Preliminary Environmental Information Report Volume 1

Chapter 27 Climate Change and Carbon

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Contents

Glossary of Project Terminology

This Glossary has been provided to define terms used across a number of the LionLink Proposed Scheme documents.

Terms and abbreviations specific to this technical chapter are provided at the end of the document in the **Topic Glossary and Abbreviations.**

Term	Description
Amendment to Kiln Lane Substation Scenario	The scenario where the Proposed Scheme will comprise the amendments to Kiln Lane Substation that would be required if Kiln Lane Substation was built out pursuant to the EA1N/EA2 DCOs.
Applicant, the	National Grid Lion Link Limited (NGLLL)
Bellmouth	A flared vehicular access/egress point connecting permanent route to the public highway.
Converter Station	A converter station changes electricity between High Voltage Alternating Current (HVAC), which power our homes, and High Voltage Direct Current (HVDC) which is more efficient for transporting electricity over long distances and vice versa. The proposed Converter Station is located to the east of Saxmundham.
Converter Station Site	The Converter Station Site as a whole, allowing for the co-location of the Converter Station with the Converter Station being separately consented as part of the Sea Link project.
Co-ordination	The process of people or entities working together.
Co-location	Where different elements of a project, or various projects, are located in one place.
Construction Compound	Temporary compounds installed during the construction phase of the Proposed Scheme. Each compound is likely to contain storage areas such as laydown areas, soils storage, and areas for equipment and fuel, drainage, generators, car parking and offices and welfare areas (portacabins).
Development Consent Order (DCO)	An order made by the Secretary of State pursuant to the Planning Act 2008 (as amended) granting development consent for a Nationally Significant Infrastructure Project. It grants consent to develop the approved project and may include (among other things) powers to compulsorily acquire land and rights where required and deemed marine licences for any offshore works.
Draft Order Limits	The area of land identified as being subject to the DCO application. The Draft Order Limits are made up of the land required both temporarily and permanently to allow for the construction, operation and maintenance, and decommissioning of the Proposed Scheme. All onshore parts of the Proposed Onshore Scheme are located within England and offshore parts of the Proposed Offshore Scheme are located within English territorial waters to 12 Nautical

Term	Description
	Miles and then up to the United Kingdom (UK) Exclusive Economic Zone (EEZ) boundary at sea.
Dutch Offshore Components	Is the term used when referring to the offshore elements of the Project within Dutch waters.
Eastern Route Option	As part of the Underground HVDC cable corridor, the Eastern Route Option would facilitate a degree of co-location with the Sizewell Link Road (SLR) scheme.
Environmental Impact Assessment (EIA)	The EIA is a systematic regulatory process that assesses the potential likely significant effects of a proposed project or development on the environment.
EIA Scoping Report	An EIA scoping report defines the proposed scope and methodology of the EIA process for a particular project or development. The EIA Scoping Report for the Proposed Scheme was submitted to the Planning Inspectorate with a request for the Secretary of State to adopt a scoping opinion in relation to the Proposed Scheme on 6 March 2024.
Environmental Statement (ES)	The ES is a document that sets out the likely significant effects of the project on the environment. The ES is the main output from the EIA process. The ES is published as part of the DCO application.
Exclusive Economic Zone (EEZ)	The zone in which the coastal state exercises the rights under Part V of the United Nations Convention on the Law of the Sea. These rights relate principally to the water column and may extend to 200 nautical miles from baselines. This is distinct from territorial waters, which for the UK extend 12 nautical miles from the coast.
Full Build Out of Kiln Lane Substation Scenario	The scenario if the Proposed Scheme was brought forward first, then it would be responsible for developing Kiln Lane Substation for the Proposed Scheme, with sufficient additional capacity for other projects.
Joint Bay	Underground structures constructed at regular intervals along the onshore cable route to join sections of cable and facilitate installation of the cables into the buried ducts.
Kiln Lane Substation	The proposed connection point for the Project to the British National Electricity Transmission System, located to the north of Friston. Formerly known as Friston Substation. The new name has recently been adopted by NGET. The substation is of the same footprint and in the same location. Friston Substation will, hereafter, be referred to as Kiln Lane Substation.
Landfall	The proposed Landfall is where the proposed offshore HVDC Submarine Cables are brought ashore and meets with the onshore proposed Underground HVDC Cables. This includes the Transition Joint Bay (TJB). The proposed Landfall will be located at Walberswick, and there will be no permanent above ground infrastructure at the proposed Landfall.
Landfall Site	The area where the Landfall may be located.

Term	Description
Limit of Deviation	A maximum distance or measurement of variation within which the works must be constructed. These are lateral (i.e. on the ground) and vertical limits (in relation to height).
Link Box Chamber	Link boxes are used at joint bays to facilitate grounding connections to ensure safety and enable maintenance. Link boxes can either be installed below ground, in a link box chamber, or in an above ground link pillar
Multi-purpose interconnector (MPI)	A project where GB interconnection is combined with transmission of offshore generation within GB (and optionally within a connecting state).
National Grid Electricity Distribution (NGED)	The local distribution network operator for the Midlands, the southwest of England and south Wales.
National Grid Electricity Transmission (NGET)	Operators of the national electricity transmission network across Great Britain and own and maintain the network in England and Wales, providing electricity supplies from generating stations to local distribution companies. National Grid does not distribute electricity to individual premises, but its role in the wholesale market is vital to ensuring a reliable, secure and quality supply to all.
National Grid Lion Link Limited (NGLLL)	The Applicant, a joint venture between National Grid Ventures and TenneT. NGLLL is a business within the wider National Grid Ventures portfolio.
National Grid Strategic Infrastructure (NGSI)	Part of NGET and responsible for delivering major strategic UK electricity transmission projects, focussed on connecting more clean, low-carbon power to England and Wales.
National Grid Ventures (NGV)	Operates and invests in energy projects, technologies and partnerships to accelerate the development of a clean energy future. This includes interconnectors (such as the LionLink Project), allowing trade between energy markets and the efficient use of renewable energy resources.
Nationally Significant Infrastructure Projects (NSIP)	Major infrastructure developments in England and Wales for which development consent is required, as defined within Section 14 of the Planning Act 2008 (as amended). This includes any development which is subject to a direction by the relevant Secretary of State pursuant to Section 35 of the Planning Act 2008.
Non-standard interconnector (NSI)	A project where GB interconnection is combined with transmission of offshore generation outside of GB.
Northern Route Option	A northern cable corridor option that would allow Underground HVAC Cable delivery for Proposed Scheme only.
Offshore Hybrid Asset (OHA)	A project that combines cross-border interconnection with the transmission of offshore generation, this is an overarching term which covers both multi-purpose interconnectors (MPI) and non-standard interconnectors (NSI).
Order Limits	The maximum extent of land within which the Proposed Scheme may take place, as consented.

Term	Description
Outline Offshore Construction Environmental Management Plan (Outline Offshore CEMP)	Describes the control measures and standards proposed to be implemented to provide a consistent approach to the environmental management of the construction activities of the Proposed Offshore Scheme.
Outline Onshore Code of Construction Practice (Outline Onshore CoCP)	Describes the control measures and standards proposed to be implemented to provide a consistent approach to the environmental management of the construction activities of the Proposed Onshore Scheme.
Overhead Lines (OHL)	Conductors (wires) carrying electric current, strung from Tower to Tower.
Planning Act 2008	The Planning Act 2008 being the relevant primary legislation for national infrastructure planning.
Planning Inspectorate (PINS)	The Planning inspectorate review DCO applications and make a recommendation to the Secretary of State, who will then decide whether to approve the DCO.
Preliminary Environmental Information Report (PEIR)	The PEIR is a document, compiled by the Applicant, which presents preliminary environmental information, as part of the statutory consultation process. This is defined by the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 as containing information which "is reasonably required for the consultation bodies to develop an informed view of the likely significant environmental effects of the development (and of any associated development)" (Section 12 2. (b)). This PEIR describes the Proposed Scheme, sets out preliminary findings of the EIA undertaken to date, and the mitigation measures proposed to reduce effects. The PEIR is published at Statutory Consultation stage for information and feedback.
Project (the)	The LionLink Project (hereafter referred to as the 'Project') is a proposal by National Grid Lion Link Limited (NGLLL) and TenneT. The Project is a proposed electricity link between Great Britain (GB) and the Netherlands with a capacity of up to 2.0 gigawatts (GW) of electricity and will connect to Dutch offshore wind via an offshore platform in Dutch waters. The Project is the collective term used to refer to the proposal for all aspects (onshore and offshore) of the proposed interconnector between GB and the Netherlands.
Proposed Offshore Scheme	The term used when referring to the offshore elements of the Proposed Scheme, seaward of the mean high-water springs to the EEZ boundary at sea.
Proposed Onshore Scheme	The term used when referring to the onshore elements of the Proposed Scheme, landward of the mean low water springs. Proposed Onshore Scheme components include:

Term	Description
	a) Kiln Lane Substation. b) Underground High Voltage Alternating Current (HVAC) Cables; c) Converter Station. d) Underground High Voltage Direct Current (HVDC) Cables; and e) Landfall.
Proposed Scheme	Used when referring to the GB scheme components of the Project, not including Dutch components. This includes both the onshore and offshore scheme components which are within UK territorial waters and up to the UK EEZ boundary at sea.
Rochdale Envelope	The Rochdale Envelope or Design Envelope approach is employed where the nature of a proposed development means that some details of a project are not available in advance of, or at the time of submitting the DCO application. The Rochdale Envelope approach defines a design envelope and parameters within which the final design will sit and ensures a robust and reliable EIA can be undertaken.
Scoping Opinion	A scoping opinion is requested from the Planning Inspectorate on behalf of the Secretary of State, to inform the requirements of EIA process and ultimately the ES which will be submitted as part of the application for development consent. Through the scoping process, the views of the statutory consultees and other relevant organisations on the proposed scope of the EIA are sought. A Scoping Opinion for the Proposed Scheme was issued by the Planning Inspectorate (on behalf of the Secretary of State) on 16 April 2024. The Applicant received a separate EIA Scoping Opinion from the Marine Management Organisation (MMO) (Reference DCO/2024/00005, dated 04 September 2024) as the MMO were unable to provide opinion to the Planning Inspectorate in time for the April 2024 deadline.
Scottish Power Renewables (SPR) East Anglia One North (EA1N) and East Anglia 2 (EA2) Consents (SPR EA1N and EA2 Consents)	The Orders made following the Scottish Power Renewables applications for development consent for the following projects: a) The East Anglia ONE North Offshore Wind Farm Order 2022; and b) East Anglia TWO Offshore Wind Farm Order 2022
Southern Route Option	A southern cable corridor option that would allow: a) Underground HVAC Cable delivery for Proposed Scheme only, or b) Underground HVAC Cable delivery for Proposed Scheme and ducting for Sea Links Underground HVAC and HVDC cables in that section.
Statutory Consultation	Consultation undertaken with the community and stakeholders in advance of the application for development consent being submitted

