



UNIVERSAL DESTINATIONS & EXPERIENCES UK PROJECT

Former Kempston Hardwick Brickworks
and adjoining land, Bedford

Environmental Statement Volume 1

Chapter 14 - Greenhouse Gases

Report reference: 2.14.0

Revision number: 00

Date: June 2025



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14. GREENHOUSE GASES

14.1. INTRODUCTION

- 14.1.1. This chapter has been prepared in support of the planning proposal for the Proposed Development as described in **Chapter 2: Description of the Proposed Development (Volume 1)**. This reports the outcome of the assessment of likely significant effects arising from the Proposed Development in relation to Greenhouse Gases during construction and operation.
- 14.1.2. This chapter reports the outcome of the assessment of likely impacts and potential significant effects on the climate from whole-life Greenhouse Gas (GHG) emissions arising from the Proposed Development. As noted in IEMA guidance for Assessing Greenhouse Gas Emissions and Evaluating their Significance (**REF:14.5**), this whole life approach is often at odds with the sub-headings set out in EIA chapter templates. However, in accordance with good practice for GHG assessment, Section 14.5 of this chapter includes a section that reports on the whole life GHG emissions associated with the Proposed Development, in addition to the sections that assess effects for construction and operation as separate phases. Impacts from GHG interfaces with other aspects and as such, should be considered alongside other chapters submitted as part of the Environmental Statement (ES), namely:
- **Chapter 2: Description of the Proposed Development (Volume 1);**
 - **Chapter 5: Traffic and Transport (Volume 1);**
 - **Chapter 8: Air Quality (Volume 1); and**
 - **Chapter 15: Climate Resilience (Volume 1).**

SUPPORTING DOCUMENTATION

- 14.1.3. This chapter is intended to be read in conjunction with the following supporting appendices (**ES Volume 3**):
- **Appendix 3.1: Legislation, Policy, and Guidance for all ES Technical Topics (Volume 3);**
 - **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3);**
 - **Appendix 5.1: Transport Assessment (Volume 3); and**
 - **Appendix 14.1: Carbon Management Plan (Volume 3).**
- 14.1.4. This chapter will assess impacts to the global climate associated with potential GHG emissions generated by construction and operational activities.

LEGISLATIVE FRAMEWORK, POLICY, AND GUIDANCE

- 14.1.5. The relevant legislation, policy, and guidance to the assessment of GHG effects associated with the Proposed Development are detailed in **Appendix 3.1: Legislation, Policy, and Guidance for all ES Technical Topics (Volume 3)**.

14.2. ASSUMPTIONS USED TO INFORM ASSESSMENT

14.2.1. The assessment presented in this chapter has been based on the Proposed Development as described in **Chapter 2: Description of the Proposed Development (Volume 1)**. This chapter has also used the following assumptions to build on the information in **Chapter 2: Description of the Proposed Development (Volume 1)** to support undertaking an assessment of a cautious worst case (that provides a robust assessment of likely significant effects).

- Construction for the Primary Phase would take place over a five year period and additional construction for the Completion of the Full Buildout would be conducted in accordance with the construction programme presented in **Chapter 2: Description of the Proposed Development (Volume 1)**;
- There are no plans to decommission and remove the Proposed Development; however, in order to set parameters for estimating whole-life GHG emissions for the assessment a minimum 60-year operational lifetime is assumed, consistent with the standard design-life assumed for building projects in the UK;
- Estimation of embodied GHG emissions during the Construction Phase has been informed by the indicative footprints for use categories from the **Parameter Plans (Document Reference 1.10.0)**. This has been used to determine a cautious worst case for the potential scale of development types and associated carbon factors; the GHG assessment is not reliant on the specific location of development indicated within the Site;
- GHG emissions attributed to the use of energy by machinery, equipment, and tools during construction have been determined based on the estimated construction cost of the Proposed Development calculated using assumptions from the Royal Institute of Chartered Surveyors (RICS) (**Ref. 14.1**), with the estimated construction cost adjusted for inflation;
- GHG emissions for maintenance, repair, replacement and refurbishment activities during the Operational Phase are assumed to be proportionate to the embodied carbon emissions for the Construction Phase, and have been estimated in accordance with industry guidance and case studies (RICS (**Ref. 14.2**) and Royal Institute of British Architects (RIBA) (**Ref. 14.3**));
- Use of natural gas in temporary boilers for heating during the first year of the Primary Phase of the Operational Phase is considered to be a cautious worst case assumption for the assessment, with full electrification of the Proposed Development assumed for the remainder of the Primary Phase and throughout the Full Buildout;
- A cautious worst case scenario has been assumed for the assessment of road transport emissions beyond Completion of Full Buildout, which does not take into account the extent to which vehicles may be decarbonised beyond this time;
- There would be a potential requirement for use of diesel fuel in back-up generators in case of power supply failures, with estimated fuel use and associated GHG emissions based on a proportion of the overall electrical power demand for a limited time period;
- Assumptions on the modes of transport split (train, private car, coach, taxis, or other modes of transport) for the traffic modelling are described in the Transport Assessment (**Appendix 5.1: Transport Assessment (Volume 3)**);
- Qualitative assessment has been used to determine the potential impact of GHGs for Operational Phase activities as there was insufficient information to quantify the associated emissions, including rail travel and use of refrigerants and consumables; and

- Separate evaluation of impacts on climate from potential GHG emissions attributable to air travel linked to the Proposed Development are provided based on high-level assumptions on visitor numbers and flight origins. Given uncertainty regarding the origin of potential visitor flights, GHG emissions factors for a **low-range scenario** are based on an average for return flights to the UK from a selection of European countries, and for a **high-range scenario** GHG emissions factors are based on an average for return flights to the UK from a selection of 'Rest of the World' countries. GHG emissions factors for a **medium-range scenario** are based on a proportion of the European average and the 'Rest of the World' average emissions factors. Further details on the methodology and scenarios used in the assessment of GHGs related to air travel are presented in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)**.
- **This assessment has been undertaken in accordance with best practice guidance and using professional judgement.**

ENGAGEMENT

- 14.2.2. Stakeholder engagement is not typically required to conduct GHG assessment as information is generally available from public sources or the project design team. No engagement has been undertaken to specifically inform the GHG assessment presented in this chapter and no future engagement is expected to be required.

