 25 and 183 record ‘Standing’ conditions in both the worst-case and summer, while probe 30 records ‘Strolling’ conditions in the worst-case and ‘Standing’ in the summer. This represents a direct, permanent, long-term Negligible (not significant) effect.

11.117 Conditions at probe 25 represent a direct, permanent, long-term Major Beneficial (not significant) effect while conditions at probes 30 and 183 represent a direct, permanent, long-term Negligible (not significant) effect.

Areas for General Public Access and Cycling – Probes 1-29, 31-45, 54, 75, 76, 78-86, 88, 89, 95, 97, 104, 106, 112-120, 128, 130-133, 137-139, 142, 143, 146, 149-152, 159, 166, 167, 169, 170, 195, 196, 198-201

11.118 Probe 41 located in the middle of Hampstead Road to the east of the site, improves from Configuration 1 to ‘Strolling’ the worst-case. This represents a direct, permanent, long-term Major Beneficial (not significant) effect**.**

11.119 Two locations (probes 32 and 146) close to the south-east corner of the site (at the corner of Euston Road and Hampstead Road) record conditions above the Lawson safety threshold for General Public Access. This represents a direct, permanent, long-term **Moderate Adverse (significant)** effect.

11.120 All other off-site locations for general public access and cycling record acceptable conditions all year round. This represents a direct, permanent, long-term Negligible (not significant) effect.

Areas for Occasional or Maintenance Access

11.121 No obvious areas of occasional access or maintenance were found in the existing surroundings. Therefore, this is a direct, permanent, long-term Negligible (not significant) effect.

MITIGATION, MONITORING AND RESIDUAL EFFECTS

Configuration 3a: Proposed Development With Landscaping and Initial Mitigation

11.122 Photos of the scale model tested in the wind tunnel for Configuration 3a: Proposed Development with Landscaping and initial mitigation is shown in Figure 11.26 and a plot of the wind conditions at ground level are shown in Figure 11.27 to Figure 11.30.

11.123 Configuration 3a includes all existing off-site landscaping, including TfL landscaping at the west corner of Euston Road and Hampstead Road. Local wind mitigation measures were also included these are described below and shown in Figure 11.25.

- South-east corner:
  - No. 2 raised planters (800mm) and five trees circling the south-east corner
    - western planter includes No. 2 deciduous multi-stem trees, 2-3m tall
    - Eastern planter includes No. 2 deciduous 3-5m tall trees and one deciduous multi-stem 2-3m tall
  - One ‘totem’ perpendicular to the south-east entrance (1.2m wide x 3m tall, 50% porous) forming part of the security bollards around the entrance.
- South-west corner:
  - One solid ‘totem’/screen, (1.5m tall x 1.2m wide) located between the southern façade and the external podium column.
- Brock Street (north road on site)
  - No. 3 planters:
    - Western raised planter: mounded to 1.5m tall with No. 7 deciduous trees 3-5m tall & No. 1 evergreen tree 8.5m tall
    - Northern raised planter: mounded to 1m tall with No. 3 deciduous trees 3-5m tall & No. 1 evergreen tree 5-7m tall
    - Eastern level planter: No. 1 evergreen tree 10m tall.

11.124 Note, some updates to the landscaping took place after the wind tunnel testing on the 14 November, particularly around the south-east entrance. These changes are highlight and their impacts discussed in the following section ‘*Configuration 3b: Proposed Development with Landscaping and Updated Mitigation’*.

Figure 11.25 Proposed Development With Landscaping

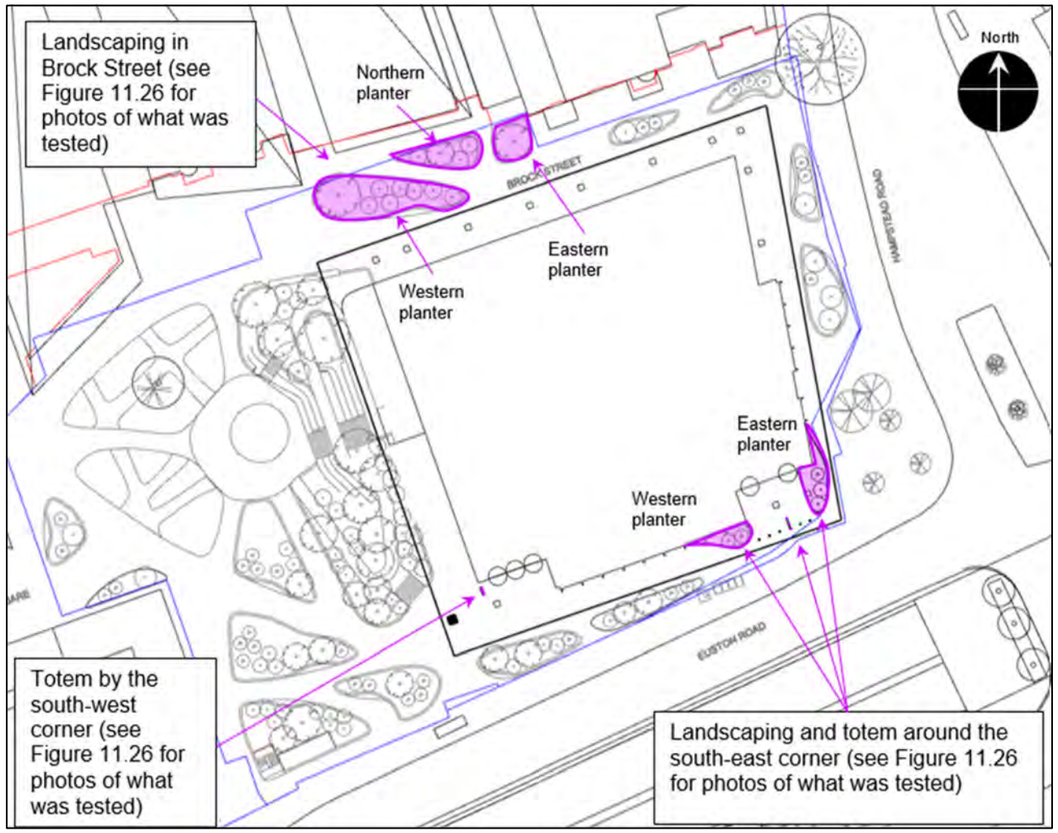
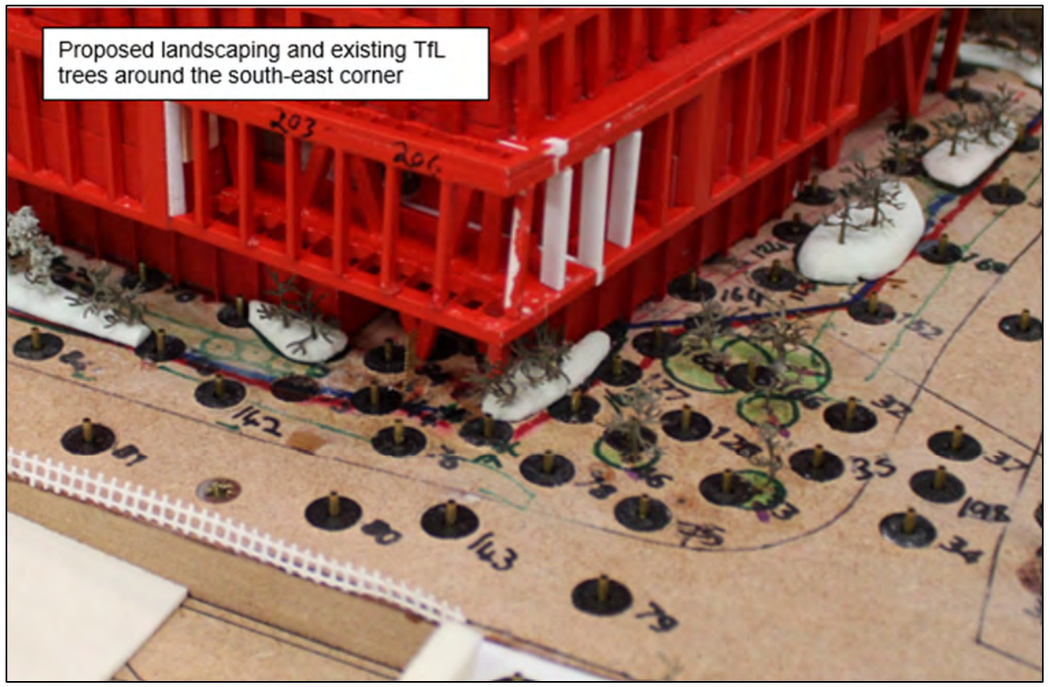


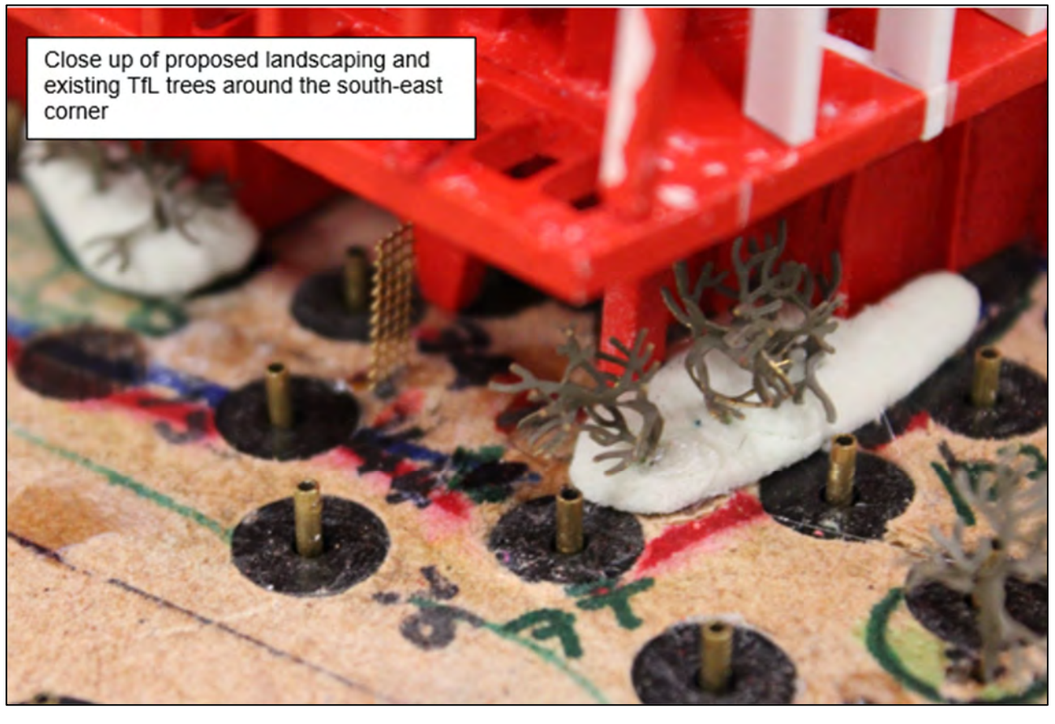
Figure 11.26 Configuration 3a: Proposed Development With Landscaping and Initial Mitigation Model

Landscaping within Regent's Place Plaza



Proposed landscaping and existing TfL trees around the south-east corner

Landscaping and mitigation screen close to the south-west main entrance and cycle entrance



Close up of proposed landscaping and existing TfL trees around the south-east corner

Figure 11.27 Configuration 3a: Proposed Development With Landscaping and Initial Mitigation Measures (Maximum Target Thresholds, Worst-Case (Winter))

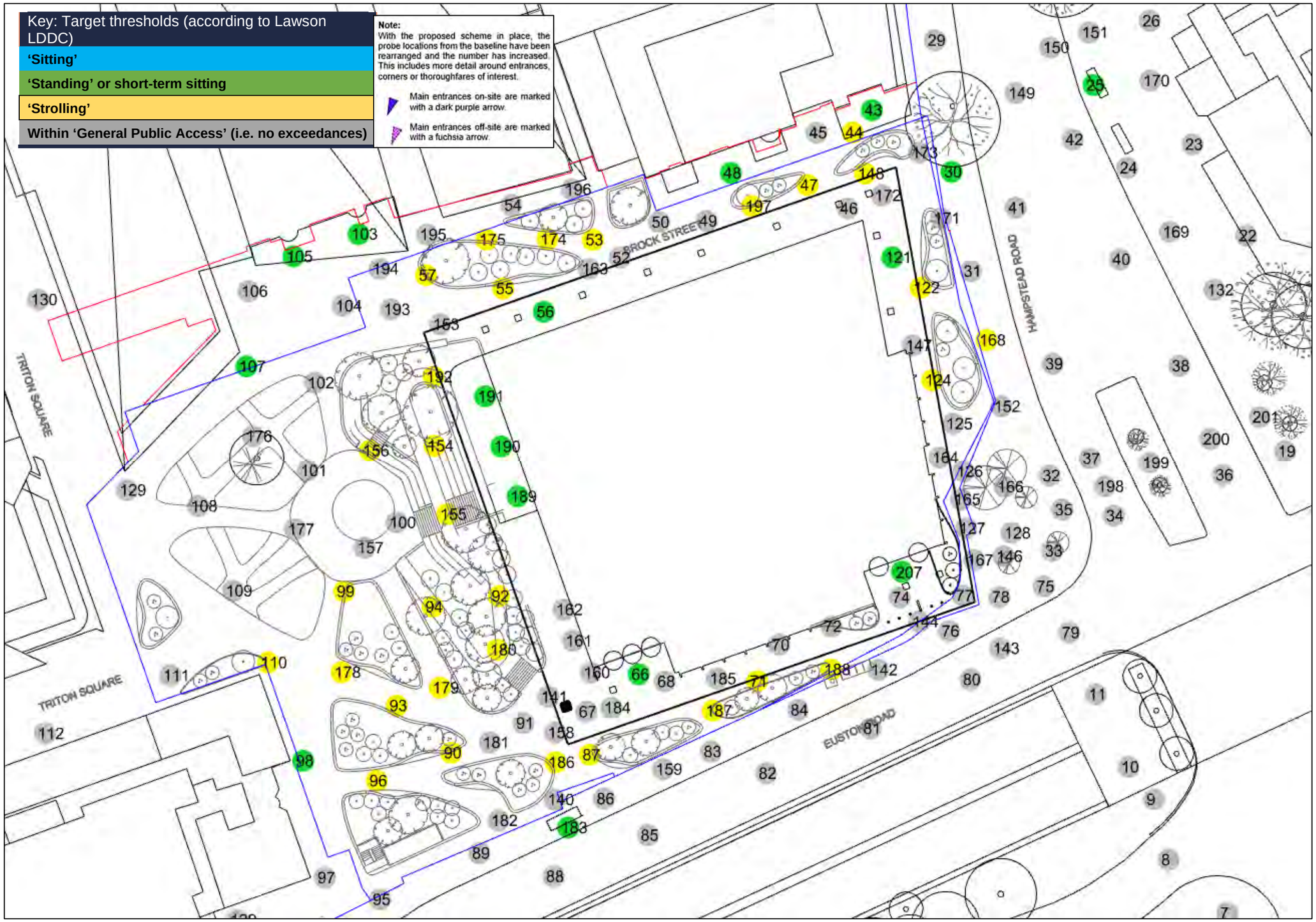


Figure 11.28 Configuration 3a: Proposed Development With Landscaping and Initial Mitigation Measures (Maximum Target Thresholds, Summer)

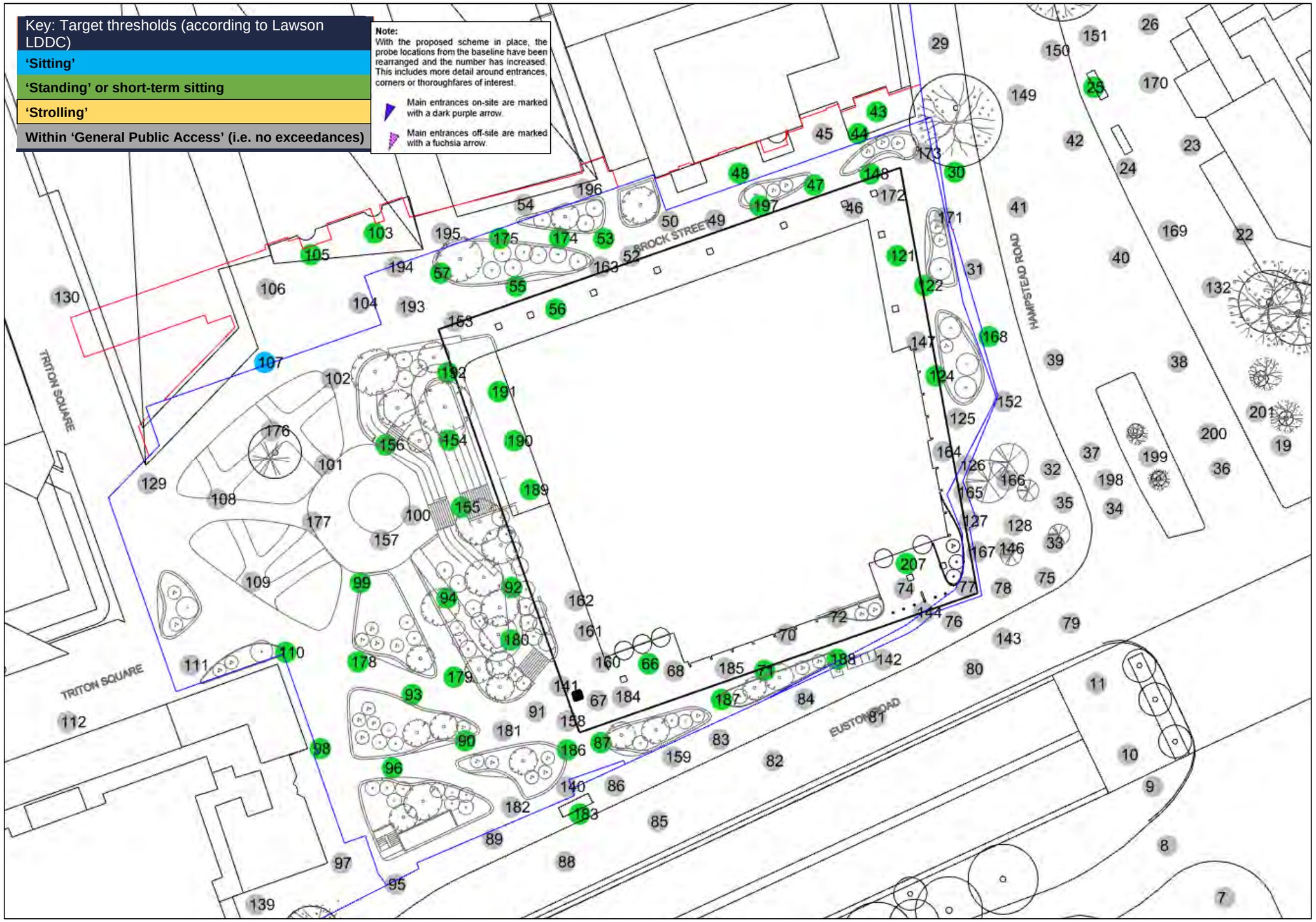


Figure 11.29 Configuration 3a: Proposed Development With Landscaping and Initial Mitigation Measures (Worst-Case)

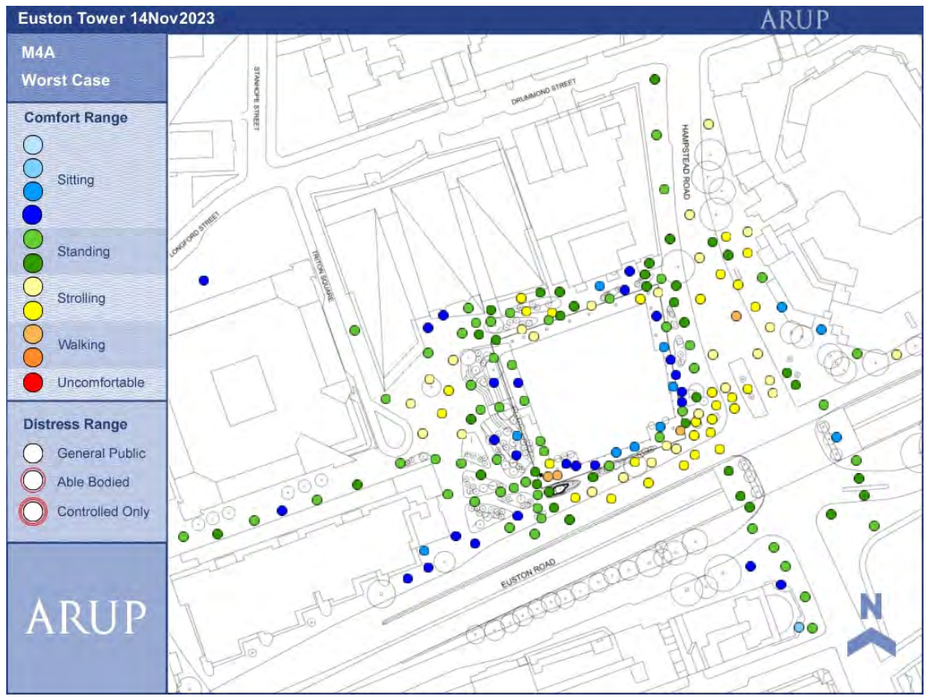
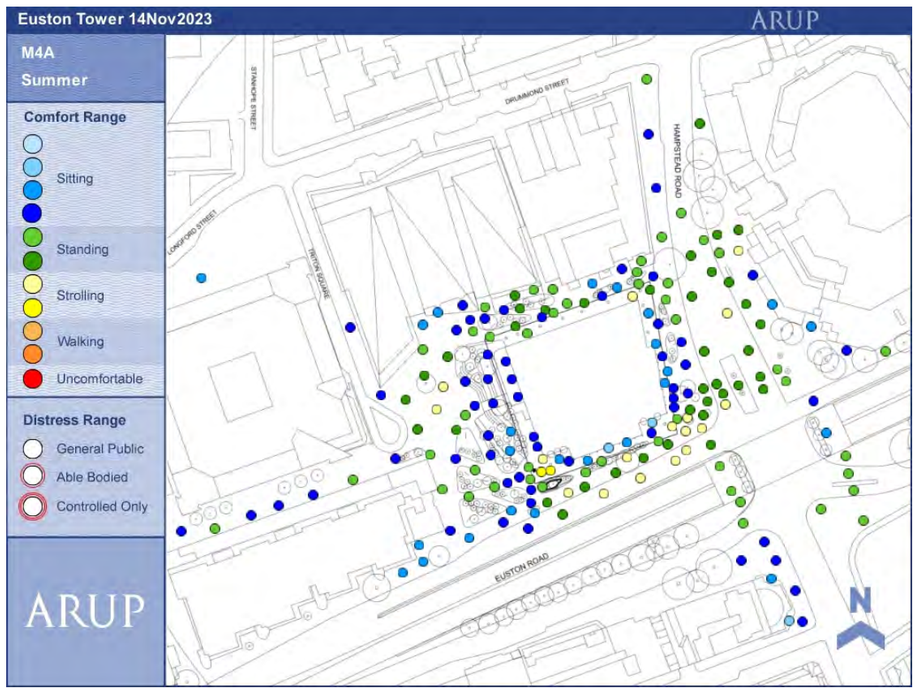


Figure 11.30 Configuration 3a: Proposed Development With Landscaping and Initial Mitigation Measures (Summer)



On-Site Receptors

11.125 Please refer to Figure 11.27 for the receptors numbers and locations discussed in this section.

Permanent Outdoor Café and Long-Term Sitting Spaces

11.126 There are no proposed permanent café spaces or long-term seating areas on-site. Areas of temporary seating for good weather are covered under *'Outdoor Recreational Spaces and Bus Stops'*.

