

Growing Baldock

Environmental Statement Volume 1: Text
Chapter 17: Climate Change



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Urban&Civic

Hertfordshire



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17.1 INTRODUCTION

- 17.1.1 This Chapter reports the outcome of the assessment of likely significant environmental effects arising from the Proposed Development in relation to Climate Change.
- 17.1.2 It has been prepared by Paul White, Director of Sustainability & ESG at Turley, who is an ISEP (formerly IEMA) Practitioner with seven years' experience of preparing Climate Change ES Chapters.
- 17.1.3 The Chapter describes the technical consultation that has been undertaken during the EIA, the scope of the assessment and assessment methodology, and a summary of the baseline information that has informed the assessment.
- 17.1.4 The assessment reports on the likely significant environmental effects, the further mitigation measures required to prevent, reduce or offset any significant adverse effects, or further enhance beneficial effects. The assessment of effects takes into consideration both primary and tertiary mitigation (see Chapter 2: The Proposed Development for further details) and is informed by the EIA Scoping process (**Appendix 1.3**).
- 17.1.5 This Chapter is intended to be read as part of the wider ES with particular reference to the introductory Chapters of this ES (Chapters 1–3).

17.2 RELEVANT POLICY

National Policy

National Planning Policy Framework

17.2.1 The National Planning Policy Framework (NPPF)ⁱ explains (paragraph 7) the purpose of the planning system is to contribute to sustainable development including the provision of new homes, commercial development, and supporting infrastructure in a sustainable manner. It explains (paragraph 8) that sustainable development has three overarching objectives which are interdependent and need to be pursued in mutually supportive ways, with the environmental objective to which this chapter relates including the need to mitigate and adapt to climate change and support the move to a low carbon economy.

17.2.2 NPPF paragraph 164 states that new development should be planned for in ways that:

- avoid increased vulnerability to the range of impacts arising from climate change through suitable adaptation measures such as green infrastructure and sustainable drainage systems; and
- help to reduce GHG emissions, such as through its location, orientation and design.

Planning Practice Guidance

17.2.3 The National Design Guideⁱⁱ forms part of Planning Practice Guidance (PPG), and explains how well-designed places address both climate change mitigation and climate change resilience.

Local Policy

North Hertfordshire Local Plan (2022)

17.2.4 The Council's Local Plan includes the following relevant climate change related policies.

- Policy SP9: Design and Sustainability – Sets out sustainable design expectations for new development, including ensuring site masterplans include a Sustainability and Energy Framework which identifies site wide and building scale opportunities for low and zero carbon. The policy also states the council will support a high-quality integrated network to support ecological connectivity, biodiversity net gain, climate adaptation and mitigation.
- Policy SP11: Natural Resources and Sustainability – States the Council aims to meet the challenge of climate change and flooding.

17.2.5 In 2024 the Council adopted the Sustainability Supplementary Planning Document (SPD) which provides information on the Council's sustainability expectations for new development. The SPD includes guidance on a range of sustainable design areas including optimising passive design and fabric performance, achieving low carbon energy, and

minimising carbon footprint. The SPD includes a checklist of targets for new development to assess sustainability performance ranking each aspect from Bronze to Gold.

Any Other Relevant Policy, Legislation or Guidance

North Herts Sustainability Strategy 2025 – 2030

- 17.2.6 The Council recently published a new Sustainability Strategy which sets out objectives and actions for Council services and the wider district. This highlights the Council's commitment to tackling climate change.

Climate Change Act

- 17.2.7 The Climate Change Act 2008ⁱⁱⁱ sets the basis for the UK's approach to tackling climate change, established the Committee on Climate Change, committed the UK to an 80% reduction in GHG emissions by 2050 compared to 1990 levels, and required Government to set legally-binding 'carbon budgets' to act as stepping-stones towards this 2050 target. The Act was amended in 2019^{iv} to commit the UK to 'net zero' (i.e. a 100% GHG emissions reduction) by 2050.

Future Homes Standard & Future Buildings Standard / Building Regulations Part L: Conservation of Fuel & Power

- 17.2.8 The Future Homes and Buildings Standards: 2023 consultation^v sets out Government's intention to set performance requirements for new homes and non-residential buildings at a level that ensures high fabric performance (insulation, air tightness etc), low-carbon heating, and 'zero-carbon ready' buildings, meaning no further work is needed for these buildings to have zero operational GHG emissions once the UK electricity grid has fully decarbonised.
- 17.2.9 This consultation sets out two performance options for the Future Homes Standard: Option 1 is the most cost-effective option to maximise carbon savings and reduce energy bills for households, although it comes with additional upfront costs for developers, including the provision of solar photovoltaic (PV) panels to cover 40% of ground floor area, as well as mechanical ventilation with heat recover. Option 2 is the minimal approach to achieve 'zero-carbon ready' homes which still deliver at least a 75% carbon saving relative to Part L 2013 requirements, comprising natural ventilation with no solar PV required.
- 17.2.10 Two performance options are also consulted for the Future Buildings Standard, with Option 1 requiring Solar PV equivalent to 40% of the building's foundation area for side-lit spaces and 75% for top-lit spaces. Option 2 requires solar PV coverage equivalent to 20% of foundation area for side-lit spaces and 40% for top-lit spaces, with both options therefore requiring solar PV provision (unlike the Future Homes Standard performance options).

- 17.2.11 Publication of the Future Homes Standard and Future Buildings Standard legislation via an update to Building Regulations Part L: Conservation of Fuel & Power is scheduled for Autumn 2025^{vi}, and following the proposed transitional arrangements, compliance with this standard is anticipated to be required from summer / autumn 2027. As a result it is assumed that all new residential and non-residential buildings delivered at the Proposed Development will comply with these standards. Government has also confirmed that the Future Homes Standard will require the installation of solar PV panels on the vast majority of new build homes.

Building Regulations Part O: Overheating

- 17.2.12 Building Regulations Part O Overheating^{vii} came into effect in June 2022, requiring new residential buildings (e.g. schools, nursing homes etc) to address risk of summertime through a combination of prevention and remedy:
- Prevention: by limiting the amount of direct sunlight through windows and glazing; and
 - Remedy: through provision to quickly remove excess heat from inside a room when it gets too hot.

Building Regulations Part A: Structure

- 17.2.13 Building Regulations Part A: Structure^{viii} covers the structural elements of new buildings in England. It includes the requirement for ground movement caused by swelling and shrinkage, which can be exacerbated by climate change, to be appropriately considered.

Make Britain A Clean Energy Superpower

- 17.2.14 Make Britain A Clean Energy Superpower^{ix} sets out the Labour Government's plans to cut energy bills, create jobs and deliver energy security with cheaper, virtually zero carbon grid electricity (i.e. 95%) by 2030. The National Energy System Operator (NESO) has recently been established to pursue this target.

ISEP Guidance – GHG Emissions

- 17.2.15 ISEP's EIA Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance (ISEP, 2022) (ISEP's GHG Assessment Guidance) – provides guidance on the assessment of GHG emissions^x.

ISEP Guidance – Climate Adaptation

- 17.2.16 ISEP's EIA Guide to: Climate Change Resilience & Adaptation^{xi} (ISEP's Climate Adaptation Guidance) – provides guidance on the assessment of climate resilience and adaptation.

RIBA 2030 Climate Challenge

- 17.2.17 RIBA 2030 Climate Challenge^{xii} – provides good and best practice guidance on reducing energy demand and embodied carbon for residential and non-residential development.

