MORGAN AND MORECAMBE OFFSHORE WIND FARMS: TRANSMISSION ASSETS

Environmental Statement

Volume 1, Chapter 4: Site selection and consideration of alternatives

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Glossary

Term	Meaning
400 kV grid connection cables	Cables that will connect the proposed onshore substations to the existing National Grid Penwortham substation.
400 kV grid connection cable corridor	The corridor within which the 400 kV grid connection cables will be located.
Applicants	Morgan Offshore Wind Limited (Morgan OWL) and Morecambe Offshore Windfarm Limited (Morecambe OWL).
Commitment	This term is used interchangeably with mitigation and enhancement measures. The purpose of commitments is to avoid, prevent, reduce or, if possible, offset significant adverse environmental effects. Primary and tertiary commitments are taken into account and embedded within the assessment set out in the ES.
Design envelope	A description of the range of possible elements and parameters that make up the Transmission Assets options under consideration, as set out in detail in Volume 1, Chapter 3: Project Description. This envelope is used to define the Transmission Assets for EIA purposes when the exact engineering parameters are not yet known. This is also referred to as the Maximum Design Scenario or Rochdale Envelope approach.
Development Consent Order	An order made under the Planning Act 2008, as amended, granting development consent.
Environmental Impact Assessment	The process of identifying and assessing the significant effects likely to arise from a project. This requires consideration of the likely changes to the environment, where these arise as a consequence of a project, through comparison with the existing and projected future baseline conditions.
Environmental Statement	The document presenting the results of the Environmental Impact Assessment process.
Evidence Plan Process	A voluntary consultation process with specialist stakeholders to agree the approach to, and information to support, the EIA and Habitats Regulations Assessment processes for certain topics.
Expert Working Group	A forum for targeted engagement with regulators and interested stakeholders through the Evidence Plan process.
Generation Assets	The generation assets associated with the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm include the offshore wind turbines, inter-array cables, offshore substation platforms and platform link (interconnector) cables to connect offshore substations.
Interconnector cables	Cables to connect the Offshore Substation Platforms to each other.
Intertidal area	The area between Mean High Water Springs and Mean Low Water Springs.
Intertidal Infrastructure Area	The temporary and permanent areas between MLWS and MHWS.

Term	Meaning
Landfall	The area in which the offshore export cables make landfall (come on shore) and the transitional area between the offshore cabling and the onshore cabling. This term applies to the entire landfall area between Mean Low Water Springs and the transition joint bay inclusive of all construction works, including the offshore and onshore cable routes, intertidal working area, and landfall compound(s).
Local Authority	A body empowered by law to exercise various statutory functions for a particular area of the United Kingdom. This includes County Councils, District Councils and County Borough Councils.
Marine licence	The Marine and Coastal Access Act 2009 requires a marine licence to be obtained for licensable marine activities. Section 149A of the Planning Act 2008 allows an applicant to apply for 'deemed marine licences' in English waters as part of the development consent process.
Maximum design scenario	The realistic worst-case scenario, selected on a topic-specific and impact specific basis, from a range of potential parameters for the Transmission Assets
Mean High Water Spring	The height of mean high water during spring tides in a year.
Mean Low Water Spring	The height of mean low water during spring tides in a year.
Mitigation measures	This term is used interchangeably with Commitments. The purpose of such measures is to avoid, prevent, reduce or, if possible, offset significant adverse environmental effects.
Morecambe Offshore Windfarm: Generation Assets	The offshore generation assets and associated activities for the Morecambe Offshore Windfarm.
Morecambe Offshore Windfarm: Transmission Assets	The offshore export cables, landfall and onshore infrastructure required to connect the Morecambe Offshore Windfarm to the National Grid.
Morecambe OWL	Morecambe Offshore Windfarm Limited is a joint venture between Zero-E Offshore Wind S.L.U. (Spain) (a Cobra group company) (Cobra) and Flotation Energy Ltd.
Morgan Offshore Wind Project: Transmission Assets	The transmission infrastructure required to connect the Morgan Offshore Wind Project to the National Grid.
Morgan and Morecambe Offshore Wind Farms: Transmission Assets	The offshore and onshore infrastructure connecting the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm to the national grid. This includes the offshore export cables, landfall site, onshore export cables, onshore substations, 400 kV grid connection cables and associated grid connection infrastructure such as circuit breaker compounds. Also referred to in this report as the Transmission Assets, for ease of reading.
Morgan Offshore Wind Project: Generation Assets	The offshore generation assets and associated activities for the Morgan Offshore Wind Project.
Morgan Offshore Wind Project: Transmission Assets	The offshore export cables, landfall and onshore infrastructure required to connect the Morgan Offshore Wind Project to the National Grid.

Term	Meaning
Morgan OWL	Morgan Offshore Wind Limited is a joint venture between bp Alternative Energy Investments Ltd. and Energie Baden-Württemberg AG (EnBW).
National Grid Penwortham substation	The existing National Grid substation at Penwortham, Lancashire.
National Policy Statement(s)	The current national policy statements published by the Department of for Energy Security and Net Zero and Climate Change in 2023 and adopted in 2024.
Offshore booster station	A fixed structure located along the offshore export cable route, containing electrical equipment to ensure bulk wind farm capacity can be fully transmitted to the onshore substations.
Offshore export cables	The cables which would bring electricity from the Generation Assets to the landfall.
Offshore export cable corridor	The corridor within which the offshore export cables will be located.
Offshore Order Limits	See Transmission Assets Order Limits: Offshore (below).
Offshore Permanent Infrastructure Area	The area within the Transmission Assets Offshore Order Limits (seaward of MLWS) where the permanent offshore electrical infrastructure (i.e. offshore export cables) will be located.
Offshore Wind Leasing Round 4	The Crown Estate auction process which allocated developers preferred bidder status on areas of the seabed within Welsh and English waters and ends when the Agreements for Lease are signed.
Onshore export cables	The cables which would bring electricity from the landfall to the onshore substations.
Onshore export cable corridor	The corridor within which the onshore export cables will be located.
Onshore Infrastructure Area	The area within the Transmission Assets Order Limits landward of Mean High Water Springs, comprising the offshore export cables from Mean High Water Springs to the transition joint bays, onshore export cables, onshore substations and 400 kV grid connection cables and associated temporary and permanent infrastructure including temporary and permanent compound areas and accesses. Those parts of the Transmission Assets Order Limits proposed only for ecological mitigation/biodiversity benefit are excluded from this area.
Onshore Order Limits	See Transmission Assets Order Limits: Onshore (below).
Onshore substations	The onshore substations will include a substation for the Morgan Offshore Wind Project: Transmission Assets and a substation for the Morecambe Offshore Windfarm: Transmission Assets. These will each comprise a compound containing the electrical components for transforming the power supplied from the generation assets to 400 kV and to adjust the power quality and power factor, as required to meet the UK Grid Code for supply to the National Grid.
Order limits	The limits within which the Transmission Assets may be carried out.
Planning Inspectorate	The agency responsible for operating the planning process for applications for development consent under the Planning Act 2008.
Point of Interconnection	The point where an offshore wind farm connects to the National Grid.

Term	Meaning
Potential Special Protection Areas	A site identified as potentially qualifying for Special Protection Area classification and for which a decision to classify has yet to be taken pending consultation.
Preliminary Environmental Information Report	A report that provides preliminary environmental information in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. This is information that enables consultees to understand the likely significant environmental effects of a project and which helps to inform consultation responses.
Protected species	A species of animal or plant which it is forbidden by law to harm or destroy.
Ramsar sites	Wetlands of international importance that have been designated under the criteria of the Ramsar Convention. In combination with Special Protection Areas and Special Areas of Conservation, these sites contribute to the national site network.
Scoping Opinion	Sets out the Planning Inspectorate's response (on behalf of the Secretary of State) to the Scoping Report prepared by the Applicants. The Scoping Opinion contains the range of issues that the Planning Inspectorate, in consultation with statutory stakeholders, has identified should be considered within the Environmental Impact Assessment process.
Special Areas of Conservation	A site designation specified in the Conservation of Habitats and Species Regulations 2017. Each site is designated for one or more of the habitats and species listed in the Regulations. The legislation requires a management plan to be prepared and implemented for each SAC to ensure the favourable conservation status of the habitats or species for which it was designated. In combination with Special Protection Areas and Ramsar sites, these sites contribute to the national site network.
Special Protection Areas	A site designation specified in the Conservation of Habitats and Species Regulations 2017, classified for rare and vulnerable birds, and for regularly occurring migratory species. Special Protection Areas contribute to the national site network.
Statutory consultee	Organisations that are required to be consulted by an applicant pursuant to section 42 of the Planning Act 2008 in relation to an application for development consent. Not all consultees will be statutory consultees (see non-statutory consultee definition).
Substation	Part of an electrical transmission and distribution system. Substations transform voltage from high to low, or the reverse by means of electrical transformers.
Transmission Assets	See Morgan and Morecambe Offshore Wind Farms: Transmission Assets (above)
Transmission Assets Order Limits	The area within which all components of the Transmission Assets will be located, including areas required on a temporary basis during construction and/or decommissioning (such as construction compounds).

Term	Meaning
Transmission Assets Order Limits: Offshore	The area within which all components of the Transmission Assets seaward of Mean Low Water Springs will be located, including areas required on a temporary basis during construction and/or decommissioning. Also referred to in this report as the Offshore Order Limits, for ease of reading.
Transmission Assets Order Limits: Onshore	The area within which all components of the Transmission Assets landward of Mean High Water Springs will be located, including areas required on a temporary basis during construction and/or decommissioning (such as construction compounds). Also referred to in this report as the Onshore Order Limits, for ease of reading.

Acronyms

Acronym	Meaning
AfL	Area for Lease
AEF	Archaeology Engagement Forum
AOD	Above Ordnance Datum
AoS	Area of Search
BEIS	The former Department of Business, Energy and Industrial Strategy
CION	Connection and Infrastructure Operations Note
COLREGS	International Regulations for Preventing Collisions at Sea
CRIA	Cable Route Identification and Approval
CRoW	Countryside and Rights of Way
CRP	The Crown Estate's Cable Route Protocol
DCO	Development Consent Order
DECC	Department of Energy and Climate Change
DESNZ	Department for Energy Security & Net Zero
ECRA	Export Cable Region Assessment
EIA	Environmental Impact Assessment
EPP	Evidence Plan Process
ES	Environmental Statement
EWG	Expert Working Group
FRAP	Flood Risk Activity Permit
GHG	Greenhouse gas
HDD	Horizontal Directional Drilling
HND	Holistic Network Design
HRA	Habitats Regulations Assessment
JNCC	Joint Nature Conservation Committee
LPA	Local Planning Authority
LNR	Local Nature Reserve
LSE	Likely Significant Effect
LVIA	Landscape Visual Impact Assessment
MARPOL	International Convention for the Prevention of Pollution from Ships
MCZ	Marine Conservation Zone
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs

Acronym	Meaning
MMO	Marine Management Organisation
MNEF	Maritime Navigation Engagement Forum
MoD	Ministry of Defence
MPA	Marine Protected Area
MPS	Marine Policy Statement
NPPF	National Policy Planning Framework
NGESO	National Grid Electricity System Operator
NGET	National Grid Electricity Transmission
NMWTRA	North and Mid Wales Trunk Road Agent
NNR	National Nature Reserve
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Projects
OFTO	Offshore Transmission Owner
OTNR	Offshore Transmission Network Review
OSP	Offshore Substation Platform
PDE	Project Design Envelope
PEIR	Preliminary Environmental Information Report
PoI	Point of Interconnection
PPG	Planning Practice Guidance
PRoW	Public right of way
SAC	Special Area of Conservation
SNCB	Statutory Nature Conservation Body
SoS	Secretary of State
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
TCE	The Crown Estate
UK	United Kingdom
UXO	Unexploded Ordnance
ZTV	Zone of Theoretical Visibility

Units

Unit	Description
%	Percentage
dB	Decibels
Kg	Kilogram
km	Kilometres
km^2	Square kilometres
kV	Kilovolt
m	Metres
m^2	Metres squared
m^3	Metres cubed
nm	Nautical mile

4 Site selection and consideration of alternatives

4.1 Introduction

4.1.1.1 This chapter of the Environmental Statement (ES) presents the results of the site selection process and consideration of alternatives undertaken for the Morgan and Morecambe Offshore Wind Farms: Transmission Assets. For ease of reference, the Morgan and Morecambe Offshore Wind Farms Transmission Assets are referred to in this chapter as the 'Transmission Assets'. This ES accompanies the application to the Planning Inspectorate for development consent for the Transmission Assets.

4.1.1.2 The purpose of the Transmission Assets is to connect the Morgan Offshore Wind Project: Generation Assets and Morecambe Offshore Windfarm: Generation Assets (referred to collectively as the 'Generation Assets') to the National Grid. The Generation Assets are each subject to separate applications for development consent.

4.1.1.3 The Transmission Assets includes the offshore export cables, landfall site, onshore export cables, onshore substations, 400 kV grid connection cables and associated grid connection infrastructure (see Volume 1, Chapter 3: Project description of the ES for further details (document reference F1.3)).

4.1.1.4 This ES chapter:

- Provides the background to the Transmission Assets application for development consent (**section 4.2**).
- Summarises the legislative and policy context concerning site selection and consideration of alternatives (**section 4.3**).
- Summarises consultation and engagement relevant to site selection (**section 4.4**).
- Outlines the approach taken to defining the spatial boundaries and constituent parts of the Transmission Assets (**section 4.5**).
- Summarises the siting decisions taken to date by the Applicants and provides an indication of main reasons for chosen option(s) (**sections 4.6 - 4.9**).
- Summarises the reasonable alternatives considered for the Transmission Assets, including location and infrastructure options (**sections 4.6 - 4.9**).

4.1.1.5 This chapter draws upon more detailed information around the site selection process and consideration of alternatives as detailed in the following annexes and shown on Figure 4.1 (Volume 1 Figures of the ES):

- Volume 1, Annex 4.1: Selection and refinement of cable landfall;
- Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure; and
- Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure.

4.2 Background

4.2.1 Offshore Wind Leasing Round 4

4.2.1.1 As described in Volume 1, Chapter 1: Introduction to the ES, Offshore Wind Leasing Round 4 was instigated by The Crown Estate (TCE) in September 2019, and four Bidding Areas were identified for the development of offshore wind in England and Wales. As part of a competitive tender, EnBW and bp were awarded Preferred Bidder status for the Morgan Area for Lease (AfL) and Flotation Energy and Cobra the Morecambe AfL within the Irish Sea Bidding Area.

4.2.1.2 Morgan Offshore Wind Limited (Morgan OWL) is the joint venture between bp Alternative Energy Investments Ltd. (bp) and Energie Baden-Württemberg AG (EnBW) that is developing the Morgan Offshore Wind Project.

4.2.1.3 Morecambe Offshore Windfarm Ltd (Morecambe OWL) is the joint venture between Zero-E Offshore Wind S.L.U. (Spain) (a Cobra group company) (Cobra) and Flotation Energy Limited that is developing the Morecambe Offshore Windfarm.

4.2.2 Offshore Transmission Network Review

4.2.2.1 Both the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm were scoped into the 'Pathways to 2030' workstream under the Offshore Transmission Network Review (OTNR). The OTNR aims to consider, simplify, and wherever possible facilitate a collaborative approach to offshore wind projects connecting to the National Grid.

4.2.2.2 Under the OTNR, the National Grid Electricity System Operator (NGESO) is responsible for assessing options to improve the coordination of offshore wind generation connections and transmission networks and has undertaken a Holistic Network Design Review (HNDR). In July 2022, the UK Government published the 'Pathway to 2030 Holistic Network Design' documents, which set out the approach to connecting 50 GW of offshore wind to the National Grid (NGESO, 2022).

4.2.2.3 A number of potential grid connection locations and options were considered by NGESO through the HNDR process based on an understanding of the grid infrastructure capacity in relation to the location of the Morgan Offshore Wind Project and Morecambe Offshore Windfarm (and considering other Round 4 offshore wind projects coming forwards in the Irish Sea). A key output of the HNDR process was that the preferred connection approach was for the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm to work collaboratively to consent proposals for the offshore wind farms to connect to the National Grid at the POI at Penwortham in Lancashire.

4.2.2.4 Morgan OWL and Morecambe OWL (the Applicants), being in agreement with the output from the HNDR, are jointly seeking a single consent for transmission assets comprising aligned offshore export cable corridors to landfall and aligned onshore export cable corridors to onshore substation(s), and onward connection to the National Grid at Penwortham, Lancashire.

4.2.2.5 The Transmission Assets are designed so that each wind farm (the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm) is electrically independent. Therefore, each wind farm will have its own set of transmission assets (i.e., cables and substation infrastructure). However, the location of the infrastructure is aligned within offshore and onshore cable corridors, where possible, to minimise impacts to environment and the community.

4.2.3 TCE Plan Level Habitats Regulations Assessment (HRA)

4.2.3.1 As a Competent Authority under the Habitats Regulations, The Crown Estate (TCE) is required to conduct a plan-level Habitats Regulations Assessment (HRA) for any leasing/licencing activity that constitutes a 'plan'. TCE completed a plan-level HRA (the Round 4 HRA) which assessed the potential impact of the preferred bidding areas that were selected through the Round 4 process on the UK's network of designated sites and protected habitats and species. The Round 4 HRA was finalised in November 2022 with preferred bidders entering into Agreements for Lease in January 2023.

4.2.3.2 In the Round 4 HRA, TCE identified mitigation and compensation measures to manage potential adverse effects on the integrity of European Sites potentially affected by the Round 4 Plan. The Round 4 HRA Plan supports decarbonisation and security of the UK's energy supply and government targets. TCE considered a range of alternative solutions and concluded that there are no feasible alternative solutions to the Round 4 Plan.

4.2.3.3 In addition to mitigation measures secured at the plan level, mitigation has been identified to be considered and implemented at the project level, where there is potential for a Likely Significant Effect (LSE) on a European site. Further information on the potential impact of the Transmission Assets on designated sites is described within the HRA Stage 1 screening (document reference E3) and Information to Support Appropriate Assessment (document reference E2) which accompanies the ES.

4.2.3.4 The key mitigation for offshore export cables within the Round 4 HRA is the consideration of the Export Cable Region Assessment (ECRA) undertaken by NIRAS (2022), described further in **section 4.2.4**.

4.2.4 Export Cable Region Assessment (ECRA)

4.2.4.1 NIRAS (2022) undertook an ECRA for designated features of European Sites for which the Round 4 HRA LSE Screening Report identified a risk of LSE from an Export Cable Region. The ECRA took a risk-based approach (consideration of both the vulnerability of species and the vulnerability of the Protected Sites) to derive an overall risk score for the potential impacts arising from the installation of offshore wind farm export cables and their associated infrastructure.

4.2.4.2 The risk scores corresponded to a category of mitigation measures as below:

- Green (low risk): no specific measures but activities to be undertaken in line with industry best practice (e.g. application of an environmental management plan, pollution control plan and spillage response plan, and adherence to international conventions such as International Convention

for the Prevention of Pollution from Ships (MARPOL) and International Regulations for Preventing Collisions at Sea (COLREGS)).

- Amber (low-medium risk): specific detail must be provided to TCE at the route selection and refinement stage. Cable route selection studies should be undertaken with a detailed evidence document provided outlining the process completed to identify the proposed Supply Cable route(s) as well as feature specific information.
- Red (high risk): the project must avoid irreparable damage (loss of a non-recoverable habitat) to red risk features. Evidence should be submitted to the TCE at the route selection and refinement stage outlining avoidance measures, mitigation and installation methods to reduce impacts depending on the type of risk.
- Black (high risk): the affected project must spatially avoid these black risk features. Evidence should be submitted to the TCE at the route selection and refinement stage outlining the avoidance of these features.

4.2.4.3 The annexes of this chapter discuss how designated features and species have been considered within the site selection process and commitments made by the Applicants to reduce the risk of potential impacts. Based on the design changes and commitments detailed in the annexes, the Information to Support Appropriate Assessment (ISAA) (document reference E2) has determined that the Transmission Assets would not have an adverse effect on the integrity of designated features associated with the Shell Flat and Lune Deep SAC, Liverpool Bay Special Protection Area (SPA), Ribble and Alt Estuary SPA, Ribble and Alt Estuary Ramsar site, Morecambe Bay and Duddon Estuary SPA or Morecambe Bay Ramsar site.

4.3 Legislative and policy context

4.3.1.0 The proposed Transmission Assets will be located in English offshore waters (beyond 12 nautical miles (nm) from the English coast) and inshore waters, with the onshore infrastructure located wholly within England. As set out in Volume 1, Chapter 1: Introduction of this ES, the Secretary of State for the Department for Business, Energy and Industrial Strategy (BEIS) (the department which preceded the Department for Energy Security and Net Zero) issued a Section 35 direction that the Transmission Assets are to be treated as ‘a development for which development consent is required’ under the Planning Act 2008, as amended.

4.3.1 Legislation

4.3.1.1 As set out in Volume 1, Chapter 1: Introduction of this ES, the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (hereafter referred to as the EIA Regulations) set out the requirements for EIA under the Planning Act 2008. Schedule 4 (paragraph 2) of the EIA Regulations requires that the Environmental Statement include a description of the reasonable alternatives studied by the Applicants, which are relevant to the Transmission Assets and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a

comparison of the environmental effects. The Statement of Reasons (document reference D2) also sets out the alternatives considered by the Applicants as part of the case for the compulsory acquisition powers being sought by the draft DCO.

4.3.2 National Policy Statements

4.3.2.1 Planning policy on renewable energy infrastructure is presented in Volume 1, Chapter 2: Policy and legislation of this ES. Planning policy in relation to site selection and consideration of alternatives, is contained in the Overarching National Policy Statement (NPS) for Energy (EN-1; DESNZ, 2023a), the NPS for Renewable Energy Infrastructure (EN3; DESNZ, 2023b) and the NPS for Electricity Networks Infrastructure (EN-5; DESNZ, 2023c).

4.3.2.2 **Table 4.1**, **Table 4.2**, and **Table 4.3** provide details on how site selection policy was taken forward within the design process for NPS EN-1, NPS EN-3 and NPS EN-5, respectively.

Table 4.1: Summary of the NPS EN-1 provisions relevant to Site Selection and Alternatives

Summary of NPS EN -1 provisions	How and where considered for site selection
EN-1	
NPS EN-1 Paragraph 4.3.9 *'As in any planning case, the relevance or otherwise to the decision making process of the existence (or alleged existence) of alternatives to the proposed development is, in the first instance, a matter of law. This NPS does not contain any general requirement to consider alternatives or to establish whether the proposed project represents the best option from a policy perspective. Although there are specific requirements in relation to compulsory acquisition and habitats sites, the NPS does not change requirements in relation to compulsory acquisition and habitats sites.'*	The approach to alternatives is described within **section 4.5** of this chapter. The consideration of alternatives is detailed within: • Volume 1, Annex 4.1: Selection and refinement of cable landfall; • Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure; and • Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure.
NPS EN-1 Paragraph 4.3.15 – 4.3.17 *'Applicants are obliged to include in their ES…. information about the main alternatives they have studied. This should include an indication of the main reasons for the applicant's choice, taking into account the environmental, social and economic effects and including, where relevant, technical and commercial feasibility'.* *In some circumstances, the NPSs may impose a policy requirement to consider alternatives.* *Where there is a policy or legal requirement to consider alternatives, the applicant should describe the alternatives considered in compliance with these requirements.'*	The approach to alternatives is described within **section 4.5** of this chapter. The consideration of alternatives, environmental and social constraints, and reasoning behind the siting of infrastructure is detailed within: • Volume 1, Annex 4.1: Selection and refinement of cable landfall; • Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure; and • Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure.
NPS EN-1 Paragraphs 4.3.22 – 4.3.29 *'Given the level and urgency of need for new energy infrastructure, the Secretary of State should, subject to any relevant legal requirements (e.g. under the Habitats Regulations) which indicate otherwise, be guided by the following principles when deciding what weight should be given to alternatives:* • *the consideration of alternatives in order to comply with policy requirements should be carried out in a proportionate manner* • *only alternatives that can meet the objectives of the proposed development need to be considered*	The approach to alternatives is described within **section 4.5** of this chapter. The consideration of alternatives, environmental and social constraints, and reasoning behind the siting of infrastructure is detailed within: • Volume 1, Annex 4.1: Selection and refinement of cable landfall; • Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure; and • Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure.