Main Entrances - Probes 56, 66, 121, 189, 190, 191

11.127 A receptor at the main entrance at the south-west corner (probe 66) improves from 'Strolling' in Configuration 2 to 'Standing' conditions in the worst-case of Configuration 3. This is now acceptable for main entrances and represents a direct, permanent, long-term Negligible (not significant) effect.

The 'Public use secondary entrance' on Brock Street (no probe at entrance) is expected to experience 'Standing' conditions all year round, similar to the conditions recorded at nearby probes (probes 52 and 163). Therefore, it represents a direct, permanent, long-term Negligible (not significant) effect.

11.128 One receptor at the accessible lift access (Probe 56) records 'Strolling' in the worst-case, which is one category above the required range for entrances. This represents a direct, permanent, long-term **Moderate Adverse (significant**) effect. This can be mitigated with local landscaping/sheltering, as discussed in the following section (11.158).

11.129 All other on-site entrance locations record acceptable 'Sitting' to 'Standing' conditions all year round and represent a direct, permanent, long-term Negligible (not significant) effect.

Outdoor Recreational Spaces and Bus Stops – Probes 47, 53, 55, 57, 71, 87, 90, 92-94, 96, 99, 110, 122, 124, 148, 154-156, 162168, 174, 175, 178-180, 186-188, 192, 197

11.130 No bus stops are located on-site.

11.131 Probes 53, 55, 148, 175, and 197 on Brock Street which record 'Strolling' conditions in the summer in Configuration 2, improve to 'Sitting to 'Standing' in summer in Configuration 3. This represents a direct, permanent, long-term Negligible (not significant) effect.

11.132 The locations recording 'Strolling' conditions in an area to the south of Regent's Place Plaza (probes 90, 93, 96, and 178) in Configuration 2, improve in Configuration 3 to 'Standing' in summer. This now represents a direct, permanent, long-term Negligible (not significant) effect.

11.133 All other on-site recreational locations (probes 44 and 47 in Brock Street, 122 and 168 on Hampstead Road, 71, 187 and 188 on Euston Road, and 92, 94, 154, 155, 156, 162, 179, 180, and 192 within Regent's Place Plaza) continue to record acceptable 'Sitting' to 'Standing' conditions in the summer in Configuration 3 and represent a direct, permanent, long-term Negligible (not significant) effect.

Areas for General Public Access and Cycling – Probes 46, 49-52, 67, 68, 70, 72, 74, 77, 91, 100-102, 108, 109, 111, 125-127, 129, 140, 141, 144, 147, 153, 157, 158, 160-164, 165, 171-173, 176, 177, 181, 182, 184, 185, 193, 194

11.134 All of the probes clustered around the south-west corner that were recording unacceptable conditions in Configuration 2, improve in Configuration 3a to acceptable 'Standing' to 'Strolling' conditions. This represents a direct, permanent, long-term Negligible (not significant) effect.

11.135 All other on-site locations for general public access and cycling record acceptable 'Standing' conditions all year round and represent a direct, permanent, long-term Negligible (not significant) effect.

Areas for Occasional or Maintenance Access

11.136 No areas were identified as only being occasional or maintenance access. All receptors have been covered in the lower comfort categories listed above. Therefore, this is a direct, permanent, long-term Negligible (not significant) effect.

Upper-Level Terraces – Probes 202-206

11.137 All receptors on the upper terraces continue to record acceptable 'Sitting' to 'Standing' conditions in the summer. These represent a direct, permanent, long-term Negligible (not significant) effect.

Off-site Receptors

Permanent Outdoor Café and Long-Term Sitting Spaces – Probe 107

11.138 Probe 107 continues to record 'Standing' conditions in both summer and worst-case and represents a direct, permanent, long-term Negligible (not significant) effect in the summer and a direct, permanent, long-term Moderate Beneficial (not significant) effect for the worst-case.

Main Entrances – Probes 20, 28, 43, 48, 98, 103, 105

11.139 The 'Strolling' conditions in the worst case at probe 98 (located at the Entrance to 2 Triton Square) is unchanged and continues to represent a direct, permanent, long-term Negligible (not significant) effect.

11.140 Professional judgment for conditions at the off-site entrances that used to be measured by probes 134 and 137 in Configuration 1 (entrances to 1 Triton Square) determines that conditions are unchanged from Configuration 2. This continues to represent a direct, permanent, long-term Moderate Beneficial (not significant) effect.

11.141 One location at the north-east corner of the site (probe 43) improves form 'Strolling' conditions in Configuration 2 to 'Standing' conditions in the worst-case in Configuration 3a. These conditions are acceptable and now represents a direct, permanent, long-term Negligible (not significant) effect.

11.142 All other on-site entrance locations record acceptable 'Sitting' to 'Standing' conditions all year round and represent a direct, permanent, long-term Negligible (not significant) effect.

Outdoor Recreational Spaces and Bus Stops – Probes 25, 30, 44, 183

11.143 There are no changes in the conditions at outdoor recreational spaces and bus stops from Configuration 2 compared to Configuration 3a. This continues to represent a direct, permanent, long-term Moderate Beneficial (not significant) effect.

11.144 Conditions at probe 25 continue to represent a Major Beneficial (not significant) effect and conditions at probes 30 and 183 continue to represent a direct, permanent, long-term Negligible (not significant) effect.

Areas for General Public Access and Cycling – Probes 1-29, 31-45, 54, 75, 76, 78-86, 88, 89, 95, 97, 104, 106, 112-120, 128, 130-133, 137-139, 142, 143, 146, 149-152, 159, 166, 167, 169, 170, 195, 196, 198-201

11.145 Probe 41 located in the middle of Hampstead Road to the east of the site, continues to record 'Strolling' conditions in the worst case and represent a direct, permanent, long-term Major Beneficial (not significant) effect.

11.146 Probe location 32 (close to the south-west corner of the site, at the corner of Euston Road and Hampstead Road) and probe 146 (close to the south-west corner of the site (at the corner of Euston Road and Hampstead Road) improve to acceptable 'Strolling' conditions in the worst-case in Configuration 3a. This now represents a direct, permanent, long-term Negligible (not significant) effect.

11.147 All other off-site locations for general public access and cycling record acceptable conditions all year round. Therefore, this is a direct, permanent, long-term Negligible (not significant) effect.

Areas for Occasional or Maintenance Access

11.148 No obvious areas of occasional access or maintenance were found in the existing surroundings. Therefore, this is a direct, permanent, long-term Negligible (not significant) effect.

Configuration 3b: Proposed Development with Landscaping and Updated Wind Mitigation

11.149 Following the final wind tunnel workshop on the 14 November, details of the landscaping and mitigation elements were refined by the design team. These refinements have been qualitatively reviewed by the wind specialists using professional judgement and sensitivity tests carried out during the wind tunnel workshop day.

11.150 A plan view of the Proposed Development, proposed landscaping, and updated mitigation are shown in Figure 11.31 and highlights the changes from Configuration 3a. Changes to Configuration 3b include:

- Removing the porous totem in front of the south-east entrance
- Extending the western raised planter and changing the soft landscaping to incorporate No.4 deciduous multi-stem trees 2-3m tall.

11.151 The changes described above can be seen in the planning documents including ground-level plans and landscaping documents. The updates to the landscaping around the south-east corner are expected to produce similarly acceptable results to those tested in the wind tunnel.

11.152 A version of this design was tested with partial wind directions, south through west (180°-270° from north) on 14 November 2023. The Lawson results (using data from Configuration 3a to fill in the untested directions) have been included in this report to provide assurance of the conclusions of the professional judgement.

11.153 Note, this method of using data from two similar runs is a common method used in the wind tunnel when a select number of wind angles are identified as significant for an area of interest. Only testing the significant wind angles and filling non-critical wind angles with other configurations allows for faster turn-around within a workshop slot. However, it is preferable to test all directions to ultimately verify the conditions according to the methodology agreed within the scoping report.

11.154 Photos of the scale model tested in the wind tunnel for Configuration 3b: Proposed Development with Landscaping and Updated Wind Mitigation is shown in Figure 11.33 and a plot of the worst-case wind conditions at ground level are shown in Figure 11.34. Please refer to Figure 11.27 for the receptors numbers and locations discussed in this section.

11.155 Configuration 3b includes all existing off-site landscaping, including TfL landscaping at the west corner of Euston Road and Hampstead Road.

Figure 11.31 Configuration 3b: Proposed Development with Landscaping and Updated Wind Mitigation

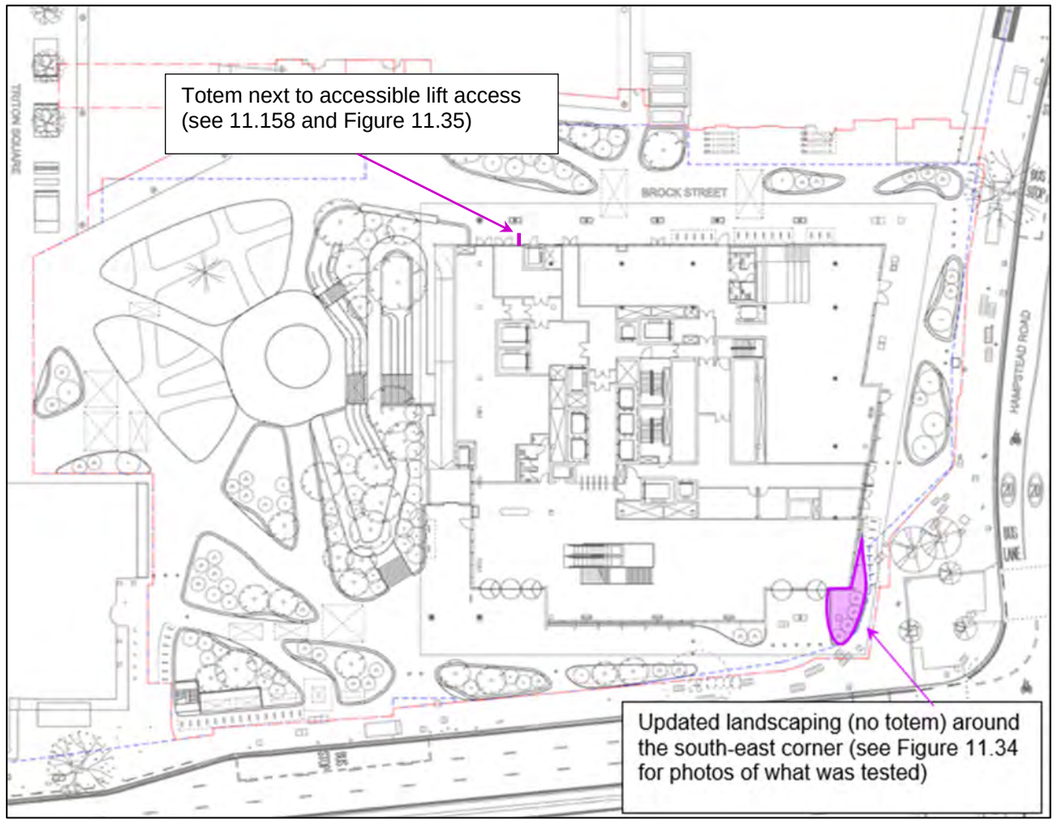


Figure 11.32 Bar Chart Highlighting Significant Wind Angles at Receptor 77 at the South-East Corner (Taken from Configuration 3a)

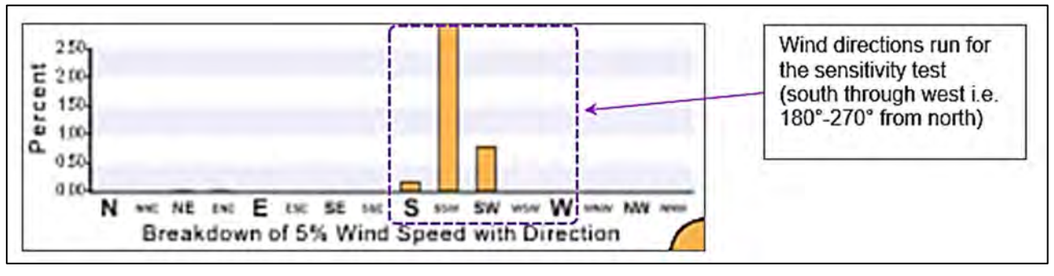


Figure 11.33 Configuration 3b: Proposed Development with Landscaping and Updated Wind Mitigation Model

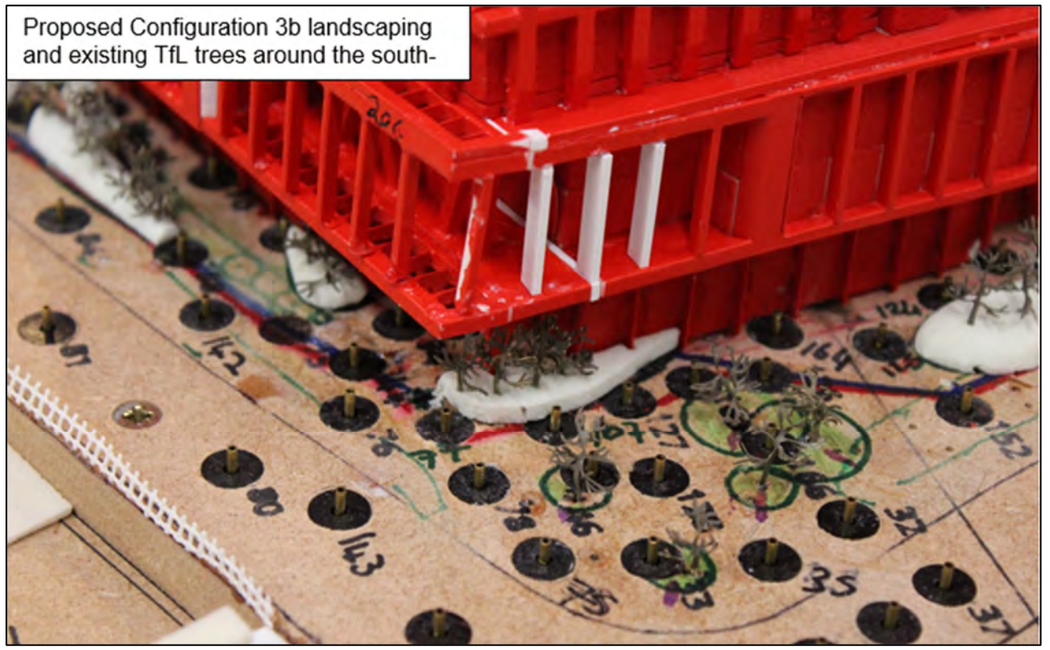
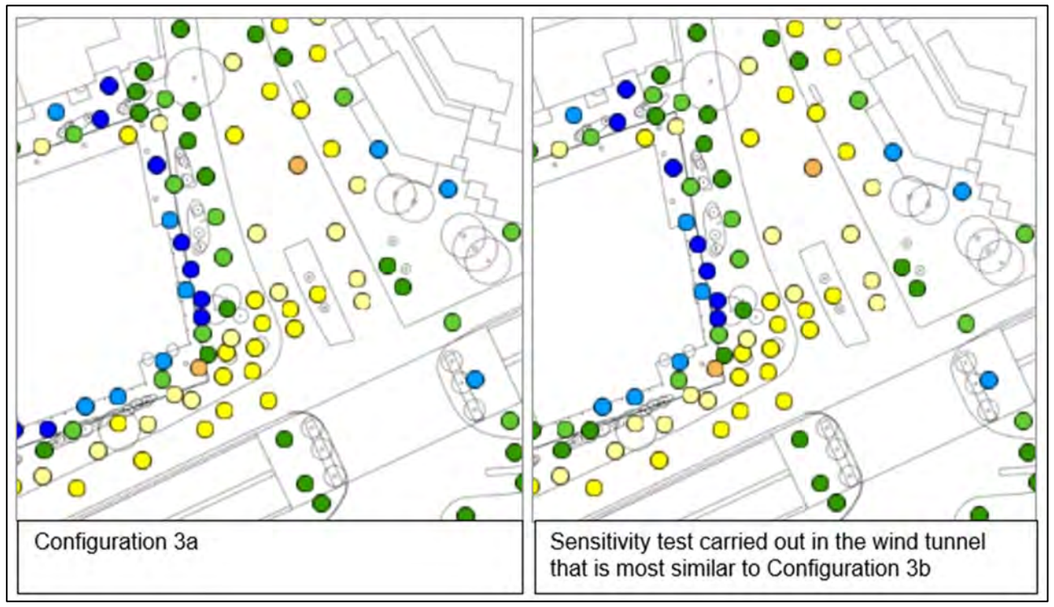


Figure 11.34 Configuration 3a and 3b Comparison (Worst-Case, Winter)



11.156 Based on the results above and an understanding of how the winds move from south-south-west to north-east, the final landscaping proposed is expected to produce similar conditions to those in Configuration 3a. Therefore, all effects are the same as in Configuration 3a.

11.157 It should be noted that the sensitivity tests in the wind tunnel identified that success of the updated landscaping was dependant on several factors:

- Landscaping farther west of the site along (i.e. landscaping within Regent's Place Plaza and along Euston Road) should not be reduced from what was tested (the heights and sizes have been captured in the landscaping documents submitted with this application).
- Landscaping on the extended western mitigation planter next to the south-east entrance needs to be clustered on the southern end of the planter, away from the building facade. Results were not as favorable when landscaping was thin on the southern end of the planter.
- Extra space has been designed into the planter to potentially include more solid elements such as trellises or other supports to help the trees grow in this windy space. These will be important to ensure the resilience of the mitigation measures. These features can be porous or transparent to preserve views and daylighting.

