7 Climate Change & Greenhouse Gases

7.1 Introduction

7.1.1 This chapter of the Environmental Statement (ES) has been prepared by Red Engineering and presents an assessment of the likely significant effects of the Proposed Development with respect to Climate Change and Greenhouse gases. Mitigation measures are identified, where possible, to avoid, reduce, or offset any significant adverse effects identified and/or enhance likely beneficial effects. Taking into account the mitigation measures, the nature and significance of the likely residual effects are reported.

Legislation and Policy Context

Legislation Context

7.1.2 The following legislation is relevant to the Proposed Development:

- Climate Change Act (2008)
- The Paris Agreement (2015)
- Environment Act (2021)

National Planning Policy

7.1.3 The following national planning policy is relevant to the Proposed Development:

- National Planning Policy Framework (2024)

7.1.4 The National Planning Policy Framework (NPPF) sets out planning policy for England. It states that the purpose of the planning system is to contribute to the achievement of sustainable development, and that the planning system has three overarching objectives, one of which is an environmental objective:

- "To protect and enhance our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."
- Chapter 14 of the framework is entitled "*Meeting the challenge of climate change, flooding and coastal change"* and sets out the strategy for minimising the climate change effects of new development.
- Paragraph 164 states that "new development should be planned for in ways that […] can help reduce greenhouse gas emissions, such as through its location, orientation, and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards."
- Paragraph 165 describes further that "to help increase the use and supply of renewable and low carbon energy and heat, plans should:

  a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed appropriately (including cumulative landscape and visual impacts);

b) consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and

c) identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers".

- Paragraph 166 states that "in determining planning applications, the NPPF requests that planning authorities should expect new development to:

  a) comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and

  b) take account of landform, layout, building orientation, massing, and landscaping to minimise energy consumption.

EIA Directive and Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended)

7.1.5 The EIA Directive 2014 sets out the rationale for incorporating climate change into the EIA process. It states:

"Climate change will continue to cause damage to the environment and compromise economic development. In this regard, it is appropriate to assess the impact of projects on climate (for example greenhouse gas emissions) and their vulnerability to climate change."

7.1.6 The requirements of the EIA Directive (2014) have been adopted within Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) and require that the assessment provides:

"A description of the likely significant effects of the development on the environment resulting from, inter alia: (f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change".

Climate Change Act (2008)

7.1.7 The overarching Act in relation to climate is the Climate Change Act 2008. The Act introduces a legally binding target to reduce the UK's GHG emissions to at least 80% below 1990 levels by 2050. It also provides for a Committee on Climate Change (CCC) with power to set out carbon budgets binding on the Government for 5-year periods.

7.1.8 In the 2009 budget, the first three carbon budgets were announced which set out a binding 34% CO_2e reduction by 2020; and the Government has since adopted the fourth and fifth carbon budgets to reduce CO_2e by 50% by 2025 and 57% by 2030.

7.1.9 The CCC also produces annual reports to monitor the progress in meeting these carbon budgets. Consequent upon the enactment of the Climate Change Act, a raft of policies at national and local level has been developed, aimed at reducing carbon emissions.

Climate Change Act 2008 (2050 Target Amendment) Order 2019

7.1.10 In June 2019, the Government passed the Climate Change Act 2008 (2050 Target Amendment) Order 2019 to amend the 2050 carbon emissions target in the Climate Change Act 2008 from 80% below 1990 levels to zero net carbon (i.e., 100% below 1990 levels). This new target will essentially end the UK's contribution to climate change by 2050. The amendment to the 2008

Climate Change Act was in part to meet the UK's commitments as a signatory of the 2015 Paris Agreement, as well as the conclusion that net-zero is necessary, feasible, and cost-effective.

The Act clarifies that GHGs include:

- Carbon dioxide
- Methane
- Nitrous oxide
- Hydrofluorocarbons
- Perfluorocarbons
- Sulphur hexafluoride

Energy Act (2013)

7.1.11 The Energy Act makes a provision for the setting of a decarbonisation target range, duties in relation to it, and for the reforming of the electricity market for the purposes of encouraging low carbon electricity generation.

Regional Planning Policy

7.1.12 The following planning policies are relevant to the Proposed Development:

- The London Plan (2021)
- Greater London Authority (GLA Energy Assessment Guidance (June 2022)

Local Planning Policy

7.1.13 The following local planning policies are relevant to the Proposed Development:

- Hillingdon Local Plan: Part 1 and 2
- Strategic Climate Action Plan (adopted July 2021)

Guidance

7.1.14 The following guidance are relevant to the Proposed Development:

- CIBSE TM46 Energy Benchmarking.
- BREEAM Data Centres, in particular Ene 01 Credits – PUE target
- UK UKGBC Emissions Reduction Plan
- Institute of Environmental Management & Assessment (IEMA) (2022, 2nd Edition)
- Institute of Environmental Management & Assessment (IEMA) Guide: Assessing Greenhouse Gas Emissions and Evaluating their Significance 2nd Edition. (2022).
- IEMA EIA Guide To: Climate Change Resilience and Adaptation (2020).
- The Greenhouse Gas Protocol Corporate Accounting and Reporting Standard (GHG Protocol)
- EN15978:2011 Sustainability of Construction Works – Assessment of environmental performance of buildings

- Committee on Climate Change (CCC), Net Zero Technical Report, 2019.
- Met Office's UK Climate Projections (UKCP18).
- Intergovernmental Panel on Climate Change (IPCC): Future Climate Projections
- RICS: Whole Life Carbon Assessment for Built Environment, 2nd Edition (2023).
- UKGBC Net Zero Carbon Buildings Standard 'Pilot Version' 2024

7.1.15 It should be noted that while the Institute of Environmental Management and Assessment (IEMA) has since rebranded as the Institute of Sustainability & Environmental Professionals (ISEP), this report will continue to reference IEMA for consistency, as that was the name in use when the guides referenced in 7.1.14 (Institute of Environmental Management & Assessment (IEMA) (2022, 2nd Edition) and IEMA EIA Guide To: Climate Change Resilience and Adaptation (2020)) was originally published.

7.2 Consultation

7.2.1 A Scoping Note was submitted to the Local Authority on 22 July 2025, outlining the proposed approach and methodology for assessing the Greenhouse Gas and Climate Change chapter of the EIA. A formal response was subsequently received from their external consultant on 11th November 2025. Table 7.1 below details the consultation alongside the Applicant's response.

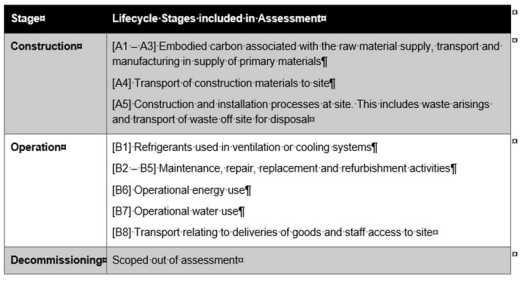
Table 7.1 Details of consultation and Applicant's response

Local Authority / External Consultant (WSP)	Applicant Response
The Authority is satisfied that the Applicant's approach to reporting provides for adequate assessment of both climate mitigation (the Proposed Development's potential impact on climate) and climate adaptation (the potential impact of climate change on the Proposed Development).	The Applicant acknowledges this comment.
The Applicant is encouraged to provide supporting details within the assessment that consider the extent of reliance or vulnerability on power supply connections and water supply systems to site.	This development has been designed to meet Tier III requirements, meaning the power infrastructure is concurrently maintainable with no single point of failure. As a result, reliance on the external power network is mitigated through dual grid connections and resilient onsite standby generation, ensuring continuity of operation under abnormal or disrupted conditions. The project adopts a direct air-cooling strategy, with no process water requirement for IT or mechanical cooling. Therefore, operational dependence on the potable water network is minimal and limited only to domestic and welfare uses, resulting in no material vulnerability associated with water supply infrastructure.
In particular, further details regarding discussions to date with the DNO and the	Utilities have been agreed to be scoped out of the ES. However, a standalone Utilities Statement has

Local Authority / External Consultant (WSP)	Applicant Response
initial grid capacity request should be provided. This includes further detail regarding the scale of sub-station to be installed within the red line site boundary.	been prepared as part of the wider planning application and should be consulted for detailed information on the initial grid capacity request, ongoing discussions with the DNO, and the proposed scale and configuration of the onsite sub-station. A summary of the relevant outcomes from these discussions has been reflected within the ES to demonstrate that sufficient capacity can be provided to the site and that no significant environmental effects are anticipated. Associated impacts from the sub-station, including emissions arising from routine annual maintenance activities, have been addressed within the assessment where relevant.
In addition to the best practice guidance listed, the Applicant is requested to consider relevant details within the Climate Neutral Data Centre Pact . At minimum this should include energy efficiency and water use benchmark performance specific to data centres (rather than the CIBSE TM46 generic benchmarking reference).	The project team acknowledges the reference to the Climate Neutral Data Centre Pact (CNDCP). However, the specific elements cited are not directly applicable to the Proposed Development for the following reasons: • The development employs a fully air-cooled mechanical design with no process water use for cooling. As such, the CNDCP water-use performance metrics, intended for facilities using evaporative or water-based cooling systems, are not relevant to this scheme. • The CNDCP is an industry-led voluntary initiative rather than a statutory or planning-policy requirement. The EIA methodology set out in the Scoping Note aligns with recognised best practice, relevant planning policy and the ISEP guidance (formerly known as IEMA) for GHG assessment. In this context, the use of CIBSE TM46 remains appropriate for establishing baseline energy reference data. • The data centre will be designed and operated in accordance with relevant international standards and best practice, including general alignment with the principles set out in the 2024 Best Practice Guidelines for the EU Code of Conduct on Data Centre Energy Efficiency.

Local Authority / External Consultant (WSP)	Applicant Response
	While the project does not adopt the CNDCP benchmarks for the reasons outlined above, the assessment remains robust and proportionate, following nationally recognised methodologies. The air-cooled design renders water-use benchmarks irrelevant, and the voluntary Pact is not a statutory requirement for EIA purposes. The project continues to apply appropriate best-practice efficiency measures.
An initial assessment of a target Power Usage Effectiveness (PUE) performance benchmark should be provided.	Initial calculations indicate the data centre will achieve a CNDCP compliant dPUE[1] of ≤1.3
It is understood from further discussions that water-based cooling systems are not proposed for use. If this is not the case, then a Water Usage Effectiveness (WUE) benchmark performance standard should be provided	As the development does not include any water-based cooling systems, WUE calculations are not relevant or required.
The determination of current and future baselines is consistent with Institute of Sustainability and Environmental Professionals (ISEP, formerly IEMA) requirements.	The Applicant acknowledges this comment.
The judgement of significance needs to be based around criteria aligned with ISEP (IEMA) guidance. The Applicant is encouraged to set these out explicitly within the context of assessment in the Scoping Report.	The EIA methodology for the Greenhouse Gas and Climate Change assessment has been developed in accordance with the latest ISEP (IEMA) guidance. The significance criteria and evaluation framework have now been clearly defined within the assessment chapter to ensure transparency and alignment with best practice. The approach includes: • explicit reference to the ISEP (IEMA) principles for evaluating significance. • use of carbon budgets and trajectory-based context to determine the relative materiality of project-related emissions; and • a rationale-based significance judgement consistent with the ISEP (IEMA) position that all residual GHG emissions are environmentally significant. These criteria are now clearly set out within the assessment methodology, demonstrating full