Term	Description
	to the Planning Inspectorate, on behalf of the Secretary of state, in accordance with the PA 2008.
Substation	Substations are used to control the flow of power through the electricity system. They are also used to change (or transform) the voltage from a higher to lower voltage to allow it to be transmitted to local homes and businesses.
TenneT	Operator of the electricity transmission network across the Netherlands.
Tower	A structure used to carry overhead electrical conductors, insulators, and fittings. Often described as a pylon.
Transition Joint Bay (TJB)	An underground structure at the Landfall Site that house the joints between the offshore cables and the onshore cables.
Underground Cable Corridors	Collective term for the corridors within which HVAC and HVDC cables are planned.
Underground High Voltage Alternating Current (HVAC) Cable Corridor	A corridor in which the underground HVAC cables are planned to be installed.
Underground High Voltage Alternating Current (HVAC) Cables	Transmission cables which connect between the Converter Station and Substation. HVAC cables are designed to manage fluctuating flow of current.
Underground High Voltage Direct Current (HVDC) Cable Corridor	A corridor in which the underground HVDC cables are planned to be installed.
Underground High Voltage Direct Current (HVDC) Cables	Transmission cables which connect the Converter Station to the Landfall Site and then offshore. HVDC cables are designed to manage current flowing in one direction.
Visibility Splay	An area of land at a road junction that ensures drivers have an unobstructed view of oncoming traffic allowing them to safely join or cross the road.
Western Route Option	As part of the Underground HVDC cable corridor, the Western Route Option would deliver the Scheme within its own corridor with no co-location with the Sizewell Link Road (SLR) scheme.

27 Climate Change and Carbon

27.1 Introduction

27.1.1 This chapter provides the preliminary environmental information in relation to the assessment of Climate Change and Carbon from the construction, operation and maintenance, and decommissioning of LionLink for both onshore and offshore elements (hereafter referred to as 'the Proposed Scheme').

27.1.2 This chapter outlines legislation, policy and guidance that is relevant to the assessment of Climate Change resilience and of Carbon impacts, summarises the engagement undertaken to date, sets out the scope and methodology and the preliminary assessment. It describes the baseline environment and presents an initial appraisal of likely effects associated with the Proposed Scheme with regards to Climate Change and Carbon, including consideration of mitigation measures within the design and control measures. While indicative effects have been estimated (where sufficient project development allows), significance conclusions have not been reached at this stage. A full assessment of significance across both Climate Change resilience and Carbon will be undertaken and reported in the Environmental Statement (ES), once further design detail and assessment inputs are available and details of any embedded mitigation are understood. Similarly for the Climate Change assessment the criteria used for defining sensitivity and magnitude of impact will be developed and reported in the ES. The need for any additional mitigation will be considered in the ES along with any proposals for monitoring and/or enhancement.

27.1.3 Climate change and climate aspects considered within this chapter for the Proposed Scheme are:

a. Greenhouse Gas (GHG) Emissions assessment – identifying the onshore and offshore GHG emissions resulting from the construction, operation and maintenance, and decommissioning of the Proposed Scheme;
b. Climate Change Resilience Assessment (CCRA) – identifying what changes to climate are expected to occur in the future, and the vulnerability of the Proposed Scheme to these identified changes to climate; and
c. In-combination Climate Change Impact (ICCI) assessment - identifying where a changing climate will combine with, or exacerbate, environmental impacts arising from the Proposed Scheme, resulting in potential effects on environmental receptors within the scope of the Environmental Impact Assessment (EIA) which are not present under current climate conditions.

27.1.4 This chapter should be read in conjunction with **Chapter 2 Description of the Proposed Scheme** of this Preliminary Environmental Impact Report (PEIR), and other chapters of relevance, namely:

a. **Chapter 8 Ecology and Biodiversity** - outputs from the Biodiversity Net Gain (BNG) assessment will be used in the GHG assessment to determine the balance of GHG emissions associated with land use change;
b. **Chapter 12 Hydrology, Hydrogeology and Drainage** and **Appendix 12.1 Flood Risk Assessment** - outputs of the impact of surface water and fluvial flood risk and how it is being mitigated will be used for the CCRA; and
c. **Chapter 17 Traffic and Transportation** - GHG calculations in the PEIR use assumptions on traffic movements to calculate GHG emissions. The ES will use outputs and assumptions from the traffic and transport assessment for the GHG assessment.

27.1.5 This chapter is supported by the following figures:

a. **Figure 27.1 Climate Change - Annual Days below 0c;**
b. **Figure 27.2 Climate Change – Annual Days over 27c;**
c. **Figure 27.3 Climate Change – Annual Dry Spells;**
d. **Figure 27.4 Climate Change – Annual Heavy Rain Spells;**
e. **Figure 27.5 Climate Change – Average Summer Daily Maximum Temperature;**
f. **Figure 27.6 Climate Change – Mean Summer Daily Precipitation**; and
g. **Figure 27.7 Climate Change – Mean Winter Daily Precipitation.**

27.2 Legislation and policy framework

27.2.1 This section identifies the legislation and policy framework that has informed the assessment of the likely effects on Climate Change and Carbon.

27.2.2 **Table 27.1** lists the legislation relevant to the assessment of the likely effects on Climate Change and Carbon.

Table 27.1: List of relevant legislation for Climate Change and Carbon

Legislation	Relevance to assessment
Climate Change Act 2008 (2050 Target Amendment) Order 2019 (Ref 1)	Climate Change Act 2008 sets a legally binding target for the UK to reduce its GHG emissions from 1990 levels by at least 80% by the year 2050 and provides for a system of legally binding five-year carbon budget which restricts the amount of GHG emissions the UK can legally emit (amongst others). The assessment in the ES will consider the likely significant effects of GHG emissions in terms of alignment to this trajectory. The Climate Change Act 2008 (2050 Target Amendment) Order 2019 which amended the 2050 target in the Climate Change Act 2008 to "net zero" i.e. that the net UK carbon account, in terms of carbon dioxide and other targeted GHGs, for the year 2050 is at least 100% lower than the relevant baseline year of 1990.

Legislation	Relevance to assessment
Carbon Budgets Order (Ref 2)	The UK's net zero target is supported by a system of legally binding five-year 'carbon-budgets' that restrict the amount of GHG emissions the UK can legally emit. Carbon Budgets Order 2009, Carbon Budget Order 2011, Carbon Budget Order 2016 and the Carbon Budget Order 2021 set the carbon budgets for each relevant budgetary periods. As part of the assessment, forecast GHG emissions for the Proposed Scheme will be compared against relevant carbon budgets in the ES.

National policy

27.2.3 The primary basis for deciding whether to grant a Development Consent Order (DCO) for the Proposed Scheme is the Overarching National Policy Statement (NPS) for Energy (EN-1) (Ref 4) and the NPS for Electricity Networks Infrastructure (EN-5) (Ref 5). the National Planning Policy Framework (Ref 6) also important and relevant in the decision-making process. This sets out policies to guide how applications for development consent for energy infrastructure should be decided and how the effects of such infrastructure are considered.

27.2.4 **Table 27.2** lists the paragraphs from the NPS and other national policy that are relevant to the Climate Change and Carbon assessment. It also sets out where these policy requirements are addressed within this chapter.

Table 27.2: List of relevant national policy for Climate Change and Carbon

Relevant paragraph reference	Summary of policy requirement	Where addressed in PEIR
National Policy Statement for Energy (NPS EN-1)		
Section 4.10.11 – 4.10.12 Climate change adaptation and resilience	4.10.11 states "Applicants should demonstrate that proposals have a high level of climate resilience built-in from the outset and should also demonstrate how proposals can be adapted over their predicted lifetimes to remain resilient to a credible maximum climate change scenario. These results should be considered alongside relevant research which is based on the climate change projections."	Within the ES the final design will be assessed for its climate resilience against climate hazards identified in **Section 27.7**. The Climate Change Resilience Assessment (CCRA) will then assess the vulnerability of the Proposed Scheme and implement embedded mitigation measures where required to ensure the proposal is climate resilient.

Relevant paragraph reference	Summary of policy requirement	Where addressed in PEIR
	4.10.12 states "Where energy infrastructure has safety critical elements, the applicant should apply a credible maximum climate change scenario. It is appropriate to take a risk-averse approach with elements of infrastructure which are critical to the safety of its operation."	The CCRA is informed by the findings of the other environmental topic assessments. The CCRA will be reported in the ES.
Section 5.3 – Greenhouse Gas Emissions	This section describes what should be included within a whole life GHG Assessment across construction and operation and how to report residual emissions. A whole life GHG assessment should include construction, operational and decommissioning GHG impacts, including impacts from change of land use.	This is covered within the Preliminary GHG Assessment and discussed within **27.8Section 27.8**. The GHG assessment will cover construction, operation (including maintenance) and decommissioning emissions within the ES. The assessment taken at PEIR does this as far as the current design allows, which is set out in **Section 27.4**. The assessment also divides the assessment into modules outlined in BS EN 17472:2022 (Ref 7)
Section 5.3 – Greenhouse Gas Emissions – Mitigation	This section states that a GHG Assessment should be used to drive down GHG emissions at every stage of the Proposed Scheme and ensure that emissions are minimised as far as possible.	The Preliminary GHG assessment will be used to inform efforts to reduce GHG emissions throughout design development and evolution. The GHG assessment will be used to identify carbon hotspots as the design developments, which will allow for more informed decisions when embedding carbon reduction mitigation measures to the Proposed Scheme. The current embedded mitigation measures are discussed in **Section 27.7** and will be further developed and refined for the ES.