Additional Mitigation

Accessible Lift (On-Site) – Probe 56

11.158 One on-site receptor at the accessible lift access (Probe 56) records 'Strolling' in the worst-case in Configurations 2 and 3a. This is one category above the required range for entrances and without additional mitigation, this represents a direct, permanent, long-term **Moderate Adverse (significant**) effect. Using professional judgment, conditions at this access point can be mitigated with local landscaping/sheltering. Discussions with the team produced a totem element, similar to the totem proposed around the south-west corner (see Figure 11.35). The totem/screen has been placed immediately west of the entrance and can be solid to 50% porous. The implementation of any of this mitigation is expected to result in a direct, permanent, long-term Negligible (not significant) effect at the entrance.

Figure 11.35 Possible inspiration for Mitigation next to Accessible Lift Entrance

Residual Effects

11.159 All of the residual effects resulting from the Proposed Development are presented in Table 11.10Table 11.10 identifying whether the effect is significant or not.

Table 11.10 Residual Effects

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
Completed Development							
On-site Receptors							
Receptors at outdoor café and long-term sitting spaces	No proposed permanent café spaces or long-term seating areas on-site	Negligible	Not Significant	L	D	P	Lt
Receptors at main entrances	Changes to the local wind conditions and change in use to new main entrances, especially at entrances within the underpass to the north of the site.	Negligible	Not Significant	L	D	P	Lt
Receptors in outdoor recreational spaces	Changes to the local wind conditions and change in use to new flexible space	Negligible	Not Significant	L	D	P	Lt
Receptors at general public access and cycling	Changes to the local wind conditions and change in use of some space from not accessible to thoroughfare	Negligible	Not Significant	L	D	P	Lt
Receptors at occasional or maintenance access	Changes to the local wind conditions	Negligible	Not Significant	L	D	P	Lt
Off-site Receptors							
Receptors at outdoor café and long-term sitting spaces	Changes to the local wind conditions around the	Negligible (Probe 107) Summer	Not Significant	L	D	P	Lt

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
	permanent café spaces or long-term seating areas off-site	Moderate Beneficial (Probe 107) Worst-case	Not Significant	L	D	P	Lt
Receptors at main entrances	Changes to the local wind conditions and change in use to new main entrances, especially at entrances within the underpass to the north of the site.	Moderate Beneficial (probes 98, 134 and 137). Negligible at all other locations.	Not Significant	L	D	P	Lt
Receptors in outdoor recreational spaces	Changes to the local wind conditions and change in use to new flexible space	Major Beneficial (probe 25). Negligible at all other locations.	Not Significant	L	D	P	Lt
Receptors at general public access and cycling	Changes to the local wind conditions and change in use of some space from not accessible to thoroughfare	Major Beneficial (probe 41)	Not Significant	L	D	P	Lt
		Negligible at all other locations.	Not Significant	L	D	P	Lt
Receptors at occasional or maintenance access	Changes to the local wind conditions	Negligible	Not Significant	L	D	P	Lt

Notes:
Residual Effect
- Scale = Negligible / Minor / Moderate / Major
- Nature = Beneficial or Adverse

Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N)
D = Direct / I = Indirect
P = Permanent / T = Temporary
St = Short Term / Mt = Medium Term / Lt = Long Term
N/A = not applicable / not assessed

ASSESSMENT OF THE FUTURE ENVIRONMENT

11.160 The only cumulative scheme within the assessment study area was the Network Building (95-100 Tottenham Court Road), 76- 80 Whitfield Street and 88 Whitfield Street, London, W1T 4TP. As this is currently under construction at the time of the assessment it was included in the existing surroundings in Configurations 2 and 3.

11.161 The other schemes listed in **ES Volume 3, Appendix: EIA Methodology – Annex 3,** have not been included in this assessment as they were either outside the study zone (more than the 360m radius from the site) or did not significantly change the massing of the surroundings (i.e. changes to internal uses).

11.162 Therefore, the results for Configurations 2 and 3 can be considered valid for the cumulative scenarios as well.

LIKELY SIGNIFICANT EFFECTS

11.163 With the proposed landscaping and mitigation measures in place, there are no significant effects in Configuration 3b: Proposed Development with Landscaping and Updated Wind Mitigation and therefore wind conditions at the site are considered suitable for their intended uses.

Chapter 12: Climate Change and Greenhouse Gases

CLIMATE CHANGE AND GREENHOUSE GASES	
AUTHOR	Trium Environmental Consulting LLP and Air Quality Consultants Ltd
SUPPORTING APPENDIX	**ES Volume 3, Appendix: Climate Change and Greenhouse Gases** Annex 1: GHG Policy and Legislation; Annex 2: Extract from Whole Life Carbon Assessment; Annex 3: Extract from Energy Strategy; Annex 4: Professional Experience; and Annex 5: Climate Change Technical Note.
KEY CONSIDERATIONS	**PART A** by Trium Environmental Consulting LLP This Environmental Statement (ES) chapter addresses climate change resilience and adaptation. A future climate scenario has been developed through the use of the future climate projections published by the Met Office (through the UK Climate Projections (UKCP18) website). The results include projections for variables including annual mean temperatures, and annual changes in summer and winter precipitation. To describe the predicted future climate, a medium emissions scenario (RCP8.5) for 2080 has been utilised as the future baseline. RCP8.5 has been used as it represents the most reasonable emissions scenario with regards to climate policy, land use, and technological development. The year 2080 is the timeframe considered most relevant to the Proposed Development. The projected change to the range of climatic conditions will adopt the 50% probability level, which is a central estimate adopted given the level of uncertainty associated with predicting the modelled scenarios. The future climate change scenario has been considered for each of the technical topics presented in this ES ('In-Combination Climate Change Impacts'), and the level of assessment and methodology is proportional to the available evidence base. The aim of the assessment has been to consider whether the effect on receptors (under the current condition, without climate change) are likely to be different under an alternative future climate regime; in particular, to identify whether the potential impacts of the Proposed Development will be worse or improve under the future baseline, and therefore if these changes alter the significance of effects identified for the Proposed Development under the current condition (without climate change). This is the potential for climate change to affect the Proposed Development. This section also includes an overview of the climate change resilience and adaptation measures that have been factored into the design of the Proposed Development. **PART B** by Air Quality Consultants Ltd The Proposed Development will lead to the direct and indirect release of greenhouse gases (GHG), both during the deconstruction and construction stage, and throughout the lifetime of the Proposed Development. This assessment estimates the GHG emissions associated with the Proposed Development taking a lifecycle approach and presents the mitigation measures and specific design measures provided by the scheme to minimise its GHG footprint. This is the effect of the Proposed Development on climate change.
CONSULTATION	An EIA Scoping Opinion Request Report ('EIA Scoping Report') was submitted to the London Borough of Camden (LBC) on 4 August 2023 (refer to **ES Volume 3, Appendix: EIA Methodology – Annex 1**) which sets out the proposed scope and method proposed for this ES chapter. A draft of the 'EIA Scoping Report Review' (prepared by CBRE, the LBC's appointed EIA advisors) was issued on 4 October 2023 (refer to **ES Volume 3, Appendix: EIA Methodology - Annex 2**), and a final EIA Scoping Opinion was subsequently issued on the 16 November 2023. The EIA Scoping Opinion agrees with the proposed scope and methodology of the climate change and GHG ES chapter. This ES chapter has been produced in line with the EIA Scoping Opinion comments, including clarity on the baseline position and the length of vacancy.

PART A CLIMATE CHANGE RESILIENCE AND ADAPTATION

12.1 The approach to assessing the potential impact of climate change on the Proposed Development has been undertaken in accordance with the Institute of Environmental Management and Assessment's (IEMA's) guidance '*Climate Change Resilience and Adaption*'[1], which presents a framework for the consideration of climate change resilience and adaption in the EIA process. It recognises a need for a proportionate approach to the assessment, due to the uncertainties associated with predicting how the environment will respond to climate change.

12.2 The guidance advises on inter alia, defining the future climate scenario, the integration of climate change adaption into the design, and the process for EIA. The guidance also provides advice on the execution of the impact assessment across the technical topics, including the identification of the climate related parameters which are likely to influence the project in question, and the anticipated changes to those parameters under a future climate scenario.

12.3 Consistent with the guidance, a future climate scenario has been developed through the use of the future climate projections published by the Met Office (through the UK Climate Projections (UKCP18) website[2]). The results include projections for variables including annual mean temperatures, and annual changes in summer and winter precipitation – refer to **ES Volume 3, Appendix: Climate Change – Annex 5**.

12.4 To describe the predicted future climate, a high emissions scenario (RCP8.5) for 2080 has been utilised as the future baseline. RCP8.5 has been used as it represents a conservative high emissions scenario. The year 2080 is the timeframe considered most relevant to the Proposed Development, this is relevant as an estimated operational lifetime of 60 years has been assumed, this is a typical assumption in accordance with British Standard EN 15978:2011[3]. The projected change to the range of climatic conditions has adopted the 50% probability level, which is a central estimate adopted given the level of uncertainty associated with predicting the modelled scenarios. This approach is in accordance with the IEMA Climate Change Resilience and Adaptation guidance, which states that "*Recommended best practice is to use the higher emissions scenario (RCP 8.5 in the latest UKCP18 projections) at the 50th percentile, for the 2080s timelines, unless a substantiated case can be made for not doing this (e.g. anticipated lifespan of the project is shorter than 2080s)*".

12.5 The future climate change scenario has been considered by each of the technical topics covered within this ES ('In-Combination Climate Change Impacts'), and the level of assessment and methodology is proportional to the available evidence base. The aim of the assessment has been to consider whether the effect on receptors (under the current condition, without climate change) are likely to be different under an alternative future climate regime; in particular, to identify whether the potential impacts of the Proposed Development will be worse or improve under the future baseline, and therefore if these changes alter the significance of effects identified for the Proposed Development under the current condition (without climate change). A key aspect of the assessment (for each of the technical topics considered) has been to identify the likely effect of those receptors considered more vulnerable to changes in climate, having taken into account the resilience and adaptive measures (being either design or management) which are proposed for the scheme in order to mitigate the risk presented by climate change.

12.6 Due to the level of uncertainty in both the future climate projections and how the future climate conditions may affect sensitive receptors, the assessment is qualitative (determining whether or not there is the risk of significant effects as a result of climate change impacts on/in conjunction with the Proposed Development), based on objective professional judgement, unless where there is published, accepted quantifiable methods available (i.e., in relation to the assessment of flood risk).

12.7 The final section of Part A presents the adaption and resilience measures proposed as part of the Proposed Development, in response to the projected future climate change scenario (as described below).

Historic and Existing Climate Conditions

12.8 The most recent State of the UK Climate Report[4] reviews current climate conditions against historic trends, summarised as follows:

- In comparison to the 20th century, recent decades have been warmer, wetter and sunnier;
- 2022 was the warmest year in the UK since 1884, 0.9°C above the 1991-2020 average;
- The most recent decade (2013-2022) was 0.3°C warmer than the 1991-2020 average and 1.1°C warmer than the 1961-1990 average;
- In 2022 the UK had its driest summer since 1995;
- The most recent decade (2013-2022) has been on average as wet as 1991-2020 and 8% wetter than 1961-1990 for the UK;
- UK Winters for the most recent decade (2013-2022) have been 10% wetter than those in 1991-2020 and 25% wetter than in 1961-1990; and

[1] *IEMA (2020). Climate Change Resilience and Adaption*
[2] *https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/download-data*
[3] *British Standard BSEN 15978:2011. Sustainability of construction works. Assessment of environmental performance of buildings. Calculation method.*
[4] *International Journal of Climatology (2022), State of the UK Climate 2022.*

- The number and severity of substantial snowfall events have generally declined since the 1960s.

Future Climate Change Scenario

12.9 The 2022 UKCP Headline Findings[5] highlights the key climate projections for the UK as follows:

- By the end of the 21st century, all areas of the UK are projected to be warmer, more so in summer than in winter;
- Hot summers are expected to become more common. The temperature of hot summer days, by the 2070s, show increases of 3.8°C to 6.8°C, under a high emissions scenario, along with an increase in the frequency of hot spells;
- Rainfall patterns across the UK are not uniform and vary on seasonal and regional scales and will continue to vary in the future;
- Significant increases in hourly precipitation extremes in the future;
- Despite overall summer drying trends in the future, future increases in the intensity of heavy summer rainfall events are likely;
- Future climate change is projected to bring about a change in the seasonality of extremes; and
- Sea levels rising.

12.10 The future climate of London is predicted to undergo significant change over the duration of the Proposed Development. Recent historical and current events such as the hot, dry summers of 2022 provide a demonstration of the conditions that are likely to become more frequent.

12.11 Annual Mean air temperature in London is predicted to rise by 1.04ºC during 2020-2039, and during the period of construction of the Proposed Development with Phase 2 scheduled for completion by 2036. This rises to 1.87ºC between 2040-2059, and 2.96ºC between 2060-2079, during much of the anticipated life span of the Proposed Development.

12.12 Rainfall in London is predicted to decrease by 8.66% during summer and rise by 7.35% in winter between 2020-2039; decrease by 19.99% during summer and rise by 11.42% during winter between 2040-2059; and drop by 29.04% during summer and rise by 17.90% in winter between 2060-2079. In addition, annual precipitation is predicted to decrease by -1.92% by 2079.

12.13 Further detail on the future climate change scenario that has been considered in this assessment based on the climate projections published by the Met Office (through the UK Climate Projections (UKCP18) website) is provided in **ES Volume 3, Appendix: Climate Change – Annex 5**.

In-Combination Climate Change Impacts

Socio-Economics

12.14 Considering the 2080 future baseline for climatic conditions, it has been concluded that climate change would have little effect on the future socio-economic baseline. It is expected that the health of the general population may be adversely affected by increased risk of overheating and other heat-related illnesses, drought, and decreased water and food security. However, this is partially offset against a reduced risk of cold-weather related illness in the winter, particularly in vulnerable groups such as the elderly.

12.15 The Proposed Development has been designed to minimise the exposure of future workers and visitors to health-related issues which could be accentuated by climate change. Therefore, whilst the baseline sensitivity might rise slightly at a general population level, it is not envisaged that the specific impact of the Proposed Development and its population would be adversely affected. Therefore, potential effects related to climate change are not expected to alter the assessment of socio-economic effects (**ES Volume 1, Chapter 6: Socio-Economics**).

Traffic and Transport

12.16 Climate change variables, such as air temperature, precipitation, wind and total cloud cover, would not have a direct effect on the transport effects considered in the Traffic and Transport assessment (severance, pedestrian and cycle amenity, collisions and safety, fear and intimidation, delay for drivers, pedestrians and cyclists and public transport) and as such the effect of the Proposed Development in transport terms would not change under the future climate change scenario.

12.17 However, people travelling to and from the Proposed Development, especially those by active modes (walking and cycling), would be sensitive to climate change. Table 12.1 provides a summary of receptor sensitivity and vulnerability for the assessment.

Table 12.1 Summary of Receptor Sensitivity and Vulnerability for Assessment

Receptor	Sensitivity	Vulnerability
Highway links/Pedestrians/Cyclists/ Public transport users	Medium	Medium – climatic factors have some influence on receptors travelling to and from the Proposed Development by active modes (walking and cycling)

12.18 The range of proposed mitigation measures designed to reduce the impact of the Proposed Development on the effects assessed under Traffic and Transport would also mitigate the potential effects of climate change in the future.

12.19 The Delivery and Servicing Plan (DSP) has been prepared to reduce and manage the number of deliveries to the site and a Travel Plan to encourage employees and visitors to travel to the site by sustainable modes of transport. The DSP will seek to minimise the impacts of all delivery and servicing activity associated with the complete and operational Proposed Development. he Travel Plan would also raise awareness of the benefits of travelling by non-car modes on the environment and climate change. In addition, the Proposed Development would provide the following improvements for travel by active modes:

- Pedestrian/cycle access links within the site improve connectivity in the area;
- Cycle parking, shower and locker facilities; and
- Footway improvements on Euston Road and Hampstead Road.

12.20 In addition, The Low Emission Zone (LEZ), which covers most of Greater London, and the recently extended Ultra Low Emission Zone (ULEZ) aim to encourage the most polluting heavy diesel vehicles driving in London to become cleaner.

12.21 With electric vehicles increasing in popularity and smarter travel options, it is not anticipated that the effects of the Proposed Development would alter the future climate scenario in the future.

12.22 Therefore, potential effects related to climate change are not expected to alter the assessment of traffic and transport effects (**ES Volume 1, Chapter 7: Traffic and Transport**).

Air Quality

12.23 In relation to air quality related impacts, the future climate baseline condition (based on the sources identified in the '*Future Climate Change Scenario'* above is likely to result in:

- Surface ozone increasing due to higher temperatures, allowing more NOx to convert NO_2, which is harmful to human health and may thus worsen local air quality;
- Increased temperatures may lead to a greater demand for air conditioning of buildings which would increase electrical demand and thus may result in increased indirect pollutant emissions via the National Grid;
- During summer periods, warmer temperatures will cause soils to become drier, which may result in increased dust and emissions of particulates from construction activities; and
- The combined effect of increased temperatures and reduced precipitation may encourage a behavioural change in transportation during summer, with potentially more users of the Proposed Development and

[5] *UKCP (August 2022), UK Climate Projections: Headline Findings.*

nearby properties walking and cycling. This may in turn lead to improved air quality in the local area, although the inverse is also possible with wetter winters users may use private modes of transport to a greater degree.

12.24 Air Quality is predicted to improve in the future, owing to lower emissions from road vehicles and heating and cooling plant as progressively lower emission technologies become available. The air quality assessment (**ES Volume 1, Chapter 8: Air Quality**), therefore, focuses on the near-term (year of opening), but the outlook for the longer term is one of improvement, both in terms of local and regional air quality, but also in terms of emissions associated with the Proposed Development itself as technological advances facilitate a shift towards lower-emitting sources. Climate change is a long-term effect, and significant changes in climate are not expected by 2030 (the earliest year of occupation of the Proposed Development), however in the longer-term (2050 – 2080) changes in climate might affect the need for heating and cooling and, therefore, may influence the regional emissions. Overall effect of climate change on the air quality effects described in **ES Volume 1, Chapter 8: Air Quality** will be not significant.

Noise and Vibration

12.25 The future climate baseline of 2080 shows an increase in air temperatures during summer months and cooler temperatures during the winter. Increased temperatures during the warmer months have the potential to result in noise sensitive receptors increasingly relying upon natural ventilation (such as openable windows) for the control of overheating. Whilst the Proposed Development does not rely on openable windows, the façade includes natural ventilation measures to facilitate air flow.

12.26 The noise climate in and around the site is predominately dominated by road traffic noise, however for this to be noticeably higher future road journeys would be required to increase significantly (i.e. more than double). Given the existing high levels of traffic, combined with the drive to encourage more sustainable travel modes such as walking, cycling and use of public transport, external noise levels are unlikely to rise to be perceptible.

12.27 There is also the potential for heating and cooling systems to operate at higher duty levels, however, increases in noise are expected to be modest and the magnitudes of impacts unchanged.

12.28 Overall, it is considered that the magnitudes of impact will remain unchanged under future climate conditions. Therefore, the effects identified within the noise and vibration assessment (**ES Volume 1, Chapter 9: Noise and Vibration**) will remain unchanged.

Daylight, Sunlight, Overshadowing and Solar Glare

Daylight

12.29 Following the guidance published by the BRE, daylight assessments are carried out under an assumed overcast sky.

12.30 The methodologies used to quantify the levels of daylight are the Vertical Sky Component (VSC) or No Sky Line (NSL). Of these, none are explicit measurements of light but rather the VSC is expressed as percentages of the total amount of light received at an unobstructed location. The NSL by contrast is a percentage of the room that can see the sky.

12.31 Being percentages, the daylight assessments above do not depend on the absolute amount of daylight outside and, since they also assume an overcast sky, they are independent of the cloud coverage or the annual number of sunlight hours.

12.32 By following the current BRE Guidelines methodology, therefore, the numeric daylight results are not affected by changes in climate.

12.33 Climate change projections (**ES Volume 3, Appendix: Climate Change Annex 5**) suggest that the average cloud coverage could be slightly reduced, although no information is provided on how this would affect global and diffuse illuminance and irradiance levels. Whilst the relationship between cloud cover and daylight illuminance is not defined as part of the projections, it is probably reasonable to assume as cloud coverage is reduced, the overall amount of usable daylight increases. However, this would not impact the conclusions within this report which are based on numeric daylight assessments.

12.34 Therefore, the current BRE Guidelines criteria and the results of the associated daylight assessments are not influenced by, nor would they be altered by the 2080 future climate scenario.

Sunlight

12.35 To quantify the amount of sunlight that a residential window can be expected to receive throughout the years, Annual Probable Sunlight Hours (APSH) are used. This is a set of 100 fixed locations in the sky representing possible sun positions throughout the year.

12.36 The point locations were published by BRE Guidelines and are based on hourly sunlight availability. A change in climate that might result in more annual sunlight hours (currently 1,481 in London) would not result in more than 100 APSH test points, since this is a fixed number.

