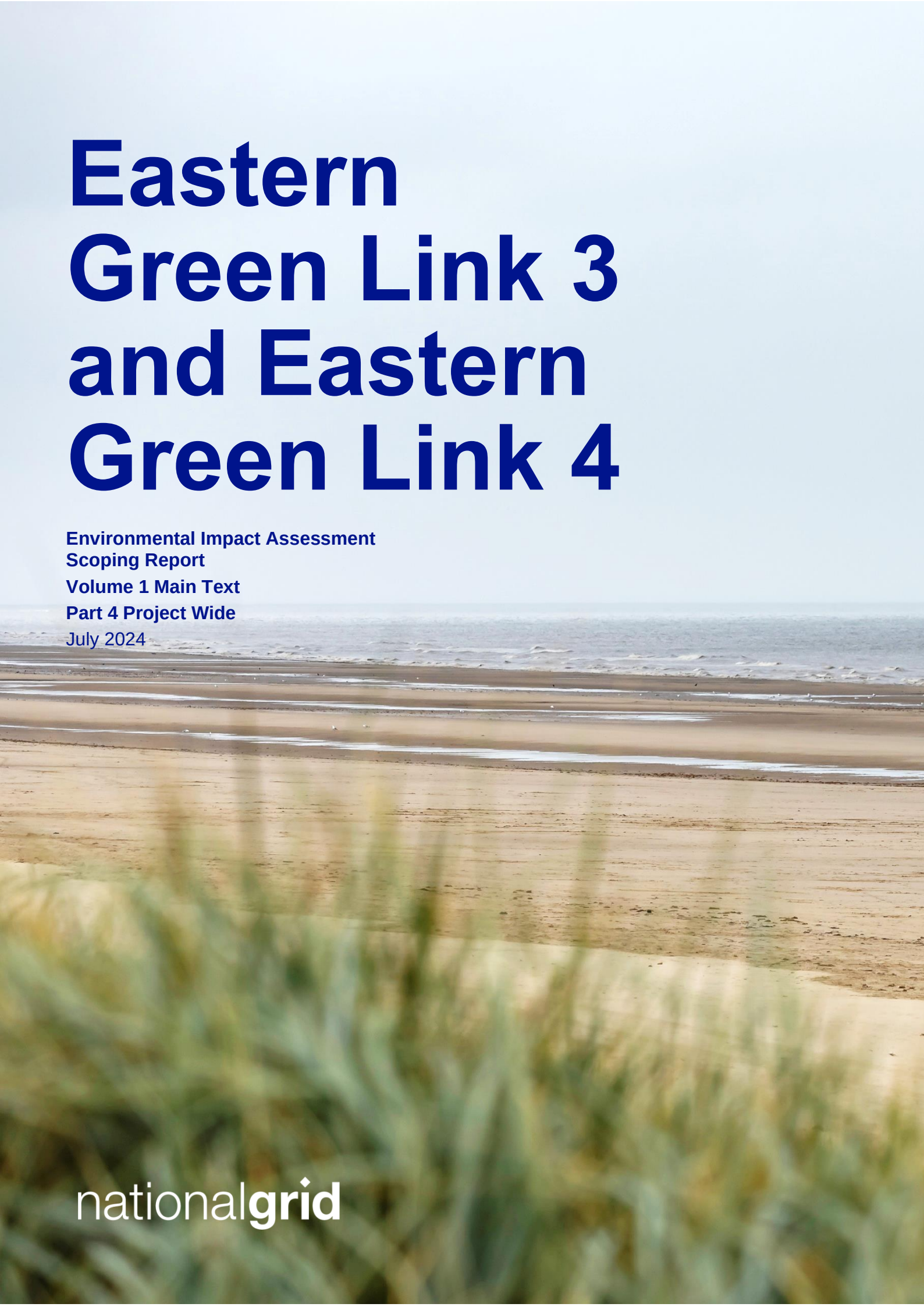
Eastern Green Link 3 and Eastern Green Link 4

Environmental Impact Assessment
Scoping Report
Volume 1 Main Text
Part 4 Project Wide
July 2024



nationalgrid

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33. Greenhouse Gases

33.1 Introduction

33.1.1 The greenhouse gases (GHG) assessment will consider the potentially significant effects from the construction and operation of the Projects on GHG. In some instances, the Projects are referred to individually, the 'EGL 3 Project and the 'EGL 4 Project'.

33.1.2 This chapter of the Scoping Report sets out the relevant legislation, planning policy context and technical guidance used to inform the scope of the assessment and summarises any consultation and engagement in relation to GHG undertaken to date. It provides an overview of the baseline conditions relevant to the Projects Scoping Boundary (**Figure 1-6: The Projects Scoping Boundary**), the measures which will be incorporated into the Projects to mitigate GHG emissions, the likely significant effects to be considered within the assessment, and how these likely significant effects will be assessed for the purpose of an EIA.

33.2 Relevant Legislation, Planning Policy and Technical Guidance

33.2.1 This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the GHG assessment.

Legislation

33.2.2 A summary of the key legislation considered, but not limited to, in the scope of GHG effects is outlined in **Table 33-1.**

Table 33-1 – Legislation relevant to Greenhouse Gases

Legislation	Legislative Context	Section Considered
United Nations Framework Convention on Climate Change (1992) (Ref 33.1)	The UK is a member of the United Nations Framework Convention on Climate Change ('UNFCCC') which drives international action on climate change. The UK has pledged to reduce emissions under the 'Paris Agreement' in 2015, as a part of a joint pledge by members of the EU. This provides an overarching commitment by the UK. In December 2020, the UK communicated its Nationally Determined Contribution (NDC) to the UNFCCC in line with Article 4 of the Paris Agreement. In its NDC, the UK commits to reducing economy-wide greenhouse gas emissions by at least 68% by 2030, compared to 1990 levels.	Section 33.7 Assessment Methodology

Legislation	Legislative Context	Section Considered
Intergovernmental Panel on Climate Change (IPCC) Special Report - Global Warming of 1.5 ºC 2018 (Ref 33.2)	The IPCC has confirmed the need for global carbon emissions to follow a pathway that will prevent global warming exceeding 1.5 ºC. In its global emission pathways, the IPCC outlines the role of carbon capture and storage and how it can contribute to negative emissions, driving reductions in the energy sector. The IPCC's Synthesis Report for the Sixth Assessment (Summary for Policymakers) Report (Ref 12.11) reports that: 'All global modelled pathways that limit warming to 1.5°C with no or limited overshoot, and those that limit warming to 2°C involve rapid and deep and, in most cases, immediate greenhouse gas emissions reductions in all sectors this decade'. The report further highlights the need for CO2 removal to stay within the bounds of 1.5°C warming trajectory.	Section 33.7 Assessment Methodology
The Climate Change Act (2008) (2050 Target Amendment) Order 2019 (Ref 33.3)	Sets UK Government overall targets for greenhouse gas (GHG) reduction and net zero target for 2050.	Section 33.7 Assessment Methodology
Climate Change Committee (CCC): The Sixth Carbon Budget The UK's path to Net Zero (Ref 33.4)	As part of the CCC's recommendation for the UK's Sixth Carbon Budget (which will run from 2033 to 2037), it is noted that investments in transmission networks will be key to accommodate higher levels of low carbon generation such as offshore wind. Upgrades in distribution networks to accommodate electric vehicles and use of heat pumps are also noted as important.	Section 33.7 Assessment Methodology
Infrastructure Carbon Review (2013) (Ref 33.5)	In 2013, the UK government published the Infrastructure Carbon Review, aiming to "release the value of lower carbon solutions and to make carbon reduction part of the DNA of infrastructure in the UK". Major infrastructure owners, operators and developers across the communication, energy, transport, waste and water sectors were invited to endorse it, become signatories and make commitments under the Review. The	Section 33.7 Assessment Methodology

Legislation	Legislative Context	Section Considered
	Review provided increased emphasis on 'capital carbon' (GHG emissions associated with raw materials, activities and transport for construction, repairs, replacement, refurbishment and de-construction of infrastructure) while acknowledging that 'operational carbon' (associated with energy consumption for the operation and use of infrastructure) will continue to dominate overall emission to 2050 and beyond. The Review highlighted the importance of assessing GHG emissions early in the lifecycle of an infrastructure scheme, when there is the greatest carbon reduction potential. The Review also led to the publication of a Publicly Available Specification (PAS) on Infrastructure Carbon Management (PAS 2080:2016)	
The Clean Growth Strategy (2017) (Ref 33.6)	Within this strategy is an ambition to deliver clean, smart, flexible power. It notes the continued need for additional renewable energy generation, including offshore wind, and therefore investment required in infrastructure supporting the transmission and distribution of power.	Part 1, Chapter 1, Section 1.3 Background to and need for the Projects

Planning Policy

33.2.3 A summary of the planning policies at both a national and local level relevant to the scope of GHG effects is given in **Table 33-2.**

Table 33-2 – National Planning Policy relevant to Greenhouse Gases

Policy Reference	Policy Context	Section Considered
National Policy		
Overarching National Policy Statement for Energy (EN-1) (2024) (Ref 33.7)		
Paragraph 5.3.4	*"All proposals for energy infrastructure projects should include a GHG assessment as part of their ES."*	Section 33.7 Assessment Methodology
Paragraph 5.3.5	*"A GHG assessment should be used to drive down GHG emissions at every stage of the proposed*	Section 33.7 Assessment Methodology

	development and ensure that emissions are minimised as far as possible for the type of technology, taking into account the overall objectives of ensuring our supply of energy always remains secure, reliable and affordable, as we transition to net zero."	
Overarching National Policy Statement for Energy Networks Infrastructure (EN-5) (2024) (Ref 33.8)		
Paragraph 2.10.1	The avoidance/minimisation of environmental impacts both onshore and offshore should be addressed at an early stage in the development process.	Section 33.7 Assessment Methodology
Paragraph 2.10.14	The climate-warming potential of Sulphur Hexafluoride[1] (SF_6) is such that applicants should, as a rule, avoid the use of SF_6 in new developments.	Section 33.7 Assessment Methodology
Paragraph 2.10.15	*"Where no proven SF_6-free alternative is commercially available, and where the cost of procuring a bespoke alternative is grossly disproportionate, the continued use of SF_6 is acceptable, provided that emissions monitoring and control measures compliant with the F-gas Regulation and/or its successors are in place."*	Section 33.7 Assessment Methodology
East Inshore and East Offshore Marine Plan (2014) (Ref 33.27)		
Policy CC2	*"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. Consideration should also be given to emissions from other activities or users affected by the proposal."*	Section 33.7 Assessment Methodology

[1] Sulphur Hexafluoride is a gas used in some designs of electrical switchgear.