Summary of NPS EN -1 provisions	How and where considered for site selection
The Secretary of State should be guided in considering alternative proposals by whether there is a realistic prospect of the alternative delivering the same infrastructure capacity (including energy security, climate change, and other environmental benefits) in the same timescale as the proposed development. *The Secretary of State should not refuse an application for development on one site simply because fewer adverse impacts would result from developing similar infrastructure on another suitable site, and it should have regard as appropriate to the possibility that all suitable sites for energy infrastructure of the type proposed may be needed for future proposals.* *Alternatives not among the main alternatives studied by the applicant (as reflected in the ES) should only be considered to the extent that the Secretary of State thinks they are both important and relevant to the decision.* *As the Secretary of State must assess an application in accordance with the relevant NPS (subject to the exceptions set out in section 104 of the Planning Act 2008), if the Secretary of State concludes that a decision to grant consent to a hypothetical alternative proposal would not be in accordance with the policies set out in the relevant NPS, the existence of that alternative is unlikely to be important and relevant to the Secretary of State's decision.* *Alternative proposals which mean the necessary development could not proceed, for example because the alternative proposals are not commercially viable or alternative proposals for sites would not be physically suitable, can be excluded on the grounds that they are not important and relevant to the Secretary of State's decision.* *Alternative proposals which are vague or immature can be excluded on the grounds that they are not important and relevant to the Secretary of State's decision.* *It is intended that potential alternatives to a proposed development should, wherever possible, be identified before an application is made to the Secretary of State (so as to allow appropriate consultation and the development of a suitable evidence base in relation to any alternatives which are particularly relevant). Therefore, where an alternative is first put forward by a third party after an application has been made, the Secretary of State may place the onus on the person proposing the alternative to provide the evidence for its suitability as such and the Secretary of State should not necessarily expect the applicant to have assessed it.'*	

Summary of NPS EN -1 provisions	How and where considered for site selection
NPS EN-1 Paragraphs 5.8.23 *'Consideration of alternative sites should take account of the policy on alternatives set out in Section 4.3 above. All projects should apply the Sequential Test to locating development within the site.'*	Consideration of the policy on alternatives as set out in NPS EN-1 is detailed in the table above. The Sequential Test has been applied and is set out in Volume 3, Annex 2.3 Flood Risk Assessment.

Table 4.2: Summary of the NPS EN-3 provisions relevant to Site Selection and Alternatives

Summary of NPS EN -3 provisions	How and where considered in the ES
NPS EN-3 Paragraphs 2.8.11 – 2.8.15 *General factors influencing site selection by applicants are set out at Section 2.3 of this NPS.* *Specific considerations involved in the siting of an offshore wind development are additionally likely to be influenced by factors set out in the following paragraphs.* *The specific criteria considered by applicants, and the role that they play in site selection, will vary from project to project.* *In proposing sites for offshore wind and/or offshore transmission infrastructure, NSIP applicants should demonstrate that their choice of site takes into account the government's Offshore Energy SEA 4 and any successors to it.* *The government is undertaking a rolling Offshore Energy SEA programme, including a research programme and data collection to facilitate future strategic and project specific assessments to achieve the 50GW ambitions.*	As described in **section 4.2**, the Transmission Assets would facilitate the delivery of electricity for two Round 4 allocations: Morgan Offshore Wind Project and the Morecambe Offshore Windfarm which have carried out their own site selection exercises which is detailed in their respective DCO applications. The approach and consideration of alternatives, environmental and social constraints, and reasoning behind the siting of infrastructure is detailed within • Volume 1, Annex 4.1: Selection and refinement of cable landfall; • Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure; and • Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure.

Summary of NPS EN -3 provisions	How and where considered in the ES
NPS EN-3 Paragraphs 2.8.16 – 2.8.19 *Marine planning currently enables the increasing demands for use of the marine area to be balanced and managed in an integrated way that protects the marine environment whilst supporting sustainable development.* *Marine plans provide a transparent framework for consistent, evidence-based decision making and should be used by applicants to guide site selection.* *Marine plans will help applicants understand generic potential impacts of their proposal at an early stage e.g., in relation to other activities, or where there are marine protected areas. Further information is provided in Section 4.5 of EN-1.* *The cross-Government Marine Spatial Prioritisation Programme will review how marine plans, the wider planning regime, legislation and guidance may need to evolve to ensure a more holistic approach to the use of the seas, and that this is taken to maximise co-existence/co-location possibilities.*	As described in **section 4.2**, the Transmission Assets were part of the HNDR process which recommended that the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm work collaboratively to consent proposals to connect the offshore wind farms to the POI at the National Grid substation at Penwortham. The Applicants have aligned infrastructure where possible as detailed in: • Volume 1, Annex 4.1: Selection and refinement of cable landfall; • Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure; and • Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure. **Table 4.4** sets out a summary of the specific policies set out in the north west Inshore and North West Offshore Coast Marine Plans (MMO, 2021) relevant to this chapter.

Summary of NPS EN -3 provisions	How and where considered in the ES
NPS EN-3 Paragraphs 2.8.20 – 2.8.24 *The Crown Estate issues leases for offshore wind farms in tendering rounds. Applicants must obtain a lease prior to placing an offshore wind structure on, or passing transmission export cables over, the seabed and its foreshore (see section 2.3.10 of this NPS for information in seabed leasing and capacity extensions).* *Rounds 1, 2 and 3 are closed and sites leased in those rounds are either operational; in construction; consented but yet to be constructed; awaiting determination; or yet to apply for development consent. Leasing Round 4 is completed, with agreements for lease awarded in January 2023.* *To date, each offshore wind leasing round has been supported by a plan level HRA, which assesses the impact of the leasing round on protected sites. It should also be noted that aspects of plan level HRAs that remain relevant at the project level might be able to be relied upon to inform the project level HRA, reducing the project level effort required and reducing duplication.* *The assessment serves to provide a better understanding of the potential effects and identify measures which can be put in place to avoid, mitigate, or reduce those significant effects at a plan level.* *Where an assessment concludes that there will still be an adverse impact, a case for derogation can be considered. This must meet strict legal tests, which includes identifying compensatory measures.*	The Applicants are engaging with TCE on the area for leases for the Transmission Assets. Consideration for how the Plan Level HRA has been considered in the site selection process is provided in **section 4.2.3** with consideration for the site specific compliance with the HRA provided in the following documents submitted with the application: • Information to Support Appropriate Assessment part 1 (document reference E2.1) • Information to Support Appropriate Assessment part 2 (document reference E2.2) • Information to Support Appropriate Assessment part 3 (document reference E2.3) • HRA Stage 1 Screening Report (document reference E2.4) No adverse effect upon the integrity for any designated site or associated features have been identified for the Transmission Assets.

NPS EN-3 Paragraphs 2.8.34 – 2.8.43 *As identified in paragraphs 3.3.65 – 3.3.83 and Section 4.11 of EN-1, and Section 2.12 of EN-5, a more co-ordinated approach to offshore-onshore transmission is required.* *The previous standard approach to offshore-onshore connection involved a radial connection between single wind farm projects and the shore. A coordinated approach will involve the connection of multiple, spatially close, offshore wind farms and other offshore infrastructure, wherever possible, as relevant to onshore network.* *This will include connections via multi-purpose interconnectors (MPIs), which combine the connection of offshore wind with the function of market-to-market interconnectors.* *Co-ordinated transmission proposals have principally been developed through, and as a consequence of, a process of ongoing reform38 including through strategic network planning, such as the Holistic Network Design for onshore-offshore transmission, as outlined in EN-5. Further details are provided in EN-5, section 2.12-2.15.* *As part of the transition to more co-ordinated transmission, it is anticipated that some proposals for transmission could be consented separately to those for the wind farm (array) application.* *For this to occur, an applicant will need to make a request to the Secretary of State. The Secretary of State would then decide whether to give direction under Section 35 of the Planning Act 2008.* *For some wind farm projects, the electricity network connection proposals in the application could comprise a wind farm export cable to an offshore transmission connection point on part of an offshore transmission network taking power to shore or exported to another market via a multi-purpose interconnector (MPI).* *MPIs will enable direct power flow from wind farms to two or more countries. They will provide the electricity network with flexibility needed to integrate the increased deployment of intermittent offshore renewable generation into the system by:* • *allowing market-to-market trading when there is additional capacity on the cable; and* • *limiting the need to curtail offshore wind generation when domestic demand has been met by providing a direct route for export to neighbouring North Sea countries.*	As described in **section 4.2**, the Transmission Assets were part of the HNDR process which recommended that the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm work collaboratively to consent proposals to connect the offshore wind farms to the POI at the National Grid substation at Penwortham. The Applicants have aligned infrastructure where possible as detailed in: • Volume 1, Annex 4.1: Selection and refinement of cable landfall; • Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure; and • Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure.

Summary of NPS EN -3 provisions	How and where considered in the ES
This will provide system benefits, reduce costs to consumers and maximise market access for generators. *The design of wind farms, and offshore transmission (including interconnection and Multi-Purpose Interconnector) projects should seek to be sufficiently flexible so that they are futureproofed as far as possible to enable future connections with different types of offshore transmission or wind farms respectively, where these are proposed to be spatially proximate.*	
NPS EN-3 Paragraphs 2.8.44 – 2.8.45 *There may be constraints imposed on the siting or design of offshore wind farms because of the presence of other offshore infrastructure, such as oil and gas, Carbon Capture, Usage and Storage (CCUS), co-location of electrolysers for hydrogen production, marine aggregate dredging, telecommunications, or activities such as aviation and recreation.* *Given the scale of offshore wind deployment required to meet 2030 and 2050 ambitions, and the importance of the UK Continental Shelf (UKCS) in supporting progress towards net zero commitments there will be increasing demand on the UKCS which could give rise to conflicts. The occurrence of conflict between offshore development projects in the short term could restrict the capacity of the UKCS to support the variety of technologies required for the delivery of net zero.*	Consideration and co-existence with other sea users and with aviation and recreational receptors relevant to site selection and design is detailed in: • Volume 1, Annex 4.1: Selection and refinement of cable landfall; • Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure; and • Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure
NPS EN-3 Paragraphs 2.8.46 *Applicants should consult the government's Marine Plans (further detailed in Section 4.5 of EN-1) which are a useful information source of existing and known or potential activities and infrastructure.*	The Applicants have considered relevant marine policy as detailed in **section 4.3.4.**
NPS EN-3 Paragraphs 2.8.47 *Prior to the submission of an application involving the development of the seabed, applicants should engage with key stakeholders, such as The Crown Estate and statutory bodies to ensure they are aware of any current or emerging interests on or underneath the seabed which might give rise to a conflict with a specific application. This will ensure adequate opportunity to reduce potential conflicts and increase time to find a resolution.*	The Applicants have engaged with The Crown Estate and stakeholders to understand existing infrastructure/projects as well as emerging projects and interest as detailed in **section 4.4.**

Summary of NPS EN -3 provisions	How and where considered in the ES
NPS EN-3 Paragraphs 2.8.48 *Applicants are encouraged to work collaboratively with those other developers and sea users on co-existence/co-location opportunities, shared mitigation, compensation and monitoring where appropriate. Where applicable, the creation of statements of common ground between developers is recommended. Work is ongoing between government and industry to support effective collaboration and to find solutions to facilitate to greater co-existence/co-location.*	As described in **section 4.2**, the Transmission Assets were part of the HNDR process which recommended that the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm work collaboratively to consent proposals to connect the offshore wind farms to the POI at the National Grid substation at Penwortham. The Applicants have aligned infrastructure where possible as detailed in: • Volume 1, Annex 4.1: Selection and refinement of cable landfall; • Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure; and • Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure.
NPS EN-3 Paragraphs 2.8.49 *As an interested party, The Crown Estate may also provide further supporting information and evidence as part of the examination. This guidance is to encourage early engagement between parties with a potential overlap in their development plans so that a solution can be found that optimises the capacity of the UKCS to enable net zero.*	The Applicants have engaged with the Crown Estate and stakeholders to understand existing infrastructure/projects as well as emerging projects and interest as detailed in **section 4.4.**
NPS EN-3 Paragraphs 2.8.50 *The applicant will also need to consider impacts on civil and military radar and other aviation and defence interests (Section 5.5 of EN-1)*	Following PIER, all sea surface piercing infrastructure was removed from the design envelope as detailed in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure. Impacts on aviation and defence interests are considered in Volume 3, Chapter 11: Aviation.

Summary of NPS EN -3 provisions	How and where considered in the ES
NPS EN-3 Paragraphs 2.8.51 – 2.8.56 *The UK Government has obligations to protect the marine environment with a network of well managed Marine Protected Areas (MPAs), which also includes Highly Protected Marine Areas (HPMAs). MCZs together with HPMAs, SACs SPAs, and Ramsar sites and marine elements of SSSIs form an ecologically coherent network of MPAs. The government has set a target for MPA condition under the Environment Act 2021.* *Given the scale of offshore wind deployment required to meet 2030 and 2050 ambitions, applicants will need to give close consideration to impacts on MPAs, either alone or in combination, and employ the mitigation hierarchy, and if necessary, provide compensation (both individually and in combination with other plans or projects) which may be needed to approve their projects.* *It is likely that mitigation may include proactive measures to reduce the impact of deployment e.g., micrositing of offshore transmission routes to avoid vulnerable habitats, alternatives piling or trenching techniques, noise abatement technology, collision avoidance methods or, if necessary, compensation for habitat loss. See Section 2.8.80 for Offshore Wind Environmental Standards.* *Further guidance can be found in Sections 4.3 and 5.4 of EN-1.* *The British Energy Security Strategy included a commitment to introducing mechanisms to support strategic compensatory measures, including for projects already in the consenting process (where possible), to offset environmental impacts and reduce delays to individual projects. Only once all feasible alternatives and mitigation measures have been employed, should applicants explore possible compensatory measures to make good any remaining significant adverse effects to site integrity.* *Applicants are expected to seek advice from SNCBs and Defra for projects in England, in conjunction with relevant regulators, Local Planning Authorities and/or landowners, on potential mitigation and/or compensation requirements at the earliest opportunity and comply with future statutory requirements and/or guidance once available.*	As detailed in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure, the Transmission Assets will interact with the Fylde MCZ and the Applicants have sited infrastructure to pass through the narrowest point and refined the design envelope within the MCZ. MPAs are considered within the Stage 1 Marine Conservation Zone Assessment (document reference E4) which found that the Transmission Assets would not hinder the conservation objectives of any protected features within the Fylde MCZ.

Summary of NPS EN -3 provisions	How and where considered in the ES
NPS EN-3 Paragraphs 2.8.57 – 2.8.58 *Although offshore wind farms themselves will not have a direct impact on green belts, it is possible that some elements of these projects may be proposed on green belt land, such as electricity network infrastructure, and comprise inappropriate development which may impact on the openness of the green belt.*	Onshore elements of the Transmission Assets run through areas of Green Belt including both substation sites. Consideration of green belt policies is discussed in the Planning Statement (document reference J28).
NPS EN-3 Paragraph 2.8.119 *'Applicant assessment of the effects of installing offshore transmission infrastructure across the intertidal/coastal zone should demonstrate compliance with mitigation measures in any relevant plan-level HRA including those prepared by The Crown Estate as part of its leasing round, and include information, where relevant, about:* • *any alternative landfall sites that have been considered by the applicant during the design phase and an explanation for the final choice;* • any alternative cable installation methods that have been considered by the applicant during the design phase and an explanation for the final choice; •	Consideration for how the Plan Level HRA has been considered in the site selection process is provided in **section 4.2.3**. Consideration of alternative landfall and cable installation is detailed in Volume 1, Annex 4.1: Selection and refinement of cable landfall while cable installation methods are discussed in Volume 1, Chapter 3: Project description. Consideration for the site specific compliance with the HRA provided in the following documents submitted with the application: • Information to Support Appropriate Assessment part 1 (document reference E2.1) • Information to Support Appropriate Assessment part 2 (document reference E2.2) • Information to Support Appropriate Assessment part 3 (document reference E2.3) • HRA Stage 1 Screening Report (document reference E2.4) No adverse effect upon the integrity for any designated site or associated features have been identified for the Transmission Assets.

Summary of NPS EN -3 provisions	How and where considered in the ES
NPS EN-3 Paragraphs 2.8.285 – 2.8.290 *When considering grid connection issues, the Secretary of State should be mindful of the requirements of the regulatory regime for onshore and offshore electricity networks and consider how this affects the proposal put forward by the applicant.* *A proposed offshore electricity transmission cable connecting the wind farm or wind farms with the onshore electricity network (noting that this may be an offshore transmission connection point), and any offshore electricity substations that may be required, may constitute associated development, depending on their scale and nature in relation to the offshore wind farm(s).* *Where the Secretary of State is satisfied that such offshore infrastructure does constitute associated development and can form part of the application, it should be considered by the Secretary of State in accordance with this NPS.* *However, some proposals for transmission could be consented separately to the windfarm (array), see paragraphs 2.8.38 following above and paragraph 1.3 in EN-1.* *The Secretary of State should assess the onshore element(s) of the grid connection (e.g. electric lines, substations) in accordance with the guidelines and requirements contained in EN-5.* *Depending upon the scale and type of this onshore development, elements of it could constitute either associated development or an energy NSIP in its own right.*	As described in **section 4.2**, the Transmission Assets were part of the HNDR process which recommended that the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm work collaboratively to consent proposals to connect the offshore wind farms to the POI at the National Grid substation at Penwortham. The Applicants have aligned infrastructure where possible as detailed in: • Volume 1, Annex 4.1: Selection and refinement of cable landfall; • Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure; and • Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure. Volumes 2, 3 and 4 of the ES provide the assessment of likely significant effects upon the environment from the Transmission Assets.
NPS EN-3 Paragraphs 2.8.292 – 2.8.293 *Where requested by the applicant, any consent granted by the Secretary of State should be flexible enough to allow for such micrositing or microrouting changes as may be advised during and after the application stage. This allows for unforeseen events, such as the discovery of previously unknown marine archaeology that it would be preferable to leave in situ.* *The Secretary of State must also be satisfied that there is sufficient space to microsite/microroute for any proposal to be acceptable as a mitigation (e.g. any feature to avoid must not cover the full width of the assessed cable corridor).*	Consideration of micrositing, where relevant, in defining the siting of offshore export cable corridor widths is provided in: • Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure. Further information on micrositing is provided in Volume 1, Chapter 3: Project description of the ES.

Summary of NPS EN -3 provisions	How and where considered in the ES
NPS EN-3 Paragraphs 2.8.318 – 2.8.324 *The Secretary of State should be satisfied that the site selection process has been undertaken in a way that reasonably minimises adverse effects on fish stocks, including during peak spawning periods and the activity of fishing itself.* *The Secretary of State should consider the extent to which the proposed development occupies any recognised important fishing grounds, and whether the project would prevent or significantly impede protection of sustainable commercial fisheries or fishing activities.* *Where the Secretary of State considers the wind farm or offshore transmission would significantly impede protection of sustainable fisheries or fishing activity at recognised important fishing grounds, this should be attributed a correspondingly significant weight.* *The Secretary of State should consider adverse or beneficial impacts on different types of commercial fishing on a case-by-case basis.* *The Secretary of State will need to consider the extent to which disruption to the fishing industry, whether short term during pre-construction (e.g. surveying) or construction or long term over the operational period, including that caused by the future implementation of any safety zones, has been mitigated where reasonably possible.* *Where an offshore wind farm or offshore transmission could affect a species of fish that is of commercial interest, but is also of ecological value, the Secretary of State should refer to Section 2.8.147 following of this NPS with regard to the latter.*	As detailed in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure, the siting of the offshore export cable corridors has avoided key herring spawning areas to the northwest of the Transmission Assets. Volume 2, Chapter 3: Fish and shellfish ecology provides an assessment on species of ecological value and Volume 2, Chapter 6: Commercial fisheries considers species of commercial value. Both chapters concluded no significant effects as a result of the Transmission Assets.
NPS EN-3 Paragraphs 2.8.325 *The Secretary of State should be satisfied that any proposed offshore wind farm and/ or offshore transmission project has appropriately considered and mitigated for any impacts to the historic environment, including both known heritage assets, and discoveries that may be made during the course of development*	Marine archaeology is assessed in Volume 2: Chapter 8: Marine archaeology and intertidal and onshore archaeology is assessed in Volume 3, Chapter 5: Historic Environment. Outline Written schemes of investigation (document reference J9 and J17) have been prepared and submitted with the application detailing how heritage assets will be appropriately mitigated. The Marine Archaeology Chapter concluded no significant effects as a result of the Transmission Assets.

Summary of NPS EN -3 provisions	How and where considered in the ES
NPS EN-3 Paragraphs 2.8.326 – 2.8.329 *The Secretary of State should not grant development consent in relation to the construction or extension of an offshore wind farm if it considers that interference with the use of recognised sea lanes essential to international navigation is likely to be caused by the development.* *The use of recognised sea lanes essential to international navigation means:* *a) anything that constitutes the use of such a sea lane for the purposes of article 60(7) of the United Nations Convention on the Law of the Sea 1982; and* *b) any use of waters in the territorial sea adjacent to Great Britain that would fall within paragraph (a) if the waters were in a REZ.* *The Secretary of State should be satisfied that the site selection has been made with a view to avoiding or minimising disruption or economic loss to the shipping and navigation industries, with particular regard to approaches to ports and to strategic routes essential to regional, national and international trade, lifeline ferries74 and recreational users of the sea.* *Where after carrying out a site selection, a proposed development is likely adversely to affect major commercial navigation routes, for instance by causing appreciably longer transit times, the Secretary of State should give these adverse effects substantial weight in its decision making. Where a proposed offshore wind farm is likely to affect less strategically important shipping routes, the Secretary of State should take a pragmatic approach to considering proposals to minimise negative impacts.*	As detailed within Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure, the Offshore Order Limits were refined with consideration for shipping and navigation and the design envelope removed surface piercing infrastructure in part to mitigate shipping and navigation impacts. Volume 2, Chapter 7: Shipping and navigation considered sea lanes and potential disruption to shipping and navigation industries with no significant effects predicted. Volume 2, Annex 7.1: Navigation Risk Assessment of the ES found zero hazards identified as being High Risk – Unacceptable, four ranked as Medium Risk – Tolerable if ALARP and were concluded to be ALARP, and 12 ranked as Low Risk – Broadly Acceptable.

Summary of NPS EN -3 provisions	How and where considered in the ES
NPS EN-3 Paragraphs 2.8.345 *As such, the Secretary of State should be satisfied that the site selection and site design of a proposed offshore wind farm and offshore transmission has been made with a view to avoiding or minimising disruption or economic loss or any adverse effect on safety to other offshore industries. Applicants will be required to demonstrate that risks to safety will be reduced to as low as reasonably practicable.*	As detailed within Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure, the Offshore Order Limits were refined with consideration for shipping and navigation, commercial fisheries and other marine users. Following PEIR, the design envelope was amended to remove surface piercing infrastructure in part to mitigate shipping and navigation impacts. Volume 2, Chapter 7: Shipping and navigation considered sea lanes and potential disruption to shipping and navigation industries with no significant effects predicted. Volume 2, Annex 7.1: Navigation Risk Assessment of the ES found zero hazards identified as being High Risk – Unacceptable, four ranked as Medium Risk – Tolerable if ALARP and were concluded to be ALARP, and 12 ranked as Low Risk – Broadly Acceptable. Volume 2, Chapter 6: Commercial fisheries and Volume 2: Chapter 9: Other Sea Users concluded no significant effects as a result of the Transmission Assets.

Table 4.3: Summary of the NPS EN-5 provisions relevant to Site Selection and Alternatives

Summary of NPS EN-5 provisions	How and where considered in the ES
NPS EN-5 Section 2.2 *The NPS for Electricity Networks Infrastructure EN-5 Section 2.2 explains that, with regard to factors which influence site/route selection: The choices which energy companies make in selecting sites reflect their assessment of risk, considerations and balance of the site-selection considerations and policies on good design and impact mitigation.*	Through the identification of constraints described in the annexes to this chapter (Volume 1, Annex 4.1, 4.2 and 4.3), the Applicants have refined the landfall, offshore infrastructure, and onshore infrastructure to avoid impacts, in the first instance, and where avoidance is not possible, to minimise the impact upon sensitive receptors.
NPS EN-5 paragraph 2.2.7 - 2.2.10 *The connection between the initiating and terminating points of a proposed new electricity line will often not be via the most direct route. Siting constraints, such as engineering, environmental or community considerations will be important in determining a feasible route.* *There will usually be a degree of flexibility in the location of the development's associated substations, and applicants should consider carefully their placement in the local landscape, as well as their design.* *In particular, the applicant should consider such characteristics as the local topography, the possibilities for screening of the infrastructure and/or other options to mitigate any impacts.* *As well as having duties under Section 9 of the Electricity Act 1989, (in relation to developing and maintaining an economical and efficient network), applicants must take into account Schedule 9 to the Electricity Act 1989, which places a duty on all transmission and distribution licence holders, in formulating proposals for new electricity networks infrastructure, to "have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and …do what [they] reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects.*	The factors considered in the siting of the Onshore Export Cable and the 400 kV Cable Corridor are set out in Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure. The Outline Landscape Management Plan (document reference J2) and Outline Design Principles document (document reference J3) consider the substations in the local landscape. Screening around the onshore substations is detailed further in Volume 3; Chapter 10: Landscape, and Visual Impact Assessment of this ES.