12.37 If, in a future revision of the daylighting guide, BRE Guidelines were to keep the current methodology but update the set of 100 reference points to reflect a slightly sunnier climate, it can be expected that the locations of the points on the sky dome may shift, whilst their overall number remain the same.

12.38 Therefore, an APSH assessment following the current methodology but relying on a (hypothetical) updated set of test points likely produce comparable but not necessarily identical results.

12.39 The future climate in the UK is likely to be somewhat sunnier; however, unless the BRE Guidelines methodology is changed, this would not be reflected in an APSH assessment.

12.40 Therefore, the current BRE Guidelines criteria and the results of the associated sunlight assessments are not influenced by, nor would they be altered by, climate change.

Overshadowing

12.41 Overshadowing assessments are undertaken on any day of the year although the equinox is most common.

12.42 The assessment assumes a day with no cloud cover and so the maximum potential sunlight is assessed. From the climate projections, the future climate in the UK is likely to be somewhat sunnier but unless the methodology is changed, this would not be reflected in an overshadowing assessment.

12.43 Therefore, the current BRE Guidelines criteria and the results of the associated overshadowing assessments are not influenced by, nor would they be altered by, climate change.

Solar Glare

12.44 The solar glare assessment assumes that there is no cloud cover and so the maximum potential sunlight is assessed. On the basis of the assessment methodology applied, changes in the climate would not affect the outcome of the solar glare assessment.

Wind Microclimate

12.45 The 'Climate Projects Report' published by UKCP18 presented the probable changes in wind speeds for the 2070-2099 period (timeframe considered most relevant for urban regeneration projects) in both the summer and winter seasons (see Climate Change Technical Note presented within **ES Volume 3, Appendix: Climate Change – Annex 5**).

12.46 As set out within **ES Volume 3, Appendix: Climate Change – Annex 5**, the current trends in climate change are not likely to have significant effects on the predicted wind microclimate conditions in and around the Proposed Development. It is therefore not necessary to provide a quantitative analysis of the increase in storm frequency and its implication on the effect on the wind microclimate for the Proposed Development. The effects identified within the wind microclimate assessment (**ES Volume 1, Chapter 11: Wind Microclimate**) would remain unchanged under the 2080 future climate scenario.

Townscape, Heritage and Visual

(Built) Heritage

12.47 There are no climatic variables that would have a material impact on the assessment of built heritage considerations relevant to the Proposed Development, i.e. potential effects on heritage significance through change in part of their townscape settings. Accordingly, there would be no changes to the identified value/ importance of the relevant built heritage assets in terms of their particular heritage significance, or the sensitivity to change. There are not likely to be any changes to the identified magnitude of effects on the significance of

the relevant built heritage assets during the deconstruction and construction works or once the Proposed Development is complete and operational, having regard to future 2080 baseline that has been considered in consideration of the effects of climate change.

Townscape and Visual

12.48 Changes expected from the 2080 future climate scenario, such as increased rainfall levels and temperatures, are unlikely to impact on the appearance of the Proposed Development in views and its relationship to townscape character when the Proposed Development is completed. Townscape and visual receptors are considered to be of low vulnerability to climatic factors. Therefore, the effects as stated in **ES Volume 2, Townscape, Visual and Built Heritage Impact Assessment** will remain unchanged.

Adaptation and Resilience of the Proposed Development to Climate Change

12.49 The latest UK Climate Change Risk Assessment[6] identifies the key climate-related risk areas for action in the UK. The following have been identified as relevant to the Proposed Development:

- Risks to soil health from increased flooding and drought;
- Risks to people and the economy from climate-related failure of the power system; and
- Risks to human health, wellbeing, and productivity from increased exposure to heat in homes and other buildings.

12.50 Accordingly, and based on the future climate change scenario projections set out in **ES Volume 3, Appendix: Climate Change – Annex 5**, the main climatic factors that have influenced the evolution and design of the Proposed Development are temperature and precipitation. The design team have worked collaboratively to ensure climate change adaptation measures are incorporated into the design, which are discussed below.

Increase in Annual and Maximum Temperatures

Overheating of Buildings

12.51 In order to reduce overheating risk during periods of increased temperatures, the Energy Strategy for the Proposed Development has developed a mitigation strategy for managing heating and cooling, increasing the resilience to future climate change.

12.52 An energy efficient approach to the design has been employed in order to minimise internal heat generation. Energy efficient lighting (i.e. Light Emitting Diodes (LED)) with low heat output, insulation to heating and hot water pipework, and energy efficient equipment with low heat output to reduce unnecessary heat gain, are all methods that will be implemented to minimise internal heat generation.

12.53 As means of reducing the amount of heat entering the buildings within the Proposed Development during the summer months, the following methods have been considered and will be determined at the detailed design stage:

- A high-performance curtain wall façade has been specified to reduce space heating demand in winter and minimise the risk of summertime overheating;
- Optimised glazing percentages to maximise daylight penetration but minimising overheating. G-value limits specified for glazing elements aims to limit excessive solar gain on to the floor plate;
- Façade elements that project horizontally and vertically adjacent to glazing are optimised to provide solar shading during peak scenarios but also allows for beneficial solar gain during winter months;
- Mechanical systems will be designed to minimise unwanted heat generation such as those from pipework, fans and pumps through proper insulation and specification of high efficiency equipment. Lighting systems will be highly efficient LED systems, controlled to minimise lighting energy during daylight hours.

12.54 Passive ventilation measures, openable, solid panels, are also proposed to be implemented in the Proposed Development, reducing the reliance on air conditioning to provide internal cooling, as described in the Ventilation Strategy submitted with the planning application. These panels will allow for additional natural ventilation to be supplied to perimeter zones of the floorplate. As there is still significant design development to undertake, no operational energy or carbon savings have been claimed from this addition.

Success of the Landscaping (and Biodiversity Benefits)

12.55 The increase in annual and maximum temperatures has the potential to damage soils (through periods of drought/drying out) and reduce the success of the proposed landscaping (and its biodiversity benefits). It is therefore critical to ensure that the landscape strategy is designed to be resilient to climate change, and that an adaptive management regime is implemented.

12.56 The soft landscaping strategy (which includes the implementation of four unique habitats, dense tree canopies and intensive green roofs) will reduce the amount of hardstanding within the Proposed Development, which will reduce the 'Urban Heat Island' effect and allow areas of shading and cooling during instances of hot weather.

12.57 Measures to improve resilience include incorporation of a diverse tree species cover, mixed species stands, careful selection of plant provenance, selection of species for their resistance to climate stress, and diverse planting structure, for example, drought tolerant species in the heathland habitat.

12.58 An appropriate maintenance strategy may involve naturalised planting management, wetland monitoring, habitat restocking and the planting of younger trees. A monitoring strategy might also be implemented to assess success of establishment and of current management, so that measures can be enacted to respond to changes.

12.59 These measures will mitigate the risk of failure of the landscaping and will assist in maintaining the biodiversity benefits of the Proposed Development.

12.60 In urban areas, intensifying climate change will result in increased rainfall intensity and risk of flash flooding in a largely impermeable environment, while increasing temperatures will exaggerate the urban heat island effect.

12.61 Not only will these proposals improve Urban Greening Factor (UGF) and biodiversity, but they are also adept at enhancing the climate resilience of the built environment, mitigating risks such as flooding and overheating, while providing a wider range of co-benefits.

Climate-Related Failure of the Power System

12.62 The Proposed Development is designed using an all-electric heating and cooling strategy that will be provided to the development by central heating and cooling plant consisting of air source heat pumps (ASHPs) and air-cooled to maximise the ability to share heat between spaces within the building. Simultaneous heating and cooling heat pumps can utilise free cooling to maximise efficiency through mid-seasons.

12.63 In addition, the installation of PV panels is included within the scheme to contribute to the reduction of the on-site carbon emissions. Approximately 100m^2 is planned to be included spread across appropriate areas at Level 31 roof level.

12.64 Space has also been provided for an emergency back-up generator for the tenants, but the specifications for this are not yet available.

Increase in Precipitation/ Intense Rainfall Events

Flood Risk

12.65 Within the landscape, the Proposed Development seeks to respond to climate change with maximising areas of soft landscaping (to reduce surface runoff) and incorporating Sustainable Urban Drainage Systems (SuDS) elements.

12.66 The impact of climate change on flood risk and water management have been considered, as required, as part of the preparation of the Flood Risk Assessment and Drainage Strategy. As identified within the Drainage Strategy, site surface water runoff will be reduced by at least 50% for the existing 1 in 100 year flood event which includes an allowance for a 40% increase due to climate change.

[6] *HM Government (2022), UK Climate Change Risk Assessment 2022*

Part A Likely Significant Effects

12.67 In conclusion, under the future 2080 climate scenario, the residual effects of the Proposed Development would remain consistent with the effects identified as described throughout this ES and summarised in **ES Volume 1, Chapter 14: Likely Significant Effects** under the current climate conditions. It is considered by the design team that the adaptation and resilience measures set out above will address the future climate change scenario for the lifetime of the Proposed Development (2080) and no additional or different likely significant climate change adaptation/resilience related effects have been identified.

PART B: GREENHOUSE GAS EMISSIONS ASSESSMENT

Assessment Methodology

12.68 This section of this ES chapter provides a Greenhouse Gas (GHG) assessment for the Proposed Development. The Proposed Development includes the partial retention (retention of the existing building core, foundations and basement) disassembly, reuse and extension of the existing building to provide a 32-storey building for use as offices and research and development floorspace (Class E(g)) and office, retail, café and restaurant space (Class E) and learning and community space (Class F) at ground, first and second floors, and associated external terraces. A full description of the Proposed Development can be found in **ES Volume 1, Chapter 4: The Proposed Development.**

12.69 As set out in the Circular Economy Statement[7] special attention has been paid to the strategic retention of the existing building, and the reuse/recycling/upcycling of any materials from the deconstruction; it is proposed to retain 31% of the existing structure. The GHG assessment considers the emissions associated with the Proposed Development (i.e., a 31% retention of the existing structure). As such it should be noted, whilst the Proposed Development retention strategy has a positive effect to GHG emissions, these benefits have not been specifically calculated in this assessment. As such, the GHG assessment is conservative and in reality, an alternative scenario where the existing building is demolished is likely to result in greater GHG emissions.

12.70 GHGs are gases which have the potential to increase atmospheric temperatures, and which contribute to climate change. The Proposed Development will lead to the direct and indirect release of GHGs, both during the deconstruction and construction phase, and throughout its lifetime. This assessment estimates the GHG emissions associated with the Proposed Development taking a lifecycle approach[7] and presents the embedded design measures provided by the scheme to avoid and reduce its direct and indirect GHG emissions.

Scope of the Assessment

12.71 The EIA Regulations require that EIAs have consideration to climate change and require that the assessment provides: "*A description of the likely significant effects of the development on the environment resulting from, inter alia… (f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change".*

12.72 The impact of future climate change on the resilience of the Proposed Development has been addressed within Part A of this ES chapter. This assessment (Part B) covers the impacts of the project on climate through the quantification of GHGs resulting from the Proposed Development. This assessment provides an estimate of GHG emissions in the first year of occupation (2030) and over the lifetime of the Proposed Development.

12.73 Relevant policy and guidance to this assessment is set out in **ES Volume 3, Appendix: Climate Change – Annex 1**.

Defining the Baseline

12.74 The site currently comprises the existing Euston Tower and Regent's Place Plaza, a pedestrianised area within Regent's Place. The building will be partially demolished, the material from which will inherently incorporate embedded carbon. To provide a conservative assessment, the baseline is assumed to be zero, as the embedded carbon emissions associated with construction already reflect the net change.

12.75 The baseline for the operational assessment relates to the energy emissions generated by the current use of the site, maintenance associated with its upkeep and traffic generated by the existing car park. The site is currently not in use, with the exception of the retail floorspace at grade level, and as a worst-case, the baseline for the operational assessment is assumed to be zero. The existing building has experienced an occupancy level of less than 70% over the past decade and has remained vacant and stripped out since 2021, apart from the retail floorspace. Any GHG emissions from the Proposed Development will be considered as being new and therefore will represent a worst-case to changes in GHG emissions.

Evolution of the Baseline

12.76 If the Proposed Development was not to come forward, it is expected that the site would remain in its current, predominantly vacant state for the foreseeable future.

Impact Assessment Methodology

12.77 The assessment has taken a whole life approach to develop a GHG footprint for the Proposed Development. The footprint sources considered include GHG emissions:

- Embodied in the material used in the construction of the Proposed Development;
- From construction site activities (e.g., construction plant, site offices, welfare facilities, waste etc.);
- From transport movements during the construction and operational phases;
- From energy consumed by the operation of the Proposed Development;
- From the operational repair, maintenance and refurbishment of the Proposed Development;
- From potable water supply and treatment during operation of the Proposed Development; and
- From the deconstruction of the Proposed Development at the end of its lifetime.

12.78 GHG emissions from the disposal of waste generated by the Proposed Development have been scoped out of the assessment, due to uncertainties in input data and them contributing only a small amount to the total Proposed Development GHG footprint. The exclusion of this GHG source will not materially affect the GHG footprint or assessment conclusions and consideration to embedded design measures to minimise waste are provided in this assessment.

12.79 Table 12.2 sets out the GHG assessment scenarios examined by the assessment, key sources of data and methodologies used.

12.80 The metric for assessing the climate change impacts of GHG emissions in this assessment is Global Warming Potential (GWP). This is expressed in units of CO_2 equivalent (CO_2e) over 100 years. This allows for the emissions of the seven key GHG: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), nitrogen trifluoride (NF_3) and sulphur hexafluoride (SF_6) expressed in terms of their equivalent global warming potential in mass of CO_2e.

12.81 Emissions associated with the deconstruction and construction phase of the Proposed Development are calculated for the whole construction phase and annualised emissions based on the anticipated construction period, which is approximately 5 years and 5 months based on information in **ES Volume 1, Chapter 5: Deconstruction and Construction**. The construction phase GHG emissions have therefore been annualised assuming a 5-year construction phase to be conservative (i.e., this will result in slightly higher annual emissions).

12.82 As discussed above, the energy and transport GHG emissions associated with the current use at the site and with the Proposed Development have been assumed to be zero as the site has no current use, except for the retail floorspace. Emissions associated with repair, maintenance and refurbishment have also been assumed as zero.

12.83 The GHG assessment (using the methodologies referenced in Table 12.2) is based on an estimated operational lifetime of 60 years, which is a typical assumption for a development of this type and is in accordance with British Standard EN 15978:2011.

12.84 The 'net emissions' are the change in the GHG emissions between the baseline and the Proposed Development, taking account of GHG reduction measures. Offsetting of emissions is also considered in the calculation of residual net GHG emissions.

[7] *GXN (2023) Euston Tower Circular Economy Statement*

Table 12.2 GHG Assessment Scenarios

Development Phase	Baseline	Proposed Development	Methods and Data Sources	Reference
Enabling Works and Construction				
Embodied Carbon	The baseline is assumed to be zero.	Emissions associated with the extraction and processing of the materials required to construct the Proposed Development ('cradle to gate').	Module A1-A3 emissions as presented in the Whole Life Carbon assessment	Whole Life-Cycle Carbon Assessment[1]
Transport	The baseline is assumed to be zero.	Emissions associated with traffic generated by the deconstruction and construction of the Proposed Development.	Module A4 emissions as presented in the Whole Life Carbon assessment.	Whole Life-Cycle Carbon Assessment
Construction Site Activities	The baseline is assumed to be zero.	Emissions associated with energy consumption for site accommodation and plant use during construction works	Module A5 emissions as presented in the Whole Life Carbon assessment.	Whole Life-Cycle Carbon Assessment
Operation				
Repair, Maintenance and Refurbishment	The baseline is assumed to be zero.	Emissions associated with the operational repair, maintenance and refurbishment of the Proposed Development.	Module B1-B5 emissions from use, repair, maintenance and refurbishment during the building's lifetime as presented in the Whole Life Carbon assessment.	Whole Life-Cycle Carbon Assessment
Transport	The baseline is assumed to be zero.	Emissions associated with traffic generated by the operation of the Proposed Development in the first year of operation (2030).	Application of calculated 2030 GHG factors to km travelled by mode from transport assessment.	Transport Consultant[8]
Energy	The baseline is assumed to be zero.	Emissions from energy use associated with operation of the Proposed Development, taking account of measures to reduce energy consumption and utilise renewable energy on-site.	CO_2 from energy use for the Proposed Development taking into account savings from the Energy Statement.	Energy Statement[9]
Water Supply and Treatment	The baseline is assumed to be zero.	Emissions associated with supply of potable water and treatment of wastewater.	Module B7 emissions as presented in the Whole Life Carbon assessment.	Whole Life Carbon Assessment
Deconstruction	n/a	Emissions associated with deconstruction activities of the Proposed Development.	Modules C1-C4 deconstruction/demolition); transport; materials re-used or recycled; and disposal emissions associated with deconstruction activities and generated waste.	Whole Life Carbon Assessment

Deconstruction and Construction

12.85 GHGs associated with the deconstruction and construction of the Proposed Development relate to those embedded in the materials from which it is constructed, and with construction site activities and vehicle movements generated during the construction stage. Information relating to the emissions have been sourced from the WLC assessment[10].

Embedded Carbon

12.86 Emissions from the manufacturing of construction materials have been sourced from the WLC assessment[10]. These correspond to modules A1-A3 of a carbon lifecycle assessment as defined in RICS[11] and GLA[12] guidance.

Construction Traffic

12.87 Emissions from the construction traffic have been sourced from the WLC assessment[10]. These correspond to module A4 of a carbon lifecycle assessment as defined in RICS[11] and GLA[12] guidance.

Construction Site Activities

12.88 Emissions from energy consumption for site accommodation and plant use during construction works have been sourced from the WLC assessment[10]. These correspond to module A5 of a carbon lifecycle assessment as defined in RICS[11] and GLA[12] guidance.

Completed Development

12.89 GHGs associated with the operation of the Proposed Development relate to emissions from repair, maintenance and refurbishment, transport, energy use and water supply and treatment.

Repair, Maintenance and Refurbishment

12.90 Over the lifetime of the Proposed Development there will be GHG emissions associated with the repair, maintenance and refurbishment[13] of the building. These emissions are effectively 'unregulated' as there is no policy or standard for establishing compliance nor is there published data on good practice against which developments can be benchmarked. Nonetheless, emissions from repair, maintenance and refurbishment have been considered in the GHG assessment based on modules B1-B5 within the WLC assessment[10].

Transport

12.91 GHG emissions factors for transport have been derived from the DfT's WebTAG databook[14]. A summary of the 2030 (the first year of operation of the Proposed Development). GHG emission factors for selected modes of transport used in this GHG assessment are provided in Table 12.3. The WebTAG data has been used to derive GHG emissions for each year out to 2050 for the purposes of calculating the Proposed Development's lifetime transport emissions. It has been assumed that, from 2050, the transport emissions are net zero in line with Government's commitments to net zero carbon by 2050 (see Paragraphs 12.97 to 12.100).

Table 12.3 2030 Transport GHG Factors by Selected Mode

Activity	Type	Unit	Calculated 2030 Factor (kg CO2e)
Car Driver	Average Car	km	0.1295
London Taxis	Black cab	km	0.2710
London Bus/Coach	Local London bus[a]	Passenger.km	0.0772
Rail	London Underground	Passenger.km	0.0128
	National Rail	Passenger.km	0.0163

[a] The GHG factor for London buses has been obtained from BEIS data[15] for company reporting as bus emission factors are not available in DfT's WebTAG.

[8] Velocity Transport Planning Ltd (2023) Euston Tower Transport Assessment
[9] Arup (2023) Energy Statement
[10] Sweco UK (2023) Whole Life-Cycle Carbon Assessment
[11] RICS, 2017. Whole life carbon assessment for the built environment
[12] GLA, 2020. Whole Life-Cycle Carbon Assessments guidance Pre-consultation draft (April 2020)

[13] Refurbishment refers to ongoing refurbishment of elements of the buildings as required during its estimated 60-year lifetime and does not include a complete whole-building refurbishment, as this would occur at the end of the buildings' practical life and would be subject to a future lifecycle GHG assessment.
[14] Department for Transport (2023) TAG data book May 2023 v1.21. Available at: https://www.gov.uk/government/publications/tag-data-book
[15] BEIS (2022) UK Government GHG Conversion Factors for Company Reporting

12.92 The calculation of transportation GHG emissions is carried out by multiplying the transport GHG factors detailed in Table 12.3 by km travelled by mode, calculated using Trip Generation per mode data, and the average distance travelled by mode, provided by the Transport Consultants.

Energy Consumption

12.93 Baseline energy consumption as a result of the operation of the existing retail and office uses and car park has been assumed to be zero. CO_2 emitted as a result of the running of the energy systems employed by the Proposed Development have been obtained from the Energy Statement[9] (see **ES Volume 3, Appendix: Greenhouse Gases – Annex 2**). Further detail on the CO_2 factors and CO_2 emissions from energy consumption are provided in the Energy Assessment.

