

The Great Grid Upgrade

Sea Link

Preliminary Environmental Information Report

Volume: 1

Part 5 Project Wide Effects

Chapter 1 Climate Change

Version A

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nationalgrid

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5.1 Climate Change

5.1.1 Introduction

5.1.1.1 This chapter of the Preliminary Environmental Information Report (PEIR) presents information about the preliminary environmental assessment of the likely significant effects of climate change identified to date, that could result from the Proposed Project (as described in **Volume 1, Part 1, Chapter 4, Description of the Proposed Project**).

5.1.1.2 This chapter describes the methodology used, the datasets that have informed the preliminary assessment, baseline conditions, mitigation measures and the preliminary climate residual significant effects that could result from the Proposed Project.

5.1.1.3 The draft Order Limits, which illustrate the boundary of the Proposed Project, are illustrated on **Figure 1.1.1 Draft Order Limits** and the Suffolk Onshore Scheme Boundary is illustrated on **Figure 1.1.2 Suffolk Onshore Scheme Boundary**, Kent Onshore Scheme Boundary is illustrated on **Figure 1.1.3 Kent Onshore Scheme Boundary** and the Offshore Scheme Boundary **Figure 1.1.4 Offshore Scheme Boundary**.

5.1.1.4 This chapter should be read in conjunction with:

- **Volume 1, Part 1, Chapter 4, Description of the Proposed Project;**
- **Volume 1, Part 1, Chapter 5, PEIR Approach and Methodology;**
- **Volume 1, Part 1, Chapter 6, Scoping Opinion and EIA Consultation;**
- **Volume 1, Part 2, Chapter 1, Evolution of the Suffolk Onshore Scheme;**
- **Volume 1, Part 2, Chapter 5, Water Environment;**
- **Volume 1, Part 3, Chapter 1, Evolution of the Kent Onshore Scheme;**
- **Volume 1, Part 3, Chapter 5, Water Environment; and**
- **Volume 1, Part 4, Chapter 1, Evolution of the Offshore Scheme.**

5.1.1.5 This chapter is supported by the following appendices:

- **Volume 2, Part 1, Appendix 1.4.A, Outline Code of Construction Practice;**
and
- **Volume 2, Part 1, Appendix 1.4.F, Schedule of Environmental Commitments and Mitigation Measures.**

5.1.2 Regulatory and Planning Context

5.1.2.1 This section sets out the legislation and planning policy that is relevant to the preliminary climate change assessment, and may influence the type of mitigation measures that could be incorporated into the Proposed Project during construction, operation, maintenance and decommissioning.

- 5.1.2.2 A full review of compliance with relevant national and local planning policy will be provided within the Planning Statement that will be submitted as part of the application for Development Consent.

Legislation

Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref. 5.1.1)

- 5.1.2.3 This legislation requires a description of:
- The factors likely to be significantly affected by the development, including climate (for example greenhouse gas emissions and impacts relevant to adaptation) – see Schedule 4, paragraph 4(4);
 - The likely significant effects of the development on the environment resulting from “the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change” – see Schedule 4, paragraph 5(f).
- 5.1.2.4 The likely significant effects of climate change with the embedded and good practice mitigation measures are presented in Section 5.1.8.

The Climate Change Act 2008 (2050 Target Amendment) Order 2019 (Ref. 5.1.2)

- 5.1.2.5 Revised the Climate Change Act (2008) (Ref. 5.1.2) to legislate for Net Zero emissions by 2050. This target is supported by a system of legally binding five-year ‘carbon budgets’ and an independent body to monitor progress, the Climate Change Committee (CCC). The UK carbon budgets restrict the amount of Greenhouse Gas (GHG) emissions the UK can legally emit in a defined five-year period.
- 5.1.2.6 Requires infrastructure operators and public bodies to report on how they are addressing the impacts of climate change on their organisation under the Adaptation Reporting Power. The National Grid Climate Change Adaptation Report (Ref. 5.1.3) has been used to inform the Climate Change Resilience (CCR) assessment, including the methodology set out in Section 5.1.4.

The Carbon Budget Order 2021 (Ref. 5.1.4)

- 5.1.2.7 In December 2020, the 6th Carbon Budget for the 2033-2037 period was published by the CCC and is the first budget to reflect the amended trajectory to Net Zero by 2050.

National Policy

National Policy Statements

- 5.1.2.8 National Policy Statements (NPSs) set out the primary policy tests against which the application for a Development Consent Order (DCO) for the Proposed Project would be considered. A review of the NPS was announced in the 2020 Energy white paper: Powering our net zero future. This review was to ensure the NPSs were brought up to date to reflect the policies set out in the white paper. The below information reflects these updates currently under consultation.

5.1.2.9 Table 5.1.1 and Table 5.1.2 below provides details of the elements of NPS for Energy (EN-1) (2011) (Ref. 5.1.5) and the Energy (EN-1) Revised (Draft) (2023) (Ref. 5.1.25), as well as the NPS for Electricity Networks Infrastructure (EN-5) (Ref. 5.1.6) that are relevant to this chapter, and how and where they are covered in the PEIR or will be covered within the Environmental Statement (ES).

Table 5.1.1 NPS EN-1 requirements relevant to climate change

| NPS EN-1 section | Where this is covered in the PEIR |
|--|---|
| NPS EN-1 (2011) | |
| Paragraphs 2.2.9 and 4.8.2 in relation to impacts on climate and adaptation | The preliminary lifecycle greenhouse gas assessment included in this PEIR, and to be updated in the ES which be submitted with the application for development consent, assesses the Proposed Project’s impact on the climate. The climate change resilience assessment in this PEIR, which will be updated in the ES considers the Proposed Project’s resilience to climate change. These assessments have been (and will be updated for the ES) in accordance with IEMA GHG assessment guidance and IEMA climate change resilience and adaption guidance (Ref. 5.1.16 and Ref. 5.1.17). |
| Paragraphs 4.1.3 to 4.1.4 in relation to adverse effects and benefits | The climate change assessment considers both the adverse effects and the benefits of the Proposed Project during all its phases. |
| Paragraphs 4.2.1, 4.2.3, 4.2.4, 4.2.8 to 4.2.10 and 5.1.2 in relation to EU Directive and ES requirements | The climate chapter of this PEIR considers the likely significant impacts on the climate during all phases of the Proposed Project, as well as any required mitigation measures required to reduce the residual effects. This will be further updated for the ES. |
| Paragraphs 4.5.3 and 4.8.1 to 4.8.12 in relation to adaptation measures in response to climate projections | The climate change resilience assessment assesses the Proposed Project’s impact on climate change and the Proposed Project’s resilience to climate change in accordance with IEMA GHG assessment guidance and IEMA climate change resilience and adaption guidance (Ref. 5.1.16 and Ref. 5.1.17). |
| Paragraphs 5.7.1 to 5.7.2 in relation to climate projections, flood risk and the importance of relevant mitigation | The climate change resilience assessment assesses the Proposed Project’s impact on climate change and the Proposed Project’s resilience to climate change, and extremer weather events such as flooding, in accordance with IEMA GHG assessment guidance and IEMA climate change resilience and adaption guidance (Ref. 5.1.16 and Ref. 5.1.17). |