Table 33-3 – Local Planning Policy relevant to GHG

Local Authority Plan/Strategy	Summary of Relevant Policies	Section Considered
East Lindsey District Council: East Lindsey Local Plan Core Strategy, (2018) (Adopted 2018) (Ref 33.9)	SP27 – Renewable and Low Carbon Energy: *"Large-scale renewable and low carbon energy development, development for the transmission and interconnection of electricity, and infrastructure required to support such development, will be supported where their individual or cumulative impact is, when weighed against the benefits, considered to be acceptable in relation to:* *a) residential amenity;* *b) surrounding landscape, townscape and historic landscape character, and visual qualities;* *c) the significance (including the setting) of a historic garden, park, battlefield, building, conservation area, archaeological site or other heritage asset;* *d) sites or features of biodiversity or geodiversity importance, or protected species;* *e) the local economy;* *f) highway safety; and* *g) water environment and water quality"*	**Part 2 Chapter 3: Consideration of Alternatives** and aspect chapters (**Part 2 Chapter 6** to **Chapter 16**).
Boston Borough Council and South Holland District: South East Lincolnshire Local Plan, (2011-2036) (Adopted 2019) (Ref 33.10)	Policy 31: Climate Change and Renewable and Low Carbon Energy. A. Climate Change: *"All development proposals will be required to demonstrate that the consequences of current climate change has been addressed, minimised and mitigated…."* *"B. Renewable Energy: With the exception of Wind Energy the development of renewable energy facilities, associated infrastructure and the integration of decentralised technologies on existing or proposed structures will be permitted provided, individually, or cumulatively, there would be no significant harm to:* *1. visual amenity, landscape character or quality, or skyscape considerations;* *2. residential amenity in respect of: noise, fumes, odour, vibration, shadow flicker, sunlight reflection, broadcast interference, traffic;* *3. highway safety (including public rights of way);* *4. agricultural land take;* *5. aviation and radar safety;* *6. heritage assets including their setting; and*	Section 33.7 Assessment Methodology Aspect chapters (**Part 2 Chapter 6** to **Chapter 16**).

Local Authority Plan/Strategy	Summary of Relevant Policies	Section Considered
	7. the natural environment."	
Borough Council of King's Lynn and West Norfolk: Local Development Framework – Core Strategy, (2011) (Adopted 2011) (Ref 33.11)	CS08 Sustainable Development - Renewable Energy *"The Council and its partners will support and encourage the generation of energy from renewable sources. These will be permitted unless there are unacceptable locational or other impacts that could not be outweighed by wider environmental, social, economic and other benefits.* *Renewable projects should be assessed accordingly (where necessary by project level Habitat Regulation Assessment) to ensure minimal ecological impact, and should undergo a detailed cumulative impact assessment."*	**Part 2 Chapter 3, Consideration of Alternatives** and aspect chapters (**Part 2 Chapter 6** to **Chapter 16**).
Fenland District Council: Fenland Local Plan, (2014) (Adopted 2014) (Ref 33.12)	Policy LP14 – Responding to Climate Change and Managing the Risk of Flooding in Fenland - Renewable Energy: *"Renewable energy proposals will be supported and considered in the context of sustainable development and climate change. Proposals for renewable energy technology, associated infrastructure and integration of renewable technology on existing or proposed structures will be assessed both individually and cumulatively on their merits taking account of the following factors;* • *The surrounding landscape, townscape and heritage assets* • *Residential and visual amenity* • *Noise impact* • *Specific highway safety, designated nature conservation or biodiversity considerations* • *Aircraft movements and associated activities* • *High quality agricultural land"*	Aspect chapters (**Part 2 Chapter 6** to **Chapter 16**).
Cambridgeshire County Council (Ref 33.13)	The County Council notes its facilitating role in Nationally Significant Infrastructure Projects through the DCO process.	**Part 2 Chapter 3, Consideration of Alternatives** and aspect chapters (**Part**

Local Authority Plan/Strategy	Summary of Relevant Policies	Section Considered
		2 Chapter 6 to **Chapter 16**).
Lincolnshire County Council (Ref 33.14)	There is a need for the Projects to be consistent with the Guiding Principles set out in the Green Masterplan.	The design of the English Onshore Scheme is described in **Part 2 Chapter 4: English Onshore Scheme.** Future design development will take policy such as this into account as described in Section 33.5.
Norfolk County Council (Ref 33.15)	The English Onshore Scheme is required to ensure that surface water management is considered and that sustainable drainage systems (SuDS) are integrated (as appropriate)	**Part 2 Chapter 9: Water Environment**

Technical Guidance

33.2.4 The following relevant guidance, specific to the GHG assessment, has informed this Scoping Report and will inform the assessment within the PEIR and ES:

- Ministry of Housing Communities and Local Government (2019). *National Planning Policy Guidance* (NPPG) (Ref 33.16) – Explains the processes and tools that can be used through the planning system in England. The guidance highlights the importance of and advises how to identify suitable climate change mitigation and adaptation measures in the planning process. This would require the implementation of appropriate measures by the local planning authorities.
- Institute of Environmental Management and Assessment (IEMA) Guidance: Assessing Greenhouse Gas Emissions and Evaluating their Significance (2022) (Ref 33.17) – The aim of this guidance is to assist practitioners with addressing GHG emissions assessment and mitigation in statutory and non-statutory EIA. It complements IEMA's earlier guide on Climate Change Resilience and Adaptation and builds on the Climate Change Mitigation and EIA overarching principles. The requirement to consider this topic has resulted from the 2014 amendment to the EIA Directive.
- The Greenhouse Gas Protocol (Ref 33.18) - GHG Protocol establishes comprehensive global standardised frameworks to measure and manage GHG emissions from private and public sector operations, value chains and mitigation actions.
- Publicly Available Standard (PAS) 2080 (2023) (Ref 33.19) - is a standard for managing carbon in building and infrastructure. It looks at the whole value chain and aims to reduce carbon and cost through intelligent design, construction and use.

- IPCC Guidelines for National Greenhouse Gas Inventories (Ref 33.20) - The 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories was adopted and accepted during the 49th Session of the IPCC in 2019. It was prepared by the Task Force on National Greenhouse Gas Inventories (TFI) in accordance with the decision taken at the 44th Session of IPCC in Bangkok, Thailand, in 2016.
- Royal Institution of Chartered Surveyors (RICS) Whole life carbon assessment for the built environment (2024) (Ref 33.21) - 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.

33.3 Consultation and Engagement

33.3.1 To date no engagement been undertaken with specific regard to greenhouse gases. It is anticipated that feedback in relation to this topic and the scope of works will be gained following consultation on this Scoping Report. Further engagement with relevant stakeholder will be ongoing up to the submission of the DCO as required to ensure agreement of the approach to the assessment.

33.3.2 Liaison with the design team will ensure that all activities within construction and operation of the Projects will be captured within this assessment.

33.4 Baseline Conditions

Study Area

33.4.1 The assessment of GHG emissions is not restricted by geographical area, instead focussing on any increase or decrease in emissions as a result of the Projects, wherever that may be. This includes:

- Construction emissions from the Projects footprint but also relating to the transport of materials to and from the Site and their manufacture. This may be distant from the Projects location, for example, GHG emissions associated with the manufacture of concrete in terms of embodied carbon and energy in the production process.
- Operation emissions (increase or reduction) which result from the operation of the Projects and any shifts in energy usage that may occur. In this case, GHG emissions include those for embodied emissions arising from materials and waste for the operation of the Projects, operational energy and water use.

Data Gathering Methodology

33.4.2 The following information has been considered in drafting the Scoping Report and will be subject to further analysis during the EIA process for those matters scoped into the assessment.

- Emission factors will be obtained from suitable sources, such as the Department for Energy Security and Net Zero (DESNZ) (Ref 33.22) and the Inventory of Carbon and Energy database (Ref 33.23).
- Activity data, including forecast construction and operational energy data, will be sourced from design team work.