LETI Design Guidance

- 17.2.18 LETI Climate Emergency Design Guide (2020)^{xiii} and LETI's Embodied Carbon Target Alignment (2021)^{xiv} – provide good and best practice for upfront embodied carbon and operational energy for residential and non-residential buildings.

UK Net Zero Building Standard

- 17.2.19 The UK Net Zero Building Standard (UKNZB) sets out a new voluntary standard for the delivery of net zero buildings. The Standard sets out energy performance and embodied carbon targets for new development. The ^{xv} version was released in 2024.

17.3 ASSESSMENT METHODOLOGY

- 17.3.1 GHG emissions from the Proposed Development have been assessed in accordance with ISEP's EIA Guide to Assessing GHG Emissions and Evaluating their Significance ('ISEP GHG Guide').
- 17.3.2 There is at present no single accepted methodology for the assessment of GHG emissions within EIA. The proposed assessment methodology outlined below is therefore based on the application of ISEP's GHG Assessment Guidance, together with professional judgement.
- 17.3.3 Determining the magnitude, level of effect and significance of climate change (GHG emissions or savings) from new development remains an emerging practice and is complex, given the local scale at which GHG emissions typically occur in contrast to the global and transboundary nature of climate change.
- 17.3.4 In line with ISEP's GHG Assessment guidance, the approach taken in this assessment is to estimate GHG emissions resulting from the construction and operation stages of the Proposed Development and to evaluate these emissions in the context of baseline GHG emissions from the Assessment Boundary, local authority (i.e. the North Hertfordshire administrative area), and region (i.e. Hertfordshire and East of England), as well as the future carbon budgets proposed for North Hertfordshire and the UK.
- 17.3.5 Furthermore, and in accordance with ISEP guidance, consideration is also given to the contribution of the Project for Assessment to a science-based net zero trajectory in line with the 2015 Paris Agreement's 1.5°C pathway. In order to evaluate the contribution of the Proposed Development to this net zero pathway, its construction and operational stage performance is evaluated against available good and best practice metrics for 'upfront embodied carbon' and 'operational energy use intensity' respectively.
- 17.3.6 The approach taken here is therefore to evaluate the likely magnitude of GHG emissions resulting during the construction and operation of the Proposed Development, together with an evaluation of the various measures that are proposed to mitigate GHG emissions during these stages, and whether these measures represent good practice or above for a project of its type, and such contributes appropriately to the UK net zero 2050 trajectory.

Scope

- 17.3.7 The Application Site forms the focus of the GHG assessment, with on-site emissions during construction including the combustion of fuels by site plant and equipment (e.g. generators) and vehicles. However, GHG emissions will also occur at unknown locations beyond the Application Site, for example the manufacture and transport of various materials during construction, and the generation (e.g. at a power station) of electricity

consumed by the Proposed Development once operational. As such the geographical scope of the GHG assessment is not determined, aligning with the ISEP EIA Guide which recognises the global effect of GHG emissions irrespective of their location.

Scenario Assessed

- 17.3.8 With reference to the scenarios being considered for the flexible land use element of the Proposed Development it has been assumed that the option which includes the 12FE secondary school and SEND school is likely to have the highest GHG impact and therefore forms the basis of the assessment within this chapter.

Scope of Assessment

- 17.3.9 Below is a summary provided on the scope of the GHG Assessment, noting which elements are scoped in, which elements scoped out, and which elements will be assessed qualitatively and quantitatively. Further detail is provided in the Limitations and Assumptions section.

Building Construction and Operation

- 17.3.10 The construction and operation of the Proposed Development will result in the release of GHG emissions associated with the upfront embodied carbon of buildings and infrastructure, as well as operational emissions from the buildings. This has been scoped in and will form part of the GHG assessment.

Transport

- 17.3.11 The Proposed Development will generate additional vehicle trips on the local road network as a result of its construction and operation.
- 17.3.12 The construction stage transport emissions form part of the construction stage A1-A5 (which covers product / material manufacture and construction)^{xvi} carbon emissions and form part of the development's upfront carbon emissions. The upfront embodied carbon has been included in the assessment of construction emissions.
- 17.3.13 In terms of the operational transport emissions, the trips associated with the residential uses are likely to already exist on the transport network and will be redistributed within the local area. The communal and non-residential elements associated with the homes, i.e. the school and local centre proposed are likely to be used primarily by people within the Proposed Development. It is anticipated that trips will largely be made via walking. The Government's Net Zero vehicle pathway aims to ensure all new cars are Net Zero from 2035^{xvii}, and the Building Regulations include requirements for the provision of EV charging infrastructure for residential and non-residential development. Therefore, these have not be considered in the assessment.

- 17.3.14 With regards to transport emissions associated with the employment land proposed the completed operational employment proposals will likely generate additional vehicle trips. It is likely that a proportion of the trips to be generate already exist on the network and will move to the Site through the consolidation or movement of business operations. It is not possible to determine whether trips associated with the employment element are truly 'Net New', it is therefore not possible to directly quantify the direct GHG emissions from this element. While it is not possible to directly quantify these emissions it is noted that the Government has previously stated an intention for HGVs to be net zero from 2040. A zero emissions HGV and coach infrastructure strategy is being prepared which will set the strategic direction to deliver zero emissions HGVsxviii. As noted above, the Building Regulations include requirements for installation of EV charging for non-residential development, and charging provision will be included for the employment units for HGVs. It is anticipated that the impact from increased transport movements will reduce over time in line with the Government's strategy. In this context operational transport emissions have not been considered in the assessment.

Green Infrastructure

Due to the nature of the Proposed Development there will be a change in the net carbon sequestration potential of the green infrastructure within the Assessment Boundary. It is expected that in achieving an enhancement in site biodiversity the carbon sequestration potential of the Proposed Development will increase. The carbon sequestration potential of the Proposed Development is likely to be very small in comparison to the construction and operational GHG emissions, and therefore not likely to be significant. In this context, and the likelihood of an improvement in sequestration from the landscaping and ecological enhancements proposed this will therefore not be considered in the assessment.

Water

- 17.3.15 GHG emissions from water are generally considered small. Construction stage water GHG emissions are included within the upfront embodied carbon of development as set out in the construction stages A1 – A5. Operational water GHG emissions are difficult to estimate as there are no available benchmarks to estimate water use from commercial buildings. Water use is to be limited with residential development built to achieve the Building Regulations higher water efficiency standard of 110l/p/d , and non-residential development designed to achieve at least two BREEAM Wat01, Water Efficiency credits, achieving a 25% reduction in water consumption. In this context, GHG emissions associated with operational water consumption have been scoped out of the GHG assessment.

Waste

- 17.3.16 GHG emissions from waste are also generally considered to be small. Construction stage waste GHG emissions are included within the upfront embodied carbon of development as set out in construction stage A1 – A5. Operational waste will be minimised through the provision of waste storage and alignment with local waste services which aim to recycle waste and minimise waste to landfill. In this context, it is considered that operational GHG emissions from waste are likely to be small in comparison to the other operational emissions of the Proposed Development (e.g. energy use) and this has therefore been excluded from the GHG assessment.