Relevant paragraph reference	Summary of policy requirement	Where addressed in PEIR
National Policy Statement for Energy (NPS EN-5)		
Para. 2.3.2	Applicants should in particular set out to what extent the Proposed Scheme is expected to be vulnerable to climate change, and, as appropriate, how it has been designed to be resilient to: • flooding, particularly for substations that are vital to the network, 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 – (at landfall areas) of offshore transmission cables and their associated substations in the onshore and coastal locations respectively.	The CCRA process takes account of the changing climate and the risks and hazards that have the potential to impact the Proposed Scheme. The assessment approach includes mitigation measures to improve resilience to these hazards. The CCRA process is informed by the findings of the other environmental topic assessments. The CCRA will be reported in the ES.
National Planning Policy Framework		
Section 14 – para. 164 Meeting the challenge of climate change, flooding and coastal change	New development should be planned for in ways that: • avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through incorporating green	The CCRA process takes account of the changing climate and the risks and hazards that have the potential to impact the Proposed Scheme. The assessment process also includes identification of mitigation measures to improve resilience to these hazards. The CCRA process is informed by the findings of the other environmental topic

Relevant paragraph reference	Summary of policy requirement	Where addressed in PEIR
	infrastructure and sustainable drainage systems; and • help to reduce GHG emissions, such as through its location, orientation and design.	assessments. The CCRA will be reported in the ES. The Preliminary GHG Assessment calculates the GHG emissions emitted by the Proposed Scheme. **Section 27.7** outlines how optioneering and Proposed Scheme evolution has taken GHG emission reduction into consideration. As the design evolves, additional embedded mitigation measures will be added to the design. These measures and their impacts will be reported in the ES.
UK Marine Policy Statement (UK MPS)		
Section 2.6.7 Climate Change adaptation and mitigation (Ref 8)	Developments are encouraged to take account of the impacts of climate change over their estimated lifetime, in particular taking account of risks such as increased land and sea temperatures and sea level rise (SLR) and possible increase in risk from extreme events such as flooding and coastal erosion.	The CCRA process takes account of SLR with respect to coastal flooding and its potential to impact the Proposed Scheme. The CCRA process is informed by the findings of the other environmental topic assessments. The CCRA will be reported in the ES.
East Inshore and East Offshore Marine Plans (Ref 9)		
Section 3.5 Climate Change • Policy CC1 • Policy CC2	Proposals should take account of: • how they may be impacted upon by, and respond to, climate change over their lifetime; and • how they may impact upon any climate change adaptation measures elsewhere during their lifetime. Where detrimental impacts on climate change adaptation measures are identified,	The CCRA process takes account of how climate change may impact the Proposed Scheme and considers several climate variables in this assessment. The CCRA process is informed by the findings of the other environmental topic assessments. The CCRA will be reported in the ES. Detrimental impacts on climate change adaptation measures are being identified

Relevant paragraph reference	Summary of policy requirement	Where addressed in PEIR
	evidence should be provided as to how the proposal will reduce such impacts. Proposals for development should minimise emissions of greenhouse gases as far as is appropriate. Mitigation measures will also be encouraged where emissions remain following minimising steps.	as part of the preliminary assessment and consideration being given as to how to reduce such impacts. Evidence will be reported at the ES stage.
UK Third Climate Change Risk Assessment 2022 (Ref 10)		
Executive Summary, pg 3	The Climate Change Act 2008 includes a requirement for UK Government to undertake a CCRA every five year period and to develop a programme for adaptation action in response to identified risks. The UK CCRA 2022 was published in January 2022. The third CCRA makes clear the risks of failing to act on climate change, and the UK's world leading approach to net zero must include action on adaptation to ensure resilience to climate change in the future. This includes building on the 'home grown' renewable energy sector.	The CCRA process takes account of the climate risks and hazards outlined within the CCRA 2022 (Ref 10) and its potential to impact the Proposed Scheme. The CCRA is informed by the findings of the other environmental topic assessments. The CCRA will be reported in the ES. The current embedded mitigation measures are discussed in **Section 27.7** and will be improved and refined for the ES.
The UK's Net Zero Strategy, 2021 (Ref 11)		
Our Strategy to Net Zero, pg 16	The 2021 Report to Parliament: Progress in Reducing Emissions highlighted that whilst the UK Government has made historic climate promises, it has been too slow to follow these with delivery. The Strategy includes policies and proposals for decarbonising all sectors of the UK economy to meet net zero by 2050.	The Preliminary GHG Assessment is used to measure the impact of the Proposed Scheme with regard to the UK's trajectory towards net zero and 2050. In the ES, the UK Carbon Budgets will be used to contextualise the Proposed Scheme's emissions against the UK's trajectory to net zero.

Relevant paragraph reference	Summary of policy requirement	Where addressed in PEIR
UK Nationally Determined Contribution, 2022 (NDC) (Ref 12)		
United Kingdom of Great Britain and Northern Ireland's Nationally Determined Contribution, pg 1	Outlines the country's commitments to reducing GHG emissions under the Paris Agreement on climate change by committing to reducing economy-wide GHG emissions by at least 68% by 2030, compared to 1990 levels.	The Preliminary GHG Assessment is used to measure the impact of the Proposed Scheme with regard to the UK's trajectory towards net zero and 2050.

27.2.5 In April 2025, the Department for Energy Security and Net Zero (DESNZ) published the consultation on the revised energy NPS's, with draft updates made to NPS EN-1, NPS EN-3 and NPS EN-5. The Applicant recognises the clarifications that are proposed in the draft NPS's, including specific reference to Offshore Hybrid Asset's directed into the NSIP regime under Section 35 of the Planning Act 2008 (draft NPS EN-1 paragraph 4.2.18 and draft NPS EN-3 paragraph 1.6.3).

27.2.6 The Applicant acknowledges that the draft policy is subject to change and therefore all potentially relevant references that apply to the Proposed Scheme are not recorded within this PEIR.

27.2.7 The Applicant will continue to monitor the progress of the designation of the draft NPS's and their applicability to the Proposed Scheme, as it progresses through Statutory Consultation and towards the submission of the application for development consent.

Local policy

27.2.8 The local policies listed in **Table 27.3** are considered relevant to the Climate Change and Carbon assessment of the Proposed Scheme.

Table 27.3: List of relevant local policy for Climate Change and Carbon

Local planning authority	Relevant local policy	Relevance to assessment
East Anglia Coastal Group Shoreline Management Plan (SMP) 7 – Lowestoft and Felixstowe (Ref 13)	A Shoreline Management Plan (SMP) is a strategy for managing flood and erosion risk for a particular stretch of coastline, over short, medium and long-term time periods. SMPs identify the best ways to manage coastal flood and erosion risk to people and the	The CCRA process takes into account the existing local sea level rise and coastal flooding mitigation and the existing management plans to assess the potential impact of sea level rise and coastal

Local planning authority	Relevant local policy	Relevance to assessment
	developed, historic and natural environment. They also identify opportunities where shoreline management can work with others to make improvements. The SMP is divided into sections of coastline with area specific strategy for reducing coastal erosion and coastal flood risk. The Walberswick Marshes DUN11.2 is a policy unit within Policy Development Zone (PDZ) 3 Easton Broad to Dunwich Cliffs (Ref 14). Walberswick Marshes DUN11.2 covers the area relevant for the Proposed Scheme. The strategy for this area between now and 2105 is "Managed Realignment" which means reliance on the natural shoreline and encourages no new defences but works to repair or construct short stretches of defences to provide local protection.	flooding to the Proposed Scheme. The CCRA also uses the findings from **Chapter 12 Hydrology, Hydrogeology and Drainage** and **Appendix 12.1 Preliminary Flood Risk Assessment** to assess climate risks, to inform required mitigation measures. The CCRA is informed by the findings of the other environmental topic assessments. The CCRA will be reported in the ES. The SMP will inform the baseline of the assessment that will be reported at the ES stage.
East Suffolk Council Suffolk Coastal Local Plan (2020) (Ref 15); and Waveney Local Plan (March 2019) (Ref 16): • Policy SCLP9.3/WLP8.25; Coastal Change Management Area; and • Policy SCLP9.5/WLP8.24: Flood Risk.	Policy SCLP9.3/WLP8.25 requires that all development within and 30 metres landward of the Coastal Change Management Area and within and 30 metres landward of areas where the intent of management is to Hold the Line, identified on the Policies Map must be accompanied by a Coastal Erosion Vulnerability Assessment. In parts of the Coastal Change Management Area expected to be at risk from change within a 20 year time horizon, only temporary development directly related to the coast, for example beach huts, cafes, car parks and sites used for touring caravan and camping will be permitted.	The CCRA process takes into account the existing local sea level rise and coastal flooding mitigation and the existing management plans to assess the potential impact of sea level rise and coastal flooding to the Proposed Scheme. The CCRA also uses the findings from **Chapter 12 Hydrology, Hydrogeology and Drainage** and **Appendix 12.1 Preliminary Flood Risk Assessment** to assess climate risks, to inform required mitigation measures. **Chapter 12 Hydrology,**

Local planning authority	Relevant local policy	Relevance to assessment
	Policy SCLP9.5/WLP8.24 states that proposals for new development, or the intensification of existing development, will not be permitted in areas at high risk from flooding, i.e. Flood Zones 2 and 3, unless the applicant has satisfied the safety requirements in the Flood Risk National Planning Policy Guidance (and any successor). These include the 'sequential test'; where needed the 'exception test' and also a site specific flood risk assessment that addresses the characteristics of flooding and has tested an appropriate range of flood event scenarios (taking climate change into consideration).	**Hydrogeology** and Drainage also takes direct account of flood risk within the Draft Order Limits.
East Suffolk Council (Ref 17) East Suffolk Council Coastal Adaptation Supplementary Planning Document	This planning document notes faster sea level risk, milder winters, hotter summers, and more extreme weather. Climate change may accelerate coastal erosion, destabilise cliffs, and damage risk management infrastructure, increasing uncertainty in predicting coastal changes and highlighting the importance of the appropriate application of climate data.	The CCRA process takes account of the climate risks and hazards outlined in the Coastal Adaptation Supplementary Planning Document and its potential to impact the Proposed Scheme. When the design is fully progressed within the ES, it will be outlined how the Proposed Scheme will be resilient to climate change and state which mitigation measures are required to ensure said resilience. The current embedded mitigation measures are discussed in **Section 27.7** and will be further developed and refined for the ES.