| NPS EN-1 section | Where this is covered in the PEIR |
|--|--|
| NPS EN-1 (draft) (2023) | |
| Paragraphs 2.2.1, 2.3.2 and 2.3.3 in relation to UK carbon budgets and the need to reduce emissions to reach the 2050 net zero target. | The climate change assessment, which will be updated for the ES, assesses the Proposed Project's greenhouse gas emissions in the context of the legally binding greenhouse gas reduction targets and carbon budgets in line with IEMA GHG assessment guidance (Ref. 5.1.16). |
| Paragraphs 3.3.63 and 3.3.64 regarding the need to establish new electricity network infrastructure to meet the UK energy objectives and reduce the need for fossil fuels. | The climate change assessment will assess if the Proposed Project aligns itself with reducing the UK's dependence on fossil fuels in line with IEMA GHG assessment guidance (Ref. 5.1.16). |
| Paragraph 5.3.4 states all projects should include a GHG assessment. | The climate change chapter to be presented in the ES to be submitted with the application for development consent will assess the Proposed Project's greenhouse gas emissions in the context of the legally binding greenhouse gas reduction targets and carbon budgets in line with IEMA GHG assessment guidance (Ref. 5.1.16). |
| Paragraphs 5.3.5 to 5.3.7 in relation to mitigation measures required to drive down GHG emissions. | The climate change assessment considers the likely significant impacts of the GHG emissions associated with all phases of the Proposed Project, as well as any required mitigation measures required to reduce the residual effects. |

Table 5.1.2 NPS EN-5 requirements relevant to climate change

| NPS EN-5 section | Where this is covered in the PEIR |
|---|--|
| Paragraphs 2.3.1 to 2.3.2 in relation to climate change adaptation and resilience | The climate change resilience assessment assesses the Proposed Project's impact on climate change and the Proposed Project's resilience to climate change, and extremer weather events such as flooding, in accordance with IEMA GHG assessment guidance and IEMA climate change resilience and adaption guidance (Ref. 5.1.16 and Ref. 5.1.17). |

National Planning Policy Framework

- 5.1.2.10 The National Planning Policy Framework (NPPF) (Ref. 5.1.7) has the potential to be considered important and relevant to the SoS' consideration of the Proposed Project.

Table 5.1.3 below provides details of the elements of the NPPF that are relevant to this chapter, and how and where they are covered in the PEIR or will be covered within the ES.

Table 5.1.3 NPPF requirements relevant to climate change

| NPPF section | Where this is covered in the PEIR |
|--|---|
| Paragraphs 8, 20 and 149 in relation to adaptation, mitigation and climate change resilience | Embedded and good practice adaptation measures have been identified in Section 5.1.7 of this chapter. |
| Paragraphs 148 and 157 in relation to flood risk and damage to property and people | The approach outlined in the NPPF to decrease vulnerability to current and future impacts of climate change and flood risk have been applied using the latest climate projections data from UKCP18, as identified in Section 5.1.4 of this chapter. |
| Paragraphs 150 and 153 in relation to reduction of CO2 emissions through design and reduced energy consumption | The climate change assessment considers the Proposed Project’s greenhouse gas emissions in the context of the legally binding greenhouse gas reduction targets and carbon budgets in line with IEMA GHG assessment guidance (Ref. 5.1.16). |
| Paragraphs 155 to 165 in relation to climate projections, associated flood risk and adaptation | The climate change resilience assessment assesses the Proposed Project’s impact on climate change and the Proposed Project’s resilience to climate change, and extremer weather events such as flooding, in accordance with IEMA GHG assessment guidance and IEMA climate change resilience and adaption guidance Ref. 5.1.16 and Ref. 5.1.17). |

National Planning Practice Guidance

- 5.1.2.11 The National Planning Policy Guidance on Climate Change (Ref. 5.1.8) describes how to identify suitable mitigation and climate adaptation measures to incorporate into the planning process, stating that:
- 5.1.2.12 *“Effective spatial planning is an important part of a successful response to climate change as it can influence the emission of greenhouse gases... Planning can also help increase resilience to climate change impact through the location, mix and design of development.”*

Local Planning Policy

- 5.1.2.13 The Suffolk Onshore Scheme Boundary lies within the jurisdiction of Suffolk County Council and the boundary of the Suffolk Coastal Local Plan.
- 5.1.2.14 The Kent Onshore Scheme Boundary lies within the jurisdiction of Kent County Council, and within the boundary of Thanet District Council Local Plan and Dover District Local Plan

- 5.1.2.15 County planning guidance which is relevant to a study of climate change and has informed the assessment of preliminary effects in this chapter are as follows:
- Suffolk County Council’s Energy and Climate Adaptive Infrastructure Policy (16th May 2023) (Ref. 5.1.9)
 - East Suffolk Council – Suffolk Coastal Local Plan (September 2020) (Ref. 5.1.10)
 - Kent Environment Strategy – a strategy for environment, health and economy (March 2016) (Ref. 5.1.11)
 - Kent and Medway Energy and Low Emissions Strategy: Implementation Plan 2020-2023 (May 2021) (Ref. 5.1.12)
 - Thanet District Council Local Plan (Adopted July 2020) (Ref. 5.1.13)
- 5.1.2.16 Local Plan policies which are relevant to climate change matters and will inform the assessment in the ES include are detailed in Table 5.1.4.

Table 5.1.4 Local Planning Policies relevant to climate change

| Policy | Where this is covered in the PEIR |
|--|---|
| Suffolk County Council’s Energy and Climate Adaptive Infrastructure Policy | |
| <p>“The Council wishes to ensure that Suffolk can fulfil this role, both to support the national and local response to climate change, and to maximise opportunities for new and existing businesses and technologies in Suffolk. Whilst recognising the importance of projects to deliver Net Zero and adapt to the changing climate, the Council considers it is essential that projects do not lead to avoidable, unmitigated, or uncompensated detriment to the communities and environment of Suffolk, and its existing businesses”</p> | <p>The climate change assessment considers the Proposed Project’s greenhouse gas emissions in the context of the legally binding greenhouse gas reduction targets and carbon budgets in line with IEMA GHG assessment guidance. In addition, the climate chapter of the ES will assess the likely significant impacts of the GHG emissions associated with all phases of the Proposed Project, as well as any required mitigation measures required to reduce the residual effects.</p> |
| East Suffolk Council – Suffolk Coastal Local Plan | |
| <p>Policy SCLP9.1 – Low Carbon & Renewable Energy</p> <p>Policy SCLP9.2 – Sustainable Construction</p> <p>Policy SCLP9.3 – Coastal Change Management Area</p> <p>Policy SCLP9.4 – Coastal Change Rollback or Relocation</p> | <p>The climate change assessment considers the impact of the Proposed Project’s greenhouse gas emissions in the context of the legally binding greenhouse gas reduction targets and carbon budgets in line with IEMA GHG assessment guidance. In addition, the climate chapter of the ES will</p> |