[1] dPUE = Design Power Usage Effectiveness

<table>
<tr><th>Local Authority / External Consultant (WSP)</th><th>Applicant Response</th></tr>
<tr><td></td><td>alignment with ISEP (IEMA) guidance and ensuring a robust and proportionate evaluation within the ES.</td></tr>
<tr><td>The overall approach proposed is consistent with ISEP (IEMA) guidance. The Applicant is encouraged to present detail in terms of what operating conditions are required within the data centre and the implications of future climate change on maintaining these.</td><td>The Applicant acknowledges this comment. The operational requirements of the data centre, particularly the temperature, humidity and environmental conditions necessary for IT equipment, mechanical systems and ancillary plant, will be clearly described within the ES.
The assessment will also consider the implications of future climate change on the ability to maintain these operating conditions, including:
projected increases in ambient temperatures on the potential impacts on cooling efficiency and energy demand.
resilience of mechanical and electrical systems under UKCP climate scenarios;
any design measures incorporated to safeguard operational performance in future climate conditions.
This information will be set out within the GHG and Climate Change chapter, ensuring a transparent and robust assessment consistent with IEMA (ISEP) guidance.</td></tr>
<tr><td>For the avoidance of doubt, the Authority considers the following life cycle stages to be within the elements to be included in the assessment.
  <table><tr><th>Stage</th><th>Lifecycle Stages included in Assessment</th></tr><tr><td>Construction</td><td>[A1 – A3] Embodied carbon associated with the raw material supply, transport and manufacturing in supply of primary materials
[A4] Transport of construction materials to site
[A5] Construction and installation processes at site. This includes waste arisings and transport of waste off site for disposal</td></tr><tr><td>Operation</td><td>[B1] Refrigerants used in ventilation or cooling systems
[B2 – B5] Maintenance, repair, replacement and refurbishment activities
[B6] Operational energy use
[B7] Operational water use
[B8] Transport relating to deliveries of goods and staff access to site</td></tr><tr><td>Decommissioning</td><td>Scoped out of assessment</td></tr></table></td><td>The Applicant acknowledges this comment and has addressed these life cycle stages within the assessment.</td></tr>
<tr><td>Energy use should be assessed on the basis of site demand being met via grid supply alone. Embedded mitigation measures can then be outlined. These may include provision for any on-site generation or procurement decisions in respect of power purchase agreements.</td><td>The Applicant acknowledges this comment. All calculations have assumed the use of grid electricity, which is the approach adopted throughout.</td></tr>
<tr><td>The Applicant is encouraged to outline energy efficiency considerations in design, particularly</td><td>The Applicant acknowledges this comment. Key energy-efficiency measures and indicative PUE benchmarks have been outlined in the ES to</td></tr>
</table>

Local Authority / External Consultant (WSP)	Applicant Response
in respect of benchmark Power Usage Effectiveness (PUE) performance.	demonstrate the expected operational performance of the Proposed Development.
It is understood from initial discussions that water-based cooling systems are not proposed for use within the Proposed Development. The Applicant is encouraged to confirm this basis of design and note a Water Usage Effectiveness (WUE) benchmark performance standard if this is relevant to the Proposed Development.	As the development does not include any water-based cooling systems, WUE calculations are not relevant or required.
The Authority agrees with the approach to assessment of climate resilience and notes alignment with best practice guidance as published by ISEP (formerly IEMA). The Applicant is encouraged to present detail in terms of what operating conditions are required within the data centre and the implications of future climate change on maintaining these.	The Applicant acknowledges this comment.
In relation to Construction, the Authority considers the baseline (without development) case to consist of the existing building. On this basis, the embodied carbon associated with the existing building does not need to be quantified in order to assess the with development impact.	The Applicant acknowledges the Authority's position that the construction baseline may be defined as the existing building, and that the embodied carbon associated with the current structure does not need to be quantified for the purposes of the "with development" assessment. However, the existing building was constructed less than five years ago, and its embodied carbon remains within its expected reference service life. For transparency and to align with good practice in whole life carbon assessment, the baseline embodied carbon has therefore been presented to illustrate the relative magnitude of retained versus newly introduced materials and to demonstrate the carbon efficiency benefits of reusing a recently constructed asset. This approach does not alter the assessment of significance but provides a clearer comparison and a more complete understanding of the carbon implications of extending and repurposing a modern building.
Baseline (without development) transport emissions will be modelled as part of the Transport Consultant analysis. The baseline (without development) energy use should include both regulated and unregulated sources as proposed. Water use should also be included in this baseline.	The Applicant acknowledges this comment. Baseline (without development) transport emissions will be captured through the Transport Consultant's modelling and incorporated into the ES where relevant. The baseline (without development) operational energy profile will also include both regulated and unregulated energy uses, consistent

Local Authority / External Consultant (WSP)	Applicant Response
	with best practice and the requirements of ISEP (IEMA) guidance. In addition, baseline water use has been included to provide a comprehensive understanding of existing resource consumption prior to the implementation of the Proposed Development. This approach ensures a complete and transparent comparison between the without development and with development scenarios.
It is agreed that future baseline (without development) would be the same as the baseline (without development).	The Applicant acknowledges this comment.
The Climate Change baseline is assessed as appropriate and in line with relevant guidance	The Applicant acknowledges this comment. The Climate Change baseline has been prepared in accordance with relevant guidance and is considered appropriate to support the assessment.
The Authority agrees with the proposed operational lifetime of 60 years as aligned with RICS best practice guidance.	The Applicant acknowledges this comment.
As noted in commentary on Table 7.1, operational water use should be included within the assessment.	The Applicant acknowledges this comment.
It is recognised that ongoing net zero targets in the operation of the national grid should lead to further decarbonisation of grid electricity. The forecast impact of this can be assessed using appropriate UK Government published data (such as within HM Treasury Green Book guidance).	The Applicant acknowledges this comment, and this has been addressed in the report. Operational carbon has been modelled using both static and dynamic grid carbon intensity factors. The dynamic scenario applies the UK Government's projections of grid decarbonisation, consistent with the Net Zero Strategy and Climate Change Committee pathways. This approach reflects expected reductions in grid carbon intensity over the 60-year reference study period, ensuring assessment against a realistic decarbonisation trajectory. 'Average future electricity, UK (2022-2082, for 60 years' service life) based on non-2050 compliant - Steady Progression 2050 scenario' has been used to model the decarbonisation of the project within One Click LCA Software.

7.3 Assessment Methodology and Significance Criteria

7.3.1 This section presents the methodology used to assess the potential effects of the Proposed Development in relation to Greenhouse Gases (GHGs) and Climate Change assessment.

Study Area

7.3.2 The study area for the Climate Change and GHGs ES chapter are split into two parts:

- Part A: the study area for the Part A assessment is not limited by any specific geographical scope or defined by specific sensitive receptors as GHGs contribute to Climate Change which is a global environmental effect; and
- Part B: the study area comprises the Site

Temporal Scope

7.3.3 At this stage, construction work is anticipated to commence in 2028, with the first phase of construction completed and operational in 2030. As such it has been assumed that the Proposed Development will be fully completed and operational by the end of 2030. For the purposes of this assessment, the programme of delivery presented in Table 7.2 below has been assumed and is referenced from the Framework Construction Logistics Plan report (PLON01-PRO-XX-XX-RP-Q-00001-FCLP) submitted as part of the planning application documents.

Table 7.2 Programme of works

Programme Dates – DC1	Scope of Works
13.03.28 - 24.04.28	Site mobilisation
02.05.28 - 04.08.28	Demolition
10.07.28 - 11.09.28	Piling
24.07.28 - 02.10.28	Groundworks and Substructure
18.08.28 - 17.05.29	Frame & Envelope
01.09.28 - 25.06.29	New Gantry
16.10.28 - 19.10.29	MEP/ Fitout
03.09.29 - 18.01.30	Commissioning (Cx3 to Cx5)
18.01.30	DC1 Complete
Programme Dates – DC2	**Scope of Works**
31.05.28 - 22.08.28	Demolition
16.08.28 - 04.10.28	Piling
07.09.28 - 18.10.28	Groundworks and Substructure
28.09.28 - 14.03.29	Frame & Envelope
23.08.28 - 22.05.29	New Gantry
23.11.28 - 11.09.29	MEP/ Fitout
03.09.29 - 18.01.30	Commissioning (Cx3 to Cx5)
18.01.30	DC2 Complete

7.3.4 The reference study period for the assessment of operational effects is 60 years, as is most commonly referenced within industry guidance, including the Royal Institute of Chartered

Surveyors (RICS) 'Professional Standards and Guidance: Whole Life Carbon Assessment for the Built Environment'. The first year of occupation has been assumed as 2030, in line with the above.

Scope

7.3.5 In line with the Scoping Report and Scoping Opinion, the following aspects have been considered in the ES:

- Generation of GHGs embedded into the materials used during construction and deconstruction;
- Energy and transport emissions generated during construction and deconstruction;
- GHG emissions associated with the repair, maintenance, and refurbishment of the Proposed Development during its lifetime; including back-up generators and predicted exhaust emissions
- Energy and water use of the Proposed Development.

7.3.6 The Climate Change and GHGs ES chapter are split are two parts:

- Part A: will assess the Proposed Development's potential impact on the climate (quantified by the volume of GHGs generated during the construction and operational phases); and
- Part B: will assess the potential impact of climate change on the Proposed Development (i.e., the resilience of the Proposed Development to climate change).

7.3.7 Due to the different assessment methodologies, receptors, and criteria to be used in each of the assessments undertaken for Part A and Part B, the chapter is addressed in two parts as follows, setting out the assessment methodology, baseline conditions and assessment for Part A and Part B.

Limitations and Assumptions

7.3.8 Assumptions are referenced within the text, where relevant, and are considered reasonable and appropriate.

7.4 Part A: The Potential Impact on Climate – Quantified by the Volume of GHGs Generated During Construction and Operational Phases

Assessment Methodology

Defining the Baseline

7.4.1 In the "do nothing" baseline scenario, without implementing the Proposed Development, GHG emissions continue to occur frequently and broadly due to both human and natural activities. These emissions stem from sources like energy use (fuel and power), industrial processes, and land use changes. The Part A assessment considers only the cases where the Proposed Development leads to additional or avoided emissions compared to the baseline scenarios and their projected evolution. Thus, the baseline conditions focus on GHG emission sources are likely to change between the baseline scenarios and the construction and operation of the Proposed Development.

7.4.2 Based on the Sustainability and Energy Statement[2] submitted as part of the consented planning application in 2020, the building's regulated and unregulated energy as well as the embodied Carbon footprint were estimated. These figures are used as the baseline for operational carbon and detailed in Table 7.7: GHG Baseline Conditions. An estimate of transport-related emissions along with the embodied carbon associated with material and equipment replacement (Modules B1–B5), are also included in the baseline as part of the overall GHG assessment. The baseline GHG emissions is taken to be **12,568 tonnes CO_2e (tCO_2e).**

7.4.3 The current use of the Site (energy and transport) only leads to very small emissions in comparison to the Proposed Development (a data centre with an IT Load of up to 52 MW). In order to assess the worst-case scenario of the emissions produced from the Proposed Development, the greatest net change in GHG emissions between the current use of the Site and the construction and operation of the Proposed Development have been calculated.

Future Baseline

7.4.4 If the Proposed Development does not proceed, it is anticipated that the Site will remain in its current state.

7.4.5 For the purposes of the Part A assessment, the evolution of the baseline is therefore assumed to remain at baseline CO_2e emissions due to the existence of the warehouse units on site. The natural evolution of the Site and the surrounding area has also been qualitatively considered.

Significance Criteria

7.4.6 The significance attributed to each effect has been determined based on the sensitivity of the receptor and magnitude of impact arising as a result of the Proposed Development. Professional judgement and experience have been drawn upon to assess the magnitude of impact and residual effects.

Receptors and Receptor Sensitivity

7.4.7 The Part A assessment does not involve identifying local sensitive receptors because GHG emissions do not directly impact specific locations but instead contribute indirectly to climate change. While the Intergovernmental Panel on Climate Change (IPCC) has identified sensitive

[2] Former GSK Site - Sustainability and Energy Statement – July 2020

areas affected by climate change, this assessment does not address specific impacts on these areas. Thus, the primary sensitive receptor concerning GHG emissions is the atmosphere, where these gases contribute to rising temperatures and associated climate change effects. As per the IEMA guidance the sole receptor 'global climate' is referred to having a 'very high' sensitivity and value.

Magnitude of Impact

7.4.8 The Part A assessment does not quantify the magnitude of impact, as there is no established guidance or statutory method for defining the impact magnitude of minor contributions to total global GHG emissions, such as those from the Proposed Development. However, the approach for evaluating the significance of effects from GHG emissions is outlined in the following sections.

Defining the Effect

7.4.9 The Institute of Environmental Management and Assessment (IEMA) guidance (IEMA, 2022) highlights that the significance of a project's emissions should be assessed based on its net impact over the project's entire lifetime, which could be positive, negative, or negligible. The evaluation should not solely focus on the project's GHG emissions or their magnitude, but rather consider whether the project helps reduce emissions compared to a baseline that aligns with a pathway to achieving net-zero by 2050. The guidance also provides specific categories for determining the significance of emissions.

