XLINKS MOROCCO-UK POWER PROJECT

Preliminary Environmental Information Report

Non-Technical Summary

FOR ISSUE
April 2024

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Contents

Tables

Plates

Figures

Figure Number	Figure Title
1	Proposed Development Draft Order Limits and Environmental Designations
2 a-l	Onshore Infrastructure Area Environmental Constraints

Glossary

Acronym	Meaning
Alverdiscott Substation	The existing National Grid Electricity Transmission substation at Alverdiscott, Devon, which comprises 400 kV and 132 kV electrical substation equipment.
Alverdiscott Substation Connection Development	The development required at the existing Alverdiscott Substation site, which is envisaged to include development of a new 400 kV substation, and other extension modification works to be confirmed by National Grid Electricity Transmission.
Alverdiscott Substation site	The National Grid Electricity Transmission substation site within which the Alverdiscott Substation sits.
Applicant	Xlinks 1 Limited
Biodiversity Net Gain	An approach to development that leaves biodiversity in a better state than before. Where a development has an impact on biodiversity, developers are encouraged to provide an increase in appropriate natural habitat and ecological features over and above that being affected to ensure that the current loss of biodiversity through development will be halted and ecological networks can be restored.
Bipole	A Bipole system is an electrical transmission system that comprises two Direct Current conductors of opposite polarity.
Climate change	A change in global or regional climate patterns, in particular a change apparent from the mid to late 20th century onwards and attributed largely to the increased levels of atmospheric carbon dioxide produced by the use of fossil fuels.
Construction Traffic Management Plan	A document detailing the construction traffic routes for heavy goods vehicles and personnel travel, protocols for delivery of Abnormal Indivisible Loads to site, measures for road cleaning and sustainable site travel measures.
Converter Site	The Converter Site is proposed to be located to the immediate west of the existing Alverdiscott Substation site in north Devon. The Converter Site would contain two converter stations (known as Bipole 1 and Bipole 2) and associated infrastructure, buildings and landscaping.
Converter station	Part of an electrical transmission and distribution system. Converter stations convert electricity from Direct Current to Alternating Current, or vice versa.
Development Consent Order (DCO)	An order made under the Planning Act 2008, as amended, granting development consent.
Earthworks	Covers the processes of soil-stripping, ground-levelling, excavation, and landscaping, as defined by the Institute of Air Quality Management.
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.
Exclusive Economic Zone	An area of the sea, which is under territorial ownership of a single state.
Habitat Regulations Assessment	An assessment of the likely significant effects on a European site protected by the Conservation of Habitats and Species Regulations 2017.
Horizontal Directional Drilling (HDD)	Horizontal Directional Drilling (HDD) is a method of installing underground cables, pipelines etc through trenchless methods. It involves the use of a directional drilling machine, and associated attachments, to accurately drill along the chosen bore path. It may be utilised to drill under a waterbody, road, railway, habitat or a designated area, to avoid direct disturbance.

Acronym	Meaning
HVAC Cables	The High Voltage Alternating Current (HVAC) Cables which would bring electricity from the converter stations to the new Alverdiscott Substation Connection Development.
HVDC Cables	The High Voltage Direct Current (HVDC) cables which would bring electricity to the UK converter stations from the Moroccan converter stations.
Intertidal area	The area between Mean High Water Springs and Mean Low Water Springs.
Landfall	The proposed area in which the offshore cables make landfall in the United Kingdom (come on shore) and the transitional area between the offshore cabling and the onshore cabling. This term applies to the entire landfall area at Cornborough Range, Devon, between Mean Low Water Springs and the Transition Joint Bay inclusive of all construction works, including the offshore and onshore cable routes, and landfall compound(s).
Marine Conservation Zone(s)	Marine nature reserves that protect a range of nationally important, rare or threatened habitats and species.
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 Proposed Development.
Mean High Water Springs (MHWS)	The height of mean high water during spring tides in a year.
Mean Low Water Springs (MLWS)	The height of mean low water during spring tides in a year.
National Grid Electricity System Operator (NGESO)	National Grid Electricity System Operator (NGESO) operates the national electricity transmission network across Great Britain. NGESO does not distribute electricity to individual premises, but its role in the wholesale market is vital to ensure a reliable, secure and quality supply to all.
National Landscape	An area of land designated for its natural features of outstanding beauty. The land is protected by the Countryside and Rights of Way Act 2000, in order to conserve and enhance its natural beauty. Previously referred to as an Area of Outstanding Natural Beauty.
National Policy Statement(s)	The current national policy statements published by the Department for Energy Security and Net Zero in 2024.
Offshore Cable Corridor	The proposed corridor within which the offshore cables are proposed to be located, which is situated within the UK Exclusive Economic Zone.
Onshore HVDC Cable Corridor	The proposed corridor within which the onshore High Voltage Direct Current cables would be located.
Onshore Infrastructure Area	The proposed area within the Proposed Development Draft Order Limits landward of the Transition Joint Bays, which contains the onshore HVDC Cables, Converter Site, highway works and onshore HVAC Cables.
Ordinary Watercourses	A river, stream, ditch, cut, sluice, dyke or non-public sewer that is not designated a main river and for which the Local Planning Authority has flood risk management responsibilities and powers.
Planning Inspectorate	The agency responsible for operating the planning process for applications for development consent under the Planning Act 2008.
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.
Proposed Development	The element of the Xlinks Morocco-UK Power Project within the UK, which includes the offshore cables (from the UK Exclusive Economic Zone to landfall), landfall site, onshore Direct Current and Alternating Current cables, converter stations, road upgrade works and, based on current assumptions, the Alverdiscott Substation Connection Development.

Acronym	Meaning
Proposed Development Draft Order Limits	The area within which all offshore and onshore components of the Proposed Development are proposed to be located, including areas required on a temporary basis during construction (such as construction compounds).
Site of Special Scientific Interest	A site designation specified and protected in the Wildlife and Countryside Act 1981. These sites are of particular scientific interest due to important biological (e.g. a rare species of fauna or flora), geological or physiological features.
Special Area 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 Special Area of Conservation 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 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 Special Area of Conservation 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 Area	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.
The national grid	The network of power transmission lines which connect substations and power stations across Great Britain to points of demand. The network ensures that electricity can be transmitted across the country to meet power demands.
Transition Joint Bay (JTB)	Subsurface infrastructure providing a secure environment for the jointing of onshore and offshore HVDC cables.
Utility Diversions	Works required by statutory utility providers to re-route infrastructure around the Proposed Development.
Xlinks Morocco-UK Power Project	The overall scheme from Morocco to the national grid, including all onshore and offshore elements of the transmission network and the generation site in Morocco (referred to as the ‘Project’).

Acronyms

Acronym	Meaning
AC	Alternating Current
AIL	Abnormal Indivisible Loads
ALC	Agricultural Land Classification
BNG	Biodiversity Net Gain
CEMP	Construction Environmental Management Plan
DC	Direct Current
DCO	Development Consent Order
DESNZ	Department for Energy Security and Net Zero
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EMF	Electromagnetic Field
ES	Environmental Statement
GB	Great Britain
GHG	Greenhouse Gas
GVA	Gross Value Added
HDD	Horizontal Directional Drilling
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
IEMA	Institute of Environment Management and Assessment
INNS	Invasive Non-Native Species
MCZ	Marine Conservation Zone
NGESO	National Grid Electricity System Operator
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
PEIR	Preliminary Environmental Information Report
SPA	Special Protection Area
SSSI	Sites of Special Scientific Interest
STW	Sewage Treatment Works
TW	Territorial Waters
UK	United Kingdom
WHO	World Health Organisation

Units

Units	Meaning
%	Percent
km	Kilometres
km^2	Square kilometres
FTU	Formazin Turbidity Units
GW	Gigawatts
GWh	Gigawatt Hours
GWp	Gigawatts Peak
m	Metres
mm	Millimetres
m/s	Metres per second
$\mu g/m^3$	Micrograms per cubic metre

1 INTRODUCTION

1.1 Purpose of This Document

1.1.1 This document is the Non-Technical Summary of the Preliminary Environmental Information Report (PEIR) prepared for the Proposed Development by RPS and APEM Group on behalf of Xlinks 1 Limited (the 'Applicant').