Current Baseline

33.4.3 In the baseline, GHG emissions occur constantly and widely as a result of natural and human activity, including land use and land use change, energy consumption (e.g. fossil fuels, purchased energy from the grid and/or other sources) and industrial processes. The GHG assessment would only consider the scenario in which the Projects result in additional or avoided emissions in comparison to the baseline. The baseline conditions therefore focus on those sources of emissions subject to change between the baseline and the Projects.

33.4.4 The latest summary of GHG emissions for 2021, and the UK (Ref 33.24) are presented in **Table 33-4**. The emissions sources are a subset of the total emissions for each region, chosen for their relevance to the Projects, with the grand total for all emissions sources provided. These emissions have only been provided for context and are not the baseline emissions for this assessment. The baseline involves no construction activities and no development of the Projects and therefore the construction baseline is zero emissions.

Table 33-4 – UK and regional GHG emissions (2021)

Emissions Source	Cambridgeshire ($ktCO_2e$)	Lincolnshire ($ktCO_2e$)	Norfolk ($ktCO_2e$)	UK ($ktCO_2e$)
Industry Electricity	225.2	196.2	190.4	17,109.1
Industry Gas	253.8	139.0	191.9	20,037.1
Large Industrial Installations	65.3	9.6	88.3	29,267.6
Industry ‘Other’	240.8	288.1	280.5	17,927.3
Industry Total	785.1	**632.9**	**751.1**	**84,341.1**
Commercial Electricity	95.9	107.4	133.5	10,964.1
Commercial Gas	36.1	36.2	34.8	6,239.0
Commercial ‘Other’	2.7	3.1	4.0	223.1
Commercial Total	**134.8**	**146.6**	**172.3**	**17,426.3**

Emissions Source	Cambridgeshire ($ktCO_2e$)	Lincolnshire ($ktCO_2e$)	Norfolk ($ktCO_2e$)	UK ($ktCO_2e$)
Public Sector Electricity	84.6	40.5	55.0	5,380.1
Public Sector Gas	136.2	97.2	100.6	10,580.5
Public Sector 'Other'	1.0	1.1	1.1	63.3
Public Sector Total	**221.8**	**138.8**	**156.6**	**16,023.9**
Domestic Electricity	237.3	276.9	361.1	22,244.9
Domestic Gas	577.4	645.5	644.0	63,612.8
Domestic 'Other'	153.6	223.2	347.3	11,063.7
Domestic Total	**968.4**	**1,145.5**	**1,352.4**	**96,921.4**
Road Transport (A-roads)	1,069.0	926.6	977.4	48,450.1
Road Transport (Motorways)	268.7	0.0	0.0	25,397.5
Road Transport (Minor roads)	399.8	465.3	616.0	36,254.3
Diesel Railways	34.6	35.0	10.1	1,680.1
Transport 'Other'	42.6	19.8	132.7	1,942.8
Transport Total	**1,814.6**	**1,446.7**	**1,736.2**	**113,724.8**
Net Emissions: Forest land	-51.9	-143.2	-332.8	-17,564.9
Net Emissions: Cropland	1,504.50	774.9	927.2	13,345.0
Net Emissions: Grassland	42.1	-43.5	234.4	261.8
Net Emissions: Wetlands	4.3	2.9	23.9	2,952.7
Net Emissions: Settlements	24.5	30.7	39.9	3,973.7

Emissions Source	Cambridgeshire ($ktCO_2e$)	Lincolnshire ($ktCO_2e$)	Norfolk ($ktCO_2e$)	UK ($ktCO_2e$)
Net Emissions: Harvested Wood Products	0.0	0.0	0.0	-2,037.5
Net Emissions: Indirect N_2O	1.1	2.2	2.1	152.3
LULUCF Net Emissions	**1,524.50**	**624.1**	**894.8**	**1,083.1**
Agriculture Electricity	32.1	80.8	52.8	1,685.9
Agriculture Gas	4.2	11.7	21.6	903.4
Agriculture 'Other'	40.4	100.3	76.2	5,385.8
Agriculture Livestock	323.1	459.5	606.7	33,489.0
Agriculture Soils	582	525.8	536.1	9,247.9
Agriculture Total	**981.7**	**1,178.1**	**1,293.4**	**50,712.0**
Landfill	204.3	100.4	138.8	13,618.1
Waste Management	150.7	65.7	73.4	5,195.5
'Other' Waste Management Total	354.9	166.1	212.1	18,813.6
Grand Total	**6,785.8**	**5,478.7**	**6,569.0**	**399,046.1**

Future Baseline

33.4.5 The future baseline relates to known or anticipated changes to the current baseline in the future which should be assessed as part of the Projects in the PEIR and ES.

33.4.6 It is recognised that there are a number of other proposed and committed developments within the surrounding area that could alter the future baseline in the absence of the Projects. The potential for cumulative effects will be considered as part of the future EIA documents in accordance with the approach and guidance outlined within **Part 2, Chapter 5: EIA Approach and Methodology**.

33.5 Design and Control Measures

Construction Phase

33.5.1 Relevant design, mitigation and enhancement measures will be identified in the ES, and these may include:

- Design optimisation to reflect the carbon reduction hierarchy (detailed below and found in clause 6.1.4 of PAS 2080:2023 (Ref 33.19):
  - reduce the number of elements required for the development of the Projects;
  - reduce the requirement for construction materials by smart design;
  - substitute-in and use alternative raw materials and resources (e.g. using low temperature asphalt) with lower embodied carbon; and
  - efficient construction processes, such as embracing design for manufacture and assembly.
- Maximising the opportunity to use more sustainable materials by specifying, in procurement documentation, that materials and products with reduced embodied carbon emissions, and materials/resources featuring recycled content (where safe and of sufficient integrity for engineering), supported with eco- and carbon labels or verified Environmental Product Declarations (EPD) are favoured and should be used.
- Applying the waste hierarchy to seek re-use and recycling or re—purposing of materials in preference to use of virgin materials. Use of waste management protocols to segregate waste arisings and enable effective resource use.
- Designing, specifying and constructing the Projects with a view to maximising the operational lifespan and minimising the need for maintenance and refurbishment (and thus reducing the frequency of releasing associated GHG emissions).
- Specifying efficient ancillary infrastructure and equipment (such as lighting and telecommunications) that is long-lasting and chosen for its durability and energy efficiency credentials.
- Using locally sourced materials where available and practicable to minimise the distance materials are transported from source to Site.
- Using more modern and efficient construction plant and delivery vehicles, and/or those powered by electricity from alternative/lower carbon fuels.
- Suitably experienced Environmental Manager(s) will be appointed for the duration of the construction phase. In addition, 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 in the Code of Construction Practice [CoCP] (developed in accordance with the Outline CoCP). The Environmental Clerk of Work(s) will monitor the works proceed in accordance with relevant environmental DCO requirements and adhere to the required good practice and mitigation measures.

- Construction workers will undergo training to increase their awareness of environmental issues as applicable to their role on the Projects. Topics will include but not be limited to:
  - 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; and
  - Agreed traffic routes, access points, etc.

Operational Phase

33.5.2 A range of standard measures for the Projects are likely to be adopted in order to reduce GHG effects throughout the duration of the operational phase, these measures will be inherent in the evolving design of the Projects. A summary of these measures is detailed below (which is not an exhaustive list):

- maximising the operational effectiveness to minimise transmission losses;
- maximising the operational lifespan and minimising the need for maintenance and refurbishment (and all associated emissions);
- operating, maintaining and refurbishing the Projects, as required, using energy efficient equipment; and
- maximising the potential for reuse and recycling of materials/elements at the end-of-life stage.

33.6 Scope of the Assessment

Potential Sensitive Receptors

33.6.1 The impacts of GHG emissions relate to their contribution to global warming and climate change. These impacts are global and cumulative in nature, with every tonne of GHG emissions contributing to impacts on natural and human systems. GHG emissions result in the same global effects wherever and whenever they occur and, therefore, the sensitivity of different human and natural receptors is not considered.

33.6.2 It is not considered that the Projects, as electricity transmission infrastructure and a boundary reinforcement, will be the direct or indirect cause of either upstream electricity generation or downstream electricity consumption. Hence, the Projects will not be the direct or indirect cause of emissions from upstream or downstream activities. The Projects will facilitate the transport of electricity on the network in response to an identified projected increase in demand. The mix of electricity generation sources cannot be known at the time of undertaking the EIA and will likely change over time, especially in relation to government policy on decarbonisation of the energy sector. In addition, sources of electricity entering the network will likely be varied and subject to their own carbon assessments.

Likely Significant Effects

Construction

33.6.3 In relation to the PAS 2080:2023 lifecycle stages, the potential likely significant effects associated with the construction phase include those elements set out in **Table 33-5**.

Table 33-5 – Key emission sources in the Construction phase

Lifecycle Stage Impacts (with codes as per PAS 2080:2023)	Potential Sources of Emissions (not exhaustive)
Product stage (manufacture and transport of raw materials to suppliers) (A1 – 3)	Embodied emissions associated with extraction and manufacturing of the required raw materials.
Transport of materials to site (A4)	Emissions from fuel and electricity used in vehicles transporting materials to Site.
Plant and equipment use in construction (A5)	Emissions from fuel and electricity used in plant and equipment onsite.
Transport of waste (A5)	Emissions from fuel/energy used in vehicles transporting waste materials from construction, demolition and excavation to destinations away from the Site

Operation

33.6.4 In relation to the PAS 2080:2023 lifecycle stages, the potential likely significant effects associated with the operation phase include those elements set out in **Table 33-6.**

Table 33-6 – Key emission sources in the Operation Phase

Lifecycle Stage Impacts (with codes as per PAS 2080:2023)	Potential Sources of Emissions (Not Exhaustive)
Operation (B1)	Leakage of SF_6 from switchgear or circuit-breakers[2]. There are no other significant additional sources of emissions from process use of the Projects.
Maintenance, Repair, Replacement, Refurbishment (B2-5)	Embodied emissions and emissions from transport and plant associated with maintenance, repair, replacement, and refurbishment

[2] The potential impact of SF_6 is scoped in to reflect a worst case scenario in terms of environmental effects. However, it is noted that NGET Policy Statement PS(T) 005 notes no further procurement of 275 kV/400 kV switchgear or circuit-breakers containing SF_6 from 2024 and 2026 respectively. This is in advance of construction of the Projects commencing.