27.3 Consultation and engagement

27.3.1 Feedback from consultation and engagement is used to drive the design of the Proposed Scheme to avoid, prevent and reduce any likely environmental effects.

27.3.2 This section describes the outcome of, and response to, the EIA Scoping Opinion, in relation to the Climate Change and Carbon assessment.

Consultation

Non-statutory consultation

27.3.3 Feedback received from stakeholders following the close of the 2022 and 2023 Consultation is outlined within the **Interim Non-Statutory Consultation Feedback Summary Report 2023** (Ref 18) and **Supplementary Non-Statutory Consultation Summary Report 2024** (Ref 19). No feedback was received that was specific or relevant to the Climate Change assessments.

27.3.4 No additional non-statutory public consultation has been undertaken to date regarding the Climate Change and Carbon assessments.

EIA scoping opinion

27.3.5 An EIA Scoping Opinion was adopted by the Planning Inspectorate on behalf of the Secretary of State on 16 April 2024. Comments received from the Planning Inspectorate in relation to Climate Change and Carbon are provided in **Table 27.4**.

Table 27.4: Preliminary responses to Planning Inspectorate Scoping Opinion comments on the chapter Scheme wide: Climate Change

Scoping Opinion ID	Scoping Opinion Comment	How this is addressed
3.22.1	Pre-construction preliminary studies and consultation: The EIA Scoping Report seeks to scope this matter out on the basis that most pre-construction works are anticipated to be desk based and GHG emissions are predicted to be very small. The Inspectorate agrees that this matter can be scoped out on that basis.	Agreed, pre-construction works is scoped out of the Preliminary GHG Assessment.
3.22.2	Refurbishment during operation: The EIA Scoping Report seeks to scope this matter out on the basis that a change of use is unlikely in the lifetime of the Proposed Scheme. The Inspectorate agrees that change of use would not be likely, and it is noted that	Agreed, refurbishment during operation is scoped out of the Preliminary GHG Assessment. GHG emissions associated with maintenance, repair and replacement will be assessed within the GHG assessment in the ES.

Scoping Opinion ID	Scoping Opinion Comment	How this is addressed
	maintenance, repair and replacement is separately proposed to be scoped into the assessment (in **Table 27.5**). On this basis the Inspectorate is content to scope this matter out.	
3.22.3	Operational energy and water use during operation: The EIA Scoping Report seeks to scope this matter out on the basis that minimal energy and water will be used during the operation of the Proposed Scheme Based on the operational maintenance requirements as described in Paragraphs 2.3.93 to 2.3.102 of the EIA Scoping Report, the Inspectorate agrees that significant effects are not likely to occur. This matter can be scoped out of the assessment. The Environmental Statement (ES) should include confirmation of the predicted energy and water demand during operation.	Agreed, operational energy and water use during operation is scoped out of the Preliminary GHG Assessment. The ES will include confirmation of the predicted energy and water demand during operation.
3.22.4	Other operational processes during operation: On this basis that no other operational processes are required as stated in the EIA Scoping Report, the Inspectorate agrees to scope this matter out of the assessment.	Agreed, “other operational processes” during operation is scoped out of the Preliminary GHG Assessment. No other operational processes are required and are therefore not assessed within the Preliminary GHG assessment.
3.22.5	User utilisation of infrastructure during operation: The EIA Scoping Report seeks to scope this matter out on the basis that the Proposed Scheme is not expected to have any direct and quantifiable impacts on GHG emissions from electricity use that is distinct from national trends on grid decarbonisation. The Inspectorate agrees to scope this matter out based on the information presented in the EIA Scoping Report.	Agreed, utilisation of infrastructure during operation is scoped out of the Preliminary GHG Assessment. The Proposed Scheme is not expected to have any direct and quantifiable impacts on GHG emissions from electricity use that is distinct from national trends on grid decarbonisation.
3.22.6	The EIA Scoping Report proposes to scope the ICCI and CCRA during construction out on the basis that the short-term construction period (2027 to 2029) means significant changes to the climate are unlikely during construction. It is stated that mitigation would be in the form of	The CCRA and ICCI assessment will assess impacts from climate change, including extreme weather events over the construction periods, where significant effects are likely to occur and describe and secure any

Scoping Opinion ID	Scoping Opinion Comment	How this is addressed
	best practice measures, captured in the proposed CoCP. An onshore construction programme of approximately up to 5 years (starting in 2026 and completing in 2030) is estimated at paragraph 2.3.57 of the EIA Scoping Report; an offshore construction programme is not provided. The EIA Scoping Report does not provide sufficient justification for the Inspectorate to have confidence that likely significant effects from climate change during construction can be excluded, as there is potential for extreme weather events both onshore and offshore or impacts to human receptors (e.g., construction workers). The ES should assess impacts from climate change, including extreme weather events over the construction periods, where significant effects are likely to occur and describe and secure any relevant mitigation measures. Decommissioning should also be considered, in line with the Inspectorate's comments at ID 2.1.13 of this Opinion.	relevant mitigation measures. The same risks during decommissioning will also be considered. The GHG assessment will also calculate emissions and their impacts during decommissioning The outcomes of these will be fully explored with required embedded and additional mitigation within the ES.
3.22.7	CCRA design measures: The EIA Scoping Report only refers the consenting scenario in which the proposed Friston substation[1] is delivered as an extension to the substation constructed by e.g., EA1N or EA2 and not the consenting scenario where it could be built by the Applicant. The ES should assess both scenarios unless the optionality of the Proposed Scheme has narrowed to exclude options prior to submission of the application for development consent.	Both Kiln Lane Substation scenarios are assessed.
3.22.8	CCRA in other assessments: The EIA Scoping Report states that some climate change matters, for example flooding, would be addressed in other assessments as a result of applying best practice guidance. For the avoidance of doubt, the Climate Change ES Chapter should signpost where each relevant ES aspect chapters has considered climate	Noted, where other assessments and chapters within the PEIR and ES are used within the CCRA, these will be signposted.

[1]The EIA Scoping Opinion request for the Proposed Scheme initially included a component called 'Friston Substation', however it is named as 'Kiln Lane Substation' as part of this PEIR and subsequent ES.

Scoping Opinion ID	Scoping Opinion Comment	How this is addressed
	change, to ensure that there is no duplication or omission of assessment.	

27.4 Assessment methodology

27.4.1 This section outlines the methodology for assessing the potential likely effects of the Proposed Scheme in relation to Climate Change and Carbon including:

a. scope of the assessment;
b. study area;
c. methodology; and
d. assessment of cumulative effects.

27.4.2 The Proposed Scheme-wide approach to the assessment methodology is set out in **Chapter 5 EIA Approach and Methodology** of this PEIR.

Scope of the assessment

27.4.3 Potential likely effects requiring assessment may be temporary or permanent and may occur during construction, operation and maintenance, and decommissioning. Potential likely effects on Climate Change and Carbon receptors within the scope of the assessment are summarised in **Table 27.5**. The scope of the assessment has responded to feedback received as detailed in **Section 27.3.**

Table 27.5: Summary of the scope for Climate Change and Carbon assessment

Receptor	Construction	Operation	Decommissioning
The Global Climate	Scoped in	Scoped in	Scoped in
The Proposed Scheme	Scoped in	Scoped in	Scoped in

Study area

27.4.4 This section describes the spatial scope (the area which may be impacted) for the assessment as it applies to Climate Change and Carbon.

Preliminary Greenhouse Gas Assessment

27.4.5 The study area for the Preliminary GHG emissions assessment defines the physical location of emission sources associated with the Proposed Scheme, some of which are or will be within the Draft Order Limits (e.g., fuel use associated with construction plant equipment) and some of which are outside of the Draft Order Limits (e.g., extraction, manufacturing and production of construction materials).

27.4.6 The receptor is the global climate as all emissions, regardless of where they occur, contribute to the concentration of GHGs in the atmosphere and associated global warming. Therefore, there is no defined physical study area with regard to the identification and assessment of impacts to the receptor[2].

27.4.7 There may be changes in emissions associated with land-use and carbon sequestration in relation to the Proposed Onshore Scheme. This could include temporal impacts of removing habitats for construction laydown, or permanent removal and creation of habitats to allow the build and operation of the proposed Converter Station and Kiln Lane Substation.

27.4.8 There is diminishing capacity of the carbon budgets up to 2050. This will inform the assessment of GHG during construction and operation.

Climate change risk assessment and in-combination climate change impacts

27.4.9 The study area for the CCRA is based on the construction footprint and includes temporary and permanent works within the Draft Order Limits (offshore and onshore) which is shown in **Figure 1.1 Location Plan** i.e., it covers all assets and infrastructure which constitute the Proposed Scheme, during construction, operation, and decommissioning.

27.4.10 The study area for the ICCI assessment is the same as the CCRA and also includes all embedded mitigation outlined in the topic chapters.

Assessment scenarios

27.4.11 **Chapter 5 EIA Approach and Methodology** of this PEIR provides an overview of the Applicant's approach to the temporal scope (the timescales over which impacts may occur) of the EIA. This section describes the temporal scope for the assessment as it applies to Climate Change and Carbon.

27.4.12 Both Kiln Lane Substation Scenarios as described in **Chapter 5 EIA Approach and Methodology** have been considered in this chapter.