Table 7.3 Types of Effect and respective description

Effects	Description
Moderate Adverse – Major Adverse (Significant)	This applies to projects that adopt a "business as usual" or "do minimum" approach, which is not aligned with the UK's net zero strategy or sector-specific transition targets. The level of significance (moderate or major) is determined through professional judgment.
Minor Adverse (Not Significant)	This applies to projects that are in line with a budgeted, science-based 1.5°C trajectory (in terms of rate of emission reduction). These projects comply with current policies and "good practice" reduction measures. While they may have some residual GHG emissions, they are still considered to contribute effectively to the net zero strategy and the goal of a 78% emissions reduction by 2035.
Negligible (Not Significant)	This applies to projects that achieve emission reductions beyond the trajectories set by existing or emerging policies.
Beneficial (Significant)	This applies to projects that actively prevent or remove GHG emissions from the atmosphere. Only projects that reverse, rather than just reduce, the risk of severe climate change should be classified as having a beneficial effect.

7.4.10 To provide context for the GHG emissions, and as per the methodology outlined in the IEMA guidance (IEMA, 2022), the estimated GHG emissions from the Proposed Development should be compared with the corresponding Carbon budgets for the UK. An indicative threshold of 5% of the UK's or devolved administration's Carbon budget should be used to determine the magnitude of GHG emissions irrespective of any reductions that is likely to be significant.

7.4.11 These budgets, established by the UK Government[3], cover the period from 2018 to 2042 but those dated 2028 onwards are deemed of most relevance to this assessment as shown in Table 7.4 below.

Table 7.4 UK Wide Carbon Budget

Period	UK Carbon Budget (tCO_2e)
Fifth: 2028 – 2032	1,725,000,000
Sixth: 2033 - 2037	965,000,000
Seventh: 2038 - 2042	535,000,000

7.4.12 As the UK's statutory carbon budgets are currently set only up to the Seventh Carbon Budget period (2038–2042), hypothetical values (shown in Table 7.5 below) have been applied to represent future five-year budget periods through to 2089. These values have been derived on the basis of a declining trajectory to net zero by 2050, after which residual emissions are assumed to remain at or near zero in line with national policy commitments. This approach provides a consistent framework for allocating the Proposed Development's whole life emissions over its 60-year reference study period, ensuring that both near-term and long-term contributions can be benchmarked against the UK's decarbonisation pathway.

Table 7.5 Hypothetical UK Carbon Budget

Period	Hypothetical UK Carbon Budget (tCO_2e)
Eight: 2043 - 2047	210,000,000
Ninth: 2048 - 2057	10,000,000
Tenth: 2058 - 2089	0

Categorising Likely Significant Effects

7.4.13 The assessment of likely significant effects follows a three-step approach:

1. Quantify the Change in Emissions:
    - The projected increase or decrease in GHG emissions resulting from the Proposed Development is estimated by calculating CO_2 equivalent (CO_2e) emissions from different sources such as transportation, energy consumption, or industrial processes.
2. Assess Against Regional Emissions:

[3] The Seventh Carbon Budget - Climate Change Committee

- The calculated change in emissions is compared to the existing GHG emission levels in the local and regional context (which per the baseline conditions stated above is assumed to be **12,568** tCO_2e emissions):
  - UK Carbon Budgets: Compare the emissions to the limits set in the UK's legally binding Carbon Budgets, which outline the total GHG emissions allowed over specific periods to meet the UK's net-zero target.

3. The significance of the effect is determined as set out in Table 7.6.

Table 7.6 UK Carbon budget categories and associated significance.

Significance		Carbon budget - UK
Significant	Beneficial	Net negative CO_2e
Not Significant	Negligible	< 0.009%
Not Significant	Minor Adverse	< 0.01% - 0.9%
Significant	Moderate Adverse	< 1% - 9%
Significant	Major Adverse	> 10%

7.4.14 In the absence of defined industry guidelines for assessing the magnitude of GHG impacts within EIA, standard GHG accounting and reporting principles are applied as per the EN15978:2011 Sustainability of Construction Works – Assessment of environmental performance of buildings. Typically, GHG accounting allows for the exclusion of emission sources contributing less than 1% of the total emissions inventory, as their impact is considered minimal. Consequently, a development contributing less than 1% of the UK GHG inventory and relevant carbon budget would be deemed minimal in its overall impact on national GHG emissions.

Geographic Extent of Effects

7.4.15 The effects resulting from the Proposed Development could potentially extend across the entire country, so the geographic extent is classified as 'national'.

Effect Duration

7.4.16 GHG emissions will be produced throughout the project's lifetime, or at least until 2050, by which time it is expected that net GHG emissions will be zero. Consequently, these emissions are considered to have a lasting effect.

Direct and Indirect Effects

7.4.17 The GHG emissions from the Proposed Development will not cause any direct environmental effects but will contribute to climate change, which is considered an indirect environmental effect.

Assessment of Effects

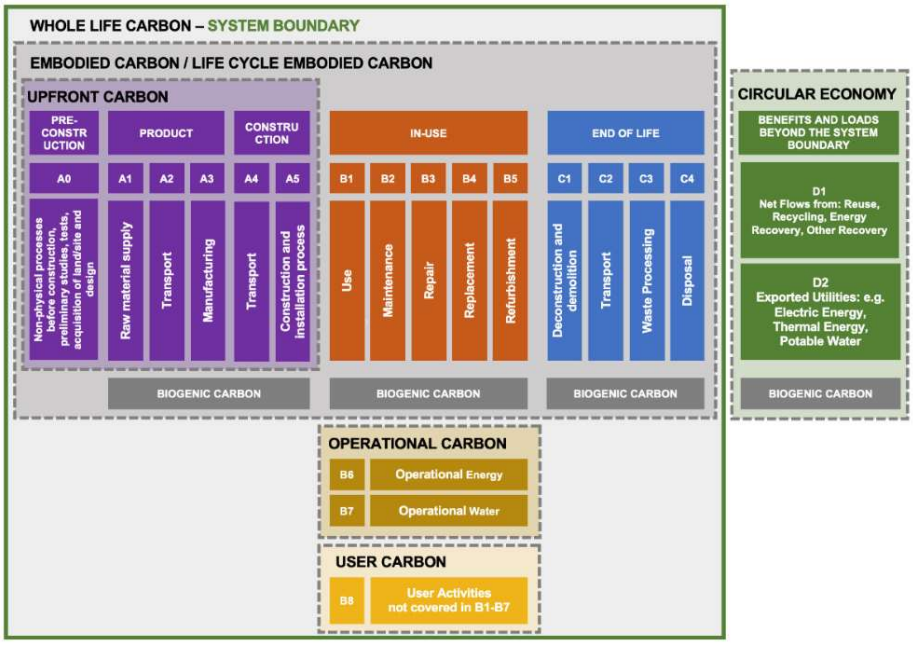
7.4.18 The methodology used to determine the GHGs of the Proposed Development during deconstruction (if any) & construction works, completed development and operational phase will follow the RICS Professional Standard Life-cycle Carbon Assessment for the Built Environment, 2nd Edition (September 2023).

Embodied Carbon

7.4.19 A dedicated report has been produced which can be found in Appendix 7.1: Whole Life Carbon Assessment Report (PLON01-RED-XX-XX-RP-Q-00006), a summary of the methodology is presented below.

7.4.20 In the UK, the RICS WLCA standard is considered as an appropriate national GHG assessment methodology (which complies with the EN 15978 and EN17472) for GHG quantification as required in the Carbon management approach set out in PAS 2080:2023, where target setting, reduction, reporting, and leadership are also considered. The assessment covers the life-cycle Carbon system boundary (Module A1-C4).

Figure 7.1 Building life-cycle stage boundaries as adapted from EN 15978, EN 17472 and EN 15643 (image extracted from RICS WLCA Standard 2nd edition)



7.4.21 The four main life-cycle stages of the assessment are defined as follows:

- **Upfront Carbon** or **Module A**: comprises Product Stage (Module A1 – A3) and Construction Stage (Module A4 – A5). Pre-construction Stage (A0) is only applicable to infrastructure projects.
    - **Product Stage**: These modules include the Greenhouse Gases (GHGs) released during extraction, processing, manufacture (including prefabrication of components or elements) and transportation of materials between these processes, until the product leaves the factory gates to be taken to site. Note that recycled content of a product affects the GHGs released in modules A1-A3. Whether it is recycled after its end of life or not, does not affect the A1-A3 module, as this is taken into account in module D (beyond building or project life cycle) which is reported separately.
    - **Construction Stage**: These modules include the GHGs released during transportation of materials/products to site, energy usage due to activities on site (site huts, machinery use, etc.) and the GHGs associated with the production, transportation, and end of life processing of materials used on site. It also includes the deconstruction of any previous structures.

- **In-Use Stage** or **Module B**: Comprises Use, Maintenance, Repair, Replacement and Refurbishment Stages (Module B1 – B5), Operational Energy (B6) and Operational Water (B7).
- **End of Life or Module C**: These modules include the GHGs released during decommissioning, stripping out, deconstruction, transportation of materials away from the site, waste processing and the disposal of materials.
- **Benefits and Loads Beyond the System Boundary** or **Module D:** Reported separately, this Module should be included in all LCA/WLCA. Module D estimates any net GHGs benefits of loads beyond the project's life cycle associated with but not limited to:
    - **Recycling of materials** e.g., use of scrap steel (rather than virgin iron) in steelmaking on future projects.
    - **Energy recovered from materials** e.g., energy generated by incinerating timber products.
    - **Full reuse of materials/products** when compared to the standard practice or product it would be replacing.

7.4.22 This assessment does not directly consider project phasing and is based on the assumption that the entirety of the Proposed Development will be completed and operational by Q1 2030. This represents a worst-case scenario, as the gradual decarbonisation of construction materials, energy supply, and transport sectors in future years could result in lower GHG emissions from construction activities and material purchases than those assumed in this assessment based on Carbon Factors used at time of assessment.

Software and Database

7.4.23 The assessment has been carried out with One Click LCA software and its RICS and GLA specific LCA module that automatically applies the Level(s) requirements and restrictions. A summary and guidance document of the scope can be found here: https://oneclicklca.zendesk.com/hc/en-us/articles/360020417600-UK-Whole-Life-Carbon-Assessment-RICS-GLA. The database used in this tool is controlled by One Click LCA's database management process and complies with ISO 14040/14044 standards. For summary of One Click LCA's database management processes, read this: https://oneclicklca.com/en/resources/articles/how-we-work-with-data.

7.4.24 The metric used to evaluate the climate change impacts of GHG emissions in this assessment is Global Warming Potential (GWP), measured in units of CO_2 equivalent (CO_2e) over a 100-year period. This metric accounts for the emissions of six key greenhouse gases: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF_6), all expressed in terms of their equivalent global warming potential in CO_2e.

Energy Use

7.4.25 The GHG emissions linked to the energy in use of the Proposed Development have been derived from the Energy and Sustainability Statement (PLON01-RED-XX-XX-RP-Q-00005) found in Appendix 7.2. This includes consideration of energy efficiency measures and the incorporation of low and zero carbon technologies within the Proposed Development. The energy strategy is based on a maximum IT Load capacity of 52 MW, to demonstrate compliance with Building Regulations and relevant local policies.

7.4.26 The GHG emissions from energy consumption are calculated using the energy demand of the Indicative Masterplan and published GHG emission factors for gas and electricity use (SAP10). Relevant extracts from Energy and Sustainability Statement are presented in PLON01-RED-XX-XX-RP-Q-00005.

7.4.27 The assessment takes into account both regulated energy consumption – such as heating, cooling, lighting, and on-site infrastructure such as lifts – and unregulated energy consumption, which includes cooling demand from the data hall like IT load. Additional information on CO_2 factors and emissions related to energy consumption is available in the Energy Strategy.

7.4.28 The assessment establishes the baseline GHG emissions and projects the GHG emissions from the Proposed Development, assuming full completion by the expected opening year of Q1 2030. The projected operational lifetime is estimated at 60 years, a standard assumption for developments of this type and aligned with British Standard EN 15978:2011. Annual emissions are quantified to enable comparison of the Proposed Development's GHG emissions with local and regional annual GHG emissions for contextual understanding.

7.4.29 'Net emissions' refer to the difference in GHG emissions between the baseline and the Proposed Development, factoring in GHG reduction measures and offsetting strategies. The assessment estimates the Proposed Development's GHG emissions for the opening year and considers this to represent the worst-case scenario due to future decarbonisation of the grid and increased adoption of sustainable transport and electric cars over petrol fuelled car use.