SCOPE OF THE ASSESSMENT

- 14.2.3. The assessment of GHGs has considered the likelihood of the Construction and Operational Phases of the Proposed Development resulting in likely significant effects.
- 14.2.4. The elements shown in **Table 14-1** are considered to have the potential to result in likely significant effects during the Construction and Operational Phases of the Proposed Development and have therefore been considered within this assessment. Each element has been considered in relation to the lifecycle stages for buildings and infrastructure described in the PAS 2080:2023 Standard for Carbon Management in Buildings and Infrastructure (**Ref. 14.4**).

Table 14-1 – Elements Scoped into the Assessment

Element Scoped In	Construction Phase	Operational Phase
Product Stage (manufacture and transport of raw materials to suppliers) (A1-A3)	✓	
Transport to Project Site (A4)	✓	
Plant and Equipment Use and Waste Management during Construction (A5)	✓	
Operation/Use (B1)		✓
Maintenance, Repair, Replacement and Refurbishment (B2-B5)		✓
Operational Energy Use (B6)		✓

Element Scoped In	Construction Phase	Operational Phase
Operational Water Use (B7)		✓
End-user Emissions (B8/D)		✓

Elements Scoped out of the Assessment

- 14.2.5. The elements shown in **Table 14-2** are not considered to give rise to likely significant effects as a result of the Proposed Development and have therefore not been considered within this assessment, in accordance with the Institute of Environmental Management and Assessment (IEMA) guidance for delivering a proportionate approach for assessment of effects (**Ref. 14.5**).

Table 14-2 - Elements Scoped out of the Assessment

Element Scoped Out	Justification
Land use, land use change and forestry (A5 Construction Phase)	A review of existing land uses (arable land and areas of hardstanding) and experience of assessments where emissions have been quantified for similar land uses indicates that emissions from the change in land use for the Proposed Development are not expected to be material. As a result, this effect is scoped out of the assessment.
Land use, land use change and forestry (B1 Operational Phase)	As above, based on a review of existing land uses, the potential reduction in carbon sequestration over the lifetime of the Proposed Development due to the land use change is not expected to be material, so is scoped out for assessment.
End of life stage: decommissioning works, including the transport, processing, and disposal of materials (C1-C4)	The Proposed Development is permanent with no specific end-of-life stage determined. However, for the purposes of setting parameters for assessing lifetime emissions a minimum operational design-life of 60 years is assumed for the Proposed Development, which goes beyond a reasonable timeframe for determining emissions attributable to decommissioning and disposal works. Therefore, the an end-of-life stage is scoped out of the assessment.

EXTENT OF THE STUDY AREA

- 14.2.6. The GHG assessment is not restricted by geographical area but instead includes any increase or decrease in emissions as a result of the Proposed Development, wherever that may be. This includes:
- Construction emissions generated within the Site and resulting from the construction traffic for the Proposed Development, the manufacture of construction materials (which may be distant from the Site), along with emissions associated with any transport and disposal of waste construction materials; and

- Operational emissions resulting from operation of the Proposed Development. In this case, GHG emissions include those for emissions arising from operational energy use and water use, transport emissions resulting from visitors travelling to and from the Proposed Development and embodied emissions for materials associated with ongoing maintenance, repair, and refurbishment during the Operational Phase.

14.3. METHODOLOGY

METHOD OF BASELINE DATA COLLATION

Desk Study

- 14.3.1. In accordance with the process set out in IEMA guidance for *Assessing Greenhouse Gas Emissions and Evaluating their Significance* (Ref. 14.5), the baseline focuses on those emission sources subject to change between the baseline scenario and the Proposed Development, which for the GHG assessment relates to a desk study evaluation of emissions associated with road and rail transport. This includes a quantitative assessment of baseline emissions associated with road transport and, the expanded Wixams Station (“Wixams East Station”) without the Proposed Development, a qualitative assessment of baseline conditions for rail transport.
- 14.3.2. The GHG emissions from development-related traffic on the surrounding road network encompass the full extent of the road traffic model. Details of the road traffic model are presented in **Chapter 5: Traffic and Transport (Volume 1)**.
- 14.3.3. The following source of information from the Transport Assessment for the Proposed Development was used to inform the Environmental Impact Assessment (EIA) baseline for the GHG assessment, encompassing the full extent of the road traffic model presented in **Chapter 5: Traffic and Transport (Volume 1)**:
 - Traffic model flow data for the Primary Phase Opening Year baseline reference over a defined geographical area around the Proposed Development, using data provided for daily traffic flows, the proportion of Heavy Duty Vehicles and vehicle speed for associated road network Link IDs.
- 14.3.4. Baseline transport user emissions were calculated based on the traffic modelling data for the scenario without the Proposed Development, in accordance with Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 14 Climate; LA114 (Ref. 14.6). Emissions were quantified using transport analysis guidance data from the Department for Transport (Ref. 14.7). This considered the proportions of the vehicle types, fuel type, forecast fuel consumption parameters and emission factors. From this, traffic emissions without the Proposed Development were quantified for the baseline reference year across the modelled network area and extrapolated over an indicative 60-year operational period (i.e. from the Primary Phase Opening Year).

ASSESSMENT METHODOLOGY

- 14.3.5. **Table 14-3** sets out the methodology used in the assessment of the elements scoped into the GHG assessment. Where possible a quantitative approach has been taken to estimating a cautious worst case for GHG emissions associated with the Proposed Development based on the level of information available at this stage of the design. For elements of the Proposed Development where information was not available, a qualitative assessment of potential impacts has been undertaken. Further details on the methodology used in the assessment of GHGs are presented in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)**.