Data Sources

Scoping Opinion and Response

- 17.3.17 The Scoping Opinion (**Appendix 1.3**) provided by the Council notes that consideration needs to be given to consultee responses from HCC as the lead local flood authority and the Environment Agency who both require climate change to be considered in the assessment of hydrology and flooding. The Council agrees that a Climate Change ES chapter will be required.
- 17.3.18 The scoping response from Natural England includes a section on Climate Change and notes the ES should identify how the development affects the ability of the natural environment to adapt to climate change, including the ability to provide adaptation for people. The response notes further guidance is available from a range of sources including the UK Climate Change Risk Assessment and UK Climate Projections. The response also notes that the ES should identify how the development impacts the natural environments ability to store and sequester greenhouse gases.
- 17.3.19 The scoping response from the LLFA notes the requirement for a Flood Risk Assessment which considers appropriate climate change allowances.
- 17.3.20 As part of the Scoping Report (**Appendix 1.3**) prepared for the Proposed Development a range of mitigation measures were set out in relation to potential climate change adaptation effects. This included mitigation related to:
- Increasing summer mean and daily maximum temperatures and influence on human health during construction
 - Changing annual temperatures / rainfall patterns and changes to water supply, flood risk and air quality in construction
 - Changes to future climate including temperature and rainfall and risk to building infrastructure during operation
 - Changes to future climate and resilience of site habitats and species
 - Higher average summer temperatures and risk of building overheating to future occupants

- Reduction in summer rainfall and risk of restricted water supply during operation

- 17.3.21 These measures set out how the Proposed Development will be resilient to the anticipated effects of climate change, enhancing the ability of the natural environment to adapt to climate change, including the ability to provide adaptation for people as requested by Natural England, as well as the consideration of climate change allowances in the Flood Risk assessment as requested by the LLFA.
- 17.3.22 As set out in the section above on the Scope of the assessment, the impacts on carbon sequestration, also highlighted by Natural England, are anticipated to be very small, and through ecological enhancements provided to achieve a net gain in biodiversity are likely to be positive.
- 17.3.23 In this context further assessment of Climate Change Adaptation and carbon sequestration are not considered significant and are not assessed.

Energy Data

- 17.3.24 Energy data used in the assessment has been drawn from Urban and Civic's (U&C) corporate Sustainability Framework and Map to Net Zero which sets out energy performance and embodied carbon targets for different building types. Information has also been drawn from the Sustainability Statement which accompanies the application which sets out the overarching energy and carbon strategy for the Proposed Development.

Grid Factors

- 17.3.25 The future UK electricity grid factors sourced from Department for Energy Security and Net Zero (DESNZ) are projections which may not reflect the actual emissions associated with grid electricity consumption in future^{xix}. However, DESNZ projections have slightly underestimated the rate of grid decarbonisation in recent years, so any inaccuracy in these projections may serve to over-estimate as well as under-estimate GHG emissions associated with the Proposed Development's future electricity demand.

Baseline GHG Emissions

- 17.3.26 Baseline GHG emissions have therefore been established at the local authorities' administrative area of North Hertfordshire and at the regional level (Hertfordshire, and East of England) from the latest (2023) UK local authority and regional greenhouse gas emissions statistics^{xx}.
- 17.3.27 Future baseline GHG emissions have been established in the form of carbon budgets proposed for North Hertfordshire^{xxi} by Manchester University's Tyndall Centre, whilst UK carbon budgets are established from Government's Carbon Budget Delivery Plan^{xxii}.

Assessment Approach

17.3.28 The applied GHG assessment methodology can be summarised as follows:

- Review national and local legislation, policy and guidance relating to GHG emissions, energy and climate change mitigation;
- Establish baseline GHG emissions;
- Establish future baseline GHG emissions in the form of carbon budgets;
- Qualitatively evaluate, based on professional judgement and in the absence of mitigation, the likely magnitude and level of potential GHG emissions effects during the construction and post-completion stages of the Proposed Development relative to baseline GHG emissions and future carbon budgets;
- Evaluate primary and tertiary measures that are proposed to mitigate GHG emissions during construction and post-completion, and consider whether these measures represent good practice for a project of this type and therefore contribute (or otherwise) to the UK's net zero 2050 trajectory;
- Estimate the construction and post construction stage GHG emissions based on available data and benchmark targets proposed;
- Establish whether any secondary mitigation is required to reduce adverse GHG effects or enhance beneficial GHG effects; and
- Evaluate, based on professional judgement, the likely magnitude and level of residual GHG emissions effect during the construction and post-completion stages, and whether these effects are significant or not significant.

Significance Criteria

17.3.29 The assessment of significance of GHG emissions from the Proposed Development comprises a number of components including determining the sensitivity of the receptor, the duration and permanence of effect, the magnitude of change, level of effect, and finally significance of effect as set out in the following sections.

Determining Sensitivity of Receptor

17.3.30 The sensitivity of affected receptor has been considered on a scale of high, medium, low or negligible. . The receptor for GHG emissions is the global climate system, an interactive system comprising five components: the atmosphere, the hydrosphere, the cryosphere, the land surface, and the biosphere^{xxiii}. In accordance with ISEP's EIA Guide to Climate Change Resilience & Adaptation^{xxiv}, the sensitivity of the global climate system to additional GHG emissions is considered to be high.

Determining Duration and Permanence of Effect

- 17.3.31 The duration of the effect has been assessed as 'short-term', 'medium-term' or 'long-term'. Short-term is considered to be up to 1 year, medium-term is considered to be between 1 and 10 years, and long-term is considered to be greater than 10 years. Permanence of effect has been assessed as either temporary or permanent.
- 17.3.32 The Intergovernmental Panel on Climate Change (IPCC) 1.5°C Report^{xxv} concludes the effects of climate change may be long-lasting or irreversible, and on this basis, the duration of GHG emissions effect is assumed to be long-term and permanent.

Determining Magnitude of Change

- 17.3.33 The magnitude of change has been assessed in the context of current and future baseline GHG emissions and on a scale of large, moderate, small or negligible.
- 17.3.34 There are currently no published or agreed criteria for evaluating the magnitude of GHG emissions change in EIA. Therefore, the magnitude of change of GHG emissions estimated from the Proposed Development during construction and post-completion is determined by qualitatively considering the likely percentage change relative to baseline GHG emissions at the North Hertfordshire, Hertfordshire, and East of England levels, and also future UK carbon budgets, as presented in **Table 17.1**, drawing on professional judgement.
- 17.3.35 Baseline GHG emissions conditions at North Hertfordshire and Hertfordshire administrative areas are considered the most appropriate basis on which the magnitude of the Proposed Development's GHG effect is evaluated, with baseline emissions at other geographic scales and future carbon budgets provided for further context only.

Table 17.1 - Magnitude of Change

	Large	Moderate	Small	Negligible
GHG emissions	A large increase / decrease in GHG emissions (e.g. >10%) relative to baseline emissions and / or future carbon budgets or sector decarbonisation pathway	A moderate increase / decrease in GHG emissions (e.g. >5% to ≤10%) relative to baseline emissions and / or future carbon budgets or sector decarbonisation pathway.	A small increase / decrease in GHG emissions (e.g. >1% to ≤5%) relative to baseline emissions and / or future carbon budgets or sector decarbonisation pathway.	A negligible increase / decrease in GHG emissions (e.g. ≤1%) relative to baseline emissions and / or future carbon budgets or sector decarbonisation pathways.

Determining Level of Effect

- 17.3.36 The level of effect has been informed by the magnitude of change in GHG emissions due to the Proposed Development, and the sensitivity of the affected receptor. Whilst **Table**

17.2 provides ranges, the level of effect is confirmed as a single level and not a range, informed by professional judgement.