Back-Up Generators

7.4.30 Annual generator testing emissions have been calculated using a fuel-based approach, applying standard emission factors for stationary diesel combustion. The information used have been derived from the Air Quality Chapter within the ES (PLON01-SLR-XX-XX-RP-Y-00001).

7.4.31 The Proposed Development includes a total of 32 back-up generators across the two buildings DC01 (20 back-up generators across 4 Data Halls) and DC02 (12 back-up generators across 2 Data Halls). The generator emission parameters have been derived on the basis of manufacturer's design and specifications and based on diesel as opposed to HVO as a worst case approach (set out in Table 2-1 of Appendix 6.1).

7.4.32 The operating scenarios modelled include the following:

- Routine Maintenance Operations – the predictable, managed testing and maintenance activity; these include:
  - Monthly generator by generator tests (various test types taking between 15 minutes and 2 hours per test, a total of 11 hours per year per generator); and
  - Quarterly Data Hall Block tests where multiple generators operate to support the power load of a Data Hall (2-hours duration, a total of 8 hours per year per generator).
- Emergency Outage Operations (all back-up generators operating required to support the Site load) – the unpredictable emergency grid outage any time during the year requiring plant to operate for the required outage duration. Outages are typically durations of seconds to minutes, as a precautionary approach a 24 outage hours have been assessed.

Net Zero Policy Implications

7.4.33 The UK has recently enacted legislation for a 2050 net-zero target, based on recommendations and analysis from the CCC. The CCC's Net Zero report outlines a "Further Ambition" scenario, which explores feasible and cost-effective policy and technology interventions to help the UK achieve this new target.

7.4.34 Under this scenario, the CCC projects that by 2050, 100% of power generation will be low-carbon, and nearly all ground transportation (except for a small number of HGVs) will be electrically powered. As a result, the CCC anticipates that both the power and ground transportation sectors will be largely decarbonised by 2050, with any remaining emissions offset through technical or natural methods.

7.4.35 With the UK adopting the net-zero target, it is reasonable to expect that government policies will be implemented to ensure this goal is met. An example of such policy development is the recent government announcement to bring forward the ban on the sale of new non-electric vehicles to 2035.

7.4.36 For this assessment, it is therefore assumed that all operational and ground transportation emissions associated with the Proposed Development will likely be zero by 2050 at the latest.

7.5 Baseline Conditions

Establishing Baseline Conditions

7.5.1 As stated previously, for the baseline scenario, construction-and operational emissions are based on the Sustainability and Energy Statement submitted as part of the consented planning application in 2020, assumed to be **12,568 tCO_2e**.

Table 7.7 GHG Baseline Conditions

Development Phase	Footprint Element	Receptor type
		tCO_2e
Existing Development	Embedded (Materials) Constructions (Modules A1 – A5)	12,050
	Embedded Materials[4] (Operation) (Modules B1 – B5) (annual)	54
	Regulated Energy (annual)	211
	Unregulated Energy (annual)	253
	Total	12,568

7.6 Assessment of Effects (Construction and Operational)

Embodied Carbon (Upfront Carbon A1 – A5)

7.6.1 The overall deconstruction and construction phase, (including transportation of emissions associated with waste generated on-Site) has been calculated as **40,235 tCO_2e**. The construction phase will result in a net increase when compared to the baseline scenarios.

7.6.2 Below is an extract from WLC report reference PLON01-RED-XX-XX-RP-Q-00006 - Prologis UK CCCXXXVIII S.à r.l. - Whole Life Carbon Assessment, which can be found in Appendix 7.1.

Table 7.8 Extract from the WLC Report – Embodied Carbon for the Whole Site (Modules A1-A5)

Life Cycle Stage	A1-A5
Unit for impacts	**tCO_2e**
1 Substructure	4,269
2 Superstructure	20,794
3 Finishes	679
5 Building services (MEP)	13,667
8 External works	826
Total	**40,235**

[4] Replacement, Repair, Maintenance, and end of life (EoL) during the operational phase of the Proposed Development

7.6.3 It is assumed that the construction phase will be completed by Q1 2030 and therefore the annual baseline emissions will be multiplied accordingly.

Table 7.9 Combined GHG for Deconstruction and Construction Phase

Development Phase	Footprint Element	Baseline	Proposed Development	Net Emissions	% to UK Carbon Budget
		tCO_2e			Fifth: 2028 – 2032
Construction – Whole Site	Embodied Carbon (Modules A1 – A5)	- 12,568	40,235	+27,667	0.002%
	Embedded Materials (Operation) (Modules B1 – B5) (annual)	- 108	0	-108	
Total		**- 12,676**	**40,235**	**+27,559**	

7.6.4 According to the criteria in the IEMA guidance (IEMA, 2022) and expert judgment, GHG emissions during the construction phase of the Proposed Development are anticipated to have a **negligible** and **non-significant impact** based on UK Carbon budget.

Completed Development

7.6.5 GHGs associated with the operation of the Proposed Development are linked to emissions from the facility itself (regulated emissions), the IT load related to the facility (unregulated emissions), and Use Phase emission of materials to account for repair, maintenance, refurbish, and End of Life (EoL), also referred to as embodied Carbon – Modules B1 – B5.

Embodied Carbon (Repair, Maintenance, Refurbishment, and End-of-Life)

7.6.6 Over the operational lifetime of the Proposed Development, GHG emissions will arise from the repair, maintenance, refurbishment, and EoL of the buildings and facilities.

Table 7.10 GHG Calculations for Repair, Maintenance, and Refurbishment over 60-year cycle

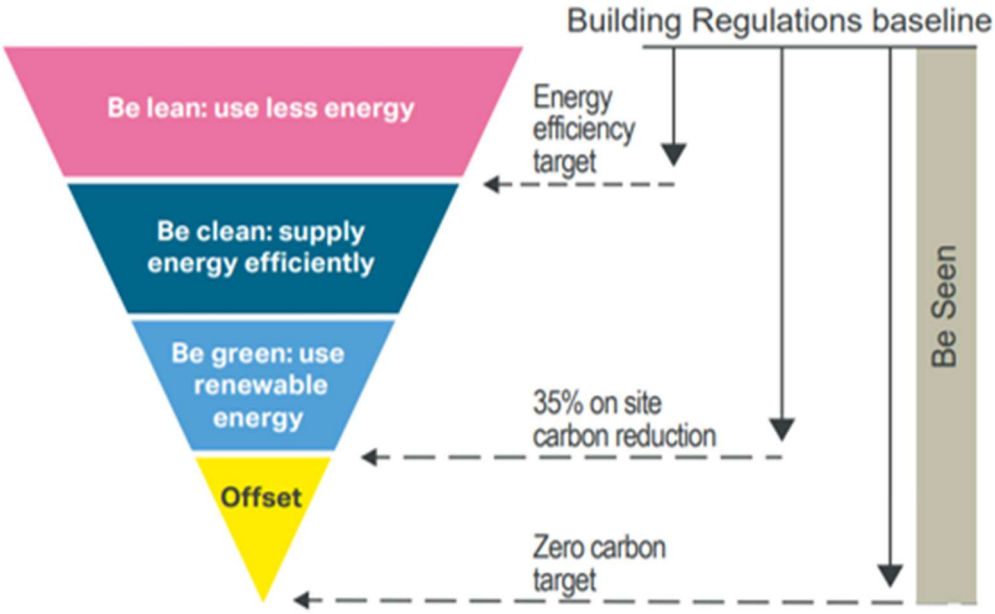
Life cycle stage	B1-B5	C1-C4	D (not included in totals)	Total
Unit for impacts	tCO_2e	tCO_2e	tCO_2e	tCO_2e
0.1 Deconstruction	0	866	0	866
1 Substructure	0	297	-553	297
2 Superstructure	5,153	978	-8,016	6,131
3 Finishes	3,240	37	-263	3,277
5 Building services (MEP)	33,311	53	-4,502	33,364
8 External works	548	70	-295	618
Total (tCO_2e)	**42,253**	**2,302**	**-13,629**	**44,555**

7.6.7 As per the WLC result, the lifetime GHG emissions for repair, refurbishment, maintenance, and EoL have been estimated to be **44,555 tCO_2e** over 60 years as seen in Table 7.10 above. When annualised, this equates to approximately **743 tCO_2e per year**.

Energy Consumption/Strategy

7.6.8 The operational carbon emissions from the energy consumption of the Proposed Development are outlined in the Energy and Sustainability Statement (PLON01-RED-XX-XX-RP-Q-00005) prepared by Red Engineering Design Ltd for the planning application submission.

Figure 7.2 Energy Hierarchy



7.6.9 Figure 7.2 shows the energy hierarchy which prioritises actions to minimise environmental impact and maximise energy efficiency in building design:

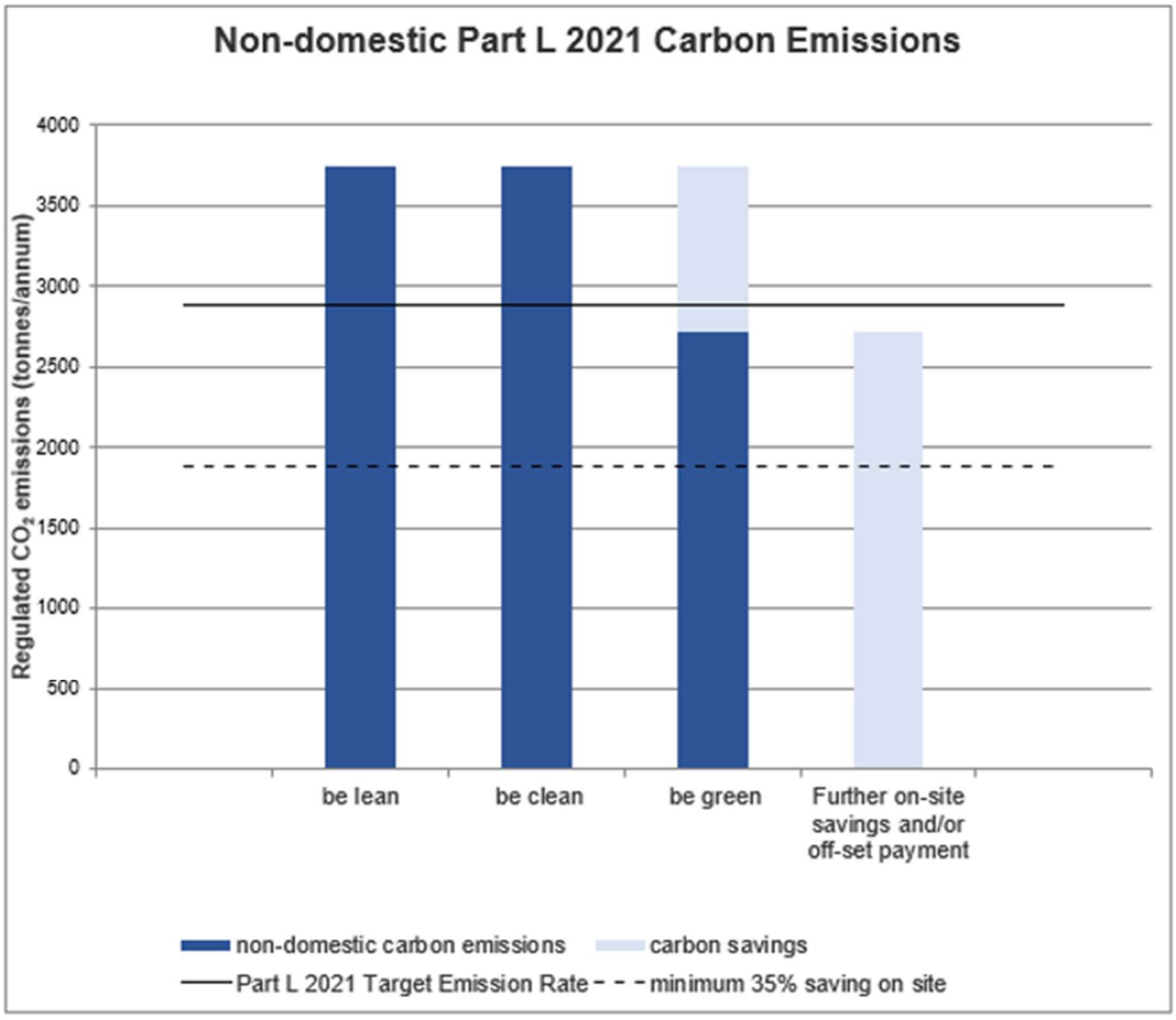
- Lean: Reduce energy demand by designing buildings to use less energy through improved insulation, energy-efficient lighting, and appliances, and optimising natural light and heat.
- Clean: Supply energy efficiently, such as by using heat networks; and
- Green: Maximise the use of renewable energy sources like solar panels and wind turbines to generate clean energy on-site.
- Be Seen: monitor, verify and report on energy performance.