12.94 The assessment considers regulated energy consumption, which is energy consumption from heating and cooling, lighting, and on-site infrastructure such as lifts, and unregulated energy consumption, which is electricity consumption from the behaviour of the building's users, such as personal electrical appliances (phones, laptops, televisions etc.), and kitchen appliances. Energy consumption corresponds to module B6 of a carbon lifecycle assessment, as defined in RICS[11] and GLA guidance[12]

Water Supply and Treatment

12.95 GHG emissions associated with water supply been obtained from the whole life-cycle assessment[10], which correspond to module B7 of a whole life carbon assessment.

Deconstruction at End of Life

12.96 Emissions associated with the end-of-life phase of the Proposed Development have been sourced from the whole life-cycle assessment[10]. These correspond to modules C1-C4 of a whole life carbon assessment, and include emissions associated with:

- Site activities associated with the disassembly of temporary buildings;
- Transportation of disassembly materials away from site;
- The treatment and processing of materials for re-use or recycling; and
- Final disposal of materials that are not re-used or recycled.

Net Zero Policy Implications

12.97 The UK has legislated a 2050 net zero target following recommendations and analysis completed by the Committee on Climate Change (CCC)[16]. The CCC's Net Zero report[17] has established a "Further Ambition" scenario which considers feasible and cost-effective policy and technology interventions to ensure the UK can meet its new net zero target.

12.98 For power generation under this scenario, the CCC considers that 100% of power generation by 2050 will be low carbon, and for ground transport it forecasts that all ground transportation (apart from small number of Heavy Goods Vehicles (HGVs)) will be electrically powered. The CCC therefore forecasts that power and ground transportation sectors will be largely decarbonised by 2050 with any residual emissions removed through technical and/ or natural means.

12.99 The implications of the UK adopting the net zero target are that it is reasonable to assume that Government policies will be brought forward to ensure the net zero target is achieved. The Government announcement bringing forward the ban on sale of new vehicles that are not electrically powered to 2035 is an example of policy that is being developed.

12.100 It is, therefore, anticipated that all operational and transportation emissions associated with the Proposed Development are likely to be zero by 2050 at the latest.

Assumptions and Limitations

12.101 The following assumptions and limitations are relevant to the GHG assessment:

- The Proposed Development is complete and operating at full capacity in 2030;
- The construction phase will be completed over a period of five years;
- Construction of the Proposed Development involves the buildings and infrastructure, and transport movements described in **ES Volume 1, Chapter 5: Deconstruction and Construction**;
- All materials used in construction are new, with no reuse or repurposing of materials (as a worst-case assumption); and
- Measures set out within the Energy Statement[9] to minimise emissions from energy consumption and embodied carbon will be implemented.

Methodology for Defining Effects

Receptors and Receptor Sensitivity

12.102 The assessment of GHGs does not include identification of sensitive receptors, as GHG emissions do not directly affect specific locations or receptors but lead to indirect effects by contributing to climate change. Identification of sensitive areas for climate change has been undertaken by the IPCC[18]. Impacts on specific areas are not included within this assessment, since the impacts of GHG emissions will affect the global atmosphere, and therefore need to be considered in a total context, rather than on localised areas.

Magnitude of Impact

12.103 There are no impact descriptors for GHG emissions; the approach taken is, therefore, to consider the calculated GHG emissions from the Proposed Development in the context of GHG emissions budgets for the GLA area as published within the London Environment Strategy Implementation Plan[19] and in the context of GHG emissions for the borough for 2020[20] as published within the London Energy and Greenhouse Gas Inventory (LEGGI)[21].

Defining the Effect

12.104 For GHG emissions there are no recognised criteria and thresholds that relate to the quantum of GHG emissions released.

12.105 In terms of defining significance, guidance from Institute of Environmental Management and Assessment (IEMA)[22] has been adopted, which has identified three underlying principles to inform the assessment of significance, as follows:

- GHG emissions from all projects will contribute to climate change; the largest interrelated cumulative environmental effect;
- The consequences of a changing climate have the potential to lead to significant environmental effects on all topics in the EIA Directive – e.g., population, fauna, soil, etc.; and
- GHG emissions have a combined environmental effect that is approaching a scientifically defined environmental limit, as such any GHG emissions or reductions from a project might be considered to be significant.

[16] Net zero has been defined by the CCC to allow for GHG removals to offset any residual GHG emissions in 2050 so that the overall balance of emissions is zero.
[17] Committee on Climate Change (2019) Net Zero. The UKs contribution to stopping global warming, Available: https://www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming
[18] The Intergovernmental Panel on Climate Change (2014) AR5 Climate Change 2014: Impacts, Adaptation, and Vulnerability.
[19] GLA (2023) London Environment Strategy Implementation Plan.
[20] The latest available year.
[21] London Energy and Greenhouse Gas Inventory (2020) London Energy and Greenhouse Gas Inventory for 2020, Available: https://data.london.gov.uk/dataset/leggiEnergyandGreenhouse,carbonreductiontargetsforLondon
[22] IEMA (2022) EIA Guide to: Assessing greenhouse gas emissions and evaluating their significance. 2nd edition 'Assessing Greenhouse Gas Emissions and Evaluating their Significance.'

12.106 Based on these principles, IEMA concludes that:

- When evaluating significance, all new GHG emissions contribute to a negative environmental impact, however, some projects will replace existing development or baseline activity that has a higher GHG profile. The significance of a project's emissions should therefore be based on its net impact over its lifetime, which may be positive, negative or negligible;
- Where GHG emissions cannot be avoided, the goal of the EIA process should be to reduce the project's residual emissions at all stages; and
- Where GHG emissions remain significant, but cannot be further reduced, approaches to compensate the project's remaining emissions should be considered.

12.107 In advising on the significance of any net change in GHG emission resulting from a development, IEMA identifies that in order to limit the adverse effects from climate change, global temperature change needs to be limited to well below 2°C, aiming for 1.5°C. The implication of this objective is that global emissions need to fall to net zero by 2050.

12.108 The UK's response to limiting climate change is enshrined in law through the Climate Change Act[23] which requires the UK economy to be net zero by 2050 following a trajectory set through five-yearly carbon budgets. The 2050 target (and interim budgets set to date) are, according to the CCC, compatible with the required magnitude and rate of GHG emissions reductions required in the UK to meet the goals of the Paris Agreement, thereby limiting severe adverse effects.

12.109 It follows, therefore, that the significance of any net change of GHG resulting from a development is not so much whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions consistent with a trajectory towards net zero by 2050.

12.110 To establish the significance of the GHG emissions from a development therefore requires judgements on:

- The consistency with policy requirements, since these have been specified to ensure the economy decarbonises in line with the UK's net zero target; and
- The degree to which the development has sought to mitigate its emissions.

12.111 Examining each of these dimensions allows the assessment to make professional judgement on the likely scale and significance of effects based on a set of significance criteria established in the IEMA guidance, summarised in Table 12.4.

Table 12.4 GHG Significance Criteria

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

12.112 IEMA advises that:

- Major and moderate adverse and beneficial effects should be considered significant in the context of EIA;
- In the case of large-scale developments, irrespective of the level of mitigation, if net GHG emissions exceed 5% of UK or devolved administrations carbon budget, that this is a level of change that is considered significant;
- Meeting the minimum standards set through existing policy or regulation cannot necessarily be taken as evidence of avoiding a significant adverse effect, and it is recommended therefore that the assessment also considers emerging policy/ standards and the guidance of expert bodies such as the CCC on necessary policy developments; and
- To aid decision making it is important to inform the decision maker about the relative severity of environmental effects such that they can be weighed in a planning balance. Therefore, it is essential to provide context for the magnitude of GHG emissions reported in the EIA in a way that aids evaluation of these effects by the decision maker. IEMA advise that context can be provided through comparison of the whole life GHG emissions resulting from the development with national, local and sectoral totals, as well as carbon budgets.

12.113 Therefore, the assessment of significance is established over two steps as follows:

Step 1: Establish Context of GHG Emissions

12.114 Context for decision making is provided by comparing the net change in the whole life GHG emissions resulting from the development with local and regional GHG emissions totals, and carbon budgets.

Step 2: Determine Scale Significance of Effects

12.115 The Scale and Significance of effects is established through applying the criteria detailed in Table 12.4 based on professional judgement that considers:

- The consistency of the development with national, regional, and local policies designed to limit GHG emissions and meet the UK's net zero target; and
- The robustness, timeliness and efficacy of mitigation measures proposed to avoid, reduce and compensate GHG emissions.

12.116 In terms of mitigation, IEMA recommends that mitigation should in the first instance seek to avoid GHG emissions[22]. Where GHG emissions cannot be avoided, the Proposed Development should aim to reduce the residual significance of a project's emissions at all stages. Where additional GHG emissions remain but cannot be further reduced at source, approaches should be considered that compensate the project's remaining emissions, for example through offsetting.

[23] *Her Majesty's Stationery Office (2019) The Climate Change Act 2008 (2050 Target Amendment) Order 2019*

Geographic Extent of Effects

12.117 The geographic extent of effects arising from the Proposed Development will extend beyond the Development boundary, and owing to the nature of GCG emissions could well extend across the entire country, and therefore the extent is considered to be 'global'.

Effect Duration

12.118 GHG emissions will be generated for the lifetime of the project (or at least up to 2050) by which time it might be expected that net GHG emissions will be zero. They are, therefore, considered to be permanent.

Direct and Indirect

12.119 The Proposed Development's GHG emissions will not have any direct environmental effects, but contribute to climate change, which is an indirect environmental effect.

Cumulative Effects

12.120 GHG emissions from all projects will contribute to climate change; globally, not just locally. As set out in the IEMA guidance:

"Effects of GHG emissions from specific cumulative projects therefore in general should not be individually assessed, as there is no basis for selecting any particular (or more than one) cumulative project that has GHG emissions for assessment over any other".

12.121 This statement relates to 'cumulative' on a global scale. The definition of 'cumulative effects' in the context of GHGs and climate change therefore goes far beyond the typical definition of cumulative effects for EIA, which tends to focus on other proposed projects in the vicinity of the Proposed Development.

Baseline Conditions

Deconstruction and Construction

12.122 The Proposed Development will require the partial deconstruction of the existing Euston Tower building. Any embedded carbon in the building fabric is not additional to this project; the reuse of these materials results in a reduced requirement for new construction materials, and consequently, a reduction in embedded carbon generated during construction.

12.123 The baseline is therefore assumed to be zero, as the embedded carbon emissions associated with construction already reflect the net change.

Operation

12.124 Baseline GHG emissions associated with repairs, maintenance and refurbishment, as well as transport, energy and water supply emissions are assumed to be zero as the site is not in use.

Table 12.5 Summary of Baseline GHG Emissions

Development Phase		Baseline CO_2e Emissions (tonnes/annum)	Comment/Rationale
Enabling Works and Construction		0	Site is not in use
Operation	Repair, Maintenance and Refurbishment	0	Site is not in use
	Transport	0	Site is not in use
	Energy	0	Site is not in use
	Water Supply	0	Site is not in use
Total		0	Construction + Operation

Embedded Mitigation

12.125 A range of mitigation measures are embedded into the design of the Proposed Development to avoid and reduce GHG emissions during its construction and operation.

Deconstruction and Construction Mitigation

12.126 Reducing GHG emissions during construction would include consideration of minimising the use of materials as well as the procurement of sustainable materials, with consideration of the embodied carbon footprint of the material, from the extraction of the raw materials to the production of the final construction products, and the transport of products between the factory and Proposed Development. As aforementioned in Paragraph 12.69 31% of the existing building will be retained, which in turn is likely to lead to a reduction in the GHG emissions during construction and the reuse/recycling/upcycling of any materials from the deconstruction.

12.127 The following measures will be considered when selecting materials for the construction of the Proposed Development to reduce embedded carbon emissions where possible:

- Optimisation of structural, façade and mechanical, electrical and plumbing (MEP) designs to reduce material intensity;
- Improved concrete specification and higher quantities of cement replacements;
- Improved reinforcement specification; and
- High recycled content aluminium in facades.

Completed Development

Transport

12.128 The following measures are embedded within the design of the Proposed Development to influence sustainable travel behaviour from the site:

- The Proposed Development will be 'car-free'. The car free scheme will discourage the use of private cars and encourage the use of existing public transport options;
- 861 secure cycle spaces, for the Proposed Development, will be provided, of which 43 spaces will be for accessible bikes; and
- The Proposed Development will provide improvements to the public realm and streetscape to enhance the pedestrian experience.

12.129 Overall, the site itself is in a highly accessible location (PTAL score of 6b) providing a wide range of transport services, being in close proximity to number bus, underground and rail routes.

Energy Consumption

12.130 The Proposed Development incorporates a suite of design measures to maximise energy efficiency, reduce energy demand and generate and supply renewable energy, including:

- A fully electric energy strategy with no gas supply to the Proposed Development, including Air Source Heat Pumps (ASHPs) and Solar Photovoltaics (PVs);
- Integration of openable elements in the façades allowing occupants to benefit from fresh air in the perimeter and aids in further reducing reliance on colling during the summer months; and
- Energy-efficient equipment will be used throughout the Proposed Development to reduce energy consumption.

12.131 The GHG emissions saving benefits of these measures are embedded in the Proposed Development's GHG footprint set out in this Chapter.

Potential Effects

Deconstruction and Construction

Embedded Carbon

12.132 The total embedded CO_2e emissions for the Proposed Development, as presented in modules A1-A3 of the whole life-cycle assessment[10], are 44,186 tonnes, based on a 5-year construction programme this equates to 8,837 tonnes/annum.

12.133 Since the Proposed Development is to be constructed on land that is already developed, and does not lead to a loss in habitat, forest or agricultural land, no land use change GHG emissions are assumed to occur.

Transport

12.134 The total CO_2e emissions from transport during construction of the Proposed Development, as presented in module A4 of the whole life-cycle assessment[10], are 6,630 tonnes, based on a 5-yearconstruction programme this equates to 1,326 tonnes/annum.

Site Activities

12.135 The total embedded CO_2e emissions from site activities during construction of the Proposed Development, as presented in module A5 of the whole life-cycle assessment[10], are 4,330 tonnes, based on a 5-year construction programme this equates to 866 tonnes/annum.

Operation

Repair, Maintenance and Refurbishment

12.136 GHG emissions from repair, maintenance and refurbishment during the Proposed Development's lifetime have been sourced from the whole life-cycle assessment[10] (modules B1-B5) and are 39,055 tonnes, or 651 tonnes/annum based on a lifetime of 60 years.

Transport

12.137 The assessment of transport related GHG emissions for the completed Proposed Development in the first year of operation (2030) are presented in Table 12.6. The assessment multiplies the calculated 2030 GHG emission factors for each mode of travel (see Table 12.3) by the distance travelled per mode. Distance travelled was calculated from the number of trips per mode and the average distance travelled by mode, as advised by the Transport Consultant.

Table 12.6 Assessment of GHG Emissions from Operational Transport

Mode	Emission Factors CO_2e per km or passenger km (from Table 6.2)	Distance Travelled per Annum (km) [a] Completed Proposed Development (all plots)	CO_2e Tonnes (per annum) [b]	
			2030 Opening Year	Lifetime Emissions
National Rail	0.0163	21,209,244	345	6,254
London Underground	0.0128	28,872,696	368	6,671
Bus/tram	0.0772	9,200,007	710	43,313
Car Driver	0.1295	0	0	0
London Taxis	0.2710	510,515	138	6,892
Cycle	-	3,991,640	0	0
Walk	-	899,451	0	0
Total	-	64,683,554	**1,562**	**63,131**

[a] Except national rail, underground and bus, which are passenger km.

[b] CO_2e emissions are calculated by multiplying distance travelled by CO_2e factors by mode from Table 6.2.

Energy Consumption

12.138 The CO_2 emissions from energy consumption of the Proposed Development are described in the Energy Statement[9]. The Energy Statement compares the Proposed Development to a notional "baseline" of compliance with Part L Building Regulations.

12.139 Table 12.7 summarises the improvement in performance for the Proposed Development for regulated CO_2 emissions, taking into account measures to address the Mayor's Climate Change Strategy to be lean, be clean, be green.

Table 12.7 Assessment of CO2 Emissions from Energy Consumption [a]

Item	Site-Wide (Tonnes CO_2 per annum)
REGULATED EMISSIONS	
Baseline: Part L compliance	326
After energy demand reduction (be lean)	292
Total % Improvement	10%
After heat network connection (be clean)	292
% Improvement	0%
After renewable energy (be green)	279
Total % Improvement	4%
Net Emissions [b]	299
UNREGULATED EMISSIONS	
With Energy Strategy	49
REGULATED AND UNREGULATED	
Net Emissions [b]	348

Notes

[a] As described in the Energy Statement[9].

[b] Net emissions do not take into account offsets to meet GLA target zero carbon, which are discussed in the Mitigation section of this ES chapter.

12.140 Table 12.7 shows that the non-domestic regulated components of the Proposed Development will achieve a 14% improvement in carbon emissions over Part L 2013 compliance, which is below the Mayor's target of 35% improvement.

12.141 Unregulated emissions do not require specific target reductions compared to a nominal baseline under the London Plan[24]. The London Plan requires all residual regulated emissions to be offset to zero, and so the Proposed Development will provide offsetting to further reduce the carbon emissions from regulated energy consumption. Carbon offsetting is discussed in the mitigation section of this report. The London Plan also requires that minimum of 15% reductions in non-domestic emissions are met through energy efficiency measures; this is not the case for the Proposed Development which achieves a 14% reduction.

12.142 To comply with the London Plan[24], the cash in-lieu contribution to offset regulated CO_2 emissions has been calculated as £795,581.

[24] *GLA (2021) The London Plan 2021*

Water Supply and Treatment

12.143 GHG emissions associated with water supply and treatment during the operational phase of the Proposed Development, as presented in module B7 of the whole life-cycle assessment[10], are 426 tonnes; this equates to 7 tonnes per annum based on a 60-year lifetime.

End of Life

12.144 The total embedded CO_2e emissions associated with the end-of-life stage of the Proposed Development, as presented in modules C1-C4 of the WLC assessment[10], are 4,470 tonnes.

12.145 All of these emissions will occur at the end of the Proposed Development's life, and it is likely, due to decarbonisation of the economy to meet the net zero 2050 target, that there will be mechanisms in place to ensure these are at least net zero. In any case, they have been reported for completeness, but are not considered in the assessment of opening year emission, or comparison to regional and local emissions.

Total GHG Emission Footprint

12.146 Table 12.8 summarises the GHG emissions for the Proposed Development in the opening year for each footprint element. The GHG emissions from embedded materials used in construction are annualised based on the duration of the deconstruction and construction works (assumed to be 5 years (see Paragraph 12.81) and a 60-year life. Annualising the embedded GHG emissions allows them to be compared on a like-for-like basis to the operational GHG emissions which are reported on a per annum basis.

12.147 As shown in Table 12.8, the Proposed Development will result in a net increase in GHG emissions in the opening year of 13,597 tonnes.

Table 12.8 GHG Footprint for Proposed Development for Opening Year [a]

Development Stage	Footprint Element	Baseline (tonnes CO_2e per annum)	Opening Year (tonnes CO_2e per annum)	Lifetime Emissions (tonnes CO_2e)
Construction	Embedded	0	8,837	44,186
	Transport	0	1,326	6,630
	Site Activities	0	866	4,330
Operation	Repair, Maintenance and Refurbishment	0	651	39,055
	Energy	0	348	2,525
	Transport	0	1,562	63,131
	Water Supply and Treatment	0	7	426
TOTAL		0	**13,597**	**160,283**
End of Life	Deconstruction; Waste transport, processing and disposal	0	17,682	155,935

Notes:

[a] *All figures are rounded.*

[b] *All emissions to occur at the end of the life of the Development. This is not an annualised value.*

Total GHG Emissions (Deconstruction and Construction and Operation)

12.148 As detailed in paragraph 12.105, the IEMA guidance has been adopted to determine the likely significant effects of the Proposed Development and considers the following three underlying principles to inform the assessment of significance.

Step 1: GHG Context

12.149 The first step in determining the likely significant effects is to contextualise the Proposed Development's GHG emissions in the opening year to London-wide and local GHG emissions. The assessment is informed through comparison to CO_2e emissions budgets for the GLA Area and reported within the London Environment Strategy[25].

12.150 The GLA carbon budget for the period of 2028-2032 which includes the earliest opening year of the Proposed Development is 18.0 $MTCO_2e$/annum and equates to 3.6 MTCO2e/annum over this 5-year period. This budget excludes embedded carbon emissions, and therefore, the comparison of the Proposed Development's GHG emissions to the budget includes only the emissions from transport (construction and operational), site activities (deconstruction, construction and repair, maintenance, and refurbishment), energy and water supply and treatment for consistency.

