EUSTON TOWER

ES Addendum Volume 1 – ES Addendum Main Report

December 2024

British Land

Table of Contents

Chapter 1: Introduction, Proposed Design Amendments and ES Addendum Approach

EUSTON TOWER ADDENDUM INTRODUCTION

Introduction and Planning History

1.1 This Environmental Statement (ES) Addendum has been prepared on behalf of British Land Property Management Limited ('the Applicant'), to support a series of changes to the scheme submitted for approval pursuant to the December 2023 Planning Application. A number of amendments ('the Proposed Amendments') have been made to the scheme in response to discussions with London Borough of Camden ('LBC) officers and other stakeholders.

1.2 In December 2023, the Applicant submitted a detailed planning application (Planning Application Reference: 2023/5240/P) to the LBC for the redevelopment of a 0.8 hectare site to provide a 32-storey building and public realm enhancements (the 'Proposed Development'). An Environmental Statement (ES) was submitted to accompany the Planning Application (hereafter referred to as the 'December 2023 ES').

1.3 The December 2023 Planning Application for the Proposed Development, which was the subject of the December 2023 ES, sought planning permission for:

"Redevelopment of Euston Tower comprising retention of parts of the existing building (including central core, basement and foundations) and erection of a new building incorporating these retained elements, to provide a 32-storey mixed-use building providing 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; public realm enhancements, including new landscaping and provision of new publicly accessible steps and ramp; short and long stay cycle storage; servicing; refuse storage; plant and other ancillary and associated work."

1.4 This December 2023 Planning Application is currently pending determination.

1.5 Since the submission of the December 2023 Planning Application, discussions have been held with the LBC, local stakeholders and residents, including the Regents Park Conservation Advisory Committee and statutory consultees including Historic England and the Greater London Authority. Following review of the LBC comments on the proposals and discussions with Planning Officers, alterations to the Proposed Development have been made and are now being submitted for approval. The full list of the alterations relevant to the ES is set out within the '*Amended Proposed Development'* section below. These are hereinafter referred to as the 'Proposed Amendments', forming the 'Amended Proposed Development'.

1.6 This introductory ES chapter to the 2024 ES Addendum sets out the following information:

- Approach to the ES Addendum;
- Design Evolution of the Proposed Amendments;
- The Amended Proposed Development;
- Deconstruction and Construction of the Amended Proposed Development; and
- Structure of the December 2024 ES Addendum.

Glossary of Key Terms

1.7 Table 1.1 provides a glossary of key terminology used throughout this ES Addendum for ease of reference.

Table 1.1 Glossary

Key Term / Document	Definition
Proposed Amendments	The new design changes to the Proposed Development (submitted under Planning Application Reference: 2023/5240/P).
Amended Proposed Development	The development which considers the details of the Proposed Development and the Proposed Amendments in combination. The Amended Proposed Development reflects the development which planning approval is sought for and which is the subject of this ES Addendum.
The December 2023 Planning Application Site	The area / location within the December 2023 Planning Application boundary as presented within the December 2023 ES and Figure 1.1 of this ES Addendum chapter.
The Site	The amended area within the planning application boundary, as presented in Figure 1.3.
Proposed Development	The scheme submitted, as detailed within the December 2023 ES (submitted under Planning Application Reference: 2023/5240/P).
December 2023 ES	The Planning Application for the scheme submitted in December 2023 was accompanied by an Environmental Statement (ES) (dated December 2023) (herein referred to as the December 2023 ES).
2024 ES Addendum	This ES Addendum to the December 2023 ES that includes such information that is reasonably required to assess the Proposed Amendments to the scheme and determine any change to environmental and socio-economic effects previously presented.
ES Review Report	A document received by the London Borough of Camden's 3rd Patry Reviewer (CBRE) giving a review of the submitted December 2023 ES, initially dated 12th April 2024 (**ES Addendum Volume 3, Appendix: Introduction, Proposed Design Amendments and ES Addendum Approach – Annex 1**)

1.8 Figure 1.1 and Figure 1.2 shows the December 2023 Planning Application Site boundary and the proposed layout, scale and massing of the Proposed Development. The application site boundary has since been amended and is presented in Figure 1.3 ('the Site').

Figure 1.1 December 2023 Planning Application Red Line Boundary

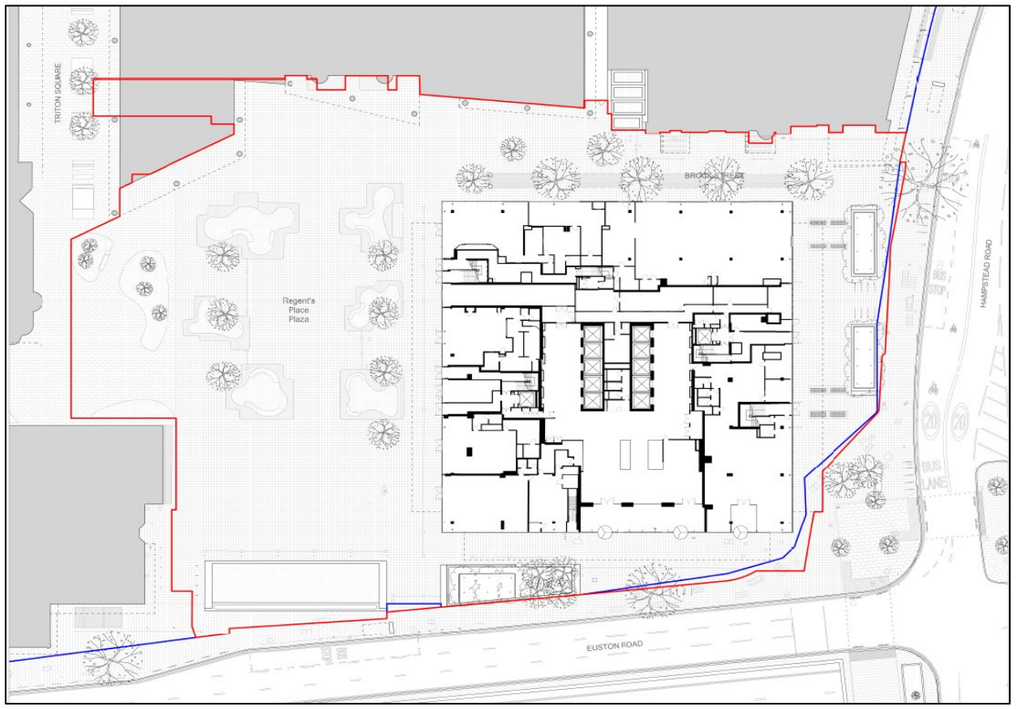


Figure 1.2 December 2023 Proposed Development

The Proposed Amendments to the December 2024 Proposed Development

1.9 Since the submission of the December 2023 Planning Application, a number of design changes (the 'Proposed Amendments') are proposed. These comprise:

- Changes to the Tower;
  - Tower massing has been adjusted to create a simpler, rectangular form; the tower is rounded at the corners and breathing spines are pushed inwards to separate the tower into four quadrants;
  - Façade design has incorporated an upstand into the horizontal elements that wrap the rounded massing corners. Vertical elements now span the tower top to bottom through which natural ventilation can occur;
  - Minor adjustment to vertical transportation strategy via level change from lift banks;
  - Four double height amenities have been relocated relative to their previous quadrants/levels;
  - Column grid adjusted to 9m bays and offset from façade by 2m;
  - The crown of the building has a double height amenity façade treatment such that the building is perceived the same from all angles;
  - There is no change to the building height;
- Changes to the amount of publicly accessible space, adjusted at ground and first floor levels;
- Changes to the Podium;
  - Number of podium levels has increased from four to six (L00-L05);
  - Podium Massing has been adjusted with rounded corners, increasing ground floor open space along Hampstead Road;
  - Layout of public space in Enterprise Space has been adjusted and its entrance along Hampstead Road adjusted from triple height to double height;
  - The escalator and stair layout of lobby space has been adjusted to be more space efficient;
- Minor updates have been made to the design and location of planters and trees in the public realm; and
- End of trip facilities entrance and access has been adjusted from a ramp to a bicycle stair and lift. External access remains from the southwest corner of the ground floor.

1.10 Further detail regarding the Proposed Amendments is included in this chapter of this 2024 ES Addendum (Sections '*Alternatives, Design Evolution and the Amended Proposed Development*') and within the Design and Access Statement (DAS) submitted in connection with the Proposed Amendments.

1.11 Figure 1.3 presents the amended application site boundary where the site area within the red line has been updated to 7,963m^2 (8,079m^2 in the December 2023 Proposed Development Site). The layout, scale and massing of the Amended Proposed Development, as assessed within this 2024 ES Addendum, is presented in Figure 1.4.

Figure 1.3 Amended Proposed Development Red Line Boundary

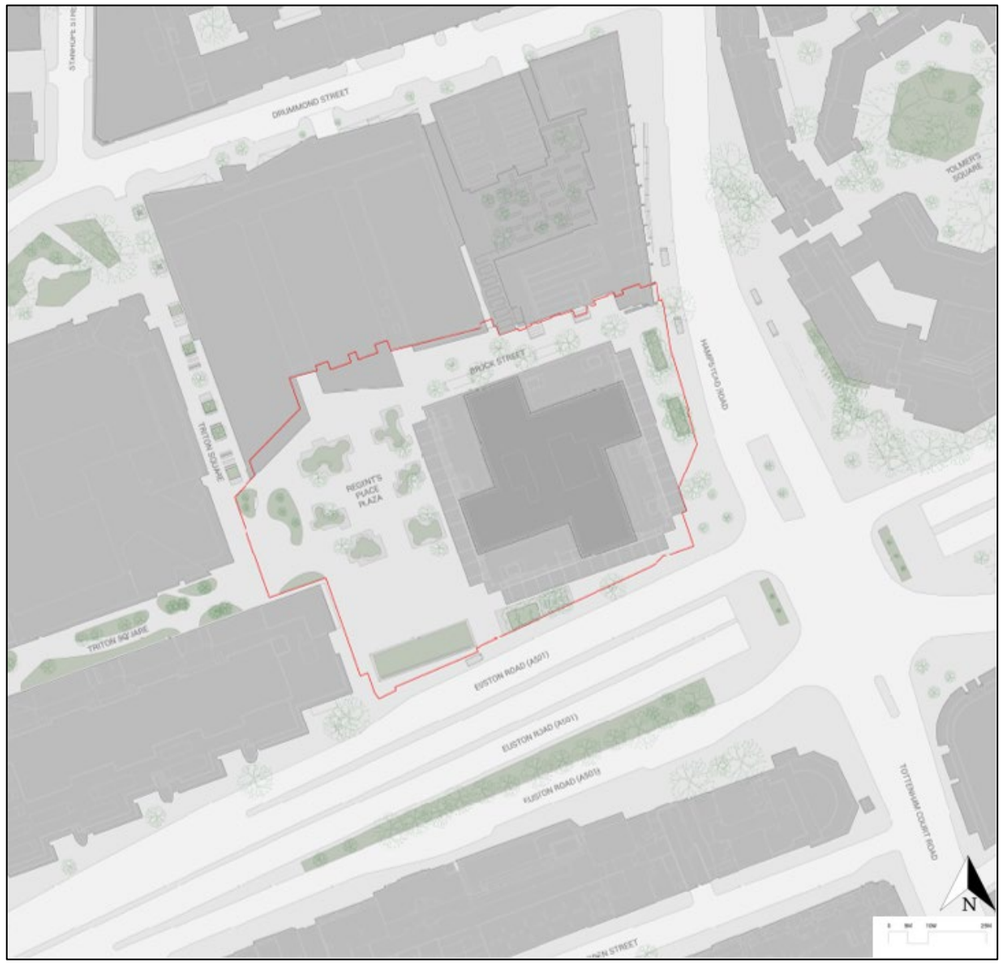


Figure 1.4 Amended Proposed Development

APPROACH TO THE ES ADDENDUM

1.12 This 2024 ES Addendum considers the Proposed Amendments and has been undertaken in accordance with the statutory procedures set out in The Town and Country Planning (Environmental Impact Assessment) Regulations 2017[1] (as amended) ('the EIA Regulations').

1.13 This 2024 ES Addendum builds on the assessments presented in the December 2023 ES to assess the likely significant effects of the Amended Proposed Development.

1.14 While considering the Amended Proposed Development as a whole, the assessment presented in this 2024 ES Addendum assesses the Amendment Proposed Development and any changes to the conclusions that may result from the Proposed Amendments. All elements of the December 2023 ES not covered in this 2024 ES Addendum are considered to remain valid.

1.15 The technical chapters within this 2024 ES Addendum follow the same general structure, format and chapter order presented within the December 2023 ES, with the same chapter volume and technical chapter numbers used throughout.

1.16 This 2024 ES Addendum considers any changes to legislation, planning policy and guidance, assessment methodology, baseline conditions; the implications of the Proposed Amendments, the cumulative assessment and potential effects during deconstruction and construction and the completed development, and any further mitigation required, and finally the residual effects and likely significant effects. There is no change to Methodology and Significance Criteria presented within the December 2023 ES.

1.17 The EIA specialists who contributed to the December 2023 ES have provided EIA technical services for this 2024 ES Addendum. These EIA specialists have reviewed the Proposed Amendments sought for approval in the context of the Amended Proposed Development and their potential to generate new or different likely significant environmental effects from the conclusions of the December 2023 ES.

DESIGN EVOLUTION

1.18 The Applicant has undertaken extensive consultation during both the pre-application and determination stages of the Proposed Development and has sought to respond positively to the responses received. The scheme has been revised in response to feedback from LBC Officers, local stakeholders and residents, including the Regents Park Conservation Area Advisory Committee and statutory consultees, including Historic England and The Greater London Authority.

1.19 A series of options were tested, all of which sought to address these comments and simplify the built form, that included changes to massing, facade design, colour, and proportion. These options were reviewed with Officers from the LBC and resulted in the Amended Proposed Development.

1.20 The Proposed Amendments predominately relate to the form of the massing and associated facade changes.

1.21 The design evolution of the Amended Proposed Development was heavily influenced by townscape and views. The views demonstrate a well-considered building that is attractive and complementary to the surrounding context.

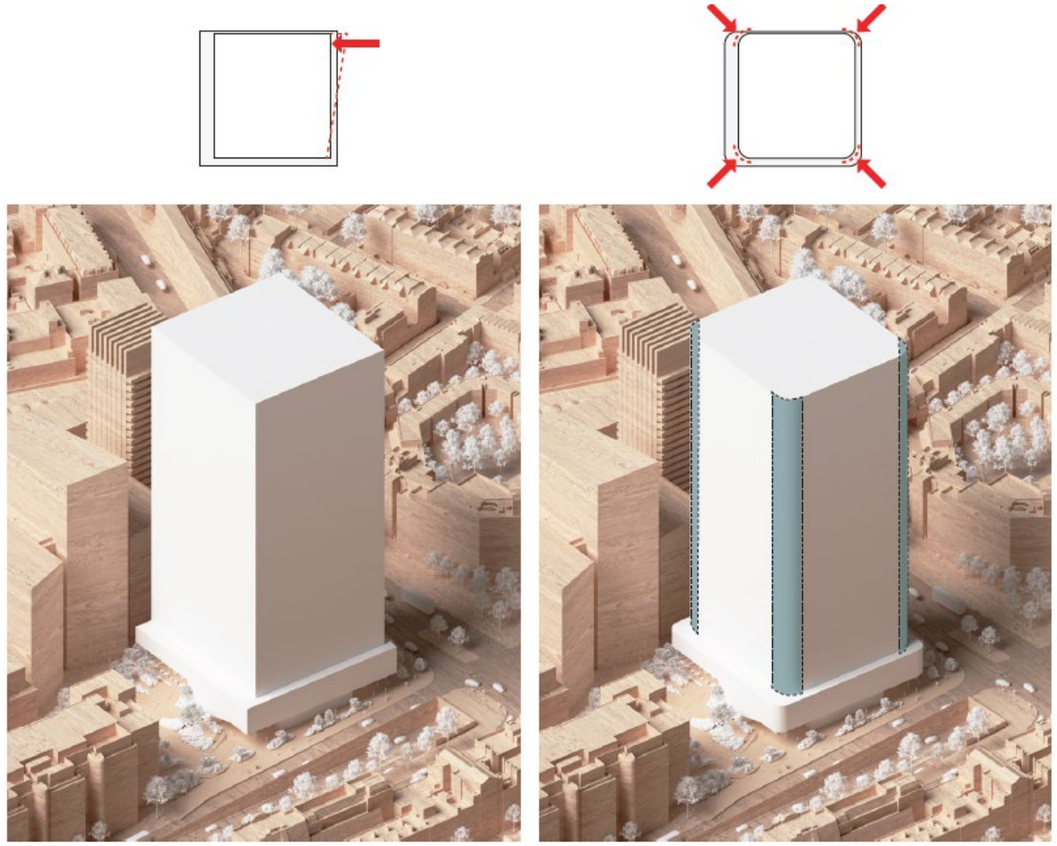
Tower Massing and Facade Evolution

1.22 As presented in Figure 1.5, the building massing was simplified to a rectangle in plan. The uniform shape helped give the proposed tower a calm, organised appearance on the skyline and provides a clear relationship to the regular forms of tall buildings in the immediate context. Cutting the form back at the north-east helped make the proposed tower appear more slender, particularly when viewed from along Tottenham Court Road.

1.23 In order to further reduce the perception of bulk and massing, the corners were rounded. This resulted in the visual width being significantly reduced, especially when the proposals are viewed on the angle. The softer appearance has also helped establish a clearer identity for the proposed tower and reinforced it as a building that addresses all four elevations.

1.24 The total height of the building remains the same as that presented within the 2023 Planning Application. The fundamental massing concepts remain largely the same, but are expressed more clearly with the simplified massing.

Figure 1.5 Tower Massing Evolution (Post-Application)



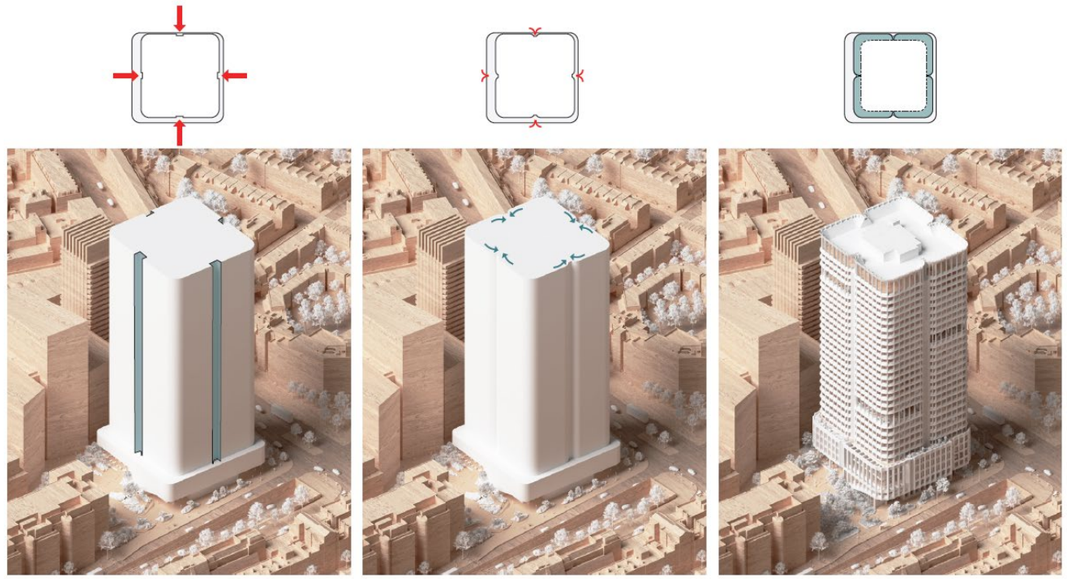
1.25 As illustrated in Figure 1.6, the four quadrant concept was reintegrated into the developing form; the Breathing Spines were set in to help define a split in the centre of each face. The Breathing Spines help reinforce verticality in the massing and create the appearance of two, slender, connected towers per elevation.

1.26 The four quadrant concept was further supported through rounding the corners at the Breathing Spines, thereby reinforcing the idea of each elevation being made up of two, slender, connected towers (Figure 1.6). The softer edges to the setback spine help make a more coherent shape to the proposed tower.

1.27 The facade developed for the Proposed Development was initially applied to the revised massing, in order to begin to understand some of the opportunities and challenges associated with the more regular form. The advantage of the rectangular form in enabling a stacked, regular rhythm across the elevation is evident, allowing for a calmer and more ordered fenestration. The form change also highlighted the chance to look at a more dynamic facade and paler colour concurrently (Figure 1.7), to link better to context.

[1] *Statutory Instruments, 2017, No. 571, Town and Country Planning (Environmental Impact Assessment) Regulations 2017*

Figure 1.6 Tower Massing Evolution (Post-Application)



Podium Massing Evolution

1.28 Following submission of the December 2023 Planning Application, the decision to reconsider the tower and podium massing required a rethinking of the podium facade design and articulation. They key focus remained on the creation of publicly accessible spaces that connect, create and provide opportunities for the local residents and communities. The podium has been designed to create improved microclimate conditions for pedestrians in the public realm through multiple methods including integrating wind mitigation into the podium's architectural expression.

1.29 The design of the podium, particularly the publicly accessible elements, has been designed with extensive input from the local community through the co-design workshops and pre-application process consultation with the LBC to ensure the Amended Proposed Development addresses the needs and aspirations of visitors, building users and the wider community.

Podium Façade and Colour Evolution

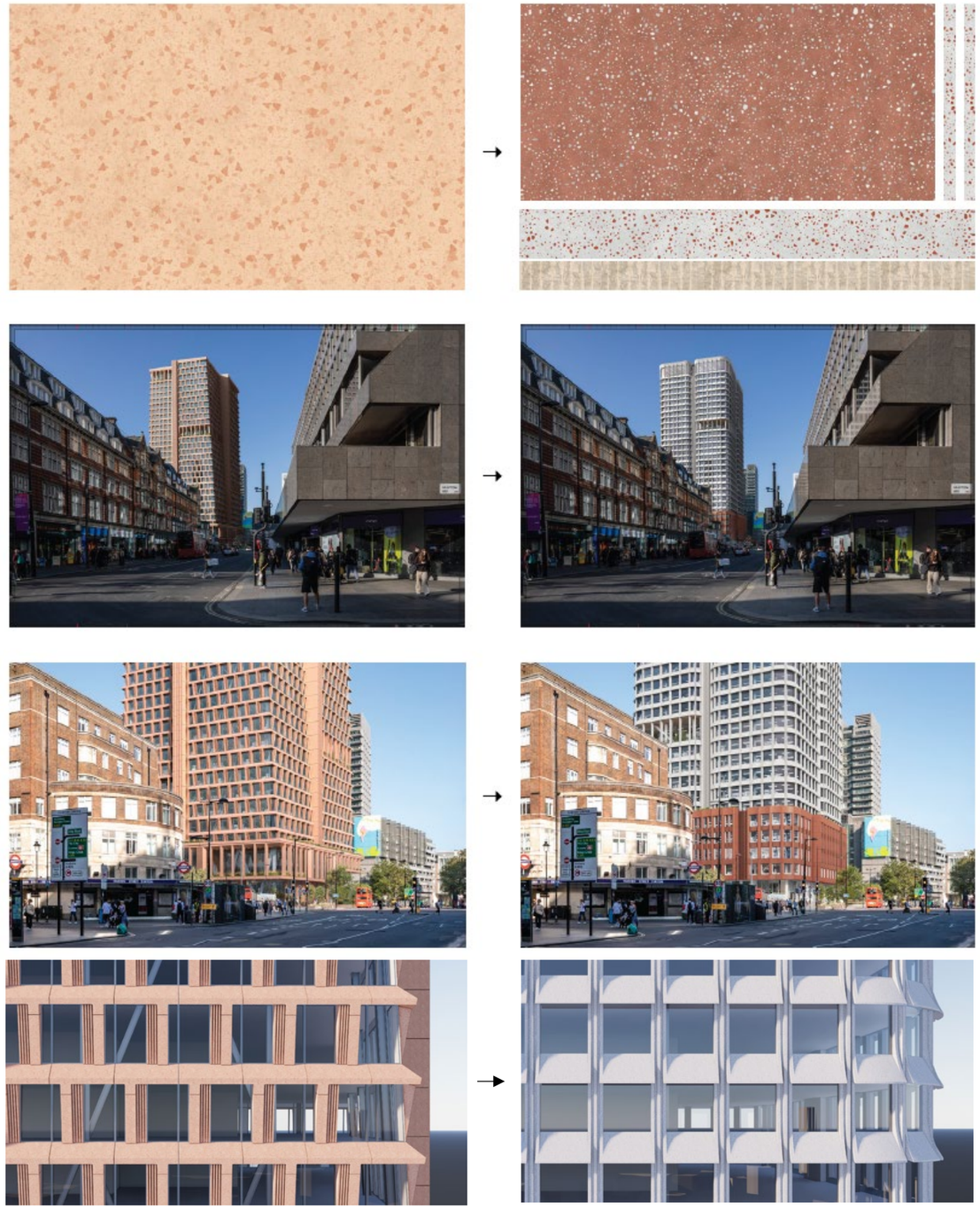
1.30 The podium facade of the Amended Proposed Development has been carefully designed to create engagement and interaction between Regent's Place Plaza and the street life of Hampstead Road, Euston Road and Brock Street.

1.31 The central core approach opens up the possibility for all four elevations to be activated across the podium levels. The podium facade incorporates a consistent double-height design, providing protection from the elements through the oversailing canopy and featuring large glazing sections that offer transparency into the activities within the interior spaces of the podium, such as the lobby and retail areas.

1.32 The facade design was developed with careful consideration for the surrounding buildings to integrate cohesively into the context. An analysis of building facades along Tottenham Court Road provided the foundational elements for the facade concept of the Amended Proposed Development.

1.33 The surrounding context employs a varied but consistent palette of brick (commonly red or brown), stonework (such as sandstone and Portland limestone), stucco, concrete, steel and glass. Colour changes are often used to identify the ground floor levels, while bold colours are used for emphasis. The material concept for the Amended Proposed Development recognizes the importance of retaining the mineral-like quality of the context buildings, proposing a glass-fibre reinforced concrete (GRC) cladding with aggregates designed to provide texture and a sense of materiality. The bold colouring of the red brick is reimagined as the red-tinted GRC cladding, and the effective use of contrasting colours is realised with the off-white GRC used for the ground floor to highlight the entrances and public realm, and detailing throughout the podium facade.

Figure 1.7 Massing and Podium Facades Colour Evolution



AMENDED PROPOSED DEVELOPMENT

1.34 The description of development for the Amended Proposed Development, in light of the Proposed Amendments, has been updated to the following:

"Redevelopment of Euston Tower comprising retention of parts of the existing building (including central core, basement and foundations) and erection of a new building incorporating these retained elements, to provide a 32-storey mixed-use building providing offices and research and development floorspace (Class E(g)) and office, retail, café and restaurant space (Class E) and enterprise space (Class E/F) at ground and first floors, and associated external terraces; public realm enhancements, including new landscaping and provision of new publicly accessible steps and ramp; short and long stay cycle storage; servicing; refuse storage; plant and other ancillary and associated work."

1.35 Where the design remains the same as set out in the December 2023 ES, these items have not been included in this chapter. All items not covered should be considered unchanged from the Proposed Development.

Change to Floorspace Areas

1.36 Table 1.2 presents the areas of the Proposed Development and the updated areas of the Amended Proposed Development as assessed within this 2024 ES Addendum.

Table 1.2 Existing and Proposed GIA

Land Use		Existing (GIA m²)	December 2023 ES (GIA m²)	2024 ES Addendum – Proposed (GIA m²)	Total Change in Area from Proposed Amendments (GIA m²)
Workspace Class E(g)	Lobby	1,294	3,830	3,045	-785
	Lab Enabled Workspace	-	24,496	24,512	+16
	Commercial Office	52,477	46,465	49,667	+3,202
Retail (Class E)		1,055	748	997	+249
Enterprise Space (Class E/F)		-	2,003	1,605	-398
TOTAL		**54,826**	**77,542**	**79,825**	**+2,284**

**Figures may not add due to rounding*

General Arrangement and Layout

1.37 The Amended Proposed Development 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 05 (the Podium) comprising the following:
  - Lobby space, office (Class E(g)) space and flexible Class E / F space at Ground Level to Level 02;
  - Office and lab-enabled spaces (Use Class E(g)) at Levels 03 to 05;
  - Outdoor terraces located at the north-west corner facing Regent's Place Plaza on Level 01 and at the south-west corner of the Podium at Levels 02 and 03;
- Levels 06 to 11 comprise Use Class E(g) uses including office and lab-enabled spaces; and
- Levels 12 to 30 comprise office (Use Class E(g)) with plant facilities on Levels 30 and 31.

1.38 Double height amenity spaces have also been relocated to Levels 11 – 12, 20 – 21, 23 – 24 and 26 – 27. Three of the four amenity terraces are dedicated to the adjacent tenants, whereas the amenity space at Levels 20 – 21 is shared tenant amenity.

Tower Massing, Materiality and Colour Palette

1.39 The tower massing has been adjusted to create a simpler, rectangular form. The Amended Proposed Development, as shown in Figure 1.8, features a less complex, more ordered façade design with a more muted façade colour when compared to the Proposed Development.

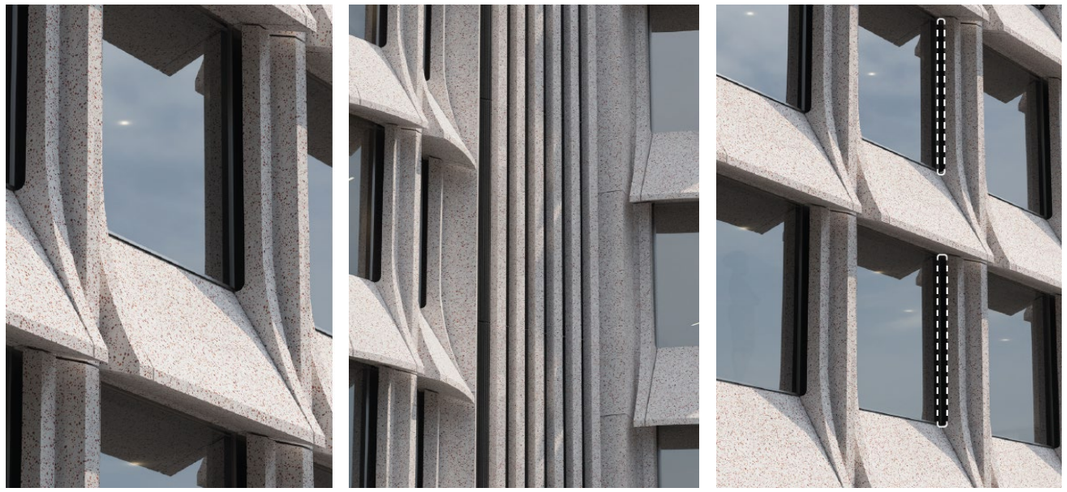
1.40 The implementation of upstands is considered to balance daylight and solar gain. Amending the façade to implement a more muted colour lightens the perception for the architecture and lessens the perception of bulk in townscape, particularly in key views. The use of verticals running up through the façade also help to better integrate the double-height workplace amenities.

Figure 1.8 Amended Proposed Development

1.41 The choice of GRC for the facade cladding contributes significantly to the desired sense of solidity and robustness. The proposed light stone tone also relates to other key high rises in Camden, in terms of both colour and texture; notably, Space House, Centre Point, and The Standard Hotel.

1.42 To provide the tower material with warmth and to create a relationship to the tone of both the podium and surrounding brick buildings in the immediate context, the aggregate in the GRC is redish-brown.

Figure 1.9 Colour and Materiality of the Tower



Podium and Public Experience

1.43 The Amended Proposed Development comprises reduced massing with chamfered edges to provide additional public open space at junction and along Hampstead Road, as presented in Figure 1.10. The key design principles comprise:

- The podium is fundamental in responding to and mitigating the site's microclimate, focused on creating a usable and safe environment all year round.
- The podium is comprised of a series of layers, each able to accommodate different functions and spatial arrangements;
- Entrances are clearly expressed in the architecture of the podium as part of the access, approach and wayfinding strategy;
- Canopies, projecting from the podium, are used to highlight public entrances as well as to improve the local microclimate; and
- The podium is integrated with the proposed landscaping design, including corner terraces, as well as reinforces the new Regent's Place Plaza with improved activity, retail offers and public realm.

1.44 A significant portion of the podium is dedicated to public spaces, establishing a legible and active connection from the primary public entrance at the northeast corner, extending across the entirety of the podium's northern elevation to Regent's Place Plaza. This continuous journey is supported by an array of diverse public uses.

1.45 The podium design incorporates a double-height oversail along each elevation. These oversailings are primarily designed to accentuate entrance conditions, improve wayfinding and to cohesively incorporate the Amended Proposed Development's wind mitigation into the architectural design of the podium.

1.46 As part of the design strategy for the podium, the south-west and north-west corners of the podium are accentuated with terraces, ideally located for connection with Regent's Place Plaza and daylight conditions. The outdoor terrace on Level 01 serves as an extension of the proposed café space, creating connections between Regent's Place Plaza, the internal cafe space and the public use. The south-west corner terrace on Level 02 extends up from the Regent's Place Plaza via the public staircase and terraced landscaping. It is designed as outdoor terraces for the café in dialogue with the lobby levels.

Figure 1.10 Proposed Development Podium (Left) and Amended Proposed Development Podium (Right)

Public Realm

1.47 Minor updates have been made to the design and location of planters and trees in the public realm, as presented in Figure 1.11. The Amended Proposed Development will provide 5,788m2 of public open space at Ground Level, Level 01 and Level 02.

Urban Greening Factor

1.48 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 Amended Proposed Development achieves a score of 0.33 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.

Biodiversity Net Gain

1.49 A Biodiversity Net Gain (BNG) assessment of the Amended 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 3.35 Habitat Units (HU), resulting in a net gain of 0.86 HU (35.39%).

Figure 1.11 Proposed Development Public Realm (Left) and Amended Proposed Public Realm (Right)

Vehicle and Cycle Parking

1.50 The Amended Proposed Development remains car-free, in accordance with London Plan and Camden Local Plan policy requirements.

1.51 The Amended Proposed Development will provide a total of 890 long-stay cycle parking spaces at basement level. They consist of 668 two-tier parking (75%), 89 foldable bicycle parking (10%), 89 Sheffield stands (10%), and 44 Enlarged Sheffield stands (5%). Male and female changing rooms will be located adjacent to the long-stay cycle parking and will provide 593 lockers (two lockers per three parking spaces), 74 showers including two accessible showers (one shower per 12 cycle parking spaces) and six toilets including two accessible WCs.

1.52 The Amended Proposed Development will provide 100 short-stay cycle parking spaces within the surrounding public realm.

DECONSTRUCTION AND CONSTRUCTION

1.53 Changes to the Proposed Development's deconstruction and construction works are proposed. These include:

- Changes to the programme of works;
- Changes to the construction quantities; and
- Changes to the peak number of demolition and construction vehicles.

1.54 Further details are provided on this below.

Programme of Works

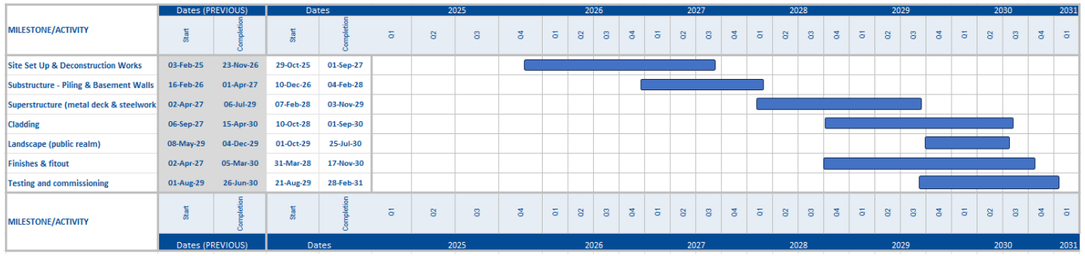
1.55 The deconstruction and construction works proposed as part of the Proposed Development were to commence in 2025, become operational in 2030 and span approximately 65 months.

1.56 The current expectation for the Amended Proposed Development is that the deconstruction and construction works would take approximately 64 months, or 5 years and 4 months, which breaks down as 4.5 years of construction preceded by 12 months of enabling works, including an overlapping period of deconstruction and new build of around 10 months (see Table 1.3 and Figure 1.12).

Table 1.3 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	Q4 2025	Q3 2027
Piling & Basement Walls	14 months	Q4 2026	Q1 2028
Superstructure (slabs and steelwork)	22 months	Q1 2028	Q4 2029
Cladding	23 months	Q3 2028	Q3 2030
Landscape (public realm)	10 months	Q4 2029	Q3 2030
Finishes & Fitout	32 months	Q1 2028	Q4 2030
Testing and Commissioning	18 months	Q3 2029	Q1 2031

Figure 1.12 Indicative Enabling (Including Deconstruction) and Construction Programme



Construction Quantities

1.57 Table 1.4 presents estimates of key construction materials associated with the construction of the Amended Proposed Development.

Table 1.4 Estimates of Key Construction Quantities

Materials Delivered	Amended Proposed Development Quantities
Excavated material	13,322m^3
Substructure concrete	8,947m^3
Substructure rebar	1,680 tonnes
Core concrete (stairs)	234m^3
Concrete slabs	10,711m^3
Rebar in slabs	1,607 tonnes
Steelwork	8,347 tonnes
Facades	24,675 m^2
Fitout materials	12,614m^2

Road Vehicle Numbers

1.58 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.

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

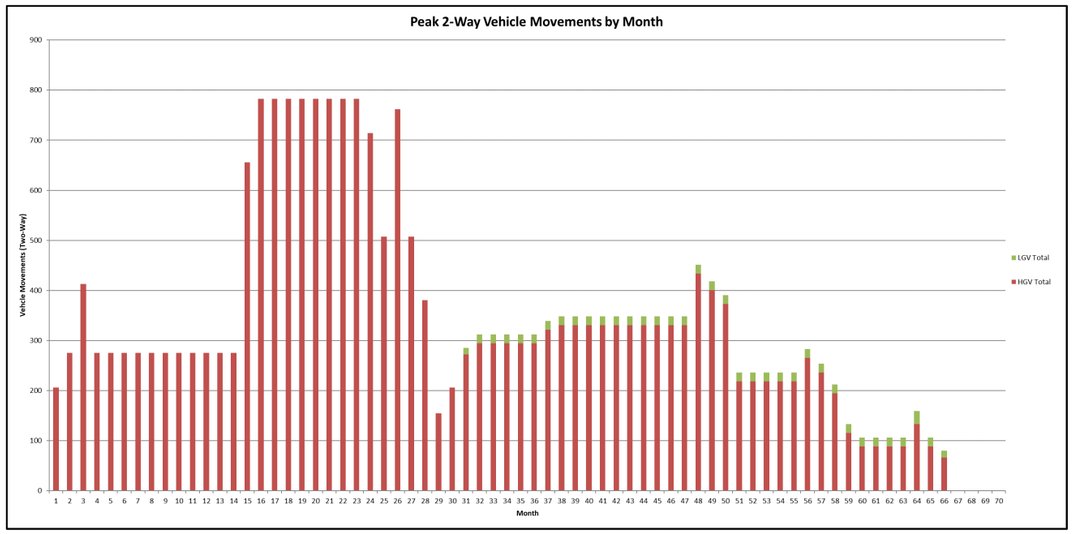
1.59 The Applicant along with the LBC and other relevant highway authorities and the Police will address movements of large or abnormal loads in advance in order to ensure compliance with regulations and advance notification for local residents is made.