1.1.2 The PEIR provides the preliminary findings of the Environmental Impact Assessment (EIA) process undertaken to date to support the pre-application consultation activities required under the Planning Act 2008. The purpose of the Non-Technical Summary is to present a summary of the preliminary Environmental Impact Assessment (EIA) findings for the United Kingdom (UK) elements of the Xlinks Morocco-UK Power Project (the 'Project'). For ease of reference, the UK elements of the Project are referred to as the 'Proposed Development'[1].

1.1.3 The EIA process is ongoing and, following completion of pre-application consultation and refinement of the design of the Proposed Development, the findings of this further work will be reported in an Environmental Statement (ES). The ES will accompany the application for development consent.

1.1.4 This Non-Technical Summary has been written in a non-technical language and is intended to act as a stand-alone document that provides an overview of the Proposed Development and its likely significant effects in non-technical language. Further detailed information is in the PEIR, which presents the preliminary findings of the EIA work undertaken to date for the Proposed Development.

1.2 Overview of the Proposed Development

1.2.1 The UK's ambition is to lead the world in combatting climate change, reducing reliance on fossil fuels, and embracing a future where renewable energy powers both homes and businesses. At the centre of this drive is a commitment to reducing UK greenhouse gas emissions and reaching net zero by 2050. The UK government has an ambition to generate 50 Gigawatts (GW) of clean, renewable energy from offshore wind by 2030.

1.2.2 The Proposed Development forms part of the wider Project proposed by the Applicant to develop a sub-sea electricity connection between the UK and Morocco. The Project would be an electricity generation facility entirely powered by solar and wind energy combined with a battery storage facility. Located in Morocco's renewable energy rich region of Guelmim Oued Noun, the Applicant proposes to install 11.5 Gigawatts peak (GWp) generation capacity that would cover an approximate area of 1,500 km^2 and would be connected exclusively to the UK via High Voltage Direct Current (HVDC) sub-sea cables. The Project would include an offshore route of approximately 4,000 km, which would run through Moroccan, Spanish, Portuguese, and French Waters before arriving

[1] To note, the definitions used to describe the UK elements of the Xlinks Morocco-UK Power Project in this Preliminary Environmental Information Report differ from those used in the section 35 Direction request submitted on 30 August 2023 by the Applicant.

within the UK Exclusive Economic Zone (EEZ). A schematic of the whole project is provided at **Plate 3.1**.

1.2.3 The Project proposes to facilitate the import of up to 3.6 GW of low carbon electricity into the national grid. Once complete, the Project would be capable of supplying approximately 8 percent (%) of UK's annual electricity needs. More details of the Proposed Development are provided in Chapter 3: Project Description of this Non-Technical Summary. The Project Description is provided in full at Volume 1, Chapter 3 of the PEIR.

1.3 Site Location

1.3.1 The PEIR addresses the UK onshore and offshore elements of the Project. The Proposed Development would be located within the Proposed Development Draft Order Limits, which is shown on **Figure 1** and covers an approximate area of 207 km^2. This includes a 370 km long Offshore Cable Corridor and an Onshore Infrastructure Area comprising an Onshore HVDC Cable Corridor which is approx. 14.5 km long together with Converter Site and Alverdiscott Substation site. A schematic of the UK part of the Project, the Proposed Development, is provided at **Plate 3.2**.

1.3.2 The onshore elements of the Proposed Development are proposed to be located within the local authority areas of Torridge District Council and Devon County Council, in north Devon, and extends from the Alverdiscott Substation site to the Landfall at Cornborough Range. The extent of the Onshore Infrastructure Area is shown on **Figure 2 a-l**. The proposed Landfall for the Proposed Development is located at Cornborough Range on the north Devon coast, to the south-west of Cornborough and approximately 4 km west of Bideford.

1.3.3 The offshore elements of the Proposed Development are proposed to be located within the Offshore Cable Corridor, which lies within the South West Inshore and South West Offshore Marine Plan Areas (Marine Management Organisation, 2021). The Offshore Cable Corridor is proposed to be routed through the Bristol Channel and Celtic Sea, extending from the Landfall to the limit of UK EEZ, south west of the UK as shown on **Figure 1**.

1.4 Consenting Process

1.4.1 The Planning Act 2008 provides the legislative basis for applications for a Development Consent Order (DCO). It also defines the application process under which a DCO is sought. The Planning Act 2008 states that projects meeting certain criteria are classified as Nationally Significant Infrastructure Projects (NSIPs). Developers wishing to construct, operate and maintain NSIPs must obtain a DCO from the relevant Secretary of State to authorise their project.

1.4.2 Under the definitions of an NSIP set out in sections 14 to 16 of the Planning Act 2008, the Proposed Development does not meet the criteria. However, under Section 35(1) of the Planning Act 2008, '*the Secretary of State may give a direction for development to be treated as development for which development consent is required*' if certain criteria (including the type and location of the development) are met.

1.4.3 In August 2023, the Applicant sought direction from the Secretary of State for Energy Security and Net Zero (the 'Secretary of State') under section 35 of the Planning Act 2008 to confirm that elements of the Proposed Development should

be treated as development for which development consent under the Planning Act 2008 is required. A direction was duly made on 26 September 2023 confirming the Secretary of State's conclusion that the overall Project is nationally significant and directed that development consent is required for the converter stations. The annex of the Secretary of State direction explains that:

'The Proposed Project is of national significance, taking into account that it forms part of a generation project which is comprised of 11.5GW of renewable power in Morocco, which is intended to deliver 3.6 Gigawatts (GW) of low carbon electricity to the UK's grid and could improve the security and diversity of the UK's electricity supply.'

1.4.4 Therefore, the Applicant is now pursuing a DCO for the Proposed Development.

1.4.5 Further details of the relevant planning policy context, including the approach to consenting, are provided in Volume 1, Chapter 2: Policy and Legislation of the PEIR.