Table 17.2 - Level of Effect

Magnitude	Sensitivity			
	High	Medium	Low	Negligible
Large	Major	Moderate to Major	Minor to Moderate	Negligible
Moderate	Moderate to Major	Moderate	Minor	Negligible
Small	Minor to Moderate	Minor	Negligible to Minor	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

Determining Significance of Effect

17.3.37 The magnitude of GHG emissions (or savings) from a project, and how this affects baseline conditions and/or future carbon budgets at the local, regional and national level are important components when establishing the level and significance of effect. However, the contribution (or otherwise) of a project to the UK's net zero 2050 trajectory is a critical further consideration when determining the significance of effect, as set out in the ISEP GHG Guide.

17.3.38 The following terms (adapted from the ISEP GHG Guide) have been applied to define the level and significance of GHG emissions effect:

- Major adverse: GHG mitigation measures are not in line with a science-based 1.5°C aligned transition to net zero for that project type, and GHG emissions equate to a large increase (e.g. >10%) relative to baseline emissions, future carbon budgets or relevant decarbonisation pathway. A project with major adverse effects is locking-in GHG emissions and does not make a meaningful contribution to the national net zero 2050 trajectory. This effect is Significant;
- Moderate adverse: GHG mitigation measures are partly in line with a science-based 1.5°C aligned transition to net zero for that project type, and GHG emissions equate to a medium increase (e.g. ≥5% to <10%) relative to baseline emissions, future carbon budgets or relevant decarbonisation pathway. A project with moderate adverse effects complies with some up-to-date policy and good practice but is locking in some emissions and makes only a partial contribution to the national net zero 2050 trajectory. This effect is Significant;
- Minor adverse: GHG mitigation measures are in line with a science-based 1.5°C aligned transition to net zero for that project type, and GHG emissions equate to a small increase (e.g. <5%) relative to baseline emissions, future carbon budgets, or relevant decarbonisation pathway. A project with minor adverse effects

complies with up-to-date policy, some emerging policy, and good practice reduction measures, and contributes to the national net zero 2050 trajectory. This effect is Not Significant;

- Negligible: GHG mitigation measures are in line with a science-based 1.5°C aligned transition to net zero for that project type, with minimal residual emissions. A project with negligible effects complies with up-to-date and emerging policy and best practice and plays a part in achieving the rate of transition required for the national net zero 2050 target. This effect is Not Significant; and
- Beneficial: net GHG impacts are below zero and the project results in a reduction in atmospheric GHG concentrations, whether directly or indirectly, compared to the without-project baseline. A project with beneficial effects substantially exceeds net zero requirements with a positive climate impact. This effect is Significant.

Uncertainties and Limitations

- 17.3.39 To ensure transparency within the EIA process, the following limitations have been identified.

Climate Change Projections

- 17.3.40 The UK climate projections are dependent on future GHG emission assumptions. UKCP18 uses scenarios for future GHGs that are based on assumptions on future population, economic development and the mitigation of GHG emissions towards international targets. The real world may follow a different pathway altogether and the scientific community cannot reliably place probabilities on which scenario of GHG emissions is most likely. As outlined in the ISEP guidance, the sensitivity of the Global Climatic System is considered to be high.

Transport Emissions

- 17.3.41 The Proposed Development will generate additional vehicle trips on the local road network as a result of construction and operation. As noted above, emissions associated with construction are incorporated as part of the upfront embodied carbon assessment. Operational transport emissions associated with residential uses has been scoped out on the basis that the movement of people to the Site will effectively relocate transport emissions already present on the transport network and would not be additional. Transport associated with the proposed non-residential uses associated with the homes, i.e. schools and local centre is anticipated to be linked to residents of the Proposed Development with the majority of these taking place via walking or via sustainable transport. While emissions will be generated through operation of the employment area the Government has set out it's intention to deliver zero emissions HGVs from 2040 which will reduce operational transport emissions.

Energy and Carbon Modelling

- 17.3.42 Given the outline nature of the application specific energy modelling, or embodied carbon assessment has not been undertaken at this stage. The modelling has therefore been based on energy performance and upfront embodied carbon from U&C's Net Zero strategy which sets out current and future targets for new development.

Phasing

- 17.3.43 The GHG assessment has assumed construction from 2027 with the Proposed Development completed by 2043, a 17-year construction period. The Development Specification has been used to provide floor areas for the various elements of the Proposed Development, with building types grouped together to make use of relevant embodied carbon and energy benchmarks.
- 17.3.44 As part of the assessment construction emissions have been estimated and then split evenly over 17 years. Operational emissions have been based on a build out rate of 200 homes per year, with emissions for non-residential development split evenly over the 17-year construction period.
- 17.3.45 It is likely the final phasing plan and build out will vary, however, the approach used provides a reasonable and proportionate method to assess emissions.

17.4 BASELINE CONDITIONS

The Current Baseline

- 17.4.1 Baseline GHG emissions have been established for the latest period available (2023) for the two local authority administrative area (North Hertfordshire), and also the regional levels (Hertfordshire, and East of England) as presented in **Table 17.3**.

Table 17.3 – Current Baseline GHG Emissions

Geographical Area	GHG Emissions (tCO ₂ e)
North Hertfordshire	619,000
Hertfordshire	5,463,000
East of England	34,802,200

- 17.4.2 Regarding baseline GHG emissions from the Application Site itself, the Site currently comprises predominantly agricultural land. This may result in GHG emissions being generated from such activities as use of agricultural machinery and vehicles, and the manufacture and transport of standard agricultural inputs such as water, fertiliser and pesticides. Conversely the agricultural use of the Site may potentially result in some carbon sequestration from, for example, the growth of crops, hedgerows and trees.
- 17.4.3 However, the likely scale of baseline GHG emissions or sequestration at the Application Site is considered likely to be small when compared to baseline emissions within North Hertfordshire, and for the purposes of this GHG assessment such emissions / sequestration is assumed to be zero providing a worst-case scenario for assessment.

The Projected Future Baseline

- 17.4.4 Future baseline conditions regarding GHG emissions in the form of carbon budgets proposed for North Hertfordshire area, and also carbon budgets set for UK, are presented in **Table 17.4**. It should be noted that carbon budgets proposed for the North Hertfordshire administrative area cover CO₂ and relate to the energy system only. In contrast, carbon budgets set for the UK cover all GHG emissions (CO₂e) and relate to all sectors of the economy except for the UK's share of international aviation and shipping.

Table 17.4 – Future Baseline (Carbon Budgets)

Period	North Hertfordshire (tCO ₂)	UK (tCO ₂ e)
2023-2027	1,400,000	1,950,000,000
2028-2032	700,000	1,725,000,000
2033-2037	300,000	965,000,000
2038-2042	200,000	535,000,000*
2043-2047	100,000	Not yet set

Period	North Hertfordshire (tCO ₂)	UK (tCO ₂ e)
2048-2100	100,000	Not yet set
*Published by the Committee on Climate Change in 2025 but not yet incorporated into law		

- 17.4.5 Future baseline GHG emissions / sequestration from the Application Site itself are considered likely to remain as per the current baseline situation above in the absence of the Proposed Development.
- 17.4.6 In order to determine whether the Proposed Development is aligned with and makes an appropriate contribution to the UK's net zero trajectory, it is necessary to provide context for the magnitude of GHG emissions. LETI Climate Emergency Design Guide (2020) and LETI's Embodied Carbon Target Alignment (2021), RIBA 2030 Climate Challenge, and the UK Net Zero Buildings Standard provide benchmarks for embodied carbon and upfront carbon for residential and non-residential buildings to ensure the construction industry delivers the significant reductions necessary in order to have a realistic prospect of achieving net zero for the whole UK building stock by 2050.
- 17.4.7 Embodied carbon is the total GHG emissions and removals associated with materials and construction processes throughout the whole lifecycle of a building (RICS lifecycle modules A1-A5, B1-B5 and C1-C4). As such embodied carbon comprises construction (or upfront) carbon (typically accounting for the large majority of embodied carbon), together with emissions during building use and end of life.
- 17.4.8 Upfront carbon is the GHG emissions associated with materials and construction processes up to practical completion (RICS lifecycle modules A1-A5), excluding any biogenic carbon sequestered in construction products and materials (e.g. timber). As such upfront carbon relates to emissions occurring during a buildings' construction stage and is the focus of this Chapter (alongside operational emissions).
- 17.4.9 **Table 17.5** sets out the LETI 2020 Design targets, RIBA 2030 Climate Challenge targets for embodied carbon for new residential and non-residential buildings.

