EAST PARK ENERGY

East Park Energy

EN010141

Environmental Statement
Volume 1 – Main Report

Chapter 15: Climate Change

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Environmental Statement
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Chapter 15: Climate Change

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15.0 CLIMATE CHANGE

15.1 Introduction

15.1.1 This chapter of the Environmental Statement (ES) presents the findings of an assessment of the resilience of the Scheme to the effects of climate change, and the likely significant effects of the Scheme on climate change, specifically the impact of greenhouse gas (GHG) emissions.

15.1.2 Naturally occurring GHG emissions such as carbon dioxide (CO_2) act as a blanket around the earth (a process called the 'GHG effect'). However, increases in GHG emissions are resulting in an enhancement of the GHG effect, resulting in an increase in global temperatures (global warming). These changes in global temperatures are driving changes in short-term weather events as well as extremes in longer-term climate variability (referred to as climate change).

15.1.3 The Scheme has the potential to be affected by the projected changes in climate, as well as contribute to the GHG emissions which are enhancing these changes.

15.1.4 This chapter is supported by the following appendices in **ES Volume 2 [EN010141/DR/6.2]**:

- **ES Vol 2 Appendix 15-1: Greenhouse Gas Emissions Assessment [EN010141/DR/6.2]**;
- **ES Vol 2 Appendix 15-2: Baseline Climate [EN010141/DR/6.2]**;
- **ES Vol 2 Appendix 15-3: Climate Resilience Assessment [EN010141/DR/6.2]**; and
- **ES Vol 2 Appendix 15-4: In Combination Climate Change Impacts Assessment [EN010141/DR/6.2]**.

Statement of Competence

15.1.5 The author of this assessment is an environmental scientist with four years' experience in planning and the environment in a variety of sectors including energy, transport and waste. The assessment has been reviewed by a chartered environmental consultant and chartered scientist with over 16 years' experience with extensive knowledge of planning and environmental issues and has undertaken and managed EIA and DCO projects on matters relating to climate change for a range of renewable technologies including solar.

15.2 Legislation, Policy, and Guidance

International Agreements

15.2.1 The United Nations Framework Convention on Climate Change (UNFCCC) was adopted in 1992 with the aim of preventing dangerous human interference with the climate system. Following the adoption of the UNFCCC, several agreements have followed including the Kyoto Protocol and more recently the Paris Agreement.

15.2.2 The Kyoto Protocol was adopted on 11 December 1997 and, owing to a complex ratification process, entered into force on 16 February 2005. The Kyoto Protocol is an international agreement that commits industrialised countries and economies in transition to reduce GHG emissions in accordance with agreed individual targets. The targets were based on the scientific consensus that global warming is occurring; that human-made CO_2 emissions are driving it and that industrialised countries and economies in transition are largely responsible for the current high levels of GHG emissions in the atmosphere.

15.2.3 Although the Kyoto Protocol technically remains in force, the Paris Agreement has, in effect, superseded the Kyoto Protocol. The Paris Agreement was adopted on 4 November 2016. This is an international agreement created as a result of the UNFCCC Conference of the Parties (COP) 21 in 2015. The goal of the Paris Agreement is to limit global average temperature rise to well below 2°C, preferably 1.5°C, compared to pre-industrial levels. The agreement was a landmark in the climate change process. The Paris Agreement recognised that climate change is a shared problem and called on all countries to set emissions targets. Today, 194 parties have committed to the Paris Agreement and are required to produce Nationally Determined Contributions that set out their targets to meet the Paris Agreement targets through national legislation.

Legislation

15.2.4 Statutory legislation with regards to climate change is provided for within the following:

- Climate Change Act 2008;
- Climate Change Act 2008 (2050 Target Amendment) Order 2019; and
- The Carbon Budget Orders 2009, 2011, 2016, and 2021.

The UK's legislation on climate change was established within the Climate Change Act 2008[1]. This sets out the UK government's commitment to reduce GHG emissions in the UK by at least 80% of 1990 levels by 2050. It also requires the UK government to set legally binding 'carbon budgets' to act as stepping stones towards 2050 and to produce Climate Change Risk Assessments ('CCRAs') and National Adaptation Programmes ('NAPs') every five years. In 2019, the Net Zero - The UK's Contribution to Stopping Global Warming[2] was published by the Committee on Climate Change ('CCC') responding to the UK government's request to reassess the UK's long-term emission targets. The CCC recommended the new emissions target of net-zero greenhouse gases by 2050 (rather than 80% which was set in 2008). The new target reflected the increased ambition of the 2015 Paris Agreement[3] and wider updates to the evidence base on tackling climate change. This CCC report led to the Climate Change Act 2008 (2050 Target Amendment) Order 2019[4].

15.2.5 Since the Climate Change Act 2008, six carbon budgets have been set to date covering the period 2008 to 2037:

- The first carbon budget (2008-2012) set under the Carbon Budget Order 2009;
- The second carbon budget (2013-2017) set under the Carbon Budget Order 2009;
- The third carbon budget (2018-2022) set under the Carbon Budget Order 2009;

- The fourth carbon budget (2023-2027) set under the Carbon Budget Order 2011;
- The fifth carbon budget (2028-2032) set under the Carbon Budget Order 2016; and
- The sixth carbon budget (2033-2037) set under the Carbon Budget Order 2021.

15.2.6 A 'carbon budget' is a cap on the amount of GHGs which can be emitted in the UK over a five-year period. The sixth carbon budget, the first to be set under the UK's new net zero target, was legislated for in June 2021 and provides ministers with advice on the amount of GHGs the UK can emit during the period 2033-2037, in order to comply with the net zero trajectory. One of the key recommendations in the sixth carbon budget is to expand low carbon energy supplies including renewable sources such as solar and wind. Furthermore, the seventh carbon budget[5] was published in February 2025. It has been recommended by the Climate Change Committee (CCC) but has not yet been legislated. The Seventh Carbon Budget covers the five-year period 2038-2042 and lays out the emissions envelope, the pathway and the main actions the UK will need to reach Net Zero by 2050. It proposes that the seventh carbon budget will be delivered through: electricity, low-carbon fuels and carbon capture and storage (CCS), nature, engineered removals, and demand. The largest share of emissions reduction during the budget period is delivered from electrification and low-carbon electricity supply.

15.2.7 The carbon budgets have been used within this assessment to inform whether the GHG emissions associated with the Scheme would be significant or not, and the lifetime GHG emissions have been compared to the net zero trajectory in line with the guidance from the Institute of Sustainability and Environmental Professionals (ISEP) (formally known as the Institute of Environmental management and Assessment (IEMA).

15.2.8 As a requirement of the Climate Change Act 2008, the UK government has a duty to undertake regular five-yearly CCRAs and complete a NAP. The CCRA identifies the range of climate risks and opportunities facing the UK from

current and predicted climate change, whilst the NAP sets the actions that UK government and others will take to adapt to the impacts of climate change in the UK.

15.2.9 The third five-year programme, the Third NAP ('NAP3'), covers the period 2023 to 2028. NAP3 sets out a clear overarching vision that reflects the importance of the need to adapt while responding to every risk and opportunity in the CCRA and provides more detail on how the UK government proposes to address each individual risk. Additionally, NAP3 was the first NAP to consider the international risks impacting the UK.

15.2.10 NAP3 identifies the following six key areas of climate change risks and the actions planned to improve resilience to them:

- Flooding and costal change risk to communities, businesses and infrastructure;
- Risks to health, wellbeing and productivity from high temperatures;
- Risks of shortages in the public water supply for agriculture, energy generation and industry;
- Risks to natural capital including terrestrial, coastal, marine and freshwater ecosystems, soils and biodiversity;
- Risks to domestic and international food production and trade; and
- New and emerging pests and diseases and invasive and non-native species affecting people, plants and animals.

Policy

National Policy and Guidance

15.2.11 The following National Policy Statements (NPS) set out national planning policies which are relevant to the Scheme as a nationally significant infrastructure project for renewable energy infrastructure:

- Overarching NPS for Energy (EN-1)[6];
- NPS for Renewable Energy Infrastructure (EN-3)[7]; and

- NPS for Electricity Networks Infrastructure (EN-5)[8].

15.2.12 The National Planning Policy Framework (NPPF)[9], and the accompanying online Planning Practice Guidance (PPG) for climate change[10] are also important and relevant but are not the key policy documents against which the application will be determined.

15.2.13 Relevant national policies and guidance from the above documents are summarised in Table 15.1.

Table 15.1 – Summary of National Planning Policy

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
NPS EN-1	Paragraph 4.10.5 – 4.10.12	Requires applicants to set out how the development will take account of the projected impacts of climate change and assess a range of scenarios. Requires applicants to demonstrate that the development has a high level of climate resilience built-in from the outset and that the development can be adapted over its lifetime to remain resilient to a credible maximum climate change scenario. The results should be considered alongside relevant research based on the climate change projections.	**ES Vol 2 Appendix 15-2: Climate Baseline [EN010141/DR/6.2]** has conservatively used Representative Concentration Pathway 8.5 (RCP8.5) for 2060-2079. RCP8.5 is a high GHG emissions scenario used in climate modelling to represent a future with continued, intensive fossil fuel use and limited climate policy. The projected changes in climate have been outlined in **ES Vol 2 Appendix 15-2: Baseline Climate [EN010141/DR/6.2]** and the resilience of the Scheme to the climate changes has been assessed in **ES Vol 2 Appendix 15-3: Climate Resilience Assessment [EN010141/DR/6.2]**.
	Paragraph 5.3.5 – 5.3.7	Requires applicants to include a GHG Assessment as part of the ES. Requires applicants to seek opportunities to	The GHG emissions associated with the Scheme have been calculated in **ES Vol 2 Appendix 15-1: GHG Assessment [EN010141/DR/6.2]**.

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
		reduce GHG emissions at every stage of a project. Requires applicants to look for opportunities within the development to embed nature-based or technological solutions to mitigate or offset the emissions of construction and decommissioning. Requires applicants to set out a GHG Reduction Strategy.	Climate change mitigation measures have been incorporated into this chapter in sections 15.7 and 15.9. The mitigation measures include measures relating to minimising GHG emissions during the lifetime of the Scheme. These measures will be included within the final CEMP, OEMP and DEMP which will be developed in substantial accordance with the **outline Construction Environmental Management Plan (oCEMP) [EN010141/DR/7.3]**, **outline Operational Environmental Management Plan (oOEMP) [EN010141/DR/7.5]**, and **outline Decommissioning Environmental Management Plan (oDEMP) [EN010141/DR/7.6]** respectively.
NPS EN-3	Paragraph 2.4.11	Requires applicants to consider how the development will be resilient to increased risk of flooding and impacts of higher temperatures.	**ES Vol 2 Appendix 8-1: Flood Risk Assessment [EN010141/DR/6.2]** considers the resilience of the development to flooding. The resilience of the Scheme to flooding and increased summer temperatures has been assessed in **ES Vol 2 Appendix 15-3: Climate Resilience Assessment [EN010141/DR/6.2].**
NPS EN-5	Paragraph 2.3.2	Requires applicants to set out to what extent the proposed development is expected to be vulnerable, and, as appropriate, how it	**ES Vol 2 Appendix 8-1: Flood Risk Assessment [EN010141/DR/6.2]** considers the resilience of the development to

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
		has been designed to be resilient to: • flooding, particularly for substations that are vital to the network; and especially in light of changes to groundwater levels resulting from climate change; • the effects of wind and storms on overhead lines; • higher average temperatures leading to increased transmission losses; • earth movement or subsidence caused by flooding or drought (for underground cables); and • coastal erosion – for the landfall of offshore transmission cables and their associated substations in the inshore and coastal locations respectively.	flooding. **ES Vol 2 Appendix 15-3: Climate Resilience Assessment [EN010141/DR/6.2]** assesses the vulnerability of receptors on Site to a number of climate change effects.
NPPF	Paragraph 164	States that new development should be planning in a way that avoids increased vulnerability to the range of impacts arising from climate change.	The resilience of the Scheme to climate change has been assessed in **ES Vol 2 Appendix 15-3: Climate Resilience Assessment [EN010141/DR/6.2]**. The GHG emissions associated with the Scheme have been calculated in **ES Vol 2 Appendix 15-1: GHG Assessment [EN010141/DR/6.2]**. Climate change mitigation measures have been incorporated into this chapter in sections 15.7 and 15.9. The mitigation measures include the mitigation of GHG emissions from the Scheme and the

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
			mitigation of the effects of climate change on the Scheme.
PPG	Climate Change Section	Provides guiding principles on how planning can help to mitigate climate change by reducing emissions from a new development, and how new developments can be built to be resilient and adapt to climate change.	The resilience of the Scheme to climate change has been assessed in **ES Vol 2 Appendix 15-3: Climate Resilience Assessment [EN010141/DR/6.2]** following the principles in the PPG.