| Policy | Where this is covered in the PEIR |
|---|---|
| Policy SCLP9.5 – Flood Risk Policy SCLP9.6 – Sustainable Drainage Systems Policy SCLP9.7 – Holistic Water Management | <p>assess the likely significant impacts of the GHG emissions associated with all phases of the Proposed Project, as well as any required mitigation measures required to reduce the residual effects.</p> <p>The Proposed Project will reinforce the existing transmission network and build new electricity infrastructure to support new sources of renewable and low-carbon energy are located along the Suffolk and Kent coastlines.</p> |
| Kent and Medway Energy and Low Emissions Strategy: Implementation Plan 2020-2023 | |
| Action 3.1 Refresh the Kent Design Guide to reflect clean growth, net-zero targets and climate change adaptation | <p>The climate change assessment considers the impact of the Proposed Project’s greenhouse gas emissions in the context of the legally binding greenhouse gas reduction targets and carbon budgets in line with IEMA GHG assessment guidance. In addition, the climate chapter of the ES will assess the likely significant impacts of the GHG emissions associated with all phases of the Proposed Project, as well as any required mitigation measures required to reduce the residual effects.</p> <p>Furthermore, the Proposed Project will reinforce the existing transmission network and build new electricity infrastructure to support new sources of renewable and low-carbon energy are located along the Suffolk and Kent coastlines.</p> |
| Thanet District Council Local Plan | |
| Thanet District Council Local Plan Policy CC01 – Fluvial and Tidal Flooding Policy CC02 – Surface Water Management | <p>The climate chapter assesses the likely significant impacts of the GHG emissions associated with all phases of the Proposed Project, as</p> |

| Policy | Where this is covered in the PEIR |
|---|---|
| Policy CC03 – Coastal Development Policy CC04 – Renewable Energy Policy CC07 -- Richborough | well as any required mitigation measures required to reduce the residual effects. Furthermore, the Proposed Project will reinforce the existing transmission network and build new electricity infrastructure to support new sources of renewable and low-carbon energy are located along the Suffolk and Kent coastlines. |

5.1.3 Scoping Opinion and Consultation

Scoping

- 5.1.3.1 A Scoping Report (Ref. 5.1.14) for the Proposed Project was issued to the Planning Inspectorate (PINS) on 24 October 2022 and a Scoping Opinion (Ref. 5.1.15) was received from the Secretary of State (SoS) on 1 December 2022. Table 5.1.5 sets out the comments raised in the Scoping Opinion and how these have been addressed in this PEIR or will be addressed within the Environmental Statement (ES). The Scoping Opinion takes account of responses from prescribed consultees as appropriate.

Table 5.1.5 Comments raised in the Scoping Opinion

| ID | Inspectorate's comments | Response |
|-----------|---|-----------------------------|
| 6.1.1 | In-combination temperature change The impact of future temperature changes as a result of climate change are not anticipated to be exacerbated by the Proposed Project in combination with future conditions. The Inspectorate agrees that this matter can be scoped out. | No further comment required |
| 6.1.2 | In-combination sea level rise The Impact of future sea level rise as a result of climate change is not anticipated to be exacerbated by the Proposed Project in combination with future conditions. The Inspectorate agrees that this matter can be scoped out. | No further comment required |
| 6.1.3 | In-combination precipitation change The impact of future precipitation changes as a result of climate change are not anticipated to be exacerbated by the Proposed Project in combination with | No further comment required |

| ID | Inspectorate's comments | Response |
|-------|---|-----------------------------|
| | future conditions. The Inspectorate agrees that this matter can be scoped out. | |
| 6.1.4 | <p>In-combination wind</p> <p>The impact of future wind conditions as a result of climate change is not anticipated to be exacerbated by the Proposed Project in combination with future conditions. The Inspectorate agrees that this matter can be scoped out.</p> | No further comment required |

Consultation and Project Engagement

- 5.1.3.2 Stakeholder engagement will be undertaken as the Proposed Project progresses with statutory parties including the Environment Agency and the relevant Local Planning Authorities on climate change targets, aims, commitments, other projects, plans and policy that affect climate and baseline data, as well as any known future developments in close proximity to the Proposed Project.

5.1.4 Approach and Methodology

- 5.1.4.1 **Volume 1, Part 1, Chapter 5, PEIR Approach and Methodology** sets out the overarching approach which has been used in developing the preliminary environmental information. This section describes the technical methods used to determine the baseline conditions, sensitivity of the receptors and magnitude of effects and sets out the significance criteria that have been used for the preliminary climate change assessment.

Guidance Specific to the Climate Change Assessment

- 5.1.4.2 The preliminary climate change assessment has been carried out in accordance with the following good practice guidance documents:
- Institute of Environmental Management and Assessment (IEMA) (2022). Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance (Ref. 5.1.16);
 - Institute of Environmental Management and Assessment (IEMA) (2020). Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (Ref. 5.1.17); and
 - The GHG Protocol (World Resources Institute and World Business Council for Sustainable Development (WRI & WBCSD)) (Ref. 5.1.18).

Baseline Data Gathering and Forecasting Methods

Greenhouse Gas Impact Assessment

- 5.1.4.3 For the purposes of the GHG emissions impact assessment, the baseline conditions are also defined as 'Do Nothing' scenario where the Proposed Project does not go ahead.
- 5.1.4.4 The baseline comprises of existing carbon stocks and sources of GHGs within the boundary of the existing Proposed Project. The methodology for calculating GHG emissions and removals is consistently used across the design, construction, and operational phases of the Proposed Project.

Climate Change Resilience Assessment

- 5.1.4.5 The current baseline for the CCR assessment is based on historic climate data obtained from the Met Office (Ref. 5.1.22) recorded by the closest meteorological stations to the Proposed Project (Walton-on-Naze (Codet2) (Essex), located on the coast approximately 40 km from the Suffolk landfall and 50km from the Kent landfall) for the period 1981-2010. As part of the ES CCR assessment, this will be compared to the future baseline throughout the life of the Proposed Project.
- 5.1.4.6 The future baseline for the CCR assessment is based on future UK Climate Projections 2018 (UKCP18) (Ref. 5.1.23). This projection data provides probabilistic indications of how global climate change is likely to affect areas of the UK using pre-defined climate variables and time periods.
- 5.1.4.7 For the purpose of the assessment, UKCP18 probabilistic projections for pre-defined 20-year periods for the following average climate variables have been obtained and will be further analysed:
- mean annual temperature;
 - mean summer temperature;
 - mean winter temperature;
 - maximum summer temperature;
 - minimum winter temperature;
 - mean annual precipitation;
 - mean summer precipitation;
 - mean winter precipitation; and
 - sea level rise.
- 5.1.4.8 UKCP18 probabilistic projections have been analysed for the two 25km grid squares within which the Proposed Project is located. These figures are expressed as temperature/precipitation anomalies in relation to the 1981-2000 baseline. This baseline was selected as it provides projections for 20-year time periods (e.g. 2020-2039) for the parameters analysed within the assessment compared to the 30-year land-based projections that would be generated from the 1981 – 2010 baseline.
- 5.1.4.9 UKCP18 uses a range of possible scenarios, classified as Representative Concentration Pathways (RCPs), to inform differing future emission trends. These

RCPs '[...] specify the concentrations of greenhouse gases that will result in total radiative forcing increasing by a target amount by 2100, relative to preindustrial levels'. RCP8.5 is considered to be the worst-case global scenario with the greatest concentration of GHGs in the atmosphere and has been used as the purposes of this assessment as a worst-case scenario.

- 5.1.4.10 As part of this assessment, the increased frequency and severity of extreme weather events (such as heavy and/or prolonged precipitation, storm events and heatwaves) will also be assessed in the ES.

Assessment Criteria

Greenhouse Gas Impact Assessment

Sensitivity

- 5.1.4.11 The sensitivity of the receptor (global climate) to increases in GHG emissions is always defined as high as any additional GHG impacts could compromise the UK's ability to reduce its GHG emissions and therefore meet its future 5-year carbon budgets. Also, the extreme importance of limiting global warming to below 2°C this century is broadly asserted by the International Paris Agreement (Ref. 5.1.24) and the Climate Science Community.