1.4.6 The key stages in the Planning Act 2008 application process have been summarised in **Plate 1.1** below.

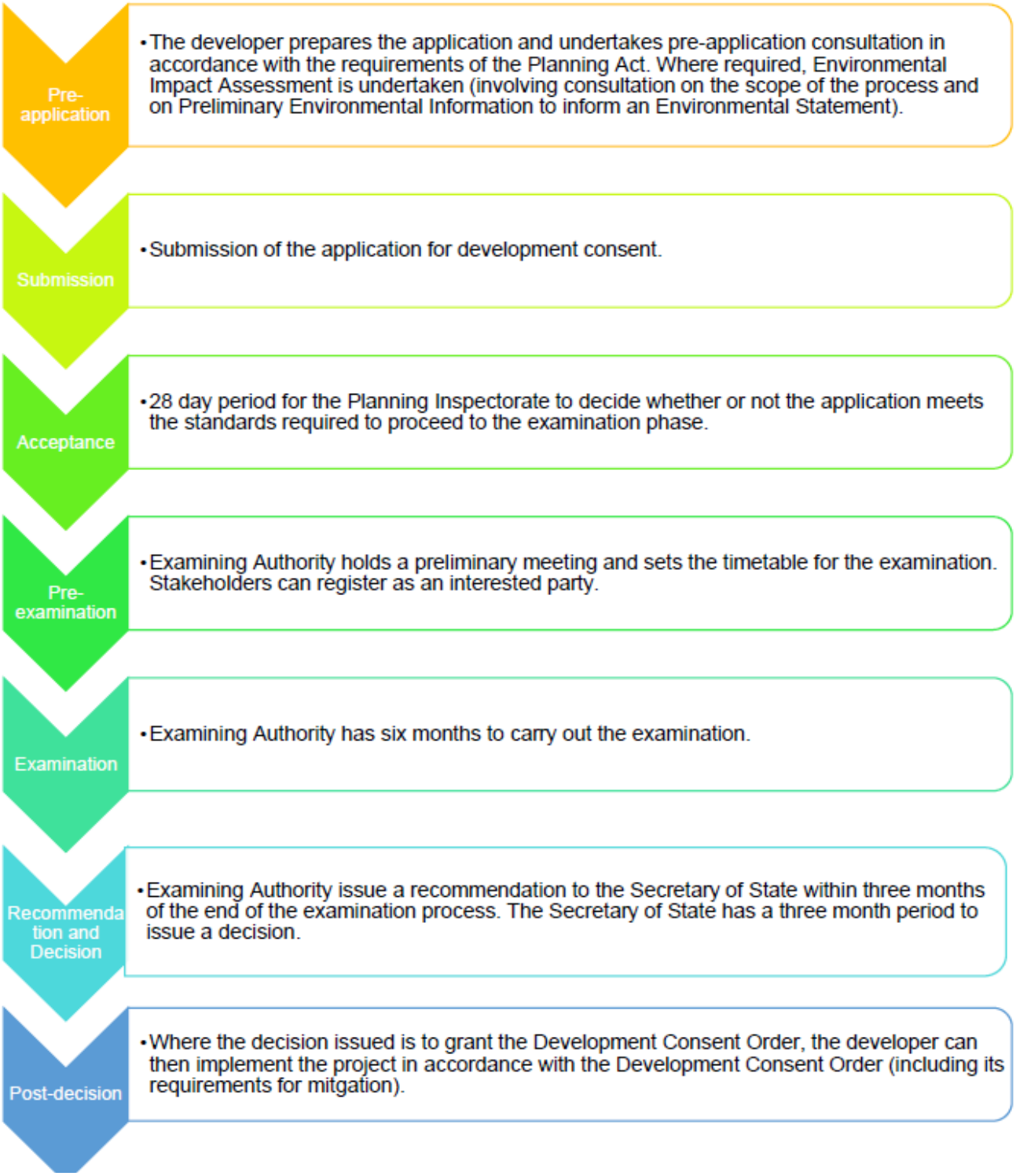


Plate 1.1: Overview of the Development Consent Order Application Process

2 POLICY AND LEGISLATIVE CONTEXT

2.1 Introduction

2.1.1 This section provides a summary of the policy and legislative context for the Proposed Development. These have been considered, along with additional topic-specific policy and legislation, in individual topic chapters.

2.2 Net Zero Legislation

2.2.1 In June 2019, the Government raised the UK's ambition of tackling climate change by legislating a net-zero greenhouse gas emissions target for the whole economy by 2050. In addition, the National Infrastructure Commission produced the 'Net Zero: Opportunities for the Power Sector' Report and the National Grid Electricity System Operator report published in July 2023.

2.2.2 These strategies culminated in the publication in the latest Energy National Policy Statements (2023) by the Government. The emphasis being on the requirement to increase installed capacity of five times existing capacity, together with the identification of all renewable and low carbon technologies as Critical National Priority infrastructure.

2.2.3 In addition to the above, the Energy White Paper (2020) sets out the long-term strategy, policy, and proposals to keep the UK on track for future carbon budgets and sets the vision for a decarbonised economy by 2050.

2.3 Key Legislation

2.3.1 As mentioned above, the Secretary of State has confirmed that the converter stations require development consent and that the Project is nationally significant. Therefore, the following legislation apply to the Proposed Development:

- Planning Act 2008;
- The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017;
- Marine and Coastal Access Act 2009;
- Environment Act 2021;
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017;
- Flood and Water Management Act, 2010; and
- Environmental Permitting (England and Wales) Regulations 2016.

2.4 National Planning Policy

2.4.1 The following NPSs are relevant to the Proposed Development and have been considered as part of the environmental impact assessment:

- Overarching NPS for Energy (EN-1) (Department for Energy Security and Net Zero (DESNZ), 2023a);

- NPS for Renewable Energy Infrastructure (EN-3) (DESNZ, 2023b); and
- NPS for Electricity Networks Infrastructure (EN-5) (DESNZ, 2023c).

2.4.2 In addition to the policy set out in the NPSs, the following planning policy and guidance is considered relevant:

- National Planning Policy Framework 2023
- UK Marine Policy Statement 2011
- South West Inshore and South West Offshore Marine Plan 2021

2.5 Local Planning Policy

2.5.1 Local development plans do not carry the same weight under the Planning Act 2008 however, the local plan policies within the North Devon and Torridge District Council Adopted Local Plan will be considered where relevant.

3 PROJECT DESCRIPTION

3.1 Overview

3.1.1 This section summarises the key components of infrastructure (both onshore and offshore) for the Proposed Development, as well as a description of the activities associated with their construction, operation and maintenance and eventual decommissioning. The current project description is indicative and has been designed to include flexibility to accommodate further project refinement. Refined design parameters will be presented in the ES and draft DCO that will accompany the application for development consent.

3.1.2 The Proposed Development would be located within the Draft Order Limits shown on **Figures 1 and 2**. The Proposed Development would be located within the Proposed Development Draft Order Limits, which is shown on **Figure 1** and covers an approximate area of 207 km^2. This includes a 370 km long Offshore Cable Corridor and an Onshore Infrastructure Area comprising an Onshore HVDC Cable Corridor which is approx. 14.5 km long together with Converter Site and Alverdiscott Substation site. At this stage of the EIA and consenting process, the project description of the Proposed Development is indicative. It is often the case that where consent is applied for and obtained before detailed design commences, there may be design elements that are unknown to an applicant at the time of application. The ongoing design process will be controlled by the DCO placing limits on certain parameters and for requirements to subsequent approval of details. The current parameters used at PEIR stage are depicted in schematic form at **Plate 3.3**.

3.2 Locations

3.2.1 The site location of the Proposed Development is shown on **Figures 1** and **2**. Volume 1, Chapter 3: Project Description contains detailed description of the locations where works will be carried out.

3.2.2 The onshore elements of the Proposed Development are proposed to be located within the Onshore Infrastructure Area, which lies within the local authority area of Torridge District Council, in north Devon (See **Plate 3.1** to **Plate 3.3**).

3.2.3 Landfall is proposed to be located at Cornborough Range on the north Devon coast, to the south-west of Cornborough.

3.2.4 The offshore elements of the Proposed Development, which includes the Offshore Cable Corridor, are proposed to be located within the Bristol Channel and Celtic Sea, extending from the Landfall to the limit of UK EEZ, south west of the UK.

3.3 Consultation

3.3.1 The Applicant submitted a Scoping Report to the Planning Inspectorate describing the approach to assessment and also highlighting the approach to assessment of any likely significant effects for the construction, operation and maintenance and eventual decommissioning phases of the Proposed Development.

3.3.2 The responses, in the form of a Scoping Opinion have been considered throughout the PEIR. A summary of Scoping Opinion responses is provided at Volume 1, Appendix 5.1 of the PEIR.