1.60 Table 1.5 and Figure 1.13 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 22 HGVs per day, with no forecast Light Goods Vehicle (LGV) movements. Therefore, the absolute daily peak is estimated to be 22 HGV arrivals or 44 two-way HGV movements.

Table 1.5 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	9	22	12	11	8	2
LGV	0	0	0	1	1	0
TOTAL	9	22	12	12	9	2

Figure 1.13 Monthly Vehicle Movements



STRUCTURE OF THE 2024 ES ADDENDUM

Scoped Out Topics

1.61 The following topics were **'scoped out'** of the December 2023 ES through the EIA Scoping process with LBC and statutory consultees:

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

1.62 When considering the Amended Proposed Development, scoping these topics out of this 2024 ES Addendum remains appropriate.

Scoped In Topics

1.63 The following technical topic areas *have the potential* to be affected by the Proposed Amendments and therefore have been considered further in this 2024 ES Addendum:

- Socio-Economics;
- Traffic and Transport;
- Air Quality;
- Noise and Vibration;
- Daylight, Sunlight, Overshadowing and Solar Glare;
- Wind Microclimate;
- Climate Change and Greenhouse Gases; and
- Townscape, Visual and Built Heritage Assessment (TVBHA).

1.64 In addition to a review of ES Volume 1 and ES Volume 2 of the December 2023 ES, the Technical Appendices (ES Volume 3) have also been reviewed, and where relevant, appendices have been updated.

1.65 The *'Design Evolution'* and '*Amended Proposed Development*' sections of this 2024 ES Addendum chapter above summarise the changes to the Proposed Development which form the Amended Proposed Development. This chapter also includes an update to **ES Volume 1, Chapter 5: Deconstruction and Construction** of the December 2023 ES.

1.66 A chapter has been provided to summarise the conclusions of this 2024 ES Addendum, noting, if applicable, where conclusions differ to those within the December 2023 ES (**ES Addendum, Volume 1, Chapter 13: Summary and Conclusions**). This chapter also summarises any updates to the concluding chapters of the December 2023 ES (**ES Volume 1, Chapter 13: Effect Interactions, Chapter 14: Likely Significant Effects,** and **ES Volume 1, Chapter 15: Environmental Management, Mitigation and Monitoring Schedule**), where relevant.

1.67 Where there are no changes or updates, or a change/update has been considered not to have a material or significant change to an assessment or the conclusions of an ES technical chapter of the December 2023 ES (in relation to all the points listed in paragraph 1.15 and 1.16 above), this has been made clear and a statement confirming this has been provided for the relevant assessment within this 2024 ES Addendum. This has been referred to below as an ES Addendum Statement of Conformity.

1.68 Where changes are considered to impact on the assessment and potentially affect the reported environmental effects and conclusions of the ES chapter of the December 2023 ES (in relation to any of the points listed in paragraph 1.15 and 1.16 above), the technical ES chapter has been updated based on the Amended Proposed Development. Where sections remain valid and unchanged this is also stated as relevant. This has been referred to as an ES Addendum Replacement Chapter.

1.69 This 2024 ES Addendum therefore comprises:

- ES Addendum Volume 1: ES Addendum Main Report:
  - Chapter 1: Introduction, Proposed Design Amendments and ES Addendum Approach (this chapter);
  - Chapter 6: Socio-Economics (ES Addendum Statement of Conformity);
  - Chapter 7: Traffic and Transport (ES Addendum Statement of Conformity);
  - Chapter 8: Air Quality (ES Addendum Statement of Conformity);
  - Chapter 9: Noise and Vibration (ES Addendum Statement of Conformity);
  - Chapter 10: Daylight, Sunlight, Overshadowing and Solar Glare (ES Addendum Replacement Chapter);

  - Chapter 11: Wind Microclimate (ES Addendum Replacement Chapter);
  - Chapter 12: Climate Change and Greenhouse Gases (ES Addendum Replacement Chapter); and
  - Chapter 13: Summary and Conclusions.
- ES Addendum Volume 2: Townscape, Visual and Built Heritage Assessment (TVBHA) (ES Addendum Replacement Chapter);
- ES Addendum Volume 3: ES Addendum Technical Appendices
  - Appendix: Introduction, Proposed Design Amendments and ES Addendum Approach
    Annex 1: LBC ES Review and Review Responses
  - 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;
    Annex 6: Window Maps;
  - Appendix: Wind Microclimate;
    Annex 1: Wind Tunnel Testing Methodology;
    Annex 2: Planning Policy and Legislation;
  - 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;
    Annex 5: Annex References; and
    Annex 6: Climate Change Technical Note.

Non-Technical Summary

1.70 A separate document is presented, referred to as the Replacement Non-Technical Summary (NTS), which provides an update to the December 2023 NTS, accounting for the details included within this 2024 ES Addendum, written in non-technical language. The Replacement NTS presents a summary of the Amended Proposed Development, the Proposed Amendments, and the likely significant environmental effects of the Amended Proposed Development.

Planning Context

1.71 This 2024 ES Addendum considers relevant legislation and relevant national, regional and local planning policy guidance and any updates to planning policy since the December 2023 ES. The key overarching changes are:

- National Planning Policy Framework[3] – the latest version is December 2023; and
- LBC have begun their review of the Euston Area Plan, consultation for which closed in September 2024. British Land submitted representations to the emerging EAP.

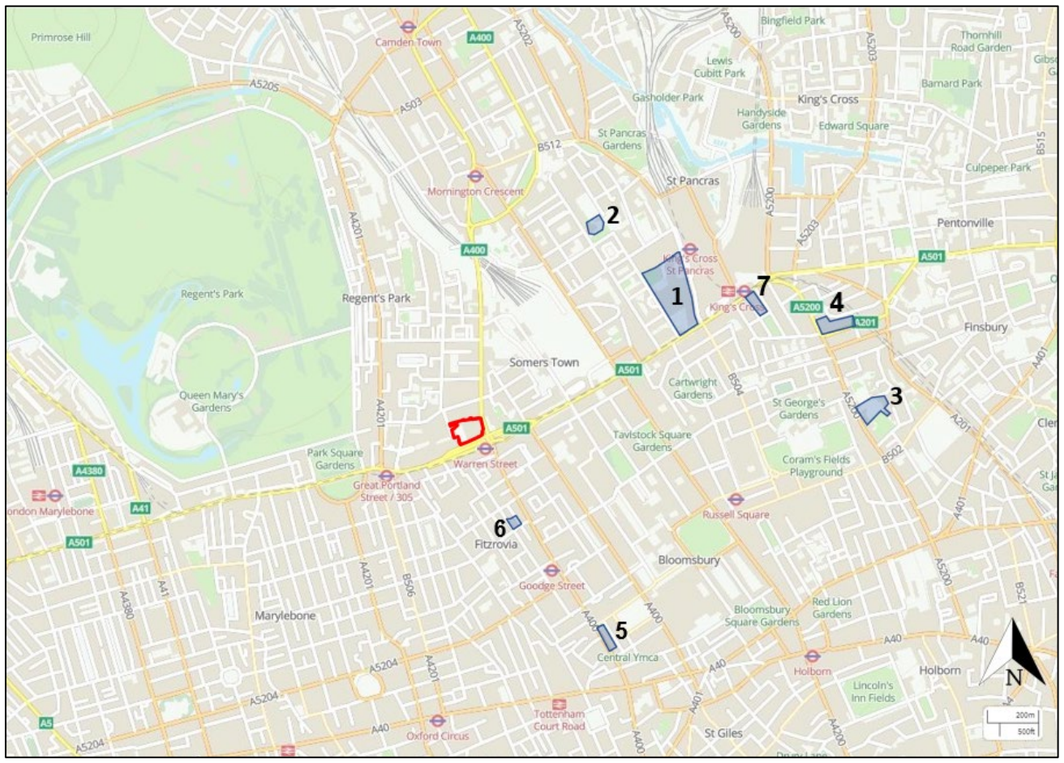
1.72 These changes to policy do not impact on the assessment methodology used within the December 2023 ES or this 2024 ES Addendum.

Cumulative Schemes

1.73 The December 2023 ES considered the following cumulative schemes as part of the cumulative impact assessment. No new cumulative schemes have been identified for consideration since the December 2023 ES. The cumulative schemes therefore remain as set out in the December 2023 ES, which are presented in Figure 1.14 and set out below:

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).

Figure 1.14 Cumulative Schemes Map



[3] *DLUHC, 2023; 'National Planning Policy Framework.'*

ES ADDENDUM AVAILABILITY AND COMMENTS

1.74 The December 2023 ES and 204 ES Addendum is viewable online at the LBC Planning Application Search:

https://accountforms.camden.gov.uk/planning-search/

1.75 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

1.76 Electronic Copies of this 2024 ES Addendum and Revised 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 2024 ES Addendum' or Tel: +44 (0) 203 887 7118.

Chapter 6: Socio-Economics

INTRODUCTION

6.1 The socio-economics chapter of the December 2023 ES has been reviewed in the context of the Amended Proposed Development submitted in December 2024 to determine if the conclusions of this assessment remain valid. In addition, consideration has been given to any updates or changes to baseline conditions, policy or methodology.

6.2 The proposed amendments relevant to this ES chapter are:

- Changes to the deconstruction and construction programme (including revised construction start and end dates and a decrease in total anticipated programme duration by one month). The previous construction programme in the December 2023 ES set out deconstruction commencement in Q1 2025, with completion in Q2 2030. The construction programme for the Amended Proposed Development commences deconstruction in Q4 2025, with completion in Q1 2031 as set out in **ES Addendum Volume 1, Chapter 1: Introduction, Proposed Design Amendments and ES Addendum Approach**.
- The total proposed floorspace for the Amended Proposed Development has increased by 2,284m^2 (2.9% uplift) from 77,542m^2 in December 2023 Proposed Development to 79,825m^2 in the Amended Proposed Development.
- Changes to the area schedules of the Amended Proposed Development, as summarised in Table 6.1, have resulted in an increase of Workspace comprising Lab Enabled Workspace (+16m^2), Commercial Office (+3,202m^2) and Retail floorspace (+249m^2), and a decrease in Lobby space (-785m^2), and Retail / Enterprise floorspace (-398m^2).

Table 6.1 Existing and Proposed GIA

Land Use		Existing (GIA m^2)	December 2023 ES (GIA m^2)	2024 ES Addendum – Proposed (GIA m^2)	Total Change in Area from Proposed Amendments (GIA m^2)
Workspace Class E(g)	Lobby	1,294	3,830	3,045	-785
	Lab Enabled Workspace	-	24,496	24,512	+16
	Commercial Office	52,477	46,465	49,667	+3,202
Retail (Class E)		1,055	748	997	+249
Enterprise Space (Class E/F)		-	2,003	1,605	-398
TOTAL		**54,826**	**77,542**	**79,825**	**+2,284**

**Figures may not add due to rounding*

LEGISLATION, PLANNING POLICY AND GUIDANCE

6.3 There have been no significant changes to policy, legislation or guidance since the December 2023 ES which would have a material effect on the approach to or findings of the assessment. Consequently, the legislation, policy and guidance set out in the socio-economics chapter of the December 2023 ES remains applicable and valid.

ASSESSMENT METHODOLOGY

6.4 There are no changes to the assessment methodology set out with the socio-economics chapter of the December 2023 ES.

6.5 Consequently, the assessment methodology and significance criteria stated in the socio-economics chapter of the December 2023 ES remains applicable and valid.

BASELINE CONDITIONS

Current Baseline Conditions

6.6 The baseline conditions have not materially altered from those set out in the December 2023 ES, and therefore have not been revisited as they will not be affected by the Amended Proposed Development.

6.7 The baseline conditions as set out within the socio-economics chapter of the December 2023 ES remain valid.

Evolution of the Baseline

6.8 The evolution of the baseline remains as assessed in the December 2023 ES.

RECEPTORS AND RECEPTOR SENSITIVITY

6.9 No amendments have been made to the receptors considered in the socio-economics chapter of the December 2023 ES as a result of the Amended Proposed Development.

IMPLICATIONS OF THE PROPOSED AMENDMENTS

6.10 The implications of the Amended Proposed Development on the socio-economics assessment are set out below.

- The Amended Proposed Development design and change to the construction programme, as set out in **ES Addendum Volume 1, Chapter 1: Introduction, Proposed Design Amendments and ES Addendum Approach,** have resulted in an adjusted construction cost. As a result, the number of construction jobs and local expenditure generated by construction workers has been updated to reflect this;
- An increase in floorspace as well as the changes to distribution of Use Classes within the Amended Proposed Development will impact on the type and quantity of jobs generated once the Amended Proposed Development is complete and operational. A change to the jobs generated will also therefore impact on the local expenditure that is expected to be generated; and
- The change to the workforce generated by the Amended Proposed Development will result in a change to the open and amenity space required to be provided by the LBC guidance.

POTENTIAL EFFECTS

Deconstruction and Construction

6.11 Amendments to the deconstruction and construction works required to facilitate the Amended Proposed Development are set out in the **ES Addendum Volume 1, Chapter 1: Introduction, Proposed Design Amendments and ES Addendum Approach.**

Employment

6.12 It is anticipated that 5,850-person years of employment (previously 5,815 in the December 2023 ES) 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 64-month programme (five years and four months), an average of 1,104 full-time equivalent (FTE) jobs could be supported in each year of this phase (previously 1,057 jobs in the December 2023 ES).

6.13 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 section of the socio-economics chapter of the December 2023 ES, the construction industry currently supports about 188,000 jobs across London, so

annual employment supported by the Amended Proposed Development during the deconstruction and construction phase would be approximately 0.59% of annual employment in London's construction sector.

6.14 The introduction of 1,104 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 which is consistent with the findings of the December 2023 ES.

Additional Expenditure and Supply Chain

6.15 The Amended 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.

6.16 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 364 FTE per year employed as result of the Amended Proposed Development (previously 349 in the December 2023 ES). 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.

6.17 The introduction of an estimated 364 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 which is consistent with the findings of the December 2023 ES.

Completed Development

6.18 The potential effects of the operational Amended Proposed Development are as set out below and compared with the findings of the December 2023 ES.

Employment

6.19 As stated in the December 2023 ES, the site currently employs approximately 56 FTE across its retail spaces, with the office space across the remainder of the site vacant since 2021.

6.20 The Amended Proposed Development includes the provision of 79,825m^2 GIA of flexible Use Class E and F (compared to the provision of 77,541m^2 in the Proposed Development) which has the potential to generate employment opportunities. This includes 77,223m^2 GIA of workspace (i.e. office and laboratory space) (Use Class E(g)), 997m^2 GIA of retail space (Use Class E), and 1,605m^2 GIA of flexible commercial / Enterprise Space (Use Class E / F). The Enterprise Space is intended to comprise a mixture of affordable workspace for local entrepreneurs and small businesses, with associated flexible space for use by the local community.

6.21 The amended area schedules have resulted in a change in employment generated as presented below in Table 6.2 and Table 6.3.

6.22 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 F1. Likewise, given the flexibility in uses associated with Enterprise Space, and the lack of a correlating classification under HCA guidance, it is assumed that this space will not generate any additional employment.

6.23 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.

Table 6.2 Amended Proposed Development Employment Generation (Best-Case Scenario)

Anticipated Use	HCA Classification	Type	December 2023 ES		Amended Proposed Development	
			Floorspace (m^2) (NIA)	Jobs Created (FTE)	Floorspace (m^2) (NIA)	Jobs Created (FTE)
Workspace (Office) Use Class E(g(i))	B1a Offices Finance & Insurance	10m^2 NIA per FTE	48,062	4,806	50,932	5,093
Retail Use Class E	A1 Retail High Street, Foodstore	15m^2 NIA per FTE	585	39	514	34
Enterprise Space Use Class E / F	Mixed B Managed Workspace	12m^2 NIA per FTE	1,541	103	465	39
	N/A[2]	-			281	0
Gross Employment			4,948		5,166	
Less Existing FTE (56)						
Net Employment			4,892		5,110	
Displacement (25%)						
Total Direct Employment			3,669		3,833	
Economic Multiplier (1.21)						
Total Indirect Employment			770		805	
TOTAL Net Employment			**4,439**		**4,638**	

Source: Trium Calculations

6.24 Under a best-case scenario, the Amended Proposed Development would result in a net employment gain of 4,638 FTE roles (previously 4,439 FTE roles in the December 2023 ES), or 1.1% of the LBC's current job market. This comprises 3,833 roles resulting from direct employment and 805 roles resulting from indirect employment.

6.25 A reasonable worst-case scenario involves a split between office and laboratory use, as well as total Enterprise Space uses across the flexible Use Class E / F space, as outlined below in Table 6.3.

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

[2] *Comprising innovation, collaboration, and knowledge sharing space which is assumed to be non-employment generating.*

Table 6.3 Amended Proposed Development Employment Generation (Most Likely Worst-Case Scenario)

Anticipated Use	HCA Classification	Type	December 2023 ES		Amended Proposed Development	
			Floorspace (m^2) (NIA)	Jobs Created (FTE)	Floorspace (m^2) (NIA)	Jobs Created (FTE)
Workspace (Office) Use Class E(g(i))	B1a Offices Finance & Insurance	13m^2 NIA per FTE	31,575	2,429	34,456	2,650
Workspace (Laboratory) Use Class E(g(ii))	B1b R&D Space	60m^2 NIA per FTE	16,487	275	16,476	275
Retail Use Class E	A1 Retail High Street, Foodstore	20m^2 NIA per FTE	585	29	514	26
Enterprise Space Use Class E / F	N/A	-	1,541	0	746	0
Gross Employment			2,733		2,951	
Less Existing FTE (56)						
Net Employment			2,677		2,895	
Displacement (25%)						
Total Direct Employment			2,008		2,171	
Economic Multiplier (1.21)						
Total Indirect Employment			422		456	
TOTAL Net Employment			**2,429**		**2,627**	

Source: Trium Calculations

6.26 Under this more likely worst-case scenario, the Amended Proposed Development would result in a net employment gain of 2,627 FTE roles (previously 2,429 FTE roles in the December 2023 ES), or 0.6% of the LBC's current job market. This includes 2,171 roles resulting from direct employment and 456 roles resulting from indirect employment.

6.27 The worst-case gain of 2,627 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 which is consistent with the findings of the December 2023 ES.

Additional Expenditure

6.28 Under the best-case scenario, the direct employment of 3,833 FTE at the Amended Proposed Development is expected to generate approximately £9.66 million (£9.2 million in the December 2023 ES) annually. Under the worst-case scenario, the direct employment of 2,171 FTE at the Amended Proposed Development is expected to generate approximately £5.64 million (£5.1 million in the December 2023 ES) annually.

6.29 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 which is consistent with the findings of the December 2023 ES.

Open Space

6.30 Based on the LBC guidance requiring 0.74m^2 of open space per FTE, the new workforce of 2,171 to 3,833 FTE within the Amended Proposed Development itself will require 1,607m^2 to 2,836m^2 of open and amenity space (previously 1,486m^2 to 2,715m^2 in the December 2023 ES). The Amended Proposed Development will include 5,788m^2 of publicly accessible open space at the ground level, Level 01 and Level 02, which represents an uplift of 394m^2 from existing and is also above the provision requirement.

6.31 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

6.32 As per the socio-economics chapter of the December 2023 ES, no adverse socio-economic effects have been identified due to the deconstruction and construction of the Amended Proposed Development, nor due to the operation of the Amended Proposed Development; therefore, no additional mitigation is required to lessen negative impacts on relevant receptors.

CLIMATE CHANGE

6.33 The impacts of climate change discussed in the socio-economics chapter of the December 2023 ES are not affected by the Proposed Amendments.

ASSESSMENT OF THE FUTURE ENVIRONMENT

Evolution of the Baseline Scenario

6.34 The evolution of the baseline as discussed in the socio-economics chapter of the December 2023 ES are not affected by the Proposed Amendments.

Cumulative Effects Assessment

6.35 It is noted that since the December 2023 ES, HS2 has been confirmed to extend to Euston station. As set out in the December 2023 ES, the construction industry is typically mobile with resources pooled from a wide geographic area. An indicative programme of construction works for HS2 is set out in **ES Addendum Volume 1, Chapter 7: Traffic and Transport** which indicates that there may be an overlap between the HS2 construction works and the construction of the Amended Proposed Development from Q4 2025 and 2027. However, it is likely that most of the major works associated with major HS2 workstreams will be completed or partially completed before work on the Amended Proposed Development commences.

6.36 Whilst it is acknowledged that this scheme will bring additional construction employees and generate greater local expenditure to the area, this is not considered to be of a scale to materially alter the conclusions presented in the December 2023 ES. As such, the cumulative assessment for all socio-economic receptors remains as set out in the December 2023 ES for both the construction phase and once the Proposed Development is complete and operational.

LIKELY SIGNIFICANT EFFECTS

6.37 No likely significant effects relating to socio-economics have been identified, which is consistent with the findings of the December 2023 ES.

Chapter 7: Traffic and Transport

INTRODUCTION

7.1 The traffic and transport chapter of the December 2023 ES has been reviewed in the context of the Amended Proposed Development to determine if the conclusions of this assessment remain valid. In addition, consideration has been given to any updates or changes to baseline conditions, policy or methodology.

7.2 The Proposed Amendments relevant to this ES chapter are:

- The total proposed floor space of the Amended Proposed Development has increased by 2,284m^2 (2.9% uplift) compared to the Proposed Development;
- Changes to the deconstruction and construction programme (increase in overall construction programme by 8 months) and changes to the construction methodology; and
- Changes to the peak number of deconstruction and construction vehicles (an 8% reduction compared to the level reported in the December 2023 ES).

7.3 The changes to the construction methodology and programme length show a reduction in the number of construction vehicles which will not affect this assessment reported in the December 2023 ES, and therefore have not been considered further within this ES chapter.

LEGISLATION, PLANNING POLICY AND GUIDANCE

7.4 There have been no significant changes to policy, legislation or guidance since the December 2023 ES which have a material effect on the approach to or findings of the assessment.

ASSESSMENT METHODOLOGY

7.5 There are no changes to the assessment methodology set out with the traffic and transport chapter of the December 2023 ES.

7.6 Consequently, the assessment methodology and significance criteria stated in the traffic and transport December 2023 ES chapter remains applicable and valid.

BASELINE CONDITIONS

Current Baseline Conditions

7.7 The baseline conditions remain as assessed in the December 2023 ES, and therefore have not been revisited as they will not be affected by the Amended Proposed Development.

7.8 The baseline conditions as set out within the traffic and transport December 2023 ES chapter remain valid.

Evolution of the Baseline

7.9 While the extension of the construction programme will mean an opening year of 2031 rather than 2030, there are no new changes to the existing conditions that are expected to take place by the new future design year. The evolution of the baseline therefore remains as assessed in the December 2023 ES.

RECEPTORS AND RECEPTOR SENSITIVITY

7.10 No amendments have been made to the receptors considered in the traffic and transport December 2023 ES chapter.

IMPLICATIONS OF THE PROPOSED AMENDMENTS

7.11 The implications of the Amended Proposed Development on the traffic and transport assessment are set out below.

7.12 There are minor changes to the construction programme duration and construction methodology as part of the Amended Proposed Development. These changes to methodology lead to an 8% reduction in the expected construction vehicle flows.

7.13 As stated in the December 2023 ES and December 2023 Transport Assessment (TA), the volume of construction traffic is small compared with background flows and would not have an impact on the operation of the highway network.

7.14 The construction vehicle routes remain valid as identified in the December 2023 ES, December 2023 TA and draft Construction Management Plan (CMP). The routing of construction-related trips to and from the Amended Proposed Development will be controlled by the CMP and Construction Logistics Plan (CLP) to agreed routes only, to be approved with the relevant authorities.

7.15 The Proposed Amendments include minor changes in the total proposed floor area (Gross Internal Area (GIA)) (2.9% uplift). The increase in floor area contributes to a rise in total person trips across the London-wide transport network. The growth in person trips is spread over a number of transport modes and the impacts of these are negligible on the public transport and highway networks which have sufficient capacity to accommodate the uplift. Given the changes the conclusions set out in the December 2023 ES and December 2023 TA remain valid.

7.16 The December 2023 TA provides the following commentary in relation to the effects of the Proposed Development once operational:

This Transport Assessment has demonstrated that the Proposed Development will prioritise active and sustainable travel, have a negligible impact on the London-wide public transport and highways networks, and will contribute localised improvements to the site and its surroundings.

POTENTIAL EFFECTS

Deconstruction and Construction

7.17 Amendments to the deconstruction and construction works required to facilitate the Amended Proposed Development are set out in the **ES Addendum Volume 1, Chapter 1: Introduction, Proposed Design Amendments and ES Addendum Approach**.

7.18 The effects of the deconstruction and construction works set out in the December 2023 ES are summarised in Table 7.1 below.

Table 7.1 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

7.19 No new or materially different effects arising from the deconstruction and construction of the Amended Proposed Development have been identified, and the conclusions set out in the December 2023 ES and December 2023 TA remain valid.

Completed Development

7.20 The effects of the operational Amended Proposed Development are as set out in the December 2023 ES and summarised in Table 7.2.

Table 7.2 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

7.21 It is deemed that all environmental effects in relation to the operational development as identified in the December 2023 ES and December 2023 TA remain valid.

MITIGATION, MONITORING AND RESIDUAL EFFECTS

7.22 The following mitigation is set out in the December 2023 ES:

- Implementation of Construction Management Plan to minimise disruption to road users and pedestrians;
- Implementation of Construction Logistics Plan to minimise impacts resulting from the deconstruction and construction phase of the Proposed Development;
- Implementation of Travel Plan to encourage sustainable transport uptake;
- Implementation of a Delivery and Servicing Plan to mitigate and minimise the impacts of delivery and servicing activity;
- Implementation of a Car Parking Design and Management Plan to manage all parking associated with the complete and operational Proposed Development; and
- The Proposed Development was car-free.

7.23 The mitigation summarised above is considered to remain sufficient to manage impacts that may arise from the Amended Proposed Development. No further mitigation is required.

7.24 The summary of the residual effects resulting from the Amended Proposed Development as set out within the December 2023 ES are shown in Table 7.3 below.

Table 7.3 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

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

[1] *https://www.hs2.org.uk/building-hs2/tunnels/tunnel-drives/euston-tunnel/euston-approaches/*

7.25 No new or materially different residual effects arising from the Amended Proposed Development have been identified in respect of traffic and transport, and the conclusions set out in the December 2023 ES and December 2023 TA remain valid.

CLIMATE CHANGE

7.26 The impacts of climate change discussed in the traffic and transport December 2023 ES chapter are not affected by the Proposed Amendments.

ASSESSMENT OF THE FUTURE ENVIRONMENT

Evolution of the Baseline Scenario

7.27 The evolution of the baseline as discussed in the traffic and transport December 2023 ES chapter are not affected by the Proposed Amendments.

Cumulative Effects Assessment

7.28 There are no changes to the identified cumulative schemes set out in the December 2023 ES and therefore these effects and conclusions remain valid.

7.29 However, since the December 2023 ES, the UK Government has announced the recommencement of the High Speed Two (HS2) rail infrastructure project, which will generate construction and operational trips around Euston Station in the vicinity of the site. Therefore, for completeness, this has been considered further and qualitative analysis has been provided, based on the information available at time of writing.

7.30 The latest publicly available information (September 2024 *Euston Approaches Construction Update*[1]) sets out that that HS2 will remobilise in April 2025 and has re-phased the construction works in the Euston area. Some construction work paused over the past two years while other activities have continued as shown below (Figure 7.1).

Figure 7.1 HS2 Euston Approach Construction Activities

7.31 Figure 7.2 below shows the major excavations programme for the next three years and the location of the major works.

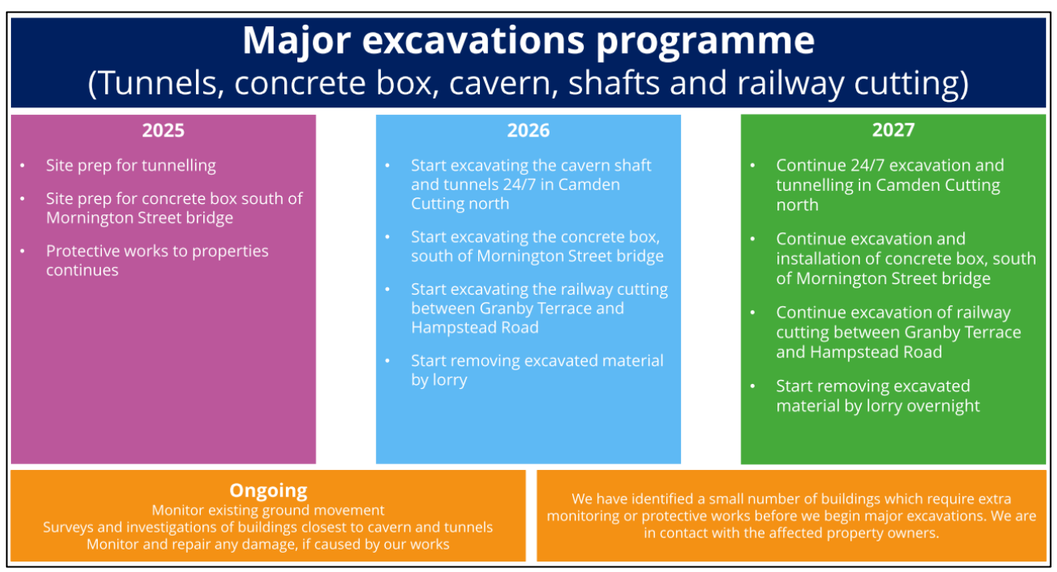
7.32 Based on the works above and the programme set out in the *September 2024 Euston Approaches Construction Update*[2] the main works and indicative programmes are set out below:

- Parkway Utility Works – During 2025;

[2] *https://www.hs2.org.uk/building-hs2/tunnels/tunnel-drives/euston-tunnel/euston-approaches/*

- Camden Cutting North – Mid 2023 - Spring 2026;
- Camden Cutting South – Ongoing to Summer 2025;
- Euston Throat – September 2023 to May 2025;
- Zone 5 Works – April 2025 to December 2025;
- Hampstead Road Utility Works – Summer 2024 to October 2025; and
- Hampstead Road Bridge – April 2025.

Figure 7.2 HS2 Euston Approach Major Excavations Programme



7.33 As shown by the indicative works programme a number of the major workstreams will be completed or partially completed before work on Euston Tower starts and therefore any cumulative effects with the HS2 construction works would be reduced.

7.34 It is expected that the HS2 works will generate a reasonable level of construction vehicle traffic over the construction programme. At this stage the level of construction vehicles using the agreed HS2 routes is unknown but through the development of the Euston Tower Construction Logistics Plan (CLP) and Construction Management Plan (CMP) submitted as part of this planning application, and regular consultation with HS2, both developments would work together to minimise impact and disruption as far as reasonably possible.

7.35 As part of each HS2 application Schedule 17 of the HS2 Act requires approval of routes where there are more than 24 two-way HGV movements to and from a worksite. As part of these applications a Local Traffic Management Plan (LTMP) is produced and is included in the planning approval process.

LIKELY SIGNIFICANT EFFECTS

7.36 No likely significant effects relating to traffic and transport have been identified, as set out in the December 2023 ES.

Chapter 8: Air Quality

INTRODUCTION

8.1 The air quality chapter of the December 2023 ES has been reviewed in the context of the Amended Proposed Development to determine if the conclusions of this assessment remain valid. In addition, consideration has been given to any updates or changes to baseline conditions, policy or methodology.

8.2 The proposed amendments relevant to this ES chapter are:

- Changes to the overall massing of the proposed building to create a simpler, rectangular form with rounded corners, as well as changes to the podium (to increase the number of levels from four to six) and the amount of publicly accessible space has changed;
- Changes to the façade of the building to allow natural ventilation to occur; and
- Update to the proposed construction programme, with a revised estimated completion date of Q1 2031, from Q2 2030.

LEGISLATION, PLANNING POLICY AND GUIDANCE

8.3 In the air quality chapter of the December 2023 ES, air quality effects were assessed against the legislation, policy and guidance in place at the time of writing. Since the December 2023 ES, there has only been one relevant change to legislation, policy and guidance:

- Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction v2.2, which was published in January 2024 and replaces the old IAQM guidance document which was used in the previous assessment.

8.4 The update to the IAQM's guidance document has no significant effect on the outcome or conclusions of the construction dust risk assessment undertaken in the December 2023 ES; however, the dust emission magnitude of the earthworks would change from medium to small under the new guidance, resulting in less stringent earthworks mitigation measures being required. A worst-case scenario has therefore already been assessed in the December 2023 ES so there is no need for further consideration is this addendum.

ASSESSMENT METHODOLOGY

8.5 There are no changes to the assessment methodology set out within the air quality chapter of the December 2023 ES. Consequently, the assessment methodology and significance criteria stated in the air quality December 2023 ES chapter remain applicable and valid.

BASELINE CONDITIONS

Current Baseline Conditions

8.6 The air quality chapter of the December 2023 ES presented the local air quality monitoring data, from monitoring units deployed by the London Borough of Camden (LBC), up to the year of 2022, with data taken from the 2022 Air Quality Annual Status Report (ASR)[1]. However, since completion of the December 2023 ES a new ASR[2] has been published, containing the monitoring information for the year 2023. The 2023 concentrations show minimal changes from the 2022 concentrations at the relevant available monitoring units.

8.7 As such, the baseline conditions are similar to the conditions discussed in the air quality chapter of the December 2023 ES and therefore have not been revisited. The baseline conditions as set out within the air quality December 2023 ES chapter remain valid.

Evolution of the Baseline

8.8 There are no changes to the evolution of the baseline scenario set out within the air quality chapter of the December 2023 ES, and as such it remains the same and valid.

RECEPTORS AND RECEPTOR SENSITIVITY

8.9 No amendments have been made to the receptors considered in the air quality December 2023 ES chapter.

IMPLICATIONS OF THE PROPOSED AMENDMENTS

8.10 The Amended Proposed Development has the potential to impact on the findings of the air quality chapter of the December 2023 ES. The previous assessment considered:

- The impacts of the Proposed Development on local air quality in terms of dust and particulate matter emissions during the deconstruction and subsequent construction works;
- The emissions from road traffic generated by the construction works and the completed and occupied development;
- The air quality impacts of existing sources on future users of the Proposed Development;
- The emissions from testing and maintenance of the emergency diesel generator; and
- The air quality neutrality of the Proposed Development.

Summary of the Findings of the Air Quality December 2023 ES Chapter

8.11 An assessment of air quality impacts associated with emissions from the development-generated traffic during the construction and operational phases of the Proposed Development was undertaken using atmospheric dispersion modelling software. The dispersion modelling found a 'negligible' change in NO_2, PM_{10} and $PM_{2.5}$ concentrations at the existing sensitive receptors as a result of the Proposed Development and that the predicted concentrations were below the air quality objectives in the peak construction year (2026), as well as the first year of occupation (2030). In addition, it was demonstrated that the pollutant concentrations for relevant future users of the Proposed Development would be below the respective air quality objectives, and thus air quality conditions would be acceptable.

8.12 A qualitative assessment of the dust and particulate matter emissions during the construction period was also undertaken to identify suitable best practice mitigation measures to reduce dust emissions such that the overall effect would be 'not significant'. Furthermore, the Proposed Development was assessed as air quality neutral as it would be 'car-free' and heat and hot water for the development would be provided via an all-electric system comprising Air-Source Heat Pumps (ASHPs), supplemented by photovoltaic panels (PVs).

8.13 At the time of preparation of the December 2023 ES, there were two options being considered for life-safety power provision:

- Option 1, the inclusion of a life-safety generator at basement level; and
- Option 2, provision of dual utility power supplies from two diverse UKPN substations, and the usage of the space allocated for the life-safety generator (Option 1) for a future installation of a tenant generator.

8.14 There was insufficient information available for both options to assess the impact of the generators on air quality, so no assessment was undertaken for the air quality chapter of the December 2023 ES. It was instead proposed that the air quality impacts associated with life-safety provision would be assessed as part of a planning condition.

[1] *LBC (2023) Air Quality Annual Status Report for 2022.*

[2] *LBC (2024) Air Quality Annual Status Report for 2023.*

POTENTIAL EFFECTS

Deconstruction and Construction

8.15 Amendments to the deconstruction and construction works required to facilitate the Amended Proposed Development are set out in the **ES Addendum Volume 1, Chapter 1: Introduction, Proposed Design Amendments and ES Addendum Approach**.

8.16 The change to the construction programme leads to completion a year later than previously assessed in the air quality chapter of the December 2023 ES, which assessed a first year of occupation of 2030. However, considering an earlier assessment year is worst-case because emission factors and background concentrations reduce with each year to reflect the transition in the vehicle fleet composition towards cleaner vehicles along with the implementation of local air quality measures. The change in opening year would, therefore, have a non-material impact on modelled pollutant concentrations and would not change the conclusions of the assessment.

8.17 Velocity Transport Planning (the appointed transport consultants for the scheme) have estimated that the Proposed Amendments will lead to a minor decrease (by approximately 2 trips per day) in the HGV trips generated during the peak construction year. This minor change in the development-generated traffic will have a non-material effect on predicted concentrations and impacts modelled in the air quality December 2023 ES chapter and will not change the conclusions of the assessment.

8.18 The design changes proposed will also not affect the conclusions of the construction dust risk assessment. It is recommended that the construction dust risk assessment is updated when the Dust Management Plan (DMP) is prepared to take account of the latest version of the IAQM's guidance document.

8.19 The proposed changes to the deconstruction and construction phases will therefore not affect the air quality assessment and the conclusions of the air quality December 2023 ES chapter remain robust and valid.

Completed Development

8.20 The Proposed Amendments will lead to an increase in the overall Gross Internal Areas (GIAs), from the previous design by a total of 2,284m^2. However, this increase results in minimal changes to the total number of vehicle trips associated with the operational phase of the Amended Proposed Development. Specifically, Velocity Transport Planning have estimated that the Proposed Amendments with changes to floor areas and reduction in some retail spaces and increase in office floorspace will lead to a minor decrease (by approximately 7 trips per day) in the maximum predicted delivery and servicing trips generated during the operational phases. This minor change in the development-generated traffic will have a non-material effect on predicted concentrations and impacts modelled in the air quality chapter of the December 2023 ES and will not lead to any changes to the conclusions of the assessment.

8.21 As no changes are proposed to the energy strategy and the Amended Proposed Development will still be 'car-free', the previous Air Quality Neutral assessment undertaken as part of the December 2023 ES remains valid, and the conclusions remain the same, i.e., that the Amended Proposed Development is air quality neutral both for the building and transport emissions.

8.22 Regarding the life-safety provision, it has been confirmed that, as a result of the Proposed Amendments, the exhaust flue will be run to the roof of the building, at an approximate height of 125m above ground level. At this location, it is considered that conditions will be optimal for the dispersion of the pollutants and since there are no sensitive receptors at the same, or greater heights than the roof, it is anticipated that the impacts from the emissions of the operation of a diesel-powered life-safety generator will be negligible. However, should Option 2 be selected and a tenant generator is later installed (see section 8.13), the recommendation from the previous assessment would still apply; that the air quality impacts associated with operation of such a generator should be assessed as part of a planning condition.

8.23 The proposed changes to the completed development will therefore not affect the air quality assessment so the conclusions of the air quality December 2023 ES chapter remain robust and valid.

MITIGATION, MONITORING AND RESIDUAL EFFECTS

8.24 The mitigation measures and residual effects remain the same as presented within the air quality chapter of the December 2023 ES.

CLIMATE CHANGE

8.25 The impacts of climate change discussed in the air quality chapter of the December 2023 ES are not affected by the Proposed Amendments and remain valid.

ASSESSMENT OF THE FUTURE ENVIRONMENT

Evolution of the Baseline Scenario

8.26 There are no changes to the evolution of the baseline scenario set out within the air quality chapter of the December 2023 ES, and as such it remains the same and valid.