Magnitude

- 5.1.4.12 To identify the magnitude of GHG impact over the life of the Proposed Project, emissions are calculated in line with guidance provided in Publicly Available Specification – PAS 2080:2023 Carbon Management in Infrastructure (Ref. 5.1.26) and with the principles for calculating greenhouse gas emissions set out in the Greenhouse Gas Protocol (Ref. 5.1.18). GHG emissions arising from the construction and decommissioning activities, embodied carbon in materials and operational emissions of the Proposed Project, will be quantified in the ES using a calculation-based methodology as per the following equation, and aligned with the GHG Protocol:

$$\text{Activity data} \times \text{GHG emissions factor} = \text{GHG volume}$$

- 5.1.4.13 Activity data is a quantifiable measure of activity, such as operating hours or volumes of fuels used. Emission factors convert the activity data into GHG volumes. Activity data will be sourced from client data. Where specific data is not available, a mix of assumptions and industry benchmarks have been used to fill data gaps. Where this is not possible, then a qualitative approach to assessing the GHG impacts will be followed, in line with the IEMA guidance (Ref. 5.1.16).
- 5.1.4.14 Emission factors will be sourced from publicly available sources, Defra (Ref. 5.1.19), and the Bath University Inventory of Carbon and Energy (Ref. 5.1.20). Carbon emissions and sinks through land use change have been calculated by using the EU Commission's Guidelines for Land Carbon Stocks (Ref. 5.1.21).
- 5.1.4.15 In line with the World Business Council for Sustainable Development and World Resources Institute GHG Protocol guidelines (Ref. 5.1.18), the GHG assessment will be reported as tonnes of carbon dioxide equivalent (tCO_{2e}) and has considered the seven Kyoto Protocol gases:

- carbon dioxide (CO₂);

- methane (CH₄);
- nitrous oxide (N₂O);
- sulphur hexafluoride (SF₆);
- hydrofluorocarbons (HFCs);
- perfluorocarbons (PFCs); and
- nitrogen trifluoride (NF₃).

5.1.4.16 These gases are broadly referred to in this report under an encompassing definition of 'GHGs', with the unit of t CO_{2e} (tonnes CO₂ equivalent) or Mt CO_{2e} (mega tonnes of CO₂ equivalent)

Significance of effects

5.1.4.17 As set out in **Volume 1, Part 1, Chapter 5, PEIR Approach and Methodology** the general approach taken to determining the significance of effect in this preliminary assessment is only to state whether effects are likely or unlikely to be significant, rather than assigning significance levels.

5.1.4.18 Further assessment will be undertaken for the ES where the significance of impact of GHG emissions on the climate will be determined in line with the criteria set out in IEMA Guidance (Ref. 5.1.16).

5.1.4.19 As per IEMA guidance, any GHG emissions or reductions from a project might be considered to be significant, as all emissions contribute to climate change. The rationale for classification is as follows:

- any additional GHG impacts could compromise the UK's ability to reduce its GHGs and therefore the ability to meet its carbon budgets;
- the extreme importance of limiting global warming to below 2°C this century, as broadly asserted within the Paris Agreement, national legislation, and community support. Additionally, a recent report by the IPCC highlighted the importance of limiting global warming below 1.5°C; and
- a disruption to global climate is already having diverse and wide-ranging impacts to the environment, society, economic and natural resources. Known effects of climate change include increased frequency and duration of extreme weather events, temperature changes, rainfall and flooding, and sea level rise and ocean acidification. These effects are largely accepted to be negative, profound, global, likely, long-term to permanent, and are transboundary and cumulative from many global actions.

5.1.4.20 IEMA guidance states that it is challenging to identify fixed numerical thresholds against which to identify the significance of a proposed project regarding the net change in GHG emissions. Therefore, the GHG assessment should present context for the GHG emissions, and it is down to the practitioner's professional judgement on how best to contextualise a project's GHG impact.

5.1.4.21 The Climate Change Act 2008 established a system of five-yearly carbon budgets. Each carbon budget represents the total amount of GHG emissions that may be emitted by the UK during each 5-year period, measured in MtCO_{2e}. The carbon budgets are consistent with furthering the achievement of the UK climate objective and include all GHG emissions. Therefore, to contextualise the impact of the Proposed

Project, as part of the assessment within the ES, GHG emissions for the Proposed Project will be put into context of the UK’s carbon budgets up to 2037 published by the CCC.

5.1.4.22 The level of significance of Proposed Project-related emissions will be determined at the ES stage using IEMA’s (2022) five distinct levels of significance which are not solely based on whether a development emits GHG emissions alone, but how it makes a relative contribution towards achieving a science based 1.5°C aligned transition towards net zero. The definitions for IEMA’s levels of significance are provided below.

Table 5.1.6 Significance of Effects for GHGs Impact Assessment (adopted from the IEMA GHG Guidance)

| Effects | Level of Significance | Description |
|-----------------|------------------------------|--|
| Significant | Major adverse | The Proposed Project’s GHG impacts are not mitigated or are only compliant with do-minimum standards set through regulation, and do not provide further reductions required by existing local and national policy for projects of this type. A project with major adverse effects is locking in emissions and does not make meaningful contribution to the UK’s trajectory towards net zero. |
| | Moderate adverse | The Proposed Project’s GHG impacts are partially mitigated and may partially meet the applicable existing and emerging policy requirements but would not fully contribute to decarbonisation in line with local and national policy goals for projects of this type. A project with moderate adverse effects falls short of fully contributing to the UK’s trajectory towards net zero. |
| Not significant | Minor adverse | The Proposed Project’s GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. A project with minor adverse effects is fully in line with measures necessary to achieve the UK’s trajectory towards net zero. |
| | Negligible | The Proposed Project’s GHG impacts would be reduced through measures that go well beyond existing and emerging policy and design standards for projects of this type, such that radical decarbonisation or net zero is achieved well before 2050. A project with negligible effects provides GHG performance that is well ‘ahead of the curve’ for the trajectory towards net zero and has minimal residual emissions. |

| Effects | Level of Significance | Description |
|----------------|------------------------------|---|
| Beneficial | Beneficial | The Proposed Project's net GHG impacts are below zero and it causes a reduction in atmospheric GHG concentration, whether directly or indirectly, compared to the without-project baseline. A project with beneficial effects substantially exceeds net zero requirements with a positive climate impact. |

Climate Change Resilience Assessment

Sensitivity

- 5.1.4.23 The CCR assessment considers the impacts of climate change on the Proposed Project over its lifetime by identifying likely changes to the climate and potential climate hazards. The receptor for the CCR review is the Proposed Project itself (during construction, operation and decommissioning) and associated users (e.g., construction and maintenance workers).

Magnitude

- 5.1.4.24 The magnitude of the impacts associated with climate change is determined by identifying the likelihood of a climate impact occurring on the Proposed Project. (e.g., increased frequency and severity of extreme weather events) on the associated users of the Proposed Project (e.g., construction and maintenance workers) has the potential to be high if no mitigation measures are in place.
- 5.1.4.25 In the detailed CCR assessment within the ES, following identification of the climate impacts, likelihood of occurrence and impact of the consequences will be assessed according to Table 5.1.7 and Table 5.1.8. The categories and descriptions provided below are based on the IEMA climate change resilience and adaptation guidance.