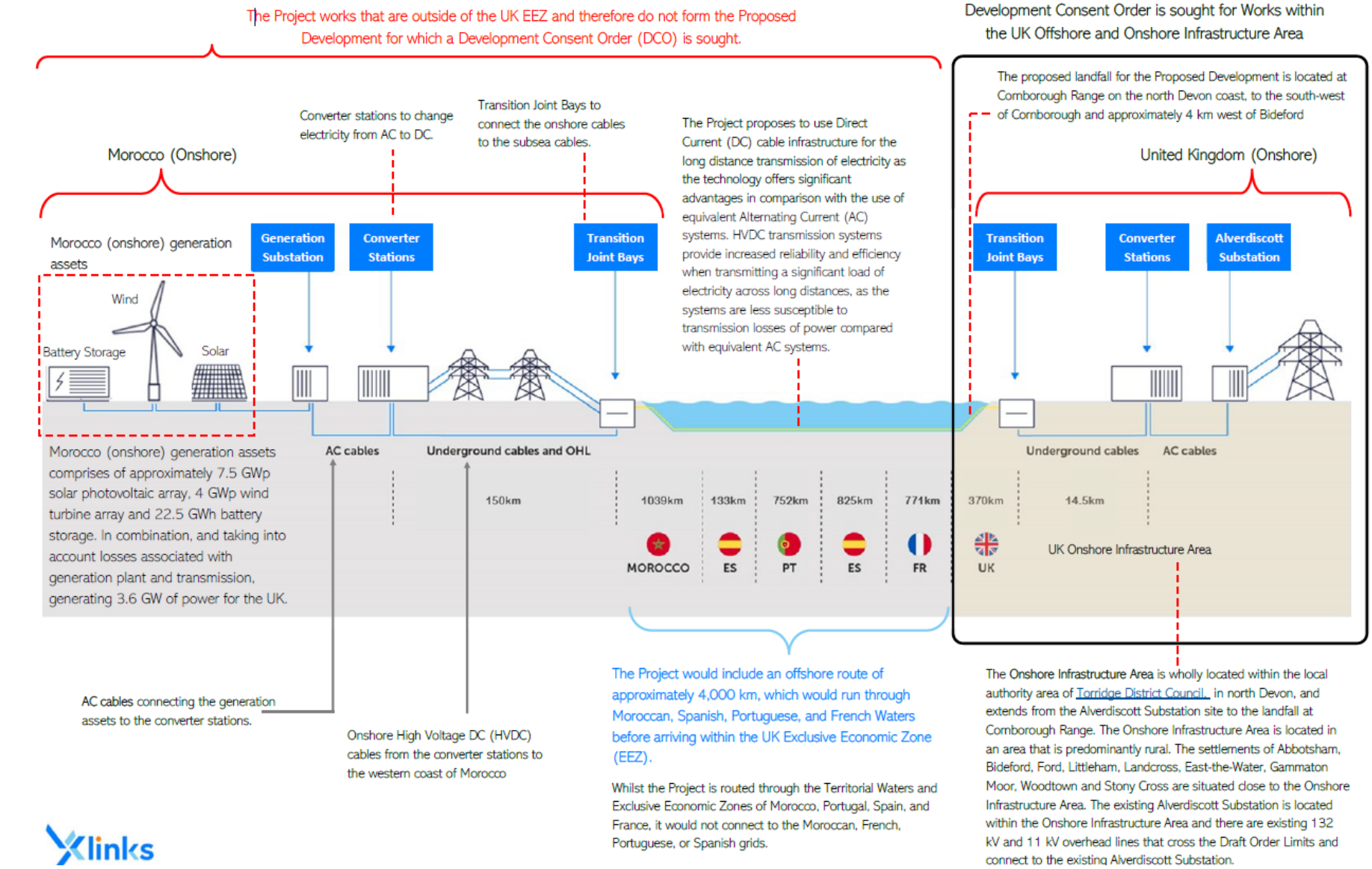
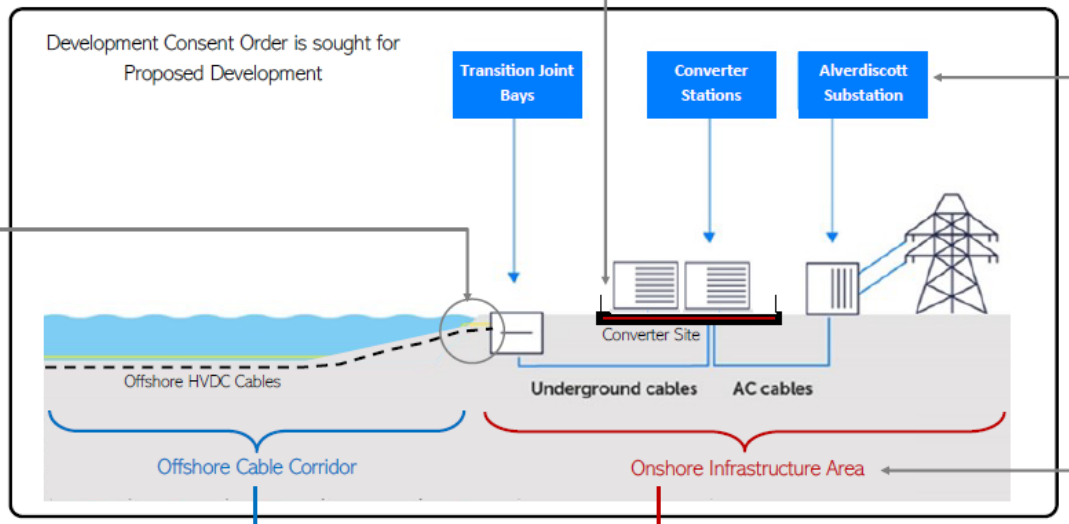


Plate 3.1: Overview of the Xlinks Morocco-UK Power Project

Proposed Development - The element of the Xlinks Morocco-UK Power Project within the UK, which includes the offshore cables (from the UK Exclusive Economic Zone to landfall), landfall site, onshore Direct Current and Alternating Current cables, converter stations, road upgrade works and, based on current assumptions, the Alverdiscott Substation Connection Development.

The **Converter Site** is proposed to be located to the immediate west of the existing Alverdiscott substation site in north Devon. The Converter Site would contain two converter stations (known as Bipole 1 and Bipole 2) and associated infrastructure, buildings and landscaping. Converter stations are part of an electrical transmission and distribution system and they convert electricity from Direct Current to Alternating Current, or vice versa.



Alverdiscott Substation - The Alverdiscott Substation is located within the Onshore Infrastructure area and consists of 2x400kV to 132kV transformers then a local distribution 132kV substation. It is proposed to include a new substation within the existing site known as Alverdiscott Substation Connection Development

Landfall - The proposed area in which the offshore cables make landfall in the UK (come on shore) and the transitional area between the offshore cabling and the onshore cabling. This term applies to the entire landfall area at Cornborough Range, Devon, between Mean Low Water Springs and the Transition Joint Bay inclusive of all construction works, including the offshore and onshore cable routes, and landfall compound(s).

Onshore Infrastructure Area - The proposed area within the Proposed Development Draft Order Limits landward of the Transition Joint Bays, which contains the onshore HVDC Cables, Converter Site, highway works and onshore HVAC Cables.

Effects on the Offshore Environment
- Benthic Ecology
- Fish and Shellfish Ecology
- Commercial Fisheries
- Marine Mammals
- Ornithology
- Shipping and Navigation
- Other Marine Users
- Marine Archaeology and Cultural Heritage
- Physical Processes

Effects on the Combined Environment
- Climate Change
- Landscape, Seascape and Visual Resources
- Socio-economics and Tourism
- Human Health

Effects on the Onshore Environment
- Onshore Ecology and Nature Conservation
- Historic Environment
- Hydrology and Flood Risk
- Geology, Hydrogeology and Ground Conditions
- Traffic and Transport
- Noise and Vibration
- Air Quality
- Land-use and Recreation