Table 14-3 - Assessment Methodology

Elements Scoped In	Methodology
A1-A3 Product Stage (manufacture and transport of raw materials to suppliers)	For the cautious worst case scenario, embodied GHG emissions for the Construction Phase have been estimated based on the footprints indicated for use categories from the Parameter Plans (Document Reference 1.10.0) , (in accordance with the assumption described in Section 14.2 of this report). Appropriate carbon factors (kgCO ₂ e/m ²) for land use were applied to these indicative footprints based on development categories in RICS guidance (Ref. 14.2).
A4 Transport to Project Site	Construction traffic model flow data (presented in Chapter 5: Traffic and Transport (Volume 1)) was used to quantify GHG emissions associated with transport over the construction period for the Primary Phase (in accordance with DMRB Volume 11, Section 3, Part 14 Climate; LA114 (Ref. 14.6)). Construction transport emissions beyond the Opening Year were estimated based on a proportion of the construction transport emissions determined for the Primary Phase, in line with the scale of development for the Full Buildout.
A5 Plant and Equipment Use and Waste Management during Construction	Estimated using the RICS assumption of project value for 'A5 Construction – installation process emissions' (in accordance with the assumption described in Section 14.2 of this report).
B1 Operation/Use	The Proposed Development is not at a sufficient level of design to confirm the need for refrigerant use nor confirm the type or quantity of consumable materials required. Therefore, a cautious worst case scenario qualitative assessment has been used to determine potential impacts for this operational element.
B2-B5 Maintenance (B2), Repair (B3), Replacement (B4) and Refurbishment (B5)	GHG emissions for these elements have been estimated based on a proportion of the embodied carbon emissions determined for the Construction Phase (A1-A3) and the built development footprint, using relevant factors and methodologies in accordance with industry guidance and case studies (in accordance with the assumptions described in Section 14.2 of this report).
B6 Operational Energy Use	GHG emissions associated with the use of grid electricity and network gas supplies are based on indicative power and fuel requirements for the Proposed Development provided by the WSP Utilities Team. Relevant UK Government GHG reporting emissions factors have been applied, accounting for future decarbonisation of UK grid electricity supplies. Use of natural gas in temporary boilers for heating is considered during the first year of the Primary Phase. However, there is increasing confidence that the UK electricity network will be able to meet design requirements for heating of the Proposed Development, so it assumed that heating will be fully electrified for the remainder of the Primary Phase and throughout the Full Buildout. GHG emissions are estimated for the potential emergency use of diesel fuel in back-up generators, based on a proportion of the overall electrical power demand for a limited time period.
B7 Operational Water Use	GHG emissions associated with use of water are based on indicative quantities for the Proposed Development provided by the WSP Utilities Team. Relevant UK Government GHG reporting emissions factors for water supplies have been applied.

Elements Scoped In	Methodology
B8/D Users Utilisation of Proposed Development – Surface Access	Operational traffic model flow data has been used to quantify GHG emissions associated with road transport, extrapolated over future years of the Proposed Development (in accordance with DMRB Volume 11, Section 3, Part 14 Climate; LA114 (Ref. 14.6)). The assessment was completed using the Core Scenarios from the transport assessment, specifically Scenario 3 for the Opening Year Reference Case, Scenario 4 for the Opening Year Reference Case plus Development and Scenario 5 for the Future Year Reference Case plus Development, which has taken into account relevant road travel by both domestic and international visitors, including journeys associated with use of the road network to and from airports. It is expected that visitors to the Proposed Development travelling by train, including international visitors, would increase use of the rail network and associated GHG emissions. In the absence of detailed information regarding rail journeys for visitors using this method of transport qualitative assessment has been used to evaluate a cautious worst case scenario for this aspect.
B8/D Users Utilisation of Proposed Development – Air Travel	It is expected that some visitors will travel further to attend the Proposed Development, requiring the use of air travel. The associated GHG emissions are outside the direct control of UDX, as the relevant Undertaker¹ for the Proposed Development; however, noting the impact of GHG emissions on climate from air travel, a separate high-level quantitative assessment of potential air travel related GHG emissions is included in Section 14.5 of this report. There is uncertainty regarding the number of visitors that may use air travel to visit the Proposed Development, and further uncertainty regarding their potential origin and whether the Proposed Development would be the sole purpose of their visit or whether it would form part of a wider visit to the UK. As such, three scenarios have been included to estimate the GHG emissions associated with air travel: ▪ Low Range – European origin only; ▪ Medium Range – a mix of European and Rest of the World origins; and ▪ High Range - Rest of the World origins only. Further details on the methodology used in the assessment of GHGs related to air travel are presented in Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3).

EMBEDDED MITIGATION

- 14.3.6. The embedded mitigation measures include the commitment from UDX to implement design measures that include the Leadership in Energy and Environmental Design (LEED) Gold level criteria under LEED Cities and Communities (**Ref. 14.9**) and LEED Building Design and Construction for UDX's flagship buildings (**Ref. 14.10**). More information on the LEED approach is given in **Section 2.6 of Chapter 2: Description of the Proposed Development (Volume 1)**.

¹ The persons (corporate or otherwise) who are permitted to carry out the Proposed Development (including their contractors and other persons appointed by them in connection with the carrying out of the Proposed Development).

- 14.3.7. For the applicable components of the Proposed Development for which UDX is the relevant Undertaker, including those LEED point categories that have opportunities for energy reduction and a reduced carbon footprint for the Construction and Operational Phases, a focus on the following areas relevant to the assessment of GHG emissions are:
- Site (access to public transit and amenities);
 - Energy (reducing emissions, improving efficiency, and shifting to clean energy);
 - Materials (prioritising circular, low-carbon materials);
 - Waste (strive to limit waste in facility construction and operations); and
 - Water (conserving freshwater resources through reduction and recycling of non-potable water).
- 14.3.8. Allowance is made for EV charging points within allocated car parking areas as set out in **Appendix 2.1: Environmental Statement Basis of Assessment (Volume 3)**.
- 14.3.9. National Highways and Network Rail, as relevant Undertakers who will take forward their respective elements of the Proposed Development, have adopted the PAS 2080:2023 Standard for Carbon Management in Buildings and Infrastructure (**Ref. 14.4**). PAS 2080:2023 Standard is being implemented by these relevant Undertakers, which will require the implementation of measures for whole-life carbon management and carbon reduction during the design, construction, and operation of their respective elements of the Proposed Development. Further to this, the following plans and commitments have been made by those Undertakers:
- National Highways has developed a Net Zero carbon plan (**Ref. 14.11**) with commitments to be net zero for its own operations by 2030 and achieving net zero for maintenance and construction emissions by 2040 against a 2020 baseline; and
 - Network Rail has set science based targets to limit emissions from its own operations to a 1.5°C warming scenario, and achieving net zero emissions by 2050 across its value chain, including its suppliers and customers (**Ref. 14.12**).