Table 5.1.7 Categories for the likelihood of the climate-related impact occurring

| Likelihood category | Description |
|----------------------------|---|
| High | Likelihood of climate hazard occurring is high and impact is always/ almost always going to occur. |
| Moderate | Likelihood of climate hazard occurring is high and impact occurs often or the likelihood of climate hazard occurring is moderate and impact is likely to occur always/ almost always. |
| Low | Likelihood of climate hazard occurring is high but impact rarely occurs or the likelihood of climate hazard occurring is moderate and impact sometimes occurs or the likelihood of climate hazard occurring is low and impact is likely to occur always/ almost always. |

| Likelihood category | Description |
|----------------------------|---|
| Negligible | All other eventualities - highly unlikely but theoretically possible. |

Table 5.1.8: Description of consequences

| Consequence of impact | Description |
|------------------------------|---|
| High | Significant disruption to construction and operations, unable to deliver services, resulting in high financial losses. |
| Moderate | Disruption to construction and operations and ability to deliver services, resulting in some financial losses/ cost implications. |
| Low | Minor disruption to construction and operations but does not significantly impact ability to deliver services. |
| Negligible | Negligible disruption to construction and operations, does not impact ability to deliver services. |

Significance of effects

- 5.1.4.26 As set out in **Volume 1, Part 1, Chapter 5, PEIR Approach and Methodology** the general approach taken to determining the significance of effect in this preliminary assessment is only to state whether effects are likely or unlikely to be significant, rather than assigning significance levels.
- 5.1.4.27 In the ES the significance of climate change impacts will be determined by combining the likelihood of impact and consequence of impact as determined above. Table 5.1.9 below sets out the how the significance will be assessed.

Table 5.1.9 Significance of Climate Change Impact

| | | Likelihood of climate-related impact occurring | | | |
|-------------------------------|-------------------|---|-----------------|-----------------|-----------------|
| | | Negligible | Low | Moderate | High |
| Measure of consequence | Negligible | Not Significant | Not Significant | Not Significant | Not Significant |
| | Low | Not Significant | Not Significant | Not Significant | Significant |
| | Moderate | Not Significant | Not Significant | Significant | Significant |
| | High | Not Significant | Significant | Significant | Significant |

Assumptions and Limitations

- 5.1.4.28 Where detailed information is not available regarding energy use, types and quantities of materials used, or the embodied carbon of key features of the assets, assumptions will be made based on industry approximations and professional best practice.
- 5.1.4.29 All assumptions and limitations, including any exclusions, together with assumptions for choices and criteria leading to exclusion of input and output data will be documented as part of the assessment.

5.1.5 Study Area

Lifecycle GHG Impact Assessment

- 5.1.5.1 The GHG Study Area includes all GHG emissions from within the proposed red line boundary areas as shown in **Figure 1.1.1 Draft Order Limits** arising during all stages of the construction, operation and maintenance, and decommissioning of the Proposed Project. It will also include emissions arising from offsite activities which are directly related to the onsite activities, such as transport, and treatment of materials and waste disposal.

Climate Change Resilience Assessment

- 5.1.5.2 The Study Area for the CCR review is the Proposed Project itself.

5.1.6 Baseline Conditions

Lifecycle GHG Impact Assessment

- 5.1.6.1 The current and future baseline for the GHG assessment of the impact of the Proposed Project on climate is a 'business as usual' scenario where the Proposed Project is not constructed and operated. The baseline comprises of existing carbon stock and sources of GHG emissions within the boundary of the existing site activities.
- 5.1.6.2 The baseline for the lifecycle GHG impact assessment will be established in the ES by quantifying the GHG emissions through a desk-based study, and analysis of data from other relevant technical disciplines, for example, transport.
- 5.1.6.3 Based on initial assessment the current land use within the Proposed Project boundary consists of predominantly arable land, and managed hedgerows and trees. Trees are present individually in some areas, as well as in rows and within small woodland areas. The abundance of vegetation within the Proposed Project boundary suggests a relatively high carbon sink potential. Also, current land use within the Proposed Project draft Order Limits has minor levels of associated GHG emissions as the land use is largely agricultural. Baseline agricultural GHG emissions are dependent on soil and vegetation types present, and fuel use for the operation of vehicles and machinery.

Climate Change Resilience Assessment

The current baseline for the CCR assessment is based on historic climate data from the nearest weather station to the Proposed Project site (Walton-on-Naze (Codet2)

(Essex), located on the coast approximately 40 km from the northern landfall and 50km from the southern landfall) Historic climate data is presented in Table 5.1.10 below.

Table 5.1.10 Baseline temperature and rainfall

| Climate Variable | Baseline (1981-2010) |
|--|-----------------------------|
| Mean annual maximum daily temperature (°C) | 13.58 |
| Mean summer maximum daily temperature (°C) | 20.23 |
| Mean winter minimum daily temperature (°C) | 2.35 |
| Highest temperature for baseline period (°C) | 21.22 (July) |
| Lowest temperature for baseline period (°C) | 2.05 (January) |
| Mean annual rainfall (mm) | 45.73 |
| Mean summer rainfall (mm) | 44.36 |
| Mean winter rainfall (mm) | 48.12 |
| Wettest month on average (mm) | 57.77 (October) |
| Driest month on average (mm) | 35.9 (April) |
| Mean monthly wind speed at 10m (knots) | 10.40 |

5.1.6.4 The future baseline is based on future UK Climate Projections 2018 (UKCP18) (Ref. 5.1.23). This projection data provides probabilistic indications of how global climate change is likely to affect areas of the UK using pre-defined climate variables and time periods. Projected climate data is presented in Table 5.1.11 below.

Table 5.1.11 Projected Changes in Temperature and Precipitation Variables, 50% Probability (10% and 90% Probability in Parenthesis)

| Climatic Parameter | Time Period | | |
|---|------------------------|------------------------|------------------------|
| | 2010-2039 | 2040-2069 | 2070-2099 |
| Mean annual air temperature anomaly at 1.5 m (°C) | +0.8 (+0.3 to +1.3) | +1.9 (+1.0 to +2.9) | +3.7 (+2.2 to +5.3) |

| Climatic Parameter | Time Period | | |
|--|--------------------------|--------------------------|--------------------------|
| | 2010-2039 | 2040-2069 | 2070-2099 |
| Mean summer air temperature anomaly at 1.5 m (°C) | +1.0 (+0.4 to +1.6) | +2.4 (+1.1 to +3.8) | +4.8 (+2.4 to +7.1) |
| Mean winter air temperature anomaly at 1.5 m (°C) | +0.7 (+0.02 to +1.3) | +1.7 (+0.5 to +2.9) | +3.1 (+1.2 to +5.1) |
| Maximum summer air temperature anomaly at 1.5 m (°C) | +1.1 (+0.2 to +2.0) | +2.7 (+1.0 to +4.5) | +5.3 (+2.4 to +8.4) |
| Minimum winter air temperature anomaly at 1.5 m (°C) | +0.7 (-0.03 to +1.4) | +1.8 (+0.4 to +3.2) | +3.2 (+1.1 to +5.7) |
| Annual precipitation rate anomaly (%) | +0.5 (-5.1 to +5.9) | -11.6 (-3.6 to +4.1) | -2.6 (-13.7 to +8.5) |
| Summer precipitation rate anomaly (%) | -4.6 (-20.7 to +10.2) | -16.4 (-42.2 to +9.4) | -33.7 (-62.2 to +1.0) |
| Winter precipitation rate anomaly (%) | +4.0 (-4.3 to +12.9) | +7.9 (-3.9 to +21.5) | +18.5 (-1.1 to +41.8) |

5.1.7 Mitigation

5.1.7.1 As set out in **Volume 1, Part 1, Chapter 5, PEIR Approach and Methodology**, mitigation measures typically fall into one of the three categories: embedded measures; control and management measures; and mitigation measures.