27.4.13 Both options (Northern Route Option and Southern Route Option) with regards to the proposed Underground High Voltage Alternating Current (HVAC) Cable Corridor as described in **Chapter 5 EIA Approach and Methodology** have been assessed. For the HVAC Cable Southern Route Option, the HVAC Cable Route LionLink Infrastructure and ducting for Sea Link Scenario has been assessed as the worst case.

27.4.14 The proposed Underground HVDC Cable Corridor generally follows a single route, except for a small section where it splits into two alternative options as described in **Chapter 2 Description of the Proposed Scheme**. Data was only

[2] The contextualisation exercise for the GHG assessment in the ES is also expected to give some consideration to the wider extent of the interconnector network where it extends beyond the Draft Order Limits but is integral to the successful functioning of the Proposed Scheme. This is discussed further in 27.4.32

available in this PEIR for the western option. Both options will be assessed within the ES.

27.4.15 The assessment approach in this PEIR has considered the combination of scenarios and options that generate both the highest (and worst case), and the lowest, whole life carbon emissions in order to provide a reasonable range of likely impact.

27.4.16 At the time of writing, sufficient data is not yet available to fully inform the Preliminary GHG Assessment of the Proposed Offshore Scheme. This will be provided for the ES.

Baseline methodology

Data collection

27.4.17 Baseline data collection has been undertaken to obtain information over the study area. This section provides the approach to collecting baseline data.

27.4.18 The following sources of data have been used to inform the baseline with respect to Climate Change and Carbon (**Table 27.6**). In addition to these data sources, the Climate Change and Carbon assessment draws on environmental baseline data collated for other topics, specifically, baseline data presented in **Chapter 12 Hydrology, Hydrogeology and Drainage** of this PEIR.

Table 27.6: Data sources used to inform the Climate Change assessment

Source of data	Baseline data
UK Climate Projections (UKCP18) (Ref 20)	Regional (UKCP18 Regional (12 km) models), probabilistic projections and factsheets. UKCP18 is the latest projections dataset for the UK, produced by the UK Met Office.
HadUK-Grid Met Office (Ref 21)	HadUK-Grid is an observational gridded dataset produced by the UK Met Office. The gridded data sets are based on the archive of UK weather observations held at the Met Office.
United Kingdom Climate Risk Indicators data (Ref 22)	Provides information on future change to indicators of climate risks across the UK, including wildfire daily hazard assessment data which Provides a five-day summary for wildfire that could affect the UK, based on UKCP18 projections.

27.4.19 Baseline data collection for the Climate Change and Carbon assessment has been desk based. No surveys specific to the Climate Change and Carbon assessment have informed the PEIR.

Assessment methodology

Greenhouse gas assessment

27.4.20 The Preliminary GHG Assessment has followed a project lifecycle approach to calculate estimated GHG emissions arising from the construction, operation and decommissioning phases of the Proposed Scheme in tonnes of carbon dioxide equivalent (tCO_2e) and to identify GHG 'hot spots' (i.e. emissions sources likely to generate the largest amount of GHG emissions). The unit tCO_2e (tonnes of carbon dioxide equivalent) is a standard unit for measuring GHG emissions, expressing the impact of all GHGs in terms of the equivalent amount of CO_2 that would cause the same magnitude of global warming. This allows emissions from different sources and gases to be consistently compared and reported.

27.4.21 In line with applicable guidelines from the GHG Protocol (Ref 23), GHG emissions are reported as tCO_2e and consider the seven Kyoto Protocol gases:

a. carbon dioxide (CO_2);
b. methane (CH_4);
c. nitrous oxide (N_2O);
d. hydrofluorocarbons (HFCs);
e. perfluorocarbons (PFCs);
f. sulphur hexafluoride (SF_6); and
g. nitrogen trifluoride (NF_3).

27.4.22 These GHGs are broadly referred to in this chapter under an encompassing definition of 'GHG emissions'.

27.4.23 The lifecycle stages included within the Preliminary GHG Assessment include:

a. the before use stage or the 'construction phase';
b. the use stage or the 'operational phase'; and
c. end of life stage or the 'decommissioning phase'.

27.4.24 This is a preliminary assessment based on the current stage of design and available data. The findings and estimates presented are subject to change as the design of the Proposed Scheme undergoes further refinement. Additional data will be incorporated into the final ES to ensure a more robust and accurate assessment. The quantification of GHG emissions may increase or decrease as this accuracy improves.

27.4.25 The GHG emissions associated with the baseline and each lifecycle stage were calculated by converting activity data into GHG emissions through application of industry standard GHG emission conversion factors in line with the GHG Protocol (Ref 23):

a. Activity data – a measure of the quantity of an activity. Activity data depends on the specific activity being assessed and the way they are quantified, for example, fuel consumption is typically quantified in litres or tonnes; construction materials and waste are quantified in m^3 or tonnes;

b. GHG factor – a measure of the GHG emissions per unit of activity. GHG factors are drawn from national and international sources; and
c. Activity data x GHG emissions factor = GHG emissions.

27.4.26 The key emissions factors which were used in the Preliminary GHG Assessment are from the following sources:

a. GHG Reporting: Conversion Factors (Ref 24); and
b. Inventory of Carbon and Energy (ICE) database (Ref 25).

27.4.27 The sources of GHG emissions are varied but there is only one impact pathway; GHG emissions released into the atmosphere contribute to global warming by absorbing heat that would otherwise be radiated into space.

27.4.28 **Table 27.7** and **Table 27.8** provide a summary of the potential emissions sources identified through the Proposed Scheme lifecycle.

27.4.29 The GHG assessment is structured by lifecycle stages: the before use stage (A), hereafter referred to as the 'construction phase', the use stage (B), referred to as the 'operational phase', and end of life stage, referred to as 'decommissioning phase' (C). These stages are then divided further into "modules" as defined in PAS 2080 (Ref 28). The modules relevant to this GHG assessment are outlined in **Table 27.7** and **Table 27.8** along with their definitions.

Table 27.7: Construction emission sources to be scoped into the greenhouse gas assessment

PAS 2080 module	Module Description/Pathway	Relevance to the Proposed Scheme
A1-3 (construction phase)	Raw material supply, transport and manufacture. The product stage captures the GHG emissions attributable to cradle to gate processes: raw material extraction and supply, transport, and manufacturing. The GHG emissions resulting from these processes are often referred to as embodied carbon.	A1-A3 emissions (i.e. from raw material extraction, product processing, and final product manufacture, energy use, and waste management within these processes, transportation within the supply chain, and manufacture) will be quantified to understand the emissions associated with the construction of the Proposed Scheme.
A4 – A5 (construction phase)	Transport to works site and construction/installation processes. This construction stage captures the GHG emissions associated with the transportation of the materials and components from the factory gate to the Proposed Scheme. GHG emissions	A4 and A5 emissions will be quantified to understand the emissions associated with the transportation of materials required for the construction of the Proposed Scheme and construction activities undertaken. A4 and A5 also includes carbon release from the disturbance of existing organic

PAS 2080 module	Module Description/Pathway	Relevance to the Proposed Scheme
	associated with any construction-related activities in the Draft Order Limits must be considered. Land use change.	carbon stock in soil during excavation and soil handling/disposal

Table 27.8: Operational emission sources to be scoped into the greenhouse gas assessment

PAS 2080 module	Module Description/ Pathway	Relevance to the Proposed Scheme
B1 (operational phase)	This use stage captures carbon emitted directly from the fabric of products and materials once they have been installed as part of the Proposed Scheme and it is in normal use. This includes GHG emissions from the use of SF6 in switch gear equipment installed as part of the Proposed Scheme.	The use of SF6 within switchgear equipment is a potential source of GHG emissions during operation of the Proposed Scheme. The associated GHG emissions are estimated as part of the Preliminary GHG Assessment. This has been included for the proposed Converter Station only.
B2, B3 and B4 (operational phase)	Maintenance, repair and replacement of the built asset components and systems over the Proposed Scheme design life.	This has been included for amended Kiln Lane and proposed Converter Station, proposed Landfall and proposed Underground Cable Corridor.
C1-4 (decommissioning phase)	Deconstruction, transport, waste processing for reuse, recycling and energy recovery and disposal.	This has been considered for any emissions at end of life.

27.4.30 A preliminary assessment of GHG emissions has been undertaken to identify potential sources and indicative magnitudes of emissions across the lifecycle of the Proposed Scheme. However, due to the evolving nature of the design and the current limitations in available data, a formal significance conclusion in accordance with Institute of Sustainability and Environmental Professionals (ISEP) guidance (Ref 27) has not been reached at this stage. This will be undertaken and reported in the ES, once further design detail and assessment inputs are available. The assessment of significance will consider how the Proposed Scheme compares with the UK's carbon budgets and the UK's legal commitment to achieve Net Zero by 2050. The assessment will also consider the wider Project of which the Proposed Scheme is an integral part and will seek to

qualitatively contextualise the GHG impact of this at a wider spatial scale beyond the UK.

Climate change risk assessment

27.4.31 This section outlines the methodology for assessing the likely effects of climate change on the construction, operational and decommissioning phases of the Proposed Scheme. The assessment approach includes potential climate hazards for infrastructure and assets associated with the Proposed Scheme. In line with ISEP guidance (Ref 26), a qualitative assessment will be undertaken based on professional expertise and judgment. This has not been carried out at this PEIR stage due to the evolving nature of the design; it will be reported in the ES.

27.4.32 The methodology and approach to assessing CCRA significance is as follows:

a. analysis of relevant climate change and weather data, emissions scenarios and probability levels for future changes to climate;
b. identification of climate hazards and potential risks from these climate hazards to the assets and occupants of the Proposed Scheme (for example, heatwaves, flooding, droughts);
c. assessment of sensitivity and magnitude of impacts;
d. assessment of likelihood and consequence - informed by using a qualitative scale for both which are then combined to indicate overall significance. The approach to producing this scale is explained in **Paragraphs 27.4.35** to **27.4.42** below;
e. consideration of the resilience of the Proposed Scheme within the context of embedded mitigation measures, including resilience measures which are embedded within the design due to regulations and design guidelines; and
f. identification of need for any further resilience measures to protect the Proposed Scheme against the effects of climate change.