Operational Energy Use (B6)	There is no significant operational energy use
Operational Water Use (B7)	There is no significant operational water use

Impacts scoped in or out of further assessment

33.6.5 With reference to all PAS 2080:2023 lifecycle stages, the impacts scoped in or out for GHGs are as follows in **Table 33-7**:

Table 33-7 – Greenhouse Gas - Scoped In or Out of Further Assessment

Impacts	Phase	Scoped In	Scoped Out	Justification
Product Stage (manufacture and transport of raw materials to suppliers) (A1-3)	Construction	✓		Raw materials required for Projects would result in embodied emissions that have the potential to be large.
Transport of Materials to Site (A4)	Construction	✓		Construction phase emissions from fuel/energy consumption due to the delivery of material to site have the potential to be large.
Plant and Equipment Use during Construction (A5)	Construction	✓		Emissions from the plant, construction vessels and equipment used during construction of the Projects have the potential to be large.
Transport of Waste (A5)	Construction	✓		Emissions from fuel/energy consumption due to the transport of waste materials have the potential to be large.
Disposal of Waste (A5)	Construction		✓	Emissions from the disposal of waste materials is not expected to be large as it will predominantly comprise inert waste.
Land use, Land Use Change and Forestry (A5)	Construction	✓		Emissions from the change in land use from existing agricultural land may be significant

Impacts	Phase	Scoped In	Scoped Out	Justification
Operation (B1)	Operation	✓		Leakage of SF_6 from switchgear or circuit-breakers.[3]
Maintenance, Repair, Replacement, Refurbishment (B2-5)	Operation		✓	The English Onshore Scheme are not designed with the expectation of any significant plant maintenance and repair activities, or refurbishment being required, and therefore emissions due to these activities are expected to be minimal. The English Offshore Scheme are not designed with the expectation of routine operational maintenance or repair requirements, and therefore emissions due to these activities are minimal.
Operational Energy Use (B6)	Operation		✓	The Projects are not designed with the expectation of any significant operational energy use and therefore emissions due to these activities are expected to be minimal.
Operational Water Use (B7)	Operation		✓	The Projects are not designed with the expectation of any significant operational water use and therefore emissions due to these activities are expected to be minimal.
Land Use, Land Use Change and Forestry (B8)	Operation	✓		The reduction in carbon sequestration due to the land use change from the Projects may be significant.
End-user Emissions (B9/D)	Operation		✓	The Projects are not designed with the expectation of any significant end user emissions and therefore emissions due to these activities are expected to be minimal.
Decommissioning Process (C1)	End of life		✓	The potential effects of the decommissioning phase of the Projects have been scoped out. This is due to uncertainties around the

[3] The potential impact of SF_6 is scoped in to reflect a worst case scenario in terms of environmental effects. However, it is noted that NGET Policy Statement PS(T) 005 notes no further procurement of 275 kV/400 kV switchgear or circuit-breakers containing SF_6 from 2024 and 2026 respectively. This is in advance of construction of the Projects commencing.

Impacts	Phase	Scoped In	Scoped Out	Justification
				fate of infrastructure at this stage (60 years in future)
Transport and Disposal of Materials (C2-4)	End of life		✓	The potential effects of the decommissioning phase of the Projects have been scoped out. This is due to uncertainties around the fate of infrastructure at this stage (60 years in future)

33.7 Assessment Methodology

Further Data to be Gathered / Processed

33.7.1 The assessment approach considers the likely magnitude of GHG emissions (or avoided emissions) in comparison to the baseline without the Projects. It considers emissions throughout the lifecycle of the Projects addressing:

- Construction phase - e.g. embodied emissions associated with materials, transportation of materials to site and waste/arisings from the Site, and the construction process; and
- Operation phase - e.g. maintenance and replacement of original materials.

33.7.2 For all PAS 2080:2023 lifecycle stages and sub-stages of the Projects, the assessment will include the following:

- collection of available data/information on the scale of GHG emitting activities (e.g. tonnes concrete, litres of fuel, kWh electricity) and GHG capturing activities for the baseline and for the Projects. In each case this will cover the whole study period (minimum design life of 60 years); and
- calculation of the GHG emissions by applying a suitable emissions factor (per unit of emissions generating or capturing activity).

33.7.3 Emissions calculations will focus on emissions annually and throughout the Projects lifecycle. Values will be reported as tonnes of CO_2 equivalents (tCO_2e).

33.7.4 The assessment of construction and operation impacts will be undertaken in line with the following guidance:

- PAS 2080:2023 (Ref 33.19);
- ISO 14064-1:2018 (Ref 33.25);
- GHG Protocol (Ref 33.18);
- IPCC Guidelines for National Greenhouse Gas Inventories (Ref 33.20)

Significance of Effect Criteria

33.7.5 Any magnitude of emitted or avoided GHG emissions makes a cumulative contribution to climate change (positive or negative).

33.7.6 Significance of GHG impacts is assessed in line with IEMA guidance (Ref 33.17); *"a development's emissions should be based on its net impact over its lifetime, which may be positive, negative or negligible. The evaluation of significance should not just focus on GHG emissions, or the magnitude of those emissions, but whether the Projects contribute to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050."*

33.7.7 To provide context to the GHG emissions, and as set out in the IEMA guidance, the estimated GHG emissions arising from the Projects will be compared with the respective UK carbon budget (Ref 33.26), shown in **Table 33-8,** which have been set by the UK Government covering 2023 to 2037.

33.7.8 Further contextualisation on more local or sector carbon budgets will also be considered as well as any cumulative impacts on GHG emissions.

Table 33-8 – UK Carbon Budgets

Carbon Budget Period	UK Carbon Budget ($MtCO_2e$)
Fourth (2023 – 2027)	1,950
Fifth (2028 – 2032)	1,725
Sixth (2033 – 2037)	965

33.8 Assessment Limitations and Assumptions

33.8.1 The following limitations and assumptions have been identified:

- There is limited detail available for non-road mobile machinery (NRMM) during the construction and maintenance phases and regarding the potential use of diesel generators at this stage. It is assumed that emissions would be temporary and transient in nature and therefore negligible in terms of air quality impacts and significance, however this will be confirmed in the PEIR and ES once further information is available.
- Details in the assessment will be based on all available design information. Given the nature of the Projects, where there are limitations or elements of this that are unknown or limited in extent of detail this will be noted.

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34. Scoped Out Aspects

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34. Scoped Out Aspects

34.1 Introduction

34.1.1 This chapter of the Scoping Report discusses the environmental aspects which it is considered can be scoped out from detailed assessment in the Environmental Statement (ES) as significant effects are not considered likely as a result of the Projects.

34.2 Major Accidents and Disasters

34.2.1 The 2017 EIA Regulations (Ref 34.1) require that significant effects be assessed on population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage and the landscape. These assessments will include, where relevant, significant effects arising from the vulnerability of the Projects assets to major accidents and disasters (MA&D).

34.2.2 A major accident is an event that threatens immediate or delayed serious environmental effects to human health, welfare and/or the environment and requires the use of resources to manage beyond those available to the Applicant or its appointed representatives. Whereas a disaster is a natural or manmade hazard that has the potential to meet the definition of a major accident (Ref 34.2). For the purpose of this assessment, an impact arising from MA&D is the risk of that Major Accident or Disaster occurring.

34.2.3 As the vast majority of the Projects are buried, there is limited potential for a Major Accident or Disaster to occur. However, the potential impacts from the Projects that are scoped out of the MA&D assessment are outlined below, with justification as to why effects are not likely to be significant.

Accidents during construction and commissioning

34.2.4 The potential for accidents to occur during the construction processes will be identified and dealt with through appropriate risk assessment and mitigation (applying the hierarchy of controls) as required to comply with UK Health and Safety legislation and environmental legislation. The Outline Code of Construction Practice (CoCP) will require risk assessment of construction activities (including any necessary earthworks or demolition activities) and this assessment shall identify and mitigate, where necessary, the potential impact of all major accidents or disasters, including those affecting non-human receptors. These risk assessments shall account for potential adverse weather and prevailing environmental conditions.

34.2.5 The potential major accidents arising from construction activity on the environment and human populations include collapse of excavations, fire during construction, accidents during testing/commissioning or the collapse of a crane/piling rig. While most of these accidents would affect, at most, one or two workers, a structural collapse or fire during construction could affect more workers (up to 10), although they are unlikely to affect members of the public as the construction activities will be segregated.