SIGNIFICANCE CRITERIA

- 14.3.10. The significance of GHG impacts is assessed in accordance with IEMA Guidance (**Ref. 14.5**). The impacts of GHG emissions relate to their contribution to global warming and climate change. The receptor is therefore the global climate, which has a high sensitivity, given the severe consequences of global climate change and the cumulative contributions of all GHG emission sources.
- 14.3.11. IEMA guidance does not specify quantitative thresholds for evaluating the significance of GHG emissions but advises that GHG emissions from a proposed development should be contextualised against suitable criteria to determine whether it supports or undermines the UK's trajectory towards net zero by 2050. The following terms have been used to define the significance of the effects, as set out in IEMA Guidance:
- **Major Adverse (Significant):** *the GHG impacts are not mitigated or are only compliant with do-minimum standards set through regulation, and do not provide further reductions required by existing local and national policy nor make a meaningful contribution to the UK's trajectory towards net zero;*
 - **Moderate Adverse (Significant):** *the GHG impacts are partially mitigated and may partially meet the applicable existing and emerging policy requirements but would not fully contribute to decarbonisation in line with local and national policy goals, falling short of fully contributing to the UK's trajectory towards net zero;*

- **Minor Adverse (Not Significant):** the GHG impacts are fully consistent with applicable existing and emerging policy requirements and good practice design standards; they are fully in line with measures necessary to achieve the UK's trajectory towards net zero;
- **Negligible (Not Significant):** the GHG impacts are reduced through measures that go well beyond existing and emerging policy and design standards for projects of this type, such that radical decarbonisation or net zero is achieved well before 2050; and
- **Beneficial (Significant):** the net GHG impacts are below zero, causing a reduction in atmospheric GHG concentration, whether directly or indirectly, compared to the without-project baseline, substantially exceeding net zero requirements with a beneficial climate impact."

14.3.12. In order to provide context to the significance of GHG emissions arising from the Proposed Development, the magnitude of changes in GHG emissions are therefore assessed with reference to national policy and the UK's legally binding national carbon budgets (**Ref. 14.13**), covering the years 2023 to 2037 (Fourth Carbon Budget (2023 to 2027) of 1,950 MtCO₂e; Fifth Carbon Budget (2028-2032) of 1,725 MtCO₂e; and Sixth Carbon Budget (2033 to 2037) of 965 MtCO₂e), and the Climate Change Committee's recently proposed Seventh Carbon Budget (of 535 MtCO₂e), covering the years 2038 to 2042 based on the assumption that the UK Government will take forward the proposed Seventh Carbon Budget. The GHG assessment is also complemented by a qualitative contextual assessment of the change in emissions reported for Bedford Borough Council (Bedford BC) and any relevant policies.

14.3.13. Further details on the terms used to define the significance of the effects for GHG assessment as set out in IEMA Guidance are described in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)**.

14.4. BASELINE CONDITIONS

- 14.4.1. The GHG assessment only considers the scenario in which the Proposed Development results in additional or avoided emissions in comparison to the future baseline.
- 14.4.2. With regard to the Construction Phase, baseline (Do Minimum) GHG emissions are considered to be zero as there are currently no construction activities taking place associated with the Proposed Development.
- 14.4.3. With regard to the Operational Phase, with the exception of road transport, under the baseline (Do Minimum) scenario GHG emissions are considered to be minimal for activities currently taking place at the Site (predominantly arable land or unused areas of hardstanding).

FUTURE BASELINE

- 14.4.4. The future baseline for the GHG assessment considers the scenario without the Proposed Development and the associated change in road and rail transport emissions over an indicative 60-year period from the baseline year (Primary Phase Opening Year). This has considered assumptions regarding permitted development and changes in modal shift.
- 14.4.5. The following future baseline GHG emissions have been determined:
 - Estimated GHG emissions for the Primary Phase (20 years from Primary Phase Opening Year) averaging 119,658 tCO₂e/yr (2,393,158 tCO₂e in total over 20 years, accounting for rounding errors); and

- Estimated GHG emissions for the Completion of Full Build Out scenario (40 years from Completion of Full Buildout) averaging 91,759 tCO₂e/yr (3,670,365 tCO₂e in total over 40 years, accounting for rounding errors).

- 14.4.6. The total future baseline GHG emissions associated with road transport without the Proposed Development, covering the Primary Phase and from Completion of Full Buildout, are estimated to be **6,063,522 tCO₂e** across the modelled area over the 60-year minimum operational period for assessment. These are the emissions expected to result from road transport across the modelled area without the Proposed Development.
- 14.4.7. There is also potential for future baseline GHG emissions attributable to use of Wixams East Station without the Proposed Development. As described in Section 14.4 of this report, the associated GHG emissions are not quantified but it is considered that without the Proposed Development there would be a nominal increase in GHG emissions for rail journeys stopping at Wixams East Station; however, it is also recognised that future decarbonisation of rail transport will limit the generation of GHG emissions.

14.5. ASSESSMENT OF POTENTIAL EFFECTS, MITIGATION AND RESIDUAL EFFECTS

- 14.5.1. This section details the assessment of impacts and effects from GHG emissions for the Proposed Development during both the Construction and Operational Phases, taking into account embedded mitigation measures detailed in Section 14.3 of this report and **Chapter 2: Description of the Proposed Development (Volume 1)**, and residual effects following the implementation of additional mitigation and enhancement measures.

CONSTRUCTION PHASE

- 14.5.2. **Table 14-4** presents the estimated Construction Phase GHG emissions for the Proposed Development. For the purposes of assessing a cautious worst case scenario, it is assumed that Primary Phase Construction would take place over a five-year period and additional construction for the Completion of Full Build Out scenario would be carried out at a future construction stage.

Table 14-4 - Proposed Development Estimated Construction Phase GHG emissions

Elements	Primary Phase GHG Emissions (tCO ₂ e)	Completion of Full Build Out GHG Emissions (tCO ₂ e)	Total GHG Emissions (tCO ₂ e)
A1-A3 Product Stage (manufacture and transport of raw materials to suppliers)	940,130	370,058	1,310,188
A4 Transport to Project Site	6,387	2,477	8,865
A5 Plant and Equipment Use and Waste Management during Construction	21,171	n/a	21,171
Total	967,688	372,536	<u>1,340,224</u>

- 14.5.3. Based on the information currently available, embodied emissions (Product Stage (A1-A3)) contribute to the majority of Construction Phase GHG emissions (at approximately 98% of the total, with 70% attributable to construction for the Primary Phase). Effects from GHG emissions during the Construction Phase would be reduced further through measures such as prioritising the use of circular, low carbon materials in the design and minimising construction waste. More detail on the process to investigate these opportunities is given in **Appendix 14.1: Carbon Management Plan (Volume 3)**.
- 14.5.4. **Table 14-5** describes the assessment of potential effects, the mitigations, the residual effects and monitoring during the Construction Phase for GHG.