Local Policy

15.2.14 The Scheme lies within the administrative boundaries of Bedford Borough Council (BBC) and Huntingdonshire District Council (HDC), with HDC being a two-tier authority with Cambridgeshire County Council. Planning policy of relevance to the assessment include:

- Bedford Borough Local Plan 2030[11];
- Bedford Allocations and Designations Local Plan[12]; and
- Huntingdonshire Local Plan to 2036[13].

15.2.15 Relevant local planning policies from the above documents are summarised in Table 15.2.

Table 15.2– Summary of Local Planning Policy

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
Huntingdonshire Local Plan to 2036	Objective 2	Promotes high quality, well designed, locally distinctive, sustainable development that is adaptable to climate change and resilient to extreme weather.	As described in **ES Vol 1 Chapter 2: The Scheme [EN010141/DR/6.1],** the Scheme will produce renewable energy and therefore the Scheme is inherently sustainable. Additionally, the GHG emissions associated

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
			with the Scheme over its lifetime (outlined in **ES Vol 2 Appendix 15-1: Greenhouse Gas Emissions Assessment [EN010141/DR/6.2]**) are not dissimilar other similar developments. The resilience of the Scheme to climate change has been assessed in **ES Vol 2 Appendix 15-3: Climate Resilience Assessment [EN010141/DR/6.2]**.
	Objective 24	Encourages waste management and pollution control practices which minimise and reduce contributions to climate change and avoid adverse impacts on the local environment or human health.	The **outline Waste Management Plan [EN010141/DR/7.12]** outlines how waste will be minimised, stored, recycled, and disposed of responsibly at the Site. The GHG emissions associated with the Scheme have been calculated in **ES Vol 2 Appendix 15-1: GHG Assessment [EN010141/DR/6.2]**. The GHG emissions associated with waste management during both the operation and decommissioning phases have been calculated. Climate change mitigation measures have been incorporated into this chapter is sections 15.7 and 15.9.
	Policy LP35	Supports proposals for renewable and low carbon energy where the impacts are or can be made acceptable.	The GHG emissions associated with the Scheme have been calculated in **ES Vol 2 Appendix 15-1: GHG Assessment [EN010141/DR/6.2]**.
	Objective 4.1	Seeks to deliver development that is	The resilience of the Scheme to climate

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
Bedford Local Plan 2030		equipped to respond to the impacts of climate change.	change has been assessed in **ES Vol 2 Appendix 15-3: Climate Resilience Assessment [EN010141/DR/6.2]**. Climate change mitigation measures have been incorporated into this chapter and are set out at Section 15.7.
	Objective 4.10	Protect and enhance our natural resources including air, soil minerals and water to minimise the impacts of flooding, climate change and pollution	Climate change mitigation measures have been incorporated into this chapter and are set out at Sections 15.7 and 15.9.
	Policy 51S	Requires development and the use of land and buildings to address climate change, adapting to anticipated future changes and mitigating against further change by reducing greenhouse gas emissions.	As described in **ES Vol 1 Chapter 2: The Scheme [EN010141/DR/6.1],** the Scheme will produce renewable energy and is therefore, reducing GHG emissions. The GHG emissions produced as a result of the Scheme are outlined in **ES Vol 2 Appendix 15-1: GHG Assessment [EN010141/DR/6.2]**.
Bedford Allocations and Designations Local Plan	Objective 15	Seeks to protect the environment by minimising the risk of flooding and the effects of climate change and facilitating improvements in air quality.	Climate change mitigation measures have been incorporated into this chapter and are set out at Section 15.7.

Guidance

15.2.16 ISEP (formerly IEMA) is the global professional body for anyone working in environment and sustainability. ISEP have provided resources, tools, networking, knowledge sharing, and high-quality formal training and qualifications for over 25 years with the aim to raise the bar for

professionalism in sustainability. The following ISEP guidance have been considered:

- Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance[14] (herein referred to as the 'ISEP GHG Guidance'); and
- Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation[15] (herein referred to as the 'ISEP Climate Change Resilience Guidance').

15.2.17 The assessment of GHG emissions has been undertaken in line with ISEP GHG Guidance and the assessment of the resilience of the Scheme to the effect of climate change has been undertaken in line with the ISEP Climate Change Resilience Guidance.

15.3 Consultation and Engagement

Scoping

15.3.1 Scoping of this climate change assessment was undertaken as part of a wider EIA scoping exercise, the findings of which were recorded in **ES Vol 2 Appendix 4-1: EIA Scoping Report [EN010141/DR/6.2]** that was submitted in October 2023.

15.3.2 A Scoping Opinion was received in December 2023 as presented in **ES Vol 2 Appendix 4-2: EIA Scoping Opinion [EN010141/DR/6.2]**. The feedback received from PINS and stakeholders within the Scoping Opinion has been reviewed and the points relating to this chapter are summarised in Table 15.3 below.

Table 15.3: Scoping responses with respect to air quality climate change effects

Consultee	Summary of Comments	Response
Planning Inspectorate	ID 3.9.1: The Planning Inspectorate agrees that changes in precipitation, frequency and magnitude of wind and storms, summer temperatures and changes in cloud cover as a result of climate change are unlikely to give rise to significant effects on the construction and decommissioning phases of the Scheme. Therefore, the Planning Inspectorate is content to scope these matters out of further assessment. However, the ES should explain how the Scheme has been designed to be resilient to such effects.	It has been explained in section 15.8 of this chapter how the Scheme is resilient to climate change during the Construction and Decommissioning phases of the Scheme.
Planning Inspectorate	ID 3.9.2: The Scoping Report identifies the potential for changes in water availability to alter soil acidity, which can increase the deterioration of building materials. Given that paragraph 15.5.5 states that materials used will be chosen to be appropriate for existing ground conditions and would be able to withstand changes in soil acidity as a	Changes in water availability have been considered within the effects of reduced precipitation within section 3 of **ES Vol 2 Appendix 15-3: Climate Resilience Assessment [EN010141/DR/6.2]**. Equipment and materials which are suitable for the site will be chosen.

Consultee	Summary of Comments	Response
	result of changes in water availability, the Planning Inspectorate is content to scope this matter out. The ES should explain how the use such materials would be secured in the application.	
Planning Inspectorate	ID 3.9.3: The Applicant explains that the Scheme is not located in an area that is susceptible to sea level rise. The Planning Inspectorate agrees that significant effects are not likely to occur and an assessment of sea level rise in the climate change chapter can be scoped out of further assessment.	Comment required no changes to the scope of **ES Vol 2 Appendix 15-3: Climate Resilience Assessment [EN010141/DR/6.2]**.
Planning Inspectorate	ID 3.9.4: The Planning Inspectorate agrees to scope snow and ice out on the basis that UKCP18 predictions anticipate less snow and ice than the current baseline and that the risk from snow and ice is not anticipated to increase with climate change.	Comment required no changes to the scope of **ES Vol 2 Appendix 15-3: Climate Resilience Assessment [EN010141/DR/6.2]**.
Planning Inspectorate	ID 3.9.5: The ES should provide an assessment of GHG emissions for the whole lifetime of the Scheme. This includes consideration of GHG emissions from the listed activities during construction, operation and decommissioning. Therefore, these matters should be assessed for the lifetime of the Scheme and the Planning Inspectorate does not agree to scope these matters out of further assessment.	Scope of assessment for **ES Vol 2 Appendix 15-1: Greenhouse Gas Emissions Assessment [EN010141/DR/6.2]** has been expanded to include all the activities required by the planning inspectorate.
Planning Inspectorate	ID 3.9.6: GHG emissions related to the leakage of GHGs - construction and decommissioning. Notwithstanding the advice set out in ID 3.9.5 above, that the ES should include an assessment of GHG emissions for the whole lifetime of the Scheme, the Planning Inspectorate agrees to scope this matter out of further assessment on the basis that impacts would be limited to the operational phase only, for which an operational phase assessment has been proposed.	Comment required no changes to the scope of **ES Vol 2 Appendix 15-1: Greenhouse Gas Emissions Assessment [EN010141/DR/6.2]**.

Consultee	Summary of Comments	Response
Planning Inspectorate	ID 3.9.7: Travel of construction workers. The Applicant proposes to scope this matter out on the basis that emissions from the travel of construction workers are expected to be negligible in context of the other sources of emissions during construction and the overall GHG emissions savings associated with the Scheme. In the absence of further detail, the Planning Inspectorate cannot agree to scope this matter out at this time. The ES should provide an assessment of the GHG emissions associated with the travel of construction workers or provide evidence to demonstrate the absence of LSE including agreement with relevant consultation bodies.	Scope of assessment for **ES Vol 2 Appendix 15-1: Greenhouse Gas Emissions Assessment [EN010141/DR/6.2]** has been expanded to include travel of construction workers.
Planning Inspectorate	ID 3.9.8: Energy consumption, material and waste generation from ongoing site maintenance. The Scoping Report states that operational emissions related to maintenance are expected to be negligible in context to the overall GHG emissions and proposes to scope this matter out. As advised above, the ES should provide an assessment of GHG emissions for the entire lifetime of the Scheme, including as a result of energy consumption, material and waste generation from ongoing site maintenance. Therefore, the Planning Inspectorate cannot agree to scope out this matter from further assessment.	Scope of assessment for **ES Vol 2 Appendix 15-1: Greenhouse Gas Emissions Assessment [EN010141/DR/6.2]** has been expanded to include energy consumption, material and waste generation from ongoing site maintenance
Planning Inspectorate	ID 3.9.9: The Applicant proposes to scope the travel of workers out on the basis that emissions from the travel of workers are expected to be negligible in context of the other sources of emissions and the overall GHG emission savings associated with the Scheme. In the absence of further detail, the Planning Inspectorate cannot agree to scope this matter out at this time. The ES should provide an assessment of the	Scope of assessment for **ES Vol 2 Appendix 15-1: Greenhouse Gas Emissions Assessment [EN010141/DR/6.2]** has been expanded to include travel of workers during the construction, operation and decommissioning phases of the Scheme.

Consultee	Summary of Comments	Response
	GHG emissions associated with the travel of workers or provide evidence to demonstrate the absence of LSE including agreement with relevant consultation bodies.	
Planning Inspectorate	ID 3.9.10: The Applicant explains that peat is not present at the site. The Planning Inspectorate agrees that on this basis significant effects are not likely to occur and an assessment of the loss of peat in the climate change chapter can be scoped out of further assessment. However, should peat be discovered on-site, the ES should provide an assessment of the potential effects on GHG emissions from the loss of peat during construction of the Scheme.	Comment required no changes to the scope of **ES Vol 2 Appendix 15-1: Greenhouse Gas Emissions Assessment [EN010141/DR/6.2]** but reference will be made to the protocol if peat is found on-site.
Planning Inspectorate	ID 3.9.11: Energy consumption from the provision of clean water and treatment of wastewater. The Applicant proposes to scope this matter out on the basis that energy consumption from the provision of clean water and treatment of wastewater is expected to be negligible in context to the overall GHG emission savings. In the absence of further detail, the Planning Inspectorate cannot agree to scope this matter out at this time. The ES should provide an assessment of potential GHG emissions associated with energy consumption from the provision of clean water and treatment of wastewater related to the Scheme or provide evidence to demonstrate the absence of LSE.	Scope of assessment for **ES Vol 2 Appendix 15-1: Greenhouse Gas Emissions Assessment [EN010141/DR/6.2]** has been expanded to include energy consumption from the provision of clean water and treatment of wastewater.
Planning Inspectorate	ID 3.9.12: The ES should consider how other developments cumulatively may affect the vulnerability of the Scheme to climate change e.g. any changes in flood flows, and cumulative GHG emissions/ savings. The Applicant should seek to agree the approach to the climate change cumulative	An assessment of cumulative effects is included at **ES Vol 1 Chapter 17: Cumulative and Intra Project Effects [EN010141/DR/6.1]** evaluates the combined effects of the Scheme and neighbouring projects on the environment. Climate change has not been assessed within **ES Vol 1 Chapter 17: Cumulative and Intra**

Consultee	Summary of Comments	Response
	effects assessment with relevant consultation bodies.	**Project Effects [EN010141/DR/6.1]** and this has been explained in section 15.12 in this chapter.
Anglian Water	Anglian Water now advise that new non household water supply requests (construction and operational phases) may be declined as these could compromise our regulatory priority of supplying existing and planned domestic growth. The flows needed to fill water storage tanks for example (in the event that the promoter decides not to use rainwater harvesting on site to meet this non potable demand) will need to be assessed by Anglian Water to advise whether a supply is feasible when assessed in terms of the potential to jeopardise domestic supply or at a significant financial or environmental cost. Our new position on non- household supply is due to our joint aim with the Environment Agency of reducing abstraction to protect sensitive environments. The promoter will need to submit a water resources assessment setting out a daily demand for each stage of the project and whether this is for domestic or non-domestic uses. Water use during construction means that the promoter will need to establish whether concrete production, for example, would be offsite or would need an on-site supply in order to assess the water supply options with Anglian Water.	Reference of this has been included within **ES Vol 2 Appendix 15-3: Climate Resilience Assessment [EN010141/DR/6.2]**.
Bedford Borough Council	BBC note that the Applicant's Scoping Report does not address where the infrastructure elements/ 'kit-of-parts' are to be manufactured (§13.5.2 'global suppliers') and decommissioned. We would suggest that the full life-cycle carbon footprint has to be assessed, including the manufacturing of components made internationally/ sub-regionally and shipped/ railed as freight into/ across the UK.	Scope of assessment for **ES Vol 2 Appendix 15-1: Greenhouse Gas Emissions Assessment [EN010141/DR/6.2]** has been expanded to include manufacturing of the components.