27.4.33 UK Climate Projections 2018 (UKCP18), are a comprehensive set of climate model projections for the UK, providing updated observations and climate change projections up to 2100. Developed by the Met Office and partners these are based on the latest climate science, including new observations and climate models. The UKCP18 Local projections (5km resolution) were used to provide parameters to understand climate change trends in the location of the Proposed Scheme. These were calculated using the time series and a simple delta bias correction. The model projections for the Draft Order Limits are outlined in **Section 27.6**.

27.4.34 These projections are available for a range of emission scenarios up to 2100, with local projections only available for the highest emissions scenario up to 2080. These climate variables and their change over the time periods are shown on **Figures 27.1** to **27.7** of this PEIR.

Significance of effect

27.4.35 To determine the significance of effect in a CCRA the sensitivity of receptors (being elements of the Proposed Scheme across its life cycle) and the magnitude

of the impact must be defined and assessed. Definitions of sensitivity and magnitude are project specific and should, where possible, reflect existing frameworks for risk appraisal used within the wider sector and/or client group.

27.4.36 At this stage a full review of how risk, sensitivity and vulnerability, and the impact of disruption and damage considered within the wider context of the Proposed Scheme is not complete and therefore is not included in this assessment.

27.4.37 The ISEP Guidance (Ref 26) provides some indication of an appropriate approach – stating that the sensitivity of the receptor/receiving environment is the degree of response of a receiver to a change, and is a function of its capacity to accommodate and recover from a change if it is affected. Determining the sensitivity of a receptor will require consideration of how likely it is to be affected by a change in climate (which can be referred to as its susceptibility) and its potential exposure to changes in climate (referred to as vulnerability).

27.4.38 Magnitude of impact upon those receptors considered sensitive reflects the scale of disruption that would arise from the loss of function of an asset - ISEP guidance (Ref 26) describes magnitude as having various components, primarily the probability of an effect occurring, and the scale of any consequences arising from disruption. It is likely that if the probability and/or consequence of an effect on a sensitive receptor is high that the magnitude of the effect would also be high.

27.4.39 The emerging approach to definitions of probability of impact, and of the scale of consequence of impact, will be derived (where possible) from existing client and/or sectoral definitions. This would enable the integration of climate risk into an established risk management framework.

27.4.40 Once the sensitivity and magnitude of impacts have been determined, these can be combined to evaluate the significance of the likely environmental effect. As noted above, the significance of effect is specific to the Project, the function it delivers, and the needs of those parties who rely on it.

27.4.41 As there is no legislative definition of ‘significance’, the conclusion of whether an effect is significant/the level of significance is one of professional judgement.

27.4.42 As the design of the Proposed Scheme is evolving and will be informed by consultation, the sensitivity of the Proposed Scheme, and the magnitude of climate change risks on the Proposed Scheme are not yet defined. As such, the significance matrix has not yet been created. These will be developed during ongoing project design development and will be used to complete the full CCRA presented within the ES.

In-combination climate change impact assessment

27.4.43 The ICCI assessment has not been undertaken for the PEIR. ICCI assessments require a level of design progression which allows the topic assessments scoped into the ES to fully outline their respective embedded and additional mitigation

measures. As these mitigation measures are not fully established at the time of writing, the ICCI assessment will be completed within the subsequent ES.

Cumulative assessment

27.4.44 **Chapter 28 Cumulative Effects** of this PEIR defines the methodology for the assessment of cumulative effects. The Climate Change and Carbon assessment of intra- and inter-project cumulative effects will be carried out and reported within the ES. The approach to the cumulative assessment of CCRA and GHGs is as follows.

27.4.45 The ICCI assessment considers likely significant effects (including those identified by the Cumulative Effects Assessment) and whether these are exacerbated by climate change.

27.4.46 GHG emissions and their assessment are inherently cumulative for the following reasons:

a. the environmental impact arising from GHGs is the aggregation and increased concentration of GHGs within the atmosphere;
b. the location of the emissions source is not relevant to the impact arising from it; any development leading to GHG emissions has the same impact whether it is located near to the Proposed Scheme or in another region/country; and
c. impacts on a given location arise from the aggregated GHG levels in the atmosphere, not from the magnitude of GHG emissions in the local area.

Guidance

27.4.47 The Climate Change and Carbon assessment has been undertaken in accordance with relevant guidance and has been compiled in accordance with professional standards. The guidance and standards which relate to this assessment are:

a. ISEP (2022) Assessing Greenhouse Gas Emissions and Evaluating their Significance (Ref 27);
b. ISEP (2020) Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (Ref 26); and
c. PAS 2080:2023 on carbon management in Buildings and Infrastructure, a global standard for managing whole life carbon in the built environment and associated PAS 2080 Guidance Document (Ref 28).

27.4.48 The following further guidance is considered likely to be relevant to inform the full calculation of GHG emissions for the GHG Assessment to be undertaken and reported within the ES:

a. The Greenhouse Gas Protocol (Ref 23) - GHG Protocol establishes comprehensive global standardised frameworks to measure and manage GHG emissions from private and public sector operations, value chains and mitigation actions.
b. Department for Energy Security and Net Zero Emission Conversion Factors 2023 (Ref 29).

c. Royal Institution of Chartered Surveyors (RICS) Whole life carbon assessment for the built environment (2024) (Ref 30). This standard addresses all element and component categories that make up a built asset, across every life cycle stage: from extracting the raw materials and manufacturing construction products, through construction and operation, to recovery or disposal at end of life. It also separately assesses the potential loads and benefits beyond the system boundary in the next life cycle.

27.5 Assessment assumptions and limitations

27.5.1 This section provides a description of the assumptions and limitations to the Climate Change and Carbon assessment.

Preliminary greenhouse gas assessment

27.5.2 A Preliminary GHG Assessment has been undertaken on the basis of the information available at the time of assessment. The GHG Assessment uses appropriate industry benchmarks, and conservative assumptions on materials, design, assembly, earthworks and use of components to provide an assessment of likely GHG emissions.

27.5.3 The Preliminary GHG Assessment for the Proposed Onshore Scheme has the following limitations:

a. The construction materials associated with the proposed Converter Station and Kiln Lane Substation were not available at this stage and have therefore been based on the Sea Link design and GHG Assessment (Ref 31). As the Sea Link design will be similar in size, material use and construction processes, to the Proposed Scheme, this is considered to give an approximation to the magnitude of GHG emissions for this PEIR assessment. The assessment has not therefore calculated the impacts from embodied carbon for the Amendments to Kiln Lane Substation Scenario. This will be completed for the ES when the full design data is available.
b. There was no data available for the carbon emitted from the removal of habitats and the carbon sequestered from the replacement and creation of habitats. This will be assessment within the ES when the data from the Biodiversity Net Gain (BNG) assessment is available.
c. The operational GHG emissions have also been based on the Sea Link application for development consent:
    i. GHG emissions associated with maintenance, repair and replacement.
    ii. The impact from the use of SF6 within switchgear equipment is a potential source of GHG emissions during operation of the Proposed Scheme.

27.5.4 In line with the UK Supreme Court's ruling in Finch v Surrey County Council (2024), which postdates the EIA Scoping Opinion for the Proposed Scheme, the ES assessment will also consider associated connected infrastructure outside the Draft Order Limits of which the Proposed Scheme forms an integral part, and will provide contextualisation of the wider global impacts of this.

27.5.5 At the time of writing, the design of the Proposed Offshore Scheme is still evolving. This part of the GHG Assessment will be conducted for the ES.

27.5.6 A comprehensive list of assumptions and limitations will be provided within the ES once the assessments has been completed.

27.6 Baseline conditions

27.6.1 To provide an assessment of the likely effect of the Proposed Scheme (in terms Climate Change and Carbon), it is necessary to identify and understand the baseline conditions in the study area. This provides a reference point against which potential changes in Climate Change and Carbon can be assessed.

Preliminary greenhouse gas assessment

Current baseline

27.6.2 The current baseline represents the environmental conditions at the time of the preliminary assessment (2025) for the PEIR. The existing baseline for the Proposed Scheme is assumed to be zero GHG emissions. This represents the worst-case scenario (on the basis that emissions arising from the Proposed Scheme will be compared to a zero baseline rather than a non-zero baseline reflecting other new development).

27.6.3 The Draft Order Limits are located in a predominantly rural setting, comprising of arable land, managed hedgerows, and trees.

Future baseline

27.6.4 The assessment has considered the likely evolution of the baseline without the implementation of the Proposed Scheme. This is termed the future baseline, and for the Preliminary GHG emissions assessment, is defined by the GHG emissions arising from the study area in the absence of the Proposed Scheme.

27.6.5 The future baseline for the GHG Emissions assessment assumes that the study area would continue to operate in its existing configuration for the duration of the study period (i.e. construction, operation and decommissioning), where:

a. All baseline land uses and operations (e.g. management of arable land, managed hedgerows and trees); and
b. No construction of any new assets are assumed.

27.6.6 For the purposes of the Preliminary GHG emissions assessment, the future baseline is assumed to be zero, as a worst-case scenario, following a precautionary approach. Further, it is anticipated that there will be no change to the net GHG emissions between the future baseline and the Proposed Scheme.

Data limitations

27.6.7 The preliminary assessment includes emissions from:

a. Embodied carbon in construction materials (where data was available);
b. Construction-related transport, fuel, water use, and waste;

c. Operational maintenance, repair, and replacement (informed by Sea Link benchmarks);
d. Decommissioning activities, based on conservative assumptions and scaled from construction benchmarks.

27.6.8 However, several key sources have been excluded or only qualitatively assessed due to data limitations at this stage. These include:

a. Embodied carbon for the Amendments to Kiln Lane Substation Scenario;
b. Operational emissions from SF_6 leakage and energy use;
c. Carbon flux from habitat loss and gain (pending BNG data);
d. Carbon release from soil disturbance during excavation; and
e. Offshore construction, operational and decommissioning emissions, which will be assessed in the ES.