34.2.6 Under the Construction (Design and Management) (CDM) Regulations (Ref 34.3), all structures must be designed so that they can be built and maintained safely. The designer must also 'design out' hazards where possible, by applying the hierarchy of controls and will produce a designer's risk assessment to inform the construction contractors. The construction process must be managed to take account of the risks to people affected by the work, including the public. These include measures to manage fire risk, electrical hazards and structural integrity (including excavations). This must be documented in a CDM Design Risk Register. This ensures that the risk of such effects occurring is extremely low and will be reduced to As Low As Reasonably Practicable (ALARP). This process will be managed by the construction contractor.

34.2.7 Construction accidents are also work-related accidents that could generally affect only one or two workers carrying out the task, the effects of which, do not extend to receptors within the wider environment. Under UK Health and Safety legislation (Ref 34.4, Ref 34.5), employers are required to manage the risk to their employees and others who could be affected by their activities and ensure that the risk is reduced to ALARP. The ALARP principle requires compliance with good practice as a minimum.

34.2.8 On the basis of the control measures described above, no likely significant effects have been identified and so the assessment of accidents during construction and commissioning is scoped out.

Accidents during operation and maintenance

34.2.9 The types of potential major accident for the English Onshore and Offshore schemes during operation and maintenance include construction hazards, fires, electrical hazards or physical hazards such as dropped objects.

34.2.10 The HVDC and HVAC cables will be buried underground and as such the cable route/s will be unoccupied during normal operation. For the supplementary works required at the existing Burwell to Walpole 4ZM 400 kV overhead line, the overhead conductors and pylons will also have no workforce present when operational, however a workforce will be required for maintenance. In line with all high voltage (HV) electrical assets currently operating, the substation and converter stations (including DCSS) will have a transient workforce that is present for periods of maintenance and during normal operation to ensure the safe and effective operation of the English Onshore Scheme.

34.2.11 Similarly, for the English Offshore Scheme, the cables will be buried, and cable routes will be unoccupied during operation. Any maintenance workforce will be minimal for minor remedial and routine work.

34.2.12 Maintenance accidents are work-related accidents that could typically only affect the one or two workers carrying out the task, the effects of which, do not extend to receptors within the wider environment. Under UK Health and Safety legislation (Ref 34.4, Ref 34.5), employers are required to manage the risk to their employees and others who could be affected by their activities and ensure that the risk is reduced to ALARP. The ALARP principle requires compliance with good practice as a minimum.

34.2.13 The Projects (including the facilities such as the substation and converter stations (including DCSS)) will be designed with consideration of the potential occupational health and safety hazards such as electrocution, falls from height and trip hazards. These will be mitigated through application of the hierarchy of controls: i.e. hazards will be designed out or minimised where practicable, and appropriate measures to prevent

and mitigate residual risks implemented. All staff who undertake maintenance on the system will be suitably qualified and experienced professionals, with appropriate training for work on HV electrical equipment. In addition, the location of the English Onshore Scheme above ground infrastructure, specifically, the substation and converter stations (including DCSS) have no material impact on the residual risk of a workplace accident occurring during maintenance, and the risk is comparable to the several hundred other HV equipment in use around the country.

34.2.14 On the basis of the control measures described above, no likely significant effects have been identified and so, the assessment of accidents during operation and maintenance are scoped out.

Construction impacts on existing services

34.2.15 The excavation of the trench for the underground and buried cables has the potential to impact on existing buried infrastructure for example, the onshore services such as power, water, telecommunications, gas and sewer. The construction working areas will be secured so that there is no public access which will protect them from harm, however in the event of impacting an existing service, a small number of project workers could suffer serious or fatal injuries.

34.2.16 There are likely to be an array of local services along the route of the cables that will need to be avoided or relocated as part of the underground cable route design. In line with industry good practice and CDM requirements, the appointed competent Projects designer will ensure that all existing services have been identified and that the design of the cable route will provide a safe means of crossing, which shall be agreed with the asset owner.

34.2.17 The English Offshore Scheme will be installed in the seabed and during installation has the potential to impact other existing infrastructure such as oil and gas pipelines and power or telecommunication cables. The crossing of third party infrastructure is made with prior agreement of the owners following a negotiated formal crossing agreement. The Crossing Agreement describes the rights and responsibilities of the parties and also the detailed physical design of the crossing. The design addresses the need to protect both the Project cables and the third-party infrastructure and other aspects such as crossing angle and vertical separation.

34.2.18 On the basis of the control measures described above, no likely significant effects have been identified and so, the assessment of construction impacts on existing services has been scoped out.

Impacts on transport networks and network impacts on cable

34.2.19 The HVAC and HVDC cable elements of the English Onshore Scheme will cross several roads. It is anticipated that other than for minor (unclassified) roads, these will likely be crossed using trenchless techniques to minimise the potential impact on these networks. Potential major accidents to the English Offshore scheme could include ship collisions and helicopter accidents.

34.2.20 At a crossing point the English Onshore Scheme would be designed such that the underground cables would be protected from any rail or road accidents. It is noted that there are a very large number of electrical cables which are buried in public highways in the UK, and experience gained over many decades ensures that the risk of damage by

traffic collisions on the road surface is negligible. The potential for vessels to impact upon the Offshore Scheme will form part of the design risk assessment, ensuring that it can withstand minor impacts from third-party vessels. During construction in line with good industry practice, the location of other utilities, shipping route will be considered.

34.2.21 On the basis of the control measures described above, no likely significant effects have been identified and so, the assessment of impacts on transport networks and network impacts to cause a major accident has been scoped out.

Impacts on mines and storage caverns

34.2.22 There have been no storage caverns identified or past/ possible previous shallow coal working areas or any past/ current surface mining according to the Coal Authority Maps within the route corridor. Therefore, impacts on mines and storage caverns is scoped out.

Third-party damage

34.2.23 The cable element of the English Onshore Scheme will be buried underground for the full extent of the cable route, through a combination of trenched and trenchless techniques and will come above the surface within the fenced perimeter of a converter station or substation compound. The approximate trench depth coverage for the HVAC and HVDC cables for the English Onshore Scheme will be 900 mm to the cable protective tiles. The depth of installation will be deeper at locations where trenchless methods e.g. HDD, are required. This will be determined through feedback from consultation, information from surveys, stakeholders, landowners and ongoing design studies.

34.2.24 In line with industry good practice for HV electricity transmission, protective provisions will be taken over the cables which will prevent the construction of structures, planting of trees or hedgerows and the use of deep farming equipment to prevent accidental damage. Periodic inspection of the whole cable will be undertaken to ensure these provisions are adhered to. The cable route will also be available for utilities searches to ensure that any persons undertaking construction works in the area are able to identify the cable route and avoid it.

34.2.25 The cabling for the Offshore Scheme will be buried in the seabed wherever feasible. However, there may be some areas where ground conditions (e.g., sub cropping/outcropping rock), or the presence of third-party infrastructure (existing cables or pipelines) would mean that the cables are surface laid requiring external protection. Cables are designed with an outer armoured layer to protect them from damage. A cable burial risk assessment will be undertaken to determine the minimum depth that the cables must be buried to protect them from external influences. This takes into consideration fishing and shipping activity in the area. Routine surveys are undertaken during operation to confirm that the cables remain buried and protect.

34.2.26 These provisions are comparable to the extensive existing HV electrical network in the UK, and therefore the risk of third-party damage is not considered to be significantly different in this location than any other comparable location. Assessment of third-party damage is therefore, scoped out of the assessment.

Aircraft crash

34.2.27 The risk of an aircraft crash impacting the Projects is considered to be extremely low. The Projects will be predominantly underground and the above ground elements will be located a considerable distance from any airport.

External major accident - chemicals

34.2.28 There are no Control of Major Accident Hazard (COMAH) establishments or Major Accident Hazard Pipelines located close to the converter station, DCSS or substation assets along the route of the English Onshore Scheme according to the Health and Safety Executive (HSE) Planning Web App, so no hazards have been identified and therefore scoped out.

External major accident - nuclear

34.2.29 The nearest licensed nuclear sites are the Sizewell B Nuclear Power Station located in Suffolk, more than 100 km away from the Walpole Stations Area and Rolls Royce Submarines in Raynesway, Derby more than 90 km away and well outside Emergency Planning Zone for the plant. Therefore, the risk of an external major accident from a nuclear facility is scoped out.

Loss of utilities

34.2.30 During the construction and operation of the Projects, there will be a reliance on utility systems to provide services to the Projects. For example, electricity will be required for lighting, and powering control systems during operations, and it may also be used to provide heating and welfare facilities during construction. However, the loss of utility systems including water, power or telecommunications will only lead to construction phase/operational inconvenience, but is not expected to lead to major accident level consequences, as all items will be designed to 'fail-safe' in the event of loss of utilities. Therefore, the assessment of loss of utilities is scoped out.

Cyber attack

34.2.31 The National Risk Register (NRR) (Ref 34.6) includes cyber-attacks as one of the types of terrorism which may affect the UK. The NRR highlights electricity infrastructure as one of the key potential targets. In recent years, other countries have seen successful cyber-attacks against power stations or grid infrastructure.

34.2.32 The Projects would have little cyber infrastructure which could be attacked; the only foreseeable consequence would be a malicious actor attempting to take control of the new Walpole substation or converter stations and shut the system down, leading to a reduction in supply to the energy grid.

34.2.33 The design of the control systems would ensure that someone gaining access to the system could not remotely cause a major accident hazard by discharging electricity or causing a fire. It is anticipated that modern encryption methods would be embedded in the design of this facility and would therefore present a more difficult target than existing electrical grid infrastructure. There are several hundred existing HV substations across the grid network in the UK, on the basis that the Projects will comply with NGET's design standards, it is expected that the risk of cyber-attack at the Projects is no greater than any other part of the grid. Therefore, the assessment of cyber-attack is scoped out.