Cumulative Effects Assessment

8.27 There are no changes to the cumulative list, and therefore the cumulative assessment remains as set out in the 2023 ES.

8.28 As mentioned within **ES Addendum Volume 1, ES Chapter 7: Traffic and Transport**, the UK Government has announced the recommencement of the High Speed Two (HS2) rail infrastructure project, which will generate construction and operational trips around Euston Station. The associated works for the respective projects are expected to overlap, but through the development of the Euston Tower Construction Logistics Plan (CLP) and Construction Management Plan (CMP) and regular communication with HS2 (who will be separately developing a Local Traffic Management Plan), it is anticipated the cumulative effects will be kept to a minimum as far as reasonably possible. As such, no significant cumulative effects in relation to air quality are expected due to the recommencement of the HS2 project.

LIKELY SIGNIFICANT EFFECTS

8.29 The Amended Proposed Development will not result in any changes to the likely significant effects in the air quality chapter of the December 2023 ES, and as such, the likely significant effects remain the same and the December 2023 ES remains robust and valid.

Chapter 9: Noise and Vibration

INTRODUCTION

9.1 The noise and vibration chapter of the December 2023 ES has been reviewed in the context of the Amended Proposed Development to determine if the conclusions of this assessment remain valid. The following key acoustic aspects were considered in the assessment.

- 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
- Noise from operational road traffic from the completed Proposed Development and from completed nearby schemes.

9.2 In addition, consideration has been given to any updates or changes to baseline conditions, policy or methodology.

9.3 The Proposed Amendments relevant to this ES chapter are:

- Update to the proposed construction programme, with a revised estimated complete date of Q1 2031 from Q2 2030;
- Changes to the peak number of deconstruction and construction vehicles (an 8% reduction compared to the level reported in the December 2023 ES); and
- The total proposed floor space of the Amended Proposed Development has increased by 2,284m^2 (2.9% uplift) compared to the Proposed Development.

LEGISLATION, PLANNING POLICY AND GUIDANCE

9.4 The legislation, planning policy and guidance stated in the noise and vibration December 2023 ES chapter remain applicable and valid.

ASSESSMENT METHODOLOGY

9.5 There are no changes to the assessment methodology set out with the noise and vibration chapter of the December 2023 ES.

9.6 Consequently, the assessment methodology and significance criteria stated in the noise and vibration December 2023 ES chapter remains applicable and valid.

BASELINE CONDITIONS

Current Baseline Conditions

9.7 The baseline conditions remain as assessed in the December 2023 ES, and therefore have not been revisited as they will not be affected by the Amended Proposed Development.

9.8 The baseline conditions as set out within the noise and vibration December 2023 ES chapter remain valid.

Evolution of the Baseline

9.9 There are no anticipated changes to the evolution of the baseline.

RECEPTORS AND RECEPTOR SENSITIVITY

9.10 No amendments have been made to the receptors considered in the noise and vibration December 2023 ES chapter.

IMPLICATIONS OF THE PROPOSED AMENDMENTS

9.11 The minor changes to the construction programme duration and construction methodology as part of the Amended Proposed Development has resulted in an 8% reduction in the expected construction vehicles flows. The construction vehicle routes remain valid as identified in the December 2023 ES chapter.

9.12 The Proposed Amendments will lead to an increase in the overall Gross Internal Area (GIA), from the Proposed Development by a total of 2,284m^2. Velocity Transport Planning (the appointed transport consultants for the scheme) have estimated that the Proposed Amendments with changes to floor areas and reduction in some retail spaces and increase in office use class will lead to a minor decrease (by approximately 7 trips per day) in the maximum predicted delivery and servicing trips generated during the operational phase.

POTENTIAL EFFECTS

Deconstruction and Construction

9.13 Amendments to the deconstruction and construction works required to facilitate the Amended Proposed Development are set out in the **ES Addendum Volume 1, Chapter 1: Introduction, Proposed Design Amendments and ES Addendum Approach**.

9.14 The amendments to the deconstruction and construction works have been reviewed and do not affect the deconstruction and construction assessment. Although the deconstruction and construction programme has been updated as part of the Amended Proposed Development, the assumed construction equipment and working practices that determine the construction noise levels (dB $L_{Aeq,10hr}$) and vibration levels remain as predicted in the December 2023 ES chapter and therefore remain valid.

9.15 Velocity Transport Planning have estimated that the Proposed Amendments will lead to a minor decrease (by approximately 2 trips per day) in the HGV trips generated during the peak construction year. This minor change in the development-generated traffic will have a non-material effect on predicted construction traffic noise modelled in the December 2023 ES chapter.

9.16 Overall, the Amended Proposed Development does not affect the deconstruction and construction assessment and therefore the December 2023 ES chapter remains robust and valid.

Completed Development

9.17 Amendments to the traffic flow data for the updated Proposed Development has been reviewed. The noise from operational road traffic for the updated Proposed Development remain as predicted in the December 2023 ES chapter and therefore remain valid.

9.18 The plant noise limits and methods to control atmospheric plant noise emissions remain as presented in the December 2023 ES chapter (i.e. these are unaffected by the Amended Proposed Development) and therefore remain valid.

9.19 Overall, the Amended Proposed Development does not affect the Completed Development assessment and therefore the December 2023 ES chapter remains robust and valid.

MITIGATION, MONITORING AND RESIDUAL EFFECTS

9.20 The mitigation measures and residual effects remain unchanged for the Amended Proposed Development, and therefore the December 2023 ES chapter remains robust and valid.

CLIMATE CHANGE

9.21 The impacts of climate change discussed in the noise and vibration December 2023 ES chapter are not affected by the Proposed Amendments.

ASSESSMENT OF THE FUTURE ENVIRONMENT

Evolution of the Baseline Scenario

9.22 There are no anticipated changes to the evolution of the baseline, as presented within the noise and vibration December 2023 ES chapter.

Cumulative Effects Assessment

9.23 There are no changes to the cumulatives list, and therefore the cumulatives assessment remains as set out in the December 2023 ES.

9.24 Since the December 2023 ES the UK Government has announced recommencement of the High Speed Two (HS2) rail infrastructure project. The associated demolition and construction works and operational road traffic and plant equipment have the potential to generate noise and vibration in the Euston area. To consider the potential for cumulative effects, a qualitative analysis has been undertaken based on the information available at the time of writing.

9.25 An indicative programme of construction works for HS2 is presented in **ES Addendum Volume 1, Chapter 7: Traffic and Transport** which indicates that there may be an overlap between HS2 construction works and construction of the Amended Proposed Development. However, the major excavation programme illustrates that a number of the major works will be completed, or partially completed, prior to major works on the Amended Proposed Development commencing and therefore any cumulative effects with the HS2 construction works are likely to be minimal.

9.26 Beyond the alignment of construction programmes, the works associated with HS2 are subject to specific measures to control construction noise and vibration. The criteria and measures are set out in the *High Speed Two Phase One Information Paper E23: Control of Construction Noise and Vibration*[1]. Provided these measures are implemented and the associated criteria is met and maintained, the cumulative effects from demolition and construction works upon nearby receptors to the Site will be minimal.

9.27 Given the distance and intervening screening by surrounding buildings (a distance of approximately 300m), the cumulative operational effects from building services noise is likely to be minimal.

LIKELY SIGNIFICANT EFFECTS

9.28 The Amended Proposed Development does not affect the likely significant effects and therefore the December 2023 ES chapter remains robust and valid.

[1] *https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/672398/E23_-_Control_of_construction_noise_and_vibration_v1.7.pdf*

Chapter 10: Daylight, Sunlight, Overshadowing and Solar Glare

DAYLIGHT, SUNLIGHT, OVERSHADOWING AND SOLAR GLARE	
AUTHOR	Point 2 Surveyors Limited (Point 2)
SUPPORTING APPENDIX	**ES Addendum 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 Amended Proposed Development once completed on sensitive receptors in relation to daylight and sunlight; • The effects of the Amended Proposed Development once completed on surrounding sensitive receptors in relation to overshadowing; and • The solar glare effects of the Amended 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** of the December 2023 ES) 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** of the December 2023 ES), 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. An ES Review Report was prepared by CBRE (on behalf of LBC) following the submission of the December 2023 ES. No additional points of clarification or requests for further information in accordance with Regulation 25 of the EIA Regulations[1] were made as part of this review.

COMPARISON AGAINST THE DECEMBER 2023 ASSESSMENT

10.1 Since the submission of the December 2023 ES, design changes have been made to the Proposed Development, including massing changes with the potential to impact the conclusions of the Daylight, Sunlight, Overshadowing and Solar Glare assessments.

10.2 A replacement ES chapter, rather than an ES Addendum, has been provided due to the fact that full re-assessment has been undertaken of the Proposed Amendments, which led to a large number of changes in the tabular data which was best presented in the form of an updated ES chapter.

10.3 To summarise the changes between the Proposed Development and the Amended Proposed Development, there were:

- Changes in daylight levels at 175 Drummond Street to Negligible (not significant) (previously Minor to Moderate Adverse (significant));
- Changes to the daylight levels at Schafer House, University College, 164-166 Drummond Street and the Triton Building which are Negligible (not significant) (previously Minor Adverse (not significant));
- Change to sunlight levels at 40-60 Hampstead Road which are Minor Adverse (not significant) (previously Negligible (not significant)); and
- A new viewpoint (Viewpoint 7) was considered along Hampstead Road in response to the revised massing, which resulted in a Minor Adverse (not significant) effect in relation to Solar Glare.

10.4 No additional cumulative schemes have been identified and therefore the cumulative effects assessment remains as presented in the December 2023 ES.

ASSESSMENT METHODOLOGY

Defining the Baseline

10.5 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 Amended Proposed Development.

10.6 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.

10.7 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 obtained from the LBC planning portal.

Evolution of the Baseline

10.8 In relation to the built environment, any alterations made to the properties surrounding the site in the absence of the Amended 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.

10.9 The site has been qualitatively considered in the context of the Amended 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 Amended Proposed Development is assessed. Any future schemes that are proposed would be required to consider the cumulative effects of it with the Amended Proposed Development.

Impact Assessment Methodology

Deconstruction and Construction

10.10 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 Amended Proposed Development. Accordingly, the effects to the surrounding properties and receptors during these phases have not been modelled and analysed.

[1] *HMSO, (2017); The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended)*

10.11 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

10.12 This scenario consists of considering the completed Amended Proposed Development in the context of the surrounding environment. This represents a worst-case scenario to assess the potential daylight, sunlight, overshadowing and solar glare effects on the surrounding residential receptors, amenity spaces and viewpoints.

10.13 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 Amended Proposed Development.

10.14 The results of the analysis have then been interpreted with reference to the BRE Guidelines, which are explained in detail within this ES chapter.

10.15 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).

10.16 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.

10.17 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 Amended Proposed Development.

Assessment Methodology

10.18 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 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.

10.19 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

10.20 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.

10.21 For existing buildings, the BRE Guidelines is based on the loss of VSC at a point at the centre of a window, on the outer plane of the wall.

10.22 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

10.23 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.

10.24 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

10.25 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"

10.26 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."

10.27 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."

10.28 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".*

10.29 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.

10.30 Bedrooms and kitchens have not been analysed in accordance with paragraph 3.2.3 of the BRE Guidelines.

Balconies Over Windows and Projecting Wings

10.31 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."

10.32 With regards to sunlight, the BRE comments on page 25, paragraph 3.2.11:

"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."

10.33 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 Amended Proposed Development) that is the main factor in the alterations in daylight or sunlight.

Overshadowing

10.34 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."

10.35 The sun on ground assessment has been used to understand the overshadowing of amenity spaces.

Sun on Ground

10.36 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 21st.The BRE criteria for gardens or amenity areas are as follows:

'It is recommended that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity space should receive at least two hours of sunlight on 21 March. If as a result of a new development an existing garden or amenity space does not meet the above, and the area which can receive two hours of sunlight on 21 march is less than 0.8 times its former value, then the loss of amenity is likely to be noticeable.' (3.3.17)

Solar Glare

10.37 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."

10.38 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."

10.39 The assessment of solar glare is carried out using specialist software applied to a 3D AutoCAD model of the Amended Proposed Development and its surrounding context.

Annual Sequence Analysis

10.40 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 Amended Proposed Development are simulated with yellow-coloured mirrors in order to more easily identify possible incidents and locations.

10.41 The path of the sun for the entire year is then simulated around the Amended 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 Addendum Volume 3, Appendix: Daylight, Sunlight, Overshadowing and Solar Glare – Annex 5**.

10.42 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.

10.43 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.

10.44 In order to understand the overall solar glare effect of the Amended 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 Addendum Volume 3, Appendix: Daylight, Sunlight, Overshadowing and Solar Glare – Annex 5**.

10.45 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.

10.46 Glare can be divided into two distinct categories: Discomfort Glare and Disability Glare.

10.47 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.

10.48 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

10.49 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.

10.50 Please note that the analysis is based on a number of assumptions and therefore the images taken from certain viewpoints are representations of the position only.

10.51 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

10.52 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.

10.53 Site and aerial photographs as well as planning drawings obtained from the LBC planning portal were used to supplement the model where necessary.

10.54 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;
- 63-68 Warren Street;
- 62 Warren Street – Partial;
- 60-61 Warren Street – Partial;
- 59 Warren Street – Partial;
- 57 Warren Street;
- 8 – 12 Warren Street;
- 16 Warren Street – Partial;
- 17 Warren Street – Partial;
- 13-14 &118-120 Whitfield Street – Partial;
- 15 Warren Street & 161 Whitfield Street; and
- Duchess House, 18-19 Warren Street – Partial.

10.55 Where plans were not available, reasonable assumptions have been made on the room sizes and layouts based on external visual inspection and professional judgment. This is industry standard practice when floorplan information is unavailable.

10.56 To identify if 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).

10.57 3XN (the project architect) supplied the 3D computer model of the Amended Proposed Development, which was received on the 15 October 2024. The computer model is illustrated in the drawings in **ES Addendum Volume 3, Appendix: Daylight, Sunlight, Overshadowing and Solar Glare – Annex 1**.

10.58 Since the issue of this model, there has been a slight reduction in massing to the southeast corner of the podium. These changes have been reviewed within Point 2's model and while there may be a slight improvement in results, it will not have a material bearing on the position or alter the conclusions outlined within this chapter.

10.59 For the solar glare assessment, when calculating the times when solar glare could potentially 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 Amended Proposed Development.

Methodology for Defining Effects

Receptors and Receptor Sensitivity

10.60 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.

Magnitude of Impact

Daylight and Sunlight

10.61 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."

10.62 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.

10.63 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.

10.64 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.

10.65 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.

10.66 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.

10.67 The nature of the effects may be either adverse (negative or detrimental) or beneficial (advantageous or positive).

10.68 The scale of each effect has been categorised as being:

- Major;
- Moderate;
- Minor; or
- Negligible.

10.69 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 chapter.

Overshadowing

10.70 The results of the sun on ground analysis are compared against the criteria set out in the 2022 BRE Guidelines, as discussed further above.

10.71 On 21st 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 21st date.

Solar Glare

10.72 The magnitude of impact in relation to solar glare effects is based on the scale set out in paragraph 10.68 and further discussion on the scale of these effects is set out in Table 10.4.

Defining the Effect

Daylight, Sunlight and Sun on Ground

10.73 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."

10.74 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."

10.75 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"*

10.76 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.

10.77 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)

10.78 Professional judgement is then used to establish the overall scale of the effect to the building. Relevant considerations include where windows and rooms are obstructed by architectural features and 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

10.79 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.

10.80 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.

10.81 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.

10.82 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

10.83 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

10.84 All receptors considered in this assessment are considered to be of high sensitivity.

Daylight, Sunlight and Overshadowing

10.85 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

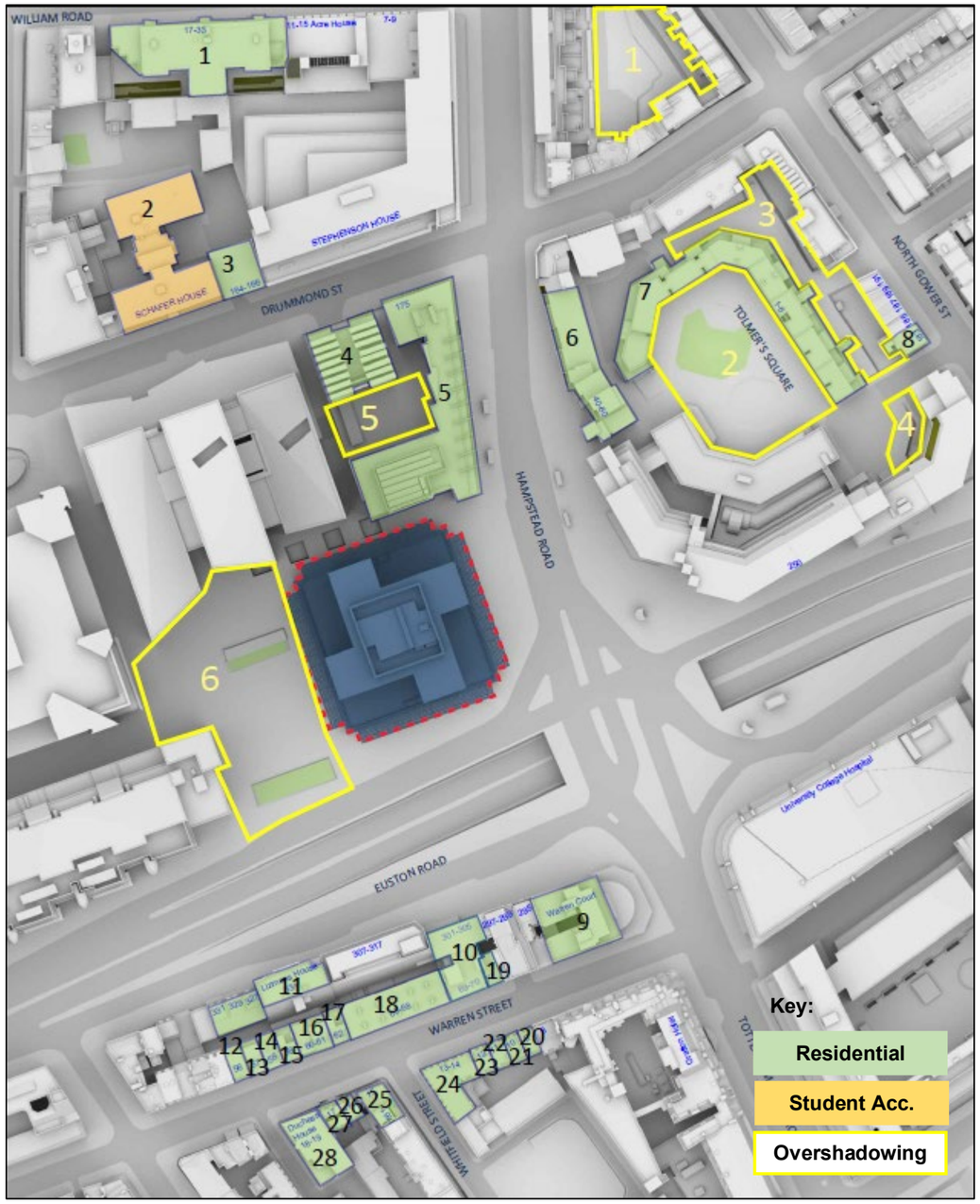
Daylight and Sunlight Receptors

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

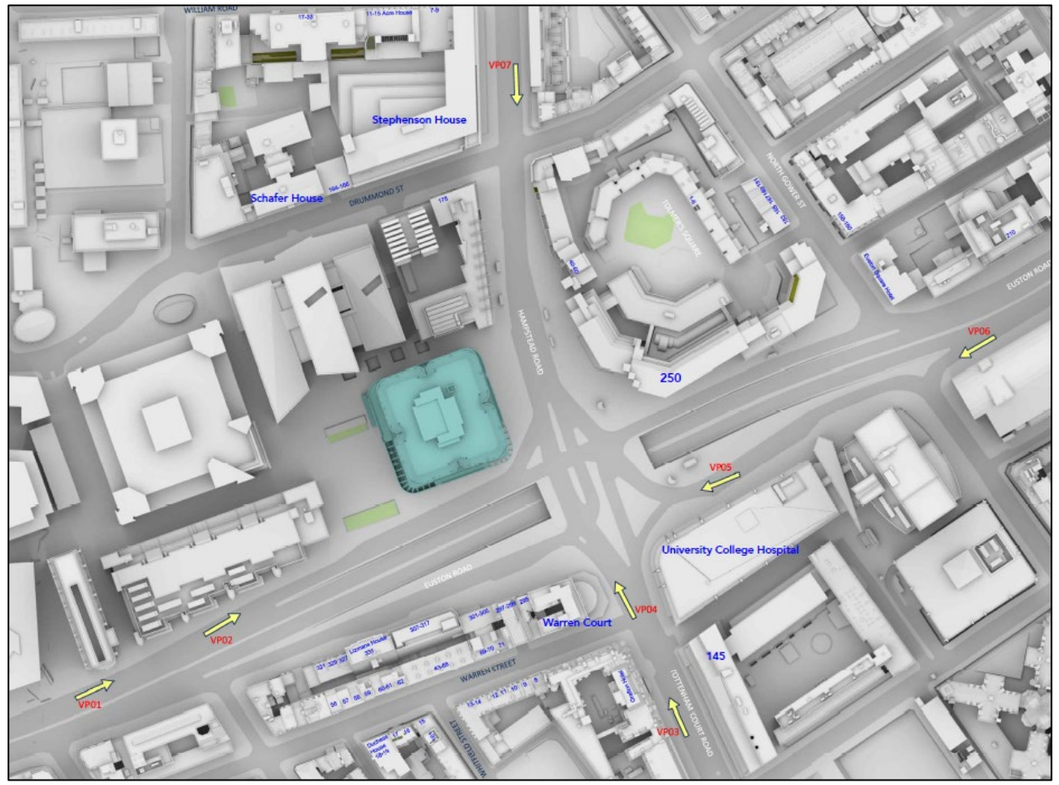
Figure 10.1 Location of Sensitive Receptors – Daylight, Sunlight and Overshadowing



Solar Glare

10.86 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
VP07	Traffic lights heading south on Hampstead Road				

BASELINE CONDITIONS

10.87 The existing buildings and structures have been modelled from 3D Point Cloud survey data which form the baseline assessment conditions.

10.88 Detailed drawings of the existing baseline scenario can be found at **ES Addendum 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

10.89 The existing baseline VSC and NSL daylight conditions were assessed. Full detailed results can be found in **ES Addendum Volume 3, Appendix: Daylight, Sunlight, Overshadowing and Solar Glare – Annex 2.**

10.90 The baseline daylight results for VSC and NSL are summarised in 10.90 and Table 10.5 respectively.

Figure 10.3 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**

10.91 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.

10.92 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 10.5 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**

10.93 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

10.94 The existing baseline APSH sunlight conditions were assessed. Full detailed results can be found in **ES Addendum Volume 3, Appendix: Daylight, Sunlight, Overshadowing and Solar Glare – Annex 2.**

10.95 The baseline results for the properties relevant for APSH are summarised in Table 10.6 below. Rooms known to be in use as bedrooms and kitchens have not been considered and are not included in the table.

Table 10.6 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	9
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**	**107**

10.96 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.

10.97 107 of the 250 rooms assessed (43%) will meet the APSH criteria in the existing condition, which is typical of a dense urban environment such as this.

Table 10.7 Summary Baseline Overshadowing Results

BASELINE OVERSHADOWING SUMMARY		
Area	**Baseline Conditions (% of Area Receiving two Hours of sun on 21st 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	98%	Yes

10.98 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 21st 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

10.99 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 Addendum Volume 3, Appendix: Daylight, Sunlight, Overshadowing and Solar Glare – Annex 2,** and the daylight results are summarised in Table 10.8 and 10.9 below.

10.100 Rows shaded in green demonstrate full compliance with the BRE Guidelines.

Table 10.8 Existing Baseline + Amended Proposed Development VSC Summary

VSC SUMMARY						
Address	**Total**	**Total that Meet BRE Guidelines**	**Below BRE Guidelines**			
			20-29% Loss	**30-39.9% Loss**	**>=40% Loss**	**Total**
17 to 33 William Road	106	106	0	0	0	0
Schafer House, University College	162	162	0	0	0	0
164-166 Drummond Street	51	51	0	0	0	0
175 Drummond Street	14	14	0	0	0	0
Triton Building	298	286	12	0	0	12
40-60 Hampstead Road	62	50	0	2	10	12
1-6 Tolmers Square	95	89	4	1	1	6
183 North Gower Street	16	16	0	0	0	0
Warren Court, Euston Road	54	54	0	0	0	0
301-305 Euston Road & 69-70 Warren Street	2	2	0	0	0	0
Lizmans House, 321 Euston Road	42	42	0	0	0	0
56 Warren Street (Assumed windows)	3	3	0	0	0	0
57 Warren Street (Assumed windows)	6	6	0	0	0	0
58 Warren Street (Assumed windows)	6	6	0	0	0	0
59 Warren Street	8	8	0	0	0	0
60-61 Warren Street	15	15	0	0	0	0
62 Warren Street	11	11	0	0	0	0
63-68 Warren Street	52	52	0	0	0	0
71 Warren Street	3	3	0	0	0	0
9 Warren Street	1	1	0	0	0	0
10 Warren Street	1	1	0	0	0	0
11 Warren Street	1	1	0	0	0	0
12 Warren Street	1	1	0	0	0	0
13-14 Warren Street & 118-120 Whitfield Street	24	24	0	0	0	0

VSC SUMMARY						
Address	Total	Total that Meet BRE Guidelines	Below BRE Guidelines			
			20-29% Loss	30-39.9% Loss	>=40% Loss	Total
15 Warren Street & 161 Whitfield Street	19	19	0	0	0	0
16 Warren Street	16	16	0	0	0	0
17 Warren Street	17	17	0	0	0	0
Duchess House, 18-19 Warren Street	20	20	0	0	0	0
TOTAL	**1,106**	**1,076**	**16**	**3**	**11**	**30**

Table 10.9 Existing Baseline + Amended Proposed Development NSL Summary

NSL SUMMARY						
Address	Total No. of Rooms	Total that Meet BRE Guidelines	Below BRE Guidelines			
			20-29% Loss	30-39.9% Loss	>=40% Loss	Total
17 to 33 William Road	83	83	0	0	0	0
Schafer House, University College	150	149	1	0	0	1
164-166 Drummond Street	17	13	4	0	0	4
175 Drummond Street	14	10	4	0	0	4
Triton Building	140	140	0	0	0	0
40-60 Hampstead Road	60	49	1	2	8	11
1-6 Tolmers Square	61	61	0	0	0	0
183 North Gower Street	16	16	0	0	0	0
Warren Court, Euston Road	37	37	0	0	0	0
301-305 Euston Road & 69-70 Warren Street	2	2	0	0	0	0
Lizmans House, 321 Euston Road	42	42	0	0	0	0
56 Warren Street (Assumed windows)	3	3	0	0	0	0
57 Warren Street (Assumed windows)	4	4	0	0	0	0
58 Warren Street (Assumed windows)	4	4	0	0	0	0
59 Warren Street	5	5	0	0	0	0
60-61 Warren Street	12	12	0	0	0	0
62 Warren Street	6	6	0	0	0	0
63-68 Warren Street	26	26	0	0	0	0
71 Warren Street	3	3	0	0	0	0
9 Warren Street	1	1	0	0	0	0
10 Warren Street	1	1	0	0	0	0
11 Warren Street	1	1	0	0	0	0
12 Warren Street	1	1	0	0	0	0

NSL SUMMARY						
Address	Total No. of Rooms	Total that Meet BRE Guidelines	Below BRE Guidelines			
			20-29% Loss	30-39.9% Loss	>=40% Loss	Total
13-14 Warren Street & 118-120 Whitfield Street	9	9	0	0	0	0
15 Warren Street & 161 Whitfield Street	13	13	0	0	0	0
16 Warren Street	6	6	0	0	0	0
17 Warren Street	7	7	0	0	0	0
Duchess House, 18-19 Warren Street	9	9	0	0	0	0
TOTAL	**733**	**713**	**10**	**2**	**8**	**20**

10.101 The VSC results confirm that a total of 1,076 of the 1,106 (97%) habitable windows tested meet the BRE Guidelines so experience a Negligible effect (not significant). 16 (1%) of the remaining windows would experience a Minor Adverse (not significant) effect meaning 1,092 windows (99%) in total experience effects that are not significant.

10.102 3 (<1%) would experience a potentially Moderate Adverse effect (**significant**) and 11 (1%) would experience a potentially Major Adverse (**significant**) effect, prior to any professional judgement being applied.

10.103 The NSL results confirm that a total of 713 of the 733 (97%) habitable rooms tested meet the BRE guideline so experience a Negligible effect (not significant). 10 (1%) of the remaining rooms would experience a Minor Adverse (not significant) effect so 723 rooms (99%) in total would experience effects that are not significant.

10.104 2 (0%) rooms would experience a potentially Moderate Adverse (**significant**) effect and 8 (1%) would experience a potentially Major Adverse (**significant**) effect, prior to any professional judgement being applied.

10.105 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. These have all been assessed in terms of both winter and annual APSH.

10.106 Full detailed results are available within **ES Addendum Volume 3, Appendix: Daylight, Sunlight, Overshadowing and Solar Glare – Annex 2** and are summarised in Table 10.10 below. Rows shaded in green demonstrate full compliance with the BRE Guidelines

Table 10.10 Existing Baseline + Amended Proposed Development APSH Summary

APSH ROOM SUMMARY										
Address	Total No. Rooms	Meet BRE Guidelines	No. of rooms below the APSH stated in BRE Guidelines							
			Below Threshold for Winter APSH				Below Threshold for Annual APSH			
			20-30%	30-40%	>40%	Total	20-30%	30-40%	>40%	Total
17 to 33 William Road	36	36	0	0	0	0	0	0	0	0
Schafer House, University College	49	49	0	0	0	0	0	0	0	0

APSH ROOM SUMMARY										
Address	Total No. Rooms	Meet BRE Guidelines	No. of rooms below the APSH stated in BRE Guidelines							
			Below Threshold for Winter APSH				Below Threshold for Annual APSH			
			20-30%	30-40%	>40%	Total	20-30%	30-40%	>40%	Total
164-166 Drummond Street	11	11	0	0	0	0	0	0	0	0
Triton Building	46	46	0	0	0	0	0	0	0	0
40-60 Hampstead Road	60	59	0	0	1	1	1	0	0	1
1-6 Tolmers Square	22	22	0	0	0	0	0	0	0	0
183 North Gower Street	16	16	0	0	0	0	0	0	0	0
13-14 Warren Street & 118-120 Whitfield Street	3	3	0	0	0	0	0	0	0	0
15 Warren Street & 161 Whitfield Street	2	2	0	0	0	0	0	0	0	0
16 Warren Street	1	1	0	0	0	0	0	0	0	0
17 Warren Street	1	1	0	0	0	0	0	0	0	0
Duchess House, 18-19 Warren Street	3	3	0	0	0	0	0	0	0	0
TOTAL	**250**	**249**	**0**	**0**	**1**	**1**	**1**	**0**	**0**	**1**

10.107 The existing and Amended Proposed Development APSH results confirm that a total of 249 of the 250 (99%) southerly orientated main living rooms tested meet the BRE guideline so experience a Negligible (not significant) effect.

10.108 Of the 28 properties assessed, the effect to the daylight amenity of the 22 properties listed below would be permanent, direct, Negligible (not significant):

- 17 to 33 William Road;
- 183 North Gower Street;
- Warren Court, Euston Road;
- 301-305 Euston Road and 69-70 Warren Street;
- Lizmans House, 231 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; and
- Duchess House, 18-19 Warren Street.

10.109 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 and professional judgement has been given on a case-by-case basis.

Schafer House, University College

10.110 This building is in use as student accommodation. It was possible to obtain partial floorplans which have been incorporated within the model.

Daylight

10.111 A total of 162 windows serving 150 rooms are understood to face the site and have been included within the technical analysis.

10.112 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).

10.113 149 of the 150 rooms (99%) will satisfy the typical BRE recommendations in regard to the NSL assessment and thus experience a Negligible effect (not significant).

10.114 The remaining bedroom experiences a relative change in NSL of 22%, which is Minor Adverse and fractionally beyond the 20% criteria suggested within the BRE Guidelines.

10.115 It should be noted that bedrooms are considered to be ‘less important’ by the BRE for NSL.

10.116 The building would remain fully BRE compliant for VSC and only one room experiences a fractional change in NSL which is considered Minor Adverse. Therefore, the overall effect to this property is considered to be permanent, direct and Negligible (not significant).

Sunlight

10.117 There are 49 southernly oriented rooms that have been considered for sunlight.

10.118 All 49 rooms (100%) will satisfy the typical BRE recommendations for both winter and total APSH assessment. Therefore, the effect of the Amended Proposed Development on the sunlight amenity to this property is considered to be permanent, direct and Negligible (not significant).

164-166 Drummond Street

10.119 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

10.120 A total of 51 windows serving 17 rooms are understood to face the site and have been included within the technical analysis.

10.121 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).

10.122 13 of the 17 rooms (76%) will satisfy the typical BRE recommendations in regard to the NSL assessment and thus experience a Negligible effect (not significant).

10.123 The remaining four bedrooms that do not meet the typical BRE recommendations for NSL would experience a relative change of 21 to 26%, with two of the rooms experiencing alterations that are fractionally beyond the 20% allowed for in the BRE. It should also be noted that these rooms are bedrooms that are considered 'less important' in NSL terms.

10.124 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' experience Minor adverse alterations in NSL. Therefore, the overall effect to this property is considered to be permanent, direct and Negligible (not significant).

Sunlight

10.125 There are 11 southernly oriented rooms that have been considered for sunlight.

10.126 All 11 rooms (100%) will satisfy the typical BRE recommendations for both winter and total APSH assessment. Therefore, the effect of the Amended Proposed Development on the sunlight amenity to this property is considered to be permanent, direct and Negligible (not significant).

Triton Building

10.127 It is understood that this residential building is made up of multiple flats. Layouts have been modelled from floorplans obtained from LBC planning records.

10.128 This building contains numerous, large external projecting balconies along the southern façade, directly facing the site. For the reasons explained in paragraphs 10.31 to 10.33 above, 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

10.129 A total of 298 windows serving 140 rooms have been included within the technical analysis.

10.130 286 of the 298 (96%) windows will satisfy the typical BRE Guideline recommendations in terms of the VSC form of assessment and thus experience a Negligible effect (not significant).

10.131 The remaining 12 windows, that do not meet the BRE recommendations, experience a relative change of between 20-23% which is fractionally beyond guidance and considered to be Minor Adverse. Therefore, all of the windows experience alterations in VSC that are not significant. It is also worth noting that the vast majority of these windows are located beneath balconies which restricts their receipt of daylight. As outlined within the BRE Guidelines an additional assessment which negates the limiting effect of the balconies has been undertaken which is discussed further below.

10.132 In regard to NSL, all 140 of the rooms (100%) will satisfy the typical BRE recommendations and thus experience a negligible effect (not significant).

10.133 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

10.134 In this assessment, all of the windows assessed would satisfy the BRE Guidelines for VSC. In accordance with the recommendation of the BRE, this additional assessment demonstrates that the relative changes in VSC beyond the BRE Guideline targets, as a result of the Amended Proposed Development, is almost exclusively attributable to the existing architectural features of the building rather than the proposed massing itself.

10.135 Overall, the daylight effect to this property is considered to be permanent, direct and Negligible (not significant).

Sunlight

10.136 There are 46 southernly oriented rooms that have been considered for sunlight.

10.137 All 46 rooms (100%) will satisfy the typical BRE recommendations for both winter and total APSH assessment. Therefore, the effect of the Amended Proposed Development on the sunlight amenity to this property is considered to be permanent, direct and Negligible (not significant).

175 Drummond Street

10.138 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.

10.139 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

10.140 A total of 14 windows serving 14 bedrooms face the site and have been included within the technical analysis.

10.141 All of the 14 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).

10.142 In terms of NSL, 10 of the 14 rooms (71%) will satisfy the typical BRE recommendations and thus experience a Negligible effect (not significant).

10.143 The remaining four bedrooms that do not meet the typical BRE recommendations for NSL would experience a relative change of between 22% and 28%, which is considered Minor 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 Amended Proposed Development.

10.144 Overall, the daylight effect to this property is considered to be permanent, direct and Negligible (not significant).

Sunlight

10.145 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

10.146 It is understood this residential building is made up of multiple flats. Room layouts/uses have been assumed in the absence of any publicly available information.

10.147 Many of the 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 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

10.148 A total of 62 windows serving 60 rooms are understood to face the site and have been included within the technical analysis.

10.149 50 of the 62 windows (81%) will satisfy the typical BRE Guideline recommendations in terms of the VSC form of assessment and thus experience a Negligible effect (not significant).

10.150 The remaining 12 windows, have an existing VSC value of 1% or less with all but two of the windows achieving a VSC of less than 0.2%. This is not a measurable or a useful level 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.

10.151 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).

10.152 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 level 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.

10.153 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.

10.154 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.

10.155 In consideration of the above, the overall effect to this property is considered to be permanent, direct and Minor Adverse (not significant).

Sunlight

10.156 There are 60 southernly oriented rooms that have been considered for sunlight.

10.157 59 of the 60 rooms (98%) will satisfy the typical BRE recommendations for both winter and total APSH assessment and thus experience a Negligible effect (not significant).

10.158 The remaining room that does not meet the typical BRE recommendations for APSH is located on the 4th floor and will experience an absolute reduction in annual APSH of 5%, which is just beyond the 4% allowed for by the BRE. This room will retain a winter APSH of 3% and an annual APSH of 18%, which is typically considered to be a reasonable level of retained sunlight in a dense urban environment. Therefore, the effect of the Amended Proposed Development on the sunlight amenity to these property is considered to be permanent, direct and Minor Adverse (not significant).

1-6 Tolmers Square

10.159 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 assumptions have been made.

10.160 There are a number of windows and rooms within this building that are located beneath deep recessed balconies and therefore experience very low levels of daylight in the existing condition of between 0% and 1.9% VSC. In situation such as this, small absolute changes in daylight levels can easily result in larger relative changes

Daylight

10.161 A total of 95 windows serving 61 rooms are understood to face the site and have been included within the technical analysis.

10.162 89 of the 95 windows (94%) will satisfy the typical BRE Guideline recommendations in terms of the VSC form of assessment and thus experience a Negligible effect (not significant).

10.163 Five of the remaining six windows, that do not meet the BRE recommendations, experience a relative change of between 22% and 33%. While these alterations could be considered Minor to Moderate Adverse, the absolute change in VSC as a result of the Amended Proposed Development does not exceed 0.11% VSC, which is an immaterial change and will not be noticeable to the occupants.

10.164 The remaining window will experience a relative change of 40%. This window, however, only achieves a existing VSC of 0.1% which is not a measurable or a useful level of VSC to provide internal illuminance to the rooms behind the windows. The absolute change to this window is 0.04%. Such fractional changes are clearly imperceptible and should effectively be discounted. The effects are therefore the effects are considered to be Minor Adverse.

10.165 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.

10.166 All 61 rooms (100%) will satisfy the typical BRE recommendations in regard to the NSL assessment and thus experience a Negligible effect (not significant).

10.167 In consideration of the above, the overall effect to this property is considered to be permanent, direct and Negligible (not significant).

Sunlight

10.168 There are 22 southernly oriented rooms that have been considered for sunlight.

10.169 All 22 rooms (100%) will satisfy the typical BRE recommendations for both winter and total APSH assessment. Therefore, the effect of the Amended Proposed Development on the sunlight amenity to this property is considered to be permanent, direct and Negligible (not significant).

Overshadowing (Sun on Ground)

10.170 Full detailed sun on the ground assessment results can be found at **ES Addendum Volume 3, Appendix: Daylight, Sunlight, Overshadowing and Solar Glare – Annex 4**.