Table 14-5 - Assessment of Potential Effects, Mitigation, Residual Effects, and Monitoring during Construction Phase

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
Global Climate	Potential Effects	The sensitivity of the global climate is high and due to the nature of GHGs, effects in the atmosphere are considered to be permanent and long term. The Construction Phase will result in an increase in GHG emissions. Notwithstanding the embedded mitigation measures in place, it is considered that there is likely to be a direct, Moderate Adverse (Significant) effect.
	Additional Mitigation	Further mitigation measures to reduce GHG emissions arising from the Construction Phase of the Proposed Development and provide consistency with the UK's trajectory towards net zero are identified below. The mitigation measures will be secured through verification by relevant independent third-party certification bodies accredited to provide assessment of compliance with the PAS 2080:2023 standard and LEED certification. - UDX will apply the PAS 2080:2023 standard for carbon management in buildings and infrastructure, as a basis for design optimisation and establishing metrics and targets for carbon reduction during the Construction Phase, incorporating UDX's LEED certification goals for the applicable components of the Proposed Development for which UDX is the Undertaker (more information on the LEED approach is given in Section 2.6 of Chapter 2: Description of the Proposed Development (Volume 1) and measures identified in Appendix 14.1: Carbon Management Plan (Volume 3). This will be secured through the development of Carbon Management Reports produced at each project Stage summarising the carbon management process adhered to through that stage of work. More information on reporting requirements is provided in Appendix 14.1: Carbon Management Plan (Volume 3). - UDX will use procurement mechanisms through PAS 2080:2023 (and UDX's LEED certification process relevant to the applicable components of the Proposed Development for which UDX is the Undertaker) to include carbon management as a differentiating factor through the supply chain. Procurement documentation will identify that materials and products with reduced embodied carbon emissions and materials/resources featuring recycled content are preferred (where safe and of sufficient integrity for engineering).

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
	Residual Effects and Monitoring	The sensitivity of the global climate is high and due to the nature of GHGs, effects in the atmosphere are considered to be permanent and long term. However, the implementation of mitigation measures is considered to reduce the likely residual effect to direct, Minor Adverse (Not Significant). Notably, the application of PAS 2080 is considered to be in line with measures necessary to achieve the UK's trajectory towards net zero. Section 3.12 Outline Construction Environmental Management Plan (OCEMP) presented in Appendix 2.3: Outline Construction Environmental Management Plan (Volume 3) sets out measures to reduce GHG emissions during construction of the Proposed Development and provides mechanisms for the Contractor to monitor the effectiveness of, and compliance with, environmental control measures, including the consideration of manufacture, transport and supply of materials. In accordance with Appendix 14.1: Carbon Management Plan (Volume 3), a Carbon Management Report will be produced at each project stage to demonstrate alignment to PAS 2080, with an 'as built' assessment that confirms the final construction GHGs at the end of construction of the Primary Phase.

OPERATIONAL PHASE

- 14.5.5. **Table 14-6** presents the estimated Operational Phase GHG emissions for the Proposed Development. For a cautious worst case scenario, annual GHG emissions are presented accounting for Primary Phase operational activities and the Completion of Full Buildout scenario. In order to evaluate impacts for the GHG assessment, total emissions for the Operational Phases are determined and presented for a 60-year operational period.
- 14.5.6. It is anticipated that heating for the Proposed Development will be from electrical power supplies from Opening Year; however, this is dependent on the development of UK electricity grid capacity and there is potential that for an initial period of one year gas may be required for heating during the Primary Phase. For the purposes of assessing a cautious worst case scenario in the GHG assessment, it is assumed that for the first year of the Primary Phase natural gas supplies would be used temporarily for heating in the Proposed Development.

Table 14-6 - Proposed Development Estimated Operational Phase GHG emissions

Elements	Primary Phase GHG Emissions (tCO ₂ e/yr)	Completion of Full Buildout GHG Emissions (tCO ₂ e/yr)	Total GHG Emissions over 60-Year Period (tCO ₂ e)
B1 Operation/Use	Qualitative assessment for cautious worst case scenario		
B2-B5 Maintenance (B2), Repair (B3), Replacement (B4) and Refurbishment (B5)	11,770	18,633	980,747

Elements	Primary Phase GHG Emissions (tCO ₂ e/yr)	Completion of Full Buildout GHG Emissions (tCO ₂ e/yr)	Total GHG Emissions over 60-Year Period (tCO ₂ e)
B6 Operational Energy Use	6,112	1,622	187,122
B7 Operational Water Use	387	580	30,955
B8/D Users Utilisation of Proposed Development (Road)	7,567	6,677	418,429
Total	25,837	27,513	<u>1,617,253</u>

- 14.5.7. The Operational Phase is expected to result in an increase in GHG emissions relative to the baseline. Given the scale of the Proposed Development, the increase relates primarily to ongoing maintenance, repair and refurbishment activities (B2-B5), estimated to be 61% of the total Operational Phase GHG emissions. Other sizable sources of quantified GHG emissions relate to visitor travel using road transport (B8/D, approximately 26%) and energy use (B6, approximately 12%). With respect to energy use, the assumption for the cautious worst case scenario is that natural gas is used temporarily for heating during the first year of the Primary Phase and subsequently, heat is provided from electrical supplies throughout the Operational Phase. However, there is an expectation that heating requirements for the Proposed Development will be fully electric from the start of the Primary Phase.
- 14.5.8. Additional operational elements that have not been quantified but would potentially generate additional GHG emissions include use of refrigerants and use of consumables (B1) and alternative means of visitor transport by rail (B8/D). It is considered that modern equipment would limit the scale of potential emissions from refrigerant leakage and embodied emissions from use of consumables would also be relatively small.
- 14.5.9. With respect to rail travel, it is expected that relative to the baseline there would be a significant increase in rail journeys made by visitors and staff for the Proposed Development. However, it is considered that this is already the lowest carbon form of public transport and in terms of the assessment of effects from GHG emissions is in accordance with strategies to achieve the UK's trajectory towards net zero by 2050.
- 14.5.10. It is expected that visitors travelling to visit will increase user emissions; however, there are broader decarbonisation strategies for transport (e.g. the Department for Transport's Transport Decarbonisation Plan (**Ref. 14.14**)), which at a systematic level should lead to the decarbonisation of transport outside the direct control of the Proposed Development.
- 14.5.11. **Table 14-7** describes the assessment of potential effects, the mitigations, the residual effects and monitoring during the Operational Phase for GHG.