Consultee	Summary of Comments	Response
Bedford Borough Council	Our reading of Table 15.4 suggests that once all infrastructure elements have been installed/ constructed there will be no further need to replace these elements and hence Topics 9 (Raw materials) to 13 and 19 (on-site maintenance) have been scoped out. Over the intended operational period of 40-years these assumptions need to be questioned in light of continually changing technologies, etc. While the Applicant states that effects may be negligible, this is currently not known. Consequently, all topics hereby noted relating to operation (management and maintenance) should be scoped in.	Scope of assessment **for ES Vol 2 Appendix 15-1: Greenhouse Gas Emissions Assessment [EN010141/DR/6.2]** has been expanded to include energy consumption, material and waste generation from ongoing site maintenance.
Bedford Borough Council	(§14.5.9) Travel of workers: there will be '10-16 staff on-site at any one time', 'visitor trips per week', and (§14.5.10) trips associated with staff on-site movement and maintenance. BBC would wish to see this accounted for, however negligible, as currently the full extent of this activity could be more extensive in regard to the matters above.	Scope of assessment for **ES Vol 2 Appendix 15-1: Greenhouse Gas Emissions Assessment [EN010141/DR/6.2]** has been expanded to include travel of workers.
Cambridgeshire County Council	In paragraph 15.4.3, the Applicant states that their intention is to the average carbon intensity for current energy generation in the UK in order to calculate the carbon emissions displaced by the electricity generated at the Scheme. However, this method is not acceptable, because it does not take into account the predicted future decarbonisation of the UK electricity grid over the years that the Scheme would be operational. Therefore, that method would not provide a good estimate of the carbon emissions that would be displaced. It is not sufficient to carry out sensitivity analysis of future scenarios with a range of alternative electricity generation carbon intensities (although this would also be helpful as an additional point). Rather, the	The purpose of solar projects like the Scheme is to replace electricity generated from fossil fuels to facilitate government policy to achieve net zero. Therefore, the correct displacement factor is that associated with CCGT, which has been taken from the Fuel Mix Disclosure Table for 2024-2025. The DESNZ predicted carbon intensity of the grid includes the take up of solar – i.e. that associated with the Scheme. Using this as a comparator would assume that the grid would be decarbonised without the Scheme, even though the purpose of the Scheme is to assist with decarbonising the grid. Notwithstanding this position, a number of alternative baselines have been considered in this assessment.

Consultee	Summary of Comments	Response
	core case must be one that takes into account projected future decarbonisation over the years, as this must be regarded as the most likely scenario. Using the current year's carbon intensity to calculate future years displaced emissions is not suitable. Predictions of the carbon intensity of the UK electricity grid by year are readily available, published by the Department for Energy Security and Net Zero (DESNZ). Sensitivity analysis may consider the potential change to displaced emissions in the event that the UK electricity grid decarbonises faster or slower than predicted, but it will never be right to use a single carbon intensity for the many years of the full lifetime of the Scheme.	
Cambridgeshire County Council	The ES should consider land use and land use change in addition to the other sources of GHG emissions listed in paragraph 15.5.7.	Scope of assessment for the **ES Vol 2 Appendix 15-1: Greenhouse Gas Emissions Assessment [EN010141/DR/6.2]** has been expanded to include land use change.
Huntingdonshire District Council	The Scoping Report notes (§15.2.2) that indirect emissions from activities outside of the site will be considered, including embodied GHG emissions within the construction materials and the manufacturing of the equipment to be used for the proposal and proposes to Scope In 'Raw material extraction and manufacturing of products required for the Scheme and transportation of raw materials to the place of manufacturing' for the construction stage, 'Energy generated' for the operational stage and 'Transportation and disposal of waste materials' for the decommissioning stage. Whilst these points are supported in principle it is suggested that the scheme be assessed which reviews the full life-cycle carbon footprint for the scheme. The operational stage does not appear to consider any necessary replacements elements for the scheme; whilst it is	Replacement of equipment has been considered during the operational phase in **ES Vol 2 Appendix 15-1: Greenhouse Gas Emissions Assessment [EN010141/DR/6.2]**.

Consultee	Summary of Comments	Response
	acknowledged that the Scoping Report refers throughout to the detailed design being unknown at this stage, it is suggested that management and maintenance factors should be scoped in.	
Huntingdonshire District Council	Waste - The Scoping Report proposes to Scope Out a detailed waste assessment from the ES; this is supported in principle, however waste arising from the development and the wider decommissioning stage is considered relevant although this is to be covered within the scope of Chapter 15 and Climate Change.	This has been considered within the decommissioning section of **ES Vol 2 Appendix 15-1: Greenhouse Gas Emissions Assessment [EN010141/DR/6.2]**.

Statutory Consultation

15.3.3 Statutory consultation on the project took place between September 2024 and October 2024. This included consultation on the Preliminary Environmental Information Report (PEIR) which contained a preliminary assessment of climate change effects. The feedback received from statutory consultees is summarised within Table 15.4.

Table 15.4: PEIR consultation responses with respect to climate change

Consultee	Summary of Comments	Response
Cambridgeshire County Council	**Carbon emissions:** 1. The Host Authority agree that, for the purpose of the greenhouse gas (GHG) emissions assessment, it is reasonable to assume that the baseline GHG emissions for the Site, without the proposed development, would be zero. 2. The GHG emissions from the Construction Phase (2027 to 2030) are estimated at 330,882 tCO_2e; emissions during the Operational Phase (from 2030 to 2070) are estimated to be 282,378 tCO_2e; and 6,736 tCO_2e for Decommissioning Phase. The total project lifetime emissions are	Cambridgeshire County Council agree with approach used for the GHG Emissions Assessment within the PEIR. No changes to the approach have been made when producing **ES Vol 2 Appendix 15-1: Greenhouse Gas Emissions Assessment [EN010141/DR/6.2]**.

Consultee	Summary of Comments	Response
	therefore estimated by the Promotor at 619,996 tCO_2e; a very large source of emissions. The vast majority of these GHG emissions in all phases are from embodied carbon in the equipment and materials – from raw materials extraction and manufacturing. 3. It is helpful to consider the local carbon budgets in 15.6.15 and 15.8.10 as well as the national carbon budgets. Overall, the Development is a small proportion of local carbon budgets, except for the Decommissioning Phase. 4. Whilst it is true that the purpose of solar schemes such as this one is to displace fossil fuel electricity generation, it is helpful to recognise that the UK grid mix will change over time, therefore it is welcomed that sensitivity analysis has considered other comparators. It cannot be assumed that the Development will only ever displace gas-fired power stations, for its entire lifetime. 5. For most types of developments, it is suggested that the long-run marginal emissions factors from DESNZ's Green Book supplementary guidance are the most appropriate comparator (15.8.16). However, it is recognised that the forecast grid decarbonisation over time will only occur if more renewables projects are implemented. This results in a 'Catch-22' situation for the purposes of assessing GHG emissions from such Development. 6. It is noted that the Development is expected to produce 15,980,748 MWh electricity for export to the national grid over its 40-year lifetime (assuming current technology) 7. The lifetime carbon intensity ($38.8gCO_2e/kWh$) is also a useful figure, and the Host Authorities recognise that this is far lower than most other forms of electricity generation, other than wind (Table 15.18). 8. Overall, the Host Authorities would agree that the Development is likely to have a significant beneficial effect on GHG emissions. 9. However, the Host Authorities would disagree with the statement that 'no additional mitigation is required'. Steps should be taken to minimise the GHG emissions, especially from embodied carbon, through the detailed design process. **Climate resilience:**	Cambridgeshire County Council mostly agree with the conclusions of GHG Emissions Assessment within the PEIR. However, Cambridgeshire County Council disagree with the statement that 'no additional mitigation is required'. Measures been recommended this chapter in section 15.9 to minimise the GHG emissions, especially from embodied carbon, through the detailed design process. Cambridgeshire County Council agree with Climate Resilience Assessment within the PEIR. No changes have been made when producing **ES Vol 2 Appendix 15-3: Climate Resilience Assessment [EN010141/DR/6.2]**.

Consultee	Summary of Comments	Response
	The assessment of resilience appears adequate. The Council have no further comments to add at this stage.	
Bedford Borough Council	In terms of GHG emissions, it is noted that: a) The figures tabled excludes the Operational Phase – Replacement activity which could generate a similar GHG emission as that of the Construction Phase. b) 15.4.3 The GHG emissions in all phases are from embodied carbon in the equipment and materials – from raw materials extraction and manufacturing. The Promotor notes that this includes the manufacture of solar arrays and BESS batteries overseas and then the international and national logistics to bring such completed elements to site during the Construction Phase. This is noted as a 'conservative estimate'. Bedford Borough Council note that these figures do not include the Operational Phase –Replacement of such elements (refer to Table 15.6 in this regard). c) Bedford Borough Council are not in agreement that Table 15.6 'Transportation and disposal of waste materials' is not scoped in in all phases (refer to PINS comments in Table 15.7 (8)). d) 5.4.6 'Emissions from the decommissioning process at the end of the design life are very difficult to estimate due to the substantial uncertainty surrounding decommissioning methodologies and approaches so far into the future. It has been assumed that the resources and effort required for decommissioning will be equivalent to those required for construction'. It is suggested that the related GHG emissions figures for these two Phase as tabled are not reflective of this statement (Table 15.12) or requires clarification. e) Bedford Borough Council would suggest that the Promotor models the volume of toxic fumes created by a potential BESS fire as a worst-case scenario in terms of GHG emissions.	a-c) Replacement of batteries, transformers, inverters, and solar panels was included in the operational phase of the GHG Emissions Assessment submitted as part of the PEIR. Replacement of batteries, transformers, inverters, solar panels and fencing has been included in **ES Vol 2 Appendix 15-1: Greenhouse Gas Emissions Assessment [EN010141/DR/6.2]**. Clarity within Table 15.8 (previously Table 15.6) in **ES Vol 1 Chapter 15: Climate Change [EN010141/DR/6.1]** has been improved to clearly define the scope of the assessment. d) It was assumed in the GHG Emissions Assessment submitted as part of the PEIR that the on-site decommissioning activities will be equivalent to those required for construction. This includes the GHG emissions from plant vehicles and generators, provision of clean water, and the treatment of wastewater. No changes have been made in the production of **ES Vol 2 Appendix 15-1: Greenhouse Gas Emissions Assessment [EN010141/DR/6.2]**. Clarity within **ES Vol 1 Chapter 15: Climate Change [EN010141/DR/6.1]** has

Consultee	Summary of Comments	Response
		been improved to clearly show this. No changes were required to be made to Table 15.13 (previously Table 15.12). e) This type of modelling is not typically undertaken in the industry. The modelling would be highly complex and likely to be of questionable reliability given that the volume and composition of gasses produced during thermal runaway are dependent on specific manufacturer cell chemistry (which is proprietary and varies between manufacturers), extent of the simulated event and state of charge at the time of an event. It is noted that a planning requirement for the assessment of the GHG emissions produced by the catastrophic loss of any plant or construction is exceptional, especially given that BESS fires are very rare. Bedford Borough Council have made no comment on the Climate Resilience Assessment within the PEIR. No changes have been made when producing **ES Vol 2 Appendix 15-3: Climate Resilience Assessment [EN010141/DR/6.2]**.