10.171 As discussed at paragraph 10.36, 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 six surrounding amenity spaces relevant for assessment is presented in Table 10.11 below.

Table 10.11 Completed Development Sun on Ground summary (Surround Areas)

Area	Pre-Deconstruction Baseline Conditions (% of Area Receiving two Hours of sun on 21st March)	With Amended Proposed Development Conditions (% of area receiving two hours of sun on 21st March)	% Alteration between Baseline and With Development Conditions	Scale of Effect
1. George Mews	70.5%	68%	2.5%	Negligible
2. Tolmers Square (main square)	74.7%	74.4%	0.3%	Negligible
3. Tolmers Square (private amenity areas 1)	62.8%	62.8%	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	97.5%	96.4%	1.1%	Negligible

10.172 Table 10.11 shows that on the 21st March all six amenity spaces assessed will either meet the BRE criteria or experience no change and therefore will experience Negligible effects (not significant).

Solar Glare

10.173 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 Amended Proposed Development.

10.174 As the existing building on the site is significant it is important to understand, if there is any potential for glare, how this compares to the existing situation.

10.175 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 Addendum Volume 3, Appendix: Daylight, Sunlight, Overshadowing and Solar Glare – Annex 5.**

10.176 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.

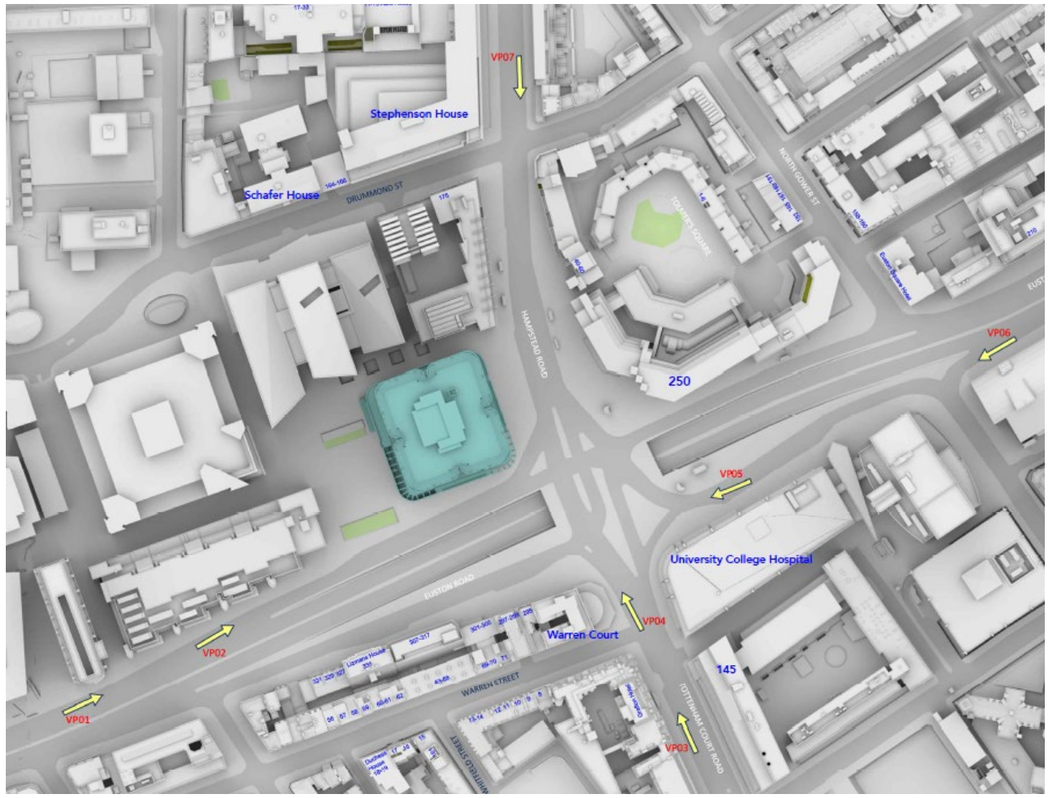
10.177 The duration of each glare occurrence as shown on the Calendar Graphs assumes a stationary viewer at the specified viewpoint. In relation to this study, however, the viewer (driver) would in fact move through the reflected beam, and this would potentially reduce the significance of the impact. Conversely the impact could be more significant if the driver is travelling along the path of a long, reflected beam.

10.178 The Calendar Graphs for the glare analysis undertaken in relation to the Amended Proposed Development are shown in drawings P3293/GC/13-20 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 Addendum Volume 3, Appendix: Daylight, Sunlight, Overshadowing and Solar Glare – Annex 5**.

10.179 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.

10.180 Visualisations showing the existing and proposed position have been created for each of the relevant times at the viewpoints identified in Figure 10.4 below. These visualisations are shown in drawings P2193/GI/07-20 and seek to illustrate the worst dates/times for glare for both the existing building and the Amended Proposed Development. 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 10.4 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

Viewpoint 7: Traffic lights heading south on Hampstead Road

10.181 The effects on each assessment viewpoint are discussed below.

Viewpoint 1

10.182 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.

Existing

10.183 The Calendar Graph for the existing scheme shows that there will be some solar reflections between 17:20 and 18:00 (BST) between the 9th April and the 23rd May. The majority of the instances will, however, occur for c. 5 minutes of the day.

Proposed

10.184 The Calendar Graph for the Amended Proposed Development shows that there will be some solar reflections for approximately 25 minutes between 17:15 and 17:50 (BST) between the 16th May to the 29th July. These instances will, however, have a reflection angle of more than 30 degrees and therefore the effect is considered to be Negligible (not significant).

10.185 There will be some very fleeting instances that occur between 3 degrees and 10 degrees between the 18th and 23rd April between 06:46 - 06:49 (BST). However, as this is such a short period of time the effect is considered to be Negligible (not significant).

10.186 Two dates/times where the glare angle is less than 30 degrees have been selected and the glare images produced. These are the 14th May 17:33 (BST) and the 29th April 06:56 (BST).

10.187 The May visualisation shows 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.

10.188 The April visualisation shows that there is a small reflection of the sun from the Amended Proposed Development however, the main source of glare will be coming directly from the sun and therefore would be identical between the existing building and the Amended Proposed Development.

10.189 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.

10.190 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). 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

10.191 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

10.192 The Calendar Graph shows that there will be some solar reflections between approximately 17:10 and 18:30pm (BST) between early April and early September in the existing condition.

10.193 There will also be some fleeting instances of solar reflections (<30 degrees) between 06.00 and 07.00 between the end of April and the middle of August. The solar reflections between approximately the 21st May and the 24th July have a reflection angle of more than 30 degrees and therefore the effect is considered to be Negligible (not significant).

Proposed

10.194 The Calendar Graph shows that there will be some solar reflections between 16:30 and 17:10 (BST) between the start of May and the end of August however, these instances will occur at an angle of over 30 degrees and therefore the effect is considered to be Negligible (not significant).

10.195 There will be some solar reflections (<30 degrees) at various times throughout the year however the vast majority of these are over a short period of time and therefore the effect is considered to be Negligible (not significant).

10.196 The 1st May at 07:07 (BST) has been selected as it appears to experience solar reflections (less than 30 degrees) for the longest period approximately 5-7 mins.

10.197 Visualisation image P2193_GI_11 shows that there is a small reflection of the sun from the Amended Proposed Development however, the main source of glare will be coming directly from the sun which is clearly unchanged from what is being experienced now.

10.198 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

10.199 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

10.200 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. Where there are longer periods of solar reflection they typically occur at an angle of >30 degrees.

Proposed

10.201 The Calendar Graph shows that there will be some solar reflections for a similar portion of the year between 12:20 and 13:30 and of a similar angle.

10.202 A visualisation has been prepared for a sample time of 12:05pm on the 10th February in both the existing and proposed condition. This time has been identified from the Calendar Graphs as an instance where the reflection angle is less than 30 degrees.

10.203 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.

10.204 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

10.205 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

10.206 The Calendar Graph shows that there will be some solar reflections between 12:20 and 14:15 (BST) between the end of August and mid-April in the existing condition.

Proposed

10.207 The Calendar Graph shows that the solar reflections will be more spread out through the year.

10.208 A visualisation has been prepared for a sample time of 12:30 (GMT) on the 14th January in both the existing and proposed condition. This time has been identified from the Calendar Graphs as an instance where the reflection angle is less than 30 degrees.

10.209 It can be seen in the existing and proposed views that the reflection of the sun is between 20 and 30 degrees 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.

10.210 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

10.211 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.

10.212 The Calendar Graphs show that there will be more instances of solar reflection as a result of the Amended Proposed Development albeit they will be for shorter periods of time.

10.213 A visualisation has been prepared for a sample time of 15:25 (GMT) on the 15th February in both the existing and proposed condition. This time has been identified from the Calendar Graphs as an instance where the reflection angle is less than 30 degrees for approximately15 minutes.

10.214 It can be seen in the existing and proposed views that the reflection of the sun is between the 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.

10.215 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

10.216 Viewpoint 6 considers pedestrian crossing heading west on Euston Road. It therefore considers whether the drivers view of the crossing would be affected.

Existing

10.217 The Calendar Graph shows that there will be some solar reflections (<30 degrees) between 5:35am and 6:00am (BST) between the end of May and mid-July in the existing condition.

Proposed

10.218 The Calendar Graph shows that the solar reflections will be more spread out through the year.

10.219 Visualisations have been prepared for a sample times of 05:50 (BST) on the 8th July and 05:51 (BST) on the 21st June in both the existing and proposed conditions. This time has been identified from the Calendar Graphs as an instance where the reflection angle is less than 30 degrees.

10.220 It can be seen from both visualisations that the reflections of the sun are approximately 20 degrees in both the existing and proposed condition and therefore could readily be mitigated by the car's sun visor. There is unlikely to be a noticeable difference between the existing and proposed condition.

10.221 The overall effect on this assessment point is considered Minor Adverse (not significant). The position will however not materially change from the existing.

Viewpoint 7

10.222 Viewpoint 7 considers the drivers view at the traffic lights heading south on Hampstead Road

Existing

10.223 The Calendar Graph shows that there will be some solar reflections (<30 degrees) between 08:50 and 09:40 (GMT) between mid-January and the end of March and 09:40 to 10:25 (BST) between the end of September and the end of November, in the existing condition.

Proposed

10.224 The Calendar Graph shows that the solar reflections will be similar in the proposed scenario albeit more spread out.

10.225 A visualisation has been prepared for a sample time of 08:51 (GMT) on the 13th November in both the existing and proposed conditions. This time has been identified from the Calendar Graphs as an instance where the reflection angle is less than 30 degrees.

10.226 It can be seen from the view in the visualisation that the reflection of the sun is between 10 and 20 degrees in the proposed condition and therefore could readily be mitigated by the car's sun visor. This reflection is also over a short period of time.

10.227 The overall effect on this assessment point is considered Minor Adverse (not significant).

MITIGATION, MONITORING AND RESIDUAL EFFECTS

Residual Effects

10.228 The residual effects resulting from the Amended Proposed Development are presented in Table 10.12, identifying whether the effect is significant or not.

Table 10.12 Residual Effects

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
Completed Development							
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	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
164-166 Drummond Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
Triton Building	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Negligible	Not Significant	L	D	P	Lt
175 Drummond Street	Reduction in Daylight	Negligible	Significant	L	D	P	Lt
	Reduction in Sunlight	n/a	n/a				
40-60 Hampstead Road	Reduction in Daylight	Minor Adverse	Not Significant	L	D	P	Lt
	Reduction in Sunlight	Minor Adverse	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

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt 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	n/a	n/a				
301-305 Euston Road & 69-70 Warren Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	n/a	n/a				
Lizmans House, 321 Euston Road	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	n/a	n/a				
56 Warren Street (Assumed windows)	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	n/a	n/a				
57 Warren Street (Assumed windows)	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	n/a	n/a				
58 Warren Street (Assumed windows)	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	n/a	n/a				
59 Warren Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	n/a	n/a				
60-61 Warren Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	n/a	n/a				
62 Warren Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	n/a	n/a				
63-68 Warren Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	n/a	n/a				
71 Warren Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	n/a	n/a				
9 Warren Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	n/a	n/a				
10 Warren Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	n/a	n/a				
11 Warren Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	n/a	n/a				
12 Warren Street	Reduction in Daylight	Negligible	Not Significant	L	D	P	Lt
	Reduction in Sunlight	n/a	n/a				
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
Viewpoint 7	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

10.229 There are no likely significant effects identified as a result of the implementation of the Amended Proposed Development.

Chapter 11: Wind Microclimate

WIND MICROCLIMATE	
AUTHOR	ARUP
SUPPORTING APPENDIX	**ES Addendum 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 Amended 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 Amended 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 Amended 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; • Configuration 3a: Proposed Development in Existing Surroundings (including proposed landscaping and initial wind mitigation), including future schemes already under construction; • Configuration 3b: Proposed Development with Landscaping and Updated Wind Mitigation (including future schemes already under construction) (assessed using professional judgment and partial sensitivity runs in the wind tunnel); • Configuration 4a: Amended Proposed Development in Existing Surroundings (including proposed landscaping), including future schemes already under construction; • Configuration 4b: Amended Proposed Development in Existing Surroundings (including proposed landscaping), including future schemes already under construction, and tower balcony mitigation with 50% porous screens; and • Configuration 4c: Amended Proposed Development in Existing Surroundings (including proposed landscaping), including future schemes already under construction, and tower balcony mitigation with solid screens. Configurations 2, 3a and 3b, which were presented within the December 2023 ES, have subsequently been superseded by Configuration 4a, 4b, and 4c, following the implementation of the Proposed Amendments and the findings of this assessment are discussed in this ES chapter.
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** of the December 2023 ES 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** of the December 2023 ES**.** 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 11.63) 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. An ES Review Report was prepared by CBRE (on behalf of LBC) following the submission of the December 2023 ES. The following points were raised as part of this review and are addressed as appropriate within this ES Addendum chapter: • Consideration of off-site balconies was raised again, and it was agreed that qualitative narrative (based on professional judgement and significant amounts of wind tunnel testing undertaken in the surrounding area) would be appropriate to provide a summary of the anticipated conditions on the identified off-site balconies; and • Final mitigation – as agreed with CBRE on 23 October 2024, all final proposed mitigation has been tested in the wind tunnel and the findings reported in this ES chapter.

COMPARISON AGAINST THE DECEMBER 2023 ASSESSMENT

11.1 Since the submission of the December 2023 ES, massing changes have been made to the Proposed Development with the potential to impact the conclusions of the wind microclimate assessment. These design changes have been assessed using wind tunnel testing.

11.2 A replacement ES chapter has been provided due to the large number of changes with reference to the updated configuration tested. Some effects have been altered as a result of the revised massing; however the overall number of likely significant effects is the same as those presented in the December 2023 ES. This replacement ES chapter of this 2024 ES Addendum supersedes the December 2023 ES chapter.

ASSESSMENT METHODOLOGY

Defining the Baseline

11.3 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.

11.4 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 Addendum Volume 3, Appendix: Wind Microclimate – Annex 1** of the December 2023 ES.

11.5 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.

11.6 The baseline conditions are reflected within the wind scenario 'Configuration 1: Existing Baseline'.

11.7 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 Amended Proposed Development. However, a comparison of the measured wind environment for the Amended Proposed Development with the existing conditions does not take into account any change in pedestrian activity that would accompany the Amended 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 Amended Proposed Development in place.

Evolution of the Baseline

11.8 The evolution of the baseline condition assumes the cumulative schemes (see paragraph below for a description the cumulative scheme included in the wind assessment) 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.

11.9 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.

11.10 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

11.11 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 Amended 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 Amended 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 Amended Proposed Development are installed, and before landscaping is in place.

11.12 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

11.13 The methodology for determining the wind microclimate effects around the completed Amended Proposed Development in existing surroundings has been determined through initial qualitative CFD analysis and verified with physical wind tunnel testing.

11.14 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 presented here in this ES chapter.

11.15 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.

11.16 The final wind tunnel workshop was held on the 28 November 2024 and the findings set out in this ES chapter.

Wind Tunnel Testing

11.17 Wind tunnel testing and the application of professional judgement have been used to assess the baseline wind conditions and the effect of the Amended Proposed Development on environmental wind conditions within and around the site.

11.18 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.

11.19 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

11.20 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.

11.21 Further detail on the wind tunnel testing methodology can be found in **ES Addendum Volume 3, Appendix: Wind Microclimate – Annex 1** of the December 2023 ES.

Testing Configurations

11.22 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.

11.23 Table 11.1 lists the configurations tested in the wind tunnel and when.

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 October 2019
Configuration 2: Proposed Development without Proposed Landscaping	Proposed Development without proposed landscaping in the existing surroundings, including consented schemes already under construction.	3 October 2023
Configuration 3a: Proposed Development with Proposed Landscaping and Initial Wind Mitigation	Proposed Development with proposed landscaping and initial wind mitigation in the existing surroundings, including consented schemes already under construction.	14 November 2023
Configuration 3b: Proposed Development with Proposed 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 November 2023
Configuration 4a: Amended Proposed Development in Existing Surroundings (including proposed landscaping), including future consented schemes already under construction	Amended Proposed Development with proposed landscaping and mitigation measures including consented schemes already under construction.	28 November 2024

[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"*

Configuration Number / Name	Description	Date Tested
Configuration 4b: Amended Proposed Development including Tower Balcony Mitigation with 50% Porous Screens.	Amended Proposed Development with proposed landscaping and mitigation measures including consented schemes already under construction. Additional 50% porous screens on all tower balconies.	30 October 2024
Configuration 4c: Amended Proposed Development including Tower Balcony Mitigation with Solid Screens.	Amended Proposed Development with proposed landscaping and mitigation measures including consented schemes already under construction. Additional solid screens on all tower balconies.	30 October 2024

11.24 The results for the Proposed Development (as submitted in the December 2023 Planning Application) (Configuration 2) concluded there were no significant effects in any locations on or off-site. A summary of the test and results is reported in paragraphs 11.99 to 11.119.

11.25 Following the December 2023 Planning Application, the Proposed Amendments were implemented and the resultant Amended Proposed Development was tested. Some of the low-level mitigation and embedded mitigation within the landscaping was re-adjusted to better incorporate with the updated scheme. Details of the test and results is reported within the '*Potential Effects*' section of this ES chapter

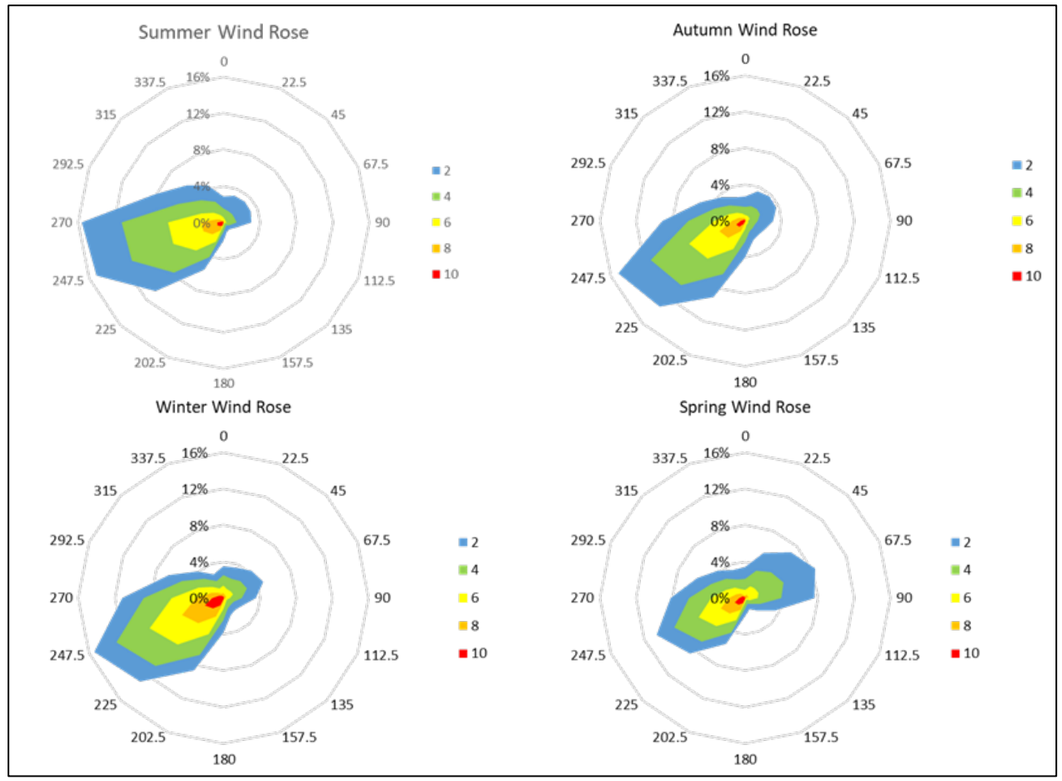
11.26 The characteristics of the oncoming wind speed and turbulence are generated in the wind tunnel using distributed roughness elements and spires upwind of the wind tunnel model.

11.27 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

11.28 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.

Figure 11.1 London Meteorological Data (London Weather Centre)



11.29 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;
- North-easterly winds are almost as common as the southwest winds during spring but are weaker. They are often associated with cold dry conditions. North-east winds can be more unpleasant than suggested by their strength due to the lower-than-average air temperature;
- Winds from the north-west can be as strong as the southwest winds but are less frequent. They are relatively cold; and
- South-east winds are generally warm and light and are rarely associated with uncomfortable ground level winds.

Lawson Comfort and Distress Criteria

11.30 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'.

[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*

11.31 Acceptable comfort conditions for various activities in order of increasing windiness are described in Table 11.2.

11.32 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

11.33 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.

11.34 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.

11.35 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

11.36 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

11.37 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.

11.38 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

11.39 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.

11.40 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

11.41 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

11.42 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 Amended Proposed Development.

11.43 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.

11.44 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 Amended Proposed Development.

11.45 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 Amended Proposed Development.

11.46 Effects once the Amended 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 Amended 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.

11.47 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.

11.48 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.

11.49 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.

11.50 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

11.51 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

11.52 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 Amended 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 Amended Proposed Development, even with wind mitigation. OR Conditions that were 'unsafe' in the baseline scenario are made worse as a result of the Amended 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 Amended 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 Amended Proposed Development.	No
Moderate Beneficial	Conditions that were 'unacceptable' in terms of comfort in the baseline scenario become 'acceptable' as a result of the Amended Proposed Development. OR Conditions that were 'unsafe' in the baseline scenario are made better as a result of the Amended Proposed Development (but not so as to make them 'safe')	No

Categorising Likely Significant Effects

11.53 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.

11.54 Wind conditions which are negligible or beneficial of any scale would not represent a significant effect.

RECEPTORS AND RECEPTOR SENSITIVITY

11.55 This section describes where receptors have been identified both on- and off-site and how they are assessed using the above tables.

11.56 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 Amended Proposed Development (i.e. within 5m of the building line). This also includes thoroughfares within the Amended 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)

11.57 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.

11.58 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.

11.59 The probe layout and the maximum tolerable wind conditions for each receptor are shown in Figure 11.2 to Figure 11.6 below.

11.60 Each figure includes the locations, ID's and chosen target conditions of ground level receptors for the respective configuration.

11.61 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.

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 seating in parks)	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 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)

Receptor Type (Season)	Receptor Reference
On-site	
Outdoor café / permanent long-term sitting spaces	None
Main entrances	51, 56, 58, 59, 66, 68, 189-191, 207, 209, 211, 212
Public outdoor recreational spaces (including possible seating around landscaping mounded over 1m)	53, 55, 57, 90-94, 96, 99, 124, 140, 141, 147, 152, 154-156, 158, 163, 168, 174, 175, 178-181, 186, 192, 195
All other areas regularly used by the general public and cyclists for access	46-47, 49-50, 52, 67, 70-72, 74, 77, 87, 100-102, 108-111, 121-122, 125-127, 129, 144, 148, 153, 157, 158, 164-165, 171-177, 182, 184-185, 187-188, 193-194, 197, 208, 210, 213
Upper-level Terraces	214-219, 221-225
Areas for Occasional or Maintenance Access	220
Off-site	
Outdoor café / permanent long-term sitting spaces	107
Main entrances *	20, 28, 43, 48, 98, 103, 105
Public outdoor recreational spaces (including bus stops)	25, 30, 183
All other areas regularly used by the general public and cyclists for access	1-19, 21-24, 26-27, 29, 31-42, 44-45, 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

[5] *BLAC-FAP-ZZ-00-DR-AR-010004-PL*

Figure 11.2 Configuration 1: Existing Baseline – Ground Level Probe Layout and the Maximum Tolerable Wind Conditions (Worst-Case, Winter)

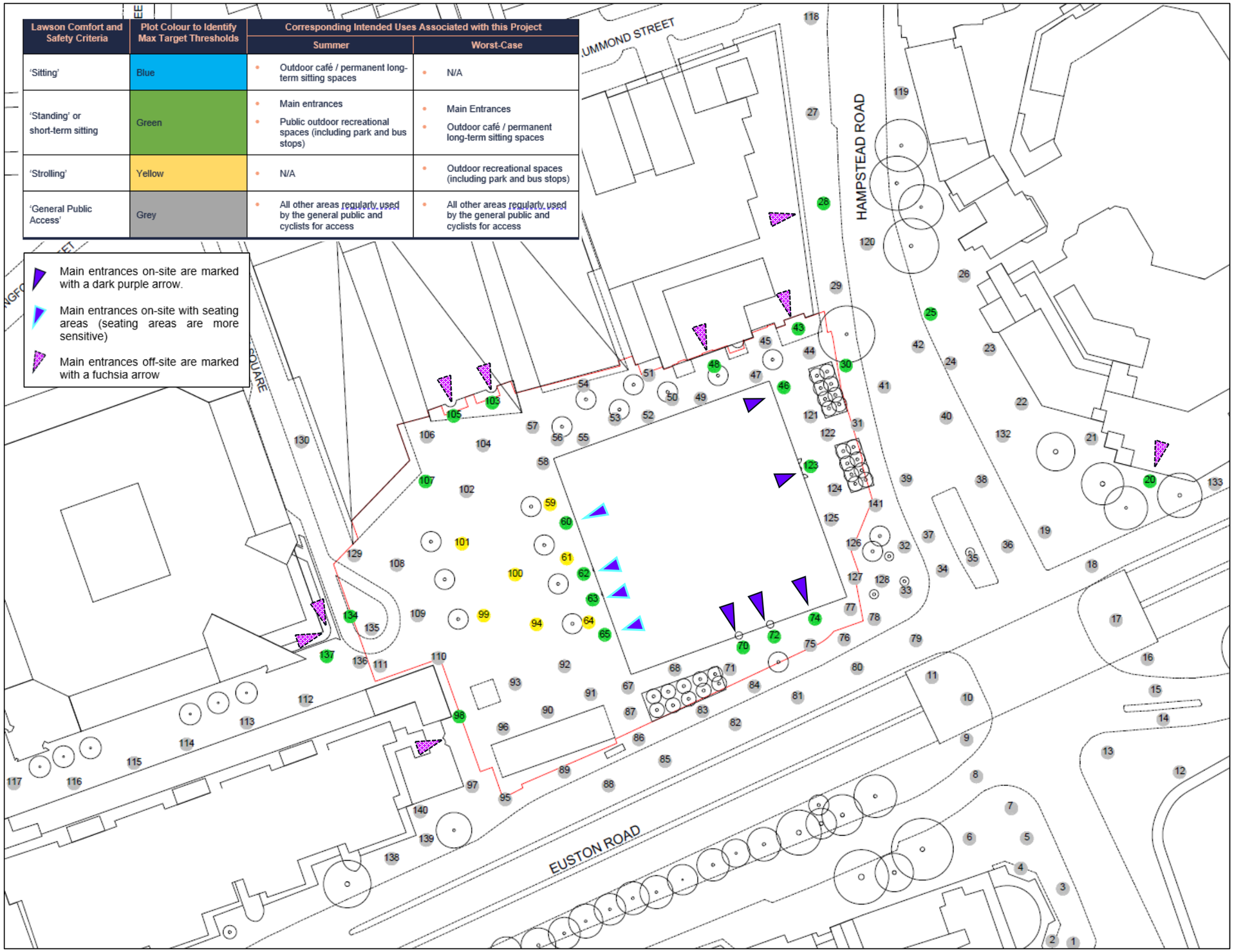
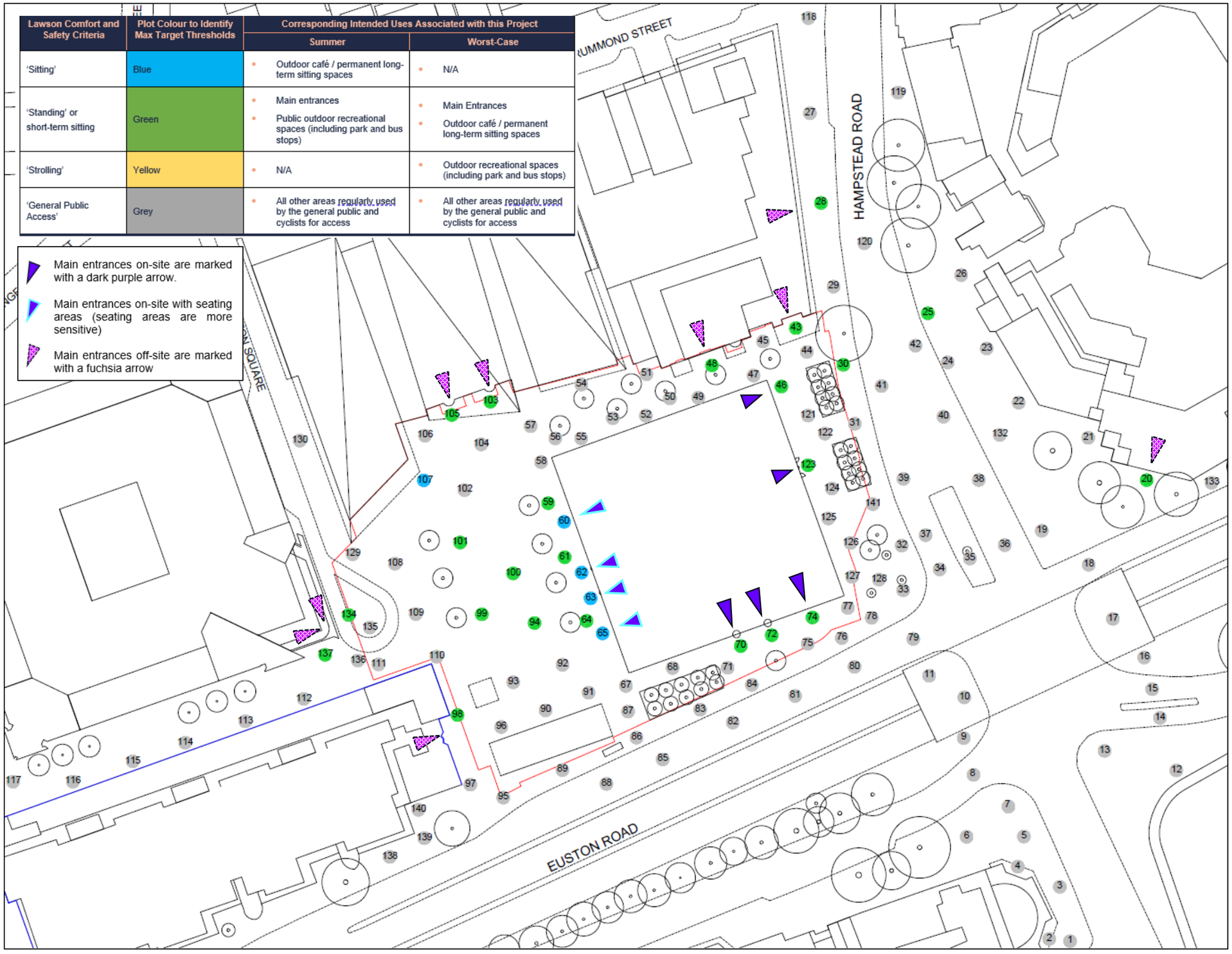


Figure 11.3 Configuration 1: Existing Baseline – Ground Level Probe Layout and the Maximum Tolerable Wind Conditions (Summer)



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

Figure 11.4 Ground Floor Plan of the Amended Proposed Development Showing the Locations of Entrances.

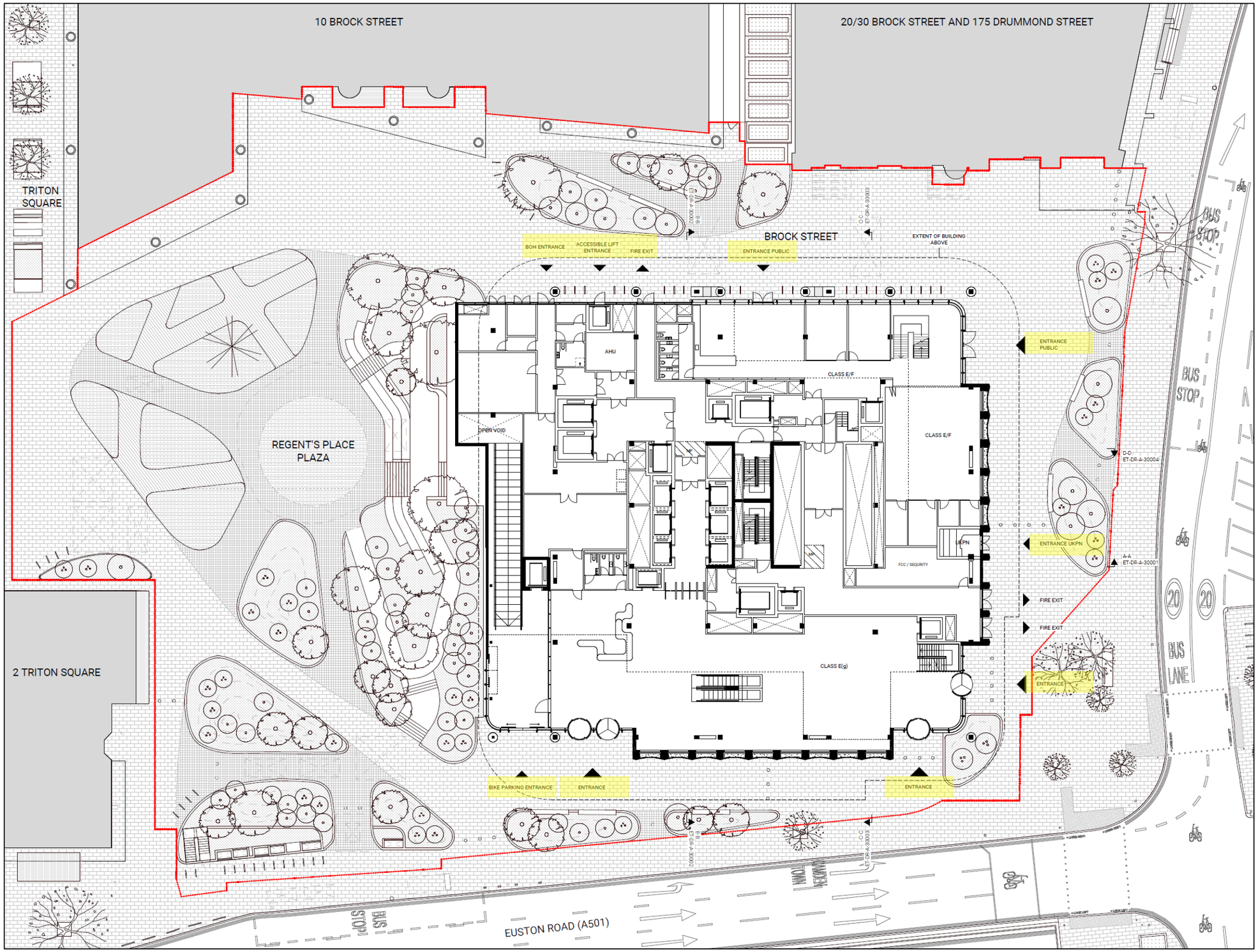


Figure 11.5 Configuration 4: Amended Proposed Development Ground Level Probe Layout and the Maximum Tolerable Wind Thresholds (Worst-Case, Winter)

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

Note:
With the proposed scheme in place, the probe locations from the baseline have been rearranged and the number has increased. This includes more detail around entrances, corners or thoroughfares of interest.

Main entrances on-site are marked with a dark purple arrow.