Terrorism

34.2.34 Terrorism is the act of inflicting violence as a means of inflicting terror for political reasons. At the time of writing (June 2024), MI5 rates the current UK-wide threat level as SUBSTANTIAL which means an attack in the UK is considered 'likely'. The NRR for the UK lists various types of terrorist attack as potential major accidents including attacks on publicly accessible locations, transport systems, infrastructure, as well as Chemical, Biological, Radiological or Nuclear (CBRN).

34.2.35 The Projects are not in publicly accessible locations or transport system, where people will gather; and as such, they also do not represent a potential target or vector for a CBRN attack. Any buildings associated with the English Onshore Scheme will be in secure compounds and are not considered to be more at risk than existing infrastructure with similar embedded protection measures in place. Additionally, underground cables are not invulnerable to being targeted but the very nature of them being buried offers them protection over and above any above ground assets.

34.2.36 The Centre for the Protection of National Infrastructure (CPNI) sets the definition of Critical National Infrastructure (CNI). Security provisions have been allowed for within the design of the Projects and consideration will be given to the appropriate additional measures if the Projects are designated as CNI. Therefore, the assessment of terrorism is scoped out.

Widespread public disorder

34.2.37 The NNR states that public disorder 'may be caused by a combination of long-standing grievances and a spontaneous response to a single incident.'

34.2.38 The UK is a developed economy with a stable democratic political regime, such that prolonged civil unrest is considered extremely unlikely. Periodically, political protests may turn violent, but these are rarely widespread and are usually in response to a 'precipitating event'.

34.2.39 As the Projects represent a fundamental element in increasing the contribution of renewable technologies to the UK energy mix and a step forward in the UK's drive to a Net Zero Carbon economy, it is not considered that the Projects are likely to be either a target or a precipitating event for widespread public disorder. Therefore, the assessment of widespread public disorder is scoped out.

Biological threats e.g. disease epidemics, animal diseases

34.2.40 The Projects will not materially alter the populations who may be exposed to biological threats, nor will it increase or decrease their likelihood, as the construction populations will be small. The Projects will not therefore materially alter the background risk of biological threats.

34.2.41 Any impacts that these threats may have on the Projects such as temporary cessation of construction or requirements for social distancing measures as were required for the Coronavirus pandemic are not considered to be major accidents. Therefore, the assessment of biological threats is scoped out.

Lightning

34.2.42 The majority of the infrastructure will be buried and therefore at negligible risk of a lightning strike.

34.2.43 The potential consequences of a lightning strike on the English Onshore Scheme, specifically on the converter station, DCSS or the substation and above ground infrastructure are likely to be restricted to damage to the building and potential injury to any workers who may be present. The above ground infrastructure will be provided with adequate lightning protection designed to a recognised industry standard. Therefore, the assessment of lightning is scoped out.

Seismic

34.2.44 The UK does not typically experience significant seismic activity. The design of the Projects will account for any foreseeable loads e.g. due to seismic activity in line with industry good practice including the British Standards such as Eurocode 8 (BS EN 1998 series). It is therefore considered there are no significant effects arising from seismic hazards. Therefore, the assessment of seismic hazards is scoped out.

Space weather

34.2.45 Severe space weather is divided into three categories in the NRR: Solar flares, solar energetic particles and coronal mass ejections. These have the capacity to cause a loss of power or interference with satellite or radio based communication technologies. While these events affecting the UK are extremely rare, they are known to have occurred in 1921, 1960, 1989, 1991 and 2003 (Ref 34.6).

34.2.46 The only foreseeable impact to the Projects is a temporary loss of power or telemetry systems. Good engineering design practices will ensure that in the event of loss of services (power or communications), the Projects will be maintained in a safe condition.

34.2.47 It is noted that the Projects are no more vulnerable than other similar infrastructure which comprises the UK electrical grid across the UK, and much less than vulnerable than other industries which have a more onerous reliance on satellites such as aviation.

34.2.48 As space weather does not have the capacity to cause a major accident which may impact the Projects it is therefore is scoped out.

34.3 Climate Resilience

34.3.1 The greenhouse gases (GHG) assessment will consider the potentially significant effects from the Projects on GHG during construction and operation. This is presented in **Part 4, Chapter 33: Greenhouse Gases**.

34.3.2 Climate resilience considers the potentially significant effects of a changing climate on the Projects.

34.3.3 In terms of vulnerability of the Projects to climate change, specifically in relation to the English Onshore Scheme above ground infrastructure such as the substations, converter stations and OHLs are designed to withstand extreme weather conditions, such as high winds and ice formation on the wires. NGET has previously investigated whether climate change might require OHLs to be redesigned but found there is more likely to be a reduction in the risk of ice on the wires and intense wind gusts occurring

simultaneously. With regards to the HVAC and HVDC elements of the Projects, by virtue of the fact that these elements are underground, they will not be exposed to weather extremes and therefore not considered vulnerable to the potential effects of climate change.

34.3.4 At the landfall, the position of the transition joint bays (TJB) and the trajectory of the horizontal direction drills (or other trenchless technique) will be designed taking into consideration coastal erosion and beach drawdown predictions for the lifetime of the Projects. This is to ensure that the cable ducts are not exposed due to changes in coastal morphology.

34.3.5 The vulnerability of the Projects to future flooding will be considered as part of the flood risk assessment and associated analysis presented in **Part 2, Chapter 9: Water Environment.**

34.3.6 Due to the nature of the Projects no further significant effects on them are anticipated as a result of future climate change. On this basis, no further assessment of the Project's vulnerability to climate change is required in the ES, therefore the below aspects of climate change assessments have been **scoped out**:

- In–Combination Climate Change Impact (ICCI) Assessment – combined impact of the Projects and future climate change on the receiving environment; and
- Climate Change Resilience (CCR) Assessment – the resilience of the Projects to the potential impacts of climate change

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35. Cumulative Effects

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35. Cumulative Effects

35.1 Introduction

35.1.1 This chapter sets out the approach to assessing cumulative effects which may arise as a result of the construction and operation of the Projects. In some instances, the Projects are referred to individually, the EGL 3 and the EGL 4.

35.1.2 The EIA Regulations (Ref 35.1) require that, in assessing the effects of a particular development, consideration should also be given to the cumulative effects that may arise from the Projects in conjunction with other existing and/or approved developments.

35.1.3 The ES will assess the potential for significant cumulative effects as a result of the Projects in the form of a Cumulative Effects Assessment (CEA). The CEA will be presented as a standalone chapter of the ES.

35.1.4 In line with Schedule 4, paragraph 5(e) of the EIA Regulations (Ref 35.1) the ES will consider *"the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources"*. Furthermore, it will address Schedule 4, paragraph 5 of the EIA Regulations (Ref 35.1) which states *"the description of the likely significant effects on the factors specified in regulation 4(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project, including in particular those established under Council Directive 92/43/EEC and Directive 2009/147/EC"*.

35.1.5 Cumulative effects may arise because of several different factors and combined changes. According to IEMA (Ref 35.2) cumulative impacts can be defined as *"the additional changes caused by a Proposed Development in conjunction with other similar developments as the combined effect of a set of developments, taken together, in practice 'effects' and 'impacts' are used interchangeably"*.

35.1.6 The following types of cumulative effects will be considered in the ES:

- Intra-project effects – the interaction and combination of different residual environmental effects of the Projects affecting the same receptor. For example, visual and noise effects during construction affecting users of a nearby PRoW.
- Inter-project effects – the residual environmental effects of the Projects combining and interacting with the residual environmental effects of other, committed development(s), affecting the same receptor. For example, effects upon users of the local road network because of traffic flows from the Projects and a nearby industrial development.

35.1.7 This chapter should be read in conjunction with **Part 2 Chapter 3: Consideration of Alternatives** and given the interface with other technical aspects, considered alongside **Part 2 Chapter 6: Biodiversity** to **Chapter 16: Health and Wellbeing**.

35.2 Relevant Legislation, Planning Policy and Technical Guidance

35.2.1 This section identifies the legislation, national and local policy and guidance relevant to the assessment of cumulative effects which have been considered when developing this chapter.

Legislation

35.2.2 A summary of the key legislation considered, but not limited to, in the scope of cumulative effects is outlined in Error! Reference source not found.

Table 35-1 – Legislation relevant to cumulative effects

Legislation	Legislative Context	Section Considered
The Infrastructure Planning (Environmental Impact Assessment) Regulations (2017) (Ref 35.1)	The EIA Regulations cover the process of EIA in the context of Nationally Significant Infrastructure Projects. They apply the amended EU Directive 2014/52/EU. Schedule 4, paragraph 5(e), and Regulation 5(2) (see paragraphs 21.1.3 and 2.1.4 above) are of relevance to cumulative effects.	Section 35.4 Assessment Methodology

Planning Policy

35.2.3 A summary of the planning policies at both a national and local level relevant to the scope of cumulative effects is given in **Table 35-2** and **Table 35-3**. The policies outlined in **Table 35-2** underpin this scoping chapter as a whole and have most notably informed the development of Section 18.4 Assessment Methodology.