Embedded Measures

5.1.7.2 Embedded measures have been integral in reducing the climate change effects of the Proposed Project. Measures that that have been incorporated are:

- Sensitive routeing and siting of infrastructure and temporary works;
- Commitments made within **Volume 2, Part 1, Appendix 1.4.F, Schedule of Environmental Commitments and Mitigation Measures**;
- The use of materials with a low embodied carbon;
- The use of low carbon construction techniques; and
- Designing the Proposed Project to be resilient to any significant impacts of climate change.

Control and Management Measures

5.1.7.3 The following measures have been included within **Volume 2, Part 1, Appendix 1.4.A, Outline Code of Construction Practice** relevant to the control and management of impacts that could affect climate change receptors:

- GG03: A Construction Environmental Management Plan (CEMP), a Landscape and Ecological Management Plan (LEMP) and a Construction Traffic Management Plan (CTMP) will be produced prior to construction.
- GG05: A suitably experienced Environmental Manager will be appointed for the duration of the construction phase. In addition, a qualified and experienced Environmental Clerk of Works will be available during the construction phase to advise, supervise and report on the delivery of the mitigation methods and controls outlined in the CEMP. The Environmental Clerk of Works will monitor that the works proceed in accordance with relevant environmental DCO requirements and adhere to the required good practice and mitigation measures. The Environmental Clerk of Works will be supported as necessary by appropriate specialists, including ecologists and arboriculturists.
- GG06: Construction workers will undergo training to increase their awareness of environmental issues as applicable to their role on the Proposed Project. Topics will include but not be limited to:
 - pollution prevention and pollution incident response;
 - dust management and control measures;
 - location and protection of sensitive environmental sites and features;
 - adherence to protected environmental areas around sensitive features;
 - working hours and noise and vibration reduction measures;
 - working with potentially contaminated materials;
 - waste management and storage;
 - flood risk response actions; and
 - agreed traffic routes, access points, etc.
- GG13: (...) Vehicles will be correctly maintained and operated in accordance with manufacturer's recommendations and in a responsible manner. All plant and vehicles will be required to switch off their engines when not in use and when it is safe to do so.
- TT01: The CTMP will set out measures to reduce route and journey mileage to and from and around site, and prevent nuisance to the residents, businesses and the wider community caused by parking, vehicle movements and access restrictions. (...)
- GM03: An offshore Construction Environmental Management Plan (CEMP) including an Emergency Spill Response Plan and Waste Management Plan, Marine Pollution Contingency Plan (MPCP), Shipboard Oil Pollution Emergency Plan (SOPEP) and a dropped objects procedure will be produced prior to installation.

Mitigation Measures

- 5.1.7.4 Mitigation measures are additional topic and site-specific measures that have been applied to mitigate or offset any likely significant effects. Mitigation measures included that are relevant to climate change receptors are:

- reduce construction emissions associated with energy consumption (e.g., source energy from renewable sources, use low carbon fuels);
- use energy efficient machinery and vehicles; and
- where possible, source materials locally to reduce emissions associated with transport.

5.1.8 Preliminary Assessment of Effects

- 5.1.8.1 The preliminary assessment of the effects of the Proposed Project described in this section considers the embedded, control and management and mitigation measures described in Section 5.1.7.
- 5.1.8.2 The preliminary climate change assessment of the effects of the Proposed Project is presented in the following sections.

Lifecycle GHG Impact Assessment

Background

- 5.1.8.3 At the time of developing this PEIR, the Proposed Project design is still in the early stages and sufficient data is not yet available for a detailed quantitative GHG assessment. Therefore, a high-level estimate of GHG emissions has been conducted using a similar project as a benchmark to indicate the potential magnitude of impact.
- 5.1.8.4 The AQUIND Interconnector, a project also comprising a subsea HVDC cable, converter stations, and connections to substations is considered reasonably comparable. The application was received on the 14th November 2019, and is currently being reviewed. The Environmental Statement for this benchmark project is publicly available on the Planning Inspectorate’s website (Ref. 5.1.27). The GHG emissions of this project, together with the capacity of the interconnector (MW) and distance of the cable (km), have been used to calculate benchmark emission factors, as shown in Table 5.1.1.12.

Table 5.1.1.12 Benchmark emission factors

| | Proposed Project – Sea Link | Benchmark Project – AQUIND Interconnector |
|--|---|---|
| Main components | <ul style="list-style-type: none"> • Subsea HVDC cable • Converter stations • Connections to substations | <ul style="list-style-type: none"> • Subsea HVDC cable • Converter stations • Connections to substations |
| MW | 2,000 | 2,000 |
| km | 140 | 238 |
| Construction GHG emissions (tCO₂e) | - | 257,000 |
| Operation GHG emissions (tCO₂e) | - | 187,000 |

| | Proposed Project – Sea Link | Benchmark Project – AQUIND Interconnector |
|---|------------------------------------|--|
| Construction Emission Factor (kgCO₂e/MW.km) | - | 540 |
| Operation Emission Factor (kgCO₂e/MW.km) | - | 393 |

5.1.8.5 The benchmark project has not quantified decommissioning phase emissions, on the basis that these emissions were difficult to meaningfully quantify at that stage.

5.1.8.6 The GHG impacts of the Proposed Project will be quantified in more detail in the ES as more data becomes available.

Construction phase

5.1.8.7 The construction phase of the Proposed Project is currently anticipated to be from 2026 to 2031.

5.1.8.8 Using the emission factor in Table 5.1.1.12, the GHG emissions associated with the construction phase of the Proposed Project are estimated to be approximately 151,000 tCO₂e. Based on the benchmark project, the majority of these emissions are likely to be embodied carbon in construction materials. Other construction emission sources are likely to include emissions associated with transport, on-site plant activities, and construction waste.

5.1.8.9 To contextualise this impact, these estimated construction emissions are compared to the respective UK carbon budgets which coincide with the construction period. This comparison is presented in Table 5.1.1.13. For the sake of this comparison, the estimated construction emissions are assumed to be distributed evenly across the years of the construction period.

Table 5.1.1.13 Comparison of potential construction phase GHG emissions with UK carbon budgets

| UK Carbon Budget Period | UK Carbon Budget MtCO₂e | Potential Construction Emissions (tCO₂e) | Percentage Contribution of Potential Construction Emissions to the UK Carbon Budget |
|--------------------------------|---|--|--|
| 4 th (2023-2027) | 1,950 | 75,500 | 0.004% |
| 5 th (2028-2032) | 1,725 | 75,500 | 0.004% |

Operation phase

5.1.8.10 The operational phase of the Proposed Project is currently anticipated to begin in 2031.

5.1.8.11 Using the emission factor in Table 5.1.1.12, the GHG emissions associated with the operational phase of the Proposed Project are estimated to be approximately 110,000 tCO₂e, assuming a reference lifespan of 40 years. Based on the benchmark

project, these emissions are likely to include emissions associated with: maintenance, repair and replacement; electricity and fuel use; transmission losses; and fugitive gases.