Table 17.5 – LETI and RIBA Operational and Embodied Carbon Targets

Operational Energy and Embodied Carbon Targets				
LETI Design Guide Targets				
	Business as usual	2020	2025	2030
Upfront Carbon – Residential (A1-A5) (kgCO ₂ e/m ²)	<850	<500	N/A	<300
Operational Energy – Residential (kWh/m ² /year)	-	<35	N/A	N/A
Upfront Carbon – Retail (A1-A5) kgCO ₂ e/m ²	<850	<550	N/A	<300

Operational Energy and Embodied Carbon Targets				
Operational Energy – Retail (kWh/m2/year)	-	-	-	-
RIBA 2030 Climate Challenge Targets				
	Business as usual	2020	2025	2030
Whole Life Carbon – Residential (A1-D4) kgCO2e/m2	1,200	-	<800	<35
Operational Energy – Residential (kWh/m2/year)	120	-	<60	<35
Whole Life Carbon – Offices (A1-D4) kgCO2e/m2	1,400	-	<970	<750
UK NZB Targets				
	Business as usual	2020	2025	2030
Upfront Carbon – Residential Homes and Flats (A1-A5) (kgCO2e/m2)	-	-	430-565	290-380
Operational Energy – Residential Homes and Flats (kWh/m2/year)			45-40	42-39
Upfront Carbon – Commercial Residential (A1-A5) (kgCO2e/m2)	-	-	580	435
Operational Energy – Commercial Residential (kWh/m2/year)			150	134
Upfront Carbon – Healthcare (A1-A5) (kgCO2e/m2)	-	-	790	590
Operational Energy – Healthcare (kWh/m2/year)			x	x
Upfront Carbon – Hotels (A1-A5) (kgCO2e/m2)	-	-	670	500
Operational Energy – Hotels (kWh/m2/year)			125	110
Upfront Carbon – Offices (A1-A5) (kgCO2e/m2)	-	-	735	550
Operational Energy – Offices (general) (kWh/m2/year)			85	72
Upfront Carbon – Retail (A1-A5) (kgCO2e/m2)	-	-	715	535
Operational Energy – Retail (kWh/m2/year)			55-215	50-182
Upfront Carbon – School (A1-A5) (kgCO2e/m2)	-	-	530	395
Operational Energy – School (kWh/m2/year)			45-60	42-55
Upfront Carbon – Sports and Leisure (A1-A5) (kgCO2e/m2)	-	-	820	610

Operational Energy and Embodied Carbon Targets				
Operational Energy – Sports and Leisure (kWh/m2/year)			80-350	74-317
Upfront Carbon – Storage and Distribution (A1-A5) (kgCO2e/m2)	-	-	635	475
Operational Energy – Storage and Distribution (kWh/m2/year)			35-160	30-129

17.5 POTENTIAL EFFECTS

17.5.1 Potential GHG effects during the construction and post-completion stages of the Proposed Development, prior to the implementation of mitigation measures, are set out below.

Construction Stage

17.5.2 Construction of the Proposed Development will result in the release of GHG emissions from various sources, both direct and indirect, expressed as upfront embodied carbon (Stages 1-5), including:

- The manufacture of construction materials and products;
- The inbound and outbound transport of construction materials and products, workers, waste, site plant and equipment;
- The combustion of fossil fuels by site plant and equipment; and
- The treatment of construction waste.

17.5.3 **Table 17.6** sets out an estimate of the upfront embodied carbon of development based on business-as-usual benchmarks noted in **Table 17.5**.

Table 17.6 – Baseline Embodied Carbon Emissions

Development	Baseline Business as Usual GHG Emissions (tCO₂e)
Residential	244,800
Non-residential	67,540
Total	312,340

17.5.4 In the absence of measures to mitigate construction-stage GHG emissions, these activities are considered to have the potential to result in a magnitude of change in GHG emissions (i.e. increase) of small relative to baseline emissions at North Hertfordshire.

17.5.5 With reference to **Table 17.2** and the global climate system being of high sensitivity, a small magnitude of change (i.e. increase) in GHG emissions results in a minor to moderate adverse level of effect. In the absence of measures to mitigate construction carbon emissions, the construction of the Proposed Development could not be concluded to meet current good practice or some emerging policy for a project of its type, and hence contribute appropriately to the UK's net zero 2050 trajectory. In conclusion, therefore, a **Moderate Adverse** potential effect is concluded which is significant.

Post-Completion Stage

17.5.6 Under the current regulations the operation of the Proposed Development post-completion has the potential to result in the release of GHG emissions from various sources, both direct and indirect, including the onsite use of gas, and off-site generation (e.g. at a power station) of electricity consumed by the development.

- 17.5.7 **Table 17.7** provides an estimate of the operational GHG emissions of the Proposed Development based on the requirements of the current building regulations. The assessment uses the floor areas from the development specification, energy performance benchmarks from **Table 17.5** multiplied by grid factors for the period 2027 – 2050.

Table 17.7 – Baseline Operational GHG Emissions

Development period	Baseline Business as Usual GHG Emissions (tCO2e)
Year 1 (2027)	455
Peak Year (2042)	10,315
Full operation (2043)	10,695
2050	10,413
Total (2027 -2050)	172,471

- 17.5.8 The current building regulations allow for the use of fossil fuels, while the Government has indicated this is to stop from 2025 with the introduction of the FHS this has not yet been confirmed or incorporated into the Building Regulations.
- 17.5.9 In the absence of measures to mitigate operational GHG emissions, the above activities are considered to have the potential to result in a magnitude of change (i.e. increase) in GHG emissions of small relative to baseline emissions at North Hertfordshire.
- 17.5.10 With reference to **Table 17.2** and the global climate system being of high sensitivity, a small magnitude of change (increase) in GHG emissions results in a minor to moderate adverse level of effect. In the absence of measures to mitigate operational GHG emissions from the Proposed Development, it could not be concluded to meet current good practice or some emerging policy for a project of its type, or to contribute appropriately to the UK's net zero 2050 trajectory. In conclusion, therefore, a **Moderate Adverse** potential effect is concluded which is significant.

Construction and Post-Completion Stage

- 17.5.11 Consideration has been given to the combination of Construction and Post-Completion emissions in combination as there is likely to be overlap between construction and occupation of the Proposed Development.
- 17.5.12 As above, with reference to **Table 17.2** and the global climate system being of high sensitivity, a small magnitude of change (increase) in GHG emissions results in a minor to moderate adverse level of effect. In the absence of measures to mitigate operational GHG emissions from the Proposed Development, it could not be concluded to meet current good practice or some emerging policy for a project of its type, or to contribute appropriately to the UK's net zero 2050 trajectory. In conclusion, therefore, a **Moderate Adverse** potential effect is concluded which is significant.