Table 35-2 – National and Local Planning Policy relevant to cumulative effects

Policy Reference	Policy Context
National Policy	
Overarching National Policy Statement for Energy (EN-1) (2024) (Ref 35.3)	
Paragraph 4.1.5	EN-1 states that, in considering any proposed development, in particular when weighting its adverse impacts against its benefits, the SoS should take into account: *"its potential adverse impacts, including on the environment, and including any long-term and cumulative adverse impacts, as well*

Policy Reference	Policy Context
	as any measures to avoid, reduce, mitigate or compensate for any adverse impacts, following the mitigation hierarchy"
Paragraph 4.2.12	Notes that applications for critical national priority infrastructure should set out how residual impacts of a proposed development will be compensated for and that cumulative impacts of multiple developments with residual impacts should also be considered.
Paragraph 4.3.3	EN-1 acknowledges the requirements of the EIA Regulations, noting that: *"The Regulations require an assessment of the likely significant effects of the proposed project on the environment, covering the direct effects and any indirect, secondary, cumulative, transboundary, short, medium, and long-term, permanent and temporary, positive and negative effects at all stages of the project, and also of the measures envisaged for avoiding or mitigating significant adverse effects"*
Sections 4.4, 4.9, 4.11, 4.12, 5.5, 5.8, 5.9, 5.10, 5.13, 5.14, 5.16	The following sections of EN-1 all state a requirement to include cumulative impacts in the assessment of a proposed development and/or that cumulative impacts should be considered as part of the SoS decision making process. • Health • Carbon Capture and Storage • Network Connection • Pollution Control and Other Environmental Regulatory Regimes • Civil and Military Aviation and Defence Interests • Flood Risk • Historic Environment • Landscape and Visual • Socio-Economic Impacts • Traffic and Transport • Water Quality and Resources
National Policy Statement for Electricity Networks Infrastructure (EN-5) (2024) (Ref 35.4)	
Paragraph 2.7.1.	Supports EN-1 by providing guidance on new electricity networks infrastructure to ensure it is well designed. It states *"EN-1 explains in Section 4.10 that the Planning Act 2008 aims to create a holistic planning regime, such that the cumulative effects of the same project can be considered together. Co-ordinated applications typically bring economic efficiencies and reduced environmental impact".*
National Planning Policy Framework (2023) (Ref 35.5)	

Policy Reference	Policy Context
Paragraph 191	The NPPF sets out the Government's planning policies for England and how these should be applied, with the following paragraphs relating to cumulative effects: Paragraph 191: *"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development".*
Local Policy	
East Lindsey District Council: East Lindsey Local Plan Core Strategy, (2018) (Ref 35.6)	
Strategic Policy 28 (SP28) – Infrastructure and S106 Obligations	SP28 states *"Infrastructure schemes should be accompanied by an impact assessment that shows how the proposal impacts on the landscape or local setting of the area, including individual and cumulative effects. It should identify what steps have been taken to minimize its effects and the alternative options that have been considered".*
Strategic Policy 11 (SP 11) – Historic Environment	SP11 states *"Proposals will be supported where they: Do not have a harmful cumulative impact on heritage assets".*
Strategic Policy 27 (SP27) – Renewable and Low Carbon Energy	SP27 states *"Large-scale renewable and low carbon energy development, development for the transmission and interconnection of electricity, and infrastructure required to support such development, will be supported where their individual or cumulative impact is, when weighed against the benefits, considered to be acceptable in relation to:* *a) residential amenity;* *b) surrounding landscape, townscape and historic landscape character, and visual qualities;* *c) the significance (including the setting) of a historic garden, park, battlefield, building, conservation area, archaeological site or other heritage asset;* *d) sites or features of biodiversity or geodiversity importance, or protected species;* *e) the local economy;* *f) highway safety; and* *g) water environment and water quality".*
Strategic Policy 28 (SP28) – Infrastructure and S106 Obligations	SP28 states *"Infrastructure schemes should be accompanied by an impact assessment that shows how the proposal impacts on the landscape or local setting of the area, including individual and cumulative effects. It should identify what steps have been taken to*

Policy Reference	Policy Context
	minimize its effects and the alternative options that have been considered".
Boston Borough Council and South Holland District Council: South East Lincolnshire Local Plan (2011-2036), (2019) (Ref 35.7)	
Policy 5: Developer Contributions	Policy 5 states *"Developers will either make direct provision or will contribute towards the provision of local and strategic infrastructure and services required by the development, either alone or cumulatively with other developments. Contributions will be determined having regard to:* • *the identified needs generated by the proposed development;* • *the viability of the proposed development; and* • *the priorities attached to meeting individual local and strategic infrastructure and service requirements".*
King's Lynn and West Norfolk Borough Council: Local Development Framework – Core Strategy, (2011) (Ref 35.8)	
Policy CS08 – Renewable Energy	Policy CS08 states *"Renewable projects should be assessed accordingly (where necessary by project level Habitat Regulation Assessment) to ensure minimal ecological impact, and should undergo a detailed cumulative impact assessment".*
Fenland District Council: Fenland Local Plan, (2014) (Ref 35.9)	
Policy LP13 – Supporting and Managing the Impact of a Growing District	Policy LP13 states *"b) Developer Contributions:* *Developers will either make direct provision or will contribute towards the provision of local and strategic infrastructure required by the development either alone or cumulatively with other developments".*
Central Lincolnshire Local Plan (2023) (Ref 35.10)	
Policy S14: Renewable Energy	Policy S14 states *"Proposals for renewable energy schemes, including ancillary development, will be supported where the direct, indirect, individual and cumulative impacts on the following considerations are, or will be made, acceptable. To determine whether it is acceptable, the following tests will have to be met:* *i. The impacts are acceptable having considered the scale, siting and design, and the consequent impacts on landscape character; visual amenity; biodiversity; geodiversity; flood risk; townscape; heritage assets, their settings and the historic landscape; and highway safety and rail safety; and* *ii. The impacts are acceptable on aviation and defence navigation system/communications; and*

Policy Reference	Policy Context
	iii. The impacts are acceptable on the amenity of sensitive neighbouring uses (including local residents) by virtue of matters such as noise, dust, odour, shadow flicker, air quality and traffic;".
Policy S45: Strategic Infrastructure Requirements	Policy S45 states *"Development Contributions: Developers will be expected to contribute towards the delivery of relevant infrastructure, either through direct provision or contribution towards the provision of local and strategic infrastructure to meet the needs arising from the development either alone or cumulatively with other developments".*

Technical Guidance

35.2.4 A summary of technical guidance documents relevant to the scope of cumulative effects which has informed this Scoping Report and will inform the assessment within the PEIR and ES, is provided in **Table 35-3.**

Table 35-3 – Guidance relevant to cumulative effects

Technical Guidance	Summary of Relevant Guidance Relating to Cumulative Effects
Demystifying Cumulative Effects, Impact Assessment Outlook Journal 2020 (Ref 35.11)	The EIA process requires the consideration of cumulative effects to be undertaken. However, guidance on this area of practice is often lacking, and a variety of methodologies are adopted by different practitioners. Volume 7 of the Impact Assessment Outlook Journal brings together a selection of articles, thought and opinion pieces on CEA in EIA.
Planning Inspectorate Advice Note 17: Cumulative Effects Assessment (Ref 35.12)	This Advice Note identifies the nature of projects (referred to as 'Other Developments') that should be considered in a CEA. It advises that a pragmatic approach should be used, in respect of what is feasible and reasonable, where there is a lack of information to identify impacts and assess effects. Planning Inspectorate Note 17 specifies that statutory definitions of EIA screening thresholds can be of assistance when considering whether the scale and nature of developments identified in Zone of Influence (ZOI) are likely to interact

Technical Guidance	Summary of Relevant Guidance Relating to Cumulative Effects
	with the proposed project development and to result in a cumulative effect.
A Strategic Framework for Scoping Cumulative Effects (Ref 35.13)	This guidance from the Marine Management Organisation provides a high level approach to scoping cumulative effects in the marine environment. It has partly been superseded by PINS Advice Note 17 but still provides a framework which can be of assistance when considering CEA in the marine environment.

35.3 Consultation and Engagement

35.3.1 To date no consultation and engagement been undertaken in relation to cumulative effects. However, in advance of the PEIR and ES, engagement would be undertaken with the following key stakeholders relevant to cumulative effects whereby the long-list (see Paragraph 35.4.11 for further information) will be sent to the relevant local planning authority/ies for comment and agreement will be sought prior to progressing to Stage 2 of the Inter-project Effects stage (see Paragraph 35.4.17 for further information):

- Lincolnshire County Council
- Norfolk County Council
- Cambridgeshire County Council
- East Lindsey District Council
- Boston Borough Council
- South Holland District Council
- Borough Council of King's Lynn & West Norfolk
- Fenland District Council
- Marine Management Organisation

35.4 Assessment Methodology

35.4.1 There is no widely accepted methodology or best practice for the assessment of cumulative effects. However, various guidance documents exist, including Advice Note 17 (Ref 35.12), which will inform the approach to both Intra-project effects and Inter-project effects assessments. The chosen approach will draw upon professional expertise, considering the specific receptors under evaluation and the nature of the Projects.

35.4.2 The assessment methodology will primarily be qualitative and based on the available information. In cases where feasible, partially quantitative assessments may be

conducted, particularly for aspects like traffic-related effects. In instances where information is not available, assumptions will be made, employing a reasonable worst-case scenario approach based on professional judgment. All assumptions will be clearly stated alongside any associated uncertainties as part of the Intra-project effects and Inter-project effects assessments.