- 5.1.8.12 To contextualise this impact, these estimated operational emissions are compared to the respective UK carbon budgets which coincide with the operational period. This comparison is presented in Table 5.1.1.14. For the sake of this comparison, the estimated operational emissions are assumed to be distributed evenly across the years of the operational period.

Table 5.1.1.14 Comparison of potential operation phase GHG emissions with UK carbon budgets

| UK Carbon Budget Period | UK Carbon Budget MtCO_{2e} | Potential Operational Emissions (tCO_{2e}) | Percentage Contribution of Potential Operational Emissions to the UK Carbon Budget |
|--------------------------------|---|---|---|
| 5 th (2028-2032) | 1,725 | 8,250 | 0.0005% |
| 6 th (2033-2037) | 965 | 13,750 | 0.001% |

Decommissioning phase

- 5.1.8.13 Decommissioning will likely result in GHG emissions associated with on-site equipment, transport, and waste disposal.
- 5.1.8.14 However, the benchmark project has not quantified decommissioning GHG emissions and it is therefore difficult to estimate the decommissioning GHG emissions of the Proposed Project at this stage.
- 5.1.8.15 The benchmark project has assumed that potential GHG impacts during decommissioning would be similar to those associated with on-site equipment, transport, and waste disposal during construction. According to the benchmark project, these emission sources only contribute to approximately 10% of construction phase emissions. It is therefore unlikely that decommissioning GHG emissions would materially impact the significance of the whole-life GHG emissions of the Proposed Project.

Overall

- 5.1.8.16 Considering the estimated GHG emissions for construction and operation together, the overall estimated GHG emissions of the Proposed Project are contextualised in terms of the UK carbon budgets in Table 5.1.1.15.

Table 5.1.1.15 Comparison of total potential Proposed Project GHG emissions with UK carbon budgets.

| UK Carbon Budget Period | UK Carbon Budget MtCO _{2e} | Potential Proposed Project Emissions (tCO _{2e}) | Percentage Contribution of Potential Proposed Project Emissions to the UK Carbon Budget |
|-----------------------------|-------------------------------------|---|---|
| 4 th (2023-2027) | 1,950 | 75,500 | 0.004% |
| 5 th (2028-2032) | 1,725 | 83,750 | 0.005% |
| 6 th (2033-2037) | 965 | 13,750 | 0.001% |

5.1.8.17 The potential GHG emissions of the Proposed Project are estimated to contribute less than 0.01% of any respective UK carbon budget.

5.1.8.18 Although the Proposed Project will result in increased GHG emissions, when considering the significance of the impact of Proposed Project on the climate, consideration needs to be given on its role in wider UK policy to decarbonise the electricity grid. Over its lifetime the Proposed Project will be a key scheme for the UK to fulfil its net zero policy and transition away from fossil fuels. By reinforcing the electricity transmission network, the Proposed Project will facilitate the connection of new renewable and low carbon energy generation and interconnectors.

5.1.8.19 In accordance with the IEMA guidance (see Section 5.1.4) the effect of GHG emissions associated with the Proposed Project is deemed to be **not significant**, because the Proposed Project's GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. A project with not significant effects is fully in line with measures necessary to achieve the UK's trajectory towards net zero. The Proposed Project is part of UK policy to decarbonise the electricity grid and transition to net zero by 2050.

5.1.8.20 Table 5.1.16 summarises the preliminary assessment of increased GHG emissions.

Table 5.1.16 Preliminary assessment of increased GHG emissions

| Preliminary assessment | |
|-------------------------|---|
| Receptor | Global climate |
| Potential impact | Initial increase of GHG emissions as a result of construction and operation however, over its lifetime, the scheme will be key for the UK to fulfil its net zero policy and move away from fossil fuels |
| Proposed Project phase | Construction and Operation |
| Duration | Entire project lifespan |
| Mitigation | Several mitigation measures are set out in Section 5.1.7 regarding reducing construction emissions. |
| Preliminary sensitivity | The sensitivity of the receptor (global climate) to increases in GHG emissions is always defined as high |

| Preliminary assessment | |
|---|--|
| | as any additional GHG impacts could compromise the UK's ability to reduce its GHG emissions and therefore meet its future 5-year carbon budgets. |
| Preliminary magnitude | Construction and operation of the Proposed Project will result in GHG emissions. There will be embodied carbon in the materials used for the construction of the Proposed Project while fuel use during construction will result in GHG emissions. There will be some GHG emissions arising during the operation of the Proposed Project. |
| Preliminary likely significance of effect | <p>In accordance with the IEMA guidance (see Section 5.1.4) the effect is deemed to be minor adverse and therefore likely deemed to be not significant, because the Project's GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. A project with minor adverse effects is fully in line with measures necessary to achieve the UK's trajectory towards net zero.</p> <p>The Proposed Project is part of UK policy to decarbonise the electricity grid and transition to net zero by 2050.</p> |
| Confidence in prediction | Confident |

Climate Change Resilience Assessment

- 5.1.8.21 Table 5.1.17 below presents a summary of the climate risks, and their significance, for the Proposed Development. Embedded mitigation associated with each climate hazard is also detailed.
- 5.1.8.22 This assessment has found there are no significant climate change risks to the Proposed development, assuming the embedded mitigation measures are successfully implemented into the design.

Table 5.1.17 Climate Change Risk Assessment

| Potential Climate Hazards | Potential Impacts on the Development | Proposed Adaptation Measures | Likelihood | Measure of Consequence | Significance Level |
|---|--|--|---------------|------------------------|--------------------|
| Construction | | | | | |
| Increased winter precipitation | Flooding of Site access routes, damage to onshore building foundations due to increased soil moisture | Flood mitigation measures to be detailed in Part 2 Chapter 5: Water Environment and Part 3 Chapter 5 Water Environment. | Low | Moderate | Not Significant |
| Increased annual/summer mean temperatures | Damage to construction plant and equipment, delays to construction schedule | Contractor to monitor weather reports and schedule work accordingly. Further details will be provided in the Outline CoCP. | Low | Negligible | Not Significant |
| Increased frequency/severity of heatwaves | Delays to construction schedule to do unsafe work conditions | Contractor to monitor weather reports and schedule work accordingly. Further details will be provided in the Outline CoCP. | Low | Negligible | Not Significant |
| Extreme Precipitation Events | Increased moisture within materials Increased runoff from material storage | The Outline CoCP will detail methods for appropriate storage of hazardous and non-hazardous materials. | Low | Low | Not Significant |
| Operation | | | | | |
| Increased summer/annual mean temperatures | Overheating of electronic equipment Increased demand for air-conditioning at onshore facilities | Conduct thermal modelling of building interiors to ensure manageable operational temperatures. | Insignificant | Low | Not Significant |

| Potential Climate Hazards | Potential Impacts on the Development | Proposed Adaptation Measures | Likelihood | Measure of Consequence | Significance Level |
|---|--|---|------------|------------------------|--------------------|
| Increased frequency and severity of extreme weather events (storms) | Storm surge flooding of onshore facilities | Flood mitigation measures to be detailed in Part 2 Chapter 5: Water Environment and Part 3 Chapter 5 Water Environment. | Low | Moderate | Not Significant |
| | Damage to pipelines due to increased wave activity | Use of resilient, sustainable materials | | | |
| Increase in high wind events | Damage to infrastructure, safety of workers | Avoid maintenance during high wind conditions | Low | Low | Not Significant |
| Increase in winter precipitation | Flooding of onshore facilities | Flood mitigation measures to be detailed in Part 2 Chapter 5: Water Environment and Part 3 Chapter 5 Water Environment. | Low | Low | Not Significant |