Main entrances off-site are marked with a fuchsia arrow

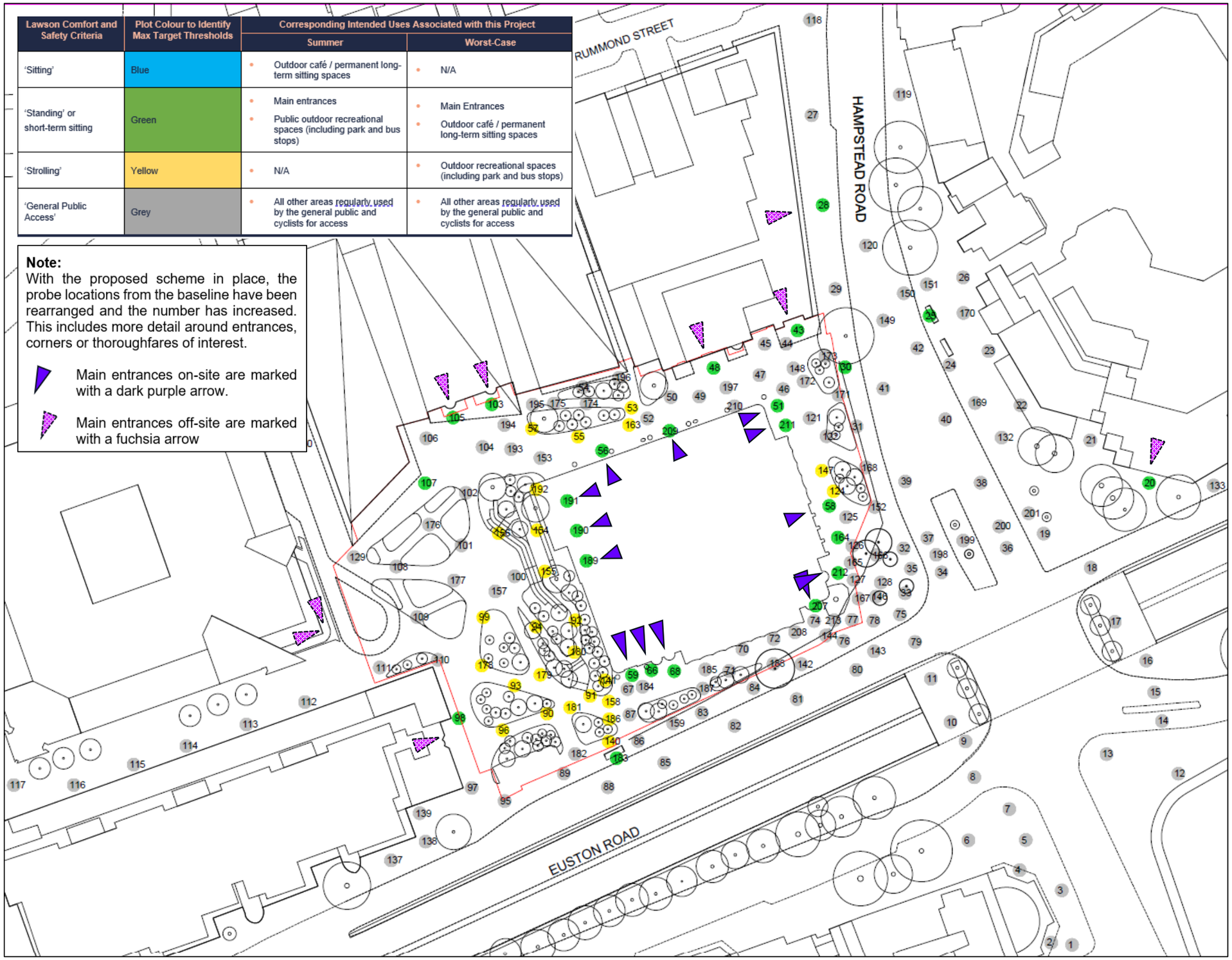
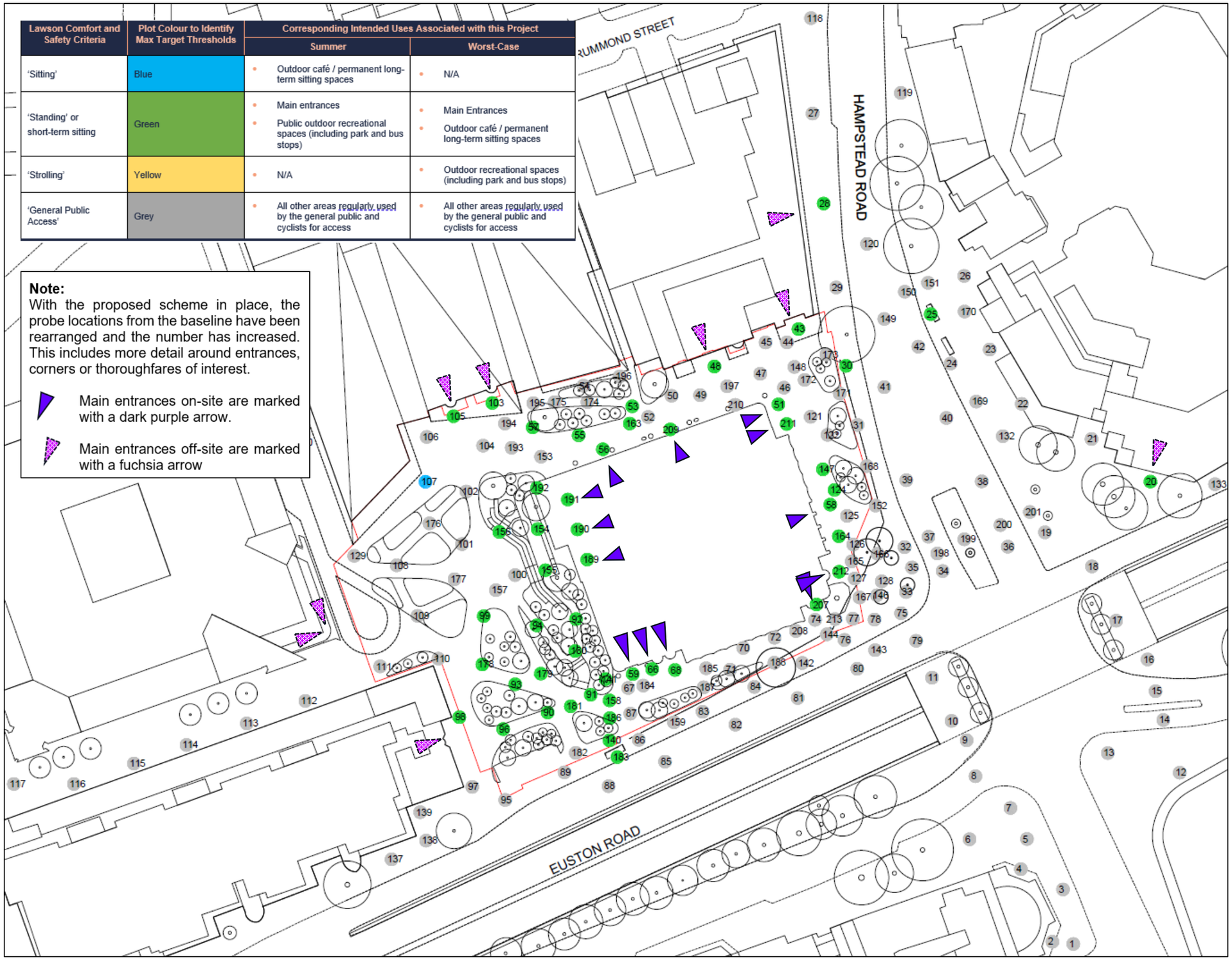


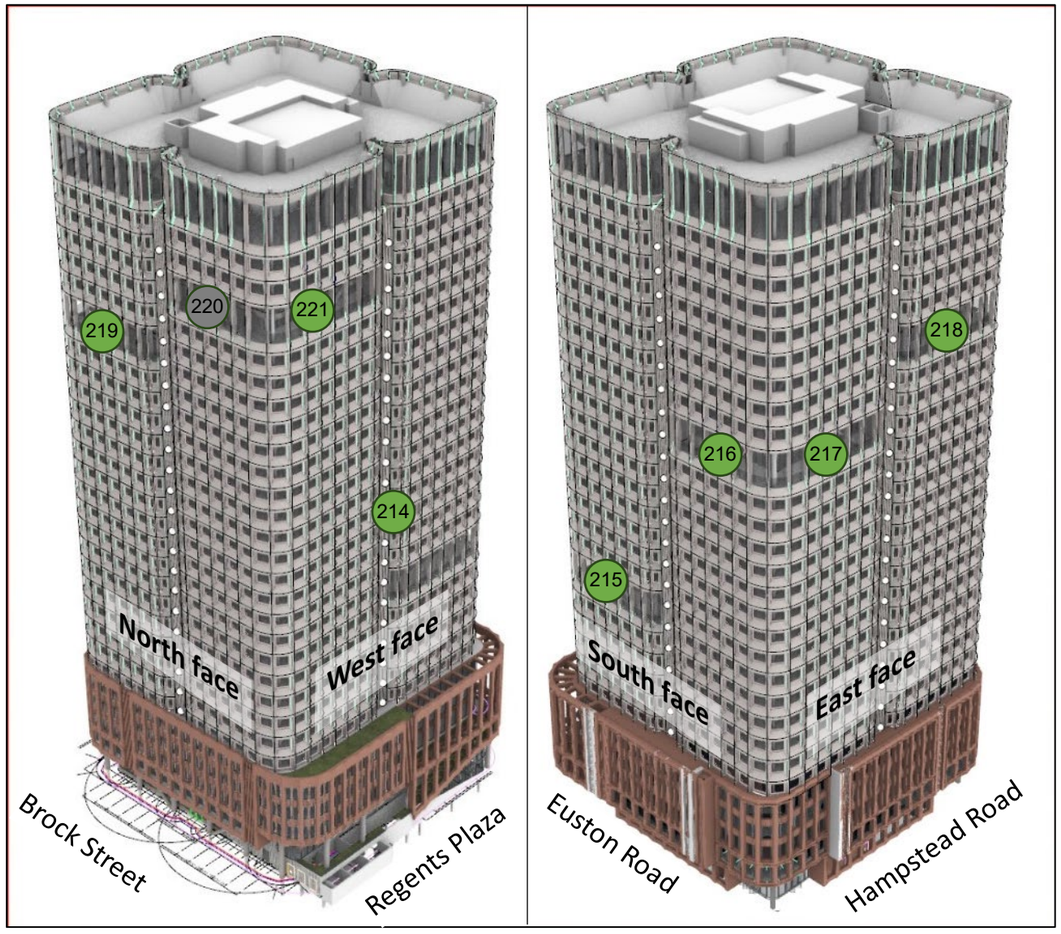
Figure 11.6 Configuration 4: Amended Proposed Development Ground Level Probe Layout and the Maximum Tolerable Wind Thresholds (Summer)



On-Site Balconies and Terraces

11.62 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 Configuration 4: Probe Locations and Maximum Tolerable Wind Thresholds (Summer only)



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

11.63 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 Amended Proposed Development.

11.64 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 shows tall porous screen elements between terraces on units along Hampstead Road, alongside solid balustrades.

11.65 Given how sheltered these locations are, there were physical limitations when trying to representatively model and instrument the spaces in the scaled 1:300 wind tunnel model. It was ultimately concluded that the spaces should be assessed qualitatively using professional judgment, as Arup has experience with wind conditions in the area, including the design of several local mitigation features.

11.66 The balconies identified all included high solid balustrades along the edges. Some, such as those in Tolmer's Square, were also recessed, leaving only one side of an enclosed space open for air to move in and out. Additional large porous fins are installed between balconies along Hampstead Road, providing more than enough shelter to users. Balustrades on 175 Drummond Street are above the height of the handrail, suggesting they are 'chest height' and would provide adequate shelter to users, especially when sitting.

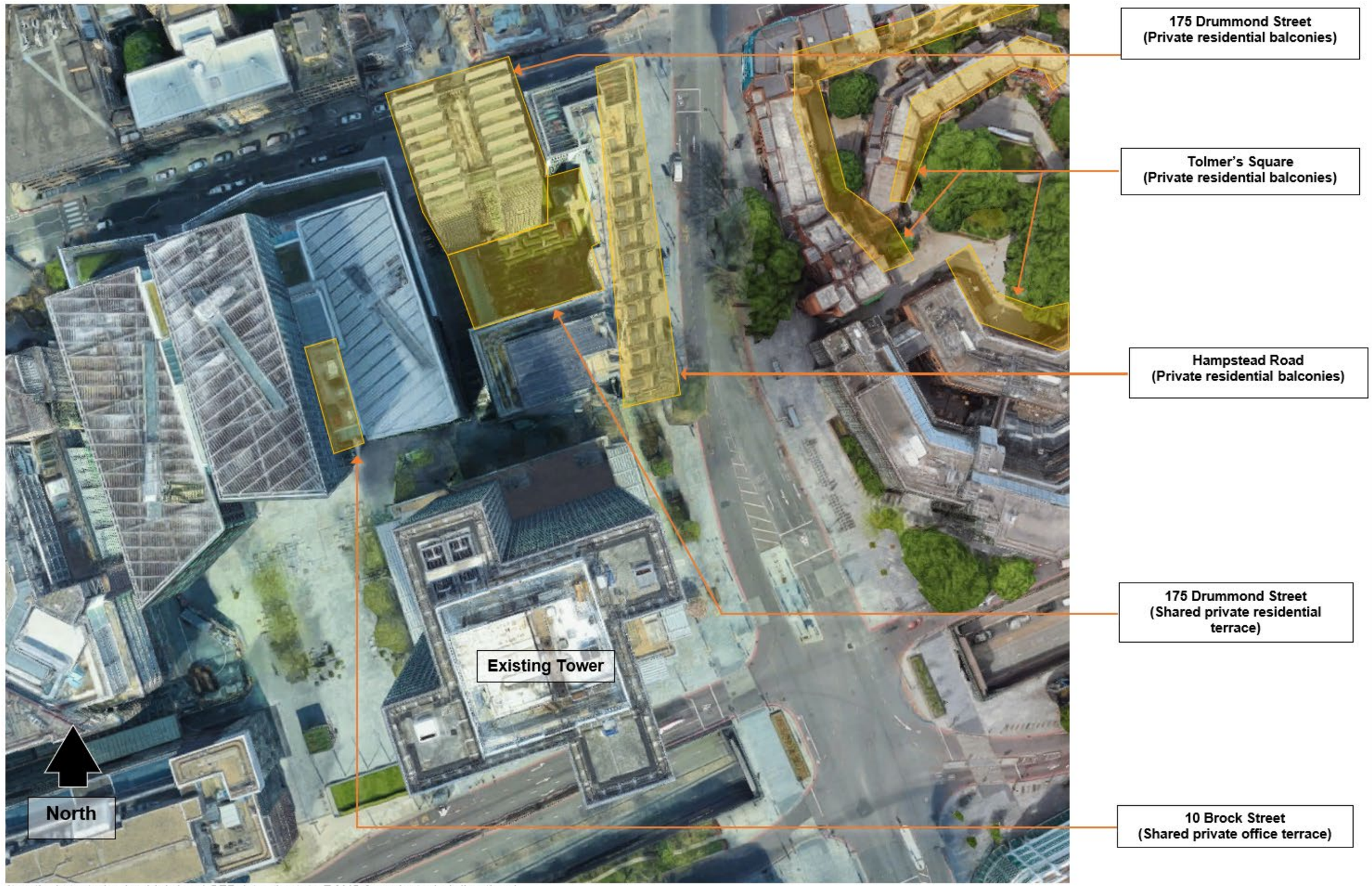
11.67 Balconies with such high levels of mitigation / sheltering are expected to experience acceptably calm wind conditions such as 'Sitting' to 'Standing' in summer and are not expected to be adversely affected by any changes created by the presence of the Amended Proposed Development. No adverse effects are expected on the surrounding elevated levels.

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

11.68 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 Transport for London (TfL) trees) is shown in Figure 11.12.

11.69 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.

11.70 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).

11.71 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

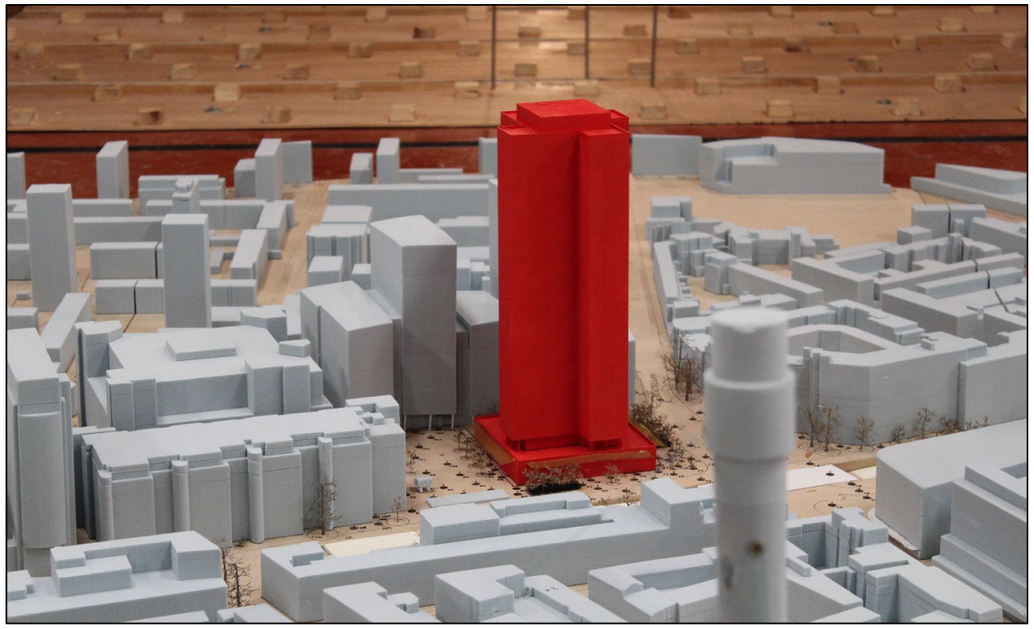


Figure 11.14 Configuration 1: Existing Baseline (Maximum Target Thresholds, Worst-Case (Winter))

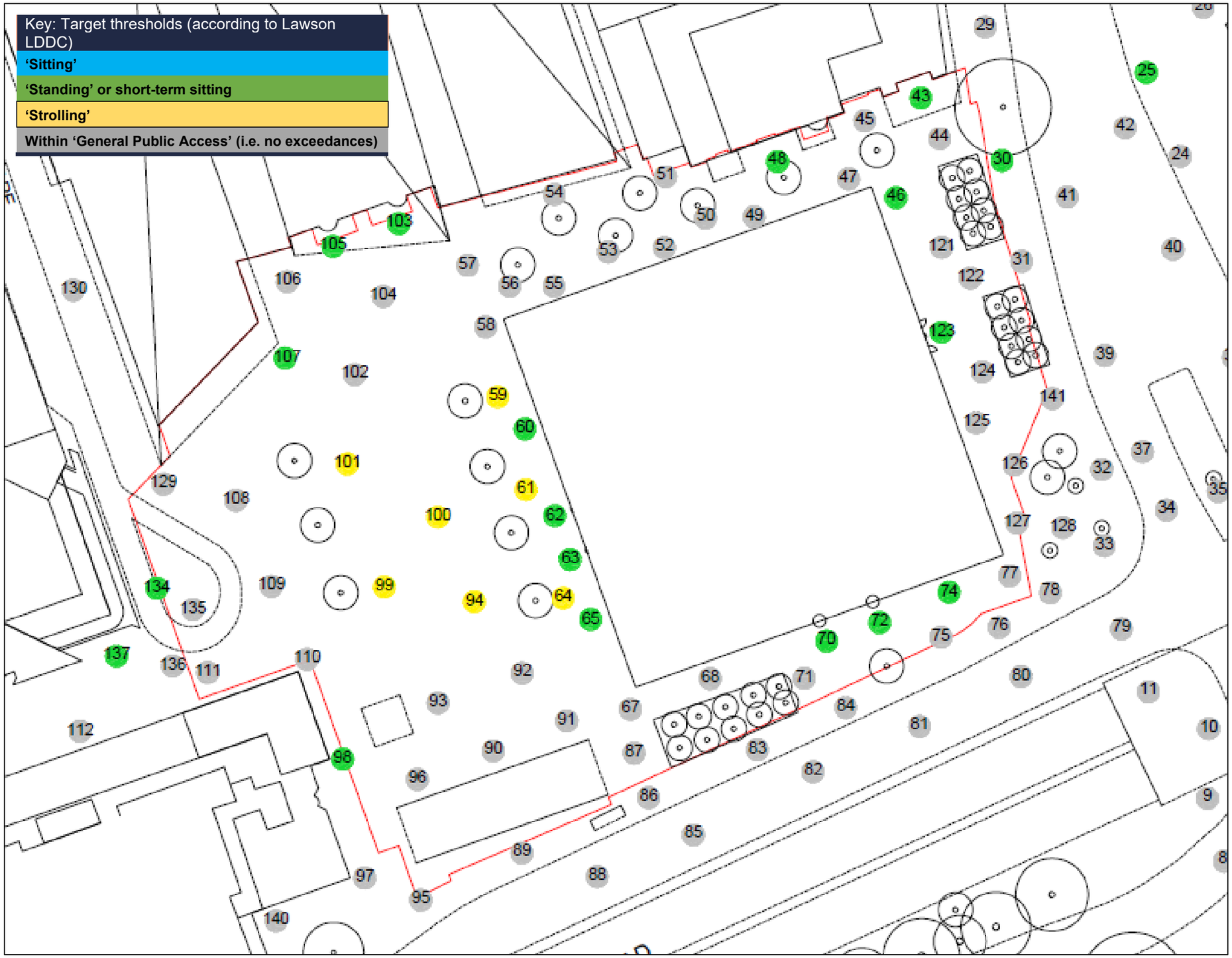


Figure 11.15 Configuration 1: Existing Baseline (Maximum Target Thresholds, Summer)

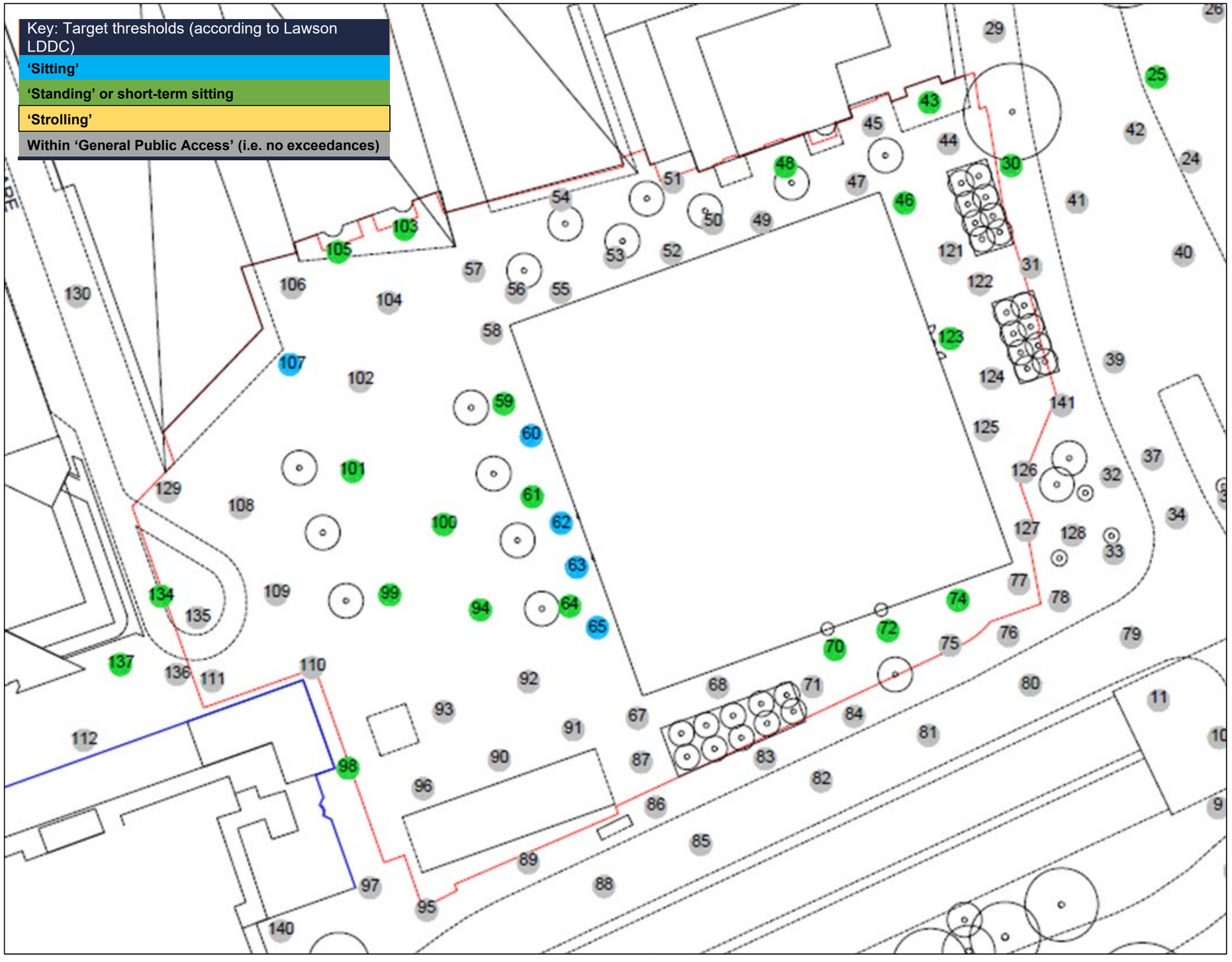


Figure 11.16 Configuration 1: Existing Baseline (Worst-Case) Wind Tunnel Results

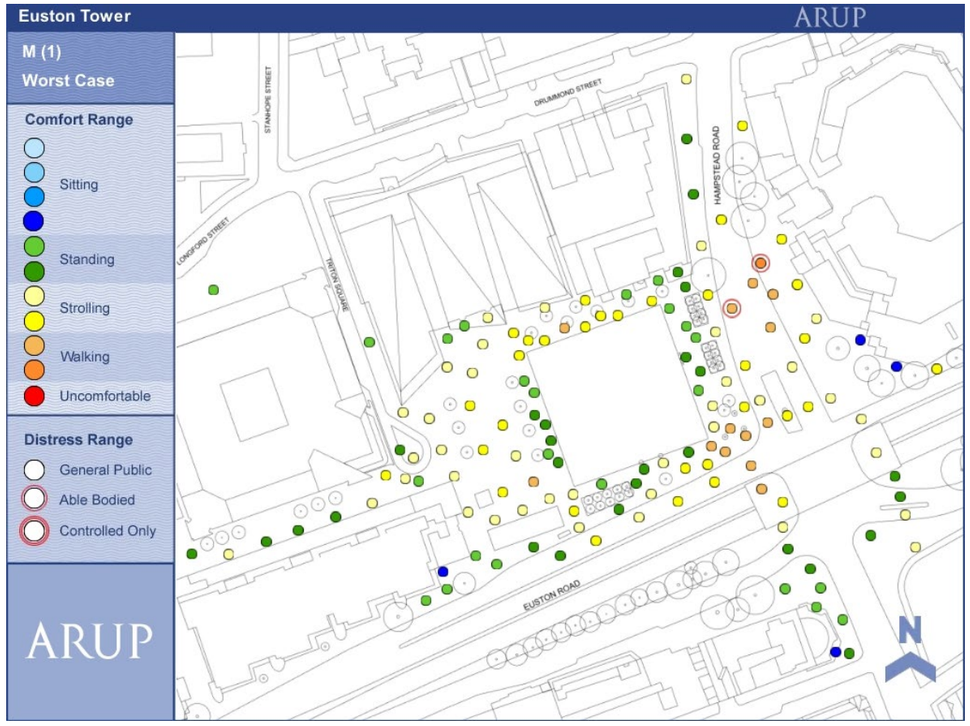
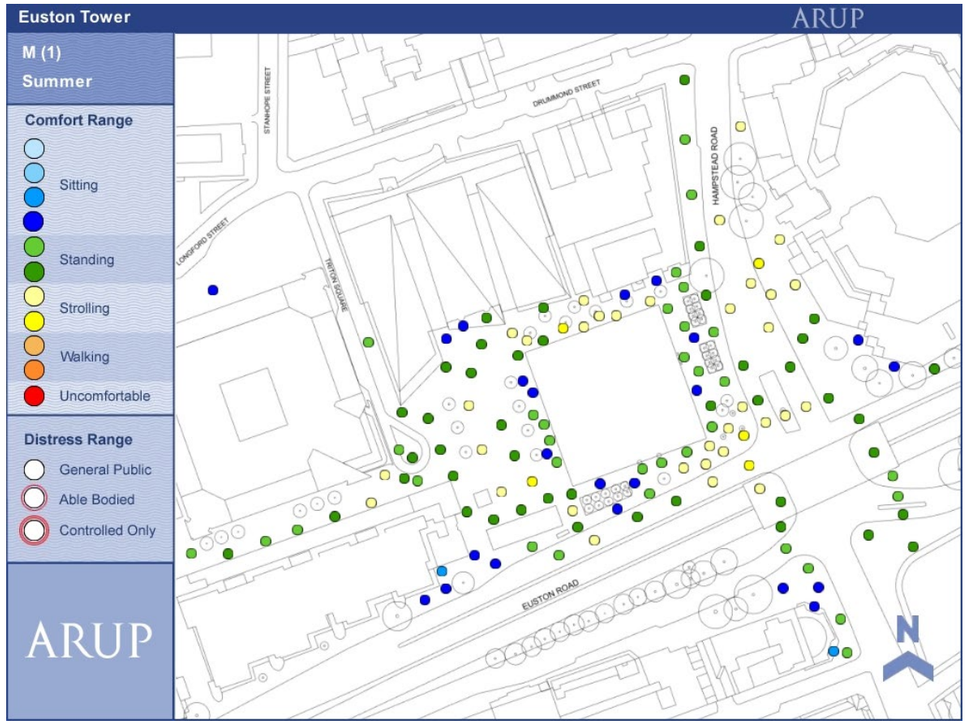


Figure 11.17 Configuration 1: Existing Baseline (Summer) Wind Tunnel Results



On-Site Receptors

11.72 Figure 11.16 and Figure 11.17 show the results of Configuration 1: Exiting Baseline. 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)

11.73 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).

11.74 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

11.75 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.

11.76 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

11.77 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.

11.78 All other on-site recreational locations also located within Regent's Place Plaza record acceptable 'Standing' conditions in the summer.

11.79 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

11.80 All on-site locations for general public access and cycling record acceptable 'Standing' to 'Business Walking' conditions all year round.

11.81 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

11.82 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

11.83 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.

11.84 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

11.85 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.

11.86 All other off-site entrance locations record acceptable 'Sitting' to 'Standing' conditions all year round.

Outdoor Recreational Spaces and Bus Stops – Probes 25, 30

11.87 No existing recreational spaces were identified the existing off-site surroundings.

11.88 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.

11.89 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

11.90 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.

11.91 All other off-site locations for general public access and cycling record acceptable conditions all year round.

Areas for Occasional or Maintenance Access

11.92 No obvious areas of occasional access or maintenance were found in the baseline surroundings.

POTENTIAL EFFECTS

11.93 This section presents the impact assessment once the (Amended) Proposed Development is complete and in use.

Embedded Mitigation

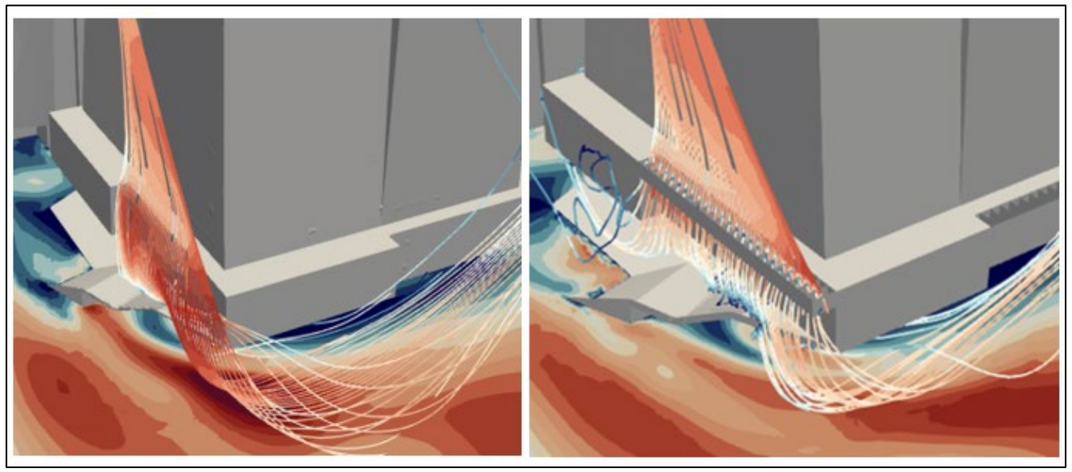
11.94 The configurations tested of both the Proposed Development (as assessed within the December 2023 ES) and Amended Proposed Development include existing off-site landscaping (including elements of existing TfL landscaping) as these elements were found to have an impact on the local wind conditions.

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

- Wide podium (to disrupt downdrafting);
- Porous fin arrays through the podium at the south-west corners (to create an intentional 'air-curtain that disrupts direct ground-level accelerations); and
- Recessing main entrances facing Euston Road (to create local shelter).

11.96 The architectural embedded mitigation features mentioned above were iteratively tested using high-level CFD (steady state RANS for select wind directions) throughout the early design stages and confirmed with boundary layer wind tunnel testing for planning. Examples of the CFD outputs and design iterations are shown in Figure 11.18 below. The final design was tested on 28 November 2024 and the results are discussed in the following sections.

Figure 11.18 3D Visualisation of Early CFD Analysis of the Proposed Development



11.97 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.

11.98 Additional embedded mitigation adopted in the Amended Proposed Development includes:

- Curved tower corners (to reduce downdraft and keep strong winds close to the upper tower and south-east podium).
- Raised planter around the south-east corner (see 11.120 - 11.146 for details and images).

Testing of the December 2023 Proposed Development

11.99 The Proposed Development (as assessed within the December 2023 ES) has now been superseded by Configuration 4a, 4b, and 4c. However, this section contains the results of the superseded tests and findings of the December 2023 ES for reference.

Table 11.10 Introduced Receptors Associated with the Superseded Development (Configuration 2 , 3a and 3b)

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
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

Configuration 2: Proposed Development Without Landscaping

11.100 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 11.22.

11.101 The Proposed Development included a 32-storey tower on top of a podium and associated public realm works. The external uses included 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.

11.102 A plan view of the Proposed Development, embedded mitigation and entrance locations are shown in Figure 11.19 below.

11.103 In this configuration, several receptors on and off-site recorded Moderate Adverse (**significant**) effects:

On-Site:

- 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.
- 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.
- Three probes in Brock Street (north side of the site) record conditions above the Lawson safety threshold for General Public Access (probes 55, 174, 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.
- 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.
- 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.

Off-site:

- 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.
- 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.

11.104 All other receptors for Permanent Outdoor Café and Long-Term Sitting Spaces, Main Entrances, Outdoor Recreational Spaces and Bus Stops, Areas for General Public Access and Cycling, and Areas for Occasional or Maintenance Access both on-site and off-site recorded Negligible (not significant) effects.

Figure 11.19 Ground Floor of the Proposed Development

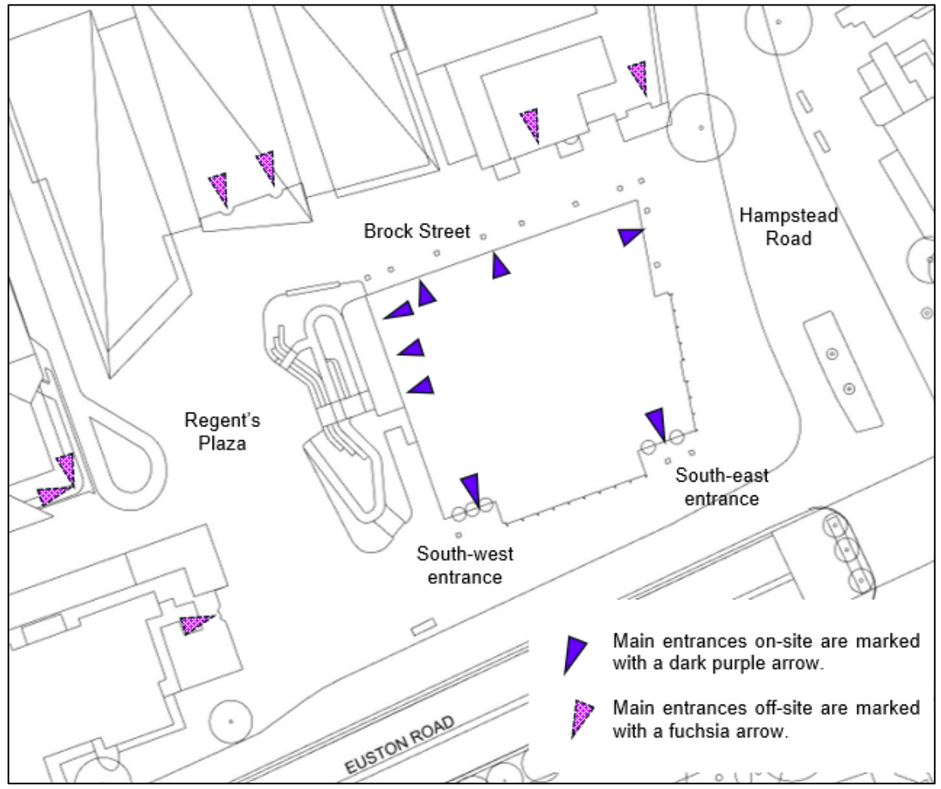


Figure 11.20 Configuration 2: Proposed Development Without Landscaping

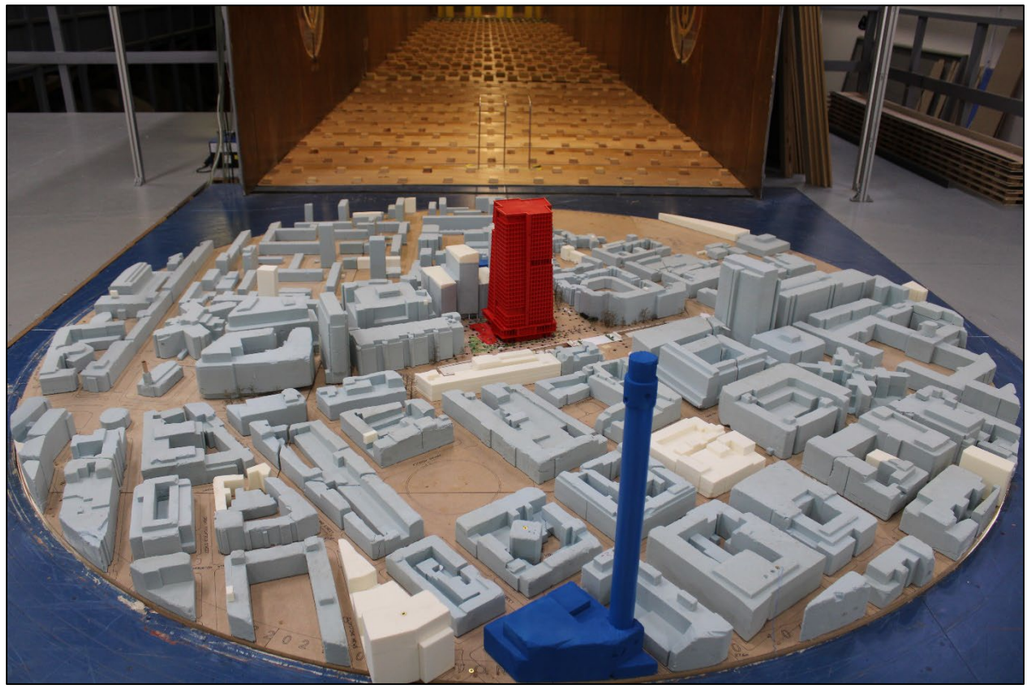


Figure 11.21 Configuration 2: Proposed Development Without Landscaping (Worst-Case)

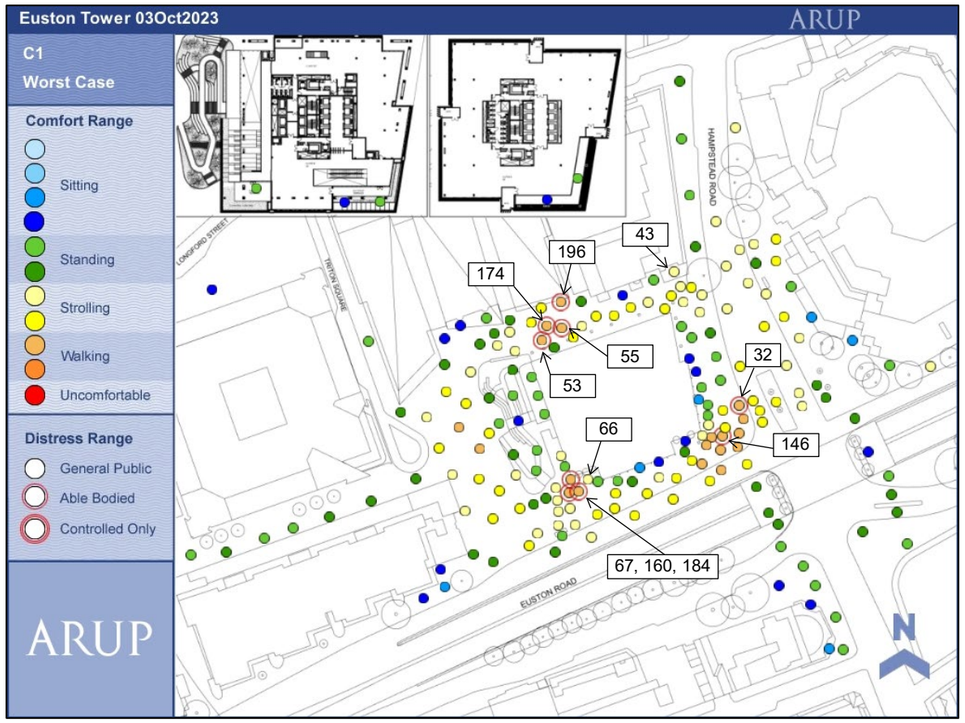
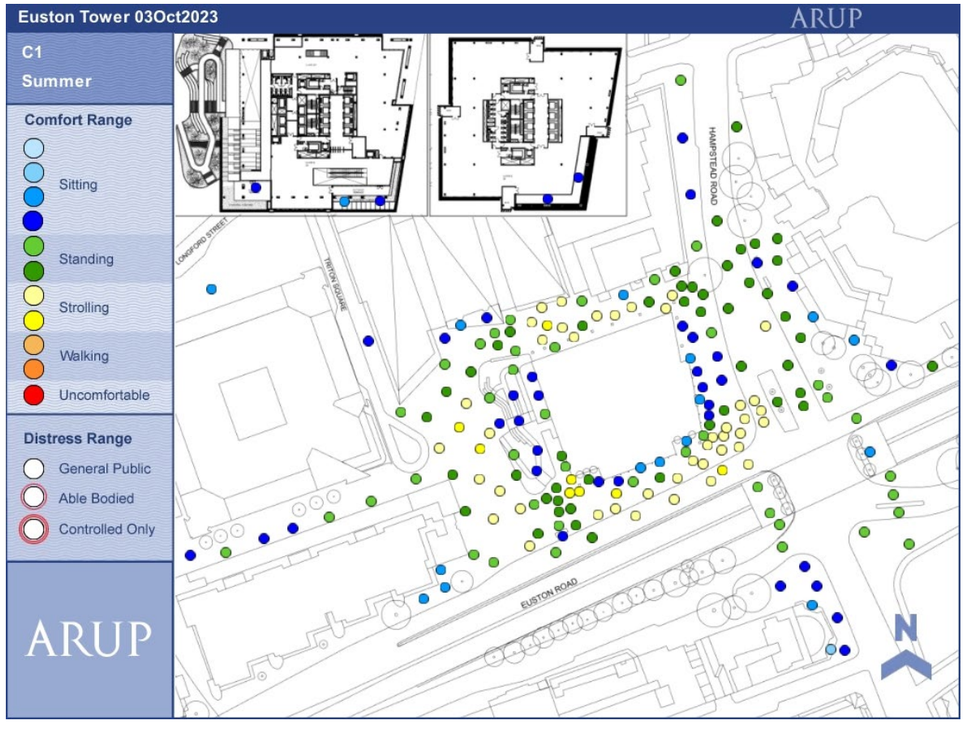


Figure 11.22 Configuration 2: Proposed Development Without Landscaping (Summer)



Configuration 3a: Proposed Development with Landscaping and Initial Mitigation

11.105 Photos of the scale model tested in the wind tunnel for Configuration 3a: Proposed Development with Landscaping and initial mitigation is shown in Figure 11.23 and a plot of the wind conditions at ground level are shown in Figure 11.25 to Figure 11.26.