7.6.10 The Energy Strategy has been structured in accordance with this hierarchy. This report shows that:

- The existing building is modern and thermally efficient incorporating high levels of insulation and very low air permeability.
- There is no existing heat network to connect to at the site and CHP is unfeasible.
- The building includes the following low and zero carbon technologies:
    - Air Source Heat pumps / VRF providing low carbon heating to the offices,
    - Solar Photovoltaic Panels generating zero carbon electricity,
    - Solar Thermal Panels providing domestic hot water.
- The data centre process cooling system is highly energy efficient, including high efficiency air cooled chillers with free cooling function.

- Initial calculations indicate the data centre will achieve a CNDCP compliant annualised dPUE[5] of ≤1.3[6].
- Carbon reporting has been completed in accordance with the GLA energy hierarchy, and the results are shown below:

Figure 7.3 Non-domestic Part L 2021 Carbon Emissions



7.6.11 The following tables (Tables 7.11 and 7.12) demonstrate the energy efficiency of the buildings in comparison to the GLA targets. It should be noted that the carbon reduction targets are not mandatory for refurbished buildings.

7.6.12 Lean CO_2 emissions' reductions are achieved by the energy efficient design of the building and by implementing passive and active energy saving measures where feasible. The key energy efficiency measures incorporated within the building are as follows:

[5] dPUE = Design Power Usage Effectiveness
[6] Based upon initial high level calculations, subject to further design development, the figure may go up or down.

- Very high level of air tightness
- High efficiency VRF for space heating with no gas on site
- Mechanical ventilation with heat recovery
- High Efficacy LED Luminaires
- Lighting control including presence detection.
- 100% electric DHW

7.6.13 Clean CO_2 emissions reductions are not achievable due to the absence of District Heating networks and CHP not being feasible for the Proposed Development. As such, the Clean building CO_2 emissions are equal to those for the Lean building.

7.6.14 Green CO_2 emissions reductions are achieved by the introduction of high efficiency VRF, solar thermal domestic hot water, and solar photovoltaic panels.

Compliance with Recognised Standards

7.6.15 The data centre will be designed and operated in accordance with relevant international standards and best practice protocols specifically, the 2024 Best Practice Guidelines for the EU Code of Conduct on Data Centre Energy Efficiency as issued by the Joint Research Centre on behalf of the European Commission.

Regulated Energy Use and Carbon Emissions

7.6.16 The regulated energy use (office areas only) has been calculated based on the following parameters shown in Table 7.11 below:

Table 7.11 Regulated Energy Use (Annual)

Source of Information	Value	Units	Source of Data
Best Practice Energy Demand	90	kWh/m^2/yr	UKGBC 2025-2030 Target
Admin Regulated Energy Demand	90	kWh/m^2/yr	Calculation
Admin Regulated Energy Demand	354	MWh/yr	Calculation
UK Electricity Carbon Factor	0.177	CO_2e kg/kWh	UK Government Greenhouse gas reporting: conversion factors 2025: Grid Electricity
Regulated Carbon Emissions	63	tCO_2e	Calculation

IT Equipment Cooling

7.6.17 The Proposed Development will achieve an annualised PUE (at 100% IT Load) of ≤ 1.3, significantly below the industry average data centre PUE of 1.58. The actual PUE will be lower than this and will be calculated during design development.

Unregulated Energy Consumption and Carbon Emissions

7.6.18 The total unregulated energy consumption of the Proposed Development is shown in Table 7.12 below based upon the maximum IT Load and annualised PUE.

Table 7.12 Unregulated Energy Use

Item	Value	Units
DC IT Load (100%)	52.159	MW
PUE (annualised)	1.3	-
Unregulated Electrical Demand (100% IT Load)	67.8	MW
Unregulated Electrical Consumption (100% IT Load)	593,984	MWh/year
UK Grid Electricity Carbon Factor	0.177	CO_2e kg/kWh
Unregulated Carbon Emissions	105,135	tCO_2e

Consideration for Back-up Generators

7.6.19 The Proposed Development will incorporate backup generators, which will be subject to routine testing to ensure reliability during potential grid power failures. This testing regime involves:

- Monthly generator by generator tests (various test types taking between 15 minutes and 2 hours per test, a total of 11 hours per year per generator); and
- Quarterly Data Hall Block tests where multiple generators operate to support the power load of a Data Hall (2-hours duration, a total of 8 hours per year per generator).

7.6.20 For this assessment, only emissions from generator testing have been included. Emergency operation has not been modelled, as both its frequency and duration are inherently uncertain and cannot be quantified with the level of accuracy required for an EIA under IEMA guidance. IEMA recommends that GHG assessments '*adopt robust, proportionate, and realistic methodologies*' rather than speculative worst-case assumptions. As the generators are intended solely for backup and not continuous use, it would be inappropriate to model their emissions at full capacity on a routine basis.

7.6.21 The back-up generators will be fuelled by Hydrotreated Vegetable Oil (HVO) or diesel (100% mineral diesel).However, to provide a reasonable worst-case assessment, it has been assumed that the generators will operate on diesel fuel.

7.6.22 Total annual diesel consumption associated with generator testing, as seen in Table 7.14, has been calculated based on the testing schedule and fuel consumption assumptions described below in Table 7.13.

Table 7.13 Generator Testing Schedule (Fuel-Relevant Activities)

Test Type		Months	Load	Duration per Test	Tests per Year	Annual Hours per Generator
Monthly Testing	Cold start + load	1, 2, 7, 10	50%	60 min	4	4
	On-load performance test	3, 6, 9	75 –100%	60 min	3	3
	Annual full service load test	12	100%	120 min	1	2
	Off-load start tests	4, 5, 8, 11	10%	15–30 min	4	2
Quarterly Test	Quarterly Block Test	3,6,9	100%	120min		8
					Total fuel-relevant run time	**19**

Table 7.14 Annual Diesel Consumption

Load Condition	Hours per Generator (h/yr)	Assume Fuel Rate (L/h)	Fuel per Generator (L/yr)	Fleet Fuel (32 gens) (L/yr)
10% load (Off load start)	2	175	350	11,200
50% load (cold start + load)	4	475	2,000	64,000
100% load (on-load tests[7] + annual service)*	13	950	12,350	395,200
Total	**19**		**14,700**	**470,400**

Table 7.15 Total Emissions from Back-Up Generator

Item	Value	Units
Total Hours	608	hrs
Total Fuel Used	470,400	L/yr.
UK 2025 Liquid Fuels - Diesel (100% mineral diesel)	2.6615	kg CO_2e/litres
Annual Emissions	1,252	tCO_2e

7.6.23 It is therefore assumed that the estimated annual emission from generator testing is approximately **1,252 tCO_2e per year**.

7.6.24 Although this estimate represents a reasonable worst-case scenario, it is recognised that future decarbonisation of fuel supplies, advances in generator efficiency, and changes in operational practices may lower actual emissions over time. As the project develops, the potential for alternative backup power options, such as lower-carbon fuels (Hydrotreated Vegetable oil) or battery storage, could also be considered.

Consideration for Substations

7.6.25 The Proposed Development incorporates a substation to distribute electricity to the data centres. The substation itself is not a material contributor to operational GHG emissions, as its role is limited to stepping down and distributing power rather than consuming significant energy.

7.6.26 Transmission and distribution losses are already reflected in the GHG conversion factors applied to estimate operational emissions, and any auxiliary power use within the substation is expected to be minimal compared to the demand of the data centre buildings.

7.6.27 Therefore, while the substation is a critical enabling component of the development, its direct impact on overall GHG emissions is negligible, with the primary source of operational emissions remaining the electricity demand of the data centre facilities.

Decarbonisation of the grid

7.6.28 Operational carbon has been modelled using both static and dynamic grid carbon intensity factors. The dynamic scenario applies the UK Government's projections of grid decarbonisation, consistent with the Net Zero Strategy and Climate Change Committee

[7] Using the worst case scenario, on-load performance test has been modelled using the upper bounds limits at 100% (range was between 75-100%)

pathways. This approach reflects expected reductions in grid carbon intensity over the 60-year reference study period, ensuring assessment against a realistic decarbonisation trajectory.

'Average future electricity, UK (2022-2082, for 60 years' service life) based on non-2050 compliant - Steady Progression 2050 scenario ' has been used to model the decarbonisation of the project within One Click LCA Software.

7.6.29 It is estimated that the total emission is **625 tCO_2e** (Regulated) and **1,048,144 tCO_2e** (Unregulated) when taken into account the decarbonisation of the UK grid over the lifetime of the project assumed at 60 years.

Total Lifetime Carbon emissions – Modules B1-C4 (60 yrs.)

7.6.30 The summary of the operational Carbon emissions (Modules B6) of both regulated and unregulated based on both the static scenario (not accounting for the grid decarbonisation) and dynamic scenario (accounting for the grid decarbonisation) can be seen in Table 7.16 below.

Table 7.16 GHG Emissions of Energy Use (Modules B6) – 60 years

	Worst-case scenario	Dynamic Scenarios (declining grid intensity per UK projections)	Units
Regulated Carbon Emissions	3,780	625	tCO_2e
Unregulated Carbon Emissions	6,308,100	1,048,144	tCO_2e
Back-up Generator during Testing	75,120	75,120	tCO_2e
Total	**6,387,000**	**1,123,889**	**tCO_2e**

7.6.31 The total gross operational Carbon emissions (Modules B1-C4) of the project (using the dynamic scenario) can be seen in Table 7.17, while the net emission is seen in Table 7.18.

Table 7.17 Project Total Operational GHG Emissions Gross – 60 years

Proposed Development (tCO_2e)		
	Annualised - Gross	Lifetime - Gross
Energy Use Combined	18,731	1,123,889
Embodied Carbon – Use Stage	743	44,555
Total	**19,474**	**1,168,444**

Table 7.18 Net Emissions during Operational Phase – 60 years

Development Phase	Footprint Element	Baseline	Proposed Development	Net Emissions
		tCO_2e		
Operation – Whole Site	Embodied Carbon (Use Stage)	- 3,240	44,555	+41,315
	Energy Use	- 27,840	1,168,444	+1,140,604
Totals		**-31,080**	**1,212,999**	**+1,181,919**

Total GHG (Operational) Emissions Summary

7.6.32 The whole life carbon profile of the Proposed Development has been assessed with reference to the UK's statutory carbon budgets, which are established in successive five-year periods under the Climate Change Act. These budgets define the legally binding pathway for reducing national greenhouse gas emissions and collectively set the trajectory towards achieving net zero by 2050.

7.6.33 In line with this framework, the assessment allocates the project's emissions to the corresponding five-year budget periods across the 60-year reference study period. This allows both the upfront construction emissions, which are concentrated in the early budget periods, and the operational emissions, which are distributed across subsequent periods, to be compared directly with the national decarbonisation pathway. This approach enables the assessment of the Proposed Development's contribution in the context of near-term budget requirements and the longer-term national commitment to net zero.

7.6.34 Overall, the Proposed Development will lead to a net increase in GHG emissions of **19,699 tCO_2e** annualised during the operational phase, when compared to the baseline scenario and **1,181,919 tCO_2e** over the assumed lifetime of the project (60 years).

7.6.35 To account for grid decarbonisation and the UK's legally binding commitment to achieve net zero by 2050, the operational emissions have been allocated to the first 25 years of the project's life cycle. This approach reflects the expectation that the electricity grid will undergo substantial decarbonisation during this period, such that allocating emissions beyond 2050 would not represent a realistic trajectory of future operational carbon. Presenting the emissions in this way ensures alignment with national policy and provides a conservative yet proportionate basis for assessing the project's contribution to the UK's carbon budgets.