Summary of NPS EN-5 provisions	How and where considered in the ES
NPS EN-5 paragraph 2.2.10 - 2.2.12 *As well as having duties under Section 9 of the Electricity Act 1989, (in relation to developing and maintaining an economical and efficient network), applicants must take into account Schedule 9 to the Electricity Act 1989, which places a duty on all transmission and distribution licence holders, in formulating proposals for new electricity networks infrastructure, to "have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and …do what [they] reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects."* *Depending on the location of the proposed development, statutory duties under Section 85 of the Countryside and Rights of Way Act 2000, Section 11A of the National Parks and Access to the Countryside Act 1949 (as amended by Section 62 of the Environment Act 1995), and Section 17A of the Norfolk and Suffolk Broads Act 1988 may be relevant. Applicants should note amendments to each of these provisions contained in Section 245 of the Levelling Up and Regeneration Act 2023.* *Transmission and distribution licence holders are also required under Schedule 9 to the Electricity Act 1989 to produce and publish a statement setting out how they propose to perform this duty generally.*	Through the identification of constraints described in the annexes to this chapter (Volume 1, Annex 4.1, 4.2 and 4.3), the Applicants have refined the landfall, offshore infrastructure, and onshore infrastructure to avoid impacts, in the first instance, and where avoidance is not possible, to minimise the impact upon environmental and social receptors. Measures adopted as part of the Transmission Assets to mitigate potential impacts are provided in Volume 1, Annex 5.3: Commitments Register and considered in the relevant chapters (e.g. section 10.8 of Volume 3, Chapter 10: Landscape and visual resources of the ES (document reference F3.10)). The outline landscape design is set out within the Outline Landscape Management Plan (document reference J2) and Outline Design Principles document (document reference J3). Legislation relevant to the assessment of land use and recreation, including the Countryside and Rights of Way (CRoW) Act 2000 are set out in section 6.2 of Volume 3, Chapter 6: Land use and recreation of the ES (document reference F3.6). The Onshore Order Limits does not coincide with any National Parks. As such, provisions set out in the National Parks and Access to the Countryside Act 1949 (as amended by Section 62 of the Environment Act 1995) have not been considered further.
NPS EN-5 paragraph 2.9.24 *In these cases, and taking account of the fact that the government has not laid down any further rule on the circumstances requiring use of underground or subsea cables, the Secretary of State must weigh the feasibility, cost, and any harm of the undergrounding or subsea option against:* • *The adverse implications of the overhead line proposal;* • *The cost and feasibility of re-routing overhead lines or mitigation proposals for the relevant line section; and* • *The cost and feasibility of the reconfiguration, rationalisation, and/or use of underground or subsea cabling of proximate existing or proposed electricity networks infrastructure.*	Subsea cables will be buried or in instances where burial is not possible, protected, in lines with best practice (CoT54 in Volume 1, Annex 5.3: Commitments Register) The onshore export cables and the 400 kV grid connection cables will be completely buried underground for their entire length (CoT12, Volume 1, Annex 5.3: Commitments Register). No overhead pylons will be installed as part of the Transmission Assets.

Summary of NPS EN-5 provisions	How and where considered in the ES
NPS EN-5 paragraphs 2.4.1 – 2.4.4 *The Planning Act 2008 requires the Secretary of State to have regard, in designating an NPS, and in determining applications for development consent to the desirability of good design.* *Applicants should consider the criteria for good design set out in EN 1 Section 4.7 at an early stage when developing projects.* *However, the Secretary of State should bear in mind that electricity networks infrastructure must in the first instance be safe and secure, and that the functional design constraints of safety and security may limit an applicant's ability to influence the aesthetic appearance of that infrastructure.* *While the above principles should govern the design of an electricity networks infrastructure application to the fullest possible extent – including in its avoidance and/or mitigation of potential adverse impacts (particularly those detailed in Sections 2.9 below) – the functional performance of the infrastructure in respect of security of supply and public and occupational safety must not thereby be threatened.*	Details of how good design has been considered throughout the development of the Transmission Assets are presented in this chapter and the associated annexes. The Outline Design Principles document (document reference J3) outlines how the onshore substation will be designed to be safe and secure but also how design principles will be applied during detailed design to minimise adverse impacts.
NPS EN-5 paragraph 2.8.1 *A more strategic approach to network planning will ensure that network development keeps pace with renewable generation and anticipates future system needs. Strategic network planning, such as through the Holistic Network Design and its follow up exercises or through forthcoming Centralised Strategic Network plans, helps reduce the overall impact of infrastructure by identifying opportunities for coordination, where appropriate, and taking a holistic view of both the onshore and offshore network. Network plans will take account of environmental and community impacts, alongside deliverability and economic cost, from the outset.*	As detailed in **section 4.2**, the Applicants have undertaken a site selection process based on the output of the HNDR process to identify the location and refine the design of the key elements of the Transmission Assets, including through early engagement with a range of stakeholders. The aim was to identify locations and routes (for the offshore export cable corridor, landfall location, onshore cable corridors and onshore substations) where locational alignment could be sought. Details of this are presented in the annexes to this chapter (Volume 1, Annex 4.1, 4.2 and 4.3).

Summary of NPS EN-5 provisions	How and where considered in the ES
NPS EN-5 paragraphs 2.9.20 – 2.9.24 *Although it is the government's position that overhead lines should be the strong starting presumption for electricity networks developments in general, this presumption is reversed when proposed developments will cross part of a nationally designated landscape (i.e. National Park, The Broads, or Area of Outstanding Natural Beauty).* *In these areas, and where harm to the landscape, visual amenity and natural beauty of these areas cannot feasibly be avoided by rerouting overhead lines, the strong starting presumption will be that the applicant should underground the relevant section of the line. However, undergrounding will not be required where it is infeasible in engineering terms, or where the harm that it causes (see section 2.11.4) is not outweighed by its corresponding landscape, visual amenity and natural beauty benefits. Regardless of the option, the scheme through its design, delivery, and operation, should seek to further the statutory purposes of the designated landscape. These enhancements may go beyond the mitigation measures needed to minimise the adverse effects of the scheme. Additionally, cases will arise where – though no part of the proposed development crosses a designated landscape – a high potential for widespread and significant adverse landscape and/or visual impacts along certain sections of its route may result in recommendations to use undergrounding for relevant segments of the line or alternatively consideration of using a route including subsea cabling. In these cases, and taking account of the fact that the government has not laid down any further rule on the circumstances requiring use of underground or subsea cables, the Secretary of State must weigh the feasibility, cost, and any harm of the undergrounding or subsea option against t*he adverse implications of the overhead line proposal; The cost and feasibility of re-routing overhead lines or mitigation proposals for the relevant line section; and The cost and feasibility of the reconfiguration, rationalisation, and/or use of underground or subsea cabling of proximate existing or proposed electricity networks infrastructure.	Further details on consideration of whether cables should be undergrounded or overhead lines is provided in **section 4.5.3,** noting that the Applicants are committed to burying subsea cables (CoT54) where possible and burying onshore cable (CoT12). Measures adopted as part of the Transmission Assets to mitigate potential impacts are provided in Volume 1, Annex 5.3: Commitments Register. Further justification for the location of the Transmission Assets, including a description of the design constraints considered as part of the iterative design process, is set out in the annexes to this chapter (Volume 1, Annex 4.1, 4.2 and 4.3).

NPS EN-5 paragraphs 2.9.25 *In such cases the Secretary of State should only grant development consent for underground or subsea sections of a proposed line over an overhead alternative if they are satisfied that the benefits accruing from the former proposal clearly outweigh any extra economic, social, or environmental impacts that it presents, the mitigation hierarchy has been followed, and that any technical obstacles associated with it are surmountable. In this context it should consider:* • *The landscape and visual baseline character, national and local designations; The additional cost of the proposed underground or sub-sea alternatives, including their significantly higher lifetime cost of repair and later uprating;* • *The potentially very disruptive effects of undergrounding on local communities, habitats, archaeological and heritage assets, marine environments, soil (including peat soils), hydrology, geology, and, for a substantial time after construction, landscape and visual amenity. (Undergrounding an overhead line will mean digging a trench along the length of the route, and so such works will often be disruptive – albeit temporarily – to the receptors listed above than would an overhead line of equivalent rating);* • *The potentially very disruptive effects of subsea cables on the seabed and the species that live in and on it, including physical damage to and full loss of seabed habitats;* *Cable protection can also be required where cables cross each other, or where they cannot be buried deep enough to protect them from becoming exposed. Such protection causes additional impacts that are often greater than those of the cable itself due to the large areas covered. There can also be issues where subsea cables make landfall, as much coastal land is protected habitat with environmental and heritage designations and landfall connections could cause additional disruption to coastal communities and the environment; ,The applicant's commitment, as set out in their ES, to mitigate the potential detrimental effects of undergrounding works on any relevant agricultural land and soils (including peat soils), particularly regarding Best and Most Versatile land, including development and implementation of a Soil Resources and Management Plan. Such a commitment must guarantee appropriate handling of soil, backfilling, and return of the land to the baseline Agricultural Land Classification (ALC), thus ensuring no loss or degradation of agricultural land. Such a commitment should be based on soil and ALC surveys in line with the*	Further details on consideration of whether cables should be undergrounded or overhead lines is provided in **section 4.5.3,** noting that the Applicants are committed to burying subsea cables (CoT54) where possible and burying onshore cable (CoT12). Measures adopted as part of the Transmission Assets to mitigate potential impacts are provided in Volume 1, Annex 5.3: Commitments Register. Further justification for the location of the Transmission Assets, including a description of the design constraints considered as part of the iterative design process, is set out in the annexes to this chapter (Volume 1, Annex 4.1, 4.2 and 4.3). All Environmental Statement chapters in Volume 2 – 4 associated with sub-surface intervention assess the effect of buried cables.

Summary of NPS EN-5 provisions	How and where considered in the ES
1988 ALC criteria and due consideration of the Defra Construction Code of Practice for Sustainable Use of Soils on Construction Sites.	
NPS EN-5 paragraphs 2.10.1 – 2.10.4 *The applicant should consider and address routing and avoidance/minimisation of environmental impacts both onshore and offshore at an early stage in the development process.* *Careful siting of a line away from, or parallel to, but not across, known flight paths can reduce the numbers of birds colliding with overhead lines considerably.* *Making lines more visible by methods such as the fitting of bird flappers and diverters to the earth wire, which swivel in the wind, glow in the dark and use fluorescent colours designed specifically for bird vision can also reduce the number of deaths. The design and colour of the diverters will be specific to the conditions – the line and pylon/transmission tower specifications and the species at risk./Electrocution risks can be reduced through the design of lattice steel tower crossarms, insulators and the construction of other parts of high voltage power lines so that birds find no opportunity to perch near energised power lines on which they might electrocute themselves.*	Further details on consideration of whether cables should be undergrounded or overhead lines is provided in **section 4.5.3,** noting that the Applicants are committed to burying subsea cables (CoT54) where possible and burying onshore cable (CoT12). Measures adopted as part of the Transmission Assets to mitigate potential impacts are provided in Volume 1, Annex 5.3: Commitments Register. Routing and site selection are considered in this chapter and annexes (Volume 1, Annex 4.1, 4.2 and 4.3). The aim was to identify sites and routes that will be minimise environmental impacts as far as practicable and can be delivered from a technical and consenting perspective, whilst also enabling the benefits in the long term of the lowest energy cost to be passed to the consumer.

Summary of NPS EN-5 provisions	How and where considered in the ES
NPS EN-5 paragraphs 2.10.5 – 2.10.6 *In addition to good design in accordance with the Holford and Horlock rules (please see paragraphs 2.9.16 - 2.9.19), and the consideration of undergrounding or rerouting the line where possible, the principal opportunities for mitigating adverse landscape and visual impacts of electricity networks infrastructure are:* • Consideration of network reinforcement options (where alternatives exist) which may allow improvements and/or extensions to an existing line rather than the building of an entirely new line; • Selection of the most suitable type and design of support structure in order to minimise the overall visual impact on the landscape. In particular, ensuring that towers are of the smallest possible footprint and internal volume; and • The rationalisation, reconfiguration, and/or undergrounding of existing electricity networks infrastructure in the vicinity of the proposed development. • Additionally, there are more specific measures that might be taken, and which the Secretary of State could mandate through DCO requirements if appropriate, as follows: Landscape schemes, comprising off-site tree and hedgerow planting, are sometimes used for larger new overhead line projects to mitigate potential landscape and visual impacts, softening the effect of a new above ground line whilst providing some screening from important visual receptors. These may be implemented with the agreement of the relevant landowner(s), or the developer may compulsorily acquire the land or land rights in question. Advice from the relevant statutory authority may also be needed; and Screening, comprising localised planting in the immediate vicinity of residential properties and principal viewpoints can also help to screen or soften the effect of the line, reducing the visual impact from a particular receptor.	Justification for the location of the Transmission Assets, including a description of the design constraints considered as part of the iterative design process, is set out in the annexes to this chapter (Volume 1, Annex 4.1, 4.2 and 4.3). Measures adopted as part of the Transmission Assets to mitigate potential impacts on landscape and visual resources are provided in Volume 3 Chapter 10: Landscape and Visual Resources of the ES. The outline landscape design is set out within the Outline Landscape Management Plan (document reference J2) and Outline Design Principles document (document reference J3).

Summary of NPS EN-5 provisions	How and where considered in the ES
NPS EN-5 paragraphs 2.11.2 – 2.11.6 *The Secretary of State should be satisfied that the development, so far as is reasonably possible, complies with the Holford and Horlock Rules (please see paragraphs 2.9.16 - 2.9.19) or any updates to them.* *The Secretary of State should also be satisfied that all feasible options for mitigation – including the rationalisation, reconfiguration, or undergrounding of existing electricity networks infrastructure, have been considered and evaluated appropriately.* *In circumstances where it can be demonstrated that a mitigation measure and/ or technological approach is appropriate and/ or necessary for a project, including to limit landscape and visual impact as set out above, the Secretary of State should take this into account in decision making. Nationally designated landscapes have specific statutory purposes which help ensure their continued protection. The Secretary of State should have special regard to nationally designated landscapes, where the general presumption in favour of overhead lines should be reversed to favour undergrounding. Away from these protected landscapes and in locations where there is a high potential for widespread and significant adverse landscape and/or visual impacts, the Secretary of State should be satisfied that the applicant has provided evidence to support a decision on whether undergrounding is or is not appropriate, having considered this on a case-by-case basis, weighing the considerations in paragraph 2.9.24 above.*	Justification for the location of the Transmission Assets, including a description of the design constraints considered as part of the iterative design process, is set out in this chapter and annexes, including consideration of undergrounding of cables. The Transmission Assets Order Limits are not located within or near any nationally designated landscapes (e.g., National Parks, NLs) (see section 10.6.4 of Volume 3 Chapter 10: Landscape and Visual Resources of the ES (document reference F3.10)). Measures adopted as part of the Transmission Assets to mitigate potential impacts on landscape and visual resources are provided in section 10.8 of Volume 3 Chapter 10: Landscape and Visual Resources of the ES (document reference F3.10). The outline landscape design is set out within the Outline Landscape Management Plan (document reference J2) and Outline Design Principles document (document reference J3).

NPS EN-5 paragraphs 2.13.1 – 2.13.20 *The strategic network designs such as those led or enabled by National Grid Electricity System Operator (ESO) will usually form the basis for identifying proposals for co-ordinated transmission. This includes the Holistic Network Design (HND) for offshore-onshore transmission prepared by ESO.* *The HND and subsequent network design and planning exercises identify and establish the transmission capabilities needed, both onshore and offshore, to support offshore wind developments. These include the onshore connection applications for infrastructure resulting from those exercises. The work of the HND and its subsequent follow up exercises considered the objectives for designs to be economic and efficient, deliverable and operable, minimise impact on the environment and minimise the impact on the local communities for the offshore transmission aspects. Through this work steps have already been taken to reduce avoidable cumulative impacts. Assessment of projects coming forward from this design should acknowledge these prior steps. It is recognised that proposed projects which have progressed through strategic network design exercises have been considered for strategic co-ordination through those exercises. However, any opportunities for subsequent local co-ordination between projects, irrespective of whether they have been through those exercise, should be considered in project development. This is in addition to considerations on co-ordinating delivery in construction, see section 2.14.2.* *In addition, it is recognised that the HND and subsequent network design exercises, may on occasion, identify a radial solution, i.e. a direct route from an offshore wind farm to shore, not proposed to co-ordinate with another project at the time of network design. In the case of infrastructure identified through the HND, and subsequent network design exercises applicants should identify any variations to or developments from that work and justify these in accordance with the same objectives or criteria above, i.e. economic and efficient, deliverable and operable, minimise impact on the environment and minimise the impact on the local communities, giving these four criteria equal weight. On occasion, network designs may be amended as necessary as a result of new information or other changes (such as where a project within a coordinated design is no longer being progressed).* *Any such changes approved through an appropriate change control process are likely to result in information that is important and relevant consideration* *Radial offshore transmission options to single windfarms should only be proposed where options assessment work identifies that a coordinated solution is not feasible. For projects which had firm connection agreements in place prior*	Both the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm were scoped into the 'Pathways to 2030' workstream under the OTNR. The OTNR aims to consider, simplify, and wherever possible facilitate a collaborative approach to offshore wind projects connecting to the UK electricity transmission network. In July 2022, the UK Government published the 'Pathway to 2030 Holistic Network Design' documents, which set out the approach to connecting 50 GW of offshore wind to the National Grid (NGESO, 2022). A key output of the HNDR process was the recommendation that the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm should work collaboratively in connecting the offshore two wind farms to the electricity transmission network at Penwortham in Lancashire. This point of interconnection was identified by NGES as representing the optimal location considering a range of criteria (i.e., technical, cost, environmental and deliverability factors). Morgan OWL and Morecambe OWL (the Applicants), being in agreement with the output from the HNDR, are jointly seeking a single consent for their electrically separate transmission assets comprising aligned offshore export cable corridors to landfall and aligned onshore export cable corridors to separate onshore substations (and associated infrastructure), and onward connection to the National Grid at Penwortham, Lancashire. The Applicants have undertaken a site selection process based on the output of the HNDR process to identify the location and refine the design of the key elements of the Transmission Assets, including through early engagement with a range of stakeholders. The aim was to identify locations and routes (for the offshore export cable corridor, landfall location, onshore cable corridors and onshore substations) where locational alignment of infrastructure was possible. Details of this are presented in this chapter and its annexes (Volume 1, Annexes 4.1, 4.2, and 4.3). Detailed assessments are provided within all chapters within Volumes 1 to 4 of the ES (document reference F1 to F4). As set out in every ES chapter, mitigation measures have been developed to primarily avoid, then prevent, reduce or offset significant adverse environmental effects. Mitigation measures adopted as part of the Transmission Assets are provided in Volume 1, Annex 5.3: Commitments register of the ES (document reference F1.5.3).

to completion of the HND (formerly known as 'Early Opportunities' projects), co-ordinated design work should be brought forward by applicants. The identification of co-ordinated solution options, and any radial option, should consider the criteria for designs to be deliverable and operable, economic and efficient, minimise impact on the environment and minimise impact on the local communities. Options should seek to identify the most appropriate balance between these criteria. *The coordinated solutions assessed should seek to be ambitious in the degree of co-ordination, wherever possible. This includes taking account of geographically proximate projects including opportunities to connect wind farms and multi-purpose interconnectors and/or bootstraps with each other that are planned or foreseen in the near future. Evidence should demonstrate that this has been considered in the assessment of options. Applicants bringing forward offshore transmission projects are expected to consider future demand when considering the location and route of their proposals. This may involve consenting offshore platforms, converter stations or substations which facilitate future coordination., through the coordinated options assessment work, a radial route is deemed to be the only feasible solution, applicants should evidence each co-ordination option and the accompanying assessment. These assessments should detail the application of the criteria identified above versus the radial counterfactual. In these instances, the Secretary of State should have regard to the need case set out in Section 3.3 of EN-1.* *Co-ordinated transmission proposals, including multi-purpose interconnectors and other types of offshore transmission (see Glossary), are expected to reduce the overall environmental and community impacts associated with bringing offshore transmission onshore compared to an uncoordinated, radial approach. These reduced impacts could, for example, relate to: fewer landing sites and reduced landfall impacts; reduced overall cable length and impacts; and fewer cable corridors and reduced impacts from these. Similarly, the related onshore infrastructure required in conjunction with the offshore transmission to enable offshore wind to be connected at its onshore grid connection point is expected to reduce the overall environmental and community impacts. This is in comparison with that which would be required for radial connections from single offshore windfarms to the shore. For onshore infrastructure, reduced impacts could, for example, relate to fewer or co-located substations and converter stations and transmission lines as well as demonstrating how environmental and community impacts have been avoided as far as possible. Applicants are expected to be able to indicate how co-ordination including reduction in impacts*	

Summary of NPS EN-5 provisions	How and where considered in the ES
have been considered drawing on work of others, including that led or enabled by National Grid Electricity System Operator (ESO). *For those projects not covered by the strategic network planning undertaken by the ESO and which have received a connection agreement, applicants should seek to demonstrate the reduced overall impacts from co-ordination (as identified at section 2.13.14 above) and how the onshore connection locations have been identified. These projects are expected to demonstrate the reductions in environmental and community impact achieved through coordination compared with radial solutions. There may be exceptional circumstances where multiple coordinated solutions have been explored and all those solutions would lead to adverse impacts (for example adverse effects on an environmentally protected site) and where these could be avoided through radial connections. In these circumstances radial connections of consideration of alternative co-ordination solutions which may not be in proximate locations. Applicants should refer to policy text in EN-3 (including section 2.8) and EN-1 (including sections 4.4 and 5.4) regarding consideration of impacts and cumulative impacts in the environment, as well as policy text in the remainder of this policy statement regarding consideration of impacts onshore.*	
NPS EN-5 paragraphs 2.13.21 - 2.13.23 *The sensitivities of many coastal locations and of the marine environment as well as the potential environmental, community and other impacts in neighbouring onshore areas must be considered in the identification onshore connection points.* *Onshore connection points for offshore transmission bringing power from offshore wind farms must be considered as part of the overall offshore transmission network design and in conjunction with the onshore network by the body responsible for the design.* *Onshore connection locations for offshore transmission must seek to minimise environmental and other impacts, both onshore and in the marine environment and including to local communities.*	Justification for the location of the Transmission Assets, including a description of the design constraints considered as part of the iterative design process, is set out in this chapter and its annexes (Volume 1, Annexes 4.1, 4.2 and 4.3). As well as the Outline Design Principles document (document reference J3). Maximum parameters for the substation have been refined following statutory consultation.

Summary of NPS EN-5 provisions	How and where considered in the ES
NPS EN-5 paragraph 2.14.1 *Adverse impacts on Marine Protected Areas (MPAs) have caused consenting delays, and in some cases a need for compensatory measures under the Conservation of Habitats and Species Regulations 2017 and the Conservation of Offshore Habitats and Species Regulations 2017, or measures of equivalent environmental benefit under the Marine and Coastal Access Act 2009. Therefore, applicants should consider and address routing and avoidance/minimisation of environmental impacts both onshore and offshore at an early stage in the development process. Applicants should also facilitate delivery of strategic compensation measures where appropriate (see paragraphs 2.8.276 -2.8.283 of EN-3).*	Justification for the location of the Transmission Assets, including a description of the design constraints considered as part of the iterative design process, is set out in this chapter and its annexes. As well as the Outline Design Principles document (document reference J3). Maximum parameters for the substation have been refined following statutory consultation. The HRA Stage 1 Screening report (document reference E3) identifies direct or indirect effects on European sites which could be affected, and those sites have been assessed in the HRA Stage 2 ISAA (document reference E2.1, E2.2 and E2.3). The HRA Stage 1 ISAA concludes that there will be no adverse effect on integrity of any European site as a result of the Transmission Assets alone or in-combination with other projects. The MCZ Screening and Stage 1 Assessment Report (document reference E4) identified a single MCZ, the Fylde MCZ, with the potential to be affected (other than insignificantly) by the construction, operation and maintenance, and decommissioning of the Transmission Assets. A Stage 1 Screening Report (document reference E4) has been undertaken which has concluded that the conservation objective of maintaining the protected features of the Fylde MCZ in a favourable condition will not be hindered by the construction, operation and maintenance, and decommissioning phases of the Transmission Assets in isolation, or cumulatively with any other plan, project or activity.