Table 14-7 - Assessment of Potential Effects, Mitigation, Residual Effects, and Monitoring during Operational Phase

Sensitive Receptor	Potential Effects, Additional Mitigation, Residual Effects, and Monitoring	
Global Climate	Potential Effects	The sensitivity of the global climate is high and due to the nature of GHGs, effects in the atmosphere are considered to be permanent and long term. The Operation Phase is expected to result in a net increase in GHG emissions. Notwithstanding the embedded mitigation measures in place, it is considered that there is likely to be a direct, Moderate Adverse (Significant).
	Additional Mitigation	Further mitigation measures to reduce GHG emissions arising from the Operational Phase of the Proposed Development and provide consistency with the UK's trajectory towards net zero are identified below. The mitigation measures will be managed by organisations accredited to provide assessment of compliance with the PAS 2080:2023 standard and LEED certification. UDX will apply the PAS 2080:2023 standard for carbon management in buildings and infrastructure, to integrate whole life carbon management into design decisions for the Proposed Development, including identifying responsibilities for carbon management; targets for whole life carbon; and a regular review process to allow for adoption of future innovations or recommendations for carbon management (see Appendix 14.1: Carbon Management Plan (Volume 3)).
	Residual Effects and Monitoring	The sensitivity of the global climate is high and due to the nature of GHGs, effects in the atmosphere are considered to be permanent and long term. However, the implementation of mitigation measures is considered to reduce the likely residual effect to direct, Minor Adverse (Not Significant). Further to the embedded mitigation measures, applying PAS 2080 for the ongoing management of GHG emissions sources is considered to be in line with measures necessary to achieve the UK's trajectory towards net zero. In accordance with Appendix 14.1: Carbon Management Plan (Volume 3) for securing the application of PAS 2080, UDX will establish carbon metrics, which are focussed on specific aspects of the Proposed Development to enable targeted carbon management, such as visitor travel, heating and cooling, procurement of goods and services, and the various built aspects of the Proposed Development (e.g. maintenance of transport infrastructure, theme park rides, the Energy Centre, hotel accommodation, offices, storage/warehousing, retail and food outlets, utilities etc). The metrics developed in Appendix 14.1: Carbon Management Plan (Volume 3) will be reviewed by UDX on an annual basis and used to identify opportunities for carbon reduction and suitable targets for improvement.

WHOLE LIFE GHG EMISSIONS AND CONTEXTUAL ASSESSMENT

14.5.12. In accordance with IEMA guidance (**Ref. 14.5**), a summary of the net lifecycle impacts associated with GHG emissions for the Proposed Development are set out in **Table 14-8**, which indicate the whole life emissions (accounting for Construction and Operational Phases) represent an overall estimated increase in GHG emissions of 3 million tCO₂e relative to the future baseline (6.2 million tCO₂e without the Proposed Development). Approximately 45% of the increase is attributed to the Construction Phase and 55% is attributed to the Operational Phase. This is considered to be a cautious worst case scenario, which as well as assuming the temporary use of gas for heating in the first year of the Primary Phase, has not factored in the potential for decarbonisation of road transport beyond 2050, and decarbonisation of construction and maintenance activities with time.

Table 14-8 - Proposed Development Whole Life GHG emissions (minimum 60-year operational period from the Primary Phase Opening Year)

GHG Emissions Category	Future Baseline (without Development) GHG Emissions (tCO ₂ e)	With Proposed Development GHG Emissions (tCO ₂ e)	Net Impact (tCO ₂ e)
Construction ^a	-	1,340,224	1,340,224
Operation ^b	-	1,385,947	1,198,824
End User ^c	6,063,522	6,481,952	418,430
			2,957,478

- a. Construction period of five years assumed for Primary Phase and unconfirmed construction period prior to Future Operational Year for the Completion of Full Buildout scenario.
- b. Minimum 60-year operational period from Primary Phase Opening Year.
- c. Represents road transport emissions over the modelled network area including the Proposed Development Site.

Contextual Assessment

14.5.13. As noted in the methodology outlined in Section 14.3 of this report, IEMA guidance (**Ref. 14.5**) does not specify quantitative thresholds for evaluating the significance of GHG emissions but advises that GHG emissions from a Proposed Development should be contextualised against suitable criteria to determine whether it supports or undermines the UK's trajectory towards net zero by 2050. To aid in the determination of significance, the CO₂ emissions from the Proposed Development, as currently calculated, have been presented in the context of the UK's legislated carbon budget periods in **Table 14-9**. For completeness, the seventh UK carbon budget proposed by the Climate Change Committee in February 2025 (**Ref. 14.18**) is included in **Table 14-9**; however, it is noted that this is not yet the legally binding carbon budget for its period.

Table 14-9 - Proposed Development GHG Emissions with UK Carbon Budgets

Carbon Budget Period	UK Carbon Budget (tCO ₂ e)	Proposed Development Emissions (tCO ₂ e)	Proportion of Carbon Budget (%)
Fourth: 2023 to 2027	1,950,000,000	387,075	0.020
Fifth: 2028 to 2032	1,725,000,000	651,433	0.038
Sixth: 2033 to 2037	965,000,000	123,865	0.013
Seventh: 2038 to 2042	535,000,000	123,865	0.023

14.5.14. The assessment indicates that GHG emissions for the Proposed Development will equate to 0.020% of the UK's fourth carbon budget, 0.038% of the UK's fifth carbon budget, 0.013% of the sixth carbon budget, and 0.023% of the proposed seventh carbon budget. GHG emissions from construction of the Primary Phase are expected to fall within part of the UK fourth (2023 to 2027) carbon budget but there would be no emissions from the Operational Phase during this period. As the indicative construction period for the Primary Phase extends to the Primary Phase Opening Year, further GHG emissions from construction activities would fall within the UK fifth (2028 to 2032) carbon budget, along with emissions from the start of operational activities during this period. During the UK sixth (2033 to 2037) carbon budget and the proposed UK seventh (2038 to 2042) carbon budget, there will be no GHG emissions from construction activities and there will continue to be GHG emissions from operational activities. Timescales for construction of the Completion of Full Buildout scenario of the Proposed Development have not been determined but it is assumed this would occur before 2050 but after the period covered by existing and proposed UK Carbon Budgets.

14.5.15. With respect to GHG emissions at a local level, the most recently available summary of GHG emissions for local councils in the UK indicates total emissions for the Bedford BC area of approximately 860,000 tCO₂e in 2021 (**Ref. 14.15** and detailed in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)**). At approximately 26,000 tCO₂e/yr of GHG emissions estimated for the Primary Phase and 27,500 tCO₂e/yr estimated for the 2050 Buildout scenario, the additional annual operational emissions for the Proposed Development would equate to 3% of Bedford BC's total annual GHG emissions for each Phase. It is also noted that local planning policies for central Bedfordshire (**Ref. 14.16**) and Bedford Borough (**Ref. 14.17**) require that development is delivered in a way that contributes to the mitigation of climate change, including reducing the carbon footprint and ongoing GHG emissions of new development. UDX's LEED certification goals for the applicable components of the Proposed Development for which UDX is the Undertaker, are considered to be consistent with local planning policies requiring developments to minimise carbon emissions and improve energy efficiency, including the central Bedfordshire Policy CC1: Climate Change and Sustainability (**Ref. 14.16**), which indicates support for developments that can demonstrate high quality sustainability standards through certification by a relevant scheme.