15.4 Assessment Methodology

15.4.1 The methodologies described in the following section have been developed in line with the relevant planning policy and the ISEP guidance. Full details of the assessment methodologies are set out below and within **ES Vol 2 Appendix 15-1: Greenhouse Gas Emissions Assessment [EN010141/DR/6.2]**, **ES Vol 2 Appendix 15-2: Baseline Climate [EN010141/DR/6.2]**, and **ES Vol 2 Appendix 15-3: Climate Resilience Assessment [EN010141/DR/6.2]**.

Climate Resilience Assessment

Study Area

15.4.2 For the climate change resilience assessment, the sensitive receptors within the Scheme, during construction, operation and decommissioning, are considered. Therefore, the study area is the Order Limits as described in **ES Volume 1 Chapter 2: The Scheme [EN010141/DR/6.1]**.

Scope of Assessment

15.4.3 The scope of the climate resilience assessment in accordance with the scoping opinion is provided in Table 15.5:

Table 15.5 – Topics scoped in and out of the Climate Resilience Assessment

Topic	Construction	Operation	Decommissioning
Increase in winter precipitation	Scoped In	Scoped In	Scoped In
Decrease in summer precipitation	Scoped Out	Scoped In	Scoped Out
Increased frequency and magnitude of storms	Scoped Out	Scoped In	Scoped Out
Increase in summer temperatures	Scoped Out	Scoped In	Scoped Out
Changes in cloud cover	Scoped Out	Scoped In	Scoped Out

Topic	Construction	Operation	Decommissioning
Sea level rise	Scoped Out	Scoped Out	Scoped Out
Changes to snow and ice	Scoped Out	Scoped Out	Scoped Out

15.4.4 As set out in the scoping report, climate change is unlikely to impact upon the construction phase of the Scheme given that, if consented, construction would occur in the near future when the climatic conditions are well understood and would be accounted for in the construction practices. Weather conditions would have the greatest effect on the construction phase and measures to minimise the effects are set out in the **outline Construction and Environmental Management Plan [EN010141/DR/7.3]**. Similarly, measures to minimise the effects during the decommissioning phase have been included in the **outline Decommissioning Environmental Management Plan [EN010141/DR/7.5]**. The final CEMP and DEMP would be prepared in advance of the respective works phases for approval by the Local Planning Authority and are secured through a DCO Requirement.

15.4.5 Despite this, an increase in winter precipitation has been included for the construction and decommissioning phases at the request of the consultees as increased winter precipitation has the potential to cause waterlogged and muddy fields which could have an impact on the ability to construct or decommission the Scheme.

Methodology

15.4.6 The assessment of the resilience of the Scheme to climate change has been undertaken in line with the ISEP Climate Change Resilience Guidance. This includes quantifying the current and future baseline climate, identifying receptors sensitive to the projected changes to climate and their level of sensitivity, determining the magnitude of effects, and the significance of any effects.

15.4.7 In order to determine the existing baseline climate, climate averages from the period 1991-2020 have been sourced from the nearest meteorological site to the Scheme (Bedford) and Met Office UK regional climate summary (Southern England) from the same time period, as published on the Met Office website.

15.4.8 The future baseline has been defined using UK Climate Projections 2018 ('UKCP18'). UKCP18 are a set of climate projections and tools to access climate data. The data used within this assessment has been extracted from the UKCP18 key results. The identified changes have then been applied to the current baseline climate conditions to give a prediction of the local future climate conditions.

15.4.9 The existing and future baseline climates have been outlined in **ES Vol 2 Appendix 15-2: Baseline Climate [EN010141/DR/6.2]**.

15.4.10 The climate resilience assessment systematically describes how each receptor could be impacted by the effects of the projected changes to climate change that have been scoped into the climate resilience assessment. This has been outlined in **ES Vol 2 Appendix 15-3: Climate Resilience Assessment [EN010141/DR/6.2]**.

Assessment of Significance

15.4.11 For each receptor, the significance of each predicted effect of climate change has been assessed. This has considered the sensitivity of the receptor and the magnitude of effect.

15.4.12 As per the ISEP Climate Change Resilience Guidance, the sensitivity of a receptor is *"the degree of response of a receiver to a change and its capacity to accommodate and recover from a change if it were to be affected"*[15]. The sensitivity of the receptor should account for the susceptibility, vulnerability, and the value / importance of the receptor.

- susceptibility is defined as "*the ability of the receptor to be affected by a change*" [15];
- vulnerability is defined as "*the potential exposure of the receptor to a change*" [15] which is the inverse of resilience; and
- Receptors are defined as *"elements of the project relevant to the location, nature and scale of the development"* [15].

15.4.13 Resilience is the measure of the ability of a receptor to respond to changes in experiences. If a receptor or a project has good climate change resilience, it is able to respond to the changes in climate in a way that ensures it retains much of its original function and form. A receptor or project that has poor climate change resilience will lose much of its original function or form as the climate changes.

15.4.14 The scale of the susceptibility and vulnerability has been determined using the ISEP Climate Change Resilience Guidance as set out in Table 15.6.

Table 15.6 – Climate Change Receptors – Susceptibility and Vulnerability Scale

Scale	Susceptibility	Vulnerability
High	Receptor has no ability to withstand / not be substantially altered by the projected changes to the existing / prevailing climatic factors (e.g. lose much of its original function and form).	Receptor is directly dependent on existing / prevailing climatic factors and reliant on these specific existing climate conditions continuing in future (e.g. river flows and groundwater level) or only able to tolerate a very limited variation in climate conditions
Moderate	Receptor has some limited ability to withstand / not be altered by the projected changes to the existing / prevailing climatic conditions (e.g. retain elements of its original function and form).	Receptor is dependent on some climatic factors but able to tolerate a range of conditions (e.g. a species which has a wide geographic range across the entire UK but is not found in southern Spain).
Low	Receptor has the ability to withstand / not be altered much by the projected changes to the existing/prevailing climatic factors (e.g. retain much of its original function and form).	Climatic factors have little influence on the receptors (consider whether it is justifiable to assess such receptors further within the context of EIA – i.e. it is likely that such issues should have been excluded through the EIA scoping process).

15.4.15 In addition to the susceptibility and vulnerability, the value/importance of the receptor has been used to reach a reasoned conclusion on sensitivity using professional judgement. The greater the susceptibility, and/or vulnerability of the receptor, the greater the likelihood that the receptor would also be of higher sensitivity. For instance, a high-value receptor that has very little resilience to change in climate is considered to be more likely to have a higher sensitivity than a high-value receptor that is very resilient to changes in climate. The sensitivity of the receptor to the effect of climate change has been deemed to be low, medium or high. These descriptors have been determined based on professional judgement and are in line with the following examples:

15.4.16 The sensitivity of a receptor to the impacts from fluvial flooding could be described as 'low' under the following scenario:

- The value of the receptor is low – such as an unused non-Best and Most Versatile (BMV) agricultural field;
- The vulnerability is low – as it does not lie within the flood plain so is unlikely to be impacted by fluvial flooding associated with increased rainfall as a result of climate change; and
- The susceptibility is low – as the receptor would have the ability to return to its previous use as the event would only cause temporary loss of use of the field, and damages would be limited.

15.4.17 The sensitivity of a receptor to the impacts from fluvial flooding could be described as 'high' under the following scenario:

- The value of the receptor is high – such as a residential property;
- The vulnerability is high – as it lies within the flood plain and is likely to be impacted by fluvial flooding associated with increased rainfall as a result of climate change; and
- The susceptibility is high – as there are no flood defences or on-site mitigation measures and therefore no ability to withstand fluvial flooding.

15.4.18 The sensitivity of a receptor to the impacts from fluvial flooding could be described as 'medium' under the following scenario:

- The value of the receptor is high – such as a residential property;
- The vulnerability is high – as it lies within the flood plain and is likely to be impacted by fluvial flooding associated with increased rainfall as a result of climate change; and
- The susceptibility is low – as there are effective mitigation measures in place such as flood defences which would allow the property to withstand the projected increases in rainfall and associated fluvial flooding events.

15.4.19 For each receptor and each identified change in climate, the magnitude of effect has been determined. The magnitude is "*the degree of a change from the relevant baseline conditions which derives from the construction and operation of a development*"[15]. This is based on a combination of:

- *"Probability, which would take into account the chance of the effect occurring over the lifespan of the development, if the risk is not mitigated; and*
- *Consequence, which would reflect the scale or complexity of the effect, considering degree of harm, duration, frequency and reversibility of effect".*

15.4.20 A combination of probability and consequence has been used to reach a reasoned conclusion on the magnitude of effect using professional judgement. Where a probability and / or consequence of the effect is high then the magnitude of effect would also be high. Descriptors of negligible, small, medium and large have been used to define the magnitude of effect in line with the following examples in relation to fluvial flooding:

- A negligible magnitude of change may be used to describe a scenario where there is a low probability of a fluvial flooding occurring, if the receptor is not within or close to a flood zone, and the consequence of flooding is low, for example the damage caused by fluvial flooding of a non-BMV agricultural field is minimal and reversible;

- A small magnitude of change may be used to describe a scenario where there is a low probability of a fluvial flood occurring, i.e. the receptor is not within a flood zone, but there is a higher consequence of risk, for example a residential property may undergo a small amount of damage. A small magnitude of change could also be used to describe a scenario where there is a high probability of fluvial flooding, but the consequence is low, for example the damage caused by flooding of a non-BMV agricultural field is minimal and reversible;
- A medium magnitude of change may be used to describe a scenario where there is some probability of a fluvial flood event occurring, if the receptor is within a flood zone, and there is some consequence to a flood, for example a residential property may undergo some amount of damage; and
- A large magnitude of change may be used to describe a scenario where there is a high probability of a fluvial flood event occurring, if the receptor is within a flood zone particularly close to a river, and there is a likely consequence to a flood, for example a residential property may undergo significant damage.

15.4.21 The significance of effect is then determined, taking into account the sensitivity for each receptor and the magnitude for each climate change effect using professional judgement. Table 15.7 provides an example of how the sensitivity of receptor and magnitude of effect can be used to determine the significance of the effect.

Table 15.7 – Climate change receptors – Significance of effect

Sensitivity of receptor	**Magnitude of effect descriptors**			
	Negligible	**Small**	**Medium**	**Large**
Low	Negligible	Negligible	Negligible	Slight
Medium	Slight	Slight	Moderate	**Substantial**

Sensitivity of receptor	Magnitude of effect descriptors			
	Negligible	**Small**	**Medium**	**Large**
High	Moderate	Moderate	**Substantial**	**Substantial**

15.4.22 Where the effect is defined as “Substantial”, the effect is considered significant in terms of EIA. Effects determined as “moderate” and below will not be considered significant in terms of EIA. Professional judgment is used in determining whether an effect is significant, and this is consistent with the other chapters in the ES.

GHG Assessment

Study Area

15.4.23 The GHG emissions assessment is not restricted by geographical area but instead includes any increase or decrease in GHG emissions as a result of the Scheme, wherever that may be.

Scope of Assessment

15.4.24 The impact of GHG emissions is on a global scale rather than affecting one localised area. Therefore, all GHG emissions arising over the course of the Scheme have been assessed within the GHG Assessment. Direct emissions from activities taking place within the Order Limits, indirect emissions from activities outside the Order Limits in support of the Scheme, and embodied carbon within construction materials are all considered as part of the study area for the GHG assessment.