Summary of NPS EN-5 provisions	How and where considered in the ES
NPS EN-5 paragraphs 2.14.2 *In the assessments of their designs, applicants should demonstrate:* • *How environmental, community and other impacts have been considered and how adverse impacts have followed the mitigation hierarchy i.e. avoidance, reduction and mitigation of adverse impacts through good design;* • *How enhancements to the environment post construction will be achieved including demonstrating consideration of how proposals can contribute towards biodiversity net gain (as set out in Section 4.5 of EN-1 and the Environment Act 2021), as well as wider environmental improvements in line with the Environmental Improvement Plan and environmental targets (paragraph 4.2.29 of EN-1); EHow the construction planning for the proposals has been co-ordinated with that for other similar projects in the area on a similar timeline; EHow enhancements to the landscape and environmental assets may contribute to overall landscape and townscape quality as set out in EN-1 4.6.13 and 5.10.23; EHow the mitigation hierarchy has been followed, in particular to avoid the need for compensatory measures for coastal, inshore and offshore developments affecting SACs SPAs, and Ramsar sites and MCZs as set out in EN-3 2.8;* *For designated landscapes the principal mitigation measure, as established by the Holford Rules, should be to seek to avoid landfall in these areas.*	Justification for the location of the Transmission Assets, including a description of the design constraints considered as part of the iterative design process, is set out in this chapter and its annexes (Volume 1, Annexes 4.1, 4.2 and 4.3). The Transmission Assets are located outside designated landscapes. The Environmental Statement Volumes 1 - 4 catalogues the wide and thorough assessment undertaken across environmental, social and economic receptors. Measures adopted as part of the Transmission Assets to avoid, reduce, mitigate or compensate for any adverse effects are set out in Volume 1, Annex 5.3: Commitments Register. The outline landscape design is set out within the Outline Landscape Management Plan (document reference J2) and Outline Design Principles document (document reference J3).

Summary of NPS EN-5 provisions	How and where considered in the ES
NPS EN-5 paragraphs 2.15.1 *Coordinated approaches to delivering offshore and onshore transmission to minimise overall environmental, community, and other impacts, as set out above, must be considered. The Secretary of State must be satisfied that applicants have explained the steps they have taken to do this, the options that have been considered and the approach they have taken to coordination as set out in above at section 2.13. This evidence is expected to draw substantially on the work under the Offshore Transmission Network Review and relevant strategic network design exercises, together with any additional supporting evidence applicants consider relevant. The Secretary of State should also be satisfied that options for coordination have been considered and evaluated appropriately.*	Both the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm were scoped into the 'Pathways to 2030' workstream under the Offshore Transmission Network Review (OTNR). The OTNR aims to consider, simplify, and wherever possible facilitate a collaborative approach to offshore wind projects connecting to the National Grid. Under the OTNR, the National Grid Electricity System Operator (NGESO) is responsible for assessing options to improve the coordination of offshore wind generation connections and transmission networks and has undertaken a Holistic Network Design Review (HNDR). In July 2022, the UK Government published the 'Pathway to 2030 Holistic Network Design' documents, which set out the approach to connecting 50 GW of offshore wind to the National Grid (NGESO, 2022). A key output of the HNDR process was the recommendation that the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm should work collaboratively in consenting the transmission network of the offshore two wind farms to the National Grid substation at Penwortham in Lancashire. Morgan OWL and Morecambe OWL (the Applicants), being in agreement with the output from the HNDR, are jointly seeking a single consent for transmission assets comprising aligned offshore export cable corridors to landfall and aligned onshore export cable corridors to separate substations (and associated infrastructure), and onward connection to the National Grid at Penwortham, Lancashire. The Applicants have undertaken a site selection process based on the output of the HNDR process to identify the location and refine the design of the key elements of the Transmission Assets, including through early engagement with a range of stakeholders. The aim was to identify locations and routes (for the offshore export cable corridor, landfall location, onshore cable corridors and onshore substations) where infrastructure could be locationally aligned. Details of this are presented in this chapter and its annexes. The Environmental Statement (document reference F1 – F4) catalogues the wide and thorough assessment undertaken across environmental, social and economic receptors, which can be used to allow weighing of impacts and benefits in the decision-making process.

4.3.3 The National Planning Policy Framework

4.3.3.1 The National Planning Policy Framework (NPPF) was published in 2012 and updated in 2018, 2019, 2021, and 2023 (Department for Levelling Up, Housing & Communities, 2024). The NPPF sets out the Government's policies for England.

4.3.3.2 A summary of the NPPF policies relevant to this chapter is presented in **Table 4.4.**

Table 4.4: Summary of NPPF requirements relevant to this chapter

Principle	NPPF Advice	How and where considered for site selection
Promoting Sustainable Transport	Transport Statements and/or Transport Assessments should be used to support proposals for developments that will generate significant vehicle movements (paragraph 113).	The site selection process for the onshore substations considered traffic and transport factors as set out in Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure.
Making Effective Use of Land	Planning decisions and policies should promote effective use of land while safeguarding and improving the environment. Such relevant policy includes taking opportunities to achieve net gains (i.e. improve public access to the countryside, or development that enable new habitat creations) (paragraph 119).	The selection process for the Onshore Export Cable, the 400 kV Cable Corridor and Onshore substations is described within: • Volume 1, Annex 4.1: Selection and refinement of cable landfall; and • Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure.
Achieving Well-Designed Places	Planning decisions should aim to ensure that developments: optimise the potential of the site to accommodate development; respond to local character and history, and reflect the identity of local surroundings and materials, while not preventing or discouraging appropriate innovation; and are visually attractive through good architecture and appropriate landscaping (paragraph 130).	Potential benefits from screening at around the onshore substations is detailed further in Volume 3; Chapter 10: Landscape, and Visual Impact Assessment of this ES. The Outline Landscape Management Plan (document reference J2) and Outline Design Principles document (document reference J3) consider the substations in the local landscape.
Meeting the Challenge of Climate Change, Flooding and Coastal Change	Local authorities should plan for new development in locations and ways that reduce flood risk amongst other environmental factors. Authorities should direct development away from areas at highest risk of flooding. Inappropriate development in vulnerable areas should be avoided (paragraph 154/158/159).	The site selection process for the onshore substations taking into consideration flood risk is described within Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure A Flood Risk Assessment has been undertaken and is set out in Volume 3, Annex 2.3 Flood Risk Assessment.
Conserving and Enhancing the Natural Environment	The planning system should contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes, geological conservation interests and soils; and preventing new and existing development from contributing to or being at	The siting of the Onshore Export Cable, the 400 kV Cable Corridor and onshore substations has taken into consideration environmental sensitivities is described within:

Principle	NPPF Advice	How and where considered for site selection
	unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability. In relation to the development of agricultural land, consideration should be given in planning terms to the economic and other benefits of best and most versatile agricultural land, and where significant development is necessary, this should be directed to areas of poorer quality land. Further guidance is provided in respect of: protecting and enhancing areas of landscape, ecological and geological importance; and avoiding / mitigating noise impacts associated with new developments (paragraph 177).	• Volume 1, Annex 4.1: Selection and refinement of cable landfall; and • Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure.
Conserving and Enhancing the Historic Environment	Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset). This should be taken into account when considering the impact of a proposed development on a heritage asset to avoid or minimise any conflict between the heritage asset's conservation and any aspect of the proposed development. Where a site on which development is proposed includes, or has the potential to include, heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation (paragraph 189/195).	The siting of the Onshore Export Cable, the 400 kV Cable Corridor and onshore substations has taken into consideration environmental sensitivities is described within: • Volume 1, Annex 4.1: Selection and refinement of cable landfall; and • Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure.
Facilitating the sustainable use of minerals	Planning policies should safeguard mineral resources by defining Mineral Safeguarding Areas and Mineral Consultation Areas; and adopt appropriate policies so that known locations of specific minerals resources of local and national importance are not sterilised by non-mineral development where this should be avoided (whilst not creating a presumption that the resources defined will be worked) (paragraph 210c)	The site selection process for the onshore substations considered Mineral Safeguarding Areas as part of the environmental constraints analysis as set out in Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure
Protecting Green Belt land	The fundamental aim of Green Belt policy is to prevent urban sprawl by keeping land permanently open; the essential characteristics of Green Belts are their openness and their permanence. When located in the Green Belt, elements of many renewable energy projects will comprise inappropriate development. In	The site selection process considered Green Belt areas as part of the environmental constraint analysis as set out in Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure Elements of the Transmission Assets run through areas of Green Belt including both substation sites. This is

Principle	NPPF Advice	How and where considered for site selection
	such cases developers will need to demonstrate very special circumstances if projects are to proceed. Such very special circumstances may include the wider environmental benefits associated with increased production of energy from renewable sources (paragraph 151)	discussed in the Planning Statement (document reference J28).

4.3.4 Marine policy

UK Marine Policy Statement

4.3.4.1 The UK-wide Marine Policy Statement (MPS) was published in March 2011, under the Marine and Coastal Access Act 2009 (MCAA), in order to provide a framework for marine spatial planning, specifically for the preparation of Marine Plans and taking decisions that affect the marine environment (Defra, 2011). The MMO has taken a regional approach to the development of marine plans in English waters.

4.3.4.2 The MCAA requires all public authorities taking authorisation or enforcement decisions that affect or might affect the UK marine area to do so in accordance with the MPS and the relevant Marine Plans. For the Transmission Assets, the relevant Marine Plan is the North West Inshore and North West Offshore Coast Marine Plan.

North West Inshore and North West Offshore Coast Marine Plan

4.3.4.3 The site selection chapter has given consideration to the specific policies set out in the North West Inshore and North West Offshore Marine Plan (MMO, 2021).

4.3.4.4 **Table 4.5** sets out a summary of the specific policies set out in the North West Inshore and North West Offshore Coast Marine Plans (MMO, 2021) relevant to this chapter.

Table 4.5: Summary of Inshore and offshore marine plan policies relevant to this chapter

Policy	Key provisions	How and where considered for site selection
NW-CO-1	Proposals that optimise the use of space and incorporate opportunities for co-existence and co-operation with existing activities will be supported. Proposals that may have significant adverse impacts on, or displace, existing activities must demonstrate that they will, in order of preference: a) Avoid b) Minimise c) Mitigate Adverse impacts so they are no longer significant	The site selection chapter has considered how the Transmission Assets have been sited to avoid existing marine activities and engaged on co-existence as detailed in **section 4.4** Consideration of specific impacts of the Transmission Assets on receptor groups, avoidance and mitigation has been considered throughout this chapter and as well as within the annexes: • Volume 1, Annex 4.1: Selection and refinement of cable landfall; • Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure; and • Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure
NW-AGG-1	Proposals in areas where a licence for extraction of aggregates has been granted or formally applied for should not be authorised, unless it is demonstrated that the proposal is compatible with aggregate extraction	There is no overlap between the Transmission Assets and any marine aggregate extraction or disposal sites.
NW-CAB-1	Preference should be given to proposals for cable installation where the method of protection is burial.	The Applicants have made a commitment for the Transmission Assets (CoT) as part of the site selection and design process for cable burial to be the preferred option for cable protection, where practicable (CoT54 as detailed in Volume 1, Annex 5.3: Commitments Register.) Further information around cable burial installation is provided in the Outline Cable Specification and Installation Plan (CSIP, document reference J15) submitted with the application.
NW-CAB-2	Proposals demonstrating compatibility with existing landfall sites and incorporating measures to enable development of future landfall opportunities should be supported.	Details for the selection of the landfall site is provided in Volume 1, Annex 4.1: Selection and refinement of cable landfall of the ES. Consideration has been given to avoiding existing project landfalls and proposed projects based on publicly available information as detailed in Volume 1, Annex 5.5: Cumulative screening matrix and location plan.

Policy	Key provisions	How and where considered for site selection
NW-CAB-3	Where seeking to locate close to existing subsea cables, proposals should demonstrate compatibility with ongoing function, maintenance and decommissioning activities relating to the cable.	The Transmission Assets has considered the location of existing cable infrastructure within site selection as detailed in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure of the ES. Where it is not possible to avoid overlap with cables, the Applicants are taking steps to ensure co-existence.
NW-PS-1	In line with the National Policy Statement for Ports, sustainable port and harbour development should be supported. Only proposals demonstrating compatibility with current port and harbour activities will be supported. Proposals within statutory harbour authority areas or their approaches that detrimentally and materially affect safety of navigation, or the compliance by statutory harbour authorities with the Open Port Duty or the Port Marine Safety Code, will not be authorised unless there are exceptional circumstances. Proposals that may have a significant adverse impact upon future opportunity for sustainable expansion of port and harbour activities, must demonstrate that they will, in order of preference: a) avoid b) minimise c) mitigate -adverse impacts so they are no longer significant. If it is not possible to mitigate significant adverse impacts, proposals should state the case for proceeding	Volume 2, Chapter 7: Shipping and Navigation of the ES did not identify any significant effects upon access to ports or harbours as a result of the Transmission Assets. Volume 2, Annex 7.1: Navigation Risk Assessment of the ES found zero hazards identified as being High Risk – Unacceptable, four ranked as Medium Risk – Tolerable if ALARP and were concluded to be ALARP, and 12 ranked as Low Risk – Broadly Acceptable.
NW-REN-1	Proposals that enable the provision of renewable energy technologies and associated supply chains will be supported.	The Transmission Assets is a renewable energy project.
NW-REN-2	Proposals for new activity within areas held under a lease or an agreement for lease for renewable energy generation should not be authorised, unless it is demonstrated that the proposed development or activity will not reduce the ability to construct, operate or decommission the existing or planned energy generation project.	No other renewable energy generation leases beyond the Generation Assets are present within the Offshore Order Limits. The Transmission Assets has considered the location of existing infrastructure within site selection as detailed in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure. Where it is not possible to avoid overlap with cables and oil and gas fields, the Applicants are taking steps to ensure co-existence.
NW-REN-3	Proposals for the installation of infrastructure to generate offshore renewable energy, inside areas of identified potential and subject to relevant assessments, will be supported.	The Transmission Assets is part of the Offshore Wind Leasing Round 4 (**section 4.2.1**).

Policy	Key provisions	How and where considered for site selection
NW-HER-1	Proposals that demonstrate they will conserve and enhance the significance of heritage assets will be supported. Where proposals may cause harm to the significance of heritage assets, proponents must demonstrate that they will, in order of preference: a) avoid b) minimise c) mitigate -any harm to the significance of heritage assets. If it is not possible to mitigate, then public benefits for proceeding with the proposal must outweigh the harm to the significance of heritage assets	The Applicants have prepared an Outline Offshore Written Scheme of Investigation and Protocol for Archaeological Discoveries (document reference J17) which sets out measures to ensure that marine archaeology is avoided, where possible, with further measures to minimise and mitigation potential impacts where avoidance is not possible. As such, no significant effects were identified upon marine archaeology from the Transmission Assets, either in isolation or when considered alongside other plans and projects. Further details are provided in Volume 2, Chapter 8: Marine Archaeology of the ES.
NW-SCP-1	Proposals should ensure they are compatible with their surroundings and should not have a significant adverse impact on the character and visual resource of the seascape and landscape of the area. The location, scale and design of proposals should take account of the character, quality and distinctiveness of the seascape and landscape. Proposals that may have a significant adverse impact on the seascape and landscape of the area should demonstrate that they will, in order of preference: a) avoid b) minimise c) mitigate -adverse impacts so they are no longer significant. If it is not possible to mitigate, the public benefits for proceeding with the proposal must outweigh significant adverse impacts to the seascape and landscape of the area. Proposals within or relatively close to nationally designated areas should have regard to the specific statutory purposes of the designated area. Great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks and Areas of Outstanding Natural Beauty.	As detailed in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure of the ES, with design changes following PEIR, i.e. the removal of the offshore substation platforms (OSPs) and the removal of the Morgan offshore booster substation, there is no surface piercing infrastructure associated with the Transmission Assets DCO. All surface piercing infrastructure (wind turbines, OSPs, etc.) are included in the Generation Assets DCO applications. As such, seascape effects have been avoided and scoped out of the assessment as detailed in Volume 3, Chapter 10: Landscape and visual resources of the ES.

Policy	Key provisions	How and where considered for site selection
NW-FISH-1	Proposals that support a sustainable fishing industry, including the industry's diversification, should be supported	Volume 2, Chapter 6: Commercial Fisheries of the ES did not identify any significant effects upon fishing activities from the Transmission Assets, either in isolation or when considered alongside other plans and projects The Applicants are taking, and will continue to take, steps to minimise the potential impacts upon the fishing industry in the area through engagement and appropriate mitigation.
NW-FISH-2	Proposals that enhance access for fishing activities should be supported. Proposals that may have significant adverse impacts on access for fishing activities must demonstrate that they will, in order of preference: a) avoid b) minimise c) mitigate -adverse impacts so they are no longer significant. If it is not possible to mitigate significant adverse impacts, proposals should state the case for proceeding.	Volume 2, Chapter 6: Commercial Fisheries of the ES did not identify any significant effects upon fishing activities from the Transmission Assets, either in isolation or when considered alongside other plans and projects The Applicants are taking, and will continue to take, steps to minimise the potential impacts upon the fishing industry in the area through engagement and appropriate mitigation.
NW-FISH-3	Proposals that enhance essential fish habitat, including spawning, nursery and feeding grounds, and migratory routes, should be supported. Proposals that may have significant adverse impacts on essential fish habitat, including spawning, nursery and feeding grounds, and migratory routes, must demonstrate that they will, in order of preference: a) avoid b) minimise c) mitigate -adverse impacts so they are no longer significant	Volume 1, Annex 4.2: Selection and refinement of infrastructure discusses how fish spawning grounds have been avoided, where possible. Consideration of mitigation is provided in Volume 2, Chapter 3: Fish and shellfish ecology of the ES which did not identify any significant effects from the Transmission Assets, either in isolation or when considered alongside other plans and projects
NW-EMP-1	Proposals that result in a net increase in marine-related employment will be supported, particularly where they meet one or more of the following: 1) are aligned with local skills strategies and support the skills available 2) create a diversity of opportunities 3) create employment in locations identified as the most deprived 4) implement new technologies -in, and adjacent to, the north west marine plan areas.	The Applicants have prepared and submitted and Outline Employment and Skills Plan (document reference J31) which details how the Applicants will engage with local workers and training providers for anticipated employment opportunities associated with the Transmission Assets.

Policy	Key provisions	How and where considered for site selection
NW-CC-1	Proposals that conserve, restore or enhance habitats that provide flood defence or carbon sequestration will be supported. Proposals that may have significant adverse impacts on habitats that provide a flood defence or carbon sequestration ecosystem service must demonstrate that they will, in order of preference: a) avoid b) minimise c) mitigate - adverse impacts so they are no longer significant d) compensate for significant adverse impacts that cannot be mitigated.	As detailed in Volume 1, Annex 4.1: Selection and refinement of cable landfall of the ES, the Applicants have sought to minimise interaction with habitats at landfall and avoid flood defences.
NW-CC-2	Proposals in the north west marine plan areas should demonstrate for the lifetime of the project that they are resilient to the impacts of climate change and coastal change.	The Transmission Assets are designed to be resilient to the impacts of climate change and ultimately as part of renewable energy developments reduce the rate at which the climate is changing as a result of human activities.
NW-CC-3	Proposals in the north west marine plan areas, and adjacent marine plan areas, that are likely to have significant adverse impact on coastal change, or on climate change adaptation measures inside and outside of the proposed project areas, should only be supported if they can demonstrate that they will, in order of preference: a) avoid b) minimise c) mitigate - adverse impacts so they are no longer significant	The Transmission Assets are designed to be resilient to the impacts of climate change and ultimately as part of renewable energy developments reduce the rate at which the climate is changing as a result of human activities. Volume 2, Chapter 1: Physical Processes of the ES concluded that there will be no significant effects on coastal change arising from the Transmission Assets during the construction, operation and maintenance or decommissioning phases.
NW-AIR-1	Proposals must assess their direct and indirect impacts upon local air quality and emissions of greenhouse gases. Proposals that are likely to result in increased air pollution or increased emissions of greenhouse gases must demonstrate that they will, in order of preference: a) avoid b) minimise c) mitigate -air pollution and/or greenhouse gas emissions in line with current national and local air quality objectives and legal requirements.	Volume 3, Chapter 9: Air Quality of the ES and Volume 4, Chapter 1: Climate change concluded that there will be no significant effects upon air quality or greenhouse gas emissions arising from the Transmission Assets during the construction, operation and maintenance or decommissioning phases.
NW-ML-2	Proposals that facilitate waste re-use or recycling to reduce or remove marine litter will be supported. Proposals that could potentially increase the amount of marine litter in the marine plan areas must include measures to, in order of preference: a) avoid b) minimise c) mitigate -waste entering the marine environment.	The Applicants have committed to produce a marine pollution contingency plan (CoT65) and follow best practice in regard to dropped objects in lines with the requirements of the Draft DCO (document reference C1).

Policy	Key provisions	How and where considered for site selection
NW-WQ-1	Proposals that protect, enhance and restore water quality will be supported. Proposals that cause deterioration of water quality must demonstrate that they will, in order of preference: a) avoid b) minimise Much of the economic and cultural prosperity of the north west marine plan areas is reliant on water quality. Activities can place stress on water bodies such that, in parts of the north west marine plan areas, water quality requires improvement. NW-WQ-1 supports activities with a primary objective to protect, enhance and restore water quality. NW-WQ-1 also manages activities that may cause deterioration of water quality by ensuring that adverse impacts from proposals must be avoided, minimised and mitigated.	Volume 2, Annex 2.2: Water Framework Directive Coastal Waters Assessments of the ES determined that there is no potential for deterioration of the Mersey Mouth or Ribble, nor the individual elements of these water bodies. In most instances, the relevant activities for the construction, operation and maintenance, and decommissioning of the Transmission Assets offshore export cables have been scoped out of the assessment as they are below the thresholds set by the 'Clearing the Waters for All' guidance.
NW-ACC-1	Proposals demonstrating appropriate enhanced and inclusive public access to and within the marine area, including the provision of services for tourism and recreation activities, will be supported. Proposals that may have significant adverse impacts on public access should demonstrate that they will, in order of preference: a) avoid b) minimise c) mitigate- adverse impacts so they are no longer significant.	The Applicants will utilise advisory safety zones of up to 500 m during construction, maintenance and decommissioning activities; however, these restrictions would be temporary in nature with advance warning and information on accurate locations and activities given via Notices to Mariners.
NW-TR-1	Proposals that promote or facilitate sustainable tourism and recreation activities, or that create appropriate opportunities to expand or diversify the current use of facilities, should be supported. Proposals that may have significant adverse impacts on tourism and recreation activities must demonstrate that they will, in order of preference: a) avoid b) minimise c) mitigate - adverse impacts so they are no longer significant.	Volume 2, Chapter 9: Other Sea Users did not identify any significant effects upon marine recreational or tourism activities. Volume 4, Chapter 2: Socio-economics identified that there will be no significant effects arising from the Transmission Assets and that there will be significant beneficial cumulative effects during construction, operation and maintenance on economic receptors including employment and Gross Value Added. The assessment has taken into consideration the measures within the Outline Skills and Employment Plan (document reference J10) included in the application.
NW-SOC-1	Those bringing forward proposals should consider and demonstrate how their development shall enhance public knowledge, understanding, appreciation and enjoyment of the marine environment as part of (the design of) the proposal.	Volume 4, Chapter 2: Socio-economics of the ES and Volume 2, Chapter 9: Other Sea Users considers socio-economic effects and effects upon other sea users with no significant impacts predicted.

Policy	Key provisions	How and where considered for site selection
NW-DEF-1	Proposals in or affecting Ministry of Defence areas should only be authorised with agreement from the Ministry of Defence	The Transmission Assets would not affect any Ministry of Defence (MoD) areas directly with the airspace above and around Warton aerodromes safeguarded to maintain an assured, obstacle free environment for aircraft manoeuvre.
NW-MPA-1	Proposals that support the objectives of marine protected areas and the ecological coherence of the marine protected area network will be supported. Proposals that may have adverse impacts on the objectives of marine protected areas must demonstrate that they will, in order of preference: a) avoid b) minimise c) mitigate - adverse impacts, with due regard given to statutory advice on an ecologically coherent network	As detailed in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure, the Transmission Assets has considered MPAs in site selection and design. The Transmission Assets will interact with the Fylde MCZ and the Applicants have sited infrastructure to pass through the narrowest point and refined the design envelope within the MCZ. MPAs are considered within the Stage 1 Marine Conservation Zone Assessment (document reference E4) which found that the Transmission Assets would not hinder the conservation objectives of any protected features within the Fylde MCZ.
NW-MPA-2	Proposals that enhance a marine protected area's ability to adapt to climate change, enhancing the resilience of the marine protected area network, will be supported. Proposals that may have adverse impacts on an individual marine protected area's ability to adapt to the effects of climate change, and so reduce the resilience of the marine protected area network, must demonstrate that they will, in order of preference: a) avoid b) minimise c) mitigate - adverse impacts.	The Transmission Assets are designed to be resilient to the impacts of climate change and ultimately as part of renewable energy developments reduce the rate at which the climate is changing as a result of human activities. Mitigation in regard to marine protected areas is detailed above in NW-MPA-1.
NW-MPA-3	Where statutory advice states that a marine protected area site condition is deteriorating or that features are moving or changing due to climate change, a suitable boundary change to ensure continued protection of the site and coherence of the overall network should be considered	The Transmission Assets are designed to be resilient to the impacts of climate change and ultimately as part of renewable energy developments reduce the rate at which the climate is changing as a result of human activities. Mitigation in regard to marine protected areas is detailed above in NW-MPA-1.
NW-MPA-4	Proposals that may have significant adverse impacts on designated geodiversity must demonstrate that they will, in order of preference: a) avoid b) minimise c) mitigate - adverse impacts so they are no longer significant	Therea are no designated sites or sites of interest due to geological importance within the Offshore Order Limits. No significant effects upon geodiversity would occur as a result of the Transmission Assets.