Climate change risk assessment

Current baseline and future baseline

27.6.9 **Table 27.9** shows the current and future baseline UKCP18 climate modelling trends for the Proposed Scheme's study area, outlined in **Figures 27.1 to 27.7**.

Table 27.9: Averages of 5km climate projections – grid squares used in averaging shown in Figures 27.1 to 27.7.

Parameter	Baseline (1981-2010)	Projection 2020-2050			Projection 2050-2080			Trend (based on column)
		RCP 8.5						
		10%	50%	90%	10%	50%	90%	
Annual number of days with high temperature [max temperature higher than 27C (Met Office Heatwave threshold)	2.5	5.0	8.9	10.9	14.0	25.1	31.9	↑
Annual number of frost days [temperature less than 0C]	39.3	13.9	22.7	30.6	1.1	8.9	22.7	↓
Annual number of days with 'heavy rain' [precipitation higher than 20mm/day]	2.1	1.6	2.4	3.1	2.1	2.7	3.4	↑
Annual number of dry spells [10 or more consecutive days without precipitation (defined as 0.2mm)]	4.1	4.2	4.6	5.4	5.1	5.5	6.2	↑
Mean winter temperature [C]	4.6	5.3	5.9	6.5	6.3	7.2	8.0	↑
Mean summer temperature [C]	16.3	17.2	18.2	18.6	18.6	20.0	20.4	↑
Mean winter daily precipitation [mm/day]	1.7	1.7	1.9	2.0	2.0	2.1	2.4	↑
Mean summer daily precipitation [mm/day]	1.7	1.3	1.5	1.7	1.0	1.2	1.5	↓

Parameter	Baseline (1981-2010)	Projection 2020-2050			Projection 2050-2080			Trend (based on column)
		RCP 8.5						
		10%	50%	90%	10%	50%	90%	
Average summer daily maximum temperature [C]	20.8	21.9	23.0	23.5	23.4	25.0	25.7	↑
Average winter daily minimum temperature [C]	1.7	2.3	3.0	3.6	3.4	4.3	5.1	↑

Qualitative data research

27.6.10 Other climate hazards exist however these are not quantifiable in the UKCP18 models. Relevant environmental hazards have been described qualitatively through literature to demonstrate the trends.

Storm surge

27.6.11 The Met Office UKCP18 Factsheet on storm surges, along with the Met Office article on UK and Global extreme weather events provides available information on UKCP18 marine projections and are summarised below:

a. no significant changes in storm surges projected (Ref 32);
b. it is currently unclear if storm surges will be more or less severe or remain same (Ref 32);
c. projections show small increase in frequency and intensity of storms in winter (Ref 32); and
d. rising sea levels worsen the effect of storm surges, increasing the risk of coastal flooding (Ref 32).

Sea level rise

27.6.12 The Met Office UKCP18 Factsheet on sea-level rise provides supplementary data on SLR trend (Ref 32):

a. SLR varies around the UK, with greater sea level rise projected with higher emissions scenarios;
b. tidal characteristics may change due to SLR;
c. both mean and extreme sea levels are projected to increase;
d. Sheerness is nearest port to the Draft Order Limits analysed in Met Office projections. In RCP8.5, still water return level of 4.85m by 2050 and 5.32m by 2100 at Sheerness;
e. SLR is the main factor in increased coastal flood risk in the UK; and
f. SLR caused primarily by thermal expansion of the water as global temperatures rise, and melting of land ice.

Coastal erosion

27.6.13 The Environment Agency's National assessment of flood and coastal erosion risk in England states that the east England has highest percentage of properties at risk of coastal erosion, with 25% at risk by 2055 and 27% at risk by 2105 (Ref 33).

Wildfire

27.6.14 The article from the University of Reading on the effect of climate change on indicators of fire danger states the following about wildfire hazards fire is increasing across UK (Ref 34);

a. increased danger is due to rise in temperature and reduction in relative humidity. Change in rainfall has had a much smaller effect;
b. number of days above Met Office Fire Severity Index (MOFSI) "Very High" warning projected to increase in the east of England from baseline of 28 days to 82 days in period 2041-2070, and to 121 days in period 2071-2100 for a high emissions scenario; and
c. changes in risk will not necessarily follow changes in danger, but gives an indication of trends to 2100.

27.7 Embedded design mitigation and control measures

Design and embedded mitigation measures

27.7.1 As described in **Chapter 2 Description of the Proposed Scheme** of this PEIR, a range of measures have been embedded into the Proposed Scheme design to avoid or reduce environmental effects.

27.7.2 During scoping, two proposed Onshore Underground Cable Corridor options were being considered, one landing at Southwold and one landing at Walberswick (the chosen option since scoping). Choosing the proposed Landfall Site at Walberswick option over the longer Southwold alternative aligns with the principles of the carbon hierarchy, which prioritises actions that avoid or reduce carbon emissions at the source. By selecting the shorter route, the Proposed Scheme reduces the need for construction materials and the overall programme duration – both of which typically correlate with lower GHG emissions.

27.7.3 Additional embedded mitigation measures will be incorporated into the design, if required, following the findings of the full GHG assessment, CCRA and ICCI assessment within the ES.

Control measures

27.7.4 Preliminary control measures are set out in the **Appendix 2.1 Outline Onshore Code of Construction Practice (CoCP)** which will manage the effects of construction. The measures of particular relevance to Climate Change and Carbon are listed in **Table 27.10**.

Table 27.10: Design and embedded mitigation and control measures relevant to Climate Change and Carbon

Commitment reference code	Design and embedded mitigation and control measure	Compliance mechanism
GHG Emissions		
CC:1	Identifying low carbon and/or reduced resource consumption solutions (including technologies, materials and products) to minimise resource consumption during the construction, operation and at end of life.	Secured via the Outline Onshore CoCP submitted as part of the application for development consent.
CC:2	Where appropriate, identify, assess and integrate measures to further reduce carbon through on or off-site sequestration.	Secured via the Outline Onshore CoCP submitted as part of the application for development consent.
CC:3	Use of materials with the higher recycled content, where this leads to lower whole life carbon emissions.	Secured via the Outline Onshore CoCP submitted as part of the application for development consent.
CC:4	Material recovered from the site shall be used to profile the new vertical and horizontal geometry. Alternatively near-site sources of material will be identified to minimise transportation and ground treatment emissions.	Secured via the Outline Onshore CoCP submitted as part of the application for development consent.
CC:5	Efforts will also be made to reduce the off-site haul distance of excess material, by prioritising its use on neighbouring schemes.	Secured via the Outline Onshore CoCP submitted as part of the application for development consent.
Climate Change resilience		
CC:6	Measures to mitigate against the impacts of climate change during the construction of the Proposed Scheme will include measures to protect the following elements from the impacts of climate change (including variations in temperature and precipitation and extreme weather events): • material specification, use and storage; • material delivery; • drainage systems; • plant and equipment; • maintenance regimes;	Secured via the Outline Onshore CoCP submitted as part of the application for development consent.

Commitment reference code	Design and embedded mitigation and control measure	Compliance mechanism
	• workforce health and safety; • design of the Proposed Scheme including site compounds; • traffic management; and • weather forecasting and emergency procedures.	

27.8 Assessment of effects

27.8.1 This section presents the preliminary assessment of likely effects on Climate Change and Carbon resulting from the construction, operation and decommissioning of the Proposed Scheme. The likely effects of the Proposed Scheme are identified taking into account the embedded design mitigation and control measures.

27.8.2 Following assessment further mitigation is proposed as required which is presented in **Section 27.9.**

Greenhouse gas assessment

27.8.3 The Preliminary GHG Assessment has been conducted to identify the maximum and minimum whole life carbon impacts across the range of scenarios and design options described in **Chapter 5 EIA Approach and Methodology**. The maximum impact assessment reflects the Full Build Out of Kiln Lane Substation Scenario and the Southern Route Option for the proposed Underground HVAC Cable Corridor, and the minimum impact assessment reflects the Amendments to Kiln Lane Substation Scenario and the Northern Route Option for the proposed Underground HVAC Cable Corridor. The results of these assessments are summarised in **Table 27.11** and **Table 27.12**. Offshore GHG emissions (tCO_2) are unavailable for the PEIR but will be considered within the ES.

Table 27.11: The maximum greenhouse gas assessment summary (Full Build Out of Kiln Lane Substation Scenario and Southern Route Option for the proposed Underground HVAC Cable Corridor)

Module	Description	Proposed Scheme Component	Onshore GHG Emissions (tCO_2)
Construction			
A1-3	Material embodied carbon	Bellmouths and Proposed Underground Cable Corridor, including Sea Link's HVAC cables	15,297
A1-3	Material embodied carbon	Full Build Out of Kiln Lane Substation	14,429
A1-3	Material embodied carbon	Proposed Converter Station (based on Sea Link's Converter Station)	90,182
A4	Transport	Materials and worker transport	18,108
A5	Construction processes	Fuel and water use	6,946
A5	Construction processes	Waste	531
A5	Disturbance of soils and removal of habitats	Release of carbon through the destruction of habitats and disturbance of soils	Data unavailable at PEIR
Total			145,493
Operation			
B1	Operation (Installed products and materials)	The use of SF6 within switchgear equipment is a potential source of GHG emissions during operation of the Proposed Scheme.	Data unavailable at PEIR
B1	Habitat creation / enhancement	Carbon captured from the atmosphere by habitats that are created or	Data unavailable at PEIR

Module	Description	Proposed Scheme Component	Onshore GHG Emissions (tCO_2)
		enhanced as part of the Proposed Scheme.	
B2, B3 and B4	Maintenance, repair and replacement of the built asset components and systems over the Proposed Scheme design life.	Maintenance of the Kiln Lane Substation, proposed Converter Station, proposed Landfall and Proposed Underground Cable Corridor	4,202
Total			4,202
Decommissioning			
C1	Deconstruction/Demolition processes	Removal of the proposed Converter Station and Kiln Lane Substation	7,211
C2	Transport	Transport of materials and workers to and from site	9,054
C3	Waste Processing	Landfill or recycling waste	265
Total			16,531