11.106 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 11.24.

- 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.

11.107 With landscaping, all receptors except one recorded acceptable conditions for their proposed uses. These represent a direct, permanent, long-term Negligible (not significant) effect.

11.108 The one receptor at the accessible lift access on the west side of Brock Street (Probe 56) recorded ‘Strolling’ in the worst-case, which is one category above the required range for entrances. This represented a direct, permanent, long-term Moderate Adverse (**significant**) effect.

11.109 However, using professional judgment, it was determined that conditions at this access point could be mitigated with local landscaping/sheltering. A totem/screen was therefore placed immediately west of the entrance within the design (solid to 50% porous). The implementation of any of this mitigation was expected to result in a direct, permanent, long-term Negligible (not significant) effect at the entrance.

11.110 Note, some updates to the landscaping took place after the wind tunnel testing on the 14 November 2023, 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 11.23 Photos of the Model Used in the Wind Tunnel for Configuration 3a: Proposed Development with Landscaping and Initial Mitigation Model

Figure 11.24 Proposed Development with Landscaping and Initial Mitigation

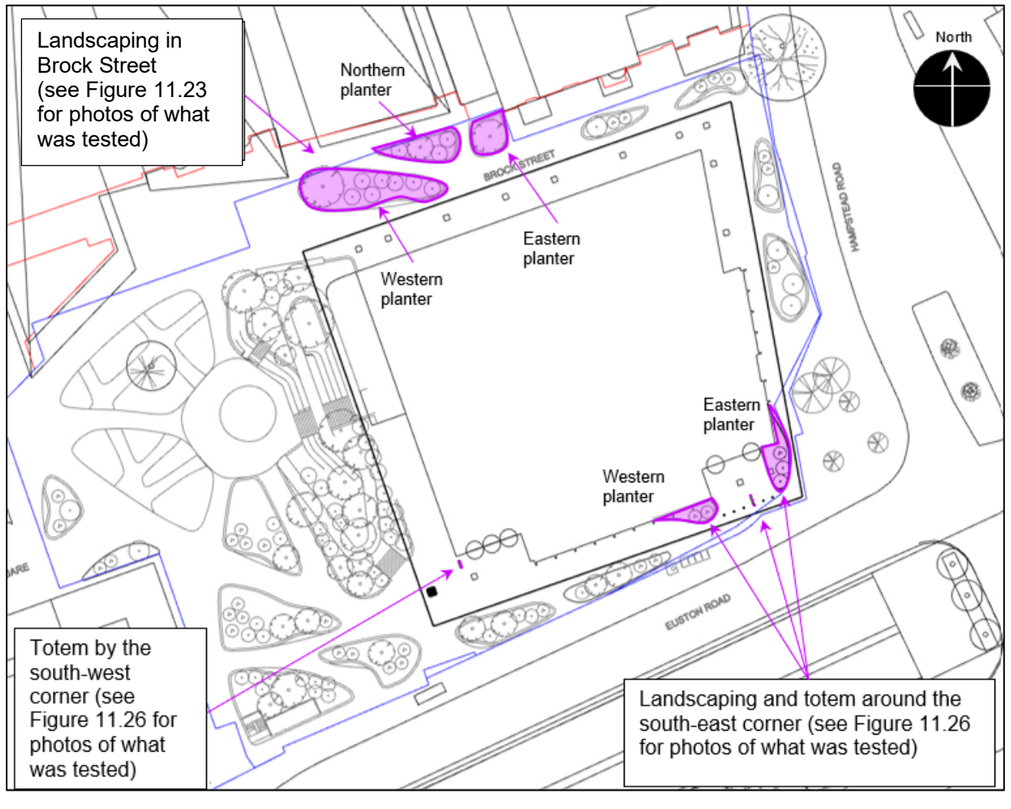


Figure 11.25 Configuration 3a: Proposed Development with Landscaping and Initial Mitigation Measures (Worst-Case)

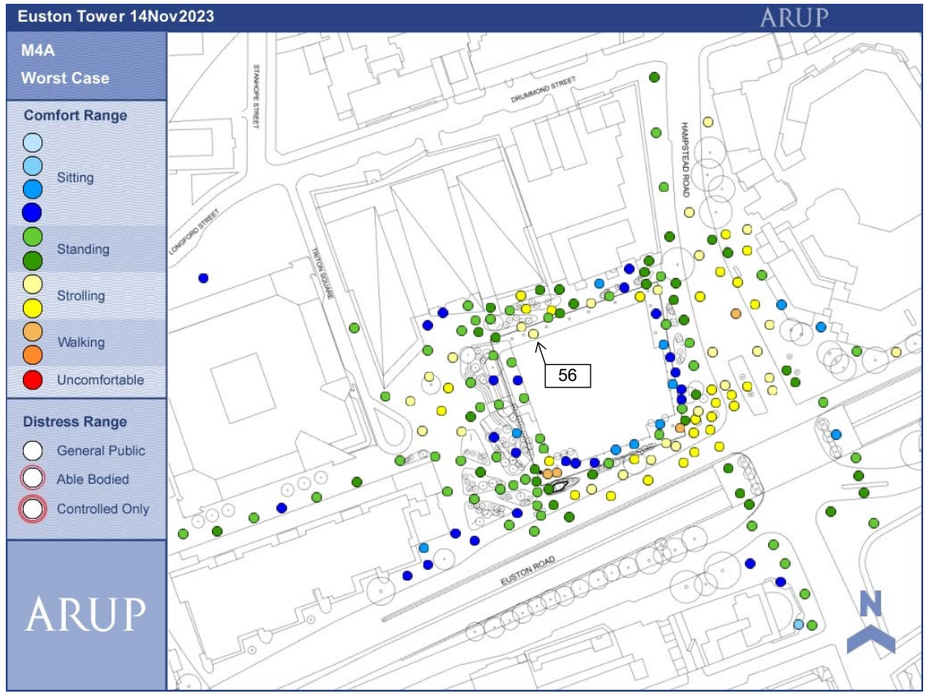
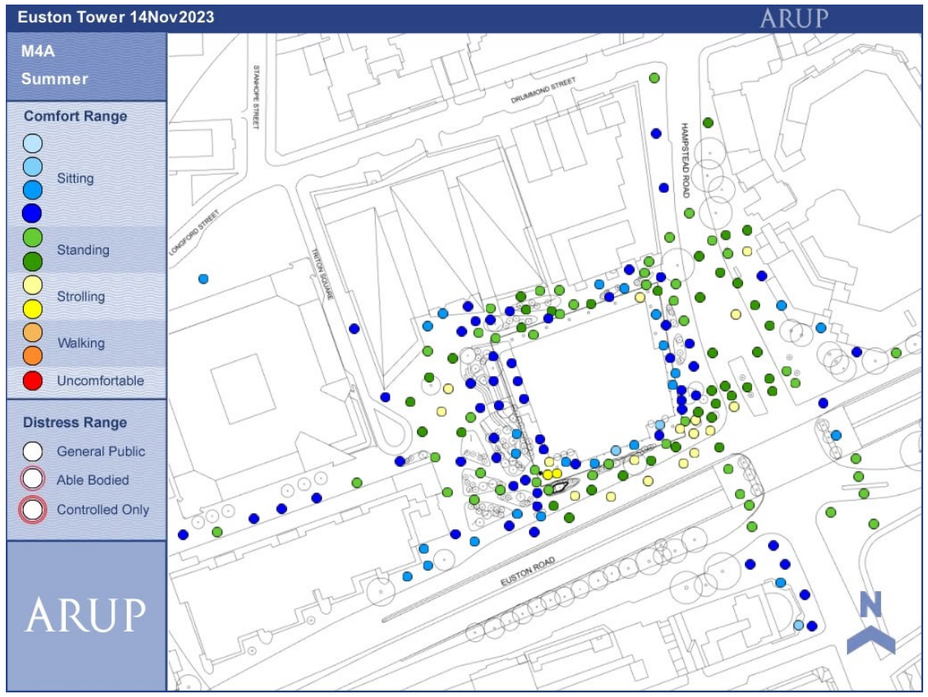


Figure 11.26 Configuration 3a: Proposed Development with Landscaping and Initial Mitigation Measures (Summer)



Configuration 3b: Proposed Development with Landscaping and Updated Wind Mitigation

11.111 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 carried out during the wind tunnel workshop day.

11.112 A plan view of the Proposed Development, proposed landscaping, and updated mitigation are shown in Figure 11.27 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.

11.113 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.

11.114 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.

11.115 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.

11.116 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 11.29 and a plot of the worst-case wind conditions at ground level are shown in Figure 11.30.

11.117 Configuration 3b includes all existing off-site landscaping, including TfL landscaping at the west corner of Euston Road and Hampstead Road.

Figure 11.27 Configuration 3b: Proposed Development with Landscaping and Updated Wind Mitigation

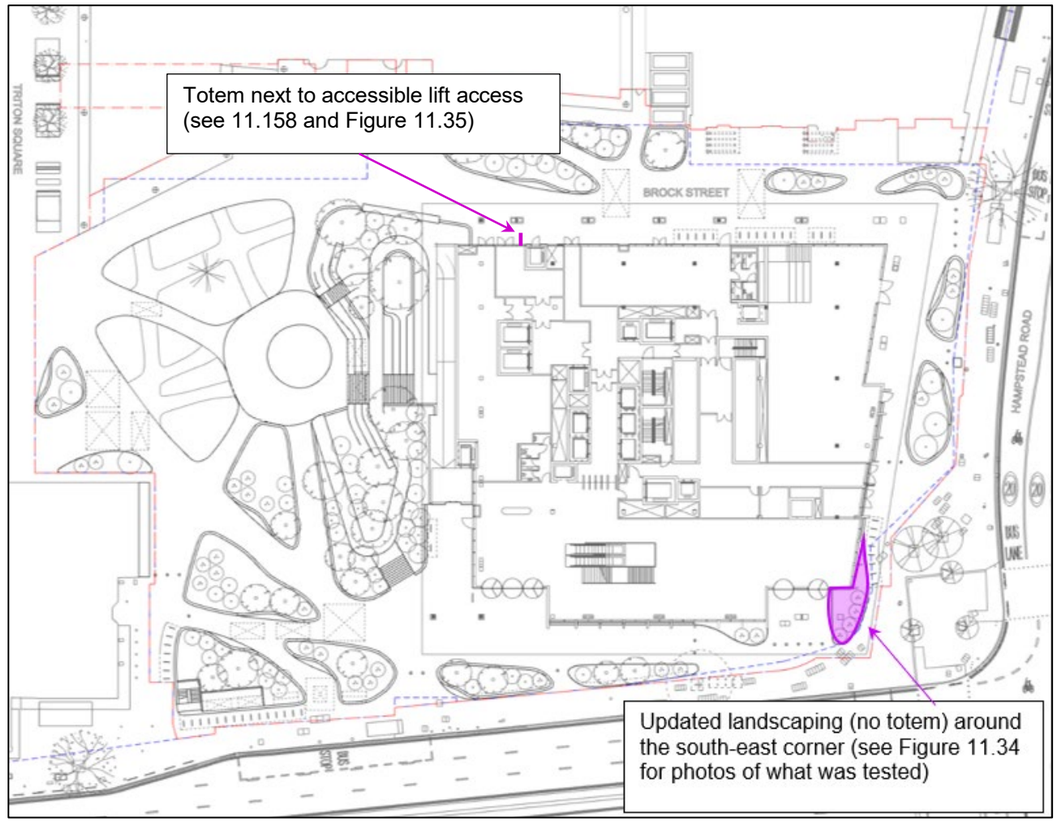


Figure 11.28 Bar Chart Highlighting Significant Wind Angles at Receptor 77 at the South-East Corner (Taken from Configuration 3a)

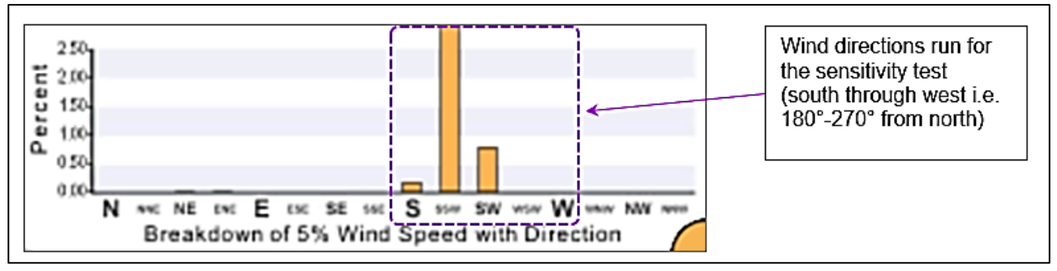


Figure 11.29 Configuration 3b: Proposed Development with Landscaping and Updated Wind Mitigation Model

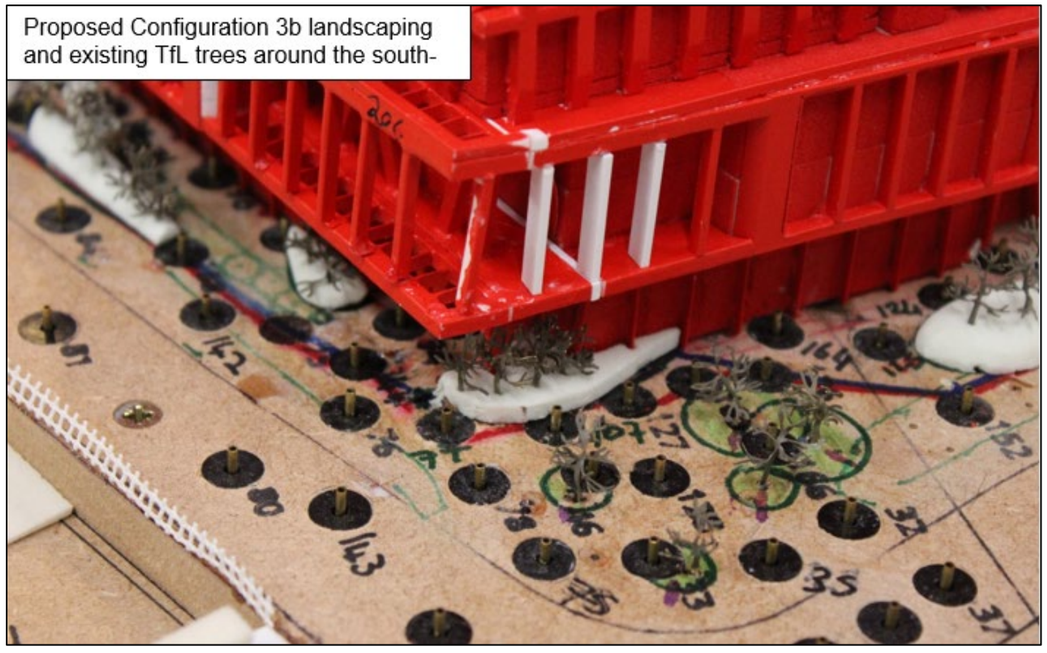
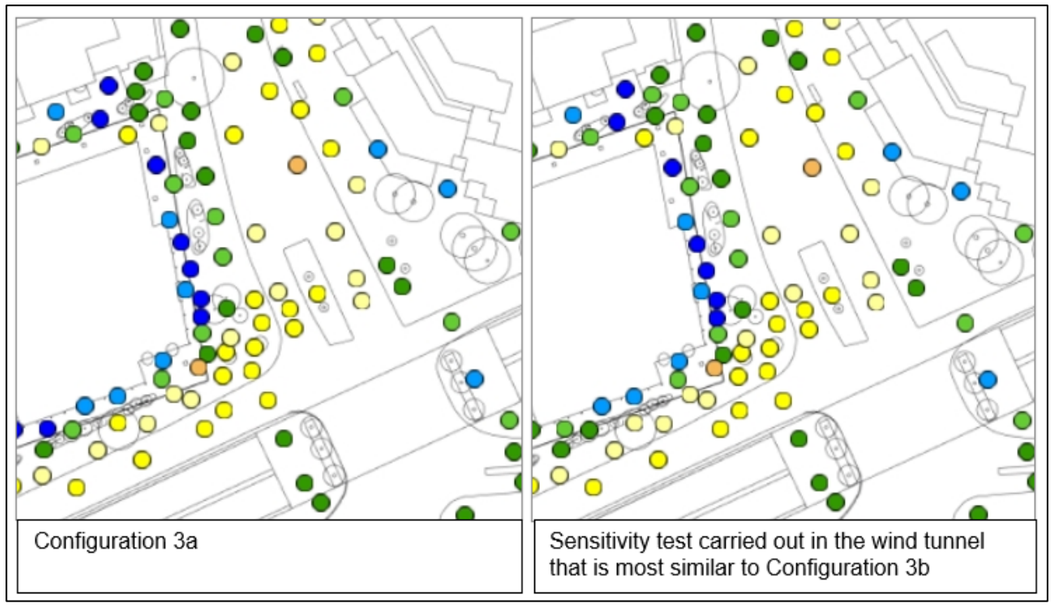


Figure 11.30 Configuration 3a and 3b Comparison (Worst-Case, Winter)



11.118 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.

11.119 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.

Configuration 4a: Amended Proposed Development with Landscaping

11.120 Configurations 2, 3a and 3b, which were presented within the December 2023 ES, have subsequently been superseded by Configuration 4a, 4b, and 4c, following the implementation of the Proposed Amendments and the findings of this assessment are discussed below.

11.121 Photos of the scale model tested in the wind tunnel for Configuration 4a: Amended Proposed Development with Landscaping are shown in Figure 11.31 and Figure 11.32 and a plot of the wind conditions at ground level are shown in Figure 11.35 to Figure 11.38.

11.122 The Amended Proposed Development includes a tower with rounded corners on top of a podium and associated public realm works. The full description of the Amended Proposed Development can be found in

ES Addendum Volume 1, Chapter 1: Introduction, Proposed Design Amendments and ES Addendum Approach. The external uses include a mix of pedestrian and cycle thoroughfares, outdoor recreational space, and entrances. Configuration 4 includes existing off-site landscaping, including landscaping included within TfL owned land at the south-east corner of Euston Road and Hampstead Road.

11.123 A plan view of the Amended Proposed Development, embedded mitigation and entrance locations are shown in Figure 11.33 below.

11.124 Configuration 4a includes all existing off-site landscaping, including TfL landscaping at the south-east corner of Euston Road and Hampstead Road. Proposed local wind mitigation measures were also included these are described in the lists below and shown in Figure 11.31 to Figure 11.36.

11.125 The list below details the key mitigation measures that have been specifically incorporated into the landscaping and should be retained to ensure a safe wind condition, it is not an exhaustive list of all landscaping tested. Details of the landscaping plan can be found the in the detailed landscaping documents submitted.

- South-east corner:
  - No. 1 raised planter (1.2m) circling the column at the south-east corner including:
    - 1m tall shrubs across the whole planter;
- South-west corner:
  - Landscaped stairs along the western façade (see Figure 11.31 and Figure 11.32);
  - No.5 planters:
    - North raised planter: mounded to 1.5m tall with No. 6 deciduous trees 3-5m tall & No. 1 evergreen tree 6m tall;
    - North-west planter: mounded to 2m tall with No. 8 deciduous trees 3-5m tall & No. 2 evergreen tree 6m tall;
    - West planter: mounded to 2m tall with No. 9 deciduous trees 3-5m tall & No. 2 evergreen tree 6m tall;
    - South-west planter: mounded to 1.5m tall with No. 3 deciduous trees 3-5m tall & No. 1 evergreen tree 6m tall; and
    - South planter: mounded to 1m tall with No. 4 deciduous trees 3-5m tall & No. 2 evergreen tree 6m tall.
- 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. 5 deciduous trees 3-5m tall & No. 1 evergreen tree 6m tall; and
    - Eastern level planter: No. 1 evergreen tree 10m tall.

11.126 An existing tree along Euston Road (highlighted in orange in Figure 11.34) was found to be beneficial to the wind conditions and should be retained or replaced if removed in order to achieve the conditions reported in this ES.

Figure 11.31 Plan of the Amended Proposed Development with Mound Heights of the Landscaping[6]

[6] *Mounds that form part of the key wind mitigation elements detailed in the text are highlighted in purple (Part of the Embedded Mitigation)*

Figure 11.32 Plan of the Tested Tree Heights in the Landscaping around the Amended Proposed Development (Part of the Embedded Mitigation)

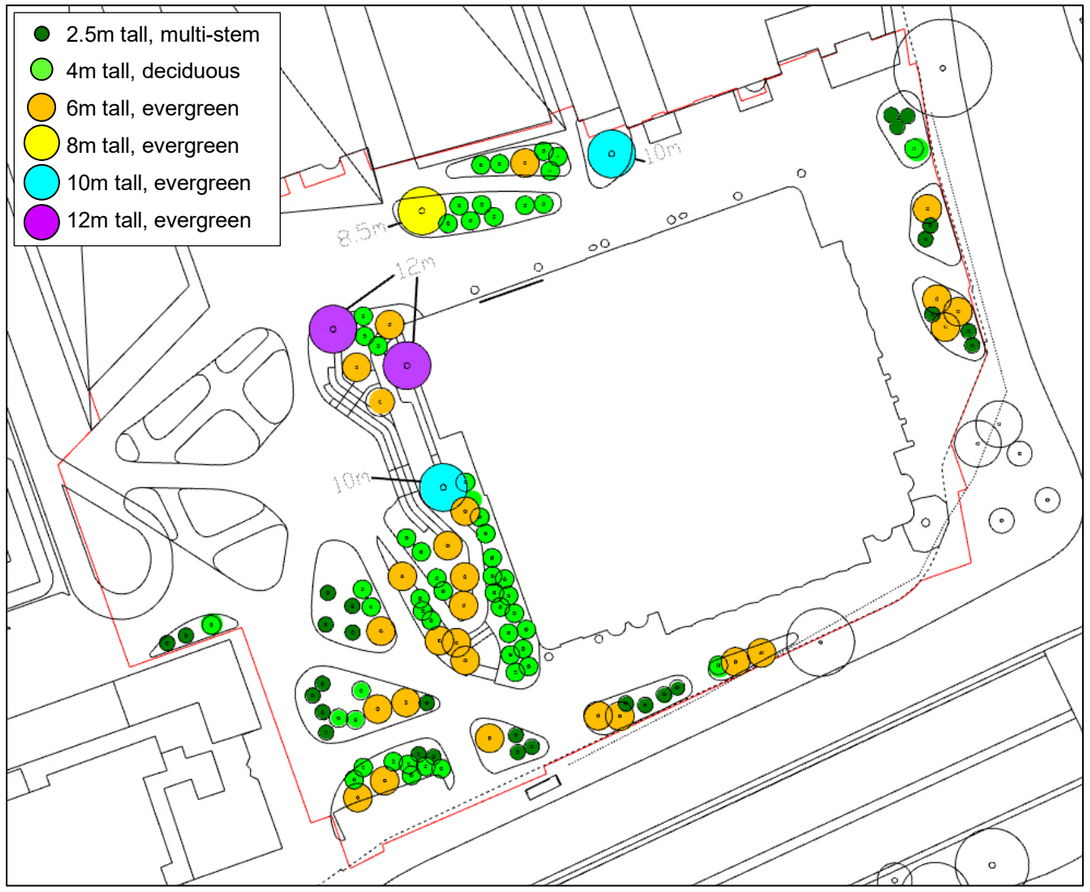


Figure 11.33 Ground Floor of the Amended Proposed Development Showing the Locations of Main Entrances.

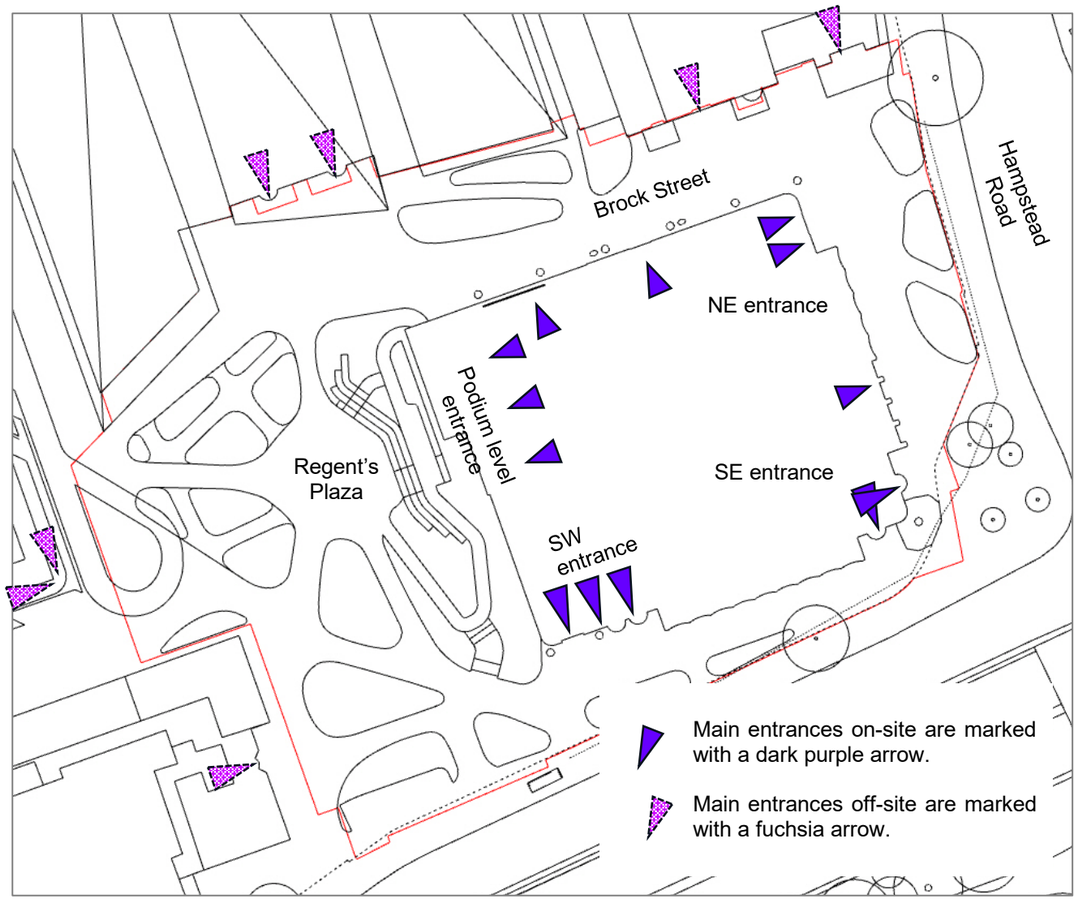
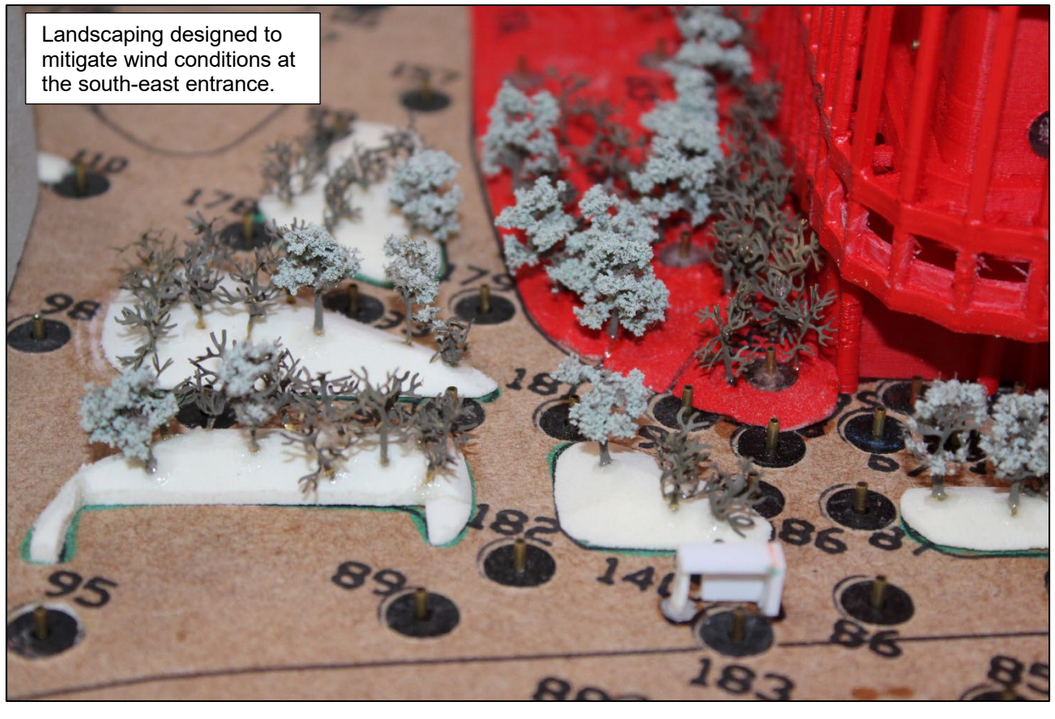
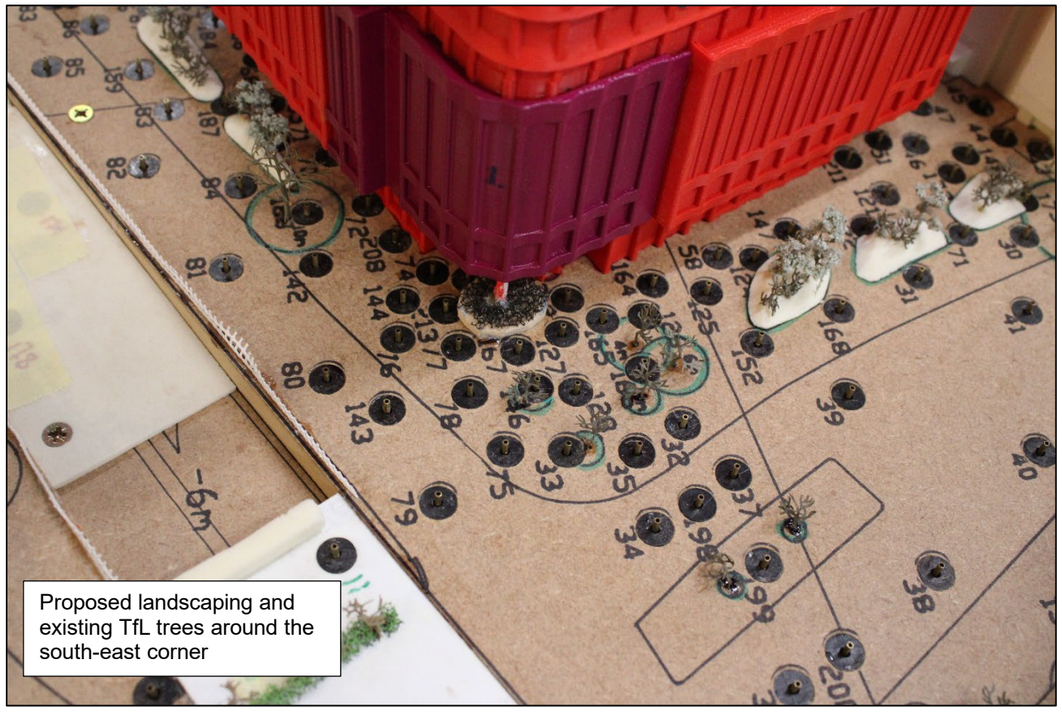


Figure 11.34 Photos of Configuration 4a: Amended Proposed Development with Landscaping and Embedded Mitigation Model




Proposed landscaping and existing TfL trees around the south-east corner

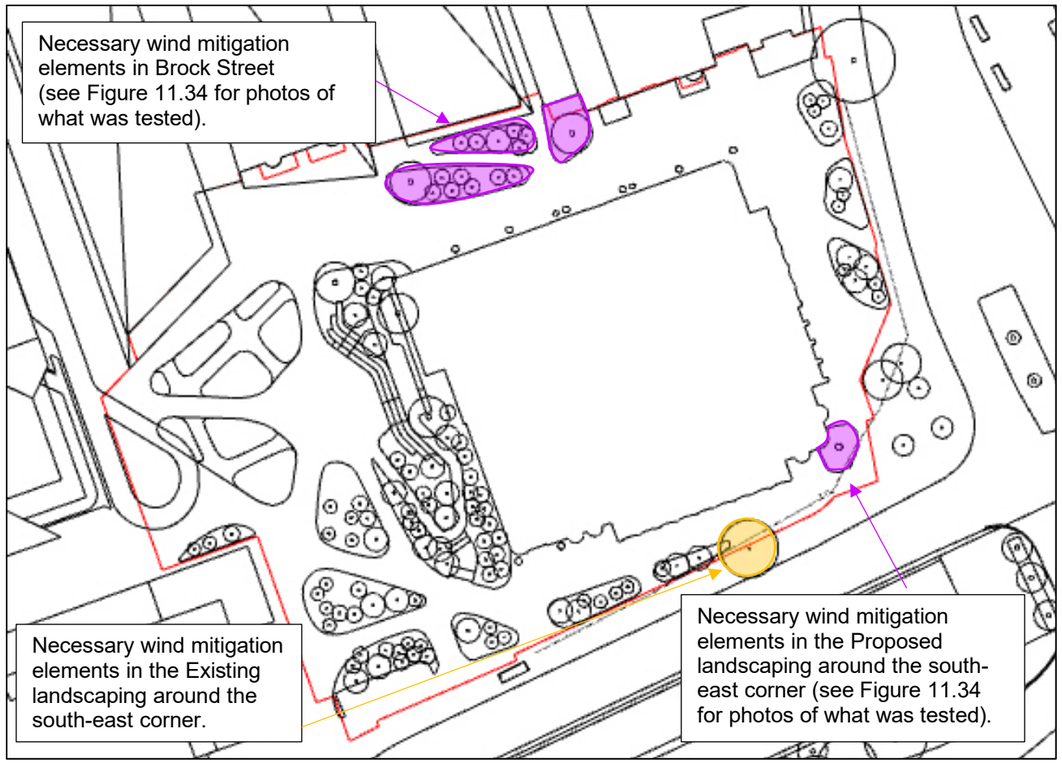

Necessary wind mitigation elements in Brock Street (see Figure 11.34 for photos of what was tested).
Necessary wind mitigation elements in the Existing landscaping around the south-east corner.
Necessary wind mitigation elements in the Proposed landscaping around the south-east corner (see Figure 11.34 for photos of what was tested).