Policy	Key provisions	How and where considered for site selection
NW-BIO-1	Proposals that enhance the distribution of priority habitats and priority species will be supported. Proposals that may have significant adverse impacts on the distribution of priority habitats and priority species must demonstrate that they will, in order of preference: a) avoid b) minimise c) mitigate -adverse impacts so they are no longer significant d) compensate for significant adverse impacts that cannot be mitigated.	Whilst there is currently no statutory requirement for intertidal or marine net gain in England, outside of the National Planning Statements, the Applicants have submitted a Marine Enhancement Statement (document reference J12) which details how the Transmission Assets may seek to enhance biodiversity. The Information to Support the Appropriate Assessment under the Habitats Regulations for the ES (document reference E2) has concluded no adverse effect on any European sites or designated features.
NW-BIO-2	Proposals that enhance or facilitate native species or habitat adaptation or connectivity, or native species migration, will be supported. Proposals that may cause significant adverse impacts on native species or habitat adaptation or connectivity, or native species migration, must demonstrate that they will, in order of preference: a) avoid b) minimise c) mitigate - adverse impacts so they are no longer significant d) compensate for significant adverse impacts that cannot be mitigated.	A detailed characterisation of the marine ecosystem in the study area and the assessment of impacts, with consideration of mitigation measures, on the related receptors is presented in the following ES chapters: • Volume 2, Chapter 2: Benthic subtidal and intertidal ecology • Volume 2, Chapter 3: Fish and shellfish ecology • Volume 2, Chapter 4: Marine mammals • ES Volume 2, Chapter 5: Offshore ornithology With the implementation of mitigation, residual effects upon species and habitats are not significant noting that Unexploded Ordnance (UXO) mitigation will be refined post-consent to limit impacts. Additionally, the Applicants have submitted a Marine Enhancement Statement (document reference J12) which details how the Transmission Assets may seek to enhance biodiversity.

Policy	Key provisions	How and where considered for site selection
NW-INNS-1	Proposals that reduce the risk of introduction and/or spread of non-native invasive species should be supported. Proposals must put in place appropriate measures to avoid or minimise significant adverse impacts that would arise through the introduction and transport of invasive non-native species, particularly when: 1) moving equipment, boats or livestock (for example fish or shellfish) from one water body to another 2) introducing structures suitable for settlement of invasive non-native species, or the spread of invasive non-native species known to exist in the area.	To reduce the risk of introduction/spread of non-native species, the Applicants have committed to prepare an Outline Offshore Construction Environmental Management Plans (CoT65, as detailed in Volume 1, Annex 5.3: Commitments Register) prior to the commencement of construction which will include details of: - a marine pollution contingency plan to address the risks, methods and procedures to deal with any spills and collision incidents in relation to all activities carried out below Mean High Water Springs (MHWS).
NW-DIST-1	Proposals that may have significant adverse impacts on highly mobile species through disturbance or displacement must demonstrate that they will, in order of preference: a) avoid b) minimise Disturbance and displacement from activities, including those that do not require authorisation such as tourism and recreation, can cause declines in some highly mobile species. NW-DIST-1 reduces the effects of disturbance and displacement by requiring proposals to manage impacts, highlighting good practice and encouraging strategic management of unauthorised activities. NW-DIST-1 enables people to appreciate marine biodiversity and act responsibly to protect and 11, 12, 13 310 c) mitigate -adverse impacts so they are no longer significant	Volume 2, Chapter 3: Fish and shellfish ecology and Volume 2, Chapter 4: Marine mammals of the ES details the potential effects upon mammals and fish species including measures to minimise and mitigate effects. With the implementation of mitigation, residual effects upon mobile species are not significant noting that UXO mitigation will be refined post-consent to limit impacts.
NW-UWN-1	Proposals that result in the generation of impulsive sound must contribute data to the UK Marine Noise Registry as per any currently agreed requirements. Public authorities must take account of any currently agreed targets under the Marine Strategy Part One Descriptor 11	As detailed in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure of the ES, design changes following PEIR, i.e. the removal of the OSPs and the removal of the Morgan offshore booster substation removes piling from the Transmission Assets project design. The Applicants have also committed to use low order techniques for UXO, where possible (CoT68, full wording in Volume 1, Annex 5.3: Commitments Register).

Policy	Key provisions	How and where considered for site selection
NW-UWN-2	Proposals that result in the generation of impulsive or non-impulsive noise must demonstrate that they will, in order of preference: a) avoid b) minimise c) mitigate - adverse impacts on highly mobile species so they are no longer significant. If it is not possible to mitigate significant adverse impacts, proposals must state the case for proceeding.	As detailed in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure of the ES, design changes following PEIR, i.e. the removal of the OSPs and the removal of the Morgan offshore booster substation removes piling from the Transmission Assets project design. The Applicants have also committed to use low order techniques for UXO, where possible (CoT68, full wording in Volume 1, Annex 5.3: Commitments Register).
NW-CE-1	Proposals which may have adverse cumulative effects with other existing, authorised, or reasonably foreseeable proposals must demonstrate that they will, in order of preference: a) avoid b) minimise c) mitigate - adverse cumulative and/or in combination effects so they are no longer significant.	Each of the marine chapters in Volume 2 of the ES consider potential impacts of the Transmission Assets alongside of other plans and projects. Mitigation is proposed for the Transmission Assets in Volume 1, Annex 5.3: Commitments Register to ensure that the contribution of the Transmission Assets to cumulative impacts is minimised.
NW-CBC-1	Proposals must consider cross-border impacts throughout the lifetime of the proposed activity. Proposals that impact upon one or more marine plan areas or terrestrial environments must show evidence of the relevant public authorities (including other countries) being consulted and responses considered.	Each of the marine chapters in Volume 2 of the ES considers transboundary impacts, where relevant. Consultation with public authorities, including other countries, and their responses is detailed in the Consultation Report (document reference E1).

4.3.5 Horlock Rules

4.3.5.1 The relevance of planning and environmental considerations in the siting of onshore substations was set out by the Central Electricity Generating Board and more recently reviewed and adopted by National Grid Electricity Transmission (NGET) in the 'Horlock Rules'. The Horlock Rules are a set of guidelines produced by NGET to assist those responsible for siting and designing substations to mitigate the environmental effects of such developments (National Grid, 2003). They are still referred to and used by National Grid (and endorsed in ministerial decisions and at public inquiry) when undertaking planning studies for new infrastructure although they now have to be considered alongside the relevant policy set out in National Policy Statements, Development Plan documents, local planning policies and other sources.

4.3.5.2 The principles embedded in the Horlock rules are relevant to the Transmission Assets.

4.3.5.3 In the Horlock Rules, NGET states that it will encourage generators to adopt the guidelines when working with NGET on proposals for substations, sealing end compounds or line entries. These guidelines also confirm that consideration must be given to environmental issues at the earliest stage in

order to keep adverse effects to a reasonably practical minimum in the planning of new substations.

4.3.5.4 **Table 4.6** summarises the Horlock Rules and the Transmission's Assets approach to them.

Table 4.6: Transmission Assets application of the Horlock Rules

Overall system options and site selection	Transmission Assets approach
In the development of system options including new substations, consideration must be given to environmental issues from the earliest stage to balance the technical benefits and capital cost requirements for new developments against the consequential environmental effects in order to keep adverse effects to a reasonably practicable minimum [Horlock Rules - Section III paragraph 1]	Environmental issues have been considered since the commencement of the site selection process as described in: • Volume 1, Annex 4.1: Selection and refinement of cable landfall; • Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure; and • Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure.
Amenity, cultural or scientific value of sites	
The siting of new substations, sealing end compounds and line entries should as far as reasonably practical seek to avoid altogether internationally and nationally designated areas of the highest amenity, cultural or scientific value by the overall planning of the system connections [Horlock Rules - Section III paragraph 2].	The site selection process has considered designated sites including those designated for ecological, landscape and historic environment within: • Volume 1, Annex 4.1: Selection and refinement of cable landfall; • Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure; and • Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure. All internationally and nationally designated sites have been avoided as part of onshore substation site selection.
Areas of local amenity value, important existing habitats and landscape features including ancient woodland, historic hedgerows, surface and ground water sources and nature conservation areas should be protected as far as reasonably practicable [Horlock Rules - Section III paragraph 3].	The onshore substation options have sought to protect areas of local amenity value, important existing habitats and landscape features as far as reasonably possible. Further information is set out in the Outline Landscape Management Plan (document reference J2) and Outline Design Principles document (document reference J3). Where impacts cannot be avoided, they are addressed through appropriate mitigation and design as described within this ES and within the Commitments Register.
Local context, land use and site planning	

Overall system options and site selection	Transmission Assets approach
The siting of substations, extensions and associated proposals should take advantage of the screening provided by landform and existing features and the potential use of site layout and levels to keep intrusion into surrounding areas to a reasonably practicable minimum [Horlock Rules - Section III paragraph 4].	The stages to siting the onshore substation is provided in Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure of the ES. Potential benefits from screening around the onshore substations is detailed in Volume 3; Chapter 10: Landscape, and Visual Impact Assessment of this ES. Additional landscape mitigation, including the provision of screening is provided within the Outline Landscape Management Plan (document reference J2) and Outline Design Principles document (document reference J3).
The proposals should keep the visual, noise and other environmental effects to a reasonably practicable minimum [Horlock Rules - Section III paragraph 5].	Visual, noise and other environmental effects have been minimised as far as possible through the site selection process. Further mitigation for potential visual impacts is considered in Volume; Chapter 10: Landscape, and Visual Impact Assessment with noise and vibration impacts considered in Volume 3; Chapter 8: Noise and Vibration of this ES.
The land use effects of the proposal should be considered when planning the siting of substations or extensions [Horlock Rules - Section III paragraph 6].	The use of existing land has been considered within the site selection process; further details on the consideration of land use are contained within: • Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure.
Design	
In the design of new substations or line entries, early consideration should be given to the options available for terminal towers, equipment, buildings and ancillary development appropriate to individual locations, seeking to keep effects to a reasonably practicable minimum [Horlock Rules - Section III paragraph 7].	The effects associated with potential equipment within the substations have been considered in the development of site proposals and through the assessment of environmental effects. Further design details are also provided in Volume 3; Chapter 10: Landscape, and Visual Impact Assessment of this ES.
Space should be used effectively to limit the area required for development consistent with appropriate mitigation measures and to minimise the adverse effects on existing land use and rights of way, whilst also having regard to future extension of the substation [Horlock Rules - Section III paragraph 8].	The initial footprints of the Onshore Substations have been determined based on the Applicants current substation designs. The design of the onshore substations may be subject to further refinement during the detailed design phase, post consent. Note: the reference to the "future extension of the substation" is related to the future extension of National Grid substations. This is not considered as part of the site selection process for the Transmission Assets.
The design of access roads, perimeter fencing, earth shaping, planting and ancillary development should form an integral part of the site layout and design to fit in with the surroundings [Horlock Rules - Section III paragraph 9].	The requirement for access roads, fencing, site levelling, planting and other works (including the need for attenuation ponds) has been taken into account as a part of the maximum design scenario approach as detailed in Volume 1; Chapter 3: Project Description of this ES.
Line Entry	

Overall system options and site selection	Transmission Assets approach
In open landscape especially, high voltage line entries should be kept, as far as possible, visually separate from low voltage lines and other overhead lines so as to avoid a confusing appearance [Horlock Rules - Section III paragraph 10].	The Applicants have not included overhead lines within the project design envelope. All cables will be buried underground, as per CoT12, (full wording in Volume 1, Annex 5.3: Commitments Register).
The inter-relationship between towers and substation structures and background and foreground features should be studied to reduce the prominence of structures from main viewpoints. Where practicable the exposure of terminal towers on prominent ridges should be minimised by siting towers against a background of trees rather than open skylines [Horlock Rules - Section III paragraph 11].	The Applicants have not included overhead lines within the project design envelope. All cables will be buried underground as per CoT12, (full wording in Volume 1, Annex 5.3: Commitments Register).

4.3.6 TCE Cable Route Protocol

4.3.6.1 TCE's Cable Route Protocol (CRP) (described within TCE Cable Route Identification and Leasing Guidelines, 2021) comprises a set of principles and requirements for offshore wind developers in the planning and siting of offshore export cable routes, with the specific purpose of minimising the direct and indirect impacts of cable routing on the marine environment. Compliance with the CRP is a requirement for entry into TCE's transmission assets AfL.

4.3.6.2 The Transmission Assets has considered the CRP throughout the site selection process. Relevant requirements to the site selection process and how these principles have been met are described in **Table 4.7**.

Table 4.7: Cable Route Protocol (CRP) requirements and where addressed in the Site Selection chapter

CRP Requirement number	Requirement	Where this requirement has been addressed
1	Where elements of offshore cable route planning have taken place before a developer has entered into an offshore energy installation AfL with The Crown Estate, these must be clearly set out within the Cable Route Impact Assessment (since The Crown Estate can only enforce compliance with the Requirements of the CRP after the developer has entered into the installation AfL).	Cable Route Impact Assessments (CRIAs) were submitted independently to The Crown Estate.
2	Under this CRP, developers must undertake consultation with Statutory Nature Conservation Bodies (SNCBs) throughout the offshore route selection and refinement process. The nature of this consultation will vary from project to project, but to be effective the consultation should be ongoing throughout the process and both parties must provide clear information and advice within the agreed timeframes.	The Applicants have consulted with SNCBs on the proposed offshore cable routing. Details of consultation undertaken is described in **section 4.4**.

CRP Requirement number	Requirement	Where this requirement has been addressed
	Developers must demonstrate…that clear information on the offshore export cable route has been provided for SNCBs at appropriate stages in cable route planning and that SNCB advice has been sought at appropriate stages (whether through formal or informal consultation). It is acknowledged that some elements of the cable planning process are time-constrained and that delays in receiving input from consultees can result in difficulties for developers.	
3	When submitting high level environmental information to NGESO as part of the CION process, developers must have considered a comprehensive picture of all offshore/coastal SACs, SPAs, MCZS, SSSIs/ASSIs and Ramsar sites for the various possible offshore transmission connection routes. They must also identify the sensitivities of each of these to impacts from export cabling (either through consultation with SNCBs or by use of the information available from conservation advice packages for sites). Within the CRIA, developers must provide evidence of such SNCB input (whether direct or indirect) to the high-level environmental information provided for the CION process.	The CION process was replaced by the Holistic Network Design (HND) Review for Round 4 projects. However, the Applicants did engage with NGESO as part of the HNDR process and provide feedback on the presence of designated sites around the Irish Sea and sensitivity of these sites to export cabling considering the conservation advice packages for designated sites.
4	In planning survey work on potential cable routes (or exploratory works within a cable route Area of Search (AoS)), developers must consult with SNCBs to ensure that they have the opportunity to provide feedback on the scope and adequacy of the overarching survey plan. Consultation on the survey plan will be required in order to obtain individual survey licences.	Consultation on the scope of the offshore export cable surveys was undertaken with relevant SNCBs as part of the required marine licences for the Transmission Assets surveys.
5	Developers must demonstrate…that planned offshore cable routes are in alignment with the relevant policies and principles within the applicable National Policy Statements and relevant marine plan(s) (including draft marine plans). Particular note should be taken of cable-specific policies within marine plans.	See **section 4.3** of this document which documents how the relevant National Policy Statements and marine plans (North West Offshore Marine Plan) have been considered within the site selection process.
6	Developers must demonstrate… that planned cable corridors have taken into account the outcomes of the relevant plan-level HRA (where applicable) as described in the Report to Inform Appropriate Assessment. This includes any specific requirements on cable planning and any geographically specific findings in which examples of appropriate project-level cable mitigations.	**Section 4.2.3** of this site selection chapter demonstrates how the Applicants have taken into account the outcomes of the Plan Level HRA in site selection.

CRP Requirement number	Requirement	Where this requirement has been addressed
7	Developers must demonstrate… that they have had regard to documents and advice produced by Statutory Nature Conservation Bodies (SNCBs) in relation to offshore export cabling, including current best practice guidance. Developers must also have regard to the outcomes of relevant research programmes which are available. This may include (amongst other things) research into the impacts of cabling, the recovery of habitats and the efficacy of mitigation measures.	**Section 4.3.7** of this document demonstrates that the Applicants have had regard to advice produced by SNCBs for the offshore export cable guidance for Round 4 developers.
8	The developer must request a The Crown Estate GIS proximity check of its proposed AoS and have regard to the findings of this check in cable route planning. This includes identification of any requirement for minimum separation distances from existing assets and any potential requirement to negotiate proximity agreements with other tenants. Iterative checks on refinements of the AoS are recommended but are only a requirement where there is a change in location or an increase in size of the AoS.	GIS proximity checks were undertaken independently by The Crown Estate with marine users identified and considered within the site selection process as detailed in Volume 1, Annex 4.2: Selection and refinement of offshore infrastruture.
9	Within the offshore AoS the developer must identify (and map where possible) the following, which are to be given significant weight in cable route planning: • Habitats Regulations sites (SACs, SPAs and Ramsar sites, whether fully designated or not) • MCZs and SSSIs (whether fully designated or not) • Features of these Protected Sites (including priority habitats and species) • Protected Sites with conservation objectives to recover features to favourable condition • Areas of known Annex I habitat outside protected areas but within the AoS • Habitats that are known to be irreplaceable or very difficult to replace (e.g. chalk reef) Having undertaken this exercise, the developer must consult with SNCBs (and, where appropriate, other relevant non-statutory consultees) to ensure that the best available evidence about the environment and specific sensitivities has been incorporated into the AoS mapping, and that the consultees have the opportunity to provide additional narrative information about particularly sensitive areas or areas of concern to them.	The sites referred to within Requirement 9 are considered within: • Volume 1, Annex 4.1: Selection and refinement of cable landfall; • Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure; • Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure; • Information to Support Appropriate Assessment (document reference E3); • HRA Stage 1 Screening Report (document reference E2); and • Stage 1 Marine Conservation Zone Assessment (document reference E4). The Applicants engaged with SNCBs through the Evidence Plan Process (EPP) and Expert Working Groups (EWGs) to ensure the most recent evidence around designated sites was taken into assessments and that SNCBs had an opportunity to flag any concerns regarding the site selection process which have been given weight

CRP Requirement number	Requirement	Where this requirement has been addressed
		within the offshore cable route planning as detailed in **section 4.4.**
10	Developers must prepare an outline view of the possible cabling infrastructure requirements (acknowledging that this may change as the design of the project evolves). The outline should include the potential number and capacities of the export cables with their indicative spacing requirements and the additional structures (e.g. substations and converter stations) which the project is likely to require. Where there are uncertainties in the required infrastructure these should be set out (with reasons). Within the AoS, developers must identify (and where possible, map) hard engineering constraints such as existing infrastructure/licence areas, challenging ground conditions and sections of the coast where landfall is not possible. Developers should also form an initial view on the likely areas within the AoS where cable preparation works and/or cable protection may be needed (noting that this information is likely to change as survey work is undertaken). Where possible, this information should be presented alongside the environmental information from Requirement 9. The developer must consult with SNCBs (and, where appropriate, non-statutory consultees) to seek to ensure that they understand the likely infrastructure requirements and constraints and that they have the opportunity to raise any areas of concern about placement of infrastructure (including cable protection) and specific Protected Sites/features.	Volume 1, Chapter 3: Project Description of this ES identifies cable infrastructure requirements for the Transmission Assets. Hard engineering constraints have been considered throughout the site selection process and are described within the annexes: • Volume 1, Annex 4.1: Selection and refinement of cable landfall; • Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure; and • Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure. Details of discussions had with SNCBs on offshore infrastructure requirements, cable preparation works and/or cable protection and any impacts on designated sites are summarised in **section 4.4** of this chapter.
11	Developers must demonstrate…. That they have undertaken regular consultation with SNCBs as the cable route selection process progresses. In line with the requirements for pre-application consultation, communication should be comprehensively documented but need not take the form of formal reporting. The frequency of communication is a matter for agreement between developers and consultees, taking into account consultee resource constraints. The consultation must encompass the entire process from AoS to final route selection and should include communication of the evolving understanding of cabling infrastructure requirements (including cable protection) as well as the evolving understanding of environmental and technical constraints on the cable route. Consultees must	Stakeholder engagement undertaken for the Transmission Assets, including where consultees have been given the opportunity to comment on proposals is described within **section 4.4** of this chapter.

CRP Requirement number	Requirement	Where this requirement has been addressed
	be given the opportunity to comment on proposals.	
12	Where SNCBs provide advice and guidance during the cable route planning process this must be clearly documented and considered in cable route decision-making. The way in which SNCB advice has been incorporated into the cable route plan must be documented. If a developer chooses not to follow SNCB advice, or there a developer disagrees with the conclusions of the SNCB, it must provide clear and detailed justification of this.	SNCB advice has been sought throughout the site selection process and is described in **section 4.4**
13	The expectation is that the cable route should avoid the risk of harm to Habitats Regulations sites and other Protected Sites. Where this is not possible and a developer seeks to rely on mitigation measures for engineering or commercial reasons, the developer must be able to demonstrate that appropriate weight has been given to environmental considerations in the cable route evaluation process. In practice, this means that the developer must demonstrate that the potential impact of the route on Protected Sites has been carefully considered throughout the process and that all reasonable efforts have been made to avoid environmental impacts and adverse effects on the integrity of sites. If avoidance is not possible then this must be clearly justified (including reasons why alternative cable routes are unsuitable), only then can mitigation be considered. Advice given by SNCBs on the efficacy of proposed mitigation should be provided where available and the mitigation must be capable of being secured via the project consents.	The Applicants have considered designated and protected sites within the refinement of the Transmission Assets as detailed in: • Volume 1, Annex 4.1: Selection and refinement of cable landfall; • Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure; • Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure; • Information to Support Appropriate Assessment (document reference E3); • HRA Stage 1 Screening Report (document reference E2); and • Stage 1 Marine Conservation Zone Assessment (document reference E4). Proposed offshore mitigation is referenced within the annexes and detailed in full within Volume 1: Annex 5.3: Commitments Register of the ES.
14	Within the CRIA the Developer must either demonstrate that the following activities have been undertaken, or present a coherent programme for their completion: • Regulation 12 consultation on a Preliminary Environmental Information Report which includes the cable route or wider area of search; A full assessment of the environmental impacts of the cable route within an Environmental	PEIR was submitted in October 2023 and subsequent consultation undertaken. This chapter forms part of the Environmental Statement submitted to accompany the DCO application with the HRA addressed in the Information to Support Appropriate Assessment (ISAA) (document reference E2).

CRP Requirement number	Requirement	Where this requirement has been addressed
	Statement and/or separate report to inform HRA.	

4.3.7 Statutory Nature Conservation Bodies (SNCB) cable advice for Round 4 developers

4.3.7.1 The SNCB's Natural England (NE) and the Joint Nature Conservation Committee (JNCC) advise on key sensitivities of habitats and Marine Protected Areas in English Waters to offshore wind farm cabling within Proposed Round 4 leasing areas.

4.3.7.2 NE and JNCC issued advice in 2019 on potential cable routes associated with the Round 4 seabed leasing for offshore wind (Natural England & JNCC, 2019). The advice within the document in relation to marine features and Marine Protected Areas (MPAs) was taken into account during siting of the Morgan and Morecambe Transmission Assets. Natural England's report on recommendations for offshore wind cabling was also considered (Natural England, 2018).

4.3.7.3 Key designations and associated sensitivities are outlined for the Irish Sea (Section 5.10, Region 17 Irish Sea) along with pathways by which cable installation, and operation and maintenance activities can interact with and impact them. This is then linked with the SNCB's detailed conservation advice for these receptors. NE and JNCC recommend early engagement from developers when identifying potential cable routes to ensure all key environmental effects and consenting risks are considered. NE and JNCC will work with developers to assist with the application of the avoid-reduce-mitigate hierarchy, if required.