Plate 3.2: Overview of the Proposed Development

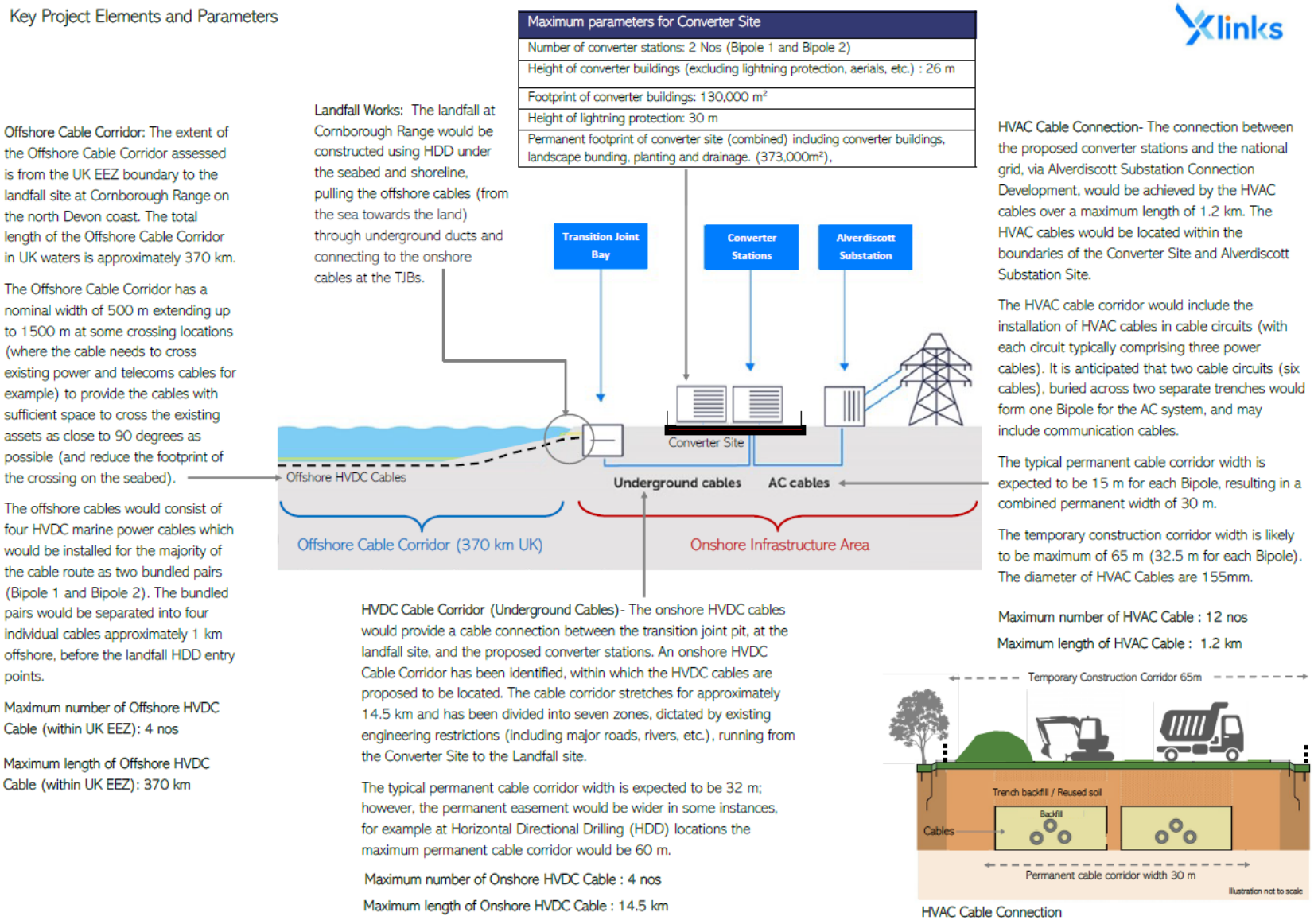


Plate 3.3: Key Project Elements and Parameters

3.4 Key Elements

3.4.1 The key **onshore components** of the Proposed Development at this stage are:

- Converter Site, which includes two independent converter stations converter electricity from Direct Current (DC) to Alternating Current (AC).
- Highways improvement works to facilitate access during construction and operation and maintenance.
- HVAC Cables connecting the Converter Site to the national gird via the Alverdiscott Substation Connection Development.
- Alverdiscott Substation Connection Development is the anticipated National Grid Electricity Transmission 400 kV substation.
- HVDC Cables linking the onshore converter stations to the Landfall and would be located within the Onshore HVDC Cable Corridor.
- Temporary and permanent utility connections to the construction compounds and the converter site.
- Permanent utility diversions, permanent diversion of existing utility services to facilitate the construction and operation of the Converter Site.
- Biodiversity Net Gain (BNG) offsetting proposed to include Atlantic rainforests, hedgerows, scrub, and species-rich grassland.

3.4.2 The **Landfall** would be where the offshore cables are jointed to the onshore cables.

3.4.3 The key **offshore components** of the Proposed Development at this stage are:

- Offshore HVDC Cables which would bring electricity from its generation source to the Landfall.

3.4.4 All of the above elements are anticipated to be located within the Proposed Development Draft Order Limits shown in **Figures 1 and 2**.

3.4.5 Key summary parameters have been illustrated in **Plate 3.3.**

3.5 Programme

3.5.1 Construction and commissioning of the Project would be timed to meet the available connection dates provided by National Grid Electricity System Operator (NGESO) with the commissioning of Bipole 1 and Bipole 2 anticipated to be 2030 and 2032 respectively. Construction and commissioning of the Project would be timed to meet the available connection dates provided by National Grid Electricity System Operator (NGESO) with the commissioning of Bipole 1 and Bipole 2 anticipated to be 2030 and 2032 respectively. Subject to being granted consent, the earliest date that construction could start would be in 2026.

3.5.2 Consistent with the build-out and commissioning of the generation and transmission infrastructure in Morocco together with the connection dates offered by NGESO, the Proposed Development would be constructed in a single phase that allows for the staggered commissioning of the two bipoles.

3.5.3 Full operation of the Project inclusive off the generation assets in Morocco is anticipated to occur in 2032, following the commissioning of Bipole 2.

3.5.4 The likely programme for the onshore elements of the Proposed Development is provided in **Table 3.1** and **Plate 3.4**.

Table 3.1: Onshore construction programme

Key Element	Expected Duration (months)
Converter Site	72
HVAC Cables	24[1]
Onshore HVDC Cable Corridor	36
Landfall	24[2]
Offshore Cable Corridor	18[3]
Alverdiscott Substation Connection Development	24

1. The construction and installation of the HVAC cables would occur over two separate periods of 12 months for each bipole, with a space between these periods.
2. Construction works at the Landfall comprise an initial 18 months of works, with a space between the subsequent works which would take a further 6 months.
3. The installation of the Offshore Cable Corridor within the UK EEZ would take place over three separate periods of 6-months. There would be a space between these construction periods.

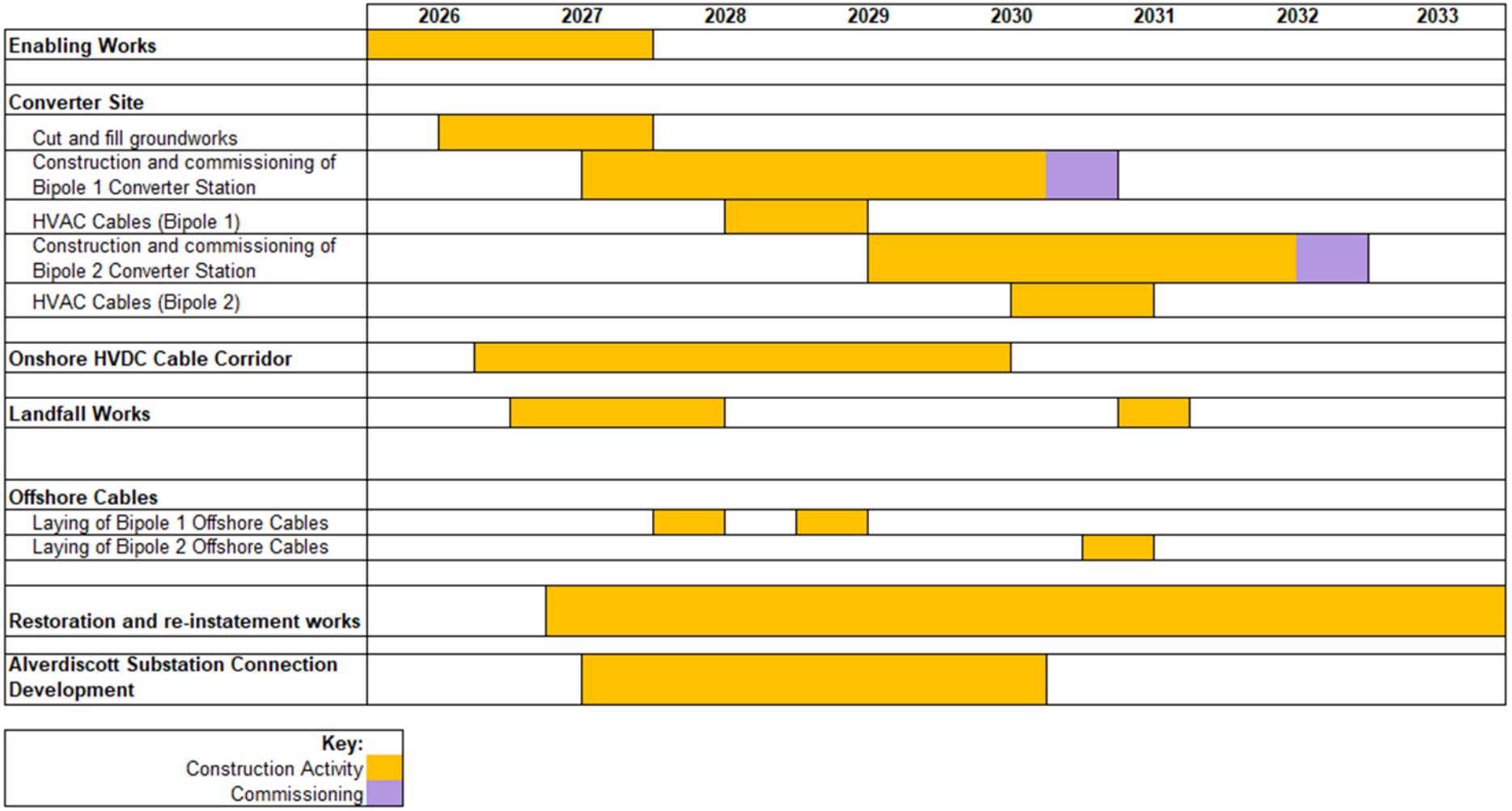


Plate 3.4: Indicative Construction Programme

3.6 Construction access and highways improvements

3.6.1 The Onshore HVDC Cable Corridor would be constructed using purpose-built temporary haul roads. Once construction vehicles have accessed their relevant compound, they would be able to access the associated section of cable corridor accordingly without any further requirement to use the highway (albeit they would cross minor roads, see below). This minimises construction vehicle movements along the public highway. Access compounds would be located at 5 key locations where the roads are wide enough to accommodate them.