15.4.25 The scope of the GHG emissions assessment, in accordance with the scoping opinion, is provided in Table 15.8:

Table 15.8 – Topics scoped into the GHG Assessment

Phase	Topic scoped in
Construction	Embodied GHG emissions associated with raw material extraction and manufacturing of products required for the Scheme and transportation of raw materials to the place of manufacturing
	Transportation of manufactured equipment and materials to the Scheme
	Transportation of construction materials (where not included in the embodied emissions)
	Plant vehicles and generators
	Provision of clean water and treatment of wastewater
	Travel of workers
Operation	Provision of clean water and treatment of wastewater
	Leakage of GHGs
	Energy generated
	Travel of workers
	Energy consumption, material and waste generation from ongoing Site maintenance
Decommissioning	Plant vehicles and generators
	Provision of clean water and treatment of wastewater
	Transportation and disposal of waste materials
	Travel of workers
Whole lifetime	Land use change (including loss of peat)

Methodology

15.4.26 The ISEP GHG Guidance acknowledges that there are many different methods available for measuring and quantifying GHG emissions. However, the guidance provides a framework of six steps that have been incorporated into the assessment, as follows:

- **Set the scope and boundaries of the assessment**. These include system boundaries and temporal boundaries.
- **Develop the baseline**. This includes the current, future and alternative baselines.
- **Decide upon the assessment methodologies**. The methodology should result in a relevant, complete, consistent, transparent and accurate assessment of the reasonable worst case.
- **Data collection**. Project activity data and GHG emissions factors should be collated.
- **Calculate the GHG emissions inventory**. Although the quantification of GHG emissions for an EIA may vary in methodology and approach between projects, it is expected that in almost all cases, a calculated (not measured) approach is taken because these are completed in advance of a project commencing development. It is recommended that the following structure should be used to calculate GHG emissions: GHG emission/removal = GHG emission factor × activity data. Both annual and lifetime GHG emissions should be calculated and reported. In addition, as part of this inventory, uncertainty should be considered.
- **Mitigation opportunities**. Once the magnitude of emissions has been determined, mitigation measures should be proposed.

15.4.27 The approach to assessing emissions follows the different stages of the Scheme i.e. the construction phase, operational phase and decommissioning phase.

15.4.28 The Applicant has provided data and information that underpins the lifecycle GHG impact assessment, which has been evaluated using the methodology and emission factors have been used from appropriate sources. The sources of the data used have been referenced within **ES Vol 2 Appendix 15-1: GHG Assessment [EN010141/DR/6.2]**.

Assessment of Significance

15.4.29 In terms of significance, the ISEP GHG Guidance states that:

> *"When evaluating significance, all new GHG emissions contribute to a negative environmental impact; however; some projects will replace existing development or baseline activity that has a higher GHG profile. The significance of a project's emissions should therefore be based on its net impact over its life time, which may be positive, negative or negligible".*

15.4.30 The key goal of EIA is "*to inform the decision maker about the relative severity of environmental effects such that they can be weighed in a planning balance*". Therefore, it is essential to provide context for the magnitude of GHG emissions.

15.4.31 The crux of a significant effect occurring is not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a science-based 1.5°C transition towards net zero which the UK government has committed to achieve by 2050. The ISEP GHG Guidance sets out the significance criteria as 'major adverse', 'moderate adverse', 'minor adverse', 'negligible', and 'beneficial', with examples to distinguish significance listed as follows:

- **Major adverse**: the project's GHG impacts are not mitigated or are only compliant with do-minimum standards set through regulation, and do not provide further reductions required by existing local and national policy for projects of this type. A project with major adverse effects is locking in emissions and does not make a meaningful contribution to the UK's trajectory towards net zero.
- **Moderate adverse**: the project's GHG impacts are partially mitigated and may partially meet the applicable existing and emerging policy requirements but would not fully contribute to decarbonisation in line with

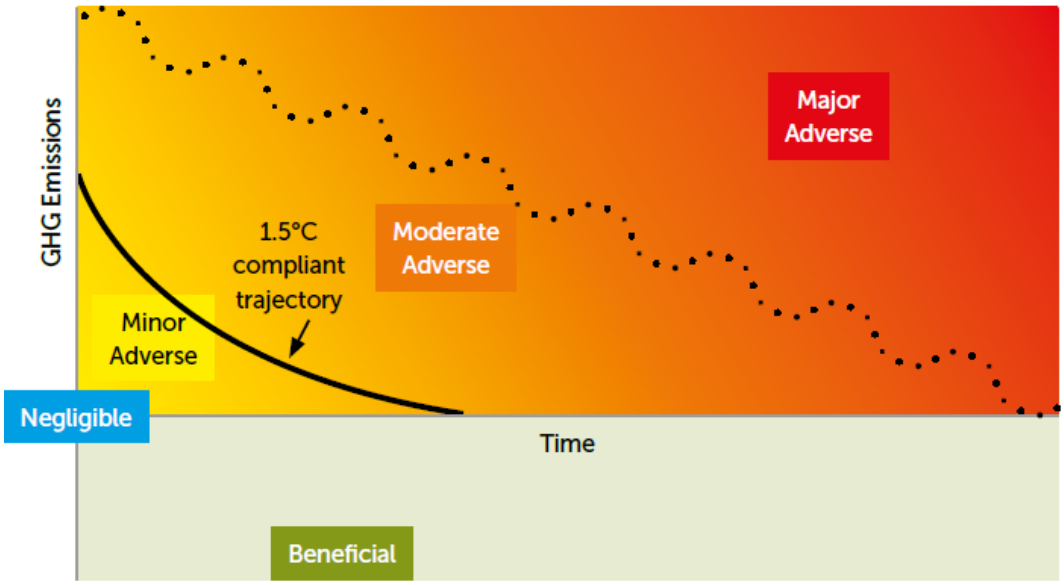
local and national policy goals for projects of this type. A project with moderate adverse effects falls short of fully contributing to the UK's trajectory towards net zero.

- **Minor adverse**: the project's GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. A project with minor adverse effects is fully in line with measures necessary to achieve the UK's trajectory towards net zero.
- **Negligible**: the project's GHG impacts would be reduced through measures that go well beyond existing and emerging policy and design standards for projects of this type, such that radical decarbonisation or net zero is achieved well before 2050. A project with negligible effects provides GHG performance that is well 'ahead of the curve' for the trajectory towards net zero and has minimal residual emissions.
- **Beneficial:** the project's net GHG impacts are below zero and it causes a reduction in atmospheric GHG concentration, whether directly or indirectly, compared to the without-project baseline. A project with beneficial effects substantially exceeds net zero requirements with a positive climate impact.

15.4.32 Major or moderate adverse effects and beneficial effects are considered to be significant. Minor adverse and negligible effects are not considered to be significant.

15.4.33 Accordingly, an assessment of the contribution of the Scheme towards the net zero trajectory (in accordance with the budgeted, science based 1.5 °C trajectory) and the significance of the contribution has been undertaken and presented within this assessment. Plate 15.1 is displayed in the ISEP GHG Guidance as a visualisation of how to determine the significance of the GHG emissions from the Scheme in the context of the net zero trajectory.

Plate 15.1 – Net zero trajectory context from ISEP GHG Guidance.



15.4.34 The ISEP GHG Guidance states that: *"a modification to this approach is required for the very largest-scale developments, those that in themselves have magnitudes of GHG emissions that materially affect the UK's or a devolved administration's total carbon budget. An indicative threshold of 5% of the UK or devolved administration carbon budget in the applicable time period is proposed, at which the magnitude of GHG emissions irrespective of any reductions is likely to be significant".* This approach has also been considered within this assessment, in addition to the previously described approach to determining likely significant effects.

15.4.35 The ISEP GHG Guidance sets out 'good practice' approaches to contextualising a projects carbon emissions by comparing to sector-based, local, and / or national carbon budgets, policy goals and / or performance standards.

15.4.36 Based on this the emissions associated with the Scheme have been compared to the fourth, fifth, sixth and seventh UK carbon budgets for the periods 2023-2027, 2028-2032, 2033-2037, and 2038-2042 respectively. It must be noted the seventh carbon budget has been recommended by the CCC but has not yet been legislated. Although the seventh carbon budget

only reaches to 2042, future continuation in the reduction of these budgets is expected in order to reach net zero by 2050.

15.4.37 Whilst not required by law (as set out in case law), the emissions associated with the Scheme have also been compared to the local carbon budget using the Tyndall Carbon Budget Tool[16] up to 2042 to align with the UK carbon budget comparison. The Tyndall Carbon Budget Tool generates reports that recommended climate change commitments for UK local authority areas that are aligned with the commitments in the United Nations Paris Agreement, informed by the latest science on climate change and defined by science-based carbon budget setting.

15.5 Assumptions and Limitations

Climate Resilience Assessment

15.5.1 The current climate baseline at the Site has been determined based on Met Office historical climate averages data from the period 1991-2020, from the closest meteorological station with this historical data, Bedford (approximately 6 km to the south west of the Site in a straight line) and Met Office UK regional climate summaries from the same time period for Eastern England[17] and the Midlands[18] (the Site is located within the Eastern England region but as the Site is close to the western boundary of the region, the Midlands region has also been summarised). The future baseline has been calculated by taking the UKCP18 regional profiles. The UKCP18 regional profiles are based on the UK administrative regions and therefore, vary slightly from the Met office regional profiles. Within the Met office regional profiles, the Site falls just within Eastern England; however, within the UK administrative regions, the Site falls within the East of England. Therefore, some of the results may be slight over or under estimations. Nevertheless, they offer an estimate sufficient for this assessment.

15.5.2 There may be some uncertainty over the climate change projections. Being projections, they are in their nature not definite. However, they have been taken from UKCP18[19], which provides the most up to date assessment of how the UK climate may change in the future and are supported by the Department for Energy Security and Net Zero (DESNZ) and the Department for Environment Food and Rural Affairs (Defra). This assessment has used projections for 2060-2079 for a 'high emissions scenario' (RCP8.5). This is considered to be conservative as it is based on a significant increase in coal use across the world but is recommended for use by ISEP unless a case can be made for using a different, lower emission scenario. In UKCP18, the probabilistic projections provide local low, central and high changes across the UK, corresponding to 10%, 50% and 90% probability levels. This assessment has used the central estimate, which is considered to be the level

at which as much evidence points to a lower outcome as a higher one. However, any under or over estimations will not impact the outcome of the assessment, as significance assumptions have been based on the impacts which climate changes cause (i.e. an increase in temperature, not an increase in temperature of X°C), for which small differences in the magnitude of change will not influence.

GHG Assessment

15.5.3 The largest single source of GHG emissions from the Scheme is likely to result from the manufacture and transport of the equipment. The equipment manufacturer has not been confirmed and therefore, for the purposes of estimating the GHG impact of the Scheme, a conservative estimate has been assumed that the solar modules, batteries, transformers and inverters will be sourced from China, and the cabling and mounting structure are sourced from Europe. This assumption is consistent with other large scale UK solar schemes. If these are sourced closer to the Scheme the emissions associated with the transportation of equipment will be lower.

15.5.4 The GHG emissions associated with the equipment (solar modules, transformers, inverters, batteries and fencing) has been factored into the replacement calculations within the operational stage of the GHG assessment. The emissions associated with replacement include those associated with the manufacture of the equipment, transport to the Scheme, and disposal and transport of waste materials (i.e. the swapped equipment). The replacement emissions due to the equipment life expectancy have been allocated to the year that each piece of equipment would be replaced based on the assumed life expectancy. The life expectancy of the equipment applied is conservative and is expected to be longer than applied. Therefore, the calculated GHG emissions associated with the replacement of equipment are conservative.

15.5.5 The construction and operational data used in the GHG assessment has been supplied by the Applicant. The embodied carbon factors used in **ES Vol 2**

Appendix 15-1: GHG Assessment [EN010141/DR/6.2] have come from reputable sources such as the Institute of Circular Ecology's Inventory of Carbon and Energy (ICE) Database[20], DESNZ's Greenhouse gas reporting conversion factors 2025[21] and recent academic papers where possible.

15.5.6 The UK government's policy is to decarbonise grid electricity. The previous government set a target to bring all GHG emissions to net zero by 2050, with all electricity to come from low carbon sources by 2035, and the incoming government's plan is that this is achieved by 2030. The purpose of the Scheme is to support these policies and to displace fossil-fuelled power stations. Therefore, for the purposes of this assessment, the benefits of the Scheme have been assessed using the current marginal technology (CCGT) as the comparator. It is considered that until such time that all unabated CCGT has been eradicated from the grid, this is an appropriate comparator. However, in recognition of recent SoS decisions (such as Gate Burton Solar, Net Zero Teeside and Heckington Fen Solar Park) which suggest that using unabated CCGT as a comparator was not viable, the assessment has also used the current grid mix as an alternative comparator to provide a range for the offset emissions.