Figure 11.35 Configuration 4a: Amended Proposed Development with Landscaping (Maximum Target Thresholds, Worst-Case (Winter))

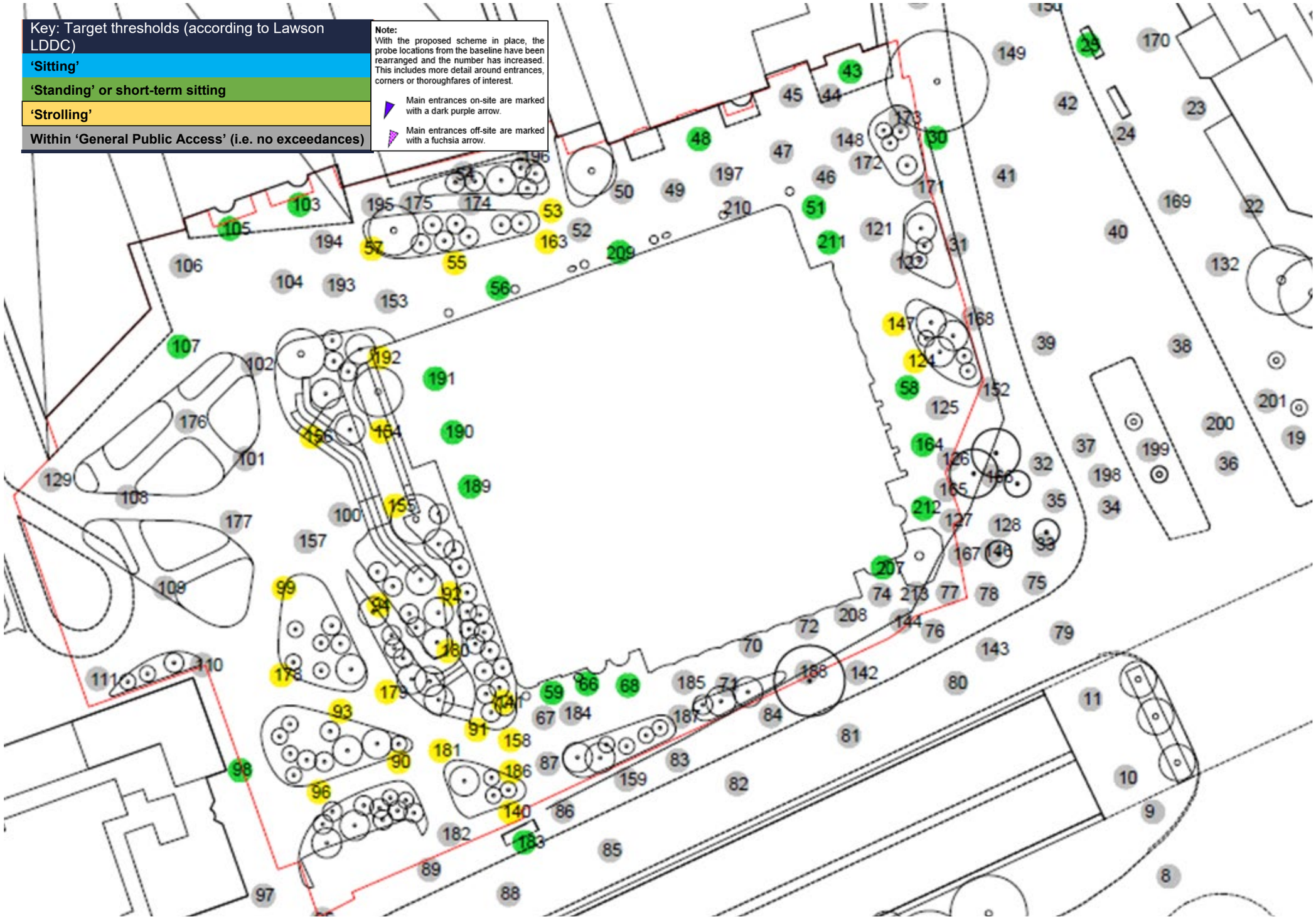


Figure 11.36 Configuration 4a: Proposed Development With Landscaping (Maximum Target Thresholds, Summer)

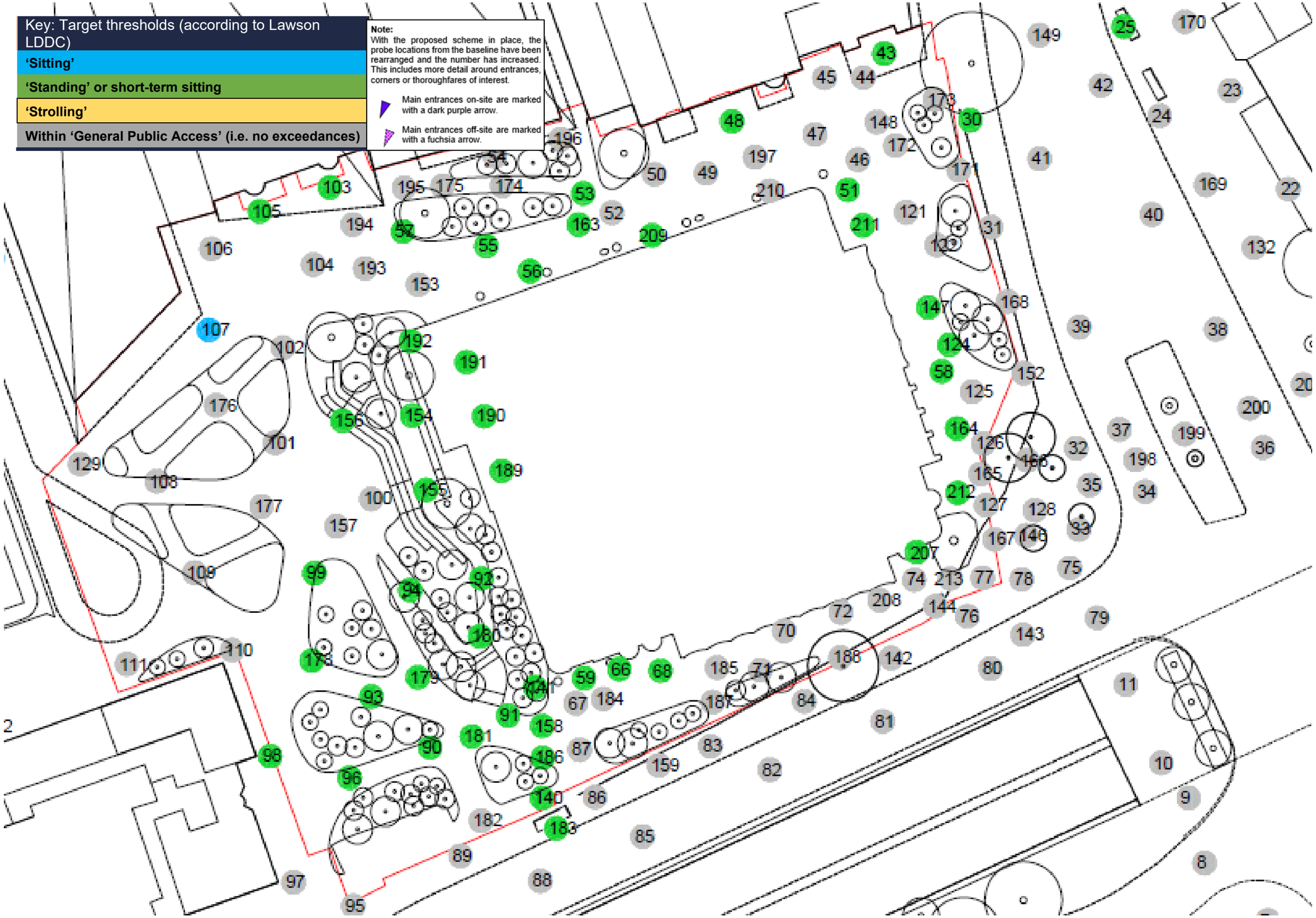


Figure 11.37 Results for Configuration 4a: Amended Proposed Development With Landscaping (Worst-Case)

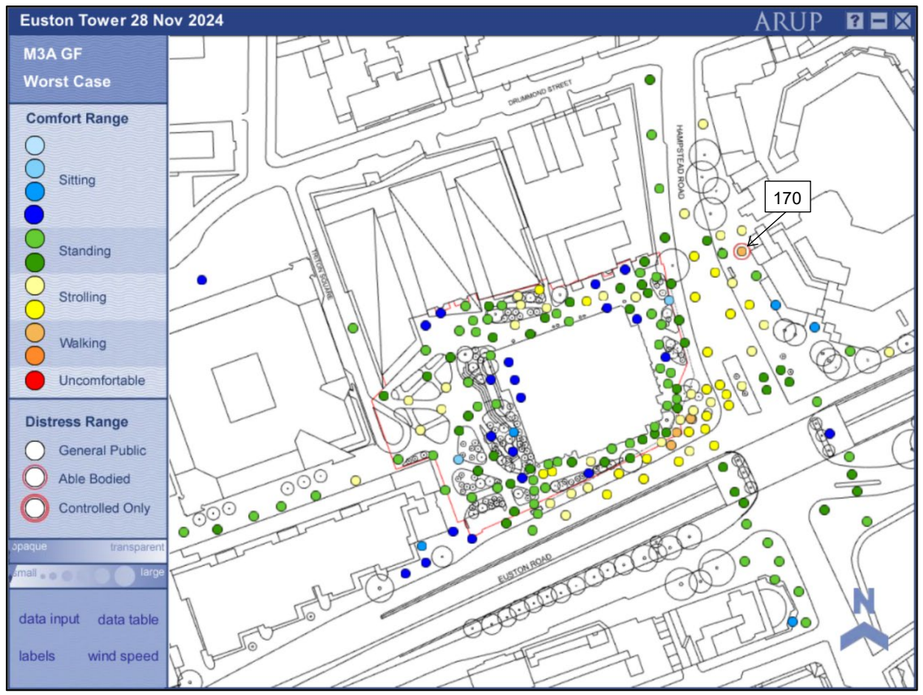


Figure 11.38 Results for Configuration 4a: Amended Proposed Development With Landscaping (Summer)

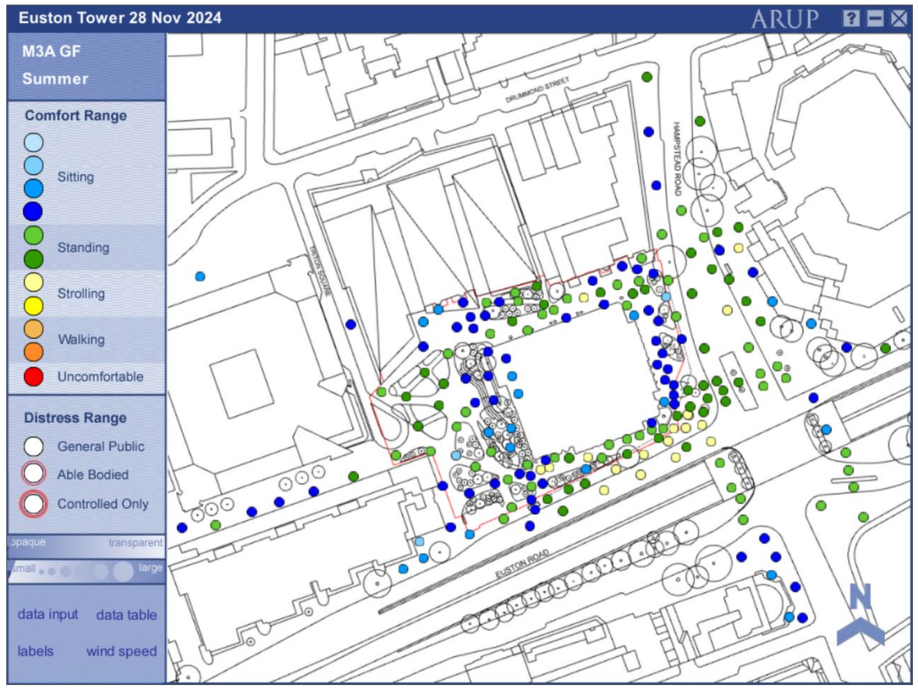


Figure 11.39 Results for Configuration 4a: Amended Proposed Development With Landscaping (Summer)

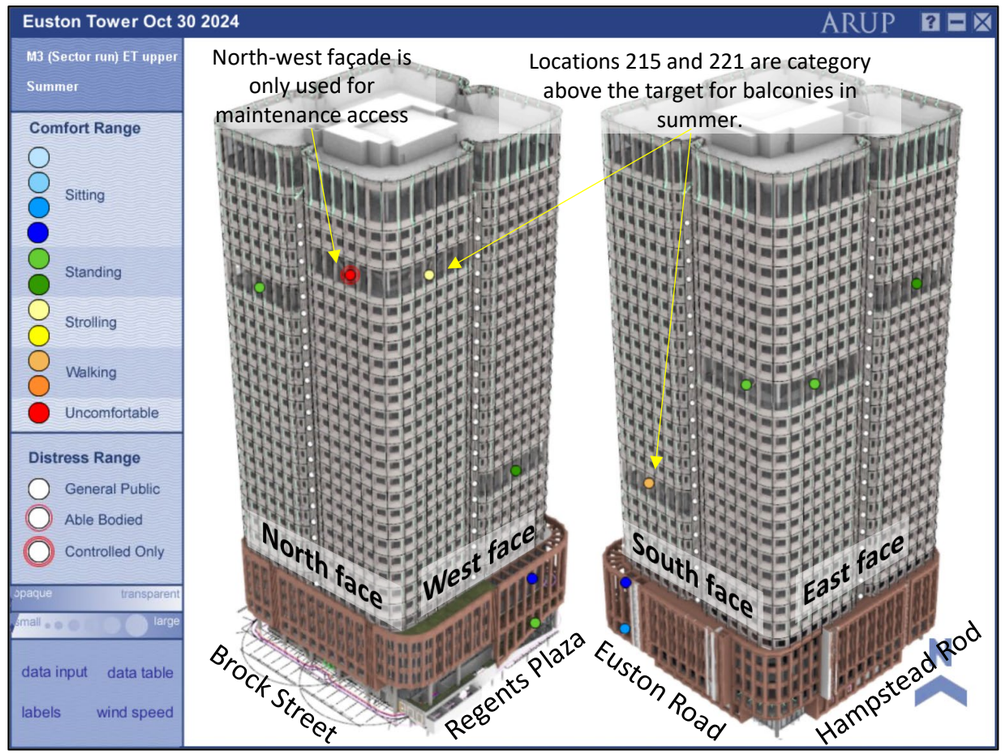
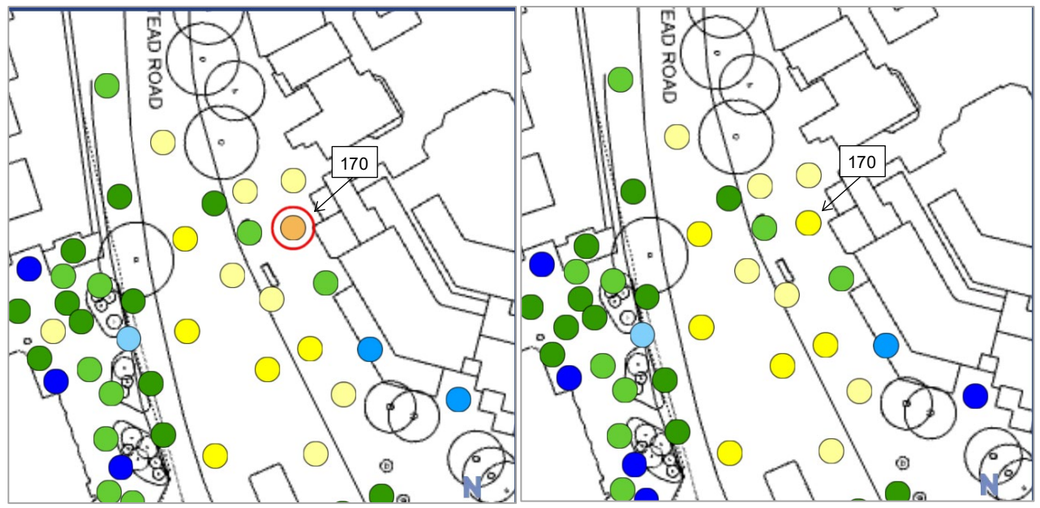


Figure 11.40 Plots Showing the Worst-Case Results Around the Amended Proposed Development Before the Measurement Probe at 170 was Swapped (Left) and After (Right).



On-Site Receptors

11.127 Please refer to Figure 11.35 for the receptors numbers and locations discussed in this section.

Permanent Outdoor Café and Long-Term Sitting Spaces

11.128 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 51, 56, 58, 59, 66, 68, 189-191, 207, 209, 211, 212

11.129 All 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 53, 55, 57, 90-94, 96, 99, 124, 140, 141, 147, 152, 154-156, 158, 163, 168, 174, 175, 178-181, 186, 192, 195

11.130 No bus stops are located on-site.

11.131 All on-site recreational locations record acceptable 'Sitting' to 'Strolling' in winter and '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 46-47, 49-50, 52, 67, 70-72, 74, 77, 87, 100-102, 108-111, 121-122, 125-127, 129, 144, 148, 153, 157, 158, 164-165, 171-177, 182, 184-185, 187-188, 193-194, 197, 208, 210, 213

11.132 All 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.

Upper-Level Terraces – Probes 214-219, 221-225

11.133 Receptor 215 on the south-west corner records 'Business Walking' conditions in summer, and receptor 221 on the north-west corner records 'Strolling' conditions in summer. Conditions at both locations are above the limit for occasional outdoor spaces at upper levels, representing long-term Moderate Adverse (**significant**) effect.

11.134 All other 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.

Areas for Occasional or Maintenance Access – Probe 220

11.135 One balcony on the north-west face is reserved for maintenance access only (represented by probe 220). conditions on this balcony exceed the safety limit. Unacceptable conditions for such areas are described in Table 11.4 as 'Exceedance of 'Able-bodied Access' criterion in any area likely to be used in windy weather'.

11.136 It is anticipated that this space would only be accessed by building maintenance personnel on an infrequent basis, which is unlikely to correlate with extremely windy days. As such, measures to mitigate wind conditions at this location specifically are not considered to be necessary due to the restricted and sporadic nature where access is likely to be required. Nevertheless, it is noted that conditions at this location do improve with the addition of mitigation measures for a nearby location in Configurations 4b and 4c (see paragraphs 11.147 - 11.154 below) so should access be required during unfavourable wind conditions, measures to ensure the safety of personnel could be achieved as discussed later in this ES chapter.

Off-Site Receptors

Permanent Outdoor Café and Long-Term Sitting Spaces – Probe 107

11.137 The one identified off-site permanent seating location (north side of Regent's Place Plaza) records 'Sitting' conditions in summer and 'Standing' conditions in the worst-case. This represents a direct, permanent, long-term Negligible (not significant) effect.

Main Entrances – Probes 20, 28, 43, 48, 98, 103, 105

11.138 Probe 98 located at the Entrance to 2 Triton Square (to the west of the site), improves from the existing baseline (Configuration 1). Conditions in the worst-case improve from 'Strolling' to 'Standing' conditions, and from 'Standing' to 'Sitting' in summer. These conditions are now acceptable for entrances in all seasons. This represents a direct, permanent, long-term Moderate Beneficial (not significant) effect.

11.139 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 3 (tested in 2024). Using professional judgment, the conditions across this area of the disc trace generally remains the same as in Configuration 1. Therefore, it is expected that conditions at location 134 (eastern entrance to 1 Triton Square) will continue to experience acceptable 'Standing' conditions for entrances all year round, and conditions at location 137 (southern entrance to 1 Triton Square) will continue to experience 'Strolling' conditions in all seasons. The conditions at these two locations continue to represent a direct, permanent, long-term Negligible (not significant) effect.

11.140 All other on-site entrance locations (probes 20, 28, 43, 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, 183

11.141 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. These conditions represent a direct, permanent, long-term Negligible (not significant) effect.

Areas for General Public Access and Cycling – Probes 1-19, 21-24, 26-27, 29, 31-42, 44-45, 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

11.142 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**.**

11.143 One location (probe 170) across Hampstead Road to the north-east of the site records conditions above the Lawson safety threshold for General Public Access. However, through the course of testing the measurement probe at this location was found to be faulty. Replacing the measurement probe and re-running the later tests, this receptor showed 'Strolling' conditions in the worst-case, which is in line with the surrounding receptors (see Figure 11.40). The results at probe 170 are therefore expected to align with the updated probe readings and represents a direct, permanent, long-term Negligible (not significant) effect.

11.144 These conditions represent a general beneficial trend in off-site wind conditions within the Hampstead Road area. In the baseline (Configuration 1), two locations (probes 41 and 25) record conditions above the safety threshold for general public access in winter (15.5 m/s at probe 41 and 16.6 m/s at probe 25). Location 42 also records conditions on the boarder of the safety threshold in the baseline for winter (14.99 m/s). This shows a

trend in the baseline (Configuration 1) for uncomfortable and potentially unsafe conditions in the Hampstead Road area that is improved with the presence of the Amended Proposed Development (Configuration 4).

11.145 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

11.146 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

Upper-Level Terraces

11.147 Within Configuration 4a, two terraces on the Amended Proposed Development experience wind conditions that exceed the thresholds for the intended uses (south-west terrace Level 11 and north-west terrace Level 26). All private balcony spaces are intended to be used occasionally (either for maintenance or leisure) and users can choose when to use them based on a combination of several factors (including daylight, sunlight, temperature, humidity, precipitation, noise, etc.). The windy conditions above the threshold are not constant and users will be able to use the balconies at times when winds are weaker within the natural ebb and flow of the wind climate.

11.148 Therefore, a type of temporary mitigation was developed with the team that could be deployed on days when wind conditions are expected to exceed the comfort and/or safety thresholds and then packed away when calmer conditions are experienced across the terrace. The temporary mitigation is created by installing a single screen on the corner of each of the two affected balconies. Each screen spans the width of the balcony, as shown in Figure 11.41, and is 2m tall to match the balustrade. The screens can be folded way next to the façade or the balustrade itself.

11.149 Two porosities of mitigation were tested in the wind tunnel: 50% porous (Configuration 4b) and fully solid (Configuration 4c). The results of each porosity of mitigation tested is shown in Figure 11.42 and Figure 11.43.

11.150 Configurations 4b and 4c focus on the wind conditions on the terraces of the Amended Proposed Development only. The changes to the terrace conditions with the inclusion of the proposed mitigation measures do not impact wind conditions in any other areas.

Configuration 4b: Amended Proposed Development with Tower Balcony Mitigation (50% Porous Screens)

11.151 The results for the test with 50% porous screens on the office balconies is shown in Figure 11.42. With the 50% porous option, conditions at location 220 (north-west terrace on Level 26, intended for maintenance access only) improve to acceptable 'Business Walking' in summer and conditions at location 221 (north-west terrace on Level 26 intended for general access) improves to acceptable 'Standing' in summer. The improvement in conditions mean both locations can be used more frequently. Conditions at these two locations therefore represent a direct, permanent, long-term Negligible (not significant) effect.

11.152 However, conditions at location 215 (on the south-west corner level 11) remain above acceptable levels, recording 'Strolling' conditions in summer. This continues to represent a long-term Moderate Adverse (**significant**) effect.

Figure 11.41 Photos from the Wind Tunnel of the Tested Balcony Mitigation (Solid Corner Screen)

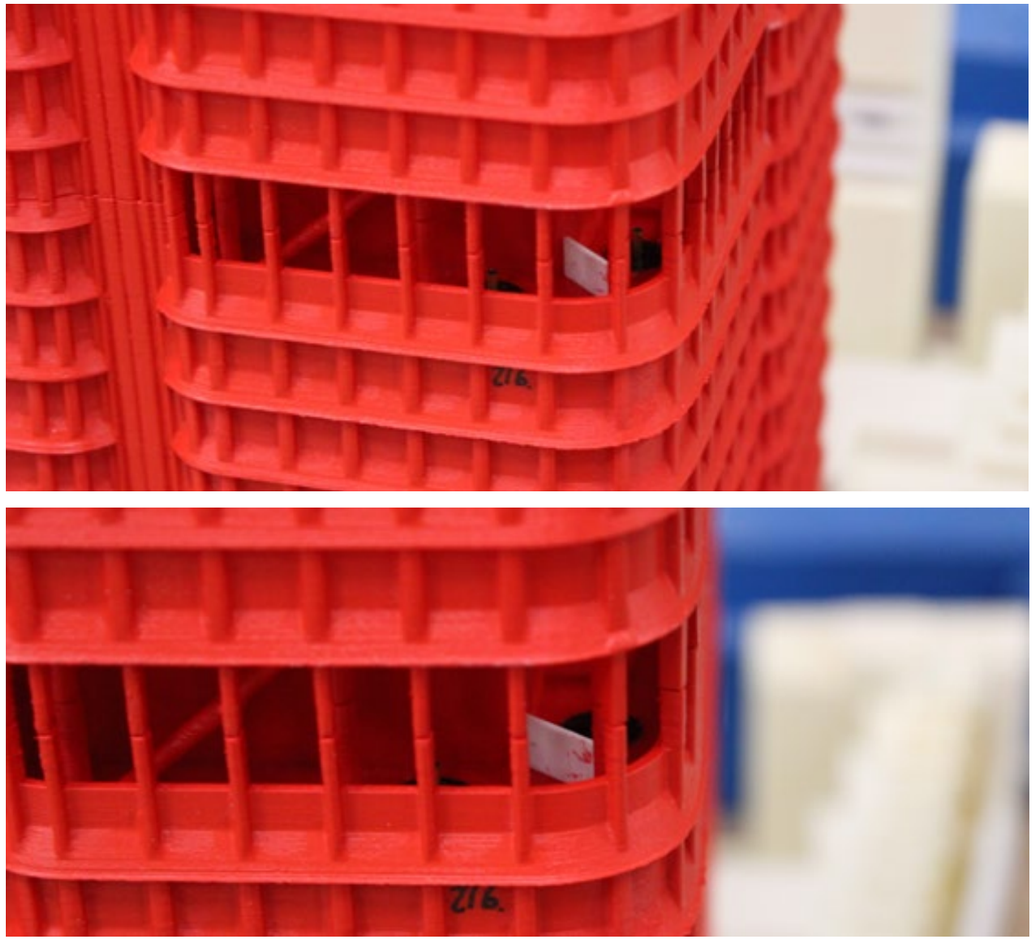


Figure 11.42 Amended Proposed Development with 50% Porous Mitigation on all Terraces (Summer)

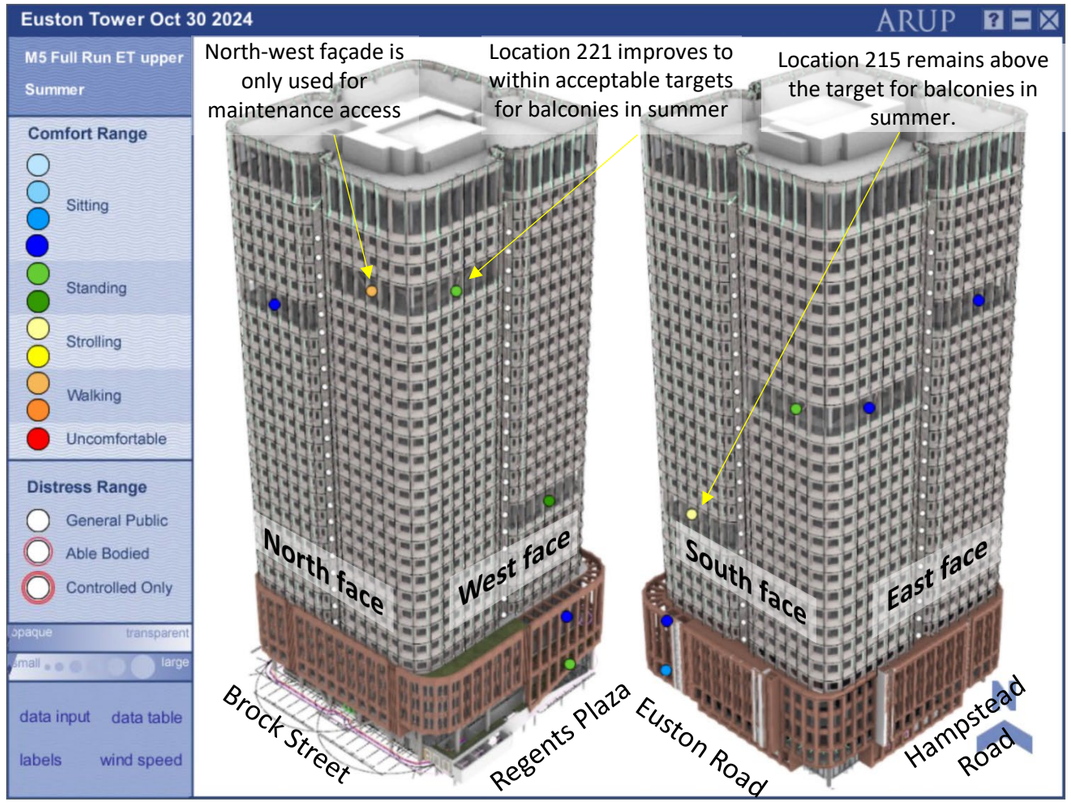
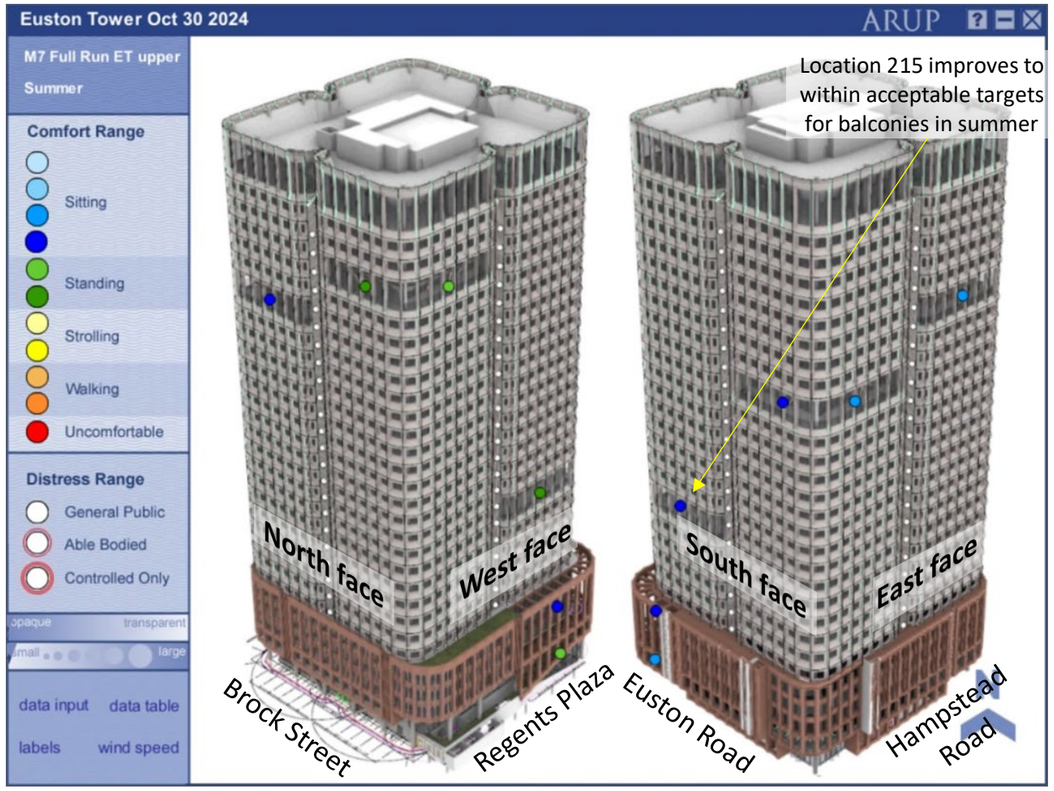


Figure 11.43 Amended Proposed Development with Solid Mitigation on all Terraces (Summer)



Configuration 4c: Amended Proposed Development with Tower Balcony Mitigation (Solid Screens)

11.153 Solid screens were also tested in the same locations as the screens in Configuration 4b, and the results are shown in Figure 11.43. With the solid screens in place, conditions on all terraces achieve acceptable 'Sitting' to 'Standing' conditions in summer representing a direct, permanent, long-term Negligible (not significant) effect.

11.154 The two mitigation tests (Configuration 4b and 4c) show that a temporary porous screen is required on the north-west balcony at location 221 (north-west terrace on Level 26 intended for general access), while a more solid screen is required on the south-west balcony location 215 (on the south-west corner on Level 11, intended for general access). No screens are needed to control wind levels on the other tower balconies or within the podium. It is noted that other balcony locations (e.g. location 220) also improve with the inclusion of the mitigation although as these are not publicly accessible spaces do not require mitigation. Nevertheless, following the implementation of the above measures, conditions at this location are anticipated to be Negligible (not significant).

Residual Effects

11.155 All of the residual effects resulting from the Amended Proposed Development are presented in Table 11.11 identifying whether the effect is significant or not.

Table 11.11 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
		Moderate Beneficial (Probe 98)	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

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt 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
Receptors at on-site balconies	Change in use of space from not accessible to accessible balcony	Negligible	Not Significant	L	D	P	Lt
Receptors at occasional or maintenance access	Change in use of space from not accessible to accessible maintenance	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 permanent café spaces or long-term seating areas off-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.	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	Major Beneficial (Probe 41)	Not Significant	L	D	P	Lt
		Negligible	Not Significant	L	D	P	Lt
Receptors at off-site balconies	No 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

11.156 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, 3a, 3b, 4a, 4b, and 4c.

11.157 The other schemes listed in **ES Addendum Volume 1, Chapter 1: introduction, Proposed Design Amendments and ES Addendum Approach,** 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).

11.158 Therefore, the results for Configurations 3 can be considered valid for the cumulative scenarios as well.

LIKELY SIGNIFICANT EFFECTS

11.159 With the proposed landscaping and mitigation measures in place (Configuration 4a at ground level, and 4c at terrace level), there are no significant effects 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 Addendum 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) Addendum 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 high 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 Amended 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 Amended Proposed Development will be worse or improve under the future baseline, and therefore if these changes alter the significance of effects identified for the Amended Proposed Development under the current condition (without climate change). This is the potential for climate change to affect the Amended 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 Amended Proposed Development. **PART B** by Air Quality Consultants Ltd The Amended 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 Amended 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 Amended 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.* *An ES Review Report was prepared by CBRE (on behalf of LBC) following the submission of the December 2023 ES. The following comments were provided as part of the ES Review Report:* • *"The assessment notes that people travelling via active modes would be sensitive to climate change. Table 12.1 sets out the sensitivity and vulnerability for the ICCI assessment in relation to transport receptors. However, the sensitivity noted in this table for certain receptors is lower than the sensitivity assigned to them in ES Volume 1, Chapter 7: Traffic and Transport, i.e. pedestrians and cyclists are high sensitivity in Chapter 7 but appear to be assigned as medium in Chapter 12. Further to this, after Table 12.1, there appears to be no consideration of how these changes to the sensitivity would follow through the assessment, with respect to magnitude and scale and significance of effects."* *This has been addressed within paragraph 12.20.* • *"Specifically, no commentary is provided on which of the land use options have been considered in the assessment, therefore it is not possible to comment on whether the assessment provides a robust position. Clarification is sought to understand which land use option has been assessed, and why that is considered appropriate"*

CLIMATE CHANGE AND GREENHOUSE GASES	
	As shown in Table 12.2, Part B: Greenhouse Gas Assessment utilises multiple sources to form the basis of assessment, including the Whole Life Carbon Assessment (Sweco, 2024) and Energy Strategy (Arup, 2024). The Energy Strategy has considered a number of scenarios but has assessed a worst-case / conservative scenario (highest energy usage) whereby all lab-enabled floorspace (Levels 03 to 11 of the Amended Proposed Development) is operational with laboratory uses. This conservative scenario has informed calculations for Whole Life Carbon Module B6 and these form the basis of information for this ES chapter.

COMPARISON AGAINST THE DECEMBER 2023 ASSESSMENT

12.1 Since the submission of the December 2023 ES, design changes have been made to the Proposed Development, primarily comprising of alternations to the massing (see Proposed Amendments as detailed in **ES Addendum Volume 1, Chapter 1: Introduction, Proposed Design Amendments and ES Addendum Approach**).

12.2 An addendum replacement ES chapter has been provided due to the fact that the following documents, which form the basis of assessment with respect to Part B, have been updated and resulted in re-calculation:

- Whole Life Carbon Assessment; Sweco, December 2024;
- Transport Assessment Addendum; Velocity Transport Planning Ltd, December 2024; and
- Energy Assessment; Arup, December 2024.

12.3 Despite the above changes, there are no changes to the effects concluded within the December 2023 ES, which remain valid.

PART A CLIMATE CHANGE RESILIENCE AND ADAPTATION

12.4 The approach to assessing the potential impact of climate change on the Amended 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.

12.5 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.

12.6 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 Addendum Volume 3, Appendix: Climate Change – Annex 5**.

12.7 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 Amended 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*

[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.*

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)".

12.8 The future climate change scenario has been considered by each of the technical topics covered within the ES and this ES Addendum ('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 Amended Proposed Development will be worse or improve under the future baseline, and therefore if these changes alter the significance of effects identified for the Amended 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.

12.9 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 Amended 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).

12.10 The final section of Part A presents the adaption and resilience measures proposed as part of the Amended Proposed Development, in response to the projected future climate change scenario (as described below).

Historic and Existing Climate Conditions

12.11 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
- The number and severity of substantial snowfall events have generally declined since the 1960s.

Future Climate Change Scenario

12.12 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.

12.13 The future climate of London is predicted to undergo significant change over the duration of the Amended 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.

12.14 Annual Mean air temperature in London is predicted to rise by 1.04°C during 2020-2039, and during the period of construction of the Amended Proposed Development scheduled for completion by 2031. This rises to 1.87°C between 2040-2059, and 2.96°C between 2060-2079, during much of the anticipated life span of the Amended Proposed Development.

12.15 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.

12.16 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 Addendum Volume 3, Appendix: Climate Change – Annex 5**.

In-Combination Climate Change Impacts

Socio-Economics

12.17 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.

12.18 The Amended 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 Amended 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 Addendum Volume 1, Chapter 6: Socio-Economics**).

Traffic and Transport

12.19 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 Amended Proposed Development in transport terms would not change under the future climate change scenario.

[4] *International Journal of Climatology (2022), State of the UK Climate 2022.*

[5] *UKCP (August 2022), UK Climate Projections: Headline Findings.*

12.20 However, people travelling to and from the Amended 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[6]	Medium – climatic factors have some influence on receptors travelling to and from the Amended Proposed Development by active modes (walking and cycling)

12.21 The range of proposed mitigation measures designed to reduce the impact of the Amended Proposed Development on the effects assessed under Traffic and Transport would also mitigate the potential effects of climate change in the future.

12.22 The Delivery and Servicing Plan (DSP)[7] has been prepared to reduce and manage the number of deliveries to the site and a Travel Plan[8] 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 Amended Proposed Development. The Travel Plan would also raise awareness of the benefits of travelling by non-car modes on the environment and climate change. In addition, the Amended Proposed Development would provide the following improvements for travel by active modes:

- Improved pedestrian/cycle access links within the site;
- Cycle parking, shower and locker facilities; and
- Footway improvements on Euston Road and Hampstead Road.

12.23 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.

12.24 With electric vehicles increasing in popularity and smarter travel options, it is not anticipated that the effects of the Amended Proposed Development would alter the future climate scenario in the future.

12.25 Therefore, potential effects related to climate change are not expected to alter the assessment of traffic and transport effects (**ES Addendum Volume 1, Chapter 7: Traffic and Transport**).

Air Quality

12.26 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 Amended Proposed Development and 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.

12.27 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 Addendum 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 Amended 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 2031 (the earliest year of occupation of the Amended 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. The overall effect of climate change on the air quality effects described in **ES Addendum Volume 1, Chapter 8: Air Quality** will be not significant.

Noise and Vibration

12.28 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 Amended Proposed Development does not rely on openable windows, the façade includes natural ventilation measures to facilitate air flow.

12.29 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.

12.30 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.

12.31 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 Addendum Volume 1, Chapter 9: Noise and Vibration**) will remain unchanged.

Daylight, Sunlight, Overshadowing and Solar Glare

Daylight

12.32 Following the guidance published by the BRE, daylight assessments are carried out under an assumed overcast sky.

12.33 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.

12.34 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.

12.35 By following the current BRE Guidelines methodology, therefore, the numeric daylight results are not affected by changes in climate.

[6] *Note this differs from the high sensitivity defined in **ES Addendum Volume 1, Chapter 7: Traffic and Transport**. Pedestrians and cyclist and public transport users are assessed as having a medium sensitivity to accommodate climate change without substantially altering their current experience. Therefore, effects remain as concluded within **ES Addendum Volume 1, Chapter 7: Traffic and Transport**.*

[7] *Delivery Servicing Management Plan Addendum; Velocity Transport Planning Ltd, December 2024*

[8] *Framework Travel Plan Addendum; Velocity Transport Planning Ltd, December 2024*

12.36 Climate change projections (**ES Addendum 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.

12.37 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

12.38 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.

12.39 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.

12.40 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.

12.41 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.

12.42 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.

12.43 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

12.44 Overshadowing assessments are undertaken on any day of the year although the equinox is most common.

12.45 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.

12.46 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

12.47 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

12.48 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 Addendum Volume 3, Appendix: Climate Change – Annex 5**).

12.49 As set out within **ES Addendum 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 Amended 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 Amended Proposed Development. The effects identified within the wind microclimate assessment (**ES Addendum Volume 1, Chapter 11: Wind Microclimate**) would remain unchanged under the 2080 future climate scenario.

Townscape, Heritage and Visual

(Built) Heritage

12.50 There are no climatic variables that would have a material impact on the assessment of built heritage considerations relevant to the Amended 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 Amended 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

12.51 Changes expected from the 2080 future climate scenario, such as increased rainfall levels and temperatures, are unlikely to impact on the appearance of the Amended Proposed Development in views and its relationship to townscape character when the Amended 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

12.52 The latest UK Climate Change Risk Assessment[9] identifies the key climate-related risk areas for action in the UK. The following have been identified as relevant to the Amended 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.

12.53 Accordingly, and based on the future climate change scenario projections set out in **ES Addendum Volume 3, Appendix: Climate Change – Annex 5**, the main climatic factors that have influenced the evolution and design of the Amended 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.

[9] *HM Government (2022), UK Climate Change Risk Assessment 2022*

Increase in Annual and Maximum Temperatures

Overheating of Buildings

12.54 In order to reduce overheating risk during periods of increased temperatures, the Energy Strategy for the Amended Proposed Development has developed a mitigation strategy for managing heating and cooling, increasing the resilience to future climate change.

12.55 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.

12.56 As means of reducing the amount of heat entering the buildings within the Amended 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.

12.57 Passive ventilation measures, openable, solid panels, are also proposed to be implemented in the Amended Proposed Development, reducing the reliance on air conditioning to provide internal cooling, as described in the Ventilation Strategy[10]. 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)

12.58 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.

12.59 The soft landscaping strategy (which includes the implementation of four unique habitats, dense tree canopies and biodiverse green roofs) will reduce the amount of hardstanding within the Amended Proposed Development, which will reduce the 'Urban Heat Island' effect and allow areas of shading and cooling during instances of hot weather.

12.60 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.

12.61 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.