5.1.8.23 Table 5.1.18 provides the preliminary assessment of Climate Change resilience.

Table 5.1.18 Preliminary assessment of Climate Change resilience

| Preliminary assessment | |
|---|--|
| Receptor | The Proposed Project (during both construction and operation) |
| Potential Impact | The increase of extreme weather events in the UK could lead to detrimental impacts on the Proposed Project |
| Proposed Project phase | Construction and operation |
| Duration | Entire project lifespan |
| Mitigation | Several mitigation/adaptation measures are set out in Section 5.1.7. |
| Preliminary sensitivity | The receptor for the CCR review is the Proposed Project itself (during construction and operations) and associated users (e.g., construction and maintenance workers). |
| Preliminary magnitude | While there may be impacts on the Proposed Project as a result of climate change it is anticipated the magnitude of these impacts will be managed as necessary through embedded mitigation measures. |
| Preliminary likely significance of effect | The magnitude of the impact of climate change on the Proposed Project is anticipated to be low to medium. The significance of the effect is therefore likely to be not significant . |
| Confidence in prediction | Confident |

5.1.9 Summary

- 5.1.9.1 The preliminary environmental assessment in this PEIR concludes that the effects on the global climate by the Proposed Project are likely to be **not significant** because the Proposed Project's GHG impacts are fully consistent with applicable existing and emerging policy requirements set by the government to support them in reaching their net zero target and move away from the use of fossil fuels. This will be confirmed in the full assessment completed as part of the Environmental Statement.
- 5.1.9.2 The PEIR also concluded that the effect of climate change impacts on the Proposed Project are not anticipated to be significant. Where any climate change impacts are identified they will be managed through the appropriate mitigation.

5.1.10 References

Ref. 5.1.1 Legislation.gov.uk (2017). “*The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017*”. Available at: <https://www.legislation.gov.uk/ukxi/2017/572/contents/made>

Ref. 5.1.2 Legislation.co.uk (2019). “*The Climate Change Act 2008 (2050 Target Amendment) Order 2019*”. Available at: <https://www.legislation.gov.uk/ukdsi/2019/9780111187654>

Ref. 5.1.3 National Grid Electricity Transmission (2021). “*Climate Change Adaptation Report*”. Available at: <https://www.nationalgrid.com/electricity-transmission/document/143211/download>

Ref. 5.1.4 Legislation.co.uk (2021). “*The Carbon Budget Order 2021*”. Available at: <https://www.legislation.gov.uk/ukdsi/2021/9780348222616>

Ref. 5.1.5 Department for Energy Security and Net Zero (2023). “*Overarching National Policy Statement for Energy (EN-1)*”. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf

Ref. 5.1.6 Department for Energy and Climate Change (2011). “*National Policy Statement for Electricity Networks Infrastructure (EN-5)*”. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47858/1942-national-policy-statement-electricity-networks.pdf

Ref. 5.1.7 Ministry of Housing, Communities and Local Government (2021). “*National Planning Policy Framework*”. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf

Ref. 5.1.8 Department for Levelling up, Housing and Communities and the Ministry of Housing, Communities and Local Government (2019). “*Guidance – Climate Change*”. Available at: <https://www.gov.uk/guidance/climate-change>

Ref. 5.1.9 Suffolk County Council (2023). “*Suffolk County Council’s Energy and Climate Adaptive Infrastructure Policy*”. Available at: <https://www.suffolk.gov.uk/asset-library/energy-and-climate-adaptive-infrastructure-policy.pdf>

Ref. 5.1.10 East Suffolk Council (2020). “*Suffolk Coastal Local Plan*”. Available at: <https://www.eastsuffolk.gov.uk/assets/Planning/Planning-Policy-and-Local-Plans/Suffolk-Coastal-Local-Plan/Adopted-Suffolk-Coastal-Local-Plan/East-Suffolk-Council-Suffolk-Coastal-Local-Plan.pdf>

Ref. 5.1.11 Kent County Council (2016). “*Kent Environment strategy*”. Available at: https://www.kent.gov.uk/__data/assets/pdf_file/0020/10676/KES_Final.pdf

Ref. 5.1.12 Kent County Council (2016). “*Kent and Medway Energy and Low Emissions Strategy: Implementation Plan 2020-2023*”. Available at: <https://cape.mysociety.org/media/data/plans/kent-county-council-ff70837.pdf>

Ref. 5.1.13 Thanet District Council (2020). “*Thanet District Council Local Plan (Adopted July 2020)*”. Available at: <https://www.thanet.gov.uk/wp-content/uploads/2018/03/LP-adjusted.pdf>

Ref. 5.1.14 National Grid (2022). “*Sea Link Environmental Impact Assessment Scoping Report*”. Available at: <https://infrastructure.planninginspectorate.gov.uk/projects/south-east/sea-link/?ipcsection=docs&stage=1&filter1=Environmental+Impact+Assessment+Scoping>

- Ref. 5.1.15 The Planning Inspectorate (2022). “*Scoping Opinion: Proposed Sea Link – Case Reference: EN020026*”. Available at: <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN020026/EN020026-000027-EN020026-Scoping-Opinion.pdf>
- Ref. 5.1.16 Institute of Environmental Management and Assessment (IEMA) (2022). “*Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance*”. Available at: <https://www.iema.net/preview-document/assessing-greenhouse-gas-emissions-and-evaluating-their-significance>
- Ref. 5.1.17 Institute of Environmental Management and Assessment (IEMA) (2020). “*Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation*”. Available at: <https://www.iema.net/resources/reading-room/2020/06/26/iema-eia-guide-to-climate-changeresilience-and-adaptation-2020>.
- Ref. 5.1.18 WRI & WBCSD (2015). “*A Corporate Accounting and Reporting Standard*”. Available at: <https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf>
- Ref. 5.1.19 Defra (2023). “*Greenhouse gas reporting: conversion factors 2023*”. Available at: <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023>
- Ref. 5.1.20 Bath University Inventory of Carbon and Energy (2019). “*Embodied Carbon – The ICE Database*”. Available at: <https://circularecology.com/embodied-carbon-footprint-database.html>
- Ref. 5.1.21 EU Commission (2010). “*Guidelines for Land Carbon Stocks*”. Available at: <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32010D0335>
- Ref. 5.1.22 Met Office (2023). “*UK Climate Averages*”. Available at: <https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/>
- Ref. 5.1.23 Met Office (2018). “*UKCP18*”. Available at: <https://ukclimateprojections-ui.metoffice.gov.uk/products#>
- Ref. 5.1.24 UNFCCC (2015). “*The Paris Agreement*”. Available at: https://unfccc.int/sites/default/files/english_paris_agreement.pdf
- Ref. 5.1.25 Department for Energy Security and Net Zero (2023). “*Overarching National Policy Statement for Energy (EN-1)*”. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1147380/NPS_EN-1.pdf
- Ref. 5.1.26 Publicly Available Specification – PAS 2080: 2023 Carbon Management in Infrastructure <https://www.bsigroup.com/en-GB/standards/pas-2080/>
- Ref. 5.1.27 AQUIND Interconnector Environmental Statement – Volume 1 – Chapter 28 Carbon and Climate Change. Available at: <https://infrastructure.planninginspectorate.gov.uk/projects/south-east/aquind-interconnector/?ipcsection=docs>

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