3.6.2 This means that construction HGVs would travel along the highway network directly to the relevant compound before moving along the Onshore HVDC Cable Corridor route on purpose built temporary haul roads.

3.6.3 Trenchless technology would be used at key road crossings including the A39 and A386. Other local roads would be crossed at surface involving temporary closures whilst the cable ducts are laid.

3.6.4 The nature of the construction access strategy detailed above requires the haul routes to cross and re-cross local roads. Those crossings would be gated and controlled by temporary traffic lights.

3.6.5 Key routes for non-motorised users are unaffected by the cross-country cable works because they are crossed by trenchless construction methods. This includes the south west coastal path and the Tarka Trail.

3.6.6 In at least two cases, Public Rights of Way (PRoW) would be crossed by the Onshore HVDC Cable Corridor. In this instance the priority would be given to the PRoW traffic with gated access across the haul routes controlled by banksmen. There is no requirement for the stopping up or diversion of PRoW.

3.6.7 The Proposed Development would include proposed permanent improvements to the local highway network, which would facilitate access during both construction and operation and maintenance. Potential improvements are included below and may be refined through detailed design:

- Abbotsham Road: Improved junction at the Cornborough Sewage Treatment Works (STW) access and widened lane towards the STW to provide access to the landfall Horizontal Directional Drilling (HDD) compound and cable corridor;
- A386/Littleham Road: Improved and re-aligned junction where the lane to Littleham meets the A386 at an oblique angle. The junction would provide access to the River Torridge HDD compound and cable corridor;
- Widening to the southern side of Gammaton Road by up to 2.0 m and setting-back of the junction with Tennacott Lane;
- A short section of new private road west of Gammaton Moor Crossroads connecting Gammaton Road with the unnamed road to the Converter Site; and
- Widening of the unnamed road to the Converter Site.

3.7 Approach to Design and Mitigation

3.7.1 Mitigation of environmental effects comprises a staged approach to avoidance by design and management measures during construction and operation and maintenance.

3.7.2 Routing of the Offshore Cable Corridor and Onshore HVDC Cable Corridor has sought to avoid the most sensitive areas whilst construction techniques would avoid direct impacts to areas that cannot be avoided i.e. the beach at the Landfall and the River Torridge.

3.7.3 Detailed consideration of the construction strategy, particularly the logistics would mean that significant impacts on the local population and road users would be minimised.

3.7.4 Careful selection of the point of connection at Alverdiscott Substation and the choice of development site for the converter stations also seeks to avoid the most significant effects of long cable connections and highly visible development.

3.7.5 The Applicant is continuing to work on design solutions for the Converter Site that would seek to minimise its visibility in the landscape.

3.7.6 The Applicant would also bring forward proposals to compensate and enhance the local environment through Biodiversity Net Gain (BNG).

3.7.7 The detailed design of the Converter Site and related landscape treatment would be controlled by the DCO including a Design Code and a Landscape and Ecology Management Plan.

3.7.8 The full list of proposed measures designed to control the potential adverse effects of constructing and operating the Proposed Development are provided at Volume 1, Appendix 3.1: Draft Mitigation Schedule of the PEIR. Most pertinent to the mitigation of construction effects is the employment of a Construction Environmental Management Plan (both onshore and offshore), which is briefly described below.

3.8 Onshore Construction Environmental Management (including Landfall)

3.8.1 Construction of the Proposed Development would be managed through Construction Environmental Management Plans (CEMPs) that sets out the principles of good environmental management to be followed in order to avoid or minimise environmental impacts. This includes principles for the management of construction noise, dust, traffic, materials storage and waste management, drainage and ecological protection. An Outline Onshore CEMP has been developed and forms Volume 1, Appendix 3.2 of the PEIR.

Construction Working Hours

3.8.2 Normal construction working hours would be Monday to Friday 07:00-19:00 and Saturday 07:00-13:00. However, some operations may require work to take place outside these times. For example, Abnormal Indivisible Loads (AILs) may be encouraged or required to travel overnight and crossings of roads may be constructed overnight to minimise disruption to traffic.

3.8.3 In certain circumstances, specific works may have to be undertaken on a continuous working basis (00:00 to 00:00, Monday to Sunday). During this period, the contractor may undertake activities that require continuous working hours, which would be notified to the relevant local authority in writing.

Local Community Liaison

3.8.4 The Applicant would establish an approach for liaising with the local community and stakeholders during the construction process, which would build on the engagement undertaken prior to and throughout the EIA process. A Project website, email address and phone number would remain in place for members of the public to contact site managers and receive updates on the works.

3.9 Biodiversity Net Gain

3.9.1 While biodiversity net gain is not a requirement of a DCO application, the Applicant would aim to deliver at least a 10% BNG in the onshore environment and aim to mitigate for effects on habitats arising as a result of the Proposed Development.

3.9.2 Areas would be identified within the Proposed Development Draft Order Limits where current habitat condition affords an opportunity to improve habitat quality or where enhancements can be made to habitats identified as functionally linked to designated sites.

3.10 Offshore Construction Environmental Management

3.10.1 The Applicant would adopt best practice environmental management measures for the offshore elements of the Proposed Development. A key aspect of this approach is the development of an Offshore CEMP(s) prepared prior to commencement of construction to outline how construction of the Proposed Development would avoid, minimise, or mitigate any adverse effects. The Offshore CEMP(s) would detail the best practice approach to offshore activities and would implement those measures and environmental commitments identified in the EIA.

3.11 Operation and Maintenance

3.11.1 The Proposed Development would be designed to operate on a continuous basis throughout the year. The Proposed Development would be subject to regular monitoring and planned maintenance. Unplanned repairs may also be required in the unlikely event that faults are identified. The assessment of the operation and maintenance phase includes for both planned and unplanned work. Details of the operation and maintenance activities associated with the Proposed Development, including converter stations, onshore cable route (HVDC and HVAC), and offshore cable route, are presented below.

Onshore Operation and Maintenance

Converter Site

3.11.2 The proposed converter stations are likely to be operated 24/7 by staff on-site through shifts, which would include personnel for operation, maintenance, asset management, and security. The converter site is anticipated to provide approximately 30 full time-equivalent FTE jobs, with up to 15 staff on-site at any one time in the day, reducing to approximately five overnight.

Onshore Cable (including Landfall)

3.11.3 The operation and maintenance requirements for the onshore HVDC and HVAC cables would involve infrequent on-site inspections of the cables and corrective maintenance activities (e.g. repairs due to cable failure). The cables would be continuously monitored remotely.

3.11.4 It is not expected that the transition joint bays at the Landfall would need to be accessed during the operation and maintenance phase. However, link boxes would be provided with inspection covers to allow for access.

Offshore Operation and Maintenance

Offshore Cable

3.11.5 The preferred installation methods are designed to minimise the number of cable inspection surveys that would be required (Volume 1, Chapter 3: Project Description of the PEIR). However, some cable inspection surveys are expected during the operational lifetime of the Proposed Development.

3.11.6 The inspection survey schedule is anticipated to include surveys up to once a year for the first 5 years, and then approximately every 5 years for the remainder of the operational life of the cables (anticipated 50 years).

3.11.7 There may be a requirement to undertake unplanned maintenance works in the event of failure of components of the system or if a cable becomes exposed because of seabed movements or the activities of third parties.

3.12 Decommissioning

3.12.1 The converter stations would be designed, manufactured, and installed for a minimum operational lifetime, which is currently anticipated to be 50 years.

3.12.2 For the electricity infrastructure only, the end of the operational lifetime is anticipated to be 50 years from date of full commissioning. Subject to relevant additional consents and legislative requirements, it is anticipated that potential refurbishment and operational life extension of the Proposed Development may occur.

3.12.3 In the event that the operational lifetime of the Proposed Development is not extended, decommissioning would take place. The decommissioning sequence would generally be the reverse of the construction sequence and involve similar types of vehicles, vessels, and equipment.

4 NEED AND ALTERNATIVES

4.1 Need

4.1.1 The Project is a renewable energy project that would deliver nationally significant amounts of power directly to the UK.