12.151 A comparison of the GHG emissions of the Proposed Development from these sources to the GLA budget in 2030 shows the Proposed Development emissions (4,760 tonnes CO_2e) are 0.03% of the budget. As embodied carbon emissions will nearly all occur outside London, the comparison is conservative.

12.152 In terms of a local comparison, there is no equivalent GHG budget for the LBC, and therefore a comparison has been made against the 2020 LBC GHG emissions reported in the LEGGI. The LBC emissions in LEGGI for 2020 (the latest available year) are 935,000 tonnes CO_2e. The LEGGI data does not include embedded carbon emissions, and therefore the comparison of the Proposed Development's GHG emissions to these benchmarks includes only the emissions from transport (construction and operational), site activities (deconstruction, construction and repair, maintenance, and refurbishment), energy and water supply and treatment for consistency.

12.153 A comparison of the GHG emissions of the Proposed Development from these sources to the LBC emissions shows that emissions associated with the construction and operation of the Proposed Development (4,760 tonnes CO_2e / annum) are 0.5% of borough wide GHG emissions.

12.154 The comparison assumes that emissions from a typical construction year and a full 12-months of fully operational development all occur in the same year, which is worst-case. The comparison also ignores decarbonisation of the borough's emissions which will be lower in 2030 than in 2020. Regardless, the contribution is still small.

12.155 As the emissions associated with the operation of the Proposed Development relate to electrical energy consumption and ground transport, both of which will be decarbonised on the pathway to net zero by national measures and interventions, the Proposed Development will not limit the UK's ability to meet its net zero 2050 target. The principles of the IEMA guidance are that where GHGs cannot be avoided, that mitigation should be provided to minimise GHGs. The mitigation is discussed in the following section.

Step 2: Consistency with Policy

12.156 The second step in determining the likely significant effects is to contextualise the Proposed Development's GHG emissions, which is described in the following sections.

National Policies

12.157 In terms of national policy, the key national policy is the National Planning Policy Framework (NPPF)[26]. Paragraphs 154 b), 155 and 157 are of particular relevance to the GHG assessment, which are all within Part 14 of the NPPF.

12.158 Paragraph 154 b) requires that: *"New development should be planned in ways that can help reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards."*

12.159 The Proposed Development has been designed using an energy efficient, fabric-first approach as described in the Energy Statement[9]. A range of measures have been implemented into the design, as discussed in Paragraph 12.130, to directly or indirectly reduce GHG emissions.

12.160 Paragraph 155 requires that: *"To help increase the use and supply of renewable and low carbon energy and heat, plans should: a) provide a positive strategy for energy from these sources, that maximises the potential*

[25] *GLA (2018) London Environment Strategy*

[26] *Department for Levelling Up, Housing & Communities (2023) National Planning Policy Framework.*

for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts); b) consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and c) identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for colocating potential heat customers and suppliers."

12.161 Although this strictly this applies to development plans and therefore overlaps with local policies, discussed later in this section, the Proposed Development will employ the use of renewable energy (principally solar PV and ASHPs) within the building. The Proposed Development therefore complies with Paragraph 155 of the NPPF.

12.162 Paragraph 157 requires that: *"In determining planning applications, local planning authorities should expect new development to: a) comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and b) take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption."*

12.163 Compliance with the local development plan is discussed in the proceeding paragraphs, but as set out in the Energy Statement[9], the Proposed Development will be designed to ensure energy efficiency of building fabrics is maximised to maximise energy efficiency and reduce energy consumption, supplemented with renewable energy as needed to meet the requirements of Policy SI 2 of the London Plan and relevant LBC Local Plan policies. As such the Proposed Development does not conflict with Paragraph 157 of the NPPF.

12.164 In addition to the NPPF, it is appropriate to review how the Proposed Development aligns with national commitments to net zero by 2050. The CCC[27] has established a "balanced net zero pathway" which considers feasible and cost-effective policy and technology interventions to ensure the UK can meet its new net zero target.

12.165 For power generation under this scenario, the CCC consider that 100% of power generation by 2050 will be low carbon and for ground transport it forecasts that all ground transportation (apart from small number of HGVs) will be electrically powered. The CCC therefore forecast that power and ground transportation sectors are largely decarbonised by 2050 with any residual emissions removed through technical and or natural means.

12.166 It is therefore reasonable to assume that national policy measures will ensure that energy and transport emissions relating to the Proposed Development will be decarbonised, consistent with the UK's net zero target. The recent government announcement bringing forward the ban on sale of new vehicles that are not electrically powered to 2030 is an example of policy that is being developed. In addition, as described in the Energy Strategy, the Proposed Development will adopt an all-electric energy strategy, ensuring the Proposed Development is fully net zero ready in accordance with CCC advice and projections.

12.167 Importantly the Proposed Development has adopted measures that are supportive of national policies to meet net zero. Specifically, this includes:

- adopting a fabric-first approach to design to minimise energy demand;
- development of an all-electric energy strategy, with no use of fossil fuels; and
- delivering a car-free scheme with a focus on ensuring the majority of building users travel by sustainable or active modes of travel.

12.168 The Proposed Development has been demonstrated to be able to decarbonise in line with Government trajectories (see Paragraph 12.166) and will therefore not conflict with efforts to meet the national net zero target.

12.169 Overall, it is demonstrated that the Proposed Development complies with the requirements of national planning policy relevant to GHG emissions.

Regional Policies

12.170 The Mayor of London published the current 'London Plan' in March 2021. This is the Spatial Development Strategy for Greater London. The Development Plan for each London Borough must ultimately comply with the general requirements of the London Plan (2021).

12.171 The London Plan includes planning policies both for reducing energy consumption within buildings and, more significantly, for promoting the use of decentralised electricity generation and renewable energy technologies. These policies cover the requirements of each borough with respect to energy strategies and planning applications.

12.172 The London Plan recognises that energy efficiency should come before energy supply considerations and has suggested a simple strategy known as the Energy Hierarchy (Policy SI 2). The process follows good practice in the design of low carbon buildings and comprises four distinct stages and order of application:

- 1. Use Less Energy (Be Lean);
- 2. Supply Energy Efficiently (Be Clean);
- 3. Use Renewable Energy (Be Green); and
- 4. Monitor, verify and report on energy performance (Be Seen).

12.173 This strategy puts energy efficiency/conservation measures first to reduce the demand for energy, 'Be Lean'. Following this, consideration must be given to supplying the resultant reduced energy demand as efficiently as possible, including to exploit local energy resources (such as secondary heat) and supply energy efficiently, 'Be Clean'. Sources of low or zero carbon and renewable energy technologies should then be examined for incorporation, 'Be Green'. Lastly, it is a requirement for developments to monitor and report energy performance post-construction to ensure that the actual carbon performance of the development is aligned with the Mayor's net zero carbon target, 'Be Seen'.

12.174 The London Plan (2021) requires a minimum on-site reduction of at least 35% beyond Building Regulation. Non-residential developments should aim to achieve 15% through energy efficiency measures alone. the policy also requires all development to achieve net zero, through offsetting residual emissions as necessary.

12.175 The Energy Statement[9] explains how the Proposed Development does comply with Policy SI 2 of the London Plan, through delivery of an energy efficient design with 14% reduction against Part L from energy efficiency measures and through offsetting as a cash in-lieu contribution to offset regulated CO_2 emissions (calculated as £795,581) to achieve net zero emissions from energy consumption.

Local Policies

12.176 The LBC Local Plan[28] was adopted in July 2017. The following policies are applicable to the GHG assessment.

12.177 Policy CC1: Climate change mitigation:

"The Council will require all development to minimise the effects of climate change and encourage all developments to meet the highest feasible environmental standards that are financially viable during construction and occupation.

We will:

a. promote zero carbon development and require all development to reduce carbon dioxide emissions through following the steps in the energy hierarchy:
b. require all major development to demonstrate how London Plan targets for carbon dioxide emissions have been met;
c. ensure that the location of development and mix of land uses minimise the need to travel by car and help to support decentralised energy networks;
d. support and encourage sensitive energy efficiency improvements to existing buildings;
e. require all proposals that involve substantial demolition to demonstrate that it is not possible to retain and improve the existing building; and
f. expect all developments to optimise resource efficiency…'

12.178 The Proposed Development complies with the requirements of Policy CC1 by:

- Production of a detailed Energy Statement[9] for the Proposed Development assessing the design and performance of the buildings against the Mayor's Energy Hierarchy;

[27] *CCC, (2019). Net Zero, Technical report.*

[28] *LBC (2020) Tower Hamlets Local Plan 2031: Managing Growth and Sharing Benefits.*

- Adopting an energy efficient design, communal zero-emission ASHP heating, and renewable PV energy to achieve a 14% reduction in regulated carbon dioxide emissions below the Part L Building Regulations baseline;
- Offsetting the remaining regulated CO_2 through a cash in lieu contribution (see Paragraph 12.142);
- Provision of PV panels to provide reduction in regulated CO_2 emissions through on-site renewable energy generation; and
- Targeting a BREEAM 'excellent' rating.

Step 2 Mitigation Assessment

12.179 Table 12.9 sets out an assessment of the Proposed Development's approach to mitigation against the mitigation principles described in IEMA guidance, to avoid and reduce GHGs where practicable and compensate for any residual emissions. Embedded mitigation measures are summarised in Paragraphs 12.125 to 12.131 and additional mitigation measures are described in Paragraphs 12.184 to 12.188.

Table 12.9 Proposed Development Approach to Mitigation in Accordance with IEMA Mitigation Principles

Development Stage	Embedded Mitigation	Additional Mitigation
Construction	Reuse of material where possible. Minimising waste to landfill. Good practice measures to minimise energy use from construction activities. Consideration to use of construction materials with low embedded carbon.	Development of a CMP, SWMP and CLP.
Operation: Repair, maintenance and refurbishment	N/A	It is anticipated that materials used in repair, maintenance and refurbishment will be sourced sustainably and in line with relevant policy requirements at the time the works are undertaken.
Operation: Transport	Measures are adopted into the design of the Proposed Development that aim to reduce car journeys and encourage low/zero carbon alternatives (e.g., cycling/walking).	A Travel Plan will also be implemented to promote sustainable transport.
Operation: Energy	Energy saving measures to meet the Mayor's climate change strategy, which requires 35% carbon reduction beyond Building Regulation. Non-residential developments should aim to achieve 15% through energy efficiency measures alone. The Proposed Developments includes a 14% reduction against Part L and includes offsetting via cash in-lieu.	Regulated emissions will be reduced to zero via offset payment, in line with GLA guidelines.

12.180 The mitigation measures set out in Table 12.9 are judged to represent good practice and be proportionate and consistent with developments of this scale and type.

Residual Effects

12.181 Table 12.10 summarises the residual significance of effects of the Proposed Development's GHG emissions, following the IEMA approach summarised in Table 12.4.

12.182 The assessment considers the context of the Proposed Development's GHG emissions, as well as the compliance of the Proposed Development will relevant national and local policies and the robustness, timeliness and efficacy of the mitigation to avoid and reduce GHG emissions.

Table 12.10 Proposed Development Assessment of Effects in Accordance with IEMA Guidance

IEMA Step	Description	Assessment	Alignment with IEMA Guidance (Table 12.4)
Step 1	Context	The Proposed Development's emissions are a small component of local (1.1 %) and regional (0.06%) GHG emissions and budgets. The Proposed Development provides net zero regulated energy emissions through offsetting and can decarbonise in line with national trajectories to net zero.	Minor Adverse: Fully in line with measures necessary to achieve the UK's trajectory towards net zero.
Step 2	Consistency with Policy	The Proposed Development has been demonstrated to meet the requirements of national, regional and local policies relating to GHG emissions and climate change.	Minor Adverse: The Proposed Development is fully consistent with applicable existing policy requirements.
	Robustness, timeliness and efficacy of mitigation	The Proposed Development has adopted good practice measures to avoid and reduce GHG emissions during the construction phase and over the lifetime of its operation. The majority of the measures to avoid and reduce GHGs are designed in and will therefore be delivered during construction or from the occupation of Proposed Development onwards.	Minor Adverse: The GHG mitigation provided by the Proposed Development is in line with best practice design standards for projects of this type.

12.183 Although the Proposed Development contributes to local and national GHG emissions, it is considered that these have been minimised through an appropriate degree of mitigation consistent with best practice and IEMA guidance, and ensure the Proposed Development is compliant with the UK's target for net zero carbon emissions by 2050. The Proposed Development has been demonstrated to meet all relevant policies related to GHG emissions and climate change. Based on the significance criteria set out in Table 12.4, it is therefore judged that the Proposed Development will have a **Minor Adverse impact** on GHG emissions, and thus the effect is **'not significant'**.

Mitigation, Monitoring And Residual Effects

12.184 Additional mitigation measures and environmental management strategies that will help directly or indirectly reduce GHG emissions during construction and operation of the Proposed Development are summarised in the following sections. The measures set out below are additional to the embedded mitigation measures described in Paragraphs 12.125 to 12.131.

Deconstruction and Construction Mitigation

12.185 An Outline Construction Management Plan (CMP) has been prepared to support this planning application and a finalised version of the CMP (on appointment of the Principal Contractor) will be conditioned with the granting of planning permission. The CMP detail control measures and activities to be undertaken to minimise environmental effects, including matters regarding waste management, and energy and water usage.

12.186 A Site Waste Management Plan (SWMP) will be developed to demonstrate how the waste will be minimised and managed. Construction waste will be minimised by the re-use of existing materials, however, where this is not possible the waste will be sorted to maximise recycling and to divert as much from landfill as possible.

12.187 In terms of construction transport, a Construction Logistics Plan (CLP) will be implemented to reduce the environmental impact from the construction stage and to optimise the efficient delivery and collection of goods and materials to the site.

Completed Development Mitigation

Transport

12.188 An Outline Travel Plan[29] and a Delivery and Servicing Plan[30] have been developed for the Proposed Development and they accompany the planning application. Both Plans set out measures to minimise car use and facilitate the sustainable movement of staff, visitors, and goods to and from the Proposed Development.

[29] *Velocity Transport Planning Ltd, 2023. Euston Tower, Regent's Place*

[30] *Velocity Transport Planning Ltd, 2023. Euston Tower, Regent's Place*

Residual Effects

12.189 All of the residual effects resulting from the Proposed Development, are presented in Table 12.10, identifying whether the effect is significant or not.

Assessment Of The Future Environment

Evolution of the Baseline Scenario

12.190 If the Proposed Development were not to come forward, then it would remain in its current unused state. The emissions from the existing unused site would remain zero.

Cumulative Effects Assessment

12.191 GHG emissions from all projects will contribute to climate change; globally, not just locally. As set out in the IEMA guidance:

"Effects of GHG emissions from specific cumulative projects therefore in general should not be individually assessed, as there is no basis for selecting any particular (or more than one) cumulative project that has GHG emissions for assessment over any other".

12.192 This statement relates to 'cumulative' on a global scale. The definition of 'cumulative effects' in the context of GHGs and climate change therefore goes far beyond the typical definition of cumulative effects for EIA, which tends to focus on other proposed projects in the vicinity of the Proposed Development.

12.193 The EIA has identified eight cumulative schemes in the assessment. It is difficult to quantify the GHG emissions from each of these cumulative schemes and as discussed above, cumulative contributions to climate change from GHGs will extend well beyond these schemes. It is expected that mitigation will be provided, principally for embodied carbon during construction and operational energy and transport, which are policy compliant and work to minimise the on-site GHG emissions and reduce the lifetime GHG emissions of each cumulative scheme.

Likely Significant Effects

12.194 The GHG assessment has identified that the Proposed Development will lead to GHG emissions, however, these are described as Minor Adverse and therefore 'not significant' in accordance with IEMA best practice guidance on the assessment of GHGs for EIA.

12.195 This conclusion is based on the GHG emissions generated by the Proposed Development being small in the context of local and regional emissions and GHG budgets, the Proposed Development being compliant will all relevant policies relating to GHG and climate change, and the fact that the Proposed Development will not conflict with or prevent the UK meeting its net zero GHG emissions target of 2050.

12.196 Mitigation is provided to avoid and reduce the GHG emissions, which follows the key principles of GHG mitigation in the IEMA guidance and is consistent with the requirements of relevant policy.

Chapter 13: Effect Interactions

INTRODUCTION

13.1 This chapter of the Environmental Statement (ES) summarises the likelihood for intra-project effects or 'effect interactions'. Effect interactions occur because of interactions between multiple individual effects associated with just one project on a receptor i.e. the combination of individual effects, for example effects interactions in relation to noise, airborne dust and traffic on a receptor.

13.2 Note that inter-project effects i.e. those in combination with other developments or 'cumulative schemes' have been discussed separately throughout this ES (in **ES Volume 1, Chapters 6 to 12**) as appropriate, and have not been re-iterated within this ES chapter to avoid repetition.

13.3 There is no established Environmental Impact Assessment (EIA) methodology for assessing the nature and scale of effect interactions on a receptor. However, the European Commission[1] (EC) has produced guidelines to assist EIA practitioners in developing an approach which is appropriate to a project. These guidelines have been used to develop an approach which uses the defined residual effects of the Proposed Development (as presented throughout this ES (in **ES Volume 1, Chapters 6 to 12**) to determine the potential for effect interactions. These residual effects are reliant on mitigation measures (as identified throughout this ES and presented within **ES Volume 1, Chapter 15: Environmental Management, Mitigation and Monitoring Schedule**), which have been assumed to be undertaken/adopted.

13.4 The approach to defining effect interactions involves tabulating the residual effects of the Proposed Development against receptors or, where more appropriate, receptor groups to identify the potential for in-combination effects or effect interactions. For the purposes of this assessment, residual effects that have been identified in **ES Volume 1, Chapters 6 to 12** and in **ES Volume 2** that do not affect a common sensitive receptor have not been presented in this ES chapter, as no effect interactions are anticipated. Only residual effects that are likely to give rise to effect interactions have been considered and discussed as relevant.

13.5 Residual effects that are beneficial, neutral, or adverse in nature and that are minor, moderate, or major in scale have been considered. Based on the definitions of what negligible effects comprise for each of the technical assessments, these do not warrant further consideration therefore have not been pulled through into the assessment of effect interactions within this ES chapter.

13.6 The residual effects highlighted in **green** within the tables presented in this ES chapter reflect (minor, moderate or major) beneficial effects, those in **orange** reflect (minor, moderate or major) adverse effects and those in **blue** reflect neutral/balanced effects. This approach has been followed unless otherwise justified for a respective technical chapter.

13.7 The potential for in-combination effects is identified, and professional judgement is then used to determine if the potential in-combination effects could lead to an effect interaction. Where a resultant effect interaction is identified, this is further discussed qualitatively.

13.8 The scale of an effect interaction has not been assigned as part of this assessment; however, whether the effect interaction is considered a significant effect or not is identified[2]. For example, when one or more residual significant effects (i.e. effects that are typically moderate or major in scale) from different EIA topics (i.e. air quality, noise and vibration, traffic and transport) coincide on a receptor, the effect interaction has been considered as being 'significant'.

13.9 If none of the individual effects are significant, consideration has been given as to whether or not the combination of many not significant effects could result in a combined significant effect, based on professional opinion.

13.10 Where the nature of effects that interact are the same (i.e. they are all either adverse or beneficial), the nature of the effect interaction is reported upon. Where multiple effects of differing natures interact (i.e. there is a combination of both beneficial and adverse effects), the nature of any significant effect interaction identified has not been assigned.

13.11 This ES chapter has subsequently been divided into two parts:

- Deconstruction and Construction – which addresses potential intra-project effects and effect interactions arising from the deconstruction and construction works; and
- Completed Development – which addresses potential intra-project effects and effect interactions arising from the completed and operational Proposed Development.

DECONSTRUCTION AND CONSTRUCTION

13.12 Table 13.1 presents the residual effects associated with the deconstruction and construction works of the Proposed Development and identifies the potential for effect interactions on particular receptors. Where the potential for an effect interaction is identified, this is discussed in more detail in the text below.

Table 13.1 Potential for Effect Interactions – Deconstruction and Construction

Receptor	Technical Topic Area and Residual Effect	Scale and Nature of Residual Effect	Significance of Individual Effect
Pedestrians (on Euston Road and Hampstead Road)	**Traffic and Transport** Pedestrian and Cyclist Delay	Minor Adverse	Not Significant
	Visual Changes to views as a result of the deconstruction and construction of the Proposed Development. (Viewpoint 11: Hampstead Road, junction with Drummond Street; Viewpoint 14: Euston Road, junction with Gower Street)	Moderate Adverse	**Significant**
	Visual Changes to views as a result of the deconstruction and construction of the Proposed Development. (Viewpoint 9: Hampstead Road, opposite junction with Varndell Street; Viewpoint 10: Hampstead Road, junction with North Gower Street; Viewpoint 13: junction with Duke's Road)	Minor to Moderate Adverse	Not Significant

Pedestrians

13.13 Pedestrians using the area immediately surrounding the site have been assessed as having the potential to experience in-combination effects as a result of the deconstruction and construction of the Proposed Development. There is potential for temporary periods of increased delays for pedestrians as a result of general construction activity. Hoarding would be present on Hampstead Road and Euston Road, which will result in the narrowing of existing footways. This has the potential to create delays for pedestrian movements on Euston Road and Hampstead Road, resulting in a Minor Adverse (not significant) effect.