Table 7.19 Proposed Development during Operational Phase against UK Carbon Budget

Carbon Budget Period	UK Carbon Budget (tCO_2e)	Proposed Development (tCO_2e)	% to UK Carbon Budget
Fifth: 2028 - 2032	1,725,000,000	236,384	0.014%
Sixth: 2033 - 2037	965,000,000	236,384	0.024%
Seventh: 2038 - 2042	535,000,000	236,384	0.044%
Eight: 2043 - 2047	210,000,000	236,384	0.113%
Ninth: 2048 – 2057[8]	10,000,000	236,384	2.364%

7.6.36 According to the criteria in the IEMA guidance (IEMA, 2022) and expert judgment, GHG emissions during the operational phase of the Proposed Development are anticipated to have a **minor adverse** and **not significant** impact when compared to the UK Carbon Budgets.

7.7 Categorising Likely Significant Effects

National GHG Emissions Context

7.7.1 To provide context for the GHG emissions, and as outlined in the IEMA guidance (IEMA, 2022), the estimated GHG emissions from the Proposed Development are compared with the

[8] Based on interpolation and hypothetical calculations to account for the UK Net Zero Carbon Target for 2025.

corresponding UK carbon budgets. These budgets, established by the UK Government, cover the period from 2018 to 2042.

7.7.2 Using the construction programme, the emissions within the UK carbon budget periods have been calculated. These emissions are allocated starting from the first full year of construction or operational activities.

- Construction emissions will begin during the fifth carbon budget period (2028). For comparison with the carbon budget, 100% of the construction emissions has been attributed to the fifth carbon budget period.
- Moreover, during the fifth carbon budget period, operational emissions will commence starting in Q1 2030, which marks the first full calendar year of the Proposed Development's operational activities; and,
- During the sixth carbon budget period, the Proposed Development will be fully operational and will remain so through to the ninth carbon budget period, by which time the UK is expected to have achieved its net-zero carbon emissions target.

Table 7.20 GHG Emissions Context during Construction Phase and Operational Phase – National

Carbon Budget Period	UK Carbon Budget (tCO_2e)	Proposed Development (tCO_2e)	% to UK Carbon Budget
Fifth: 2028 - 2032	1,725,000,000	263,943	0.015%
Sixth: 2033 - 2037	965,000,000	236,384	0.024%
Seventh: 2038 - 2042	535,000,000	236,384	0.044%
Eight: 2043 - 2047	210,000,000	236,384	0.113%
Ninth: 2048 – 2057	10,000,000	236,384	2.364%

7.7.3 The overall GHG generated by the Proposed Development during construction and operations (in a 5-year period) would have minimal effect to the UK Carbon Budget as it's less than **0.015%**.

7.7.4 The IEMA guidance states that any increase in GHG emissions may be considered significant; however, as shown in Table 7.20, the residual emissions represent a small proportion, approximately 0.015% of the national GHG emissions. Therefore, according to the principles of the IEMA guidance, where GHG emissions cannot be entirely avoided, mitigation measures should be implemented to minimise them. The following section will discuss the proposed mitigation strategies.

7.8 Mitigation Measures

Mitigation during Deconstruction and Construction

7.8.1 Reducing GHG emissions during the deconstruction and construction phase would involve minimising material usage and procuring sustainable materials. This approach will consider the embedded carbon footprint of the materials, which includes emissions from raw material extraction, the production of construction products, and the transportation of these products from the factory to the Site (also known as Modules A1-A5).

7.8.2 A Construction Environmental Management Plan (CEMP) will be implemented (secured by suitably worded planning condition) to manage mitigation measures and ensure compliance with local policies. The CEMP will outline control measures and activities aimed at minimising environmental impacts, including waste management, energy use, and water consumption.

7.8.3 The CEMP will include waste management measures to minimise waste generation, promote reuse and recycling, and explore alternatives to road-based waste removal. Regarding energy usage, all contractors will be required to investigate ways to reduce energy consumption, aiming to avoid significant adverse effects from excessive energy use and the resulting GHG emissions.

7.8.4 For machinery, plant, and site energy usage, energy consumption monitoring and reduction plans will be implemented. Contractors will explore opportunities to minimise energy use, such as employing low-emission or electric machinery, enforcing an on-site engine idling policy, and using energy-efficient site lighting. During site establishment, grid-generated electrical energy will be used for small power operations, tower cranes, and hoists.

7.8.5 To reduce emissions from transportation during the deconstruction and construction phase, limited parking will be encouraged, and off-site parking will be discouraged. Walking, cycling, and other sustainable transportation options will be promoted, with pedestrian site access separated from the road by physical barriers to ensure safety.

Mitigation once the Proposed Development is Operational

Energy Consumption

7.8.6 The Proposed Development will follow the principles of the energy hierarchy and aim to achieve significant reduction on passive measures such as:

- High performance building fabric.
- High performance solar glazing and low u-values.
- Low air permeability rates to reduce uncontrolled heat losses and gains; and
- Use of renewable energy such as photovoltaic panels to reduce energy consumption.

7.8.7 The data centre cooling system design will be developed and optimised to provide a high performing cooling solution appropriate to the Site and local climatic conditions.

7.8.8 The energy efficiency of a data centre can be described in terms of the ratio of total facility energy consumed to the energy used by IT equipment. This is known as the PUE or Power Usage Effectiveness.

7.8.9 The Water Usage Effectiveness (WUE) is used to measure the water efficiency of a datacentre. It indicated the amount of water used in relation to the energy consumption of IT equipment.

7.8.10 Both the PUE and WUE study will be undertaken during detailed design to investigate the energy and water usage of every component within the engineering infrastructure of the proposed data centre. This assessment will be undertaken by utilising an in-house application which can model the infrastructure and determine its corresponding steady state air, electrical power flows, heat flow, and water flow throughout. Energy and water flows are calculated for every hour of the year, based on local historical weather data, at various data centre load capacities from 0% to 100%. Analysis will be undertaken for energy and water usage for a

duration of one year, to give the location impact on energy efficiency and the seasonal variation in performance.

Generators

7.8.11 To help mitigate emissions associated with standby generators in the Proposed Development, a range of design, operational and fuel-related measures can be implemented. These measures are consistent with best practice in the UK and align with planning policy requirements relating to carbon reduction and local air quality. Key approaches include:

- Use of lower-carbon fuels, such as Hydrotreated Vegetable Oil (HVO) or other advanced biofuels, which can deliver significant lifecycle carbon savings compared to conventional diesel.
- Specification of high-efficiency, Tier V compliant engines with integrated exhaust after-treatment systems (e.g. Selective Catalytic Reduction and Diesel Particulate Filters) to minimise emissions of nitrogen oxides (NO_x) and particulates.
- Integration of hybrid battery systems to reduce generator runtime, with batteries covering short-duration outages and load fluctuations.
- Optimised operational management, including minimised run hours, efficient generator testing regimes (e.g. grid-synchronised testing), and real-time performance monitoring to maintain fuel and combustion efficiency.
- Enhanced energy strategy, ensuring resilient grid connections, incorporating on-site renewable generation with battery storage, and restricting generator use to emergency-only scenarios except where lower-carbon fuels are available.
- Procurement and compliance requirements, such as mandating low-carbon fuels within supplier contracts, aligning with local planning and air-quality standards, and embedding generator performance within WLCAs.

7.9 Residual Effects and Monitoring

7.9.1 The residual effects arising from the Proposed Development are summarised in Table 7.18 below.

Table 7.21 Residual Effects

Effect	Receptor (Sensitivity)	Nature of Effect and Geographic Scale	Magnitude of Impact*	Classification of Effect (Statement of Significance BEFORE mitigation)	Mitigation and Monitoring	Residual Effect
Construction Effects						
Whole Life GHG Emissions	Contribution to global warming and climate change affecting natural and human systems.	Global	Negligible Adverse	Not Significant	Source material with low embodied carbon. Encourage use of electric machinery during construction. Implementation of the CEMP and CTMP.	Negligible – Not Significant
Operation Effects						
Whole Life GHG Emissions	Contribution to global warming and climate change affecting natural and human systems.	Global	Minor Adverse	Not Significant	Source replacement material with low embodied carbon. Source primary energy usage from renewables.	Minor Adverse – Not Significant

7.10 Likely Significant Environmental Effects

7.10.1 The Proposed Development is expected to contribute **19,699 tCO_2e** annually to overall GHG emissions. Nevertheless, it will incorporate suitable mitigation measures to ensure compliance with relevant policies and actively reduce its carbon footprint wherever feasible. These efforts aim to minimise its contribution to climate change and ensure that any potential significant environmental effects linked to the development are effectively mitigated and avoided. By adopting these measures, the development aligns with broader sustainability goals and helps to limit its environmental impact.

7.10.2 The IEMA guidance (IEMA, 2022) emphasises that any level of GHG emissions can be considered significant in the broader context of climate change; however, it's crucial to understand that the significant impacts of climate change stem from the cumulative effect of global GHG emissions, which collectively drive atmospheric warming. The relatively small contribution of GHGs from the Proposed Development, while **Minor Adverse**, does not, on its own, cause direct significant effects. Instead, its impact should be viewed in the context of global emissions as a whole, where the combined output of numerous projects and developments contribute to climate change.

7.10.3 It is therefore concluded that the Proposed Development would not have a significant adverse effect on the government's ability in achieving the carbon budgets and therefore effects are anticipated to be **Not significant**.

7.11 Summary and Conclusions

7.11.1 The Proposed Development is dedicated to minimising greenhouse gas (GHG) emissions associated with its activities by adhering to the GHG emissions hierarchy: avoid and/or prevent, reduce, and remediate. Both the GHGs generated by the Proposed Development during construction and the annual operational GHG emissions would have minimal effect to the UK Carbon Budget as it's less than 0.015%.

7.11.2 In conclusion, the Proposed Development is not expected to significantly hinder the Government's ability to meet its carbon budgets. Therefore, the anticipated effects are considered **'Not Significant'**.

7.12 Effects interactions and Cumulative Effects

Cumulative Effects of the Proposed Development with Other Development Schemes

7.12.1 This section identifies the effects of the Proposed Development in combination with the effects of other cumulative schemes within the surrounding area (those schemes identified in Chapter 5 of the ES).

7.12.2 GHG emissions from all projects will contribute to climate change on a global scale, not just at the local level. As set out in the IEMA guidance: "Effects of GHG emissions from specific cumulative projects therefore in general should not be individually assessed as there is no basis for selecting any particular (or more than one) cumulative projects that has GHG emissions for assessment over any other". This statement addresses 'cumulative' impacts at a global level. In the context of GHGs and climate change, the definition of 'cumulative effects' goes far beyond the conventional EIA definition, which typically concentrates on the combined impacts of other proposed projects in the surrounding area of the development.

7.12.3 While the residual cumulative GHG emissions from the identified cumulative schemes and the Proposed Development are expected to be minor relative to national emissions, as detailed in sections Total GHG (Operational) Emissions Summary (7.6.32 to 0) and National GHG Emissions Context (7.7.1 to 7.7.4), they are still considered Not Significant when viewed in the context of the broader cumulative impact of GHG emissions from national, and global sources, in accordance with IEMA guidance.

7.13 Part B: The Potential Impact of Climate Change on the Proposed Development

Assessment Methodology

7.13.1 This section assesses the potential impact of climate change to the construction and operational phases of the Proposed Development.

7.13.2 This section of the ES chapter offers a qualitative assessment of the Proposed Development's resilience to climate change. The assessment methodology is based on the recommendations from the IEMA 'EIA guide to Climate Change Resilience and Adaptation (IEMA, 2020) ' and has been tailored to ensure it is proportionate to the scope of the Proposed Development.

7.13.3 Currently, only provisional guidelines exist in the UK for assessing climate change impacts within EIA. The IEMA guidance (IEMA, 2020) on GHG emissions in EIA highlights that the cumulative environmental impact of GHGs contributes to environmental degradation, approaching a defined limit; therefore, it suggests, that "GHG emissions or reductions from a project might be considered significant." The significance level of a project's GHG impact within a Climate Change Impact Assessment (CCIA) should be contextualised and determined by a qualified practitioner, following the IEMA guidance framework, which underpins the assessment criteria used here.

7.13.4 The assessment of the Proposed Development's vulnerability to Climate Change is conducted in accordance with IEMA EIA Guidance (IEMA, 2020). The following key terms and definitions are applied in assessing the vulnerability of the Proposed Development to Climate Change:

- Climate hazard – a weather or climate related event which has potential to do harm to environmental or community receptors or assets, for example increased winter precipitation.
- Likelihood – probability and frequency of occurrence of the climate hazard.
- Climate change impact – an impact from a climate hazard which affects the ability of the receptor or asset to maintain its function or purpose; and
- Consequence of impact – any effect on the receptor or asset as a result of the climate hazard having an impact.