17.6 MITIGATION MEASURES

17.6.1 The following sections describe the range of measures that are proposed to mitigate the potential GHG emissions effects set out in Section 17.5. In EIA, the following types of mitigation measures exist:

- Primary (inherent): Modifications to the location or design of development made during the pre-application phase that are an inherent part of the project and do not require additional action to be taken. For example, limiting the height of a development to reduce visual impact;
- Secondary (foreseeable): Actions that will require further activity to achieve the anticipated outcome, and may be imposed as part of the planning consent or through inclusion in the Environmental Statement. For example, describing certain lighting limits which will be subject to the submission of a detailed lighting layout as a planning condition; and
- Tertiary (inexorable): Actions that would occur with or without input from the EIA feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirements, or actions that are considered to be standard practices used to manage commonly occurring environmental effects. For example, Considerate contractors' practices that manage activities which have potential nuisance effects. ISEP guidance advises that there must be confidence that such tertiary mitigation is very likely to occur (i.e. >90% probability)^{xxvi}.

Construction Stage

17.6.2 To mitigate upfront embodied carbon the Proposed Development will target achieving the following upfront embodied carbon targets set by U&C (which draw on the UKNZB targets) for the period 2026-2030 which are aligned with the description of the Proposed Development. While U&C have set embodied carbon targets for future years beyond 2030, due to potential uncertainty on phasing and delivering the set of targets for 2026-2030 have been used to provide a proportionate worst-case scenario.

Table 17.8 – Construction Stage Mitigation – Upfront Embodied Carbon Targets

Unit / Building	Construction stage Embodied Carbon target (Stages A1-A5) (kgCO2/m2)
Dwellings	800
C1/C2 hotel	605
Sui generis - Pub	605
E - Convenience retail	590
E - Retail /café/ restaurant	590
E - office	635
E - Gym	720
E - Nursery	605

Unit / Building	Construction stage Embodied Carbon target (Stages A1-A5) (kgCO2/m2)
E - Health hub	685
F2 - Community hall	720
E - office	635
E / D - indoor sport / recreation	720
E - Research and development	630
B2 - Industrial	550
Primary school	605
D2 - sports pavillion	720
Secondary school	635
SEND School	635

17.6.3 'Upfront Embodied Carbon' comprises GHG emissions arising from the building's upfront stages including: materials manufacture and transport and construction and is references as Stages A1-A5^{xxvii}. The construction stage (i.e. materials manufacture, transport and construction) is typically the largest source of GHG emissions across a buildings lifecycle. Mitigating this element therefore significantly reduces emissions.

17.6.4 Future detailed and Reserved Matters applications will incorporate a Life Cycle Assessment to demonstrate how each Phase will meet the targets (where possible) set out above.

17.6.5 These targets go beyond the LETI Business as Usual targets set out in **Table 17.5** and therefore are a form of good practice.

Post-Completion Stage

17.6.6 Key GHG mitigation measures for the operational development post-completion will be secured through compliance with the Future Homes Standard and Future Building Standard as a minimum. These standards will ensure significant tertiary mitigation to the operational GHG emissions performance of the Proposed Development relative to current Part L 2021 standards, through various measures including:

- Enhanced 'fabric-first' approach to reducing energy demand from the outset through high performing building fabric including thermal performance (insulation, thermal bridging) and air tightness;
- Enhanced efficiency of building services such as lighting, fans and pumps,
- Provision of low-carbon heating (e.g. heat pumps), thereby avoiding locking the buildings in to higher carbon fossil fuels such as mains gas;
- Solar PV provision for all buildings in line with the FHS and FBS; and
- Being 'zero-carbon ready' meaning no further work is needed for these buildings to have zero operational emissions once the UK electricity grid has fully decarbonised.

- 17.6.7 This strategy will support delivery which meets U&C's Energy Use Intensity (EUI) targets. As with the construction stage embodied carbon targets, while U&C have set embodied carbon targets for future years beyond 2030, due to potential uncertainty on phasing and delivering the set of targets for 2026-2030 have been used to provide a proportionate worst-case scenario.

Table 17.9 – Post-Completion Stage Mitigation – EUI Targets

Unit / Building	Operational EUI target (kgCO2/m2)
Dwellings	60
C1/C2 hotel	120
Sui generis - Pub	120
E - Convenience retail	180
E - Retail /café/ restaurant	180
E - office	75
E - Gym	140
E - Nursery	55
E - Health hub	150
F2 - Community hall	75
E - office	75
E / D - indoor sport / recreation	55
E - Research and development	280
B2 - Industrial	140
Primary school	55
D2 - sports pavilion	140
Secondary school	55
SEND School	55

- 17.6.8 Future detailed and Reserved Matters applications will incorporate energy modelling to demonstrate how each Phase will meet the targets (where possible) set out above.
- 17.6.9 Buildings delivered under the Future Homes and Buildings Standards will require no retrofitting to achieve zero operational emissions, thereby avoiding or reducing these in-use emissions. Alignment with emerging national policy and setting specific EUI targets is considered to be good practice.
- 17.6.10 In addition to mitigation to reduce operational energy demand the Proposed Development will incorporate EV charging infrastructure in line with Part S of the Building Regulations^{xxviii}. As well as providing suitable HGV charging infrastructure within the

employment area. This will support the Government's zero emissions transport strategy which aims to achieve zero emissions cars and vans by 2035 and zero emissions HGVs by 2040.

Summary

- 17.6.11 A summary of GHG mitigation measures proposed for the construction and post-completion stages of the Proposed Development is provided in **Table 17.10**.

Table 17.10 - GHG Emissions Mitigation Summary

Unit / Building	Construction stage upfront embodied carbon target (Stages A1-A5) (kgCO ₂ /m ²)	Operational EUI target (kgCO ₂ /m ²)
	Life Cycle Assessment to be prepared at Reserved Matters application stage to demonstrate performance	Energy modelling to be prepared at the Reserved Matters stage to demonstrate performance
Dwellings	800	60
C1/C2 hotel	605	120
Sui generis - Pub	605	120
E - Convenience retail	590	180
E - Retail /café/ restaurant	590	180
E - office	635	75
E - Gym	720	140
E - Nursery	605	55
E - Health hub	685	150
F2 - Community hall	720	75
E - office	635	75
E / D - indoor sport / recreation	720	55
E - Research and development	630	280
B2 - Industrial	550	140
Primary school	605	55
D2 - sports pavilion	720	140
Secondary school	635	55
SEND School	635	55

17.7 RESIDUAL EFFECTS

Construction Stage

- 17.7.1 **Table 17.11** below presents annual and total construction stage GHG emissions calculated for the Proposed Development.

Table 17.11 - Estimated Construction Carbon GHG Emissions

	Baseline GHG Emissions	Proposed Development GHG Emissions (tCO ₂ e)	Proposed Development Annual GHG Emissions (tCO ₂ e)
Residential	244,800	230,400	13,553
Non-residential	67,540	55,170	3,245
Total	312,340	285,570	16,798

- 17.7.2 The mitigation included results in a c.9% reduction in upfront embodied carbon, resulting in total emissions of 285,570tCO₂e, equating to annual construction emissions of c.16,798tCO₂e across the 17-year construction period.