13.14 In addition to, and in combination with, the effects above relating to pedestrian delay, pedestrians along Euston Road and Hampstead Road will experience a temporary adverse change in the visual amenity, as a result of the deconstruction and construction of the Proposed Development. These effects are associated with the use of machinery and tower cranes and will be temporary in nature.

13.15 This effect interaction is considered **Significant** as at least one of the effects is significant in isolation, and it could result in an adverse pedestrian experience on Euston Road and Hampstead Road. However, these effects will be temporary and will be mitigated where possible, for example, through the implementation of a Construction Management Plan, which will aim to minimise disruption and ensure there are not adverse

[1] *European Community (1999); Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions.*
[2] *The methodology for determining a significant in-combination effect has been defined by the HS2 Phase 2a: West Midlands – Crewe Scoping and Methodology Report (July 2017) and the published HS2 Phase 2a Environmental Statement Volume 1 Introduction and Methodology and Volume 2 Community Area Reports (July 2017). The methodology for assigning significance to in combination effects has been specifically included in this ES to assess if there are any combination effects that would result in a significant effect.*

impacts on pedestrians (as detailed in **ES Volume 1, Chapter 15: Environmental Management, Mitigation and Monitoring Schedule**).

COMPLETED DEVELOPMENT

13.16 There is no potential for any effect interactions to occur once the Proposed Development is complete and operational. Whilst there are a number of effects identified to surrounding receptors, these receptors are not impacted by multiple effects in a way that could classify as an effect interaction.

SUMMARY

13.17 In summary, a **Significant Adverse** temporary effect interaction to pedestrians along Euston Road and Hampstead Road due to combined delay and visual amenity effects during the deconstruction and construction works has been identified.

13.18 No effect interactions have been identified from the Proposed Development, once complete and operational.

Chapter 14: Likely Significant Effects

INTRODUCTION

14.1 This chapter of the Environmental Statement (ES) presents a summary of the likely significant residual effects pertaining to the Proposed Development during the deconstruction and construction works, and once completed and operational.

14.2 It should be noted that for most technical topics, residual effects that are identified as moderate or major in scale are considered 'significant', with effects that are negligible or minor in scale being 'not significant'.

14.3 For the Wind Microclimate assessment, as explained within **ES Volume 1, Chapter 11: Wind Microclimate**, adverse effects that are minor, moderate, and major in scale are considered a 'significant' effect; and beneficial effects (at all scales) are considered 'not significant'.

14.4 The purpose of this ES chapter is not to re-present the residual effects associated with each of the technical topic assessments. All residual effects, including their associated nature and scale, are presented and summarised within each technical chapter of the ES, and reference should be made to **ES Volume 1, Chapters: 6 to 12** of this ES. Instead, this chapter focuses on summarising likely significant effects that are expected to arise as a result of the Proposed Development, in line with the Environmental Impact Assessment (EIA) Regulations[1].

14.5 Table 14.1 and Table 14.2 of this ES chapter respectively outline the likely significant effects resulting from the deconstruction and construction works associated with the Proposed Development, and once the Proposed Development is complete and operational. Significant adverse effects are shaded in '**orange**', significant beneficial effects are shaded in '**green**', and significant neutral effects are shaded in '**blue**'[2] for ease of identification.

DECONSRUCTION AND CONSTRUCTION

14.6 Table 14.1 summarises the likely significant residual effects arising as a result of the Proposed Development during deconstruction and construction.

14.7 No significant deconstruction and construction effects are likely to arise as a result of the Proposed Development in respect of the following environmental topic area which have been the subject of this EIA:

- Socio-Economics;
- Traffic and Transport;
- Air Quality;
- Daylight, Sunlight, Overshadowing and Solar Glare;
- Wind Microclimate;
- Climate Change and Greenhouse Gases; and
- Built Heritage.

14.8 Significant effects arising as a result of the deconstruction and construction of the Proposed Development have been identified as being likely in respect of the following topic areas, and are therefore discussed further in this chapter:

- Townscape; and
- Visual.

Table 14.1 Likely Significant Effects – Deconstruction and Construction

EIA Topic Area	Receptor(s)	Description of Residual Effect	Classification of Residual Effect			
			Scale, Nature and Geographic Extent	D I	P T	St Mt Lt
Townscape	Townscape Character Area 1: Euston Road	Alterations to the townscape setting during the deconstruction and construction works.	Moderate Adverse	D	T	St
	Townscape Character Area 4: Drummond Street			D	T	St
	Townscape Character Area 6: Fitzroy Square			D	T	St
Visual	Viewpoint 5: The Regent's Park: East of the Broad Walk	Changes to views as a result of the deconstruction and construction of the Proposed Development.	Moderate Adverse	D	T	St
	Viewpoint 11: Hampstead Road, junction with Drummond Street			D	T	St
	Viewpoint 12: Drummond Street, at junction with Coburg Street			D	T	St
	Viewpoint 14: Euston Road, at Gower Street			D	T	St
	Viewpoint 19: Fitzroy Square			D	T	St
	Viewpoint 21: Tottenham Court Road, at Capper Street			D	T	St
	Viewpoint 22: Tottenham Court Road, at Grafton Way			D	T	St
	Viewpoint 23: Tottenham Court Road, at Grafton Way (night)			D	T	St

Notes:

Residual Effect Scale = Negligible / Minor / Moderate / Major Nature = Beneficial or Adverse Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N) D = Direct / I = Indirect P = Permanent / T = Temporary St = Short Term / Mt = Medium Term / Lt = Long Term N/A = not applicable / not assessed

Townscape and Visual

14.9 The deconstruction and construction of the Proposed Development would result in **Significant Adverse** (Moderate) effects are on the following Townscape Character Areas (TCAs):

- Townscape Character Area 1: Euston Road;
- Townscape Character Area 4: Drummond Street; and
- Townscape Character Area 6: Fitzroy Square.

[1] *His Majesty's Stationary Office (HMSO) 2017. The Town and Country Planning (Environmental Impact Assessment) (England) Regulations 2017 (as amended in 2018 and 2020).*

[2] *As noted within **ES Volume 1, Chapter 2: EIA Methodology**, neutral effects are relevant for the Townscape, Visual and Built Heritage Impact Assessment*

14.10 The deconstruction and construction of the Proposed Development would also result in **Significant Adverse** (Moderate) effects on Viewpoints 5, 11, 12, 14, 19, 21, 22 and 23.

14.11 All townscape and visual effects attributed to the deconstruction and construction process will be short-term and temporary in nature.

COMPLETED DEVELOPMENT

14.12 Table 14.2 summarises the likely significant effects arising as a result of the Proposed Development, once complete and operational.

14.13 No significant effects have been identified as being likely as a result of the complete and operational Proposed Development in respect of the following environmental topic areas which have been the subject of this EIA:

- Socio-Economics;
- Traffic and Transport;
- Air Quality;
- Noise and Vibration;
- Wind Microclimate;
- Climate Change and Greenhouse Gases; and
- Built Heritage.

14.14 Significant effects have been identified as being likely as a result of the completed and operational Proposed Development in respect of the following topic areas, and are therefore discussed further in this chapter:

- Daylight, Sunlight, Overshadowing and Solar Glare; and
- Townscape; and
- Visual.

Table 14.2 Likely Significant Effects – Completed and Operational Development

EIA Topic Area	Receptor(s)	Description of Residual Effect	Classification of Residual Effect			
			Scale, Nature and Geographic Extent	D I	P T	St Mt Lt
Daylight, Sunlight, Overshadowing & Solar Glare	175 Drummond Street	Reduction in daylight	Minor to Moderate Adverse (Local)	D	P	Lt
Townscape	Townscape Character Area 1: Euston Road	Enhancement to the Townscape Character Area as a result of the completed Proposed Development.	Moderate Beneficial	D	P	Lt
	Townscape Character Area 4: Drummond Street			D	P	Lt
	Townscape Character Area 6: Fitzroy Square			D	P	Lt
Visual	Viewpoint 5: The Regent's Park: East of the Broad Walk	Changes to views as a result of the completion of the Proposed Development.	Moderate Beneficial	D	P	Lt
	Viewpoint 11: Hampstead Road, junction with Drummond Street			D	P	Lt
	Viewpoint 12: Drummond Street, at junction with Coburg Street			D	P	Lt
	Viewpoint 14: Euston Road, at Gower Street			D	P	Lt
	Viewpoint 19: Fitzroy Square			D	P	Lt
	Viewpoint 21: Tottenham Court Road, at Capper Street			D	P	Lt
	Viewpoint 22: Tottenham Court Road, at Grafton Way			D	P	Lt
	Viewpoint 23: Tottenham Court Road, at Grafton Way (night)			D	P	Lt

Notes:

Residual Effect Scale = Negligible / Minor / Moderate / Major Nature = Beneficial or Adverse Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N) D = Direct / I = Indirect P = Permanent / T = Temporary St = Short Term / Mt = Medium Term / Lt = Long Term N/A = not applicable / not assessed

Daylight, Sunlight, Overshadowing and Solar Glare

14.15 The Proposed Development will result in the reduction in daylight provision to 175 Drummond Street, resulting in a **Significant Adverse** (Minor to Moderate) effect. The reduction of the provision of daylight to the majority of rooms in 175 Drummond Street would be equivalent to a Minor Adverse (not significant) effect, and greater reductions in daylight are in relation to bedrooms, which are considered 'less important' in terms of the amount of daylight received.

Townscape and Visual

14.16 The site is located within Townscape Character Area 1: Euston Road. The Proposed Development will reinforce its existing character, which contains modern large scale and tall buildings, and would enhance the townscape character through its architectural quality and urban design benefits, therefore resulting in a **Significant Beneficial** (Moderate) effect.

14.17 The Proposed Development will also be visible from Townscape Character Area 4: Drummond Street and Townscape Character Area 6: Fitzroy Square. It will be consistent with the existing relationship between the site and these TCAs, resulting in **Significant Beneficial** (Moderate) effects as a result of the high architectural quality and enhanced landmark role of the Proposed Development.

14.18 The complete and operational Proposed Development would also result in **Significant Beneficial** (Moderate) effects on Viewpoints 5, 11, 12, 14, 19, 21, 22 and 23.

LIKELY SIGNIFCANT CUMULATIVE EFFECTS

14.19 The EIA process has identified likely significant effects additional to the main assessment of the Proposed Development, as summarised within Table 14.1 and Table 14.2 above, as well as changes to significant effects already identified as a result of the Proposed Development in conjunction with other surrounding cumulative schemes.

Deconstruction and Construction

14.20 During deconstruction and construction, there are no significant cumulative effects that would be different to those outlined within the assessment of the Proposed Development.

Completed Development

14.21 During the operation of the Proposed Development, there are no significant cumulative effects that would be different to those outlined within the assessment of the Proposed Development.

LIKELY SIGNIFICANT EFFECT INTERACTIONS

14.22 A **Significant Adverse** temporary effect interaction has been identified for pedestrians along Hampstead Road and Euston Road, due to combined delay and visual amenity effects during the deconstruction and construction works.

Chapter 15: Environmental Management, Mitigation and Monitoring Schedule

INTRODUCTION

15.1 Mitigation refers to '*measures envisaged to prevent, reduce and, where possible, offset any significant adverse effects on the environment*'[1]. Throughout the design process, environmental mitigation measures have been incorporated into the design of the Proposed Development to prevent and reduce potentially adverse effects (e.g., appropriate drainage strategy measures to ensure that flood risk is minimised). These mitigation measures have been incorporated into the design of the Proposed Development and so comprise part of the scheme for which planning permission is sought. These environmental mitigation measures are described in this Environmental Statement (ES) in **ES Volume 1, Chapter 4: The Proposed Development**; they are not necessarily repeated within this chapter of the ES, although some have been brought through for completeness. Securing these measures will be via the planning permission granted for the Proposed Development itself and the requirement for this to be delivered in accordance with approved details.

15.2 Environmental enhancement measures have been incorporated into the design of the Proposed Development where practical to improve the existing environmental conditions of the site and surrounding area. Again, these are described in this ES in **ES Volume 1, Chapter 4: The Proposed Development**; they are not repeated within this chapter of the ES. Securing these measures will also be via the planning permission granted for the Proposed Development itself and the requirement for this to be delivered in accordance with approved details.

15.3 Several Management Plans or Management Documents have also either been prepared in draft to accompany the planning application or are committed to being prepared and implemented which relate to mitigating adverse environmental effects (e.g., a Construction Management Plan (CMP)). These Management Plans / Documents will be secured through obtaining planning permission for the Proposed Development and their drafting, agreement and implementation will be subject to Planning Conditions attached to the planning permission if granted by the Local Planning Authority (LPA), in this case London Borough of Camden (LBC). 15.3Table 15.1 lists the Management Plans / Documents. The requirements (which have been identified as being necessary in accordance with the Environmental Impact Assessment (EIA)) of each of the Management Plans / Documents is summarised in Table 15.2.

15.4 Table 15.2 also presents other 'secondary' mitigation and environmental design commitments required for the Proposed Development which have been identified as being required by the EIA process and described within this ES, but which do not necessarily sit within a specific Management Plan or Management Document. These measures are typically bespoke project mitigation and design commitments that have been identified as being required by the EIA, both in relation to the deconstruction and construction works and following completion and during operation of the Proposed Development.

15.5 Table 15.2 also sets out any relevant 'tertiary'[2] mitigation. This is environmental mitigation and design commitments which are standard measures/commitments that would be adopted as a matter of course to meet legislative requirements and best practice guidance in relation to the deconstruction and construction works and completed development as relevant to the EIA.

15.6 Monitoring can relate to observations and recordings throughout the deconstruction and construction works (for example noise, vibration, or dust monitoring). In addition, monitoring can be relevant at the operational stage of a development, for example in relation to a staff or residential travel plan and use of cycle parking or electric vehicle charging facilities. Monitoring can also be relevant where mitigation needs to be checked and validated for its effectiveness. In the case of the Proposed Development, noise and vibration monitoring and air quality and dust monitoring is proposed during the deconstruction and construction works. No other monitoring requirements have been identified as a result of the EIA.

15.7 The environmental mitigation, design commitments and monitoring presented in Table 15.2 are measures that the LPA will need to secure for the project, either using Planning Conditions (related to the Planning Permission) or through the planning obligations to be secured by the Section 106 Agreement. The environmental mitigation, design commitments and monitoring have been developed through coordination with the Applicant, Design Team, and EIA technical specialists to ensure the environmental mitigation, design and monitoring measures suggested are deliverable and are considered appropriate in terms of their ability to mitigate likely significant adverse environmental effects associated with the Proposed Development.

Table 15.1 Management Plans / Documents

MANAGEMENT PLANS/ DOCUMENTS	DRAFT / OUTLINE SUBMITTED FOR PLANNING	ES / OTHER RELEVANT REFERENCE
Enabling Works, Deconstruction and Construction		
Construction Management Plan (CMP) which includes: • Noise and Vibration Controls; • Dust Management Plan (DMP); and • Resource Management Plan (RMP) • Site Waste Management Plan (SWMP)	Yes	ES Volume 1, Chapter 5: Deconstruction and Construction ES Volume 1, Chapter 7: Traffic and Transport ES Volume 1, Chapter 8: Air Quality ES Volume 1, Chapter 9: Noise and Vibration ES Volume 1, Chapter 12: Climate Change and Greenhouse Gases ES Volume 3, Appendix: EIA Methodology – Annex 1
Construction Logistics Plan (CLP)	Yes	ES Volume 1, Chapter 5: Deconstruction and Construction ES Volume 1, Chapter 7: Traffic and Transport
Completed Development		
Travel Plan (TP)	Yes	ES Volume 1, Chapter 7: Traffic and Transport
Car Parking Design & Management Plan (CPDMP)	Yes	N/A
Operational Waste Management Plan (OWMP)	Yes	ES Volume 1, Chapter 4: The Proposed Development ES Volume 1, Chapter 7: Traffic and Transport ES Volume 1, Chapter 10: Climate Change and Greenhouse Gases ES Volume 3, Appendix: EIA Methodology – Annex 1
Delivery and Servicing Plan (DSP)	Yes	ES Volume 1, Chapter 4: The Proposed Development ES Volume 1, Chapter 7: Traffic and Transport
Ecological Management Plan (EMP)	No	ES Volume 1, Chapter 4: The Proposed Development

[1] *https://www.legislation.gov.uk/uksi/2017/571/schedule/4/made?view=plain*

[2] *https://www.nipa-uk.org/uploads/news/NIPAroundtablemitigationP2.pdf*

Table 15.2 Mitigation and Monitoring Schedule

ENVIRONMENTAL MITIGATION	ES REFERENCE
REGISTRATIONS AND CONSENTS	
The site will be registered with the 'Considerate Constructors Scheme' (CCS) and 'Construction Logistics and Community Safety' (CLOCS) scheme. • The appointed contractor will enroll the project in the Considerate Contractors Scheme and the project will be managed to achieve a high score of 40/45 or higher; • The name and contact details of the Principal Contractors Project Manager will be displayed on the CCS poster located at the entrance of the site; • The appointed Principal Contractor and all subcontractors will abide by, comply and adhered to the CLOCS Standards for construction logistics; • The Principal Contractor will use subcontractors and suppliers that are members of the Fleet Operator Recognition Scheme (FORS); and • All deliveries will be made to the site using vehicles and hauliers with FORS accreditation.	ES Volume 1, Chapter 5: Deconstruction and Construction
All consents and licenses required to commence any on-site activity will be obtained ahead of the works commencing and give the appropriate notice period. As a minimum, these will include: • Notices for works on the highway in accordance with the Highways Act 1980 and Road Traffic Act 1998; • Hoarding and scaffold licences for works on the perimeter boundary; • Construction Phase Plan under CDM Regulations; • Health and Safety Executive (HSE) F10 Notification; • Deconstruction Method Statements (DMS) and Risk Assessments; • Construction Method Statement (CMS) and Risk Assessments; • Section 80 (Demolition Notice[3]) Application; • Section 61 (Noise Control) Application; • Construction notices; • Connections to existing statutory services and main sewers; • Licence for discharge of water from the site into the public sewer; • Party Wall Act notices and agreements; and • Approval of relevant deconstruction and construction related environmental management plans and other supporting documents).	
UNEXPLODED ORDNANCE	
A detailed Unexploded Ordnance Risk Assessment will be undertaken ahead of any intrusive works on-site.	Basement Impact Assessment
ARCHAEOLOGICAL WRITTEN SCHEME OF INVESTIGATIONS	
Any archaeological works will be undertaken in accordance with an approved Written Scheme of Investigation (WSI) and will be carried out under the terms of an appropriately worded planning condition. This could include the following work, if required: • An archaeological watching brief to be undertaken during ground reduction for the proposed basement level B2, which will ensure that any previously unrecorded archaeological assets are not removed without record; or • Archaeological monitoring of preliminary geotechnical investigations to clarify the nature and depths of deposits.	Archaeological Desk Based Assessment
CONSTRUCTION MANAGEMENT PLAN (CMP)	
An Outline Construction Management Plan (CMP) has been submitted alongside the planning application to help developers to minimise construction impacts both on and off-site. Various environmental management controls will form the basis of a Construction Management Plan (CMP) that will be implemented over the duration of construction works. A Full CMP will be secured by an appropriately worded planning condition. The CMP will seek to support the achievement of the following objectives: • To demonstrate that construction materials can be delivered, and waste removed in a safe, efficient and environmentally friendly way; • To identify deliveries that can be reduced, re-timed or even consolidated, particularly during peak periods; • To help cut congestion on nearby roads and ease pressure on the environment; • To encourage construction workers to travel to the site by sustainable or active travel modes; • To improve vehicle and road user safety; • To encourage the use of greener vehicles;	ES Volume 1, Chapter 5: Deconstruction and Construction ES Volume 1, Chapter 7: Traffic and Transport ES Volume 1, Chapter 8: Air Quality ES Volume 1, Chapter 9: Noise and Vibration ES Volume 1, Chapter 12: Climate Change and Greenhouse Gases

[3] *To clarify, this legislation is required for the deconstruction works of the Proposed Development.*