7.13.5 A four-stage framework is used for the operational assessment, examining the likelihood and consequences of impacts on each receptor, ultimately evaluating the effect's magnitude and significance:

- The first stage assesses climate effects on the Proposed Development by considering its expected lifespan and the long-term life cycle stage for which baseline projections have been provided. Climate trends from the UKCP18, including general climate conditions and extreme weather events, are identified and utilised in the assessment to determine future changes to the climate baseline.
- The second stage identifies receptors that are vulnerable to climate change.

- The third stage identifies the impacts (hazards and opportunities) for each receptor using UKCP18 data, considering the Proposed Development's vulnerability to both typical weather and extreme weather-related disaster scenarios.
- The fourth stage involves assessing the identified impacts to determine the likelihood of an event occurring. Table 7.20 sets out the potential impacts of climatic events on receptors, including consideration of the wider effects associated with climate change, while Table 7.21 outlines the measures of consequence.

7.13.6 In line with the IEMA EIA Guide, receptor sensitivity has been defined with reference to the receptor's value or importance, and its susceptibility to the type of change being assessed, including the extent to which it can tolerate, adapt to, or recover from the predicted effects. Sensitivity is categorised as follows:

- **High sensitivity**: receptors of critical importance or with very limited ability to adapt, such as critical infrastructure, designated ecological sites, or endangered habitats. These receptors are highly vulnerable to change and can experience major adverse or beneficial effects when exposed to high-magnitude impacts.
- **Medium sensitivity**: receptors of notable importance or moderate adaptive capacity, such as locally significant habitats or infrastructure with some resilience. These receptors may experience moderate effects under medium or high impact scenarios.
- **Low sensitivity**: receptors of lower importance or high adaptive capacity, such as robust assets or common habitats. These receptors generally tolerate change well and are likely to experience minor or negligible effects, even under medium or high impact scenarios.
- **Very Low sensitivity**: receptors of minimal importance or very high resilience, such as highly adaptable assets or degraded environments. These receptors typically experience negligible effects under most impact scenarios.

7.13.7 Potential adverse impacts can be either seasonal or ongoing and may cause physical effects (e.g., on structural elements like buildings and roads) or operational effects (e.g., on the functioning of buildings during climate events).

7.13.8 The interaction between receptor sensitivity and magnitude of impact is shown in Table 7.19 below, which shows how the significance of effect varies across these categories.

Table 7.22 Impact Significance Matrix Based on Receptor Sensitivity and Magnitude of Impact

Receptor Sensitivity	Magnitude of Impact			
	High	**Medium**	**Low**	**Very Low**
High	Major Beneficial / Adverse	Major Beneficial / Adverse	Moderate Beneficial / Adverse	Minor Beneficial / Adverse
Medium	Major Beneficial / Adverse	Moderate Beneficial / Adverse	Minor Beneficial / Adverse	Negligible
Low	Moderate Beneficial / Adverse	Minor Beneficial / Adverse	Negligible	Negligible
Very Low	Minor Beneficial / Adverse	Negligible	Negligible	Negligible

Table 7.23 Likelihood of Climate Events During the Operational lifetime of the Proposed Development

Likelihood	Type
Very High	The climate event occurs multiple times during the operational lifetime of the Proposed Development (60 years) - e.g. approximately annually, 60 events.
High	The climate event occurs several times during the operational lifetime of the Proposed Development (60 years) - e.g. approximately once every 5 years, 12 events.
Medium	The climate event occurs limited times during the operational lifetime of the Proposed Development (60 years) - e.g. approximately once every 15 years, four events.
Low	The climate event occurs once during the operational lifetime of the Proposed Development (60 years) - e.g. once in 60 years.
Very Low	The climate event may occur once during the operational lifetime of the Proposed Development (60 years).

Table 7.24 Consequences of Impact on the Proposed Development including Infrastructure and Ecological Systems

Consequence of Impact	Description
Very Large Adverse	• Regional level (or greater) disruption to infrastructure route(s) lasting more than one week; or • Disruption to the Proposed Development lasting more than one week. • Very significant damage or harm to human and/or ecological systems
Large Adverse	• Regional level (or greater) disruption to infrastructure route(s) lasting more than one day but less than one week; or • Disruption to the Proposed Development lasting more than one day but less than one week. • Significant damage or harm to human and/or ecological systems
Moderate Adverse	• Local level (or greater) disruption to infrastructure route(s) lasting more than one day but less than one week; or • Disruption to a part of the Proposed Development lasting more than one day but less than one week. • Moderate damage or harm to human and/or ecological systems
Minor Adverse	• Local level (or greater) disruption to infrastructure route(s) lasting less than one day; or • Disruption to a part of the Proposed Development lasting less than one day. • Minor damage or harm to human and/or ecological systems
Negligible	• Disruption to an isolated part of the Proposed Development lasting less than one day. • Negligible damage or harm to human and/or ecological systems

Significance criteria

7.13.9 The significance of climate-related risks to the Proposed Development is determined by combining two key factors: likelihood and consequence. Likelihood reflects the probability of a climate hazard occurring during the 60-year operational life of the development (e.g., heatwaves, extreme rainfall, drought), while consequence represents the severity of its potential impact on receptors such as building fabric, cooling systems, operational continuity, and workforce welfare.

7.13.10 This approach follows IEMA's EIA Guide to Climate Change Resilience and Adaptation and is operationalised through an impact significance matrix (Table 7.19), which cross-references receptor sensitivity with the magnitude of impact. High sensitivity receptors such as critical infrastructure and operational continuity, combined with high-magnitude hazards may result in major adverse effects if unmanaged. Equally, hazards with low likelihood or negligible consequences are assessed as not significant.

Spatial Extent and Study Area

7.13.11 The study area is the Site and includes all the physical infrastructure of the assets associated with the Proposed Development.

Temporal Scope

7.13.12 The temporal scope of the Climate Change Resilience assessment is the entire lifetime of the Proposed Development, which therefore covers the partial deconstruction, and construction works as well as the Proposed Development once completed and operational, with an operational lifespan of 60 years assumed.

Limitations and Assumptions

7.13.13 This assessment gives a general indication of the potential impacts of climate change on the Proposed Development, relying on a qualitative evaluation and professional judgment, informed by knowledge of similar projects. UKCP18, the most recent set of climate change projections for the UK, provides probabilistic forecasts for different emissions scenarios. Due to the uncertainty of future GHG emissions, the impact of climate change will be in line with the IEMA guidance, using the Relative Concentration Pathway (RCP) 8.5 to establish the future climate conditions. The selection of the RCP 8.5 represents the 'worst-case' future climate scenario.

7.13.14 The adaptation measures included are based on information provided by the Project Team. The determination of significance assumes that industry design standards will be followed where detailed design information is not yet available.

7.14 Establishing Baseline Conditions

7.14.1 The assessment of the Proposed Development's resilience to climate change impacts is based on regional data concerning historical and projected climate changes, along with other relevant studies related to the Proposed Development. Future baseline conditions are established using potential climate risks identified in the 'UK Climate Change Risk Assessment and the Key Climate Projections: Headline Findings' from the UK Met Office, utilising the latest UK climate projection dataset (UKCP18).

Tidal and Fluvial Flood Risk

7.14.2 As per the Flood Risk Assessment and Drainage Strategy Report produced by Pinnacle Consulting Engineers (4 November 2025), the Site is not in the proximity of a tidal section of

watercourse or the coast; consequently, the risk of flooding posed to and from the Site and the Proposed Development from this source is considered to be Negligible and no mitigation is required.

7.14.3 As the Site is not considered to be at risk from fluvial flooding, and this form of flooding will not impact safe access and egress from the Site, no mitigation measures will be required, and the risk of fluvial flooding to and from the Proposed Development is considered to be Very Low.

Surface Water Flooding

7.14.4 The Flood Risk Assessment and Drainage Strategy Report indicates that some flooding is expected within the development boundary. This is based on site levels and does not account for the mitigation implemented by the surface water strategy and attenuation that has been provided as part of the 2021 Permission and is proposed as part of this new development.

7.14.5 The Site will therefore be at a low risk of surface water flooding following the construction of the Proposed Development and associated drainage infrastructure.

7.14.6 The Environment Agency's Risk of Flooding from Surface Water mapping shows most of the site to have a 'very low risk' of surface water flooding, with an annual probability of surface water flooding of less than 0.1%.

7.14.7 The previous consented scheme has incorporated sufficient attenuation to restrict run-off from the development to Greenfield runoff rates, in line with national and local policy requirements (refer to RPS Report No. PPEWL-RPS-XX-SI-XX-CA-C-0300). The SWDS has mitigated the potential for the current development to exacerbate flood risk as a result of pluvial / overland flow sources. Consequently, the existing development likelihood of increasing flood risk from this source to the (post-development) Site is considered to be Low.

Existing, and Projected Climate Conditions

7.14.8 The UK has warmed over recent decades: the 30-year period 1991–2020 is ~0.9 °C warmer than 1961–1990 on average.

7.14.9 Rainfall has also increased in recent decades (particularly in winter), with more intense precipitation events becoming more frequent.

7.14.10 In London specifically, climate has already shown signs of change: hotter summers, occasional severe heatwaves, and increased flood and urban heat island risk.

7.14.11 The London Climate Resilience Review notes that in 2024, London and the UK more broadly are experiencing record or near-record heatwaves, consistent with a climate in transition.

Future Climate Change Scenario

7.14.12 Climate modelling by the UK Met Office (UKCP18) predicts hotter, drier summers, warmer, wetter winters, and an increase in extreme weather events due to climate change. Additionally, rainfall trends across the UK are on the rise, with more frequent heavy winter rainfall leading to increased flooding and damage to buildings and infrastructure. These patterns align with projections of more intense rainfall in a warmer global climate, heightening health and safety risks to both people and the built environment, as well as raising costs and disruption for repairs and adaptation.

7.14.13 The projections for the London in the 2020s and 2030s (2020 – 2039) in comparison to mean year 1981-2000 baseline under a high emissions scenario (RCP8.5) suggest a central estimate (50% probability) of:

- An increase in mean annual temperature of 1.1°C.
- An increase in mean winter temperature of 0.9°C.
- An increase in mean summer temperature of 1.3°C.
- A +7% change in mean winter precipitation.
- A -5% change in mean summer precipitation.

7.14.14 By the 2040s and 2050s (2040 – 2059), the high emission central estimate provides the following projection:

- An increase in mean annual temperature of 1.9°C.
- An increase in mean winter temperature of 1.6°C.
- An increase in mean summer temperature of 2.5°C.
- A +11% change in mean winter precipitation.
- A -15% change in mean summer precipitation.

7.14.15 By the 2080s and 2090s (2080-2099) the high emission central estimate provides the following projection:

- An increase in mean annual temperature of 4.3°C.
- An increase in mean winter temperature of 3.5°C.
- An increase in mean summer temperature of 5.8°C.
- A +23% change in mean winter precipitation.
- A -41% change in mean summer precipitation.

7.14.16 No trend in the wind speed or frequency of strong winds over the UK for the mean projections model is forecasted.

Three key climate risks have been identified: hotter summers with extreme temperatures (heatwaves), wetter winters with heavy rainfall and drier summers with drought. These risks are assessed in this evaluation.

7.15 Potential Impacts

7.15.1 This section identifies the potential effects of projected climate hazards, such as hotter summers, wetter winters, and drier periods, on key receptors during both construction and operational phases of the Proposed Development. It evaluates receptor sensitivity, the likelihood of these hazards occurring, and the severity of their consequences to determine initial significance prior to the application of mitigation measures, as summarised in Table 7.22.