4.3.7.4 Consultation has been ongoing with Natural England and JNCC throughout the design and consideration of potential impacts as detailed in **Table 4.9**, noting that formal responses are provided for all consultation responses received and can be accessed in the Consultation Report (document reference E1). For the Irish Sea, there are seven key designations listed in the Round 4 advice note:

- Solway Firth SAC,
- West of Copeland MCZ,
- West of Walney MCZ,
- Morecambe Bay SAC,
- Shell Flat and Lune Deep SAC,
- Ribble Estuary SAC, and
- Dee Estuary SAC/SPA.

4.3.7.5 Details of how the site selection and design process has avoided or minimised interactions with these designations is detailed in the annexes that accompany this chapter.

4.3.8 Local planning policy

4.3.8.1 The onshore elements of the Transmission Assets are located within the administrative areas of Fylde Council, Blackpool Council, South Ribble Borough Council and Preston City Council (and Lancashire County Council at the County level).

4.3.8.2 **Table 4.8** outlines the main local planning policy documents that are under consideration in the onshore site selection process.

Table 4.8: Summary of local planning policy relevant to this chapter

Policy	Key provisions	How and where considered for site selection
Adopted Fylde Local Plan to 2032 (incorporating Partial Review) (Fylde Council, 2021)	Policy ENV2 – ENV5 sets out Fylde Council's commitment to ensuring the protection and enhancement of biodiversity and geological assets, including areas within the Green Belt. The planning policies gives regards to the nature conservation sites and ecological networks and the need to avoid and mitigate potential impacts. Policy GD2- sets out the provisions for protection and developments within the Green Belt. This is in line with Policy ENV3, Protecting Existing Open Space (Part of the Green Infrastructure network) which sets out the positive community benefits the Green Belt can provide in terms of landscape, amenity and open space.	The design and siting of Transmission Assets has sought to minimise environmental impacts. This is detailed within Volume 1, Annex 4.3: Site selection and refinement of onshore infrastructure. Elements of the Transmission Assets run through areas of Green Belt including both substation sites. This is discussed in the Planning Statement (document reference J28). Further assessment, including mitigation, on geological assets is considered in Volume 3; Chapter 1: Geology, hydrogeology and ground conditions of this ES, with ecology considered in Volume 3; Chapter 3: Onshore ecology and nature conservation of this ES, and potential landscape impacts considered in Volume 3, Chapter 10: Landscape and visual resources of this ES.
Blackpool Local Plan Part 1: Core Strategy 2012-2027 (Blackpool Council, 2016).	The Council is committed to protecting and maintaining international, national and local sites of biological and geological conservation importance including Site of Special Scientific Interest (SSSI) and safeguarded Blackpool Biological Heritage Sites (BHSs). Measures that seek to preserve, restore and enhance local ecological networks and priority habitats/ species will be required where necessary.	The site selection process has considered how the Transmission Assets have been sited to avoid/minimise potential environmental considerations on designated sites as described in: • Volume 1, Annex 4.1: Selection and refinement of cable landfall; and • Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure. Further assessment of geological assets is considered in in Volume 3; Chapter 1: Geology, Hydrogeology and Ground Conditions of this ES, with ecology considered in Volume 3; Chapter 3: Onshore Ecology and Nature Conservation of this ES.

Policy	Key provisions	How and where considered for site selection
Blackpool Local Plan 2001-2016 – Saved Policies (Blackpool Council, 2006).	This sets out the council's existing policies (Policies NE1, NE2, NE4, NE5, NE6, NE9, NE10) and proposals for developments with respect to conserving the natural environment. This is to ensure that designation of areas, protected species, coast and foreshore and flood risk areas are protected and any damaging impact on the environment or local amenity arising from the proposed development can be overcome	The site selection process has considered how the Transmission Assets have been sited to avoid/ minimise potential environmental considerations on designated sites as described in • Volume 1, Annex 4.1: Selection and refinement of cable landfall; and • Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure. Further assessment on ecology is considered in Volume 3; Chapter 3: Onshore Ecology and Nature Conservation of this ES, and flood risk is considered in Volume 3; Chapter 2: Hydrology and Flood Risk of this ES.
South Ribble Local Plan 2012-2026 (South Ribble Borough Council, 2015).	Policy G1 sets out the provisions for granting planning permission for the construction of new buildings within the Green Belt in line with the NPPF. Development must protect, enhance or restore landscape character as appropriate. Policy 16 to 21 sets out some core policies to Secure Sustainable Development for the protecting & enhancing the quality of the natural & built environment including heritage assets, design of new buildings, green infrastructure, areas of separation and major open space, countryside management and access, landscape character areas, and biodiversity and geodiversity	The site selection has considered how the Transmission Assets have been sited to avoid (where practicable) areas within the Green Belt, and to minimise potential environmental considerations. This is detailed within Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure and discussed in the Planning Statement (document reference J28). Further assessment of ecology is considered in Volume 3; Chapter 3: Onshore Ecology and Nature Conservation of this ES, and mitigation for potential landscape impacts considered in Volume 3; Chapter 10: Landscape, and Visual Impact Assessment of this ES.
The Preston Local Plan 2012-26 (Site Allocations and DPD (Preston City Council, 2015).	Policy EN11- Species Protection and GB1- Green Belt. The council is committed to supporting developments that protects ecological species. Within Green Belt areas national policies for development in the Green Belt will be applied.	The site selection has considered how the Transmission Assets have been sited to avoid (where practicable) areas within the Green Belt, and to avoid/minimise potential environmental considerations on ecological species. This is detailed within Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure and discussed in the Planning Statement (document reference J28). Further assessment of ecology is considered in Volume 3; Chapter 3: Onshore Ecology and Nature Conservation of this ES, and mitigation for potential landscape impacts considered in Volume 3; Chapter 10: Landscape, and Visual Impact Assessment of this ES.

Policy	Key provisions	How and where considered for site selection
Lancashire County Council Local Flood Risk Management Strategy for Lancashire 2021-2027 (Blackpool Council, Blackburn with Darwen Council and Lancashire County Council, 2021).	Theme 1 to 6 of this strategy by Lancashire's Lead Local Flood Authorities (LLFA) set out actions to manage the local risk to people and property	The site selection process has considered how the Transmission Assets have been sited to avoid/minimise potential flood risk as described within Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure. Further assessment of flood risk is considered in Volume 3; Chapter 2: Hydrology and Flood Risk Impact Assessment of this ES.
Joint Lancashire Minerals and Waste Development Framework Core Strategy DPD: Managing our Waste and Natural Resources (Blackpool Council, Blackburn with Darwen Council and Lancashire County Council, 2009).	Policy CS1 on Safeguarding Lancashire's Mineral Resources details how mineral resources with the potential for extraction now or in the future within Mineral Safeguarding Areas will be protected from permanent sterilisation by other development.	The site selection has identified areas within mineral safeguarding areas and how the Transmission Assets have been sited to avoid such areas where practicable as described within Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure. Further assessment of geological assets is considered in in Volume 3; Chapter 1: Geology, Hydrogeology and Ground Conditions of this ES.
Joint Lancashire Minerals and Waste Local Plan: Site Allocation and Development Management Policies (Blackpool Council, Blackburn with Darwen Council and Lancashire County Council, 2013).	Policy M2 explains that within mineral safeguarding areas identified, planning permission will not be supported for any form of development that is incompatible by reason of scale, proximity and permanence with working the minerals, unless the applicant can demonstrate to the satisfaction of the local planning authority.	The site selection has identified mineral safeguarding areas and how the Transmission Assets have been sited to avoid such areas where practicable as described within Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure. Further assessment of geological assets is considered in in Volume 3; Chapter 1: Geology, Hydrogeology and Ground Conditions of this ES.

4.4 Consultation and engagement

4.4.1.1 Stakeholder engagement and public consultation is recognised as vitally important for shaping the approach to development. Engagement has been undertaken with a wide range of stakeholders to refine the siting and design of the Transmission Assets. This has been done in parallel with the consideration of wider spatial constraints and environmental factors.

4.4.1 Scoping

4.4.1.1 In October 2022, the Applicants submitted a Scoping Report to the Planning Inspectorate, which described the scope and methodology for the environmental technical studies being undertaken to provide an assessment of any likely significant effects for the construction, operation and maintenance and decommissioning phases of the Transmission Assets. The

Applicants received the Scoping Opinion in December 2022 (The Planning Inspectorate, 2022).

4.4.1.2 Following Scoping, two phases of non-statutory consultations were undertaken. One ran from 2nd November to 13th December 2022 at the scoping phase and another ran between 18th April and 4th June 2023 prior to submission of the PEIR. These included events hosted across different locations throughout north west England and the Isle of Man where local residents and stakeholders could learn more about the Transmission Assets, and the Applicants sought feedback on the site selection process and obtained local knowledge about the surrounding area. A summary of consultation in relation to site selection is given in **Table 4.9**.

4.4.1 Section 42 responses

4.4.1.1 The preliminary findings of the EIA process were published in the Preliminary Environmental Information Report (PEIR) in October 2023. The PEIR was prepared to provide the basis for formal statutory consultation under the Planning Act 2008. This included consultation with statutory bodies under section 42 of the Planning Act 2008 (**Table 4.9**).

4.4.2 Other Consultation Targeted February 2024

4.4.2.1 The Applicants and their land agents have continued to engage with affected landowners and/or land agents within the Transmission Assets Order Limits. A number of onshore cable route change proposals as well as changes to the substation platforms, construction compounds and access tracks have been put forward by those affected by the proposed onshore infrastructure, and the Applicants has been able to incorporate a number of those suggestions into refinements of the onshore and landfall infrastructure (as detailed in Volume 2, Annex 4.1: Selection and refinement of the cable landfall and Volume 2, Annex 4.3: Selection and refinement of onshore infrastructure). The Applicants has also engaged with landowners regarding survey access through consultation meetings. Letters were sent to all affected parties offering to meet to discuss the Transmission Assets.

4.4.3 Evidence Plan Process

4.4.3.1 The Applicants have an ongoing dialogue with technical stakeholders through the Evidence Plan Process (EPP) to ensure the most recent evidence is being taken into assessments and that stakeholders had an opportunity to raise issues and suggestions regarding the site selection process. The process provided an opportunity for stakeholders to advise on proposals at an early stage to help mitigate any potential significant effects. As part of this, a steering group was established along with Expert Working Groups (EWGs) to discuss topic-specific issues with relevant stakeholders. EWGs were established for the following topics:

- Physical processes, benthic ecology and fish and shellfish ecology
- Marine mammals
- Offshore ornithology

- Onshore historic environment
- Onshore ecology and ornithology
- Traffic and transport
- Noise and vibration, air quality and human health
- Hydrology and flood risk

4.4.3.2 In addition to the Evidence Plan Process, a Maritime Navigation Engagement Forum (MNEF) and Archaeology Engagement Forum (AEF) were established.

4.4.4 Summary of consultation responses received

4.4.4.1 A summary of the key comments raised during consultation activities relevant to site selection is provided in **Table 4.9**, together with how these issues have been considered in the site selection process.

4.4.4.2 All statutory consultation feedback provided by stakeholders and members of the public regarding site selection and alternatives, alongside the Applicants' response can be seen in Annex E1.16 of the Consultation Report and is outlined in section 4.7.9 of the Consultation Report (document reference E1.16 and E1, respectively).

Table 4.9: Summary of key consultation activities undertaken for the Transmission Assets relevant to site selection

Date	Consultee	Discussion Topics and Consideration	How and where considered for site selection
November to December 2022	Morgan and Morecambe Offshore Wind Farms: Transmission Assets Non-statutory consultation	Key themes from the feedback include suggestions for the onshore cable route to explore using the bed of the River Ribble, follow the line of existing infrastructure (e.g. highways including the M55, and the Blackpool branch line rail routes from Preston to Blackpool), potential impacts during construction and operation of the substation, visual impact of the onshore substations and impact on onshore ecology.	The feedback received during the consultation has subsequently been utilised to further refine the site selection process for the landfall and onshore infrastructure with further details provided in Annex 4.1: Selection and refinement of cable landfall which includes consideration of cables within the River Ribble and Annex 4.3: Selection and refinement of onshore infrastructure. Further information on assessment with respect to these themes can be found in Volume 3; Chapter 3: Onshore Ecology and Nature Conservation, Chapter 4: Onshore and intertidal Ornithology, and Volume 4; Chapter 1: Landscape, and Visual Resources assessment of this ES.
March 2023	Transmission Assets Physical Processes, Benthic Ecology and Fish and Shellfish Ecology Expert Working Group 1	An overview of the Transmission Assets and site selection process to date was presented. Stakeholders queried how the River Ribble would be crossed to get to Penwortham substation location and indicated that they would not support trenching within the riverbed.	Further information regarding the offshore infrastructure site selection and consideration of alternatives can be found in **section 4.8** and within Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure of the ES. Further information on the River Ribble crossing is provided in Annex 4.3: Selection and refinement of onshore infrastructure, nothing that there is a Commitment (CoT90) to use trenchless techniques (direct pipe or micro tunnel) under the River Ribble.
March 2023	Transmission Assets Onshore Ecology, Onshore and Intertidal Ornithology EWG Meeting 1	An overview of the route planning and site selection process was presented.	Further information regarding the onshore infrastructure site selection and consideration of alternatives is summarised in **section 4.9** with further details provided in Volume 1, Annex 4.3: Site selection and refinement of onshore infrastructure.

Date	Consultee	Discussion Topics and Consideration	How and where considered for site selection
March 2023	Transmission Assets Traffic and Transport EWG Meeting 1	An overview of the onshore Route Planning and Site Selection process was presented.	Further information regarding the onshore infrastructure site selection and consideration of alternatives is summarised in **section 4.9** with further details provided in Volume 1, Annex 4.3: Site selection and refinement of onshore infrastructure.
April 2023	Transmission Assets Marine Mammals Expert Working Group 1	An overview of the Transmission Assets and site selection process to date was presented.	Further information regarding the offshore infrastructure site selection and consideration of alternatives can be found in **section 4.8** and within Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure of the ES.
April 2023	Transmission Assets Noise and Vibration EWG Meeting 1	An overview of the route planning and site selection process was presented.	Further information regarding the onshore infrastructure site selection and consideration of alternatives is summarised in **section 4.9** with further details provided in Volume 1, Annex 4.3: Site selection and refinement of onshore infrastructure.
April to June 2023	Morgan and Morecambe Offshore Wind Farms: Transmission Assets Non-statutory consultation	The key themes which emerged from the consultation included proximity to neighbouring communities, visual impact of the onshore substations, flood risk, ornithology, and potential impacts on landowners. The key themes which emerged specific to the onshore cable corridor included potential impacts on landowners, traffic associated with construction, interactions with Blackpool Airport, proximity to neighbouring communities, flood risk, and ornithology.	The feedback received during this period of non-statutory consultation has subsequently been utilised to further refine the site selection process for the onshore substations and cable corridor provided in **section 4.9** and **section 4.10**. Further information on assessment with respect to these themes can be found in Volume 3; Chapter 2: Hydrology and Flood Risk, Chapter 3: Onshore Ecology and Nature Conservation, Chapter 4: Onshore and intertidal Ornithology, Chapter 7: traffic and Transport, and Volume 4; Chapter 1: Landscape, and Visual Resources assessment of this ES.

Date	Consultee	Discussion Topics and Consideration	How and where considered for site selection
May 2023	Evidence Plan Steering Group Meeting with: Planning Inspectorate Natural England Marine Management Organisation Historic England South Ribble Council	Presentation and discussion on site selection process for offshore cable route including interaction with designated sites. Feedback received from Natural England about concerns of locating the booster station within the Liverpool Bay SPA.	Consideration of the Transmission Assets Cable Corridor route through designated sites is summarised in **section 4.8** and **section 4.9** with further details provided in Volume 1, Annex 2: Selection and refinement of the offshore infrastructure and Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure. The Morgan Offshore Booster Station was removed from the project design following PIER to avoid possible impacts on the Liverpool Bay SPA, Fylde MCZ, navigation, and existing oil and gas platforms. Further details are provided in Volume 1, Annex 2: Selection and refinement of the offshore infrastructure.
May 2023	Transmission Assets Hydrology and Flood Risk EWG Meeting 1	An overview of the route planning and site selection process was presented.	Further information regarding the onshore infrastructure site selection and consideration of alternatives is summarised in **section 4.9** with further details provided in Volume 1, Annex 4.3: Site selection and refinement of onshore infrastructure.
May 2023	Stena Line Stakeholder meeting	The main concern raised with respect to the Transmission Assets was the potential for the booster station to be placed as an isolated structure causing deviation and allision risk, rather than being located adjacent to the Morecambe Offshore Windfarm: Generation Assets.	The Morgan Offshore Booster Station was removed from the project design following PIER to avoid possible impacts on the Liverpool Bay SPA, Fylde MCZ, navigation, and existing oil and gas platforms. Further details are provided in Volume 1, Annex 2: Selection and refinement of the offshore infrastructure.
May 2023	Trinity House Stakeholder meeting	It was highlighted that the Morgan Offshore Wind Project offshore booster station has potential to impact existing commercial routes, for example the dredger routes to/from Liverpool.	The Morgan Offshore Booster Station was removed from the project design following PIER to avoid possible impacts on the Liverpool Bay SPA, Fylde MCZ, navigation, and existing oil and gas platforms. Further details are provided in Volume 1, Annex 2: Selection and refinement of the offshore infrastructure.

Date	Consultee	Discussion Topics and Consideration	How and where considered for site selection
June 2023	Oil and gas operators (collectively) Stakeholder meeting	The Morgan Offshore Wind Project offshore booster station has potential to be located such that the Calder platform is put into a 'shadow zone' for the early radar detection monitoring system which monitors allision risks. Micro-siting of the Morgan Offshore Wind Project offshore booster station location to minimise impact to nearby oil and gas platforms/wells should be considered.	The Morgan Offshore Booster Station was removed from the project design following PIER to avoid possible impacts on the Liverpool Bay SPA, Fylde MCZ, navigation, and existing oil and gas platforms. Further details are provided in Volume 1, Annex 2: Selection and refinement of the offshore infrastructure.
June 2023	Transmission Assets Offshore Ornithology Expert Working Group 1	An overview of the Transmission Assets and site selection process to date was presented.	Further information regarding the offshore infrastructure site selection and consideration of alternatives is summarised in **section 4.8** with further details provided in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure of the ES.
June 2023	Transmission Assets Marine Archaeology AHEF	An overview of the Transmission Assets and site selection process to date was presented.	Further information regarding the offshore infrastructure site selection and consideration of alternatives is summarised in **section 4.8** with further details provided in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure of the ES.
July 2023	Transmission Assets Physical Processes, Benthic Ecology and Fish and Shellfish Ecology Expert Working Group 2	An update on the Transmission Assets project, including offshore site boundaries, in the lead up to submission to PEIR.	Further information regarding the offshore infrastructure site selection and consideration of alternatives is summarised in **section 4.8** with further details provided in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure of the ES.
August 2023	Transmission Assets Marine Mammals Expert Working Group 2	An update on the Transmission Assets project, including offshore site boundaries, in the lead up to submission to PEIR.	Further information regarding the offshore infrastructure site selection and consideration of alternatives is summarised in **section 4.8** with further details provided in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure of the ES.

Date	Consultee	Discussion Topics and Consideration	How and where considered for site selection
August 2023	Transmission Assets Offshore Ornithology Expert Working Group 2	An update on the Transmission Assets project, including offshore site boundaries, in the lead up to submission to PEIR. Lighting of offshore substation platforms and booster station were raised.	Further information regarding the offshore infrastructure site selection and consideration of alternatives is summarised in **section 4.8** with further details provided in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure of the ES. The Morgan Offshore Booster Station was removed from the project design following PIER so there is no surface piercing infrastructure that would require lighting. Further details are provided in Volume 1, Annex 2: Selection and refinement of the offshore infrastructure.
August 2023	Transmission Assets Historic Environment EWG Meeting 2	An update on the Transmission Assets project, including the site selection process undertaken to date regarding the Order Limits and potential substation zones.	Further information regarding the onshore infrastructure site selection and consideration of alternatives is summarised in **section 4.9** with further details provided in Volume 1, Annex 4.3: Site selection and refinement of onshore infrastructure.
August 2023	Transmission Assets Hydrology and Flood Risk EWG Meeting 2	An update on the Transmission Assets project, including the site selection process undertaken to date regarding the Order Limits and potential substation zones.	Further information regarding the onshore infrastructure site selection and consideration of alternatives is summarised in **section 4.9** with further details provided in Volume 1, Annex 4.3: Site selection and refinement of onshore infrastructure.
September 2023	Transmission Assets Onshore Ecology, Onshore and Intertidal Ornithology EWG Meeting 2	An update was provided on the site selection undertaken to date. This included the route options near to the Queensway Farmland Conservation area, laying the cables within the public highway surrounding Blackpool Airport and the substation zones.	Further information regarding the onshore infrastructure site selection and consideration of alternatives is summarised in **section 4.9** with further details provided in Volume 1, Annex 4.3: Site selection and refinement of onshore infrastructure.

Date	Consultee	Discussion Topics and Consideration	How and where considered for site selection
September 2023	Transmission Assets Traffic and Transport EWG Meeting 2	An update was provided on the site selection undertaken to date. This included the route options near to the Queensway Farmland Conservation area, laying the cables within the public highway surrounding Blackpool Airport and the substation zones.	Further information regarding the onshore infrastructure site selection and consideration of alternatives is summarised in **section 4.9** with further details provided in Volume 1, Annex 4.3: Site selection and refinement of onshore infrastructure.
November 2023	Natural England – Section 42	From experience on other windfarms HDD can fail on occasion, the applicant should ensure that the worst case scenario at landfall takes this into consideration. This should consider impacts on Lytham St. Annes Dunes SSSI with sufficient baseline collected to assess impact post construction and identify remedial measures where needed.	At PEIR, the landfall installation methodology was by Horizonal Directional Drilling (HDD) or equivalent trenchless techniques. For the DCO application, the Applicants have selected the direct pipe trenchless technique. Direct pipe results in a shorter installation duration and less interaction with the beach (up to two weeks of beach works per cable) which minimises disruption to public access and environmental impacts upon designated features of the Ribble and Alt Estuary Special Protection Area (SPA), Ribble and Alt Estuary Ramsar site, Ribble Estuary SSSI, and Lytham St Annes Dunes SSSI. Further details are provided in Volume 1, Annex 4.1: Selection and refinement of cable landfall.

Date	Consultee	Discussion Topics and Consideration	How and where considered for site selection
November 2023	Natural England – Section 42	Natural England seeks confirmation that the proposed HDD works beneath the Ribble Estuary will take place 'bank to bank' (i.e., no works will take place in the water, and entry and exit points for drilling will be terrestrially), thereby mitigating the potential impacts on MCZ Smelt. We also note that the assessment presents no contingency / alternative measures should HDD not be used or fails. The submitted ES should confirm how HDD works will operate to confirm whether there will indeed be potential impacts on Smelt, a feature of the Ribble Estuary MCZ. We also advise the developer should consider impacts of alternate methods should HDD not be feasible or fail.	The Ribble Estuary crossing will be undertaken by direct pipe or micro tunnel trenchless installation techniques, and the works will be bank to bank (i.e. no works will take place in the water) (CoT90 within the Commitments Register in Volume 1, Annex 5.3). There will be no potential for impacts to the smelt feature of the Ribble Estuary MCZ which could undermine the conservation objectives.

Date	Consultee	Discussion Topics and Consideration	How and where considered for site selection
November 2023	Natural England – Section 42	Natural England indicated that the Maximum Design Scenario's (MDS) for sandwave clearance and other seabed preparation activities (within and outside of protected areas) is large. While we support the use of sandwave levelling as a form of mitigation measure to reduce the likelihood of using cable protection; there is a considerable amount of sandwave clearance and seabed preparation footprint proposed. We advise that all efforts should be made to avoid areas of sandwaves or minimise the need for clearance by micro-routing cables. Therefore, we encourage refinement of the MDS as much as possible using project specific acoustic data. Full consideration should also be given to relocation of any disposal material and impacts that may have. We advise where possible disposal is within area of similar sediment type and within the same sediment system.	Post-PEIR design refinements have reduced the amount of sandwave clearance across the Transmission Assets as a whole to 9% of the entire route (reduced from 60% for Morgan Offshore Wind Project and 30% for Morecambe Offshore Windfarm). Further commitments have been made to reduce these parameters even further within the Fylde MCZ to up 5% of the route through the Fylde MCZ (CoT47). Details of the final parameters are provided in Volume 1, Chapter 3: Project description of the ES.