4.1.2 There is a growing body of both UK and international energy and climate change commitments, laws, policies and guidance highlighting an urgent need for new energy generation infrastructure, particularly renewable sources. Alongside this drive for new energy generation, the UK Government has committed to achieving net zero greenhouse gas emissions by 2050 and decarbonising the energy sector by 2035.

4.1.3 Decarbonisation is a legal requirement in the UK and is of global significance. In June 2019, the Government passed The Climate Change Act 2008 (2050 Target Amendment) Order 2019 that would end the UK's contribution to global warming by 2050: Net Zero.

4.1.4 UK electricity demand is expected to double by 2050. Decarbonisation requires the electrification of energy which is currently sourced from fossil fuels (including gas, petrol and diesel) for example by heating our homes and powering our cars with electricity. It can be seen therefore, that the UK's pathway to achieving Net Zero by 2050 must also involve wider transitions outside of the power sector, including decarbonising transport, industry, agriculture and homes.

4.1.5 In March 2023, the Government published Powering Up Britain, which explains '*how the government will enhance our country's energy security, seize the economic opportunities of the transition, and deliver on our net zero commitments*.'

4.1.6 Under the Renewables investment section, the policy paper makes a direct reference to the Project, as follows, '*As we set out in the 'British Energy Security Strategy', we are actively exploring the potential for international projects to provide clean, affordable and secure power. For example, the government is interested in the Xlinks Morocco – UK Power Project, a proposed large scale onshore wind, solar and battery electricity generation site in Morocco that would exclusively supply power to the GB grid via high voltage direct current subsea cables. The government is considering – without commitment – the viability and merits of the proposal to understand if it could contribute to the UK's energy security.*'

4.1.7 The reference to the Project in the Renewables Investment section highlights the importance of the Project as a critical element of the UK's plan to decarbonise the electricity sector. In this regard, the Project's key objectives include making a critical and timely contribution to the UK's decarbonisation and security of supply, helping shield consumer bills from volatile energy prices and international supply markets, and providing the potential to deliver biodiversity net gains through its development.

4.1.8 In summary, the Project would unlock the potential of dedicated, remote, renewable energy and enable the UK to diversify its energy supply, increase resilience and help support local and national carbon ambitions. It would be capable of supplying 3.6 GW of power to the UK, meeting around 8% of the UK's identified electricity needs and helping the UK to meet carbon reduction commitments as well as diversifying and securing its energy supplies.

4.2 Approach to route and site selection

4.2.1 The Applicant has undertaken a route planning and site selection process to identify the location of the Proposed Development. The approach to identifying and assessing alternative sites and routes has ensured integrated and iterative consideration of potential impacts on the environment and local communities alongside technical and engineering factors. The Proposed Development has also been considered against National and Local planning policies. The overall aim of this approach has been to identify sites or routes that best balance these factors to establish the preferred Strategic Option for the Substation Point of Connection and Landfall. The Applicant also undertook a Corridor and Preliminary Routing study for the cable corridors (both onshore and offshore) as well as the siting of the convertor stations.

4.2.2 The site selection process has considered numerous factors that have influenced the site/route selection and design of the Proposed Development. The specific factors considered by the Applicant include:

- environmental;
- social and economic;
- electrical and Civil Engineering; and
- security and safety.

4.2.3 The design and layout of the Proposed Development has been an iterative process. This process has been informed by the ongoing environmental appraisal informing site/route selection and taking into consideration the design principles and controls, non-statutory consultation feedback and engagement with stakeholders, landowners, and consultees.

4.3 Consideration of Alternatives

4.3.1 The consideration of alternatives and the Proposed Development layout will continue to evolve following consultation and as part of the environmental assessment process and further design development. Having regard to outputs from engagement with stakeholders and consultees and feedback from statutory consultation.

4.3.2 A Consultation Report will be submitted supporting the DCO application, which will provide a summary of consultation feedback and how the Applicant has regard to the feedback in developing the design. A Design and Access Statement will also be prepared and submitted to support the DCO application, which will set out the evolution of the Proposed Development design.

Onshore Development

4.3.3 During the initial site/route selection phase, a long list of potential Landfall options were identified and formed the basis of the assessment. A preliminary desk study was carried out along the North Devon coastline to identify the potential landfall locations. Factors considered in determining a potential landfall location included the following:

- Suitable geological conditions for Horizontal Directional Drilling (HDD) and ground conditions in general for construction.

- Topography (height difference) between the HDD entry and exit points i.e. between land and seabed.
- Minimising the number of landholdings affected.
- Avoiding key transport and utility infrastructure.
- Potential environmental constraints.
- Minimizing the overall Onshore HVDC Cable Corridor length (from landfall to the Alverdiscott substation).
- Availability of access for construction to and from the coast for workers and vehicles.
- Proximity to sensitive receptors.

4.3.4 As part of the initial consideration of potential landfall sites, a longlist of 14 locations was created. Reasons for rejecting potential landfall locations included insufficient access or space for HDD operations, unsuitable geology or topography for drilling, environmental constraints, and excessive disruption to other marine users. The initial shortlist was reduced to five locations, and further details are found in Volume 1, Chapter 4: Need and Alternatives of the PEIR.

4.3.5 The Applicant has refined the landfall options to a single option, to ensure the EIA and DCO processes continue to progress, as well as establishing a focused area for onshore and nearshore geophysical and geotechnical surveys to be undertaken. These detailed site investigations would determine the exact positions where the cables would eventually make landfall and the Onshore HVDC Cable Corridor would be routed between the point of landfall and Converter Site.

4.3.6 The identification and assessment of the Onshore HVDC Cable Corridor options included the assessment of the key environmental constraints that would provide obstacles and constraints between the point of landfall at Cornborough Range and the available grid connection point at Alverdiscott Substation. A constraints analysis was undertaken to understand potential challenges for routing the Onshore HVDC Cable Corridor from landfall to the grid connection point. This focused on the environmental, planning, engineering and cost constraints.

4.3.7 Environmental and planning features that were considered during the design of the onshore cable route to reduce the associated impacts included the following:

- Locations of settlements, including residential dwellings and farms.
- Existing infrastructure, including roads and pipelines (e.g. gas pipelines).
- Statutory designated sites, such as National Landscapes, Sites of Special Scientific Interest (SSSI) and Local Nature Reserves.
- Historically designated sites, such as Scheduled Monuments & Listed Buildings.
- High flood risk areas & watercourses.
- Areas of Ancient Woodland.

4.3.8 Engineering and cost considerations during the design of the cable route included the following:

- The River Torridge.
- Existing infrastructure, including roads and pipelines (e.g. A39 or gas pipelines).

- Cost associated with the length of cable required.
- Areas of steep or variable terrain.
- Avoidance of multiple small and sharp bends in the cable route.

4.3.9 The identification and assessment of the potential Converter Site location included a 2 km radius study area around the existing Alverdiscott Substation to identify potential Converter Site options. The radius was determined by the need to minimise transmission losses along the HVAC Cable Corridor between the proposed Converter Site and the existing Alverdiscott Substation. Transmission losses increase with distance along HVAC cables and because of the number of cables connecting each of the two bipoles with Alverdiscott Substation (12 in total), losses need to be minimised.

4.3.10 The following factors were used to determine potential Converter Site locations:

- Environmental designations and sensitive habitats.
- Area of land available to house two independent converter stations.
- Topography of available land.
- Landscaping and screening opportunities.
- Environmental constraints including flood risk, ecological habitats and archaeology.
- Proximity of sensitive receptors such as homes and schools.
- Existing road access to and from the site.
- Avoidance of Public Rights of Way (PRoW).
- Distance and potential impact of the HVAC cable corridor.

4.3.11 The factors used to determine potential routes for the Onshore HVDC Cable Corridor and the Converter Site location, together with the design refinements for both are further explained in Volume 1, Chapter 4: Need and Alternatives of the PEIR.

Offshore Development

4.3.12 The Applicant has taken a staged approach to finding a feasible route for the Offshore HVDC Cable Corridor between Morocco and the UK. During the initial assessment stage, a desktop study to identify possible route options between Morocco and the south west of the UK for the offshore development was undertaken. Three potential options were identified and can be summarised as;

- a direct route directly through the Bay of Biscay (water depth of over 5,000 m);
- a route that limited water depth of up to 3,000 m; and
- a route that limited water depth of up to 700 m.