12.62 These measures will mitigate the risk of failure of the landscaping and will assist in maintaining the biodiversity benefits of the Amended Proposed Development.

12.63 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.

12.64 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

12.65 The Amended 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.

12.66 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.

Increase in Precipitation/ Intense Rainfall Events

Flood Risk

12.67 Within the landscape, the Amended 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.

12.68 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.

Part A Likely Significant Effects

12.69 In conclusion, under the future 2080 climate scenario, the residual effects of the Amended Proposed Development would remain consistent with the effects identified as described throughout this ES and summarised in **ES Addendum Volume 1, Chapter 13: Summary and Conclusions** 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 Amended 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

12.70 This section of this ES chapter provides a Greenhouse Gas (GHG) assessment for the Amended Proposed Development. The Amended 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 (Use Class E(g)) and office, retail, café and restaurant space (Use Class E) and Enterprise space (Use Class E / F) at ground and first floors, and associated external terraces. A full description of the Amended Proposed Development can be

[10] *Euston Tower Ventilation and Extraction Statement Addendum; Arup, December 2024*

found in **ES Addendum Volume 1, Chapter 1: Introduction, Proposed Design Amendments and ES Addendum Approach.**

12.71 As set out in the Circular Economy Statement[11] 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 Amended Proposed Development (i.e., a 31% retention of the existing structure). As such it should be noted, whilst the Amended 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 an alternative scenario where the existing building is demolished is likely to result in greater GHG emissions.

12.72 GHGs are gases which have the potential to increase atmospheric temperatures, and which contribute to climate change. The Amended 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 Amended Proposed Development taking a lifecycle approach[11] and presents the embedded design measures provided by the scheme to avoid and reduce its direct and indirect GHG emissions.

12.73 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.

Scope of the Assessment

12.74 The EIA Regulations (as amended)[12] 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".*

12.75 The impact of future climate change on the resilience of the Amended 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 Amended Proposed Development. This assessment provides an estimate of GHG emissions in the first year of occupation (2031) and over the lifetime of the Amended Proposed Development.

12.76 Relevant policy and guidance to this assessment is set out in **ES Addendum Volume 3, Appendix: Climate Change – Annex 1**.

Defining the Baseline

12.77 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.

12.78 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 Amended Proposed Development will be considered as being new and therefore will represent a worst-case to changes in GHG emissions.

Evolution of the Baseline

12.79 The EIA Regulations 2017 (as amended)[12] require that the likely evolution of the baseline is considered in the event that the Amended Proposed Development were not to come forward. In other words, the likely effect if the Cumulative Schemes and any relevant policy designations were to come forward in the absence of the Amended Proposed Development.

12.80 If the Amended 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

12.81 The assessment has taken a whole life approach to develop a GHG footprint for the Amended Proposed Development. The footprint sources considered include GHG emissions:

- Embodied in the material used in the construction of the Amended 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 Amended Proposed Development;
- From the operational repair, maintenance and replacement of the Amended Proposed Development;
- From potable water supply and treatment during operation of the Amended Proposed Development; and
- From the deconstruction of the Amended Proposed Development at the end of its lifetime.

12.82 GHG emissions from the disposal of waste generated by the Amended 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 Amended 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. IEMA guidance[13] states:

"Activities that do not significantly change the result of the assessment can be excluded where expected emissions are less than 1% of total emissions, and where all such exclusions total a maximum of 5% of total emissions; all exclusions should be clearly stated."

12.83 Table 12.2 sets out the GHG assessment scenarios examined by the assessment, key sources of data and methodologies used.

12.84 Emissions associated with the deconstruction and construction phase of the Amended Proposed Development are calculated for the whole construction phase and annualised emissions based on the anticipated construction period, which is approximately 5 years and 4 months based on information in **ES Addendum Volume 1, Chapter 1: Introduction, Proposed Design Amendments and ES Addendum Approach**. 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).

12.85 The operational energy and transport GHG emissions associated with the Amended Proposed Development have been calculated for the anticipated year of first occupation (2031), and over the lifetime of the completed Amended Proposed Development, taking account of national projections with regards to energy production and vehicle fleet etc..

[11] *Euston Tower Circular Economy Statement; GXN, December 2024*
[12] *His Majesty's Stationery Office (HMSO) (2017) The Town and Country Planning (Environmental Impact Assessment) (England) Regulations 2017 (as amened in 2018 and 2020).*
[13] *IEMA (2022) Assessing Greenhouse Gas Emissions and Evaluating their Significance. 2nd Edition.*

12.86 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[14].

12.87 The 'net emissions' are the change in the GHG emissions between the baseline and the Amended Proposed Development, taking account of GHG reduction measures. Offsetting of emissions is also considered in the calculation of residual net GHG emissions.

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 Amended Proposed Development ('cradle to gate').	Module A1-A3 emissions as presented in the Whole Life Carbon assessment	Whole Life-Cycle Carbon Assessment[17]
Transport	The baseline is assumed to be zero.	Emissions associated with traffic generated by the deconstruction and construction of the Amended 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 Replacement	The baseline is assumed to be zero.	Emissions associated with the operational repair, maintenance and replacement of the Amended Proposed Development.	Module B1-B4 emissions from use, repair, maintenance and replacement 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 Amended Proposed Development in the first year of operation (2031).	Application of calculated 2031 GHG factors to km travelled by mode from transport assessment.	Transport Consultant[15]
Energy	The baseline is assumed to be zero.	Emissions from energy use associated with operation of the Amended Proposed Development, taking account of measures to reduce energy consumption and utilise renewable energy on-site.	CO_2 from energy use for the Amended Proposed Development taking into account savings from the Energy Statement.	Energy Statement[16]
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 Amended 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

12.88 GHGs associated with the deconstruction and construction of the Amended 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[17].

Embedded Carbon

12.89 Emissions from the manufacturing of construction materials have been sourced from the WLC assessment[17]. These correspond to modules A1-A3 of a carbon lifecycle assessment as defined in RICS[18] and GLA[19] guidance.

Construction Traffic

12.90 Emissions from the construction traffic have been sourced from the WLC assessment[17]. These correspond to module A4 of a carbon lifecycle assessment as defined in RICS[18] and GLA[19] guidance.

Construction Site Activities

12.91 Emissions from energy consumption for site accommodation and plant use during construction works have been sourced from the WLC assessment[17]. These correspond to module A5 of a carbon lifecycle assessment as defined in RICS[18] and GLA[19] guidance.

Completed Development

12.92 GHGs associated with the operation of the Amended Proposed Development relate to emissions from repair, maintenance and replacement, transport, energy use and water supply and treatment. There will also be emissions from the deconstruction of the Amended Proposed Development at the end of its operational lifetime ('end-of-life' phase).

Repair, Maintenance and Replacement

12.93 Over the lifetime of the Amended Proposed Development there will be GHG emissions associated with the repair, maintenance and replacement 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 replacement have been considered in the GHG assessment based on modules B1-B4 within the WLC assessment[17].

Transport

12.94 GHG emissions factors for transport have been derived from the DfT's WebTAG databook[20] and the Department for Energy, Security and Net Zero (DESNZ) GHG conversion factors[21]. A summary of the 2031 (the first year of operation of the Amended 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 Amended 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 12.102 to 12.105).

[14] *British Standard EN 15978:2011. Sustainability of construction works. Assessment of environmental performance of buildings. Calculation method.*
[15] *Velocity Transport Planning Ltd (2024) Euston Tower Transport Assessment Addendum*
[16] *Arup (2024) Euston Tower Energy Statement*
[17] *Sweco UK (2024) Euston Tower Whole Life-Cycle Carbon Assessment*
[18] *RICS, 2017. Whole life carbon assessment for the built environment*
[19] *GLA, 2020. Whole Life-Cycle Carbon Assessments guidance Pre-consultation draft (April 2020)*
[20] *Department for Transport (2024) TAG data book May 2024 v1.23. Available at: https://www.gov.uk/government/publications/tag-data-book*
[21] *DESNZ (2024) Greenhouse gas reporting: conversion factors 2024. Available: https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2024*

Table 12.3 2031 Transport GHG Factors by Selected Mode

Activity	Type	Unit	Calculated 2031 Factor (kg CO2e)
Car Driver	Average Car	km	0.1040
London Taxis	Black cab	km	0.1905
London Bus/Coach	Local London bus[a]	Passenger.km	0.0597
Rail	London Underground	Passenger.km	0.0086
	National Rail	Passenger.km	0.0110

[a] The GHG factor for London buses has been obtained from BEIS data[22] for company reporting as bus emission factors are not available in DfT's WebTAG.

12.95 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

12.96 The total CO_2 emissions associated with the energy use of the Amended Proposed Development have been obtained from the Energy Statement[16] (see **ES Addendum Volume 3, Appendix: Greenhouse Gases – Annex 2**), taking account of energy efficiency measures, and low and zero carbon (LZC) technologies to be incorporated within the Amended Proposed Development. Further detail on the CO_2 factors and CO_2 emissions from energy consumption are provided in the Energy Assessment.

12.97 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..

12.98 Data from the Energy Statement[16] relate to annual emissions and have been used as the anticipated year of first occupation (2031) emissions associated with the completed Amended Proposed Development. Lifetime emissions from operational energy have been calculated by applying the total regulated and unregulated opening year emissions from the Energy Statement to Domestic Electricity Emissions Factors for the period 2031 to 2050 published by DESNZ[23], assuming decarbonisation in line with UK Government targets and that net zero is reached by 2050 (see paragraph 12.102).

12.99 It should be noted that for energy consumption during operation, the GHG emissions are presented as CO_2 rather than CO_2e. The use of CO_2 emissions factors (rather than CO_2e) will underestimate the GHG emissions from energy by approximately 1%[24], however these are used for consistency with the Energy Statement, which is prepared in line with Policy requirements. Any underestimation is minor and will not alter the conclusions of the assessment.

Water Supply and Treatment

12.100 GHG emissions associated with water supply been obtained from the whole life-cycle assessment[17], which correspond to module B7 of a whole life carbon assessment.

Deconstruction at End of Life

12.101 Emissions associated with the end-of-life phase of the Amended Proposed Development have been sourced from the Whole Life-Cycle Carbon Assessment[17]. 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

12.102 The UK has legislated a 2050 net zero target following recommendations and analysis completed by the Committee on Climate Change (CCC)[25]. The CCC's Net Zero report[26] 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.

12.103 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.

12.104 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.

12.105 It is, therefore, anticipated that all operational and transportation emissions associated with the Amended Proposed Development are likely to be zero by 2050 at the latest.

Assumptions and Limitations

12.106 The following assumptions and limitations are relevant to the GHG assessment:

- The Amended Proposed Development is complete and operating at full capacity in 2031;
- The construction phase will be completed over a period of five years;
- Construction of the Amended Proposed Development involves the buildings and infrastructure, and transport movements described in ES Addendum Volume 1, Chapter 1: Introduction, Proposed Design Amendments and ES Addendum Approach;
- 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[16] to minimise emissions from energy consumption and embodied carbon will be implemented.

[22] BEIS (2022) UK Government GHG Conversion Factors for Company Reporting
[23] DESNZ (2023) Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal. Available: https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal
[24] For UK electricity, CO_2e/kWh is estimated by DESNZ to be 0.9% higher than CO_2/kWh.

[25] 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.
[26] 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

Methodology for Defining Effects

Receptors and Receptor Sensitivity

12.107 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[27]. 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

12.108 There are no impact descriptors for GHG emissions; the approach taken is therefore to consider the calculated GHG emissions relating to the Amended Proposed Development (during the deconstruction and construction phase and once complete and operational) in the context of GHG emissions budgets for:

- The UK, as published by the DESNZ in the UK-wide carbon budgets[28];
- The GLA-wide area, as published within the London Environment Strategy Implementation Plan[29]; and
- The LBC, as published by the University of Manchester Tyndall Centre for Climate Change Research[30].

Defining the Effect

12.109 For GHG emissions there are no recognised criteria and thresholds that relate to the quantum of GHG emissions released.

12.110 In terms of defining significance, guidance from Institute of Environmental Management and Assessment (IEMA)[13] 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.

12.111 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.

12.112 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.

12.113 The UK's response to limiting climate change is enshrined in law through the Climate Change Act[31] 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.

12.114 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.

12.115 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.

12.116 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 Amended 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 Amended 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 Amended Proposed Development's net GHG impacts are: • Fully consistent with applicable existing and emerging policy requirements; and • In line with 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 Amended 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 Amended 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.

[27] *The Intergovernmental Panel on Climate Change (2022) AR6 Climate Change 2022: Impacts, Adaptation, and Vulnerability.*
[28] *DESNZ (2021) Carbon Budgets. Available: https://www.gov.uk/guidance/carbon-budgets#setting-of-the-fourth-carbon-budget-2023-2027*
[29] *GLA (2023) London Environment Strategy Implementation Plan.*
[30] *The University of Manchester Tyndall Centre for Climate Change Research (2024) Setting Climate Commitments for Camden. Available: https://carbonbudget.manchester.ac.uk/reports/E09000007/*
[31] *Her Majesty's Stationery Office (2019) The Climate Change Act 2008 (2050 Target Amendment) Order 2019*

12.117 The IEMA guidance[13] states:

> *"A project that is compatible with the budgeted, science based 1.5°C trajectory (in terms of rate of emissions reduction) and which complies with up-to-date policy and 'good practice' reduction measures to achieve that has a minor adverse effect that is not significant. It may have residual emissions but is doing enough to align with and contribute to the relevant transition scenario, keeping the UK on track towards net zero by 2050 with at least a 78% reduction by 2035 and thereby potentially avoiding significant adverse effects.*
>
> *A project that achieves emissions mitigation that goes substantially beyond the reduction trajectory, or substantially beyond existing and emerging policy compatible with that trajectory, and has minimal residual emissions, is assessed as having a negligible effect that is not significant. This project is playing a part in achieving the rate of transition required by nationally set policy commitments."*

12.118 IEMA also advise 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.

12.119 Therefore, the assessment of significance is established over two steps as follows:

Step 1: Establish Context of GHG Emissions

12.120 Context for decision making is provided by comparing the net change in the whole life GHG emissions resulting from the development with national, regional (GLA-wide) and local GHG emissions totals and carbon budgets.

Step 2: Determine Scale and Significance of Effects

12.121 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 (GLA-wide), 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.

12.122 In terms of mitigation, IEMA recommends that mitigation should in the first instance seek to avoid GHG emissions. Where GHG emissions cannot be avoided, the Amended 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.

Geographic Extent of Effects

12.123 The geographic extent of effects arising from the Amended Proposed Development will extend beyond the Development boundary, and could well extend across the entire country, and therefore the extent is considered to be 'global'.

Effect Duration

12.124 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

12.125 The Amended Proposed Development's GHG emissions will not have any direct environmental effects, but contribute to climate change, which is an indirect environmental effect.

Baseline Conditions

Deconstruction and Construction

12.126 The Amended 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.

12.127 The baseline is therefore assumed to be zero, as the embedded carbon emissions associated with construction already reflect the net change.

Operation

12.128 Baseline GHG emissions associated with repairs, maintenance and replacement, 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 Replacement	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

12.129 A range of mitigation measures are embedded into the design of the Amended Proposed Development to avoid and reduce GHG emissions during its construction and operation.

Deconstruction and Construction Mitigation

12.130 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 Amended Proposed Development. As aforementioned in paragraph 12.71, 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.

12.131 The following measures will be considered when selecting materials for the construction of the Amended 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.

12.132 An Outline Construction Management Plan (CMP)[32] 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.

Completed Development

Transport

12.133 The following measures are embedded within the design of the Amended Proposed Development to influence sustainable travel behaviour from the site:

- The Amended Proposed Development will be 'car-free', with the exception of two blue-badge parking spaces within the Amended Proposed Development basement. The car-free scheme will discourage the use of private cars and encourage the use of existing public transport options;
- 890 secure long-stay cycle spaces, for the Amended Proposed Development, will be provided, of which 44 spaces will be for accessible bikes; and
- The Amended Proposed Development will provide improvements to the public realm and streetscape to enhance the pedestrian experience.

12.134 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.

12.135 An Outline Travel Plan[33] and a Delivery and Servicing Plan[34] have been developed for the Amended 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 Amended Proposed Development.

Energy Consumption

12.136 The Amended 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 Amended 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 Amended Proposed Development to reduce energy consumption.

12.137 The GHG emissions saving benefits of these measures are embedded in the Amended Proposed Development's GHG footprint set out in this ES chapter.

Potential Effects

Deconstruction and Construction

Embedded Carbon

12.138 The total embedded CO_2e emissions for the Amended Proposed Development, as presented in modules A1-A3 of the whole life-cycle assessment[17], are 47,263 tonnes, based on a 5-year construction programme this equates to 9,453 tonnes/annum.

12.139 Since the Amended 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[35].

Transport

12.140 The total CO_2e emissions from transport during construction of the Amended Proposed Development, as presented in module A4 of the whole life-cycle assessment[17], are 4,261 tonnes, based on a 5-year construction programme this equates to 852 tonnes/annum.

Site Activities

12.141 The total embedded CO_2e emissions from site activities during construction of the Amended Proposed Development, as presented in module A5 of the whole life-cycle assessment[17], are 4,608 tonnes, based on a 5-year construction programme this equates to 922 tonnes/annum.

Operation

Repair, Maintenance and Replacement

12.142 GHG emissions from repair, maintenance and replacement during the Amended Proposed Development's lifetime have been sourced from the whole life-cycle assessment[17] (modules B1-B4) and are 37,822 tonnes, or 630 tonnes/annum based on a lifetime of 60 years.

Transport

12.143 The assessment of transport related GHG emissions for the completed Amended Proposed Development in the first year of operation (2031) are presented in Table 12.6. The assessment multiplies the calculated 2031 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.

[32] *Draft Construction Management Plan (including Demolition) Addendum; Velocity Transport Planning Ltd, December 2024*
[33] *Outline Travel Plan Addendum; Velocity Transport Planning Ltd, December 2024.*
[34] *Delivery and Servicing Management Plan Addendum; Velocity Transport Planning Ltd, December 2024.*

[35] *Land use change can result in GHG emissions for example by the removal of habitats or green infrastructure (e.g. woodland / trees) that act as carbon sinks.*

Table 12.6 Assessment of GHG Emissions from Operational Transport

Mode	Emission Factors CO_2e per km or passenger km (from Table 12.3)	Distance Travelled per Annum (km) [a] Completed Amended Proposed Development	CO_2e Tonnes (per annum) [b]	
			2031 Opening Year	Lifetime Emissions
National Rail	0.0110	18,393,309	203	878
London Underground	0.0086	25,039,290	216	937
Bus/tram	0.0597	7,978,529	476	4,963
Car Driver	0.1040	0	0	0
London Taxis	0.1905	510,515	97	1,299
Cycle	-	3,461,673	0	0
Walk	-	780,032	0	0
Total	-	56,163,349	**992**	**8,077**

[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 12.3.*

Energy Consumption

12.144 The CO_2 emissions from energy consumption of the Amended Proposed Development are described in the Energy Statement[16]. The Energy Statement compares the Amended Proposed Development to a notional "baseline" of compliance with Approved Document Part L (AD L) 2021[36].

12.145 Table 12.7 summarises the improvement in performance for the Amended 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 CO_2 Emissions from Energy Consumption [a]

Item	Site-Wide (Tonnes CO_2 per annum)
REGULATED EMISSIONS	
Baseline: Part L compliance	298
After energy demand reduction (be lean)	275
Total % Improvement	8%
After heat network connection (be clean)	275
% Improvement	0%
After renewable energy (be green)	251
Total % Improvement	16%
Net Emissions [b]	251
UNREGULATED EMISSIONS	
With Energy Strategy	49
REGULATED AND UNREGULATED	
Net Emissions [b]	300

Notes
[a] *As described in the Energy Statement[16].*
[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.*

12.146 Table 12.7 shows that the non-domestic regulated components of the Amended Proposed Development will achieve a 16% improvement in carbon emissions over Part L 2021 compliance, which is below the Mayor's target of 35% improvement.

12.147 The London Plan[37] also require that a minimum of 15% reduction in non-domestic regulated emissions are met through energy efficiency measures ('Be Lean'); the Amended Proposed Development achieves an 8% reduction, which does not meet the target.

12.148 Whilst the reductions in regulated non-domestic emissions do not achieve the reduction targets, it should be noted that this is a challenging target to meet; the emissions targets are more difficult to achieve due to significant improvements to the notional baseline since the introduction of AD L 2021[36]. The GLA guidance states that applicants should continue to aim to maximise carbon reductions from passive measures as far as possible; this has been demonstrably achieved by the Amended Proposed Development, which has followed the energy hierarchy and exhausted all feasible and practical passive design measures.

12.149 The London Plan requires all residual regulated emissions to be offset to zero, and so the Amended Proposed Development will provide offsetting to further reduce the carbon emissions from regulated energy consumption. Carbon offsetting is discussed in the '*Mitigation, Monitoring and Residual Effects*' section of this ES chapter.

Water Supply and Treatment

12.150 GHG emissions associated with water supply and treatment during the operational phase of the Amended Proposed Development, as presented in module B7 of the whole life-cycle assessment[17], are 776 tonnes; this equates to 13 tonnes per annum based on a 60-year lifetime.

End of Life

12.151 The total embedded CO_2e emissions associated with the end-of-life stage of the Amended Proposed Development, as presented in modules C1-C4 of the WLC assessment[17], are 5,012 tonnes.

12.152 All of these emissions will occur at the end of the Amended 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

12.153 Table 12.8 summarises the GHG emissions for the Amended 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 12.84) 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.

12.154 As shown in Table 12.8, the Amended Proposed Development will result in a net increase in GHG emissions in the opening year of 13,162 tonnes.

[36] *(2023) Part L Building Regulations for England, 2023 Amendments. Available: https://www.gov.uk/government/publications/conservation-of-fuel-and-power-approved-document-l*

[37] *GLA (2021) The London Plan 2021*

Table 12.8 GHG Footprint for Amended 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	9,453	47,263
	Transport	0	852	4,261
	Site Activities	0	922	4,608
Operation	Repair, Maintenance and Replacement	0	630	37,822
	Energy	0	300	2,214 [b]
	Transport	0	992	8,077 [b]
	Water Supply and Treatment	0	13	776
TOTAL		**0**	**13,162**	**105,021**
End of Life	Deconstruction; Waste transport, processing and disposal	N/A	N/A	5,012 [c]

Notes:
[a] All figures are rounded.
[b] Taking account of decarbonisation up to 2050 (the UK's net zero target) utilising DESNZ electricity emissions factors[23] and transport emissions factors in DfT's WebTAG[20], as discussed in paragraphs 12.98 and 12.94, respectively.
[c] All emissions to occur at the end of the life of the Amended Proposed Development. This is not an annualised value.

Assessment of Significance

12.155 As detailed in paragraph 12.110, the IEMA guidance has been adopted to determine the likely significant effects of the Amended Proposed Development and considers the following three underlying principles to inform the assessment of significance.

Step 1: GHG Comparison

12.156 The first step in determining the likely significant effects is to contextualise the Amended Proposed Development's net GHG emissions to the UK-wide carbon budget[28], the GLA-wide GHG emissions total[29], and the LBC's borough-wide GHG emissions total[30]. This can be done for the deconstruction and construction phase of the Amended Proposed Development, as well as once complete and operational.

12.157 It should be noted that the LBC's carbon budgets include emissions for energy consumption only; thus, a comparison of the Amended Proposed Development's GHG emissions (including emissions from various other sources) to the budget present a worst-case scenario.

Deconstruction and Construction Phase GHG Comparison

12.158 The deconstruction and construction period has been based on 5 years.

12.159 Table 12.9 shows the GHG comparison between the deconstruction and construction phase of the Amended Proposed Development against the respective carbon budgets for the UK[28], GLA area[29] and the LBC[30]. As shown, the Amended Proposed Development will comprise no greater than 3% (when rounded) of GHG emissions from any budget, which is a commensurate contribution for a major development of this nature.

Table 12.9 GHG Comparison – Demolition and Construction Phase

	Budget (MT CO_2e)	Amended Proposed Development GHG Emissions (MT CO_2e)	% Comparison of Budget
2023 – 2027 (4th Budget)			
LBC-wide	2.4	0.02	0.9
GLA-wide	112.0		0.02
UK-wide	1,950.0		0.001
2028 – 2032 (5th Budget)			
LBC-wide	1.3	0.03	2.6
GLA-wide	90.0		0.04
UK-wide	1,725.0		0.002

12.160 It should be noted that all GHG emissions from the deconstruction and construction phase of the Amended Proposed Development are included in the budget comparisons, which is conservative as embedded carbon emissions are not considered within the GLA budget, and the LBC budget considers energy emissions only.

Completed and Operational Phase GHG Comparison

12.161 As previously discussed in this ES chapter, the Amended Proposed Development is anticipated to be first operational in 2031.

12.162 Table 12.10 shows the GHG comparison between the complete and operational Amended Proposed Development against the respective carbon budgets for the UK[28], GLA area[29] and the LBC[30]. As shown, the Amended Proposed Development will comprise no greater than 1% (when rounded) of GHG emissions from any budget, which is a commensurate contribution for a major development of this nature.

Table 12.10 GHG Comparison – Complete and Operational Amended Proposed Development

	Budget (MT CO_2e)	Amended Proposed Development GHG Emissions (MT CO_2e)	% Comparison of Budget
2028 – 2032 (5th Budget)			
LBC-wide	1.3	0.004	0.3
GLA-wide	90.0		0.004
UK-wide	1,725		0.0002
2033 – 2037 (6th Budget)			
LBC-wide	0.7	0.007	1.0
GLA-wide	-		-
UK-wide	965		0.0007

12.163 As above, it should be noted that all GHG emissions from the complete and operational Amended Proposed Development are included in the budget comparisons, which is conservative.

Step 2: Consistency with Policy

12.164 The second step in determining the likely significant effects is to contextualise the Amended Proposed Development's GHG emissions, which is described in the following sections.

National Policies

12.165 In terms of national policy, the key national policy is the National Planning Policy Framework (NPPF)[38]. Paragraphs 159 b), 160 and 162 are of particular relevance to the GHG assessment, which are all within Part 14 of the NPPF.

12.166 Paragraph 159 b) requires that: *"New development should be planned for 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."*

12.167 The Amended Proposed Development has been designed using an energy efficient, fabric-first approach as described in the Energy Statement[16]. A range of measures have been implemented into the design, as discussed in paragraph 12.138, to directly or indirectly reduce GHG emissions.

12.168 Paragraph 160 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 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."*

12.169 Although this strictly this applies to development plans and therefore overlaps with local policies, discussed later in this section, the Amended Proposed Development will employ the use of renewable energy (principally solar PV and ASHPs) within the building. The Amended Proposed Development therefore complies with Paragraph 160 of the NPPF.

12.170 Paragraph 162 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."*

12.171 Compliance with the local development plan is discussed in the proceeding paragraphs, but as set out in the Energy Statement[16], the Amended 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 Amended Proposed Development does not conflict with Paragraph 162 of the NPPF.

12.172 In addition to the NPPF, it is appropriate to review how the Amended Proposed Development aligns with national commitments to net zero by 2050. The CCC[39] 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.

12.173 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.

12.174 It is therefore reasonable to assume that national policy measures will ensure that energy and transport emissions relating to the Amended Proposed Development will be decarbonised, consistent with the UK's net zero target. In addition, as described in the Energy Statement, the Amended Proposed Development will adopt an all-electric energy strategy, ensuring the Amended Proposed Development is fully net zero ready in accordance with CCC advice and projections.

12.175 Importantly the Amended 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.

12.176 The Amended Proposed Development has been demonstrated to be able to decarbonise in line with Government trajectories (see paragraph 12.176) and will therefore not conflict with efforts to meet the national net zero target.

12.177 Overall, it is demonstrated that the Amended Proposed Development complies with the requirements of national planning policy relevant to GHG emissions.

Regional Policies

12.178 The Mayor of London published the '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.

12.179 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.

12.180 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).

12.181 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'.

12.182 Part C of Policy SI 2 includes a target to achieve minimum on-site carbon reductions in regulated emissions of at least 35% beyond AD L 2021[36] compliance , with a minimum of 15% reduction in regulated non-domestic emissions met through energy efficiency measures. The Amended Proposed Development does not achieve these targets..

12.183 Notwithstanding the above, Policy SI 2 of the London Plan requires all developments to achieve net zero through offsetting residual emissions as necessary. Thus, offsetting is provided (as discussed in the Energy Statement[16]) to achieve net zero emissions from energy consumption. Overall, therefore, the Amended Proposed Development is net zero and compliant with the London Plan. As such, it is considered that the Amended Proposed Development complies with the requirements of regional planning policy relevant to GHG emissions.

[38] *Department for Levelling Up, Housing & Communities (2023) National Planning Policy Framework.*

[39] *CCC, (2019). Net Zero, Technical report.*

12.184 Taking account of the above, it is considered that the Amended Proposed Development complies with the requirements of regional planning policy relevant to GHG emissions.

London Plan Guidance: Whole Life-Cycle Carbon Assessments

12.185 Part F of the London Plan Policy SI 2 requires major applications to produce a WLCA, in accordance with GLA guidance and demonstrate actions to reduce life cycle carbon emissions. The GLA have provided several targets covering upfront embodied carbon (Modules A1-5), in-use and end of life carbon (Modules B-C) and life-cycle carbon (Modules A-C). This includes a standard benchmark and an aspirational benchmark, which are detailed in Table 12.11 below. The Amended Proposed Development's emissions for WLCA modules A1-5, B-C (excluding B6 & B7) and A-C (excluding B6 & B7) are also presented in Table 12.11 for comparison against the GLA's WLCA standard and aspirational benchmarks.

Table 12.11 GLA's WLCA Standard and Aspirational Benchmarks and the Amended Proposed Development's WLCA Emissions

	A1-5 (kg CO_2e/m^2 GIA)	B-C (exc. B6 & B7) (kg CO_2e/m^2 GIA)	A-C (exc. B6 & B7) (kg CO_2e/m^2 GIA)
GLA WLCA Standard Benchmark – Offices	< 950	< 450	< 1,400
GLA WLCA Aspirational Benchmark – Offices	< 600	< 370	< 970
Amended Proposed Development's WLCA Emissions	703	537	1,225

12.186 As shown, the predicted upfront embodied carbon value (modules A1-A5) of 703 kg CO_2e/m^2 GIA for the Amended Proposed Development performs better than the GLA's WLCA standard benchmark but falls short of the aspirational benchmark. A 10 - 15% uplift factor has been applied to all modules to account for design changes that may occur following RIBA Stage 2, alongside market uncertainties and procurement.

12.187 The Amended Proposed Development falls short of the GLA's WLCA standard and aspirational benchmarks for modules B-C (excluding B6 and B7). However, Table 12.11 shows an overall embodied carbon value (modules A-C (excluding B6 and B7)) of 1,225 kg CO_2e/m^2 GIA for the Amended Proposed Development, inclusive of the aforementioned uplift. Overall, therefore, the Amended Proposed Development performs better than the GLA's WLCA standard benchmark but falls short of the aspirational benchmark.

12.188 Taking account of the above, it is considered that the Amended Proposed Development complies with the requirements of regional planning policy relevant to GHG emissions.

Local Policies

12.189 The LBC Local Plan[40] was adopted in July 2017. The following policies are applicable to the GHG assessment.

12.190 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…'

12.191 The Amended Proposed Development complies with the requirements of Policy CC1 by:

- Production of a detailed Energy Statement[16] for the Amended Proposed Development assessing the design and performance of the buildings against the Mayor's Energy Hierarchy;
- Adopting an energy efficient design, communal zero-emission ASHP heating, and renewable PV energy to achieve a 16% reduction in regulated carbon dioxide emissions below the AD Part L 2021 baseline;
- Offsetting the remaining regulated CO_2 through a cash in lieu contribution;
- 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

12.192 Table 12.12 sets out an assessment of the Amended 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 12.131 to 12.139 and additional mitigation measures are described in paragraphs 12.199 to 12.137.

Table 12.12 Amended 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 replacement	N/A	It is anticipated that materials used in repair, maintenance and replacement 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 Amended 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 Amended Proposed Developments does not achieve these targets, but includes offsetting via cash in-lieu.	Regulated emissions will be reduced to zero via offset payment, in line with GLA guidelines.

12.193 The mitigation measures set out in Table 12.12are judged to represent good practice and be proportionate and consistent with developments of this scale and type.

Assessment of Significance

12.194 The final stage of assessment of significance is to consider the residual GHG emissions in the context of the proposed mitigation and relevant policy targets. Table 12.13 summarises the residual significance of effects of

[40] *LBC (2020) Tower Hamlets Local Plan 2031: Managing Growth and Sharing Benefits.*

the Amended Proposed Development's GHG emissions, following the IEMA approach summarised in Table 12.4.

12.195 The assessment considers the context of the Amended Proposed Development's GHG emissions, as well as the compliance of the Amended Proposed Development will relevant national and local policies and the robustness, timeliness and efficacy of the mitigation to avoid and reduce GHG emissions.

Table 12.13 Amended 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 Amended Proposed Development's emissions are a small component of national, regional and local emissions budgets. The Amended 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 Amended 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 Amended Proposed Development is fully consistent with applicable existing policy requirements.
	Robustness, timeliness and efficacy of mitigation	The Amended 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 Amended Proposed Development onwards.	Minor Adverse: The GHG mitigation provided by the Amended Proposed Development is in line with best practice design standards for projects of this type.

12.196 Although the Amended Proposed Development contributes to local, regional 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 Amended Proposed Development is compliant with the UK's target for net zero carbon emissions by 2050. The Amended 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 Amended Proposed Development will have a **Minor Adverse** impact on GHG emissions, and thus the effect is **'not significant'**.

Mitigation, Monitoring and Residual Effects

12.197 Additional measures and environmental management strategies that will help directly or indirectly reduce GHG emissions during deconstruction and construction and operation of the Amended Proposed Development are summarised in the following sections. The measures set out below are additional to the embedded mitigation measures described in paragraphs 12.131 to 12.139.

Deconstruction and Construction Mitigation

12.198 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.

12.199 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

12.200 To comply with Policy SI 2 of the London Plan[37] and LBC Local Plan[40], carbon offset payments will be provided to reduce residual regulated CO_2 emissions to zero. The offset price is £95 per tonne for 30 years. Thus, for the Amended Proposed Development, as set out in the Energy Statement[16], the offsetting contribution will be £716,023.

12.201 The final residual opening year CO_2e emissions from the Amended Proposed Development's energy consumption when considering offsetting will be zero.

Monitoring

12.202 No monitoring is proposed to monitor the GHG effects of the Amended Proposed Development.

Residual Effects

12.203 The residual effects are judged to be the same as those identified in the main assessment of potential effects. The GHG effects associated with the Amended Proposed Development are Minor Adverse and therefore **'not significant'**.

Assessment of the Future Environment

Evolution of the Baseline Scenario

12.204 If the Amended 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

12.205 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".

12.206 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 Amended Proposed Development.

12.207 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.

12.208 The residual cumulative GHG emissions from the eight cumulative schemes and the Amended Proposed Development will likely be small in the context of local, regional (GLA-wide) and national GHG emissions, and as part of the wider cumulative effects of GHG emissions from all local, regional, national and global sources are nonetheless judged to be '**not significant**' in accordance with IEMA guidance.

Likely Significant Effects

12.209 The GHG assessment has identified that the Amended 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.

12.210 This conclusion is based on the GHG emissions generated by the Amended Proposed Development being small in the context of local and regional emissions and GHG budgets, the Amended Proposed Development being compliant will all relevant policies relating to GHG and climate change, and the fact that the Amended

Proposed Development will not conflict with or prevent the UK meeting its net zero GHG emissions target of 2050.

12.211 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: Summary and Conclusions

INTRODUCTION

13.1 This ES Addendum chapter summarises the conclusions of the 2024 ES Addendum for the Amended Proposed Development, in addition to providing an overview of the updates to the December 2023 ES **– ES Volume 1, Chapter 13: Effects Interactions, Chapter 14: Likely Significant Effects** and **Chapter 15: Environmental Management, Mitigation and Monitoring Schedule**.

ES CHAPTER 13: EFFECTS INTERACTIONS

13.2 All effects interactions reported in the December 2023 ES remain valid and unchanged. No additional effect interactions have been identified within this 2024 ES Addendum.

ES CHAPTER 14: LIKELY SIGNIFICANT EFFECTS AND CONCLUSIONS

13.3 The majority of the likely significant effects determined within the December 2023 ES remain valid and unchanged. There are no changes or additions to the significant effects concluded during the deconstruction and construction phase.

13.4 Changes to significant effects were identified once the Amended Proposed Development is completed and operational. These changes relate to the topic of Daylight, Sunlight Overshadowing and Solar Glare only.

13.5 There are no changes to the identified cumulative schemes set out in the December 2023 ES and therefore these effects and conclusions remain valid.

Daylight, Sunlight, Overshadowing and Solar Glare

13.6 For daylight, the effect of the Amended Proposed Development on 175 Drummond Street would be reduced from 'Minor to Moderate Adverse' (**Significant**) in the December 2023 ES to 'Negligible' (Not Significant) in the 2024 ES Addendum.

13.7 Further changes between the assessment of the Proposed Development and the Amended Proposed Development were identified, however these changes did not impact the significance of the effects stated (all effects remain Not Significant)

CHAPTER 15: ENVIRONMENTAL MANAGEMENT, MITIGATION AND MONITORING SCHEDULE

13.8 The mitigation measures detailed within the December 2023 ES remain valid and should also be applied for the Amended Proposed Development, with the exception of the wind microclimate mitigation measures which are superseded by those detailed below.

13.9 The following wind microclimate mitigation measures have been included as part of the Amended Proposed Development to ensure that external spaces are suitable and safe for their intended use for future occupant / users of the Amended Proposed Development:

- South-east corner:
  - No. 1 raised planter (1.2m) circling the column at the south-east corner including:
    - 1m tall shrubs across the whole planter;
- South-west corner:
  - Landscaped stairs along the western façade;
  - No.5 planters:
    - North raised planter: mounded to 1.5m tall with No. 6 deciduous trees 3-5m tall & No. 1 evergreen tree 6m tall;
    - North-west planter: mounded to 2m tall with No. 8 deciduous trees 3-5m tall & No. 2 evergreen tree 6m tall;
    - West planter: mounded to 2m tall with No. 9 deciduous trees 3-5m tall & No. 2 evergreen tree 6m tall;
    - South-west planter: mounded to 1.5m tall with No. 3 deciduous trees 3-5m tall & No. 1 evergreen tree 6m tall; and
    - South planter: mounded to 1m tall with No. 4 deciduous trees 3-5m tall & No. 2 evergreen tree 6m tall.
- 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. 5 deciduous trees 3-5m tall & No. 1 evergreen tree 6m tall; and
    - Eastern level planter: No. 1 evergreen tree 10m tall.

13.10 Furthermore, a temporary porous screen is required on the north-west balcony on Level 26, while a solid screen is required on the south-west balcony on Level 11.

13.11 An existing off-site tree located along Euston Road will also be retained, or replaced if removed, in order to achieve the wind conditions reported within **ES Addendum Volume 1, Chapter 11: Wind Microclimate**.

13.12 All remaining mitigation and monitoring measures set out within the December 2023 ES – **ES Volume 1, Chapter 15: Environmental Management, Mitigation and Monitoring Schedule** remain valid.

CONCLUSIONS

13.13 This 2024 ES Addendum has considered whether the Amended Proposed Development as a whole is likely to give rise to any new or materially different significant environmental effects or change any of the conclusions of the December 2023 ES.

13.14 The Amended Proposed Development would not result in a likely significant daylight effect at 175 Drummond Street, as previously anticipated from the December 2023 ES. While some additional changes in magnitude of effects were identified, none of these introduced new or different significant effects.

13.15 All other technical assessments have shown no change in the significance of effects concluded within the December 2023 ES, as a result of the Proposed Amendments.