- 17.7.3 **Table 17.12** presents construction emissions as a proportion of baseline emissions from North Hertfordshire, Hertfordshire and East of England, as well as future UK carbon budgets. In order to assess the worst-case scenario, annual average construction emissions are used for comparison with baseline North Hertfordshire, Hertfordshire, and East of England emissions (given these are also annual emissions), whilst total construction emissions are compared with UK carbon budgets for that period.

Table 17.12 - Construction Stage GHG emissions contextualisation

Contextualised construction GHG emissions	
Context	Construction phase GHG emissions (as a %)
Baseline emissions	
North Hertfordshire	2.71289%
Hertfordshire	0.30749%
East of England	0.04827%
Carbon budgets	
UK 4th Carbon Budget (2023 – 2027)	0.005%
UK 5th Carbon Budget (2028 – 2032)	0.005%
UK 6th Carbon Budget (2033 – 2037)	0.010%
UK 6th Carbon Budget (2038 – 2042)	0.05%

- 17.7.4 It should be noted that North Hertfordshire's carbon budgets proposed by the Tyndall Centre relate to emissions from the energy system only, whereas construction emissions from the Proposed Development will largely comprise those from the manufacture and

transport of construction products and materials. Construction GHG emissions are therefore not readily comparable given a significant proportion of these emissions are likely to occur outside the geographical and/or temporal boundary of the local carbon budgets.

- 17.7.5 Currently the Building Regulations set no requirement for the consideration of upfront embodied carbon and the target proposed exceeds the LETI Business as Usual benchmarks and in part aligns with the UKNZB targets , achieving a c.9% reduction in embodied carbon, this therefore represents a form of good practice. The Proposed Development is therefore considered to make an appropriate contribution to the UK net zero trajectory for this issue.
- 17.7.6 Following the construction stage GHG mitigation measures set out above, a small magnitude of change (increase) in GHG emissions is considered likely relative to baseline emissions at North Hertfordshire.
- 17.7.7 With reference to **Table 17.2** and the global climate system being of high sensitivity, a small magnitude of change (i.e. increase) in GHG emissions results in a minor to moderate adverse level of effect. The proposed mitigation measures are considered to represent current good practice for the construction of a project of its type, and hence the construction stage will contribute appropriately to the UK's net zero 2050 trajectory. On this basis a **Minor Adverse** effect is concluded which is not significant.

Post-Completion Stage

- 17.7.8 **Table 17.13** presents the estimated occupation stage GHG emissions for the first year of operation (2027), the peak year of emissions (2042), and the total emissions up to 2050, showing a comparison to the baseline operational emissions.

Table 17.13 – Operational GHG Emissions

	Baseline Business as Usual GHG Emissions (tCO2e)	Estimated operational Emissions (tCO2e)	Carbon Reduction (tCO2e)
Year 1 (2027)	455	129	326
Peak Year (2042)	10,315	423	9,892
Full operation (2043)	10,695	270	10,426
2050	10,413	90	10,323
Total (2027 -2050)	172,471	6,791	165,680

- 17.7.9 All development will be constructed as a minimum to meet the anticipated FHS and FBS which will require residential development to achieve a c.75% carbon reduction beyond Building Regulations Part L 2013.

17.7.10 The mitigation, including meeting the FHS and FBS, and U&C EUI targets included significantly reduces GHG emissions, ensuring development is gas free means carbon emissions from the scheme will fall over time as the national electricity network decarbonises.

17.7.11 **Table 17.14** presents operational emissions as a proportion of baseline emissions from North Hertfordshire, Hertfordshire and East of England, as well as future local and UK carbon budgets. In order to assess the worst-case scenario, peak annual emissions are used for comparison with baseline North Hertfordshire, Hertfordshire, and East of England emissions (given these are also annual emissions), whilst total operational emissions are compared with local and UK carbon budgets for that relevant period up to 2042, aligning with the current national carbon budgets.

Table 17.14 - Post-Completion Stage GHG Emissions Contextualisation

Context	Construction Phase GHG Emissions (as a %)
Baseline emissions	
North Hertfordshire	0.068%
Hertfordshire	0.0077%
East of England	0.0012%
Carbon budgets	
UK 4th Carbon Budget (2023 – 2027)	0.00003%
UK 5th Carbon Budget (2028 – 2032)	0.00009%
UK 6th Carbon Budget (2033 – 2037)	0.00017%
UK 7th Carbon Budget (2037 - 2042)	0.00037%
North Hertfordshire Carbon Budget (2023 - 2027)	0.046%
North Hertfordshire Carbon Budget (2028 - 2032)	0.225%
North Hertfordshire Carbon Budget (2033 - 2037)	0.5466%
North Hertfordshire Carbon Budget (2038 - 2042)	0.9993%

17.7.12 Aligning with the future requirements of the FHS and FBS, delivering an all-electric development supports the Government's Net Zero trajectory and represents good practice. The Proposed Development is therefore considered to make an appropriate contribution to the UK net zero trajectory for this issue.

17.7.13 Following the construction stage GHG mitigation measures set out above, a small magnitude of change (increase) in GHG emissions is considered likely relative to baseline emissions at North Hertfordshire.

- 17.7.14 With reference to **Table 17.2** and the global climate system being of high sensitivity, a small magnitude of change (i.e. increase) in GHG emissions results in a minor to moderate adverse level of effect. The proposed mitigation measures are considered to represent current good practice for the construction of a project of its type, and hence the construction stage will contribute appropriately to the UK's net zero 2050 trajectory. On this basis a **Minor Adverse** effect is concluded which is not significant.

Construction and Post-Completion Stage

- 17.7.15 A combined assessment of GHG emissions has been provided, considering the construction and operational GHG emissions in combination.
- 17.7.16 **Table 17.15** presents construction and operational emissions as a proportion of baseline emissions from North Hertfordshire, Hertfordshire and East of England, as well as future local and UK carbon budgets. In order to assess the worst-case scenario, peak annual emissions are used for comparison with baseline North Hertfordshire, Hertfordshire, and East of England emissions (given these are also annual emissions), whilst total operational emissions are compared with UK carbon budgets for that relevant period up to 2042, aligning with the current national carbon budgets.

Table 17.15 - Construction and Post-Completion Stage GHG Emissions Contextualisation

Context	Combined Phase GHG Emissions (as a %)
Baseline emissions	
North Hertfordshire	2.78%
Hertfordshire	0.32%
East of England	0.05%
Carbon budgets	
UK 4th Carbon Budget (2023 – 2027)	0.004%
UK 5th Carbon Budget (2028 – 2032)	0.005%
UK 6th Carbon Budget (2033 – 2037)	0.009%
UK 7th Carbon Budget (2038 – 2042)	0.016%

- 17.7.17 The inclusion of upfront embodied carbon mitigation which exceeds current business as usual practice and aligns with the UKNZB targets, and alignment with the FBS and FHS represents good practice and therefore the Proposed Development is considered to make an appropriate contribution to the UK net zero trajectory for this issue.
- 17.7.18 Following the construction stage GHG mitigation measures set out above, a small magnitude of change (increase) in GHG emissions is considered likely relative to baseline emissions at North Hertfordshire.

- 17.7.19 With reference to **Table 17.2** and the global climate system being of high sensitivity, a small magnitude of change (i.e. increase) in GHG emissions results in a minor to moderate adverse level of effect. The proposed mitigation measures are considered to represent current good practice for the construction of a project of its type, and hence the construction stage will contribute appropriately to the UK's net zero 2050 trajectory. On this basis a **Minor Adverse** effect is concluded which is not significant.