Table 7.25 Climate-Related Risk and Significance for Key Receptors

Development Phase	Receptor and Impacts Identified	Sensitivity	Likelihood of Climate Event	Consequence of Impact	Overall Significance (pre-mitigation)
Construction	**Construction workers** - are exposed to outdoor activities during extreme weather, including high temperatures, heavy rainfall, and increased storm frequency.	**Medium–High**	**Medium** – extreme heat / intense rainfall likely to occur a limited number of times over the assessment period.	**Moderate Adverse** – local disruption to works and increased H&S risk if unmanaged.	**Moderate Adverse**
	Data centre structure & fabric - is moderately sensitive to future climate pressures, including heat-related expansion, wind loading, and increased rainfall intensity. Climate projections show these hazards could affect durability and performance.	**Medium**	**Medium** – extreme heat / intense rainfall likely to occur during the design life.	**Moderate Adverse** – local damage or shorter service life to building fabric.	**Moderate Adverse**
Operational	**Operational staff / data centre employees** - Operational staff are mostly indoors, protected by mechanical cooling systems. However, indoor environmental conditions could still be affected by external heat, water shortages, or cooling inefficiencies.	**Medium**	**High** – repeated hot spells affecting indoor conditions.	**Moderate Adverse** – degraded thermal comfort and productivity, limited H&S risk with controls in place.	**Minor–Moderate Adverse**

Development Phase	Receptor and Impacts Identified	Sensitivity	Likelihood of Climate Event	Consequence of Impact	Overall Significance (pre-mitigation)
	Electricity supply network - Power networks are highly sensitive due to increased peak loads and temperature-induced equipment stress. Data centres place continuous high demand on the grid, and extreme heat may exacerbate vulnerabilities.	**High**	**Medium** – climate-driven grid stress events expected a limited number of times.	**Large Adverse** – loss or curtailment of supply affecting multiple users.	**Moderate–Major Adverse**
	Water supply network - The project adopts a direct air-cooling strategy, with no process water requirement for IT or mechanical cooling.	**Low**	**Medium** – drought and local water-stress events expected a limited number of times.	**Minor Adverse** – No constraints on process water but some impact on welfare water use.	**Minor Adverse**
	Data centre cooling capacity under extreme heat - Cooling systems face exceptional pressure under future climate scenarios. With both sensitivity and magnitude assessed as high, any reduction in cooling capacity directly compromises the functioning of the data centre.	**High**	**High** – multiple severe heatwave events over the design life.	**Very Large Adverse** – loss of adequate cooling with potential for widespread IT failure.	**Major Adverse**
	Operational continuity / uptime - Uptime is a critical performance requirement. Extreme heat, water scarcity, or energy supply issues could reduce redundancy or force derating.	**High**	**Medium–High** – some events severe enough to challenge redundancy provisions.	**Very Large Adverse** – prolonged loss or curtailment of data-centre services.	**Major Adverse**

7.16 Additional Mitigation and Enhancement Measures Applied with Residual Effect

7.16.1 Table 7.23 outlines the embedded design and operational strategies implemented to reduce the potential impacts of climate hazards identified in the previous assessment, ensuring that all residual risks, such as those from heatwaves, extreme rainfall, and drought, are mitigated to 'Negligible - Not Significant or Minor Adverse – Not Significant.

Table 7.26 Climate Change Impact and Mitigation Measures

Receptor	Sensitivity	Pre-Mitigation Significance	Key Mitigation and Enhance Measures Proposed	Residual Likelihood	Residual Consequence	Residual Significance / Effect
Construction workers	Medium–High	Moderate Adverse	**Hotter Summer Extreme Temperatures (Heatwaves):** Heatstroke may to occur during the deconstruction and construction phase. Well-ventilated and sheltered staff resting areas should be provided during heatwaves. Staff management will ensure staff have easy access to water and encourage regular hydration breaks. Additionally, frequent rest breaks will be implemented alongside scheduling heavy tasks during cooler parts of the day such as early morning or late afternoon. **During wetter winter (Extreme Rainfall):** Providing staff with necessary training on safety practices during wet conditions can help reduce the risk of accidents.	Low	Minor Adverse	Negligible – Not Significant
Data centre structure & fabric (Building & Site)	Medium	Moderate Adverse	**Hotter Summer Extreme Temperatures (Heatwaves):** Enhanced envelope durability, storm-resistant materials, improved drainage, thermal design margins. **During wetter winter (Extreme Rainfall):** The Site is identified as predominantly being in an area at very low risk of overland and surface water flooding. Sustainable Drainage Systems (SuDS) will be used to manage	Very Low	Minor Adverse	Negligible – Not Significant

Receptor	Sensitivity	Pre-Mitigation Significance	Key Mitigation and Enhance Measures Proposed	Residual Likelihood	Residual Consequence	Residual Significance / Effect
			surface water runoff and limit the impact of surface water flooding. Surface water run-off from the proposed development will be restricted to a greenfield runoff rate of 2 l/s/ha. The total discharge rate from both proposed units is 12.5 l/s. Attenuation will be provided in the form of below ground attenuation tanks and permeable pavements before discharging from the Site. The proposed strategy will modify the existing layout to remove the Tubosider attenuation pipes (to make space for buried services) and offset the loss of storage through increasing the capacity in the attenuation crates. The surface water drainage strategy has been designed to accommodate run off from all storms up to and including the 1% AEP with a 40% allowance for climate change.			
Operational staff / data centre employees	Medium	Minor–Moderate Adverse	**Hotter Summer Extreme Temperatures (Heatwaves):** Robust cooling in occupied spaces, welfare water storage, heat alarms, emergency response plans. Indoor climate control redundancy, improved ventilation, operational heat-response protocols. Building management will commission the building and ensure that the cooling demand meets the needs of the occupants. Additionally, conducting a Post Occupancy Survey is recommended to capture the 'actual' performance of the building.	Very Low	Minor Adverse	Negligible – Not Significant

Receptor	Sensitivity	Pre-Mitigation Significance	Key Mitigation and Enhance Measures Proposed	Residual Likelihood	Residual Consequence	Residual Significance / Effect
			During wetter winter (Extreme Rainfall): alternative method of transportation will be taken or if feasible, such as working from home. Providing staff with necessary training on safety practices during wet conditions can help reduce the risk of accidents. **Drier Summers (Drought):** Conducting an assessment on the operational systems and staff welfare requirement will be undertaken, this will help minimise any potential disruption to safe working practices due to lack of water supply in the drier summer months. It is proposed that an on-site water tank with sufficient capacity be installed which will provide a reliable reserve and support uninterrupted supply during challenging conditions. Rainwater harvesting during seasons of extreme rainfall is also recommended as a proactive measure.			
Electricity supply network	High	Moderate–Major Adverse	**Hotter Summer Extreme Temperatures (Heatwaves):** The development has been designed to meet Tier III requirements, meaning the power infrastructure is concurrently maintainable with no single point of failure. As a result, reliance on the external power network is mitigated through dual grid connections and resilient onsite standby generation, ensuring continuity of operation under abnormal or disrupted conditions.	Very Low	Minor Adverse	Minor Adverse – Not Significant

Receptor	Sensitivity	Pre-Mitigation Significance	Key Mitigation and Enhance Measures Proposed	Residual Likelihood	Residual Consequence	Residual Significance / Effect
Water supply network	Medium–High	Moderate Adverse	**Drier Summers (Drought):** The project adopts a direct air-cooling strategy, with no process water requirement for IT or mechanical cooling. Therefore, operational dependence on the potable water network is minimal and limited only to domestic and welfare uses, resulting in no material vulnerability associated with water supply infrastructure.	Very Low	Negligible	Negligible – Not Significant
Data centre cooling capacity under extreme heat	High	Major Adverse	**Hotter Summer Extreme Temperatures (Heatwaves):** Increased cooling loads, due to solar gains and potential failures to meet demand can be mitigated by ensuring the building undergoes proper commissioning of the MEP equipment. Additionally, conducting energy audits can be beneficial in determining whether the building is performing as designed. **Drier Summers (Drought):** The project adopts a direct air-cooling strategy, with no process water requirement for IT or mechanical cooling. Therefore, operational dependence on the potable water network is minimal and limited only to domestic and welfare uses, resulting in no material vulnerability associated with water supply infrastructure.	Low	Minor Adverse	Minor Adverse – Not Significant
Operational continuity / uptime	High	Major Adverse	The development has been designed to meet Tier III requirements, meaning the power infrastructure is concurrently maintainable with no single point of failure.	Low	Minor Adverse	Minor Adverse – Not Significant

7.17 Residual Climate Change Effects

7.17.1 Considering the design mitigation measures outlined in Table 7.23 above, the overall vulnerability of the Proposed Development to climate change effects during both the construction and operational phases is assessed as between **'Negligible - Not Significant to Minor Adverse – Not Significant'.**

7.18 Summary and Conclusions

7.18.1 An evaluation has been undertaken to assess both the impacts of the Proposed Development on the climate and its vulnerability to future climatic conditions during the construction and operational phases. The assessment considers how rising temperatures, more frequent extreme weather events and increased flood risk may affect workers and worksites during construction, as well as materials, occupant wellbeing, and the overall functionality of the data centre during operation. Appropriate mitigation measures have been identified to minimise these potential effects.

7.18.2 It is concluded that climate change effects during both construction and operational phases are deemed to be **'Not Significant'**.

7.19 Effect Interactions and Cumulative Effects

Cumulative Effects of the Proposed Development with Other Development Schemes

- Ark Data Centre Campus - 75111/APP/2020/1955 (dated 15-04-21) and 75111/APP/2022/1007 (dated 21-09-22)
- Colt Cata Centre Campus - 38421/APP/2021/4045 (dated 25-11-22) and 78343/APP/2025/719 (recommended for approval at Committee in October 2025)
- Hayes Bridge 78343/APP/2025/719
- Woodlands Park Landfill Site (Buckinghamshire Council app)

7.19.1 The EIA has identified several cumulative schemes that are relevant to the assessment of climate change and resilience. Each scheme has been reviewed to understand its potential contribution to the collective environmental context and how, in combination, these developments may influence climate-related risks within the area.

7.19.2 In this assessment, consideration has been given not only to the Proposed Development but also to the interaction with other nearby and committed projects. Assessing cumulative effects provides a more holistic understanding of how climate change may affect the wider region, ensuring that all relevant factors are captured to support informed and resilient decision-making.

7.19.3 The climate variables outlined in the baseline section (including increased temperatures, extreme rainfall, and changes in seasonal patterns) will affect all developments in the surrounding area. However, the magnitude and nature of potential impacts on the Proposed Development may vary depending on the influence of other cumulative schemes. This reinforces the importance of evaluating how combined development activity may alter exposure, sensitivity, or adaptive capacity under future climate conditions.

7.19.4 Cumulative schemes that increase impermeable surface cover may intensify flooding and surface water runoff effects linked to increased winter rainfall or extreme precipitation events. However, these matters are addressed in detail within the separate Flood Risk and Drainage

Assessment, which incorporates climate change allowances and cumulative effects. Therefore, these issues are not assessed further in this chapter.

7.19.5 Rising summer temperatures and more frequent extreme heat events could also be exacerbated by the above-mentioned cumulative developments, particularly where additional hard landscaping or impermeable surfacing contributes to local heat retention. Such changes can reinforce the local heat-island effect. However, the Proposed Development is located within a previously developed site where built form has been established for some time. The scheme represents an extension and changes of use to existing facilities and will not increase the project footprint. Given this context, the addition of the Proposed Development is not expected to generate any material change to local microclimatic conditions.

7.19.6 Furthermore, the cumulative schemes identified are dispersed across the wider area and are generally located at sufficient distances from the Site such that any localised heat contributions would not interact or combine in a manner that results in meaningful cumulative temperature increases. As a result, the cumulative influence on the heat-island effect and wider microclimate is expected to be minimal.

7.19.7 As a result, the cumulative effects related to climate resilience are deemed **Not Significant**.

7.20 References

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Table 7.27 Climate Change Impact and Mitigation Measures

Chapter	Responsibility	Name	Qualifications	Assessor information
Greenhouse Gas and Climate Change Chapter	Red Engineering Design	Hope Amira	MSc, BSc, MIEnvSc	The chapter has been prepared by an Associate-level environmental practitioner with around 10 years' experience specialising in greenhouse gas assessment, climate resilience and whole life carbon analysis for major infrastructure and data centre developments. The author has delivered numerous WLCAs, embodied-carbon assessments and climate-related evaluations in line with IEMA/ISEP guidance, UK Government methodologies and local planning authority requirements. Their portfolio includes multiple hyperscale and colocation data centre projects across the UK and Europe, supporting multidisciplinary design teams through RIBA Stages 2–5 on carbon-reduction strategies, cooling-system optimisation and alignment with BREEAM, GLA SI2 and emerging net-zero standards. The author is actively progressing toward Chartered Environmentalist (CEnv) accreditation through the Institution of Environmental Sciences. Operational energy modelling referenced within this chapter was completed by a dedicated building-services energy specialist within the project team