ENVIRONMENTAL MITIGATION	ES REFERENCE
• To improve the reliability of deliveries to the site; and • To reduce fuel costs and carbon emissions for freight operators. **General Information** • Details (including plans) of deconstruction works; • Standard working hours for the site in compliance with the requirements of 'Guide for Contractors in Camden': – 8.00am to 6.00pm on Monday to Friday – 8.00am to 1.00pm on Saturdays – No working on Sundays or Public Holidays • Detailed site layout and access arrangements, including plans for storage, site office set-up, vehicular movements, site access and egress; and • Construction programme and methodology; **Community Liaison** • A neighbourhood consultation process will be undertaken prior to submission of the CMP first draft; • Consultation process specifically relating to construction impacts will take place regardless of prior consultation relating to planning matters; • Affected individuals will be provided with a copy of the draft CMP, or a link to an online document; **Transport (**see **– CONSTRUCTION LOGISTICS PLAN (CLP))** • The contractors will use designated construction traffic routes for deliveries to the site; • Access routes to and from the site to be used by HGVs will be agreed upon with the LBC and TfL before the initiation of the construction programme via the details Construction Logistics Plan (see Construction Logistics Plan below); • The strategic road network will be used as far as possible to reach the site; and • All vehicle movements to site will be controlled by an electronic delivery management system (EDMS) where vehicles will be booked into pit lanes or entry gates as necessary to ensure that all arrivals are known and controlled, and materials management spaces are not double booked. **Environment** • Noise, vibration, and dust emissions on-site will be carefully managed via real-time continuous monitoring systems throughout the works until otherwise agreed with the Local Planning Authority • Noise and vibration controls will be implemented – see **CMP - Noise and Vibration Controls** below; and • Dust management measures – see **CMP – Dust Management Plan** below.	
CMP – NOISE AND VIBRATION CONTROLS (BEST MANAGEMENT PRACTICES)	
Section 72 of the Control of Pollution Act 1974 (CoPA) describes Best Practicable Means (BPM), which will be implemented to reduce noise emissions throughout the construction works to a reasonable and practicable level. The following measures will be adopted in line with BPM: • Careful selection of construction methods and plant to be used; • The use of temporary acoustic barriers where appropriate and the use of enclosures and screens around noisy fixed plant where practicable; • Regular maintenance and servicing of vehicles, equipment and plant; • Appropriate and well-maintained hoardings constructed on the boundaries of adjacent noise-sensitive premises, which may include sound absorbing materials; • Strategic placement of plant items as far from receptors as practicable possible and use of temporary acoustic barriers where appropriate and other noise containment measures such as screens and sheeting to minimise noise breakout and reduce noise levels at the potentially affected receptors. • Switching off of plant and vehicle engines when not in use; • Restriction of drop heights onto lorries; • Regular maintenance and servicing of vehicles, equipment and plant; • Vehicles and mechanical plant should be fitted with effective exhaust silencers; • Pneumatic percussive tools should be fitted with appropriate mufflers or silencers; • Appropriate handling and storage of materials; • Enforcement of restricted working hours for excessively noisy activities; • Time slots should be adopted for deliveries to ensure that convoys of vehicles do not arrive simultaneously and avoid potential engine idling on-site; and • Implementation of an appropriate traffic management strategy. This strategy should include controls to prevent temporary parking of construction vehicles in the vicinity of Noise Sensitive Receptors.	ES Volume 1, Chapter 5: Deconstruction and Construction ES Volume 1, Chapter 9: Noise and Vibration

ENVIRONMENTAL MITIGATION	ES REFERENCE
If a temporary source of noise cannot reasonably be prevented and the works being undertaken are crucial to progressing the Proposed Development, then separate liaison with LBC and the appropriate neighbours will be held. In addition to the above, reasonable steps would be taken to keep the local community informed of proposed construction operations. The site management team will co-ordinate the dissemination of information (for example, by means of a regular newsletter) and to schedule those operations at times that would minimise the potential for disturbance. The site management team will provide a contact telephone number on the site boundary so that any concerns with construction activities can be communicated directly to a senior manager who will be able to address any concerns and control activities accordingly. This person will be responsible for logging complaints and actions. A Section 61 consent under the CoPA will also be sought to secure the appropriate noise and vibration limits for construction activities at the nearby sensitive properties. These limits will be monitored (for both noise and vibration) and reported. The reports and monitoring will highlight when it is likely that the construction limits will be exceeded, so that construction activities can be effectively altered so as not to exceed the limits. Vibration limits will be set in compliance with BS 5228-2 to minimise the likelihood of adverse effects and cosmetic building damage. Prior warning and explanations will be given to the occupiers of residential properties on Hampstead Road prior to piling activities. Agreed vibration limits will be controlled through the implementation of the CMP, along with continuous long term vibration monitoring at appropriate locations.	
CMP – DUST MANAGEMENT PLAN	
Implementation and compliance with the measures set out within the Dust Management Plan (DMP), which will be integrated into the CMP, and secured by a suitably worded planning condition. **Site Management** • Develop and implement a stakeholder communications plan that includes community engagement before work commences on-site; • Display the name and contact details of persons accountable on the site boundary; • Display the head or regional office information on the site boundary; • Record all dust and air quality complaints, identify causes and take measures to reduce emissions; • Make the complaints log available to the local authority when requested; • Carry out regular site inspections to monitor compliance with air quality and dust control procedures, record inspection results, and make an inspection log available to the Local Authority when asked; • Increase the frequency of site inspections by those accountable for dust and air quality pollutant emissions issues when activities with a high potential to produce dust and emissions are being carried out and during prolonged dry or windy conditions; and • Record exceptional incidents and action taken to resolve the situation. **Preparing and Maintaining the Site** • Plan site layout so that machinery and dust causing activities are located away from sensitive receptors, as far as possible; • Erect solid screens or barriers around dusty activities on the site boundary at least as high as any stockpile on-site; • Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period; • Avoid site run off of water or mud; • Keep site fencing, barriers and scaffolding clean using wet methods; • Remove potentially dusty materials from site as soon as possible; • Cover, seed or fence stockpiles to prevent wind whipping; • Put in place real-time dust and air quality pollutant monitors across the site and ensure they are checked regularly; • Agree monitoring locations with LBC; and • Where possible, commence baseline monitoring at least three months before works begin. **Operation Vehicle/ Machinery and Sustainable Travel** • Loading and unloading will only be permitted in designated areas identified in the construction logistics plan; • Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone (LEZ) and Ultra Low Emission Zone (ULEZ); • Ensure all vehicles comply with the Non-Road Mobile Machinery (NRMM) standards, where applicable; • Ensure all vehicles switch off engines when stationary; • Avoid the use of diesel- or petrol-powered generators where possible; • Produce a Construction Logistics Plan (CLP) to manage the delivery of goods and materials **(**see **– CONSTRUCTION LOGISTICS PLAN (CLP))**; and • Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking); **Operations** • Only use cutting, grinding and sawing equipment with dust suppression equipment; • Ensure an adequate supply of water on-site for dust suppressant; • Use enclosed chutes and conveyors and covered skips;	ES Volume 1, Chapter 5: Deconstruction and Construction ES Volume 1, Chapter 8: Air Quality ES Volume 3, Appendix: Air Quality – Annex 11

ENVIRONMENTAL MITIGATION	ES REFERENCE
• Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use water sprays on such equipment where appropriate; and • Ensure equipment is readily available on-site to clean up spillages of dry materials. **Waste Management** • Reuse and recycle waste to reduce dust; and • No on-site bonfires and burning of waste materials on-site. **Deconstruction** • Ensure water suppression is used during deconstruction operations; • Avoid explosive blasting, using appropriate manual or mechanical alternatives; and • Bag and remove any biological debris or damp down such material before deconstruction. **Earthworks** • Re-vegetate earthworks and exposed areas / soil stockpiles to stabilise surfaces as soon as practicable; • Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable; and • Only remove the cover in small areas during work and not all at once. **Construction** • Avoid scabbling (roughening of concrete surfaces) if possible; • Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless required for a particular process; • Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored silos with suitable emissions control systems; **Trackout** • Use water assisted dust sweepers on the site access and local road; • Avoid dry sweeping of large areas; • Ensure vehicles entering and leaving the site (including barges) are covered to prevent escape of materials; • Record all inspections of haul routes and any subsequent action in a site log book; • Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems or mobile water bowsers, and regularly cleaned; • Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable); and • Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits; • Ensuring that dusty materials are transported appropriately (e.g., sheeting of vehicles carrying spoil and other dusty materials); • Confinement of vehicles to designated haul routes within the site; • Restricting vehicle speeds on haul roads and other unsurfaced areas on the site; • Hoarding and gates to prevent dust breakout; • Appropriate dust site monitoring will be included within the site management practices informing site management of the success of dust control measures used; and • Covering the load bed on vehicles when entering and leaving site.	
CONSTRUCTION LOGISTICS PLAN (CLP)	
An Outline Construction Logistics Plan (CLP) included as part of the Transport Assessment, has been submitted in support of the planning application, detailing management of freight vehicle movements to and from the site during the development. A detailed CLP will be secured by an appropriately worded planning condition and will be prepared before construction and implemented and monitored throughout the construction programme. The CLP will minimise adverse impacts resulting from the deconstruction and construction phase of the Proposed Development. Objectives and measures of the CLP will include: • Encourage construction workers to travel to the site by non-car modes; • Promote smarter operations that reduce the need for construction travel, or that reduce or eliminate trips in peak periods; • Encourage the use of greener vehicles and sustainable freight modes; • Manage the ongoing development and delivery of the CLP with construction contractors; • Communicate site delivery and servicing facilities to workers and suppliers; and • Avoid queueing and disrupting the traffic along the surrounding roads.	ES Volume 1, Chapter 5: Deconstruction and Construction ES Volume 1, Chapter 7: Traffic and Transport ES Volume 1, Chapter 12: Climate Change and Greenhouse Gases

ENVIRONMENTAL MITIGATION	ES REFERENCE
SITE WASTE MANAGEMENT PLAN (SWMP)	
An Outline Site Waste Management Plan (SWMP) has been prepared to support the planning application. The SWMP details how overarching waste management processes and practices will be undertaken during the deconstruction, site preparation, and construction phases of the site. The Outline SWMP also considers the need to lessen the overall impact of waste generation through recycling of materials from the construction phase of the Proposed Development. A detailed SWMP will be submitted and agreed with LBC prior to commencement of works on-site, and measures will include, but not be limited to: • Construction waste arising will be investigated to determine its reuse potential on-site; • Hazardous waste materials will be stored in secure bunded compounds in appropriate containers which are clearly labelled to identify their hazardous properties and are accompanied by the appropriate assessment sheets; • Any fuels, oils and chemicals that are used will be stored in appropriate containers within secure bunded compounds in accordance with good site practice and regulatory guidelines and located away from sensitive receptors; • A sustainable materials selection strategy will be prepared prior to the construction of the Proposed Development. The ordering of appropriate, minimum amounts of building materials will be part of the materials selection strategy; • Temporary offices and work compounds on-site will retain all details relating to the waste strategy for the site, health and safety and monitoring and reporting details; • Clearly identified containers for segregated waste streams for reuse and recycling; • Dedicated skips will be provided for any construction waste that requires off-site disposal; and • Appropriate targets and objectives will be set in relation to the minimisation, reuse, and recycling of any waste materials during earth works and construction. These targets will be agreed at the inaugural meeting between the Principal Contractors, the contractors and LBC. Initiatives to reduce waste as far as practically possible include: • Undertaking sustainability workshops setting targets for recycled content in concrete and steel, promoting off-site manufacture and reuse of materials in the design stage; • Minimising raw material waste through analysing design and construction techniques where possible; • A commitment to developing waste minimisation opportunities by maintaining a role in the management of the supply chain during construction. Measures such as bulk buying will be utilized to facilitate this; • Liaison with suppliers to enable packaging material is to be sent back for reuse, the use of off-cuts where possible and the recycling of off-cut material by the supplier; • Engaging contractors in the process of maximizing the use of recycled aggregates for hard-core and cement replacements according to application; • To ensure compliance with legislative requirements, only Environment Agency licensed waste hauliers, waste management contractors and landfill sites will be used; • Suitable protection measures will be incorporated in the design of the waste management area to prevent pollution and regular inspections carried out to ensure that stored waste is covered by present accidental spillage and from being blown away; • Movement of waste by haul road and public highways will avoid, where possible, the use of access routes through residential areas. When leaving site, vehicles will be sheeted/covered to prevent any escape of materials onto the public highway; • Waste transfer notes will be retained and will fully describe the waste terms of type, quantity, and containment in accordance with relevant regulations. Information regarding the type and quantity of material returned to the supplier and the contractor or contractors will also hold copies of all waste documentation; and • Materials stored on-site for disposal (e.g., spoil arising) will be subject to the provisions of the duty of care and may require a waste management permit. Where this is identified the permit of any exemption will be managed by the Principal Contractor.	ES Volume 1, Chapter 5: Deconstruction and Construction ES Volume 1, Chapter 12: Climate Change and Greenhouse Gases
RESOURCE MANAGEMENT PLAN (RMP)	
A Resource Management Plan will be produced to cover non-hazardous waste materials including deconstruction and excavation waste and accurate data records on waste arisings and waste management routes.	ES Volume 1, Chapter 5: Deconstruction and Construction
GROUND MOVEMENT MONITORING	
A monitoring regime will be undertaken to measure the ground and asset movement during partial superstructure deconstruction, localised excavation and construction of the new superstructure. The required monitoring will be confirmed at later design stages following development of the construction methodology and agreement with third party building owners. In addition to monitoring of buildings, monitoring of existing LUL underground assets, and other third-party assets would be scoped and specified based on ground movement assessments of these assets and development of the basement design and construction sequence.	Basement Impact Assessment
ECOLOGY AND BIODIVERSITY	
In order to mitigate the risk of disturbing, injuring or killing nesting birds during the site clearance work, clearance work will take place outside of nesting bird season (March to August). If this is not possible, clearance will only occur after a suitably qualified ecologist has confirmed the absence of nesting birds, a maximum of 48 hours prior to site clearance.	ES Volume 3, Appendix: EIA Methodology – Annex 1
TRAVEL PLAN (TP)	
An Outline Travel Plan (TP) has been produced to support the planning application, which will inform the production of a Full TP, which will be secured by an appropriately worded planning condition. The TP will set out measures to ensure that all trips to and from the operational Proposed Development are as sustainable as possible. Measures included within the TP will include: • The appointment of a TP Coordinator (TPC) prior to occupation to implement the TP. The TPC will report periodically to the LBC Travel Plan officers; • Organisation of a cycle to work week, which will be promoted by the TPC and coordinated with the National Bike Week, where timescales permit; • Promotion of a wide range of cycle initiatives, through a travel leaflet; • The establishment of a Bicycle User Group within the Proposed Development, which will enable users to set goals, log trips and participate in the cycling community within the building;	ES Volume 1, Chapter 7: Traffic and Transport ES Volume 1, Chapter 12: Climate Change and Greenhouse Gases

ENVIRONMENTAL MITIGATION	ES REFERENCE
• The implementation of a bike maintenance service; • Inductions for new employees to encourage sustainable transport methods; • Travel Leaflets will be made available electronically to tenants to distribute to employees, which will raise awareness of sustainable travel initiatives; • Notice boards will provide travel information to employees and visitors; • A programme of monitoring and review will be implemented to evaluate the success of the TP. This will establish whether the agreed targets are being met. Monitoring the TP will be undertaken through travel surveys to understand the changing nature of travel habits and the effectiveness of measures in working towards meeting the TP objectives. – The TPC will coordinate the baseline travel survey in Year 1 to identify the initial travel mode share and adjust the Travel Plan targets, if necessary, in coordination with the LBC and TfL Travel Plan officers. Surveys will be then repeated in Year 3 and Year 5 to monitor progress against targets. – The monitoring report will be submitted to the LB Camden Travel Plan officers. The TPC will be responsible for coordinating the timing of the Travel Plan survey questionnaires, collating the results and submitting the monitoring report. – Once the Year 5 survey is undertaken and reported, the Travel Plan's monitoring requirements will have been completed. – The TPC will report the monitoring survey results within one month of the travel survey being undertaken. If appropriate, the targets and measures will be revised. The travel survey results, and revised targets will be included in the subsequent revisions of the Travel Plan. If the monitoring results identify that targets are not being met, remedial measures to encourage cycling will be implemented by the TPC. The TPC will report back to the LBC on an annual basis on how effectively the Travel Plan is in achieving its targets.	
CAR PARKING DESIGN AND MANAGEMENT PLAN	
A Car Parking Design and Management Plan (CPDMP) will manage all parking associated with the complete and operational Proposed Development and will be secured by an appropriately worded planning condition. The Regent's Place Management team will ensure that the parking facilities provided on-site are being appropriately used and are in accordance with the CPDMP. The team will also be responsible for monitoring the parking on a regular basis.	ES Volume 1, Chapter 7: Traffic and Transport
DELIVERY AND SERVICING PLAN (DSP)	
An Outline Delivery and Servicing Plan (DSP) has been produced to support the planning application and will be secured by an appropriately worded planning condition. The DSP will seek to mitigate and minimise the impacts of all delivery and servicing activity associated with the complete and operational Proposed Development, and will include the following measures: • All vehicle movements across the Regent's Place Plaza and the delivery process will be fully managed by trained staff with a 'banksman' provided to guide the vehicles across the plaza; • The Regent's Place Management (RPM) team will be responsible for managing and coordinating the servicing of the Proposed Development including: – Liaising with occupiers and suppliers to encourage good practice; – Managing a delivery scheduling system, which will aim to avoid busy peaks; – Overseeing and accepting deliveries and being available to provide assistance; – Contacting individual occupiers to alert when their delivery has arrived; and – Recording vehicle sizes and types and discouraging long dwell times. • The RPM team will issue written / email instructions to all suppliers who book deliveries setting out the delivery procedures to be adopted. The information will include a plan indicating the location for access and servicing and where goods will be received; • All deliveries including the specialist gas deliveries will be scheduled to limit the number of vehicles in the morning and afternoon peak hours; • Clear signage will be provided directing goods to the correct entrance; • Drivers will be informed that vehicle engines must be switched off whilst goods are being loaded/ unloaded (i.e., when their vehicle is stationary). • Suppliers will be encouraged to use small and fuel-efficient vehicles where possible; • The refuse collection contractor will inform the Facility Manager (FM) team when the refuse collection vehicle is expected to arrive, so that the refuse is collected as promptly as possible; and • A logbook will be maintained and will include a record of any accidents or near misses and, if necessary, will be used to avoid potential future incidents.	ES Volume 1, Chapter 7: Traffic and Transport ES Volume 1, Chapter 12: Climate Change and Greenhouse Gases
OPERATIONAL WASTE MANAGEMENT PLAN (OWMP)	
An Operational Waste Management Strategy (OWMS) has been prepared to accompany the planning application, which aims to develop a strategy for legislative compliance and good practice in separation, storage, and collection of waste arising.	ES Volume 1, Chapter 4: The Proposed Development
WIND MICROCLIMATE	
Wind mitigation measures were developed through wind tunnel testing. The following mitigation measures have been included as part of the Proposed Development: • No. 2 raised planters (800mm) and five trees circling the south-east corner: – Western planter includes No. 2 deciduous multi-stem trees, 2-3m tall; and – Eastern planter includes No. 2 deciduous 3-5m tall trees and one deciduous multi-stem 2-3m tall; • One solid 'totem'/screen, (1.5m tall x 1.2m wide) located between the southern façade and the external podium column; • No. 3 planters located along Brock Street: – Western raised planter: mounded to 1.5m tall with No. 7 deciduous trees 3-5m tall & No. 1 evergreen tree 8.5m tall; – Northern raised planter: mounded to 1m tall with No. 3 deciduous trees 3-5m tall & No. 1 evergreen tree 5-7m tall; and – Eastern level planter: No. 1 evergreen tree 10m tall. Following the final wind tunnel workshop, details of landscaping and mitigation elements were refined by the design team which included:	ES Volume 1, Chapter 11: Wind Microclimate

ENVIRONMENTAL MITIGATION	ES REFERENCE
• Extending the western raised planter and changing the soft landscaping to incorporate No.4 deciduous multi-stem trees 2-3m tall. The above change is reflected in the planning drawings. One on-site receptor at the accessible lift access records wind conditions one category windier than desired, representing an adverse effect. However, this will be mitigated with the local landscaping/sheltering such as a totem. The totem, landscaping or screen will be placed immediately west of the entrance and will be solid or 50% porous. It is anticipated that the wind mitigation measure may be subject to further detailed design prior to their implementation, in accordance with planning conditions to be imposed on the planning permission (if granted).	
ECOLOGICAL MANAGEMENT PLAN	
An Ecological Management Plan (EMP) will be produced and will detail any habitat creation and its ongoing management. The EMP will be agreed with LBC and secured by an appropriately worded planning condition. the EMP will provide a description of how habitats are to be created, managed and maintained for a period of at least 30 years.	Biodiversity Net Gain Assessment