Summary of Effects

- 17.7.20 The residual GHG effects identified are summarised in **Table 17.16** below.

Table 17.16 - Summary of Residual Effects - GHG Emissions

Potential Effect	Significance (pre-mitigation)	Mitigation Measure	Significance of residual effect
Construction Stage			
GHG emissions	Moderate adverse (Significant)	Life Cycle Assessment and target setting at Reserved Matters application stage	Minor adverse (Not Significant)
Post-Completion Stage			
GHG emissions	Moderate adverse (Significant)	Compliance with Future Homes Standard and Future Buildings Standard	Minor adverse (Not Significant)
Construction and Post-Completion Stage			
GHG emissions	Moderate adverse (Significant)	Life Cycle Assessment and target setting at Reserved Matters application stage, and compliance with Future Homes Standard and Future Buildings Standard	Minor adverse (Not Significant)

17.8 CUMULATIVE EFFECTS

- 17.8.1 The atmospheric concentration of GHGs and resulting effect on climate change is affected by all GHG sources and sinks globally, both anthropogenic and natural. Because GHG emissions and resulting effects are global rather than affecting one localised area, the approach to cumulative effects assessment for GHGs differs from that of many EIA other topics where other projects within a geographically bounded study area are considered e.g. air pollutants or noise.
- 17.8.2 There is no greater local climate change effect from a localised GHG emission source than a global source (or vice versa). All global cumulative GHG sources are relevant to the effect on climate change, and this is taken into account in defining the global climate system (the receptor of GHG emissions) as being of 'high' sensitivity to further emissions.
- 17.8.3 For these reasons the ISEP GHG Guide states "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".
- 17.8.4 However, the contextualisation of GHG emissions within baseline emissions and future carbon budgets accounts for the cumulative contributions of numerous other GHG sources which make up that context including all other sectors of the economy). The consideration of cumulative GHG effects is therefore inherent to the methodology that has been applied.

17.9 REFERENCE LIST

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- ⁱ MHCLG (2024) National Planning Policy Framework; December 2024. Available at:
https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NP_PF_December_2024.pdf
 - ⁱⁱ MHCLG (2019) National Design Guide. Available at:
<https://www.gov.uk/government/publications/national-design-guide>
 - ⁱⁱⁱ UK Government (2008). The Climate Change Act 2008. Available at:
<https://www.legislation.gov.uk/ukpga/2008/27/contents>
 - ^{iv} UK Government (2019) The Climate Change Act 2008 (2050 Target Amendment) Order 2019. Available at:
<https://www.legislation.gov.uk/uksi/2019/1056/contents/made>
 - ^v DLUHC (2023) The Future Homes and Buildings Standards: 2023 consultation. Available at: <https://www.gov.uk/government/consultations/the-future-homes-and-buildings-standards-2023-consultation/the-future-homes-and-buildings-standards-2023-consultation>
 - ^{vi} DESNZ and MHCLG (2025). Press release: Rooftop solar for new builds to save people money. New homeowners stand to benefit from rooftop solar and cheaper bills, with the Future Homes Standard being published this Autumn. Available at: <https://www.gov.uk/government/news/rooftop-solar-for-new-builds-to-save-people-money>
 - ^{vii} HM Government (2022) Building Regulations Approved Document O Overheating. Available at:
<https://www.gov.uk/government/publications/overheating-approved-document-o>
 - ^{viii} HM Government (2013) Building Regulations Approved Document A Structure Available at: <https://www.gov.uk/government/publications/structure-approved-document-a>
 - ^{ix} Labour (2024) Make Britain A Clean Energy Superpower. Available at:
<https://labour.org.uk/wp-content/uploads/2024/03/Make-Britain-a-Clean-Energy-Superpower.pdf>
 - ^x ISEP (2022) EIA Guide to: Assessing GHG Emissions and Evaluating their Significance. Available at: <https://www.isep.net/resources/blogs/2022/02/28/isep-launch-of-the-updated-eia-guidance-on-assessing-ghg-emissions-february-2022/>
 - ^{xi} ISEP (2020). EIA Guide to: Climate Change Resilience & Adaptation. Available at: <https://www.isep.net/media/mabhqino/isep-eia-climate-change-resilience-june-2020.pdf>
 - ^{xii} RIBA 2030 Climate Challenge. Available at: 2030 Climate Challenge (architecture.com)
 - ^{xiii} LETI Climate Emergency Design Guide. Available at:
https://www.leti.london/_files/ugd/252d09_3b0f2acf2bb24c019f5ed9173fc5d9f4.pdf

-
- xiv LETI (2021). Embodied Carbon Alignment Target. Available at: https://www.leti.uk/_files/ugd/252d09_25fc266f7fe44a24b55cce95a92a3878.pdf
- xv UK Net Zero Buildings (2024). UK Net Zero Buildings Standard. Available at: Home | UK Net Zero Carbon Buildings Standard
- xvi RICS (2024). Whole Life Carbon Assessment (WLCA). Available at: Whole life carbon assessment (WLCA) for the built environment
- xvii Department for Transport (2024). Transitioning to zero emissions cars and vans: 2035 delivery plan. Available at: Transitioning to zero emission cars and vans: 2035 delivery plan
- xviii Department for Transport (2023). Infrastructure for zero emissions heavy goods vehicles and coaches. Available at: <https://www.gov.uk/government/calls-for-evidence/infrastructure-for-zero-emission-heavy-goods-vehicles-and-coaches/infrastructure-for-zero-emission-heavy-goods-vehicles-and-coaches>
- xix DESNZ (2023). Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal. Available at: Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal - GOV.UK
- xx DESNZ and DBEIS (2025). UK local authority and regional greenhouse gas emissions statistics. Available at: UK local authority and regional greenhouse gas emissions statistics, 2005 to 2023 - GOV.UK
- xxi Tyndall Centre. Setting Climate Commitments for North Hertfordshire. Available at: <https://carbonbudget.manchester.ac.uk/reports/E07000099/>
- xxii HM Government (2023). Carbon Budget Delivery Plan. Available at: <https://assets.publishing.service.gov.uk/media/6424b2d760a35e000c0cb135/carbon-budget-delivery-plan.pdf>
- xxiii IPCC (2018). The Climate System: an Overview. Available at: <https://www.ipcc.ch/site/assets/uploads/2018/03/TAR-01.pdf>.
- xxiv ISEP (2020). EIA Guide to: Climate Change Resilience & Adaptation. Available at: <https://www.isep.net/media/mabhqino/isep-eia-climate-change-resilience-june-2020.pdf>
- xxv IPCC (2019). Global Warming of 1.5°C: An IPCC Special Report on the impacts of global warming of 1.5°C. Available at: https://www.ipcc.ch/site/assets/uploads/sites/2/2022/06/SR15_Full_Report_LR.pdf
- xxvi ISEP (2024). Impact Assessment Guidelines: Implementing the Mitigation Hierarchy from Concept to Construction; Annex A Classifying Impact Assessment Mitigation. Available at: <https://www.isep.net/media/oone2qce/isep-mitigation-in-eia-guidance-final.pdf>
- xxvii RIBA (2020) Plan of Work. Available at: RIBA Plan of Work
-

^{xxviii} MHCLG / DLUHC (2023) Infrastructure for charging electric vehicles:
Approved Document S. Available at: Infrastructure for charging electric
vehicles: Approved Document S - GOV.UK