4.3.13 The more direct route between Morocco and the UK is significantly shorter (c.25%) than the other options but has a maximum water depth of over 5,000 m in the Bay of Biscay. The number of cable systems operating in water depths beyond 700 m is extremely limited. There are some HVDC cables that have been installed and are in operation up to depths of 1,640 m in the Mediterranean. In addition, the EuroAsia interconnector is currently under development with a maximum depth of 3,000 m. However, this has no operational track record

presenting a risk to Project feasibility. As such, the direct route (through the deepest water) has not been taken forward for consultation.

4.3.14 At the second stage, Intertek conducted a feasibility assessment in 2022 to select the optimum route that balanced natural hazards and conservation areas, technological feasibility, and ease of installation, protection, and operation. That route was limited to a maximum water depth of 700 m. It followed a route which was considered close enough to the continental shelf to be deemed technically feasible and was selected as the preferred option for further optimisation.

4.3.15 At stage 3, the Preferred Route for consultation was further refined by a Routing Workshop that considered water depth, seabed features and geohazards, influences of weather, ocean currents and waves (metocean), external stakeholders (e.g. seabed leaseholders, general fishing activities, shipping, etc.) and environmental constraints such as marine protected areas, including Special Areas of Conservation (SAC), Special Protection Areas (SPA), and Marine Conservation Zones (MCZ).

4.3.16 Following the initial route option analysis and the confirmation that Cornborough Range would be the preferred entry point for the proposed landfall HDD, the Offshore HVDC Corridor was further refined through a series of technical workshops benefitting from the input of specialist marine survey contractors 4C Offshore and GEOxyz. Further information on the reasonable alternatives considered by the Applicant are provided in the PEIR (Volume 1, Chapter 4: Need and Alternatives).

5 ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

5.1 Introduction

5.1.1 The EIA process and methodology is detailed within Volume 1, Chapter 5: EIA Methodology of the PEIR. EIA is the formal process of identifying and assessing the positive (beneficial) and negative (adverse) effects of a proposed development on the environment and determining if these are likely to be significant. Where significant adverse impacts are identified, suitable measures are proposed to avoid, prevent, reduce, or offset their effect on the environment. The EIA is then reported in an ES to assist with the decision-making process (e.g. assist the Secretary of State to make a decision on the application for development consent).

5.2 Scope of the Assessment

5.2.1 Scoping is the process of identifying the relevant topics to consider within the EIA process (establishing the scope of the assessment). Scoping is therefore an important preliminary procedure, which sets the context for the EIA process. Through scoping, the key environmental issues are identified at an early stage, which permits subsequent work to concentrate on those topics for which significant effects may arise.

5.2.2 Whilst there is no formal requirement in the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 to seek a Scoping Opinion prior to the submission of an application, the Applicant submitted a Scoping Report in January 2024 to the Planning Inspectorate. The Scoping Report described the scope and methodology for the technical studies being undertaken to provide an assessment of any likely significant effects for the Proposed Development (Xlinks, 2024).

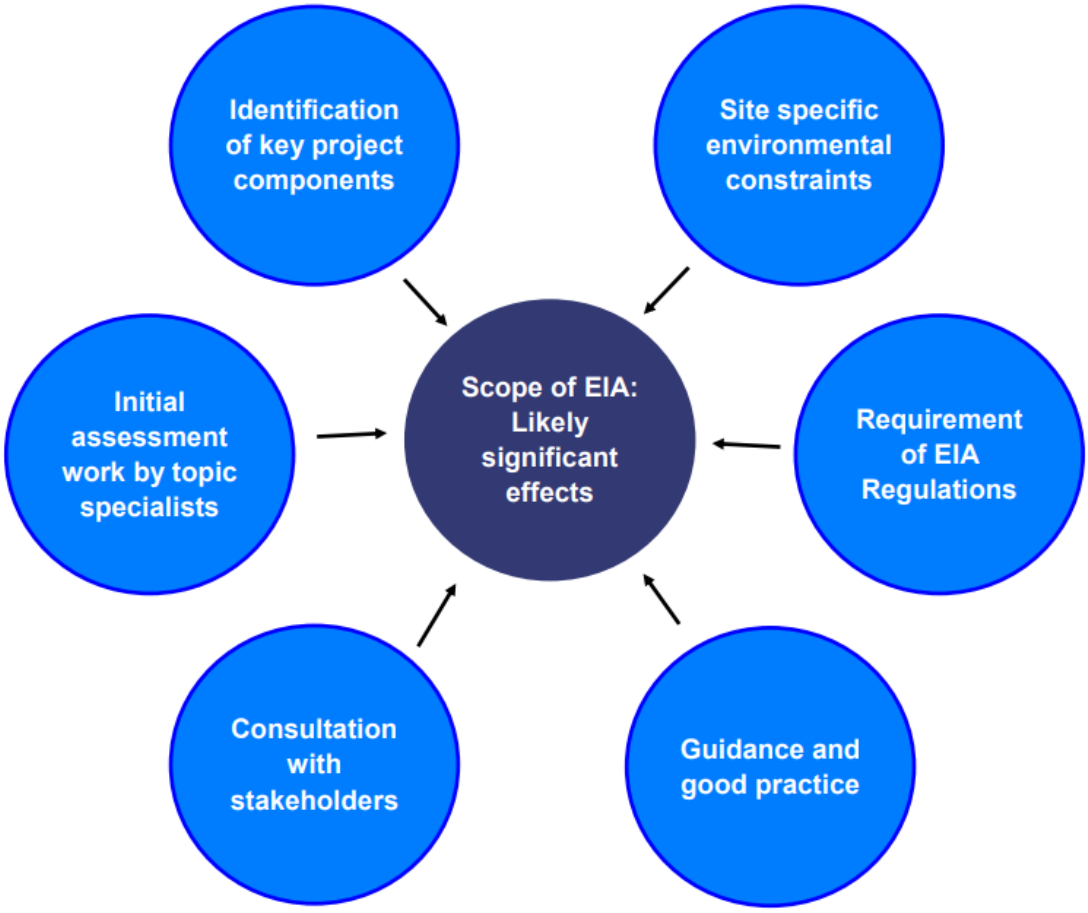


Plate 5.1: Overview of the scoping process

5.3 Approach to EIA

5.3.1 As set out above the Scoping Opinion was sought by submitting the EIA Scoping Report in January 2024. The EIA Scoping Report set out the scope and methodology of the EIA for the Proposed Development and was shared and consulted on by key stakeholders.

5.3.2 Following consultation, the Planning Inspectorate provided its Scoping Opinion on 7 March 2024. The Scoping Opinion formed the basis of the EIA for the Proposed Development by identifying and confirming which environmental topics require assessment in the Environmental Statement. The scope of the EIA will also be informed by relevant legislative requirements; the nature, size, and location of the Proposed Development; and ongoing consultation responses received to date.

5.3.3 The EIA process has taken into account the relevant EIA Guidance, ensured a proportionate EIA approach. Maintaining proportionate EIA has been recognised by the Institute of Environmental Management and Assessment (IEMA) through published guidance ‘Delivering proportionate EIA’ (IEMA, 2017).

Maximum Design Scenario

5.3.4 The iterative design process remains ongoing at this time. At this stage of the EIA and consenting process the project description for the Proposed Development is indicative.

5.3.5 A Project Design Envelope (PDE) approach has been adopted which defines a maximum design envelope and parameters within which the final design would sit. This approach allows for the assessment of a realistic worst-case scenario, whilst also allowing for flexibility in the design of elements requiring a more detailed design subsequent to the submission of a PEIR or ES.

5.3.6 Furthermore, the PDE approach utilises a ‘Limit of Deviation’ in order to accommodate potential changes in routeing and siting of infrastructure. The Limits of Deviation, which sit within the Proposed Development Draft Order Limits, define the maximum extent within which the development works can be carries out. This allows a proportionate degree of flexibility to accommodate any changes before the final alignment and design of the Proposed Development.

Approach to Mitigation and Monitoring

5.3.7 For the purposes of the PEIR, the term ‘measures adopted as part of the Proposed Development is used to include measures that have been identified during the EIA process to date and that the Applicants are committed to.

Assessment of Effects

5.3.8 EIA is a means of identifying and collating information to inform an assessment of the likely significant environmental effects of a development. For each environmental topic in the PEIR, the following have been addressed and are detailed within section **6, 7** and **8** of this Non-Technical Summary.

- assessment methodology;
- description of the existing environmental (baseline) conditions;