Intra-project Effects

35.4.3 The assessment of Intra-project effects will be based on the information and study areas within the technical aspect chapters (**Part 2 Chapter 6: Biodiversity** to **Chapter 16: Health and Wellbeing**). This assessment considers any residual effects that are reported as non-negligible (or equivalent) within the technical chapters. Minor effects, while not significant, are considered in the assessment on the basis that multiple minor effects may interact to result in a significant effect. Negligible residual effects reported in the technical chapters are considered unlikely to accumulate to the extent that a potential significant Intra-project effect would occur.

35.4.4 The methodology for assessing Intra-project effects will encompass the following key stages.

Stage 1 – Screening of Sensitive Receptors

35.4.5 A screening process will be conducted for sensitive receptors, as identified within each topic chapter, to ascertain if any may encounter multiple types of residual effects. This evaluation spans both individual technical aspect assessments and potential overlaps across multiple assessments, encompassing both the construction and operational phases of the Projects. These identified sensitive receptors, termed 'common receptors,' will progress to Stage 2 of the assessment.

Stage 2 – Determine Common Receptor's Residual Effects

35.4.6 Of the common receptors identified in Stage 1, those that have two or more non-negligible residual effects will be identified and taken forward to Stage 3 of the assessment.

Stage 3 – Assessment of Intra-project Effects

35.4.7 An assessment of the overall significance of the Intra-project effects on common receptors identified at Stage 2 will be undertaken. The assessment will be based on information provided within the technical aspect assessments, as well as professional judgement.

Significance Criteria

35.4.8 While there is no standard approach to the assessment of Intra-project effects, it should be carried out with reference to guidance and professional judgement. Professional judgement will be used to determine the potential for cumulative effects, with effects identified as significant or not. If significant residual Intra-project effects are identified, additional mitigation measures will be considered and reported in the ES.

Inter-project Effects

35.4.9 The methodology for assessing Inter-project effects will entail identifying incremental changes to baseline conditions anticipated from other pertinent projects in conjunction with the Projects. This process will encompass the following key stages.

Stage 1 – Identification and Evaluation of Developments for Consideration

35.4.10 Stage 1 of the approach outlined in Advice Note 17 (Ref 35.12) requires the identification of a ZOI for each technical aspect (derived from the study areas in **Part 2 Chapter 6: Biodiversity** to **Chapter 16: Health and Wellbeing**) considered within the ES for the Projects, with other, reasonably foreseeable developments identified within those ZOI, which are termed 'Other Developments'.

35.4.11 'Other Developments' will be identified through an initial search conducted within the designated ZOI. This search will encompass the planning registers of local planning authorities, the Planning Inspectorate's planning register, the marine Management Organisations (MMO) Marine Case Management System (MCMS) public register, OPRED environmental submissions and determinations and relevant development plans. Employing professional judgment, the initial search will cover the largest practicable ZOI search area identified in the technical chapters. This process will generate a 'long-list' of 'Other Developments' for consideration, aligning with Stage 1 as outlined in Advice Note 17 (Ref 35.12).

35.4.12 Table 2 of Advice Note 17 also outlines criteria for assessing the level of certainty associated with each of the 'Other Developments' being considered. Error! Reference source not found. has been adapted from Table 2 of Advice Note 17 (Ref 35.12). The criteria are organised in descending order from Tier 1 (indicating the highest level of certainty) to Tier 3 (representing the lowest level of certainty). These tiers reflect a decreasing degree of certainty that can be attributed to each 'Other Development'.

Table 35-4 – Assigning Certainty to 'Other Developments' adapted from Advice Note 17 (Ref 35.12)

Tier	Certainty
Tier 1	• Under construction; • Permitted application(s), whether under the Act or other consent regimes, but not yet implemented; and • Submitted application(s), whether under the Act or other consent regimes, but not yet determined.
Tier 2	• Projects on the Planning Inspectorate's Programme of Projects or MCMS public register where a Scoping Report has been published.
Tier 3	• Projects on the Planning Inspectorate's Programme of Projects or MCMS public register where a Scoping Report has not been submitted. • Identified in the relevant Development Plan (and emerging Development Plans – with appropriate weight being given

Tier	Certainty
	as they move closer to adoption) recognising that there will be limited information available on the 'Other Development'. • Identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, recognising that there will be limited information available on the 'Other Development'.

35.4.13 In line with Advice Note 17, which advises that statutory definitions of major development and EIA screening thresholds may be of assistance when considering issues of scale, all development classified as 'major development' under the Town and Country Planning (Development Management Procedure) (England) Order 2015 and meets the criteria in Error! Reference source not found. will be considered in the Long-List. However, with respect to urban development projects, the thresholds and criteria from schedule 2 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 will be applied as follows:

- The development includes more than 1 hectare of urban development which is not dwellinghouse development; or
- the development includes more than 150 dwellings; or
- the overall area of the development exceeds 5 hectares.

35.4.14 All 'Other Developments' which meet the criteria in Error! Reference source not found. will be considered against this criteria.

35.4.15 For the selection of 'Other Developments' the following criteria will also be considered ahead of inclusion in the Long-List:

- the development is under construction but is not yet completed;
- the development has been permitted within the last five years but is yet to be constructed/implemented;
- submitted application(s) for a development that are yet determined, or refused, but are subject to appeal procedures not yet determined;
- identified in relevant development plans (and emerging development plans) which would have the characteristics of 'Other Developments'; and
- other plans and programmes (as appropriate) which set out the framework for future development consents/approvals, where such development is reasonably likely to come forward and would likely be 'Other Developments'.

35.4.16 The long-list will be submitted to the relevant local planning authorities and the MMO for their input, and consensus will be sought before advancing to Stage 2. A draft long-list will be formulated during the PEIR stage, undergoing review and updated during the ES stage. This process ensures that the identification of 'Other Developments' remains as up-to-date as practicable before proceeding to Stage 2.

Stage 2 – Identify a Short-List of ‘Other Developments’

35.4.17 Following the data collection in Stage 1, the long-list will undergo refinement into a short-list. This will be achieved by assessing each of the 'Other Developments' identified against the following criteria:

- Is there a concurrent construction or operation phase between the ‘Other Development’ and the Projects?
- Is there potential that the ‘Other Development’ shares some of the same Sensitive Receptors with the Projects?
- Those ‘Other Developments’ that have no, or insufficient, environmental assessment information will, typically, not be considered as it will not be possible to accurately identify shared Sensitive Receptors or Inter-project effects.

Stage 3 – Identification of Information for the ‘Other Developments’

35.4.18 Details regarding ‘Other Developments’ included within the short-list will be collected from accessible third-party sources within the public domain.

35.4.19 The gathered information should encompass, but not necessarily be restricted to:

- proposed design and site boundary information;
- proposed programme of construction and operation; and
- technical information that sets out baseline data and effects arising from the Other Development on common receptors.

Stage 4 – Assessment of Inter-Project Effects

35.4.20 The assessment of Inter-project effects will examine deviations from baseline conditions at common receptor(s) resulting from changes induced by the Projects in conjunction with one or more ‘Other Developments’ in the short-list. This phase aligns with Stage 4 of Advice Note 17 (Ref 35.12).

35.4.21 Inter-project effects assessment will be based on residual effects identified in the technical aspect assessments of the ES, as well as available environmental information for the ‘Other Developments’.

35.4.22 The assessment of Inter-project effects will encompass the following considerations:

- combined magnitude of change;
- sensitivity/value/importance of the Receptor to change; and/or
- duration and reversibility of effect.

35.4.23 By integrating the qualitative assessment outlined in the ES with the environmental data accessible for ‘Other Developments’, conclusions will be reached regarding the probability of significant Inter-project effects i.e. those over and above, or different to, those identified for the Projects on its own.

35.4.24 In the event that significant residual Inter-project effects are identified, mitigation measures deemed necessary will be proposed in the ES.

Significance Criteria

35.4.25 The assessment of Inter-project effects will encompass the examination of potential significant residual effects, for which appropriate additional mitigation measures will be proposed. The determination of effect significance is formulated by considering the environmental value/sensitivity of a Sensitive Receptor or resource and the magnitude of impact from the Projects. This approach is consistent with Advice Note 17 (Ref 35.12), which emphasises, *"The significance criteria used to assess likely cumulative effects should consider the capacity of environmental resources and receptors to accommodate changes that are likely to occur. The terminology used to determine significance should be explicit and ensure a clear understanding of the outcome of the CEA"*.

35.5 Assessment Limitations and Assumptions

35.5.1 The following limitations and assumptions have been identified:

- The assessment of Intra-project effects resulting from the Projects will concentrate on residual effects during the construction and operation phases, post-implementation of mitigation measures mandated by DCO requirements or other mechanisms.
- The assessment of Inter-project effects will be based on the interpretation and assessment of publicly available data and limited by the level of information available.
- There may be instances where 'Other Developments' screened into the short-list provide information for some technical aspects but not for others. In such cases, the Inter-project effects assessment for the respective 'Other Developments' may be limited to only those topics with sufficient information available. However, wherever feasible, attempts will be made to conduct an assessment based on available information, supplemented by assumptions and professional judgment. Such instances will be stated in the ES as appropriate.
- While information may be accessible for 'Other Developments', its compatibility may be limited due to differences in assessment methodologies or criteria used in the technical topic assessments. In cases where such discrepancies hinder or prevent the Inter-project effects assessment, it will be clearly stated in the ES.

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