Date	Consultee	Discussion Topics and Consideration	How and where considered for site selection
November 2023	Natural England – Section 42	Where the cable corridor crosses an area of high-density boulders and coarse material, we recommend the developer considers micro-siting if there is capacity within the planned cable corridor. We note that the developer has stated boulder clearance would occur within the footprint of installation activities. All efforts to avoid areas of boulders or minimise the need for boulder clearance by micro-siting should be explored through a boulder clearance methodology and stated within the Application. Placement of boulders should be carefully considered to minimise impact on sediment movement.	As detailed in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure, a micrositing allowance of 500 m has been added to either side of the cable corridors for mircrositing of cables around seabed features, including boulders.
November 2023	Natural England – Section 42	We note that there is a possibility that all or part of the Offshore Service Platforms (OSPs) could be classed as part of the Generation Assets or the Transmission Assets. We advise that this optionality should ideally be resolved prior to the application and assessed within the relevant ES. The applicant to clarify which aspect of the proposed project the OSPs fall under (i.e. Generation or Transmission Assets), this should then be refined and assessed within the relevant ES.	As detailed in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure, the six OSPs included in the Transmission Assets PEIR were removed from the project design. The OSPs are now solely included in the Morgan Offshore Wind Project: Generation Assets DCO and the Morecambe Offshore Windfarm: Generation Assets DCO.

Date	Consultee	Discussion Topics and Consideration	How and where considered for site selection
November 2023	Natural England – Section 42	The MDS for OSPs is high when compared to other projects of a similar scale (i.e. 6 x OSPs, 1 booster station). We advise that this is refined. We note that for the Morgan Offshore Wind Project, the developer has included two different MDS options for OSPs. Natural England advise that the preferred option would be to have 1 large OSP rather than 4 small OSP as this will have a smaller footprint and therefore least impact on the seabed. Clarify and refine OSP parameters for the ES submission. Include seabed preparation parameters for the areas for foundations.	As detailed in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure, the six OSPs included in the Transmission Assets PEIR were removed from the project design. The OSPs are now solely included in the Morgan Offshore Wind Project: Generation Assets DCO and the Morecambe Offshore Windfarm: Generation Assets DCO.
November 2023	Natural England – Section 42	The parameters for cable crossings have not been defined, NE acknowledges the developer needs to confirm crossings with the asset owner. However, when this information is known, please provide further information on MDS parameters for cable crossing (i.e. indicative number of crossings, specific locations, overlap with MPAs etc) and methodology in line with best practise guidance	An offshore crossing schedule is provided in Volume 1, Annex 3.1 which details potential crossing across the offshore export cable corridors with further details on the crossings required including within the Fylde MCZ provided in Volume 1, Chapter 3: Project description. Crossings required within the Fylde MCZ are discussed in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure.
November 2023	Natural England – Section 42	The information on indicative MDS for cable crossing dimensions or potential locations of cable crossings is unclear. Natural England advises that further information on cable crossings, including MDS parameters and an indicative schematic is provided in the submitted ES. This should show MDS cable crossing cross-section and plan, and also a map identifying potential cable crossing locations, if possible.	An offshore crossing schedule is provided in Volume 1, Annex 3.1 which details potential crossing across the offshore export cable corridors with further details provided in Volume 1, Chapter 3: Project description.

Date	Consultee	Discussion Topics and Consideration	How and where considered for site selection
November 2023	Natural England – Section 42	We advise that the avoid, reduce, mitigate hierarchy should be employed to reduce impacts to the MCZ, drawing on best practice guidance for cable installation produced by NE and JNCC. We advise that if the level of interaction with Fylde MCZ cannot be avoided, the next stage of the mitigation hierarchy would be for the project to minimise the amount of cable protection within the designated site	Post-PEIR design refinements have reduced the amount of cable protection across the Transmission Assets as a whole to 10% of the entire route (reduced from 20% for Morgan Offshore Wind Project and 15% for Morecambe Offshore Wind Farms). Further commitments have been made to reduce these parameters even further within the Fylde MCZ to up 3% of the route through the Fylde MCZ, for use as a contingency measure only (CoT47). Further details are provided in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure.
November 2023	Natural England – Section 42	We advise that the Morgan Offshore Booster Station should be located in the area which will have the least impact on Fylde MCZ. where feasible, and the rationale for the chosen location presented in the submitted ES.	The Morgan Offshore Booster Station was removed from the project design following PIER to avoid possible impacts on the Liverpool Bay SPA, Fylde MCZ, navigation, and existing oil and gas platforms. Further details are provided in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure.
November 2023	Natural England – Section 42	Natural England advises that either further information is provided to demonstrate the extent of deep peat in the area of the cable route, or that the proposed developments are amended to avoid any work within these particular areas.	Volume 3, Annex 6.2: Agricultural land classification survey results indicates that where peaty soil horizons were expected and surveyed that these areas were areas of wastage of in drained and intensively farmed areas largely. Deep quality peat was generally not present except in very low lying hollows and avoided where possible. Measures adopted as part of the Transmission Assets to mitigate impacts upon peat deposits includes development of Soil Management Plans in general accordance with the Outline Soil Management Plan (document reference J1.7), which has been submitted with the application for development consent. The Outline Soil Management Plan (document reference J1.7) includes measures to preserve and maintain the quality of soils, including peat deposits during construction of the Transmission Assets.

Date	Consultee	Discussion Topics and Consideration	How and where considered for site selection
November 2023	Spirit Energy – Section 42	Of the two proposed Morgan Booster Station sites, the site proposed to the East of the Morecambe Wind Farm could introduce less impact risk on the Spirit Energy Production UK Limited ("Spirit") infrastructure and the aviation and operational interactions between South Morecambe, DP6 and Calder platforms, however both proposed locations introduce risks given proximity to Spirit's existing operations which will need to be understood and considered.	The Morgan Offshore Booster Station was removed from the project design following PIER to avoid possible impacts on the Liverpool Bay SPA, Fylde MCZ, navigation, and existing oil and gas platforms. Further details are provided in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure.
November 2023	Harbour Energy – Section 42	Comments relating to the location of the Morgan Offshore Wind Project offshore booster station and effects on oil and gas activity.	The Morgan Offshore Booster Station was removed from the project design following PIER to avoid possible impacts on the Liverpool Bay SPA, Fylde MCZ, navigation, and existing oil and gas platforms. Further details are provided in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure.

Date	Consultee	Discussion Topics and Consideration	How and where considered for site selection
November 2023	Northwest Wildlife Trust	The Wildlife Trusts (TWT), of which the NWWTs are members, have long advocated for greater strategic coordination in the planning, design, and delivery of offshore electricity generation together with the offshore and onshore electricity transmission infrastructure needed to distribute electricity generated offshore to where it is needed, to reduce environmental and consenting risks." To this end TWT is represented on the Offshore Transmission Network Review (OTNR) Expert Advisory Group and participates in strategic forums such as the Offshore Wind Evidence and Change (OWEC) Programme. We therefore welcome that the Morecambe and Morgan OWF have been scoped into the Pathways to 2030 Workstream under the OTNR and will therefore share transmission assets.	As detailed in **section 4.5.2**, the Applicants have sought alignment on the siting of infrastructure for the Transmission Assets.
November 2023	Northwest Wildlife Trust	We note that every effort should be taken to limit and reduce cable protection in soft sediments, particularly designated areas and MCZs.	Post-PEIR design refinements have reduced the amount of cable protection across the Transmission Assets as a whole to 10% of the entire route (reduced from 20% for Morgan Offshore Wind Project and 15% for Morecambe Offshore Windfarm). Further commitments have been made to reduce these parameters even further within the Fylde MCZ to up 3% of the route through the Fylde MCZ, for use as a contingency measure only (CoT47). Further details are provided in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure.

Date	Consultee	Discussion Topics and Consideration	How and where considered for site selection
November 2023	Northwest Wildlife Trust	We note that Ribble Estuary MCZ has not been screened in to the MCZ Assessments, however there is direct overlap with the MCZ and onshore search. We would like to see a guarantee that the onshore elements will not impact the waterways of the Ribble Estuary.	The Ribble Estuary crossing will be undertaken by direct pipe or micro tunnel trenchless installation techniques, and the works will be bank to bank (i.e. no works will take place in the water) (CoT90). There will be no potential for impacts to the smelt feature of the Ribble Estuary MCZ which could undermine the conservation objectives.
November 2023	Freckleton Parish Council	The project description presented at PEIR lacked maturity, commensurate with presentation for approval. The reason for dismissal of possible alternative was unclear at PEIR.	The scheme design has been developed through an iterative process and refined throughout the pre-application to achieve a design freeze, including consideration of alternative onshore substation location options. Onshore alternative designs and technology are summarised in **section 4.9** with further details provided in Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure.
November 2023	Fylde Council	Wherever the substations are located, it is essential that the technology used minimises the size of the structures required, and/or delivers the structures in a disaggregated form to minimise their visual impact in the landscape.	Consideration of substation siting is summarised in **section 4.9** and detailed in Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure. An Outline Design Principles (ODP) document accompanies the application for development consent (document reference J3). The ODP sets out the considerations that will inform the detailed design of the final substation.
November 2023	Newton with Clifton Parish Council	The PEIR lacked information for the exit route of the 400kv cables and the two different options for the Morecambe substations.	Further information regarding the onshore infrastructure site selection and consideration of alternatives is summarised in **section 4.9** with further details provided in Volume 1, Annex 4.3: Site selection and refinement of onshore infrastructure.

Date	Consultee	Discussion Topics and Consideration	How and where considered for site selection
November 2023	Morgan and Morecambe Offshore Wind Farms: Transmission Assets statutory consultation public feedback	Key themes from the feedback included the location of the substations, proximity to schools and village boundaries, industrialisation of the countryside, use of Heysham power station site, and disruption to local communities from onshore cable construction activities.	Further information regarding the onshore infrastructure site selection and consideration of alternatives is summarised in **section 4.9** with further details provided in Volume 1, Annex 4.3: Site selection and refinement of onshore infrastructure.
February 2024	Transmission Assets Physical Processes, Benthic Ecology and Fish and Shellfish Ecology EWG Meeting 03	Presented key offshore refinements since PEIR including the removal of the booster station, OSPs and interconnectors from the Transmission Assets DCO application as well reductions to the amounts of sandwave clearance and cable protection in response to S42 comments received. Further information was requested on where cable protection may be required in the Fylde MCZ and for this to be provided in a Cable Burial Risk Assessment. The implementation of the mitigation hierarchy of avoid, minimise and then mitigate should be made clear in site selection and in assessments.	Further information regarding the offshore infrastructure site selection and consideration of alternatives, including how the Applicants have avoided, minimised and mitigated potential impacts, is summarised in **section 4.8** with further details provided in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure of the ES. A Cable Burial Risk Assessment and Cable Specification and Installation Plan (documents reference J14 and J15) have been submitted as part of the application.
February 2024	Transmission Assets Marine Mammals EWG Meeting 03	Presented key offshore refinements since PEIR including the removal of the booster station, OSPs and interconnectors from the Transmission Assets DCO application as well reductions to the amounts of sandwave clearance and cable protection. Discussed with stakeholders that the removal of infrastructure means that there is no piling associated with Transmission Assets.	Further information regarding the offshore infrastructure site selection and consideration of alternatives is summarised in **section 4.8** with further details provided in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure of the ES.

Date	Consultee	Discussion Topics and Consideration	How and where considered for site selection
February 2024	Transmission Assets Offshore Ornithology EWG Meeting 03	Presented key offshore refinements since PEIR including the removal of the booster station, OSPs and interconnectors from the Transmission Assets DCO application as well reductions to the amounts of sandwave clearance and cable protection in response to S42 comments received. Discussed with stakeholders that the removal of infrastructure means that the Transmission Assets would not create a collision risk or barrier effect due to having no surface piercing infrastructure.	Further information regarding the offshore infrastructure site selection and consideration of alternatives is summarised in **section 4.8** with further details provided in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure of the ES.
February 2024	Transmission Assets Historic Environment EWG Meeting 3	Presented key onshore refinements since PEIR including refinement of cable corridor and substation locations.	Further information regarding the onshore infrastructure site selection and consideration of alternatives is summarised in **section 4.9** with further details provided in Volume 1, Annex 4.3: Site selection and refinement of onshore infrastructure.
February 2024	Transmission Assets Marine Archaeology and Historic Environment AHEF Meeting 2	Presented key offshore refinements since PEIR including the removal of the booster station, OSPs and interconnectors from the Transmission Assets DCO application as well reductions to the amounts of sandwave clearance and cable protection in response to S42 comments received.	Further information regarding the offshore infrastructure site selection and consideration of alternatives is summarised in **section 4.8** with further details provided in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure of the ES.

Date	Consultee	Discussion Topics and Consideration	How and where considered for site selection
February 2024	Transmission Assets LVIA Stakeholder Meeting 1	Presented key offshore and onshore refinements since PEIR including refinement of cable corridor and substation locations and removal of the booster station, OSPs and interconnectors from the Transmission Assets DCO application.	The offshore infrastructure site selection and consideration of alternatives is summarised in **section 4.8** with further details provided in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure of the ES. Further information regarding the onshore infrastructure site selection and consideration of alternatives is summarised in **section 4.9** with further details provided in Volume 1, Annex 4.3: Site selection and refinement of onshore infrastructure.
June 2024	Transmission Assets Onshore Ecology, Onshore and Intertidal Ornithology EWG Meeting 6a and 6b	Presented key onshore refinements since PEIR including refinement of cable corridor and substation locations.	Further information regarding the onshore infrastructure site selection and consideration of alternatives is summarised in **section 4.9** with further details provided in Volume 1, Annex 4.3: Site selection and refinement of onshore infrastructure.
August 2024	Transmission Assets Marine Archaeology and Historic Environment AHEF Meeting 3	Presented key offshore refinements since PEIR including the removal of the booster station, OSPs and interconnectors from the Transmission Assets DCO application as well changes to the Order Limits for DCO application.	Further information regarding the offshore infrastructure site selection and consideration of alternatives is summarised in **section 4.8** with further details provided in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure of the ES.
August 2024	Transmission Assets Physical Processes, Benthic Ecology and Fish and Shellfish Ecology EWG Meeting 04	Presented an update on the reduction in sandwave clearance and cable protection within the Fylde MCZ and how the project has applied the mitigation hierarchy avoid and minimise impacts to the Fylde MCZ. Refinements and reductions to design parameters were welcomed by stakeholders with final comments to be provided following submission and review of the completed application documents.	Further information regarding the offshore infrastructure site selection and consideration of alternatives is summarised in **section 4.8** with further details provided in Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure of the ES.

Date	Consultee	Discussion Topics and Consideration	How and where considered for site selection
August 2024	Transmission Assets Traffic and Transport EWG Meeting 3	Presented key onshore refinements since PEIR including refinement of cable corridor and substation locations.	Further information regarding the onshore infrastructure site selection and consideration of alternatives is summarised in **section 4.9** with further details provided in Volume 1, Annex 4.3: Site selection and refinement of onshore infrastructure.
September 2024	Transmission Assets LVIA Stakeholder Meeting 2	Presented refinements to the substations including outline landscaping and outline design principles.	Further information regarding the onshore infrastructure site selection and consideration of alternatives is summarised in **section 4.9** with further details provided in Volume 1, Annex 4.3: Site selection and refinement of onshore infrastructure.

4.5 Site Selection Process Methodology

4.5.1 Overview

4.5.1.1 The Applicants have followed an iterative site selection and design process from inception to the finalisation of the design for application in order to identify the most suitable locations and configuration, based on the criteria outlined below for the Transmission Assets. The process has taken account of environmental, physical, technical, commercial, and social considerations and opportunities as well as engineering requirements. In all routing and siting decisions, an overall perspective was maintained of the appropriate relative weight to be given to constraints and context of the other elements of the Transmission Assets as a whole.

4.5.1.2 The aim has been to identify sites and routes that will be environmentally acceptable, deliverable and consentable, whilst also enabling the benefits in the long term of the lowest energy cost to be passed to the consumer.

4.5.2 Site Selection Principles

4.5.2.1 Site selection principles were developed and followed as far as possible throughout the site selection process.

4.5.2.2 A multi-disciplinary team was formed to undertake the site selection process, which included input from engineers, planners, land advisors, legal and EIA/topic consultants whose expertise was drawn upon through the process.

4.5.2.3 Alongside published policies and guidance (see **sections 4.2 and 4.3** for further details on polices and guidance), the following site selection principles were developed and applied at the outset of the site selection process for the Transmission Assets. These are drawn from the experience of the Applicants and technical expertise of consultants supporting the process and comprise:

- Alignment of the offshore, landfall and onshore infrastructure for the Morgan Offshore Wind Project and Morecambe Offshore Windfarm where possible;
- Shortest route preference to reduce impacts by minimising footprint for the Transmission Assets offshore and onshore cable corridors as well as considering cost (hence ultimately reducing the cost of energy to the consumer) and minimising transmission losses;
- Minimising impacts to environmental features and social receptors, where possible; and
- The necessary space to accommodate the design envelope.

4.5.2.4 As detailed in the corresponding annexes, a series of overarching principles and engineering assumptions were identified for infrastructure which governed the decisions made at each stage. These included environmental, physical, technical, commercial and social considerations and opportunities. Each stage of the process involved gathering data from different sources (e.g. surveys, desktop studies, stakeholder and public feedback) to define and assess alternative site options. This information was then collated,

reviewed and appraised to reach cross-discipline decisions about refining the site selection options at each stage.

4.5.3 Consideration of alternatives and design commitments

4.5.3.1 This ES chapter and corresponding annexes provides a description of the reasonable spatial and geographical alternatives that have been considered by the Transmission Assets and presents a comparison between different options.

4.5.3.2 Strategic-level project design alternatives were also considered as part of the site selection and project design decision-making process. The strategic consideration of alternatives which fed directly into the Transmission Asset's site selection process resulting in design commitments as summarised in **Table 4.10**.

Table 4.10: Alternative considerations and commitments

Consideration	Commitment	Justification
Landfall		
HDD at landfall or open cut trenching	The Project Description (Volume 1, Chapter 3 of the ES) sets out that the installation of the onshore export cable corridor at Lytham St Annes SSSI and the St Anne's Old Links Golf Course will be undertaken by HDD (or other trenchless methodologies) (Commitment Number (CoT) 44)	Whilst both HDD and open cut trenching options are included within the landfall design, open trenching would be seaward of the exit pits on the beach with works between the beach and TJBs via trenchless techniques under the SSSI and golf course as this method is less impactful.
HDD or alternative trenchless techniques between beach and TJBs	The Project Description (Volume 1, Chapter 3 of the ES) sets out that the installation of the onshore export cable corridor between the transition joint bays and the beach will be undertaken by direct pipe (Commitment Number (CoT) 44)	At PEIR, the landfall installation methodology was by Horizonal Directional Drilling (HDD) or equivalent trenchless techniques. For the DCO application, the Applicants have selected the direct pipe trenchless technique. Direct pipe results in a shorter installation duration and less interaction with the beach (up to two weeks of beach works per cable) which minimises disruption to public beach access as well as environmental impacts upon designated features of the Ribble and Alt Estuary Special Protection Area (SPA), Ribble and Alt Estuary Ramsar site, Ribble Estuary SSSI, and Lytham St Annes Dunes SSSI.

Consideration	Commitment	Justification
Approach to installation of permanent infrastructure in the intertidal area	All permanent infrastructure located between Mean Low Water Springs (MLWS) and Mean High Water Springs (MHWS) will be buried to a target depth of 3 metres, subject to further pre-construction surveys to be reported within Detailed Cable Burial Risk Assessments (CBRAs). An Outline CBRA has been prepared and submitted with the application for development consent (CoT114).	Burial of all permanent infrastructure allows beach to be fully reinstated with no above ground visibility of infrastructure.
Offshore		
Offshore cable burial or cable protection	An Outline Offshore Cable Specification and Installation Plan (document reference J15) includes for cable burial to be the preferred option for cable protection, where practicable (CoT 54).	Cable burial allows benthic habitats to recover and limits risk of snagging.
Cable burial or cable protection through MCZ	The Outline Offshore Cable Specification and Installation Plan (CSIP, document reference J15) includes measures to limit the extent of cable protection to 3% of the offshore export cable route within the Fylde (Marine Conservation Zone) MCZ (excluding cable crossings). Within the Fylde MCZ, external cable protection will only be used where deemed to be essential, e.g. for cable crossings or in the instance that adequate burial / reburial is not possible for any section of the route through the Fylde MCZ. (CoT47)	Cable burial, where ground conditions are suitable, allows benthic habitats to recover and offers less opportunity for invasive species to become establish on hard strata.
Requirement for OSPs and interconnector cables to be in both the Generation Assets and Transmission Assets DCO applications	Following PEIR, the OSPs and interconnectors were removed from the design envelope for the Transmission Assets. The OSPs and interconnectors are now solely in their respective Generation Assets DCO applications.	With the removal of OSPs and the Morgan booster station, the offshore elements of the Transmission Assets have no sea surface piercing infrastructure which minimises impacts to a number of offshore receptors as discussed in Volume 2 of the ES.
Requirement for a booster station	Following PEIR, the requirement for the Morgan Offshore Wind Project booster station was removed from the design envelope.	
Onshore		

Consideration	Commitment	Justification
Buried onshore cables or overhead lines	The onshore export cables and the 400 kV grid connection cables will be completely buried underground for the entire length. No overhead pylons will be installed as part of the Transmission Assets (CoT 12)	The Applicants sought to minimise potential environmental impacts by burying cables and not having overhead lines.
Crossing the River Ribble	Direct pipe or micro tunnel will be used to cross the River Ribble where the 400 kV grid connection cable is proposed. (CoT 90)	Minimise environmental impact on surface water.
Cable crossings at roads, watercourses and railways	The following features will be crossed by HDD (or other trenchless methodologies), as set out in the Onshore Crossing Schedule to be submitted as part of the application for the development consent: - A, B and Classified unnumbered roads (known as C roads) (including the Preston Western Distributor Road, A582 South Ribble Western Distributor Upgrade and M55 Heyhouses Link Road); - the following Environment Agency main rivers, Moss Sluice, east of Midgeland Road; along Pegs Lane; Wrea Brook southeast of Cartmell Lane; Dow Brook east of Lower Lane between the A584 and the A583; Middle Pool north of Lund Way; and - all railway crossings (including the railway crossings at the Network Rail crossing along the line which runs between Blackpool North and Preston, south of Cartmell Lane; and at the Network Rail crossing along the line which runs to Blackpool North, south east of Squires Gate, parallel to the A584). (CoT 2)	Minimise environmental impact and disruption of key routes.
Avoidance of Ponds	Ponds identified during the route planning and site selection process have been avoided, where possible. During construction any newly identified ponds will be avoided through micro-siting of the onshore export cable corridor and 400 kV grid connection corridor where reasonably practicable (CoT 31).	To minimise effects upon the aquatic and ecological environment.

4.5.4 Site Selection Process Summary

4.5.4.1 The Applicants have followed an iterative site selection and design process. The following key factors have driven the process:

- The Holistic Network Design Review (HNDR) which identified the Penwortham National Grid substation as the grid connection point for the Morgan Offshore Wind Project and Morecambe Offshore Windfarm (see **section 4.2**), and therefore enabled identification of the Transmission Assets offshore cable corridors, landfall, onshore cable corridors, and location of onshore substations.
- Review of environmental, social and technical constraints and planning policy which led to site specific refinement of the Transmission Assets (as detailed in the annexes to this ES chapter).
- Consultation with statutory and non-statutory consultees. As described in **section 4.4**, the Applicants have undertaken pre-application engagement with stakeholders, communities and landowners in order to seek input to refine the project design.

4.5.4.2 The site selection and design refinement process followed an iterative approach to ensure the most appropriate and efficient solution was identified with consideration of environmental, social and technical constraints. The site selection has been progressed through four stages, incorporating feedback received from stakeholders and the public at each stage to further refine the siting and design envelope of the Transmission Assets at the next stage. These four stages are:

- Stage 1 - Identification of Point of Interconnection (PoI)
- Stage 2 - Identification of areas of search
- Stage 3 - Refinement of the siting and design of the Transmission Assets for PEIR
- Stage 4 – Refinement of the siting and design of the Transmission Assets for DCO application

4.5.4.3 The development timelines of some of these discrete but inter-dependent aspects of the Transmission Assets are summarised in the following sections for landfall, offshore infrastructure and onshore infrastructure. The stages are presented in **Table 4.11** with the overview of the site selection process presented in **Diagram 4.1**. More detailed consideration of each stage is presented in the annexes of this ES chapter as follows:

- Volume 1, Annex 4.1: Selection and refinement of cable landfall (document reference F1.4.1);
- Volume 1, Annex 4.2: Selection and refinement of offshore infrastructure (document reference F1.4.2); and
- Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure (document reference F1.4.3).