14.5.16. The Proposed Development would represent a relatively small contribution to current UK Carbon Budgets (less than 0.05% for each budget period) and GHG impacts would be partially mitigated (e.g. through measures implemented to achieve LEED Gold certification for the applicable components of the Proposed Development for which UDX is the Undertaker). It is also understood that as part of the Energy Strategy for the Proposed Development, UDX is actively reviewing options for improving energy efficiency, although at this stage of the design the extent to which these will be implemented are not confirmed. On this basis, in accordance with IEMA guidance (**Ref. 14.5**) for defining significance (described in Section 14.3 of this report), without additional mitigation measures in place, it is considered that overall potential GHG impact of the Proposed Development will be a **Moderate Adverse (Significant) effect**.

14.5.17. Implementation of the additional mitigation measures outlined in **Table 14-5** and **Table 14-7** would make sure the Proposed Development is consistent with existing and emerging policy requirements and good practice design standards for projects of this type, notably the use of PAS 2080 (Carbon Management in Buildings and Infrastructure), which would support the UK's trajectory towards net zero by 2050. The adoption of the PAS 2080 process as mitigation, implemented by a PAS 2080 certified organisation, is in accordance with the following assessment of significance described in the IEMA guidance (described in Section 14.4 of this report):

Minor Adverse (Not Significant) effect: *the GHG impacts are fully consistent with applicable existing and emerging policy requirements and good practice design standards; they are fully in line with measures necessary to achieve the UK's trajectory towards net zero.*

14.5.18. The Carbon Management Plan (**Appendix 14.1: Carbon Management Plan (Volume 3)**) demonstrates how the PAS 2080 process will be applied during the development stages. The Carbon Management Plan outlines reporting requirements with a '**Carbon Management Report**' required that summarises the whole life carbon management process at each project stage, including the identification of key potential sources of carbon emissions at the design stage and how they have been managed. It will include information on related standards such as LEED and serve as evidence of the implementation of "good practice standards" as set out in IEMA guidance. Application of the PAS 2080 approach set out in **Appendix 14.1: Carbon Management Plan (Volume 3)** will be verified by a relevant independent third-party auditor, accredited to provide assessment of compliance with the PAS 2080:2023 standard.

14.5.19. On this basis, it is considered that although there may still be a relative increase in GHG emissions attributable to the Proposed Development, the overall GHG impact of the Proposed Development would be a **Minor Adverse (Not Significant) effect**.

AIR TRAVEL

14.5.20. As identified in Section 14.4 of this report, a separate assessment is provided here for indirect GHG emissions attributable to the Proposed Development, with respect to visitors using air travel in the Operational Phase. Given uncertainty regarding the number of visitors that may use air travel to visit the Proposed Development and the potential origin of flights, a range of scenarios has been included to cover what may be considered a cautious worst case for impacts arising from the Proposed Development, related to GHG emissions from air travel:

- **Low-range** – visitor flights originating from European countries only;
- **Medium-range** – visitor flights originating from European and 'Rest of the World' countries; and
- **High-range** – visitor flights originating from 'Rest of the World' countries only.

14.5.21. For each scenario, an estimate of the annual air travel related GHG emissions is presented in **Table 14-10**, accounting for the assumed visitor numbers for the Primary Phase Opening Year and the assumed increase in visitor numbers for the Completion of Full Buildout scenario. **Table 14-10** also includes the annual operational emissions already presented for each development phase (from **Table 14-6**), providing a comparative indication of the scale of potential GHG emissions attributable to air travel.

Table 14-10 - Estimated annual GHG Emissions for Air Travel

Air Travel Scenario	Primary Phase GHG Emissions (tCO₂e/yr)	Completion of Full Buildout GHG Emissions (tCO₂e/yr)
Total Operational GHG emissions for the Proposed Development – excluding air travel (from Table 14-6)	44,217	65,272
<i>Low-range – additional air travel emissions</i> (European countries only)	108,198	244,401
<i>Medium-range – additional air travel emissions</i> (mix of European and Rest of the World countries)	187,575	423,699
<i>High-range – additional air travel emissions</i> (Rest of the World countries only)	637,376	1,439,720

14.5.22. Noting some of the uncertainties with the assessment, the quantitative analysis indicates that for each scenario indirect GHG emissions associated with visitor air travel would be significantly higher than the Operational Phase GHG emissions directly attributable to the Proposed Development, with air travel representing the primary source of emissions during the Operational Phase.

14.5.23. For the *Low-range scenario* the additional air travel related GHG emissions would represent approximately 71% of the overall annual Operational Phase emissions during the Primary Phase and 79% of the annual emissions during the Completion of Full Buildout scenario. For the *Medium-range scenario* the additional air travel related GHG emissions would represent approximately 81% and 87% of the overall annual emissions respectively for the Primary Phase and the Completion of Full Buildout scenario. For the *High-range scenario* the additional air travel related GHG emissions would represent approximately 94% and 96% of the overall annual emissions respectively for the Primary Phase and the Completion of Full Buildout scenario.

14.5.24. On this basis it is considered that in accordance with IEMA guidance for defining significance (described in Section 14.4 of this report), the overall potential GHG impact of the Proposed Development including indirect GHG emissions for air travel would be a **Moderate Adverse (Significant) effect**.

- 14.5.25. Mitigation of the GHG emissions associated with air travel is beyond the control of the Promotor, UDX, which is dependent on measures within the aviation sector and airline operators. Actions are being taken by the Aviation Sector to decarbonise. One of the key measures to reduce GHG emissions associated with international air travel is the International Civil Aviation Organization's Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), which has established a goal of net-zero CO₂ emissions from international aviation by 2050. Currently the CORSIA scheme is being adopted on a voluntary basis but from 2027 (i.e. before the Primary Phase Opening Year) there is a requirement that all international flights will be subject to offsetting requirements to support the 2050 goal for net-zero. Additionally the UK Government's Jet Zero strategy is targeting delivery of net zero emissions for the UK aviation sector by 2050 through the adoption of the measures to reduce GHG emissions, including the development and uptake of sustainable aviation fuels; system efficiencies targeting improvements to the existing aviation system; technological development of aircraft with zero carbon tailpipe emissions; and market removal mechanisms to compensate for any residual emissions from air travel in 2050.
- 14.5.26. Whilst these mitigation measures are positive and may contribute to a reduction in GHG emissions associated with air travel, the current reliance by the aviation sector on offsetting emissions to achieve carbon reduction and uncertainty regarding the implementation of technological developments mean that GHG impacts from air travel will only be partially mitigated and cannot be relied on to change the significance impact given above.

