

Chapter 12: Climate Change and Greenhouse Gases

CLIMATE CHANGE AND GREENHOUSE GASES	
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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	<i>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.</i> <i>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.</i> <i>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:</i> <ul style="list-style-type: none"><i>"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."</i> <i>This has been addressed within paragraph 12.20.</i><i>"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"</i>

CLIMATE CHANGE AND GREENHOUSE GASES	
	<i>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.</i>

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) website²). 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 15978:2011³. 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 Report⁴ 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 Findings⁵ 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 Plan⁸ 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 NO_x to convert NO₂, 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 Assessment⁹ 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 Strategy¹⁰. 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 100m² 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 Statement¹¹ 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 approach¹¹ 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 CO₂ equivalent (CO₂e) over 100 years. This allows for the emissions of the seven key GHG: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), nitrogen trifluoride (NF₃) and sulphur hexafluoride (SF₆) expressed in terms of their equivalent global warming potential in mass of CO₂e.

Scope of the Assessment

- 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 guidance¹³ 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..

¹¹Euston Tower Circular Economy Statement; GXN, December 2024

¹²His Majesty’s Stationery Office (HMSO) (2017) *The Town and Country Planning (Environmental Impact Assessment) (England) Regulations 2017 (as amended 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 15978:2011¹⁴.
- 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 assessment¹⁷.

Embedded Carbon

- 12.89** Emissions from the manufacturing of construction materials have been sourced from the WLC assessment¹⁷. These correspond to modules A1-A3 of a carbon lifecycle assessment as defined in RICS¹⁸ and GLA¹⁹ guidance.

Construction Traffic

- 12.90** Emissions from the construction traffic have been sourced from the WLC assessment¹⁷. These correspond to module A4 of a carbon lifecycle assessment as defined in RICS¹⁸ and GLA¹⁹ 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 assessment¹⁷. These correspond to module A5 of a carbon lifecycle assessment as defined in RICS¹⁸ and GLA¹⁹ 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 assessment¹⁷.

Transport

- 12.94** GHG emissions factors for transport have been derived from the DfT's WebTAG databook²⁰ and the Department for Energy, Security and Net Zero (DESNZ) GHG conversion factors²¹. 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 CO ₂ e)
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 data²² 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 CO₂ emissions associated with the energy use of the Amended Proposed Development have been obtained from the Energy Statement¹⁶ (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 CO₂ factors and CO₂ 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 Statement¹⁶ 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 DESNZ²³, 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 CO₂ rather than CO₂e. The use of CO₂ emissions factors (rather than CO₂e) 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 assessment¹⁷, 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 Assessment¹⁷. 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 report²⁶ 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 Statement¹⁶ 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, CO₂e/kWh is estimated by DESNZ to be 0.9% higher than CO₂/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 UK's 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 IPCC²⁷. 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 budgets²⁸;
- The GLA-wide area, as published within the London Environment Strategy Implementation Plan²⁹; and
- The LBC, as published by the University of Manchester Tyndall Centre for Climate Change Research³⁰.

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 Act³¹ 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: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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 guidance¹³ 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 ₂ e 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 Plan³³ and a Delivery and Servicing Plan³⁴ 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 CO₂e emissions for the Amended Proposed Development, as presented in modules A1-A3 of the whole life-cycle assessment¹⁷, 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 occur³⁵.

Transport

12.140 The total CO₂e emissions from transport during construction of the Amended Proposed Development, as presented in module A4 of the whole life-cycle assessment¹⁷, are 4,261 tonnes, based on a 5-year construction programme this equates to 852 tonnes/annum.

Site Activities

12.141 The total embedded CO₂e emissions from site activities during construction of the Amended Proposed Development, as presented in module A5 of the whole life-cycle assessment¹⁷, 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 assessment¹⁷ (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 ₂ e per km or passenger km (from Table 12.3)	Distance Travelled per Annum (km) ^a Completed Amended Proposed Development	CO ₂ e 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 CO₂e emissions are calculated by multiplying distance travelled by CO₂e factors by mode from Table 12.3.

Energy Consumption

12.144 The CO₂ emissions from energy consumption of the Amended Proposed Development are described in the Energy Statement¹⁶. The Energy Statement compares the Amended Proposed Development to a notional “baseline” of compliance with Approved Document Part L (AD L) 2021³⁶.

12.145 Table 12.7 summarises the improvement in performance for the Amended Proposed Development for regulated CO₂ emissions, taking into account measures to address the Mayor’s Climate Change Strategy to be lean, be clean, be green.

Table 12.7 Assessment of CO₂ Emissions from Energy Consumption ^a

Item	Site-Wide (Tonnes CO ₂ per annum)
REGULATED EMISSIONS	
Baseline: Part L compliance	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
<i>Notes</i> ^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.	

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>

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 Plan³⁷ 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 2021³⁶. 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 assessment¹⁷, are 776 tonnes; this equates to 13 tonnes per annum based on a 60-year lifetime.

End of Life

12.151 The total embedded CO₂e emissions associated with the end-of-life stage of the Amended Proposed Development, as presented in modules C1-C4 of the WLC assessment¹⁷, 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.

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 ₂ e per annum)	Opening Year (tonnes CO ₂ e per annum)	Lifetime Emissions (tonnes CO ₂ e)
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 budget²⁸, the GLA-wide GHG emissions total²⁹, and the LBC's borough-wide GHG emissions total³⁰. 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 UK²⁸, GLA area²⁹ and the LBC³⁰. 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 ₂ e)	Amended Proposed Development GHG Emissions (MT CO ₂ e)	% Comparison of Budget
2023 – 2027 (4 th Budget)			
LBC-wide	2.4	0.02	0.9
GLA-wide	112.0		0.02
UK-wide	1,950.0		0.001
2028 – 2032 (5 th 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 UK²⁸, GLA area²⁹ and the LBC³⁰. 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 ₂ e)	Amended Proposed Development GHG Emissions (MT CO ₂ e)	% Comparison of Budget
2028 – 2032 (5 th Budget)			
LBC-wide	1.3	0.004	0.3
GLA-wide	90.0		0.004
UK-wide	1,725		0.0002
2033 – 2037 (6 th 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 Statement¹⁶. 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 Statement¹⁶, 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 CCC³⁹ 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 2021³⁶ 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 Statement¹⁶) 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 ₂ e/m ² GIA)	B-C (exc. B6 & B7) (kg CO ₂ e/m ² GIA)	A-C (exc. B6 & B7) (kg CO ₂ e/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 CO₂e/m² 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 CO₂e/m² 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 Plan⁴⁰ 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:

- promote zero carbon development and require all development to reduce carbon dioxide emissions through following the steps in the energy hierarchy;*
- require all major development to demonstrate how London Plan targets for carbon dioxide emissions have been met;*
- 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;*
- support and encourage sensitive energy efficiency improvements to existing buildings;*

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

- require all proposals that involve substantial demolition to demonstrate that it is not possible to retain and improve the existing building; and*
- 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 Statement¹⁶ 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 CO₂ through a cash in lieu contribution;
- Provision of PV panels to provide reduction in regulated CO₂ 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 Development 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 12.12 are 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

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 Plan³⁷ and LBC Local Plan⁴⁰, carbon offset payments will be provided to reduce residual regulated CO₂ 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 Statement¹⁶, the offsetting contribution will be £716,023.

12.201 The final residual opening year CO₂e 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.