Table 4.11: Site Selection and Refinement Stages Directory

Stage	Associated Document
Stage 1 – Identification of Point of Interconnection (PoI)	Volume 1, Chapter 4: Site selection and consideration of Alternatives
Stage 2 – Identification of areas of search	
Stage 2a – Identification of landfall areas of search	Volume 1, Annex 4.1: Selection and Refinement of Cable Landfall
Stage 2b – Identification of offshore infrastructure search area	Volume 1, Annex 4.2: Selection and Refinement of Offshore Infrastructure
Stage 2c – Identification of onshore substations search areas	Volume 1, Annex 4.3: Selection and Refinement of Onshore Infrastructure
Stage 2d – Identification of onshore export cable route search area	Volume 1, Annex 4.3: Selection and Refinement of Onshore Infrastructure
Stage 3 – Refinement of the siting and design of the Transmission Assets for PEIR	
Stage 3a – Refinement of landfall for PEIR	Volume 1, Annex 4.1: Selection and Refinement of Cable Landfall
Stage 3b – Refinement of offshore infrastructure options for PEIR	Volume 1, Annex 4.2: Selection and Refinement of Offshore Infrastructure
Stage 3c – Refinement of onshore substations search areas for PEIR	Volume 1, Annex 4.3: Selection and Refinement of Onshore Infrastructure
Stage 3d – Refinement of onshore export cable route options for PEIR	Volume 1, Annex 4.3: Selection and Refinement of Onshore Infrastructure
Stage 4: Refinement of the siting and design of the Transmission Assets for DCO Application	
Stage 4a – Refinement of landfall design for DCO Application	Volume 1, Annex 4.1: Selection and Refinement of Cable Landfall
Stage 4b – Refinement of offshore infrastructure for DCO Application	Volume 1, Annex 4.2: Selection and Refinement of Offshore Infrastructure
Stage 4c – Refinement of onshore substations search areas for DCO Application	Volume 1, Annex 4.3: Selection and Refinement of Onshore Infrastructure
Stage 4d – Refinement of onshore export cable route options for DCO Application	Volume 1, Annex 4.3: Selection and Refinement of Onshore Infrastructure

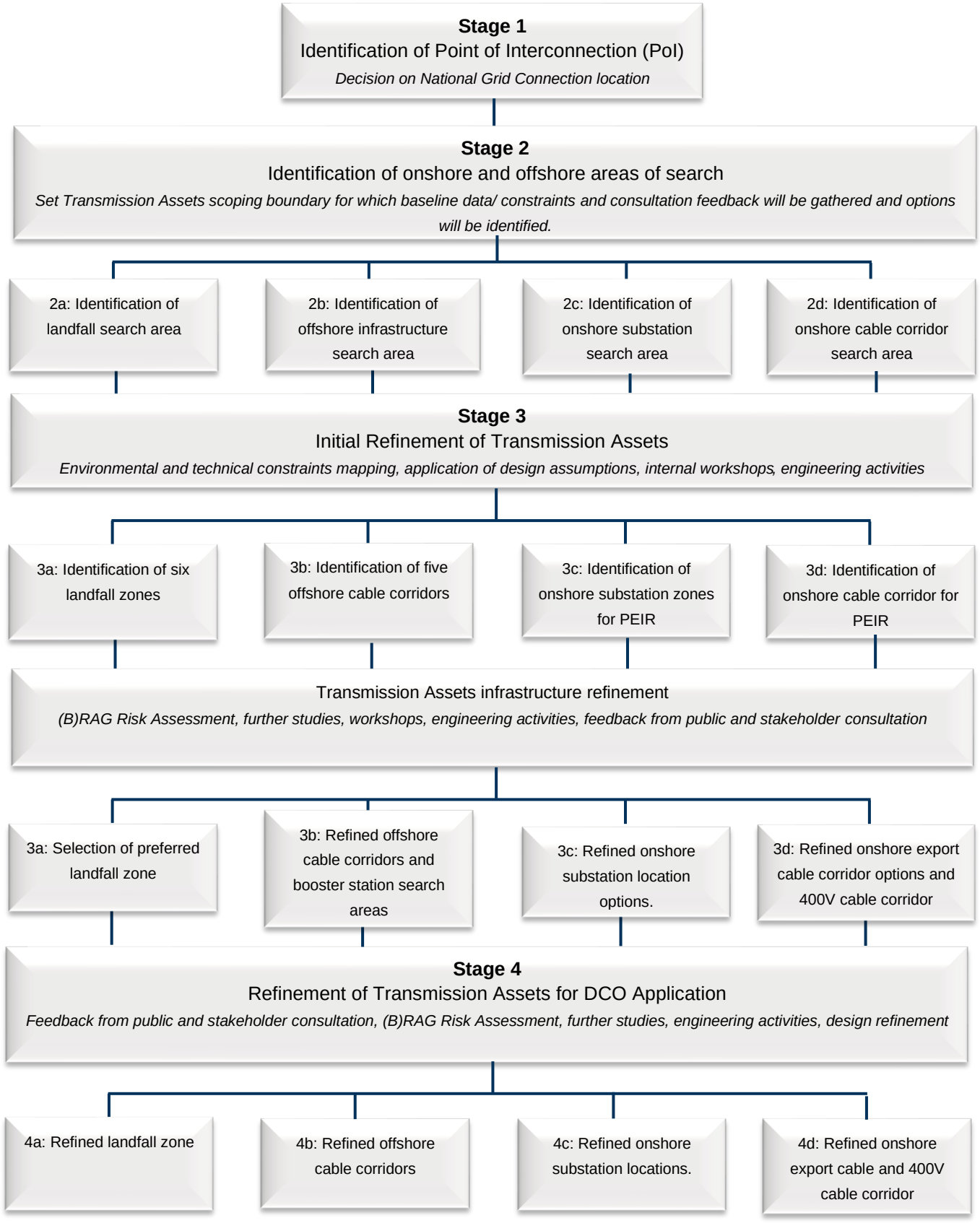

Diagram 4.1: Site selection process overview

4.6 Stage 1 Identification of Point of Interconnection (PoI)

4.6.1.1 Until 2021, National Grid Electricity System Operator (NGESO) used the Connection and Infrastructure Operations Note (CION) process to coordinate changes needed to the electricity network to accommodate new offshore connections from offshore energy infrastructure.

4.6.1.2 In its 2020 report to Parliament, the Committee on Climate Change called for Government to "Develop a strategy to coordinate interconnectors and offshore networks for wind farms and their connections to the onshore network and bring forward any legislation necessary to enable coordination". Following this, the UK Government announced the Offshore Transmission Network Review (OTNR) to identify near-term actions and opportunities for offshore windfarm projects to coordinate and thereby address the barriers that the existing offshore transmission regime was considered to present to deployment of offshore wind; the intention being to develop an offshore transmission network that facilitates coordination between offshore wind developments.

4.6.1.3 The output of the OTNR was the Holistic Network Design (HND); an integrated approach for connecting new offshore wind infrastructure to the grid cohesively. The Morgan Offshore Wind Project and Morecambe Offshore Windfarm was scoped into the HNDR as Pathways to 2030 Projects. The recommended design for the north west region is a combination of collaborative developer-led solutions and single radial connections.

4.6.1.4 A number of potential grid connection locations and options were considered by NGESO through the HNDR process based on an understanding of the grid infrastructure capacity in relation to the location of the Morgan Offshore Wind Project and Morecambe Offshore Windfarm (and considering other Round 4 offshore wind projects coming forwards in the Irish Sea).

4.6.1.5 In July 2022, the UK Government published the Pathway to 2030 Holistic Network Design documents, which set out the approach to connecting 50 GW of offshore wind to the UK electricity network (National Grid ESO, 2022). The output of this process concluded that the preferred connection option representing the most optimal design (economic, efficient and coordinated) considering all criteria (i.e. technical, cost, environmental and deliverability) that the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm should work collaboratively to consent the connection of their respective wind farms to the National Grid at Penwortham in Lancashire (as shown in Figure 4.2, Volume 1 Figures of the ES)).

4.7 Landfall (Stage 2, Stage 3 and Stage 4)

4.7.1.1 The landfall is the area in which the offshore export cables make landfall (come onshore) and the transitional area between the offshore cabling and the onshore cabling. This term applies to the entire landfall area between Mean Low Water Springs and the transition joint bay inclusive of all construction works, including the offshore and onshore cable routes, intertidal working area, and landfall compound(s). Annex 4.1: Selection and refinement

of cable landfall contains further details on the site selection process and consideration of alternatives for the landfall which is summarised below.

4.7.1 Stage 2a: Identification of landfall search area

4.7.1.1 A Landfall Area of Search (Stage 2) was defined based on the location of the Generation Assets and the National Grid Substation at Penwortham which extended from the south of Blackpool to Formby, covering approximately 50 km of coastline. Within the landfall area of search, six potential landfall zones were identified as shown on Figure 4.3 (Volume 1 Figures of the ES) and listed below:

- Lytham St. Annes,
- Banks,
- Southport,
- Ainsdale,
- Formby, and
- South of Formby.

4.7.2 Stage 3a: Refinement of landfall options

4.7.2.1 In addition to applying the general site selections principles as outlined in **section 4.5.2**, a Red Amber Green (RAG) constraints analysis was undertaken to identify key constraints (see Annex 4.1: Landfall site selection and refinement).

4.7.2.2 Of the six potential coastal landfall locations initially identified, those locations south of the Ribble Estuary were primarily discounted due to high potential to constrain development with longer and less direct cable routes required to reach the POI, ecological designations extending further inland along the coast, and with shallow subsea water depths of less than 10 m extending for longer distances seaward from MLWS.

4.7.2.3 Landfall constraints include more potential to interact with populated areas, Special Category Land (e.g., Royal Air Force/Ministry of Defence land), infrastructure crossings, main rivers and non-statutory nature designations. As such, landfall locations south of the Ribble Estuary were considered to be less feasible compared to the landfall location north of the Ribble Estuary at Lytham St Annes with the RAG appraisal identifying only moderate (Amber) and low (Green) potential to constraint development and no high (Red) potential constraint areas. Lytham St Annes was therefore the only shortlisted landfall option which was taken forward at Scoping and to PEIR (Stage 3) as shown on Figure 4.4 (Volume 1 Figures of the ES).

4.7.3 Stage 4a: Refinement of Lytham St Annes landfall option for DCO Application

4.7.3.1 The refinement of the landfall option at Lytham St Annes between PEIR and the DCO application focused on revisions to the Transmission Assets Order Limits at the landfall location and refinement of cable installation techniques

to minimise disturbance and disruption to the public as well as flora and fauna. The refined landfall for the Transmission Assets Order Limits for the DCO application are shown on Figure 4.5 (Volume 1 Figures of the ES).

4.7.3.2 Further details on the refinements between PEIR and DCO submission for landfall are provided in Volume 1, Annex 4.1: Selection and refinement of Landfall.

4.8 Offshore Infrastructure (Stage 2, Stage 3 and Stage 4)

4.8.1.1 Annex 4.2: Selection and refinement of offshore infrastructure contains further details on the site selection process and consideration of alternatives for the offshore elements of the Transmission Assets which is summarised below.

4.8.1 Stage 2b: Identification of the Offshore Search Area

4.8.1.1 The offshore export cable corridor routing exercise sought to identify the shortest route from the Generation Assets to the selected landfall location at Lytham St Annes, whilst avoiding environmental sensitivities and existing seabed infrastructure, where possible as detailed in Volume 1, Annex 4.2: Selection and refinement of the offshore infrastructure. The identified area of search was the offshore boundary that was presented in the Scoping Report, as shown in Figure 4.6 (Volume 1 Figures of the ES).

4.8.2 Stage 3b: Refinement of offshore infrastructure options for PEIR

4.8.2.1 Within the identified Offshore Search Area, five potential offshore export cable corridor options were identified with the necessary spacing to accommodate up to four offshore export cables and an offshore booster station location for the Morgan Offshore Wind Project and up to two offshore export cables for the Morecambe Offshore Windfarm (as shown in Figure 4.7, Volume 1 Figures of the ES)).

4.8.2.2 Consideration was then given to avoiding/ minimising interactions with sensitive features and existing infrastructure. After completion of an initial constraints and feasibility analysis, Route 4 was discounted due to the numerous technical challenges of routing offshore export cables over, around and between existing cables to south of Morecambe Offshore Windfarm: Generation Assets. At PEIR, four routes and two booster station search areas were presented as shown on Figure 4.8 (Volume 1 Figures of the ES). Further details are provided in Volume 1, Annex 4.2: Selection and refinement of the offshore infrastructure.

4.8.3 Stage 4b: Refinement of offshore infrastructure options for DCO Application

4.8.3.1 The refinement of offshore infrastructure between PEIR and the DCO application focused largely on changes to the design envelope, most notably the removal of the Offshore Substation Platforms (OSPs) and booster station and a reduction in sandwave clearance and cable protection requirements. Slight refinements were also made to the Offshore Order Limits as shown in

Figure 4.9 (Volume 1 Figures of the ES) with further details provided in Volume 1, Annex 4.2: Selection and refinement of the offshore infrastructure.

4.9 Onshore Infrastructure (Stage 2, Stage 3 and Stage 4)

4.9.1.1 Annex 4.3: Selection and refinement of onshore infrastructure contains further details on the site selection process and consideration of alternatives for the onshore elements of the Transmission Assets which is summarised below.

4.9.1 Stage 2c: Identification of onshore substation search area

4.9.1.1 To commence site selection, an initial 5 km buffer was drawn around the National Grid Substation at Penwortham based on previous project experience as well as technical and commercial feasibility. Mapping of environmental constraints inside the buffer identified limited areas that met the design parameters. Therefore, the initial area of search was expanded to 8 km to identify viable options for comparison.

4.9.1.2 In accordance with NGET's Horlock Rules, environmental designations and built up commercial and residential areas were excluded from the 8 km search area. The exclusion of these areas resulted in the Onshore Substations Search Area, which was presented at scoping, as shown in Figure 4.10, Volume 1 Figures of the ES).

4.9.2 Stage 2d: Identification of onshore cable route search area

4.9.2.1 The location and extent of the initial onshore cable route search area encompassing both the onshore export cable corridor and 400 kV grid connection cable corridor was based on the location of prospective landfall zone near Lytham St Annes to the west and the Point of Interconnection (PoI) at the National Grid Substation at Penwortham to the east. The northern and southern extents of the search area were defined by key constraints such as main roads and towns.

4.9.2.2 The Scoping boundary established in November 2022 as shown in Figure 4.11 (Volume 1 Figures of the ES) encompassed a broad area to allow subsequent refinement of the onshore cable corridors route and to accommodate feedback received from a first phase of non-statutory consultation between 2 November – 13 December 2022.

4.9.3 Stage 3c: Refinement of onshore substation search areas for PEIR

4.9.3.1 After establishing the substation search area at scoping (see **section 4.9.1** and Figure 4.10), an initial heat mapping exercise was undertaken, based on environmental, social and technical constraints, to identify areas considered to be less or more suitable for onshore substations. Areas considered less suitable were excluded and the remaining area was divided into four onshore substation search zones based on existing geographic features such as field boundaries, watercourses or roads as shown on Figure 4.12, Volume 1 Figures of the ES.

4.9.3.2 A BRAG appraisal was then undertaken for each of the zones to further assess their suitability for siting an onshore substation. This involved grading a number of environmental and planning constraints to allow clear and direct comparison across the four zones. In addition, a non-statutory consultation event held between April and June 2023 sought feedback on the onshore substation zones and to obtain local knowledge about the surrounding area.

4.9.3.3 Zone 1 was ultimately considered to be the most preferable as it was the least constrained (no red areas and the most areas of green in the BRAG appraisal) with an absence of priority habitat or protected and notable species compared to other zones. It was subsequently taken forward for further assessment as the onshore substation's consultation area whilst the other three zones were discounted from further consideration. Details of the BRAG and constraints is presented in Volume 1, Annex 4.3: Selection and Refinement of Onshore Infrastructure.

4.9.3.4 A further site selection exercise was then undertaken to identify appropriate parcels of land within Zone 1 that aligned with the site selection principles (see **section 4.5.2**) and that could accommodate the onshore substation resulting in one option for the Morgan Offshore Wind Project and two options for the Morecambe Offshore Windfarm as shown on Figure 4.13 (Volume 1 Figures of the ES). Further details are provided in Volume 1, Annex 4.3: Selection and refinement of the Onshore Infrastructure.

4.9.4 Stage 3d: Refinement of onshore cable route options for PEIR

4.9.4.1 Having established an onshore cable corridor search area at Scoping (see **section 4.9.2** and Figure 4.11), a BRAG methodology was then applied for PEIR to find the most suitable routing from the landfall to the onshore substation statutory consultation zone. This involved grading and mapping a number of environmental, planning and engineering constraints (see Figure 4.14 and 4.15, Volume 1 Figures of the ES), which, along with consideration of the routing principles allowed for establishment of the onshore export cable corridor options.

4.9.4.2 Principles were also established to identify suitable temporary and permanent access points along the onshore export cable corridors and 400 kV grid connection cable corridors to ensure that access was available during both the construction and operational and maintenance phases of the project. Further information regarding the principles can be found in Volume 1, Annex 4.3 Site Selection and Refinement of Onshore Infrastructure.

4.9.4.3 The temporary construction compounds along the onshore export cable corridor were identified primarily based on locations of existing accesses as well as being located at 5 km intervals along the cable route and being situated at least 30 m from residential receptors.

4.9.4.4 A 400 kV grid connection cable corridors search area was defined as shown in Figure 4.16 (Volume 1 Figures of the ES) using the PEIR substation statutory consultation zone 1 as the western extent and the PoI at Penwortham as the eastern extent. Towns and arterial roads were used to define the southern and northern extents with the southwestern extent of the of 400 kV Grid Connection Cable Corridors also refined to avoid SSSIs. The

400 kV grid connection cable corridors search area remained broad due to various constraints which were under consideration at this stage (e.g. the presence of other developments, utilities, historic landfill and ground conditions).

4.9.4.5 Initial areas for environmental mitigation and/or biodiversity benefit were also identified at this stage, with landowners consulted to gauge whether they would be amenable to providing land. The feedback received was used to inform and refine the areas, which was subsequently presented as part of statutory consultation at PEIR (see Figure 4.17, Volume 1 Figures of the ES).

4.9.4.6 Between 19 April and 4 June 2023, a second phase of non-statutory consultation was held, which focused on potential cable route options, landfall options and onshore substation locations. The consultation also confirmed the National Grid POI at Penwortham. Landowner meetings were also held between February and May 2023 to obtain feedback on the route in order to allow the project to incorporate feedback into the site selection process early, wherever possible. As a result of defining key infrastructure parameters and consultation in the form of non-statutory consultation and landowner feedback. Key changes were made to the cable corridor options, including:

- Residential areas removed from the PEIR Red Line Boundary;
- Alignment of the PEIR Red Line Boundary along field margins to reduce severance to landowners; and
- Avoidance of key ecological constraints.

4.9.4.7 Further details are provided in Volume 1, Annex 4.3: Selection and refinement of the Onshore Infrastructure.

4.9.5 Stage 4c: Refinement of onshore substation search areas for DCO Application

Morgan Substation

4.9.5.1 The formal consultation period for PEIR provided the opportunity for statutory stakeholders, landowners, nearby residents and members of the public to comment on the site selected for the Morgan substation.

4.9.5.2 The key refinement made to address the comments received was to relocate the Morgan substation site further to the east to lessen the impact upon agricultural land and increase the distance from the residential areas of Kirkham South and Hall Cross. The relocated Morgan substation site also allows more opportunity to utilise existing screening to reduce visibility and views of the substation from residential areas. The refinement of the Morgan onshore substation location between PEIR and DCO application is shown on Figure 4.18, Volume 1 Figures of the ES with the final location of the Morgan substation shown on Figure 3.17, Volume 1 Figures of the ES.

4.9.5.3 Further refinement saw the construction compound being located to the north of the substation site as shown on Figure 4.18, Volume 1 Figures of the ES. This meant that both construction and operational access could be taken directly from the A583 via a new junction, eliminating the requirement for any

construction traffic to traverse Lower Lane. It also meant that the PRoW was no longer located between the construction compound and the substation platform, thus greatly reducing the direct impact to the PRoW during construction.

Morecambe Substation

4.9.5.4 Following the consultation at PEIR on two potential Morecambe onshore substation locations, an analysis was undertaken to identify the best location for the Morecambe substation within Zone 1. This considered consultation feedback from statutory stakeholders, landowners, nearby residents and members of the public, potential environmental constraints and engineering considerations.

4.9.5.5 The two potential Morecambe onshore substation options were subjected to a BRAG analysis (see Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure for further details). From this analysis, Option 2 (south) was identified as the preferred option for the Morecambe onshore substation due to proximity residential receptors and the use of an access from the A584 Preston New Road, rather than the A583. Option 2 (south) also results in a significant reduction in cable length for both the onshore export cable and the grid connection cable corridors.

4.9.5.6 Once Option 2 (south) was identified as the most suitable area for the substation location, potential construction and operational access routes were identified with the construction access from the A584 Preston New Road and the main operational access for light goods vehicles off Lower Lane.

4.9.5.7 In parallel to the selection of access tracks the position of the temporary and permanent substation areas were reconfigured from those presented at PEIR. The location of the temporary compounds for Option 2 (south) were re-orientated west and optimised to align to the construction access from the A584. In addition the permanent substation area, encompassing the substation platform, was moved to the east, thus moving it further away from receptors on Lower Lane. The refinement of the Morecambe onshore substation location between PEIR and DCO application is shown on Figure 4.19, Volume 1 Figures of the ES with the final location of the Morecambe substation shown on Figure 3.18, Volume 1 Figures of the ES.

4.9.6 Stage 4d: Refinement of onshore cable route options for DCO Application

4.9.6.1 The refinement of the onshore export cable corridor route options between PEIR and the DCO application was largely driven by refinements to key infrastructure parameters, consultation in the form of Section 42/47 feedback, and review of environmental constraints.

4.9.6.2 The main refinement to key infrastructure was a reduction of the temporary construction export cable corridors width from 122 m to 100 m to avoid a greater number of sensitive receptors along the route.

4.9.6.3 Temporary access points and construction compounds were also refined at this stage based on changes to the onshore export cable corridor and 400 kV grid connection corridors. Once access points had been confirmed, access tracks of up to 10 m in width were designed and the perimeters of the temporary construction compounds were realigned with the reduced width of the onshore export cable corridors.

4.9.6.4 An exercise was also undertaken to ensure that permanent operational tracks were identified along the onshore export cable corridor and 400 kV grid connection corridor to ensure that access could be sought in order to undertake routine operation and maintenance activities. Where possible, these were identified using existing access routes or gates/gaps in the hedgerows.

4.9.6.5 Having established a 400 kV grid connection search area at PEIR, the area was graded and mapped to identify environmental, planning and engineering constraints as shown on Figure 4.20 (Volume 1 Figures of the ES) which, along with consideration of the routing principles, allowed for establishment of the 400kV grid connection cable corridors and specifically the crossing point for the River Ribble as shown on Figure 3.8 (Volume 1 Figures of the ES). Further details are provided in Volume 1, Annex 4.3: Selection and refinement of onshore infrastructure.

4.9.7 Biodiversity benefit and environmental mitigation

4.9.7.1 Areas for environmental mitigation and/or biodiversity benefit were also refined between PEIR and DCO application to seven areas for ecological and or ornithological mitigation as shown on Figure 3.9, Volume 1 Figures of the ES) with further details within Outline Ecological Management Plan (document reference: J6).

4.9.7.2 The Project also has an aspiration that the DCO application for the Transmission Assets would seek to achieve an overall biodiversity benefit of 10% for areas of permanent habitat loss associated with the areas of habitat loss arising from above ground infrastructure (such as the Onshore Substations, associated permanent access tracks and Transition Joint Bays). Principles were established in order to select the most suitable site to deliver biodiversity benefit. This resulted in Lea Marsh Fields (see Figure 3.9, Volume 1 Figures of the ES),being selected due the close proximity to an area identified for mitigation and Masons Wood (BHS) which in turn provides further benefits due to the connectivity of the three sites.

4.10 Conclusion

4.10.1.1 The Transmission Assets site selection and consideration of alternatives as presented within this chapter has evolved through a process of stakeholder engagement and a siting and design process.

4.10.1.2 The information presented and the decisions made were conducted by a multi-disciplinary team, taking into consideration stakeholder feedback and detailed site-specific data.

4.10.1.3 The final Transmission Assets Order Limits taken forward for the application for Development Consent is described in Volume 1, Chapter 3: Project description and shown in Figure 3.1, Volume 1 Figures of the ES.

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