CUMULATIVE EFFECTS

- 14.5.27. IEMA guidance (**Ref. 14.5**) identifies that GHG emissions are not geographically limited, so impacts from emissions are not restricted to a specific location or physical boundary (as may be the case for other environmental impacts, such as noise, air quality or flooding) but impact the atmosphere at a global level. Avoided or emitted GHG emissions make a cumulative contribution to the global atmosphere and impact on climate change (beneficial or adverse). Therefore, in accordance with the IEMA guidance, consideration of cumulative GHG emissions is inherent in the assessment and the cumulative impact of GHG emissions for the Proposed Development have been assessed against the contextual scale of relevant UK carbon budgets.
- 14.5.28. As referred to in **Chapter: 3 Approach to EIA (Volume 1)**, the cumulative assessment for Greenhouse Gases is set out in **Chapter 18: Cumulative Effects (Volume 1)**.

14.6. UNCERTAINTIES

- 14.6.1. Given the current stage of design, assumptions have been made to enable a quantitative baseline to be developed for the Proposed Development. This baseline will provide much value in future design stages to enable further conversations on carbon reduction opportunities to take place. At the same time, with more design information available at later stages, the number of uncertainties are expected to reduce.
- 14.6.2. The following uncertainties have been identified for the assessment which have primarily affected the quantification of estimated GHG emissions for the Proposed Development; however, it is considered that the broad scale of associated GHG emissions has been identified and there is sufficient information to determine significance in terms of whether the Proposed Development supports or undermines the UK's trajectory towards net zero by 2050:

- Given the current stage of the design, information was not available on material quantities for construction, maintenance and replacement/refurbishment schedules, or use of consumables during operation. Therefore, as identified in the assumptions in Section 14.2 of this report for a cautious worst case scenario, embodied GHG emissions have been informed by the indicative footprints for use categories;
- Given the high-level assessment of embodied carbon for construction materials based on development footprint rather than material types and quantities, the exact mass and location of where materials are sourced is unknown. As such, to estimate emissions for transport of materials, the construction traffic modelling presented in **Chapter 5: Traffic and Transport (Volume 1)** has been used to consider the associated transport emissions during construction;
- Where necessary, qualitative assessment has been used to determine the potential impact of GHGs for certain Operational Phase activities where there was insufficient information to quantify the associated emissions;
- Given the current stage of the design, embedded mitigation measures for reducing the impact of GHG emissions are limited and there will be greater certainty on options as the detailed design progresses; and
- There is limited information regarding the number of visitors that may use air travel to visit the Proposed Development, and further uncertainty regarding their potential origin and whether the Proposed Development would be the sole purpose. The extent to which travel to the Proposed Development would lead to a reduction in air travel to alternative destinations is also unknown. The additional assessment of GHG emissions related to air travel is therefore intended to provide an indication of the scale of potential emissions relative to the main construction and operation of the Proposed Development, along with commentary on actions to mitigate the impacts more widely by the aviation sector.

14.7. SUMMARY OF LIKELY SIGNIFICANT EFFECTS AND PROPOSED MITIGATION

- 14.7.1. **Table 14-11** below presents a summary of the likely significant effects relating to climate from GHG as a result of the Proposed Development, and the mitigation measures proposed to avoid, prevent, reduce or, offset (if possible and required) any identified significant adverse effects. The table summarises those effects that were identified within the assessment as likely to be significant prior to the consideration of mitigation. Significant effects are identified as **major or moderate**. Effects that are identified as **negligible or minor** are not considered to be significant, and therefore, are not listed in the summary table below.

Table 14-11 - Summary of GHG Likely Significant Effects and Proposed Mitigation

Key to table: P/T = Permanent or Temporary, D/I = Direct or Indirect, ST/MT/LT = Short Term, Medium Term or Long Term, N/A = Not Applicable

Receptor	Description of Effect	Classification of Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
Construction Phase					
Global Climate	The Construction Phase is expected to result in an increase in GHG emissions with subsequent adverse effects on the global climate.	Moderate Adverse (Significant) P/D/LT	Further mitigation measures to reduce GHG emissions arising from the Construction Phase of the Proposed Development and provide consistency with the UK's trajectory towards net zero are identified below. The mitigation measures will be secured through verification by relevant independent third-party certification bodies accredited to provide assessment of compliance with the PAS 2080:2023 standard and LEED certification. UDX will apply the PAS 2080:2023 standard for carbon management in buildings and infrastructure, as a basis for design optimisation and establishing metrics and targets for carbon reduction during the Construction Phase, incorporating UDX's LEED certification goals for the applicable components of the Proposed Development for which UDX is the Undertaker (more information on the LEED approach is given in Section 2.6 of Chapter 2: Description of the Proposed Development (Volume 1) and measures identified in Appendix 14.1: Carbon Management Plan (Volume 3)). This will be secured through the development of a Carbon Management Report summarising the carbon management process adhered to through the Construction Phase. UDX will use procurement mechanisms through PAS 2080:2023 (and UDX's LEED certification process relevant to the applicable components of the Proposed Development for which UDX is the Undertaker) to include	Minor Adverse P/D/LT	Not significant.

Receptor	Description of Effect	Classification of Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
			carbon management as a differentiating factor through the supply chain. Procurement documentation will identify that materials and products with reduced embodied carbon emissions and materials/resources featuring recycled content are preferred (where safe and of sufficient integrity for engineering).		
Operational Phase					
Global Climate	The Operational Phase is expected to result in an increase in GHG emissions with subsequent adverse effects on the global climate.	Moderate Adverse (significant) P/D/LT	Further mitigation measures to reduce GHG emissions arising from the Operational Phase of the Proposed Development and provide consistency with the UK's trajectory towards net zero are identified below. The mitigation measures will be managed by organisations accredited to provide assessment of compliance with the PAS 2080:2023 standard and LEED certification. UDX will apply the PAS 2080:2023 standard for carbon management in buildings and infrastructure, to integrate whole life carbon management into design decisions for the Proposed Development, including identifying responsibilities for carbon management; targets for whole life carbon; and a regular review process to allow for adoption of future innovations or recommendations for carbon management (see Appendix 14.1: Carbon Management Plan (Volume 3)).	Minor Adverse P/D/LT	Not Significant.

14.8. REFERENCES

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