Table 27.12: The minimum greenhouse gas assessment summary (Amendments to Kiln Lane Substation Scenario and Northern Route Option for the proposed Underground HVAC Cable Corridor)

Module	Description	Proposed Scheme item	Onshore GHG Emissions (tCO_2)
Construction			
A1-3	Material embodied carbon	Bellmouths and proposed Underground Cable Corridor	13,070
A1-3	Material embodied carbon	Amendments to Kiln Lane Substation Scenario	Data unavailable at PEIR

Module	Description	Proposed Scheme item	Onshore GHG Emissions (tCO_2)
A1-3	Material embodied carbon	Proposed Converter Station (based on Sea Link's Converter Station)	90,182
A4	Transport	Materials and worker transport	11,176
A5	Construction processes	Fuel and water use	2,063
A5	Construction processes	Waste	20
A5	Disturbance of soils and removal of habitats	Release of carbon through the destruction of habitats and disturbance of soils	Data unavailable at PEIR
Total			116,510
Operation			
B1	Operation (Installed products and materials)	The use of SF6 within switchgear equipment is a potential source of GHG emissions during operation of the Proposed Scheme.	Data unavailable at PEIR
B1	Habitat creation / enhancement	Carbon captured from the atmosphere by habitats that are created or enhanced as part of the Proposed Scheme.	Data unavailable at PEIR
B2, B3 and B4	Maintenance, repair and replacement of the built asset components and systems over the Proposed Scheme design life.	Maintenance of the Kiln Lane Substation, proposed Converter Station, proposed Landfall and proposed Underground Cable Corridor.	Data unavailable at PEIR
Decommissioning			
C1	Deconstruction/Demolition processes	Removal of the proposed Converter Station and Kiln Lane Substation	2,073
C2	Transport	Transport of materials and workers to and from site	5,588
C3	Waste Processing	Landfill or recycling waste	10

Module	Description	Proposed Scheme item	Onshore GHG Emissions (tCO_2)
Total			7,671

27.8.4 The overall GHG emissions will be compared with associated UK carbon budgets to give an indication of scale of emissions against the UK's trajectory to net zero for the completed GHG assessment in the ES.

Construction

27.8.5 The majority of construction phase GHG emissions are attributed to embodied emissions in raw materials. The main contributors to embodied carbon are buildings and electrical equipment at the proposed Converter Station and Kiln Lane Substation. Other emission sources include emissions from material transport, construction activities, worker transport and waste.

27.8.6 The maximum assessed construction phase is estimated to emit 145,493 tCO_2e. This estimation will likely change in the ES following a complete GHG assessment.

Operation

27.8.7 The majority of operational GHG emissions are assumed to be attributed to maintenance, repair and replacement of the built asset components and systems over the Proposed Scheme's design life. The maximum assessed operational phase is estimated to emit 4,202 tCO_2e. This estimation will likely change in the ES following a complete GHG assessment.

Decommissioning

27.8.8 Should the Proposed Scheme be required to be decommissioned, this would likely result in GHG emissions from use of equipment, transport, and waste disposal arising from the Draft Order Limits. It is likely that GHG emissions associated with typical decommissioning practices, waste disposal, transport and energy will reduce over the lifetime of the Proposed Scheme as each of these industries decarbonise. It is also true that GHG emissions produced at the time of decommissioning may have a greater impact from the UK national perspective, as overall national GHG emissions are required to be net zero by 2050. The maximum assessed decommissioning phase is estimated to emit 16,531 tCO_2e. This estimation is expected to change in the ES to reflect the more comprehensive GHG assessment at that time.

Whole life carbon

27.8.9 The preliminary GHG assessment has estimated total onshore emissions for the Proposed Scheme across its lifecycle. For the Full Build Out of Kiln Lane

Substation Scenario with Southern Route Option for the proposed Underground HVAC Cable Corridor, indicative emissions are approximately 145,493 tCO_2e for construction, 4,202 tCO_2e for operation, and 16,531 tCO_2e for decommissioning. For the Amendments to Kiln Lane Substation Scenario with Northern Route Option for the proposed Underground HVAC Cable Corridor, emissions are estimated at 116,510 tCO_2e for construction and 7,671 tCO_2e for decommissioning, with operational emissions not yet quantified. These figures represent a partial and preliminary picture of the Proposed Scheme's total GHG footprint. These are based on currently available data and assumptions, and are therefore subject to refinement for the ES.

27.8.10 The ES will provide a full lifecycle GHG assessment, incorporating:

a. Updated design information (including mitigation) for all assets;
b. Quantified offshore emissions;
c. BNG outputs to assess land use change and sequestration;
d. Revised assumptions for operational and decommissioning phases; and
e. Contextualisation against UK carbon budgets and net zero trajectories.

27.8.11 The ES will apply ISEP guidance to determine whether the Proposed Scheme is consistent with the UK's trajectory to net zero.

Climate change risk assessment

27.8.12 At this stage, no assessment of significance has been undertaken. A full CCRA and ICCI will be undertaken and submitted with the ES.

27.9 Mitigation, monitoring and enhancement

27.9.1 Mitigation measures are defined in **Chapter 5 EIA Approach and Methodology** of this PEIR, with embedded control measures for Climate Change and Carbon being presented in **Section 27.7** of this chapter.

Indicative mitigation and enhancement

27.9.2 In line with ISEP guidance, additional mitigation is only required where a likely significant effect has been identified. As this PEIR does not draw a conclusion on the significance of GHG emissions, no additional mitigation can be proposed at this stage. However, this section presents a set of indicative mitigation opportunities that may be relevant to the Proposed Scheme as it progresses toward the ES. These are not presented as formal mitigation measures, nor are they assumed to be committed within the current design. As such, this section is intended to be informative rather than prescriptive and may be updated in the ES to better reflect the development of the design.

27.9.3 These measures are drawn from the National Grid's Climate Transition Plan (Ref 35), which outlines National Grid's strategy for reducing GHG emissions. This Plan's approach includes setting near-term climate targets to align with the Science Based Targets initiative's (SBTi) 1.5°C pathway, broadening scenario

analysis to cover upstream Scope 3 emissions and integrating GHG emissions reduction targets throughout, embedding into financial planning processes, performance management and governance structures. Although these have not been incorporated into the current design of the Proposed Scheme, these company targets and polices may impact the final Proposed Scheme. These actions are outlined below:

a. Reducing transmission losses: delivering the UK's Great Grid Upgrade, constructing and rebuilding over 1,000 miles of transmission lines and substations and continuing to develop energy links between the UK and Europe.
b. Sulphur Hexafluoride (SF6): The sector is collaborating to develop and implement SF6-free technologies, improve leak detection and repair, and invest in prevention. National Grid aims to cut absolute SF6 emissions by 50% by 2030/31 and achieve net zero by 2050. In the UK, investment in leak detection and regulatory funding through to 2026 support efforts to reduce future leaks, influencing the Proposed Scheme's design to lower GHG emissions during operation.
c. Company facilities and transport: A key target is to move all vehicles to 100% electric fleet by 2030 for light-duty vehicles and work towards the replacement of medium and heavy-duty vehicles using low/zero carbon alternatives. This would seek to directly reduce the GHG emissions of the Proposed Scheme during operational maintenance, repair and refurbishment activities.
d. Purchased goods and services: The development of procurement modes to include GHG emissions as part of the procurement process, so that by 2025/26, 80% of UK suppliers will commit to setting formal science-based targets with the SBTi. This would seek to directly reduce the GHG emissions of the Proposed Scheme during construction and operation by working with delivery partners who commit to using low carbon materials.

27.9.4 Additional mitigation and enhancement measures will be incorporated into the design, if required, following the findings of the full GHG assessment, CCRA and ICCI assessment and reported in the ES.

Monitoring

27.9.5 It is currently unknown if the Proposed Scheme will require monitoring related to GHG emissions or climate related risks.

27.10 Summary of residual effects

27.10.1 The overall residual effects have not been determined at this stage and will be reported in full within the ES.

27.11 Monitoring

27.11.1 Any monitoring related to GHG emissions or climate related risks that may be needed will be reported in full in the ES.

Topic Glossary and Abbreviations

Term	Definition
BNG	Biodiversity Net Gain
CCC	Climate Change Committee
CCGT	Combined Cycle Gas Turbine
CCR	Climate Change Resilience
CCRA	Climate Change Resilience Assessment
CH_4	Methane
CO_2	Carbon Dioxide
CoCP	Code of Construction Practice
DCO	Development Consent Order
DEMP	Decommissioning Environmental Management Plan
DM	Do-Minimum
EA	Environment Agency
GHG	Greenhouse Gas
HVAC	High Voltage Alternating Current
HFC	Hydrofluorocarbons
ICCI	In-combination Climate Change Impact
ICE database	Inventory of Carbon and Energy database
ISEP	Institute of Sustainability and Environmental Professionals
LEMP	Landscape and Ecology Management Plan
MOFSI	Met Office Fire Severity Index
N_2O	Nitrous Oxide
NF_3	Nitrogen trifluoride
NDC	Nationally Determined Contribution
NPS	National Policy Statement
NPS EN-1/EN-3/EN-5	National Policy Statements for Energy Infrastructure
PAS 2080	Publicly Available Specification 2080
PEIR	Preliminary Environmental Information Report
PFC	Perfluorocarbons
RCP8.5	Representative Concentration Pathway 8.5 (high emission scenario)
RICS	Royal Institution of Chartered Surveyors
SBTi	Science Based Targets initiative's

Term	Definition
SF6	Sulphur Hexafluoride
SLR	Sea Level Rise
SMP	Shoreline Management Plan
SuDS	Sustainable Drainage System
T&C	Transmission and distribution
tCO_2e	Tonnes of carbon dioxide equivalent
UKCP18	UK Climate Projections 2018 – Climate change projections for the UK
UKMPS	UK Marine Policy Statement

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