15.5.7 Emissions from the decommissioning process at the end of the design life are very difficult to estimate due to the substantial uncertainty surrounding decommissioning methodologies and approaches so far into the future. It has been assumed that the on-site decommissioning emissions are the same as the on-site construction emissions (plant vehicles and generators, provision of clean water and treatment of wastewater, and travel of workers). This is considered to be a worst-case scenario, as future developments in methodologies and technological advances are likely to reduce the GHG impact of decommissioning. It is assumed that the land will be returned to its original land use (arable land) following decommissioning of the Scheme.

15.5.8 The GHG emissions associated with the decommissioning phase are uncertain. The GHG emissions associated with recycling and landfill of the

equipment have been taken as the current levels, but it is likely that these will reduce as energy decarbonises because energy emissions make up a great proportion of these GHG emissions.

15.6 Baseline Conditions

Climate Resilience Assessment

Current baseline

15.6.1 The current climate baseline at the Scheme has been determined based on Met Office historical climate averages data from the period 1991-2020, from the closest meteorological station with this historical data, Bedford (approximately 6 km to the south west of the Site in a straight line), and Met Office UK regional climate summaries from the same time period for Eastern England and the Midlands. The Site is located within the Eastern England region, however, as it is close to the western boundary of the region, the Midlands region has also been reviewed.

Full details of the baseline climate are provided in **ES Vol 2 Appendix 15-2: Climate Baseline [EN010141/DR/6.2]** and summarised in Table 15.9.

Future Baseline

15.6.2 The future baseline has been calculated by taking the UKCP18 predictions based on the predictions for the administrative area of the East of England. The predicted changes to baseline climate are detailed within **ES Vol 2 Appendix 15-2: Climate Baseline [EN010141/DR/6.2]**.

15.6.3 There are uncertainty and variability in projections but generally climate change is projected to lead to hotter summers and warmer winters, and generally wetter winters and drier summers. Projections indicate there will be an increase in near surface wind speeds over the UK and more significant impacts of wind will be experienced in the winter months, including an increase in frequency of winter storms.

15.6.4 A summary of the current and future baseline climate is provided in Table 15.9 applying the central estimate which is considered to be the level at which as much evidence points to a lower outcome as a higher one. The 10th and 90th

percentiles reflect the lowest and highest 10 % of the model runs – the value at which 10 % of the model runs fall at or below (10th percentile) or at and above (90th percentile) fall at or above. These have been considered where the direction of change is predicted to vary at each level.

Table 15.9: Future baseline climate conditions

Item	Units	Baseline (Bedford 1981-2010)	Predicted change (UKCP18)	Future baseline (At Bedford 2060-2079)
Central (50th percentile) estimate				
Mean annual temperatures	°C	10.4	+2.9	13.3
Mean winter temperatures	°C	4.6	+2.4	7.0
Mean summer temperatures	°C	16.5	+3.6	20.1
Mean in winter precipitation	mm	49.0	+15.0%	56.0
Mean summer precipitation	mm	53.0	-22.0%	41.0
Central (90th percentile) estimate				
Mean summer precipitation	mm	53.0	+9.0%	58.0
Central (90th percentile) estimate				
Mean summer precipitation	mm	49.0	-3.0%	48.0

GHG Assessment

15.6.5 The goal of establishing a baseline is being able to assess and report the net GHG emission associated with the Scheme.

15.6.6 The ISEP GHG Emissions Guidance defines the baseline as a reference point against which the impact of a project can be compared against (sometimes referred to as 'business as usual' or 'BaU', where assumptions are made on current and future GHG emissions). The baseline can be in the form of:

a) *"GHG emissions within the boundary of the GHG quantification but without the proposed project; or*

b) *GHG emissions arising from an alternative project design and/or BaU for a project of this type".*

15.6.7 Option a) has been chosen to establish the baseline for the purpose of this assessment.

Current baseline

15.6.8 The current baseline is a 'no-development' scenario whereby the Scheme is not implemented.

15.6.9 The current land use within the Site consists of arable land which undergoes farming practices necessitating machinery and fertilisers which releases GHGs into the atmosphere. However, carbon will be sequestered in the crops. The amount of GHGs released into the atmosphere is dependent on the soil, vegetation type present and the fuel use of vehicles and other agricultural machinery. For the purpose of the GHG assessment it is assumed that the baseline GHG emissions for the Site are zero. This is a conservative approach as any savings as a result of not using fertilisers on the land etc is not allowed for. A report from Natural England[22] (hereafter referred to as the 'Natural England Report 2021') shows that the net carbon flux for arable land use is +0.29 t CO_2e per hectare per year – i.e. there is a net burden in terms of GHG emissions.

15.6.10 The Scheme will export electricity which would otherwise need to be generated by other sources. Renewable energy generation sources (such as solar) currently displace baseload gas fired CCGT. In recognition of recent NSIP decisions, the assessment has also used the current grid mix as an alternative comparator to provide a range for the offset emissions.

Future Baseline

15.6.11 For the assessment, the future baseline is that the Scheme is not implemented and the Site will be continued to be used as arable land for the 40-year operational lifetime of the Scheme. It has been assumed the future baseline GHG emissions from the land use is zero. This is a conservative approach as any savings as a result of not using fertilisers on the land etc is not allowed for.

15.6.12 The Scheme will generate electricity which will offset the burden of producing electricity using other methods. Currently the electricity generated by solar displaces gas-fired power stations for which the displacement factor is 382 gCO_2e/kWh. It is acknowledged that the UK grid mix will change and decarbonise over time, but this will occur due to the Scheme and other low carbon energy projects being delivered. Therefore, it is considered reasonable to assess the benefits using the marginal technology at the current time (CCGT) as the comparator. However, in recognition of recent NSIP decisions, the assessment has also used the current grid mix as an alternative comparator to provide a range of offset emissions.

Carbon Budgets

15.6.13 The 'UK carbon budget' is a cap on the amount of GHGs which can be emitted in the UK over a five-year period. This reflects the UK government's commitments to net zero and as such are considered to be the future baseline GHG emissions for the UK. The carbon budgets for the UK are set out in Table 15.10.

Table 15.10: UK Carbon budgets

Item	Value ($MtCO_2e$)
UK carbon budget 2023 – 2027 (the fourth carbon budget)	1,950
UK carbon budget 2028 – 2032 (the fifth carbon budget)	1,725
UK carbon budget 2033 – 2037 (the sixth carbon budget)	965

Item	Value ($MtCO_2e$)
UK carbon budget 2038 – 2042 (the seventh carbon budget)	535

Source: Carbon Budget Order 2011, 2016 and 2021 and the CCC's report titled: 'The Seventh Carbon Budget: Advice for the UK Government"

15.6.14 The UK Carbon budgets have not yet been set beyond 2037. The next budget, the seventh carbon budget, covering the period 2038 to 2042, has been recommended by the CCC, but has not yet been legislated. The budgets will gradually reduce with the aim of achieving net zero by 2050.

15.6.15 The Tyndall Carbon Budget Tool presents recommended climate change commitments for UK local authority areas that are aligned with the commitments in the United Nations Paris Agreement. The carbon budgets for Bedford and Huntingdonshire are set out in Table 15.11.

Table 15.11 – Bedford and Huntingdonshire carbon budgets

Item	Value ($MtCO_2e$)
Bedford and Huntingdonshire carbon budget 2023 – 2027	4.2
Bedford and Huntingdonshire carbon budget 2028 – 2032	2.0
Bedford and Huntingdonshire carbon budget 2033 – 2037	0.9
Bedford and Huntingdonshire carbon budget 2038-2042	0.4

Source: The Tyndall Carbon Budget Tool for Bedford and Huntingdonshire.

15.7 Embedded Mitigation and Enhancement Measures

15.7.1 The assessment of effects takes into account any mitigation and design measures that have been specifically embedded into the Scheme to reduce environmental effects. They are assumed to be implemented and are therefore factored into the determination of residual significant effects.

15.7.2 The following mitigation measures have been incorporated into the design of the Scheme to mitigate the effects of climate change or are best practice measures. Note the following mitigation measures are not an exhaustive list.

Construction

15.7.3 The following best practice measures have been incorporated into the **oCEMP [EN010141/DR/7.3]**. Post-consent, this outline plan will be developed into a full plan which must be in substantial accordance with the outline, and the Scheme must be constructed in accordance with that detailed plan. This is secured via a Requirement of the draft DCO.

- Weather conditions will be monitored.
- Risk Assessment Method Statements (RAMS) will be used.
- Staff will all have the correct personal protective equipment (PPE), be trained in site health and safety and be informed about protecting themselves from the dehydration and the sun.
- Construction materials would be covered when stored.
- Pro-active planning would be undertaken that accounts for the possibility of extreme weather events, including the use of extreme weather alert systems.
- Health and safety plans developed for construction activities would be required to account for potential climate change impacts on workers, such as flooding and heatwaves. To include measures such as toolbox talks on training on dangers of extreme weather conditions.
- The Scheme would be designed, constructed, and operated in such a way as to minimise the creation of waste and maximise the use of alternative

materials with lower embodied GHGs, such as locally sourced products and materials with a higher recycled content where feasible.

- Suitable infrastructure and resources already available within the Site would be reused where possible to minimise the use of natural resources and unnecessary materials (e.g., reusing excavated soil for fill requirements).
- Recyclability would be increased by segregating construction waste to be re-used and recycled where reasonably practicable.
- The Considerate Constructors Scheme (CCS) would be adopted to assist in reducing pollution, including GHGs, from the Scheme by employing good industry practice measures such as optimising the use of resources and minimising carbon throughout the value chain.
- The Applicant has committed to exploring the provision of staff minibuses where appropriate during peak periods of construction activity.
- Vehicles would be switched off when not in use and construction vehicles would be checked to ensure they conform to current UK emissions standards.
- Regular planned maintenance of the construction plant and machinery would be carried out to optimise efficiency.
- Materials used in the construction would be selected to be resilient to expected climatic extremes with British Standards applicable for most materials to ensure that extreme climatic conditions are accounted for.

Operation

15.7.4 The following measures have been incorporated into **the oOEMP [EN010141/DR/7.5]**. Post-consent, this outline plan will be developed into a final plan which must be in substantial accordance with the outline, and the Scheme must be constructed in accordance with that detailed plan. This is secured via a Requirement of the draft DCO.

- The equipment will be resilient to expected climatic extremes with British Standards applicable for most materials to ensure that extreme climatic conditions are accounted for.
- The ventilation systems for the electrical systems are designed to withstand a range of temperatures greater than the currently experienced temperatures to account for climate change.

15.7.5 The Applicant is proposing rainwater harvesting tanks within East Park Site D at the East Park substation and the storage, operations and maintenance building. The roofs of these buildings are likely to cover a large area, with an estimate (as set out under Design Principle 1.3 of Section 5 of the Design Approach Document [EN010141/DR/5.7]) that in an average year the total rainfall that could potentially be captured by the roofs would be up to 1,116,130 litres. Utilising a proportion of this harvested rainwater would reduce demand on mains water supply, providing greater resilience for future changes in climate during times of drought.

15.7.6 **ES Vol 2 Appendix 8-1: Flood Risk Assessment [EN010141/DR/6.2]** has outlined the following mitigation measures in respect to climate change.

- Though very small areas of the Site within the Scheme Boundary are located within fluvial Flood Zones 2 and 3, all infrastructure is located in areas at the lowest possible risk of fluvial flooding, i.e., in Flood Zone 1.
- Small areas of solar panels are within pluvial flood zones according to national scale pluvial flood mapping. However, it is proposed that all panels are elevated above predicted flood levels on piled supports.
- The solar panels will be fixed at an angle with a maximum height of 3m and a minimum height of 0.8m above existing ground levels along the top (northern) edge and along the bottom (southern) edge of the array, respectively. This will allow surface water to flow under the panels similar to pre-development/baseline conditions.
- Vegetation cover will be retained for as long as possible and track construction phased to minimise the potential for soil stripping.

- Temporary drainage pathways will be established to direct surface water away from at risk areas and towards the SuDS and surface water drainage network via sediment controls.
- The battery storage units in the BESS compound will be protected against the existing pluvial flood risk by means of the bunding at the perimeter of the compound.
- The existing design specifications at Eaton Socon Substation means the probability of failure is minimal.

Decommissioning

15.7.7 Measures to minimise the effects at the decommissioning phase are likely to be similar to those described for the construction phase and are included in the **oDEMP [EN010141/DR/7.6]**. A final DEMP would be produced by the selected contractors that would decommission the Scheme. This is secured via a Requirement of the DCO and would be prepared prior to the start of decommissioning. The DEMP would be in substantial accordance with the **oDEMP [EN010141/DR/7.6]**.

15.8 Assessment of Likely Impacts and Effects

Climate Resilience Assessment

15.8.1 The resilience to climate change has been assessed for the following vulnerable receptors during the operational phase of the Scheme:

- Operational equipment (solar modules, BESS, transformers, inverters, substation, and cabling)
- Vehicular access to Site; and
- On-site workers.

15.8.2 This has considered the following projected changes to climate as identified in **ES Vol 2 Appendix 15-3: Climate Resilience Assessment [EN010141/DR/6.2]**:

- Increased winter precipitation;
- Decreased summer precipitation;
- Increase in temperatures;
- Increased frequency and magnitude of storms; and
- Changes in cloud cover.

15.8.3 Full details of the assessment for each receptor can be found in **ES Vol 2 Appendix 15-3: Climate Resilience Assessment [EN010141/DR/6.2]**. For each receptor and climate change effect the following has been provided:

- a description of how the projected change in climate could affect the receptor;
- the sensitivity of the receptor to the effect taking into account the value, susceptibility and vulnerability;
- the magnitude of the impact taking into account the probability of the projected change in climate, and the consequence taking account of any mitigation measures in place; and
- the resultant significance of the effect.

15.8.4 A summary of this analysis is provided in Table 15.12, which takes into account the embedded mitigation set out in section 15.7.

Table 15.12 – Summary of climate resilience assessment

Predicted change in climate	Effect	Value	Vulnerability	Susceptibility	Sensitivity	Probability	Magnitude of effect	Overall Significance
Increased winter precipitation resulting in increased flooding								
Operational equipment	Flood damage to operational equipment	High	High	Low	**Medium**	Low	**Small**	**Slight – Not significant**
Vehicular access to Scheme	Flood damage resulting in disruption to access	High	Moderate	Low	**Medium**	Medium	**Small**	**Slight – Not significant**
On-site workers	Not likely to affect receptor	-	-	-	**-**	-	**-**	**-**
Decreased summer precipitation resulting in water shortages								
Operational equipment	Loss of water supply impacting upon operations and safety	High	Low	Low	**Low**	Low	**Small**	**Negligible – Not significant**
Vehicular access to Scheme	Not likely to affect receptor	-	-	-	**-**	-	**-**	**-**
On-site workers	Not likely to affect receptor, water supplier includes mitigation to ensure a supply for welfare facilities	-	-	-	**-**	-	**-**	**-**
Increase in temperatures								

Predicted change in climate	Effect	Value	Vulnerability	Susceptibility	Sensitivity	Probability	Magnitude of effect	Overall Significance
Operational equipment	Damage to equipment	High	Moderate	Low	**Low**	Low	**Small**	**Negligible – Not significant**
Vehicular access to Scheme	Not likely to affect receptor	-	-	-	**-**	-	**-**	**-**
On-site workers	Dangerous working conditions	High	Moderate	Low	**Medium**	Medium	**Small**	**Slight – Not significant**
Increased frequency and magnitude of storms								
Operational equipment	Damage to equipment	High	Moderate	Low	**Medium**	Low	**Small**	**Slight – Not significant**
Vehicular access to Scheme	Fallen trees resulting in disruption to access	High	Moderate	Low	**Medium**	Medium	**Small**	**Slight – Not significant**
On-site workers	Increased risk of hazards and dangerous working conditions	High	Moderate	Low	**Medium**	Low	**Small**	**Slight – Not significant**
Changes in cloud cover resulting in increased solar radiation and increased temperatures								
Operational equipment	Damage to equipment	High	Moderate	Low	**Medium**	Medium	**Small**	**Slight – Not significant**
Vehicular access to Scheme	Not likely to affect receptor	-	-	-	**-**	-	**-**	**-**

Predicted change in climate	Effect	Value	Vulnerability	Susceptibility	Sensitivity	Probability	Magnitude of effect	Overall Significance
On-site workers	Dangerous working conditions	High	Moderate	Low	**Medium**	Medium	**Small**	**Slight – Not significant**

15.8.5 The construction and decommissioning phase have been scoped out for most of the climate change effects. Climate change is unlikely to impact upon the construction and decommissioning phase as they would occur over a relatively short period where conditions will be known, and the working practices can be adapted to ensure that the effect of any changes in climate can be accounted for during the decommissioning phase.

15.8.6 Weather conditions would have the greatest effect on the construction and decommissioning phases. However, it has been requested that increased precipitation during the construction and decommissioning phase is considered. Increased precipitation can lead to flooded and waterlogged ground conditions which can make construction difficult and potentially impact upon worker safety. However, the **oCEMP [EN010141/DR/7.3]** and **oDEMP [EN010141/DR/7.6]** outline best practice measures which would be in place to minimise any risk to workers. With the implementation of these measures, the effect is deemed to be negligible.

15.8.7 This analysis shows that the overall effect of climate change is negligible to slight, which is not significant. Therefore, it is considered that the Scheme is resilient to the effects of climate change.

GHG Assessment

15.8.8 Full details of the inputs into the GHG emissions calculation can be found in **ES Vol 2 Appendix 15-1: Greenhouse Gas Emissions Assessment [EN010141/DR/6.2]**. The calculated GHG emissions over the lifetime of the Scheme are shown in Table 15.13.

Table 15.13 – GHG emissions over the lifetime of the Scheme

Source of GHG emissions	Value (tCO_2e)
Construction	

Source of GHG emissions	Value (tCO_2e)
1. Embodied within equipment and material - Raw material extraction and manufacturing of products required for the Scheme and transportation of raw materials to the place of manufacturing (including raw material extraction and manufacturing of products required for maintenance)	334,957
2. Transportation of equipment and construction materials to the Scheme (including transportation of products and construction materials required for maintenance)	21,021
3. Plant vehicles and generators	2,760
4. Provision of clean water and treatment of wastewater	3.7
5. Travel of construction workers	314
Total Construction Phase	**359,056**
Operation	
1. Provision of clean water and treatment of wastewater	6.0
2. Energy generated from the solar PV modules	-
3. Leakage of GHGs	-
4. Travel for workers	0.4
5. Replacement of equipment	
i) Embodied GHG emissions associated within the replacement of equipment	268,942
ii) Transportation of replacement equipment to Scheme	17,447
iii) Transportation of replaced equipment to recycling and disposal	4,382
iv) Disposal and recycling of relaced equipment	3,292
Total Operational Phase	**294,069**
Decommissioning	
1. Plant vehicles and generators	2,760
2. Provision of clean water and treatment of wastewater	3.7
3. Transportation of waste materials	6,120
4. Disposal of waste materials	3,592
5. Travel for workers	314

Source of GHG emissions	Value (tCO_2e)
Total Decommissioning Phase	**12,790**
Total lifetime emissions	**665,916**

15.8.9 As shown, the total emissions over the lifetime of the Scheme are predicted to be approximately 666,000 tCO_2e.

Carbon Budgets

15.8.10 The GHG emissions from the Scheme have been compared to the carbon budgets for the UK and for the combined budget of Bedford and Huntingdonshire. Table 15.14 provides a summary of the calculated direct GHG emissions for the Scheme in relation to combined budget of Bedford and Huntingdonshire and Table 15.15 provides a summary of the calculated GHG emissions for the Scheme in relation to the UK's carbon budgets. In both tables, the GHG emissions have been calculated for each budget period and compared to the budget. The budget periods cover the construction phase (2027-2030) and several years of the operational phase (2030-2070). This does not include any offset due to the displacement of alternative forms of electricity generation ring the operational phase. The decommissioning phase (2070-2072) has not been compared to a carbon budget as the carbon budgets have only been published up to 2042, so no carbon budgets are available.

Table 15.14 – Comparison of GHG emissions with the cumulative carbon budget of Bedford and Huntingdonshire

Budget period	Budget ($MtCO_2e$)	Calculated emissions associated with the Scheme in budget period	
		Emissions from Scheme (tCO_2e)	As % of budget
2023-2027	4.2	71,811	1.71%
2028-2032	2	287,245	14.4%
2033-2037	0.9	0.320	0.0000356%
2038-2042	0.4	0.320	0.0000800%
Note: 1 Mt = 1,000,000 tonnes			

Table 15.15 – Comparison of net GHG emissions with the UK's Carbon Budgets

Budget period	Budget ($MtCO_2e$)	Calculated net emissions associated with the Scheme in budget period	
		Emissions from Scheme (tCO_2e)	As % of budget
2023-2027	1,950	71,811	0.00368%
2028-2032	1,725	287,245	0.0167%
2033-2037	965	0.320	0.00000003%
2038-2042	535	0.320	0.00000006%
Note: 1 Mt = 1,000,000 tonnes			

15.8.11 As shown the Scheme makes up a very small contribution (0.00368%) of the UK carbon budget for 2023 to 2027 and 1.71% of the cumulative carbon budget of Bedford and Huntingdonshire, predominantly due to the embodied emissions during construction. Given that the Scheme is to provide low

carbon electricity to the UK and not just the local area it is considered more appropriate to compare the GHG emissions to the UK carbon budgets.

15.8.12 The above analysis does not consider that when operating (from 2030), i.e. following the first carbon budget (2023-2027), the Scheme will produce low carbon electricity which will offset alternative forms of electricity generation. Therefore, the Scheme will have beneficial impacts which have not been captured in the above analysis.

Offset GHG emissions

15.8.13 The offset GHG emissions from the Scheme will range depending on what method of electricity generation the Scheme is displacing.

15.8.14 Displacement of gas-fired power stations has been considered as electricity generated by solar currently displaces gas-fired power stations (GHG intensity of 382 gCO_2e/kWh) (i.e. the current long-run marginal electricity generation in the UK) and the purpose of the Scheme is to support government policy by replacing fossil fuel power stations.

15.8.15 As gas-fired power stations only make up a proportion of the grid mix, the reported GHG intensity of the grid from the government's Fuel Mix Disclosure Table for the period April 2024 to March 2025 (GHG intensity of 154 gCO_2e/kWh) has also been considered as a comparator to calculate the offset emissions over the lifetime of the Scheme.

15.8.16 As the grid will decarbonise to meet the UK government's net zero commitments, the long-run marginal generation-based electricity emission factors from DESNZ's report titled *"Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal"*[23] have also been used as a comparator to calculate the offset emissions over the lifetime. These emission factors start at 0.357 $kgCO_2e/kWh$ for the long-run marginal generation based in 2010 and drop to 0.00228 $kgCO_2e/kWh$ by 2070.

15.8.17 However, as shown in Table 15.16 the current long-run marginal generation based GHG emission factor is 0.382 kgCO_2e/kWh. Therefore, an adjusted GHG emissions trajectory has also been calculated starting at this value in 2023 and gradually reducing to achieve the target for 2035 and then following the same trajectory as the Green Book after this date. The adjusted emission factors have also been used as a comparator to calculate the offset emissions over the lifetime.

15.8.18 As the Scheme is expected to produce 15,980,748 MWh electricity for export to the national grid over its lifetime, the GHG emissions offset over the lifetime of the Scheme has been calculated using each comparator as outlined in Table 15.16.

Table 15.16 – Offset emissions

Comparator	Emission factors (gCO_2e/kWh)	Offset over lifetime (tCO_2e)
Gas-fired power station (current long-run marginal generator)	382	6,104,646
Grid average 2024-2025	154	2,461,035
DESNZ Green Book long-run marginal generation-based electricity emission factors	Varies over the lifetime of the Scheme	172,820
Adjusted DESNZ Green Book long-run marginal generation-based electricity emission factors	Varies over the lifetime of the Scheme	359,321

15.8.19 As shown, the Scheme will offset between ~173,000 and ~6,105,000 tCO_2e over its lifetime, depending upon the displacement factor applied.

15.8.20 Whilst current planning policy (EN-1)[6] requires new commercial scale combustion power stations to be constructed Carbon Capture Ready, this does not apply to existing combustion power stations. Furthermore, the need to construct a power station Carbon Capture Ready does not guarantee that the infrastructure would be in place for carbon capture to be undertaken at all new facilities by 2035. The reality is that in the opening year and by 2035 it is likely that unabated CCGT plants will still be operating, so new renewable

generating schemes which become operational from 2035 (or earlier) would displace the power these unbated CCGTs generate. As such comparison to unabated CCGT is of relevance, when looking at the opening year of the project and the near future.

15.8.21 Table 15.16 provides comparisons against the predicted future grid mix to set the GHG emissions from the Scheme in the context of the likely grid mix over the Scheme's lifetime. However, in reality this is not reporting offset CO_2 as the Scheme is part of the delivery of the policy outcome of reaching the future reduced carbon intensity of the grid. In summary, while offset calculations provide an interesting perspective, they should not detract from the broader significance of the Scheme's role in enabling long-term systemic decarbonisation.

GHG Intensity

15.8.22 The GHG intensity has been calculated for the lifetime of the Scheme and the operational phase of the Scheme for comparison with published values.

15.8.23 As the Scheme is expected to produce 15,980,748 MWh electricity for export to the national grid, the GHG intensity of the electricity generated over the lifetime of the Scheme has been calculated as 41.7 gCO_2e/kWh. Table 15.17 sets out the GHG intensity of other forms of electricity generation from the CCCs report titled: *"Reducing the UK's carbon footprint"* [24]. This includes the full life-cycle GHG emissions associated with each type of technology. This differs from the DESNZ fuel mix disclosure table 2024-2025 as this is associated with GHG emissions associated with the production of power i.e. not the full lifecycle GHG emissions.

Table 15.17 – Comparison of energy intensities of varies forms of energy generation

Form of energy generation	Unit	GHG Intensity
Combined Cycle Gas Turbine (CCGT) – current long-run marginal generator	gCO_2e/kWh	380 to 500
CCGT with carbon capture and storage (CCS)	gCO_2e/kWh	90 to 245

Nuclear	gCO_2e/kWh	5 to 55
Offshore wind	gCO_2e/kWh	5 to 24
Onshore wind	gCO_2e/kWh	7 to 20
Solar PV	gCO_2e/kWh	20 to 85

15.8.24 As shown the GHG intensity of the Scheme is in line with the estimates from the literature and has a much lower GHG intensity than the current long-run marginal generator which the electricity generated by the Scheme will displace. Additionally, the Scheme has a much lower GHG intensity than CCGT with CCS, despite CCS capturing carbon dioxide from the combustion process.

15.8.25 To enable a comparison with the GHG intensity of the current grid (only considering operational emissions i.e. not full life-cycle GHG emissions) and the DESNZ Green Book projections, the average operational GHG intensity of the Scheme has been calculated by dividing the total operational GHG emissions by the total energy generation of the Scheme. The operational GHG intensity of the Scheme is 0.0004 gCO_2e/kWh which is well below the 2024 GHG intensity of the current grid (154 gCO_2e/kWh) as per the Fuel Mix Disclosure Table for the period April 2024 to March 2025 and well below the projected GHG intensity of the grid over the whole operational life of the Scheme as per the long-run marginal generation-based electricity emission factors from DESNZ. For example, the long-run marginal generation-based electricity emission factor from DESNZ at 2070 (the decommissioning year within the assessment) is 2 gCO_2/kWh which is still well above the calculated operational GHG intensity of the Scheme. It must be noted that construction, replacement of parts, and decommissioning has not been included within this calculation to allow for a like-for-like comparison with the projected grid intensity which relates to only generator emissions in the operational phase and does not include emissions related to the fuel supply chain or maintenance activities.

15.8.26 Both the GHG intensity of the Scheme and the GHG intensity of the operational phase of the Scheme show that low-carbon energy generation projects such as the Scheme are essential to reduce the GHG intensity of the grid in line with the projections.

Change in land use

15.8.27 During the lifetime of the Scheme, the land use will no longer be used for agricultural purposes and would be under long term management. The Natural England Report 2021 shows that the carbon flux of undisturbed semi-natural grassland under long-term management is negligible, compared to a net carbon loss from the land of 0.29 tCO_2e/ha/yr for arable land. Therefore, the land use change associated with the Scheme will be an additional net carbon benefit. Peat is not suspected to be at the Site, but if peat is found at any point during the construction, operation of decommissioning of the Scheme, operations will halt until a suitably qualified ecologist has inspected the Site.

Summary of GHG Assessment

15.8.28 The Scheme has a predicted carbon burden during the construction phase of ~359,056 tCO_2e, with greatest emissions associated with the embodied emissions (i.e. those resulting from the raw material extraction and manufacturing of products required for the Scheme and transportation of raw materials to the place of manufacturing), contributing 0.00368% to the UK's carbon budget for 2023 to 2027 and 1.71% of the cumulative carbon budget of Bedford and Huntingdonshire.

15.8.29 The Scheme produces ~294,069 tCO_2e during the operational phase, with greatest emissions associated with the energy consumption, replacement of equipment and material and waste generation from ongoing maintenance on-Site. The operational phase will contribute 0.0167%, 0.00000003%, and 0.00000006% to the UK's carbon budget for 2028-2032, 2033-2037, and 2038-2042 respectively; and 14.4%, 0.0000356%, and 0.00008% of the

cumulative carbon budget of Bedford and Huntingdonshire for 2028-2032, 2033-2037, and 2038-2042 respectively. However, the Scheme will offset GHG emissions during the operational phase of the Scheme. The GHG emissions offset is dependent upon the displacement factors applied. Using the GHG emission factor for the current long run marginal generator (CCGT) the Scheme would displace ~6,106,646 tCO_2e but using the DESNZ Green Book long-run marginal generation-based electricity GHG emission factors the Scheme would only displace ~172,820 tCO_2e.

15.8.30 The DESNZ Green Book long-run marginal generation-based electricity GHG emission factors reduce significantly throughout the operational phase of the Scheme due to the projected implementation of renewables. This means that there becomes a point at which the GHG emissions offset by the electricity generated by the Scheme are lower than those associated with building and operating the Scheme. However, developments similar to the Scheme are required to achieve the projected reductions in generation-based GHG emissions factors. This results in a 'Catch-22' situation for the purposes of assessing GHG emissions from the Scheme.

15.8.31 The Scheme has a predicted carbon burden during the decommissioning phase of ~12,790 tCO_2e, with greatest emissions associated with the transport and disposal of waste materials.

15.8.32 The land use change from agricultural and drained marshland to undisturbed semi-natural grassland will be an additional net carbon benefit that has not been quantified to the Scheme.

15.8.33 The lifetime GHG intensity of the electricity generated is in line with the values stated in literature for other solar projects. The average operational GHG intensity of the Scheme is much lower than the GHG intensity of electricity generation using fossil fuels, the current grid mix and the projected grid mix.

15.8.34 Once operational the Scheme provides low carbon electricity to the national grid and supports the UK government's goal for all electricity to come from

low carbon sources by 2035, and indeed the incoming government's plan that this is achieved by 2030. Without low-carbon energy generation projects such as the Scheme, the GHG intensity of the grid will not be able to decrease in line with the projections. Therefore, the Scheme is fully consistent with existing and emerging policy requirement and fully in line with measures necessary to achieve the UK's trajectory towards net zero. As such the Scheme is considered to have a beneficial effect. This is a significant effect.

15.9 Additional Mitigation and Monitoring

Climate Resilience

15.9.1 This assessment has identified the Scheme is resilient to the effects of climate change therefore no additional mitigation is required.

GHG Emissions

15.9.2 This assessment has identified that the Scheme is considered to have a beneficial effect and is fully in line with measures necessary to achieve the UK's trajectory towards net zero and therefore no additional mitigation is required. However, as requested by CCC, the following measures have been identified which could further minimise GHG emissions during the detailed design phase:

- Optimise design to minimise material use;
- Select equipment and materials with low embodied carbon, supported by Environmental Product Declarations (EPD) or recognised environmental certifications;
- Minimise cut and fill operations where possible to protect topsoil and reduce carbon loss;
- Source equipment locally or regionally and consolidate deliveries of equipment to reduce emissions to reduce transport emissions;
- Specify recyclable equipment and prioritising suppliers with manufacturer take-back schemes;
- Continue to develop a lifecycle assessment from the GHG Assessment produced in **ES Vol 2 Appendix 15-1: Greenhouse Gas Emissions Assessment [EN010141/DR/6.2]** to maintain awareness and support ongoing emissions reduction.

15.10 Residual Effects

Climate Resilience

15.10.1 The resilience of the Scheme to the effects of climate change has been considered with reference to the effects on operational equipment; vehicular access to Site; and on-site workers. The significance of effect has been assessed to be negligible to slight, which is not significant, and no additional mitigation is required. Therefore, it is considered that the Scheme is resilient to the effects of climate change.

GHG Emissions

15.10.2 The GHG emissions from the Scheme have been calculated within the GHG Assessment. The lifecycle GHG emissions are in line with other similar types of projects, and the operational GHG emissions intensity of the Scheme is much lower than the GHG intensity of electricity generation using the current long-run marginal generator (which the Scheme will displace), and the current and projected grid mix. The Scheme has a net carbon benefit over its lifetime and is fully consistent with existing and emerging policy requirements and fully in line with measures necessary to achieve the UK's trajectory towards net zero. Therefore, it is considered the Scheme has a beneficial effect on climate change. This is a significant effect, and no additional mitigation is required. However, measures have been identified which would further minimise GHG emissions during the detailed design phase.

15.11 Cumulative Effects

15.11.1 The Scheme's resilience to climate change will not be impacted by other projects, on the basis that climate change adaptation effects and impacts are specific to the Scheme and will not result in impacts to neighbouring development. This position is supported by the ISEP Climate Change Resilience Guidance. Therefore, there are no cumulative impacts with respect to climate change resilience.

15.11.2 As the Scheme's impact of GHG emissions is on a global scale rather than affecting one localised area, the approach to cumulative assessment differs from that for many other environmental topics. Therefore, rather than assessing impacts in combination with other local developments, the Scheme's contribution to carbon budgets has been determined within section 15.8 of this chapter. This position is supported by the ISEP GHG Guidance and case law as an appropriate approach. This demonstrates that the Scheme will make a very minor contribution to the local and UK's carbon budgets and would provide low carbon electricity which would displace more carbon intensive forms of electricity generation. Therefore, cumulative impacts of GHG emissions are not assessed further within this chapter.

In-Combination Climate Change Impacts

15.11.3 The in-combination climate change impacts (ICCI) consider the extent to which climate change exacerbates or ameliorates the potential effects identified within each of the technical assessments presented in each of the following technical chapters:

- **ES Vol 1 Chapter 5: Landscape and Visual [EN010141/DR/6.1]**;
- **ES Vol 1 Chapter 6: Cultural Heritage and Archaeology [EN010141/DR/6.1]**;
- **ES Vol 1 Chapter 7: Ecology and Nature Conservation [EN010141/DR/6.1]**;
- **ES Vol 1 Chapter 8: Hydrology and Flood Risk [EN010141/DR/6.1]**;

- **ES Vol 1 Chapter 9: Traffic and Transport [EN010141/DR/6.1]**;
- **ES Vol 1 Chapter 10: Noise and Vibration [EN010141/DR/6.1]**;
- **ES Vol 1 Chapter 11: Air Quality [EN010141/DR/6.1]**;
- **ES Vol 1 Chapter 12: Ground Conditions [EN010141/DR/6.1]**;
- **ES Vol 1 Chapter 13: Land and Soils [EN010141/DR/6.1]**; and
- **ES Vol 1 Chapter 14: Socio Economics, Land Use and Tourism [EN010141/DR/6.1]**.

15.11.4 The ICCI Assessment is presented in **ES Vol 2 Appendix 5-4: In-combination Climate Change Impacts Assessment [EN010141/DR/6.2]**.

15.11.5 The ICCI Assessment found climate change has the potential to exacerbate and/or ameliorate the potential effects identified within the technical chapters. However, the mitigation measures outlined in the technical chapters remain effective in the context of anticipated climate change scenarios. Therefore, there are no in-combination effects.

15.12 Conclusions

15.12.1 This climate change assessment has been produced as part of the ES for the Scheme. The assessment has considered the resilience of the Scheme to the projected changes in climate, and measures taken to mitigate the impacts, the impact of the Scheme on climate change.

15.12.2 The resilience of the Scheme to the effects of climate change has been assessed to be negligible to slight, which is not significant. Therefore, it is considered that the Scheme is resilient to the effects of climate change and no additional mitigation measures are required.

15.12.3 The Scheme has a beneficial effect on climate change which is a significant effect. This is because the Scheme's net GHG impacts are below zero as it causes a reduction in atmospheric GHG concentration indirectly through offsetting other more carbon intensive methods of electricity generation. Additionally, the Scheme substantially exceeds net zero requirements. This is a significant effect, and no additional mitigation is required. However, measures have been identified which would further minimise GHG emissions during the detailed design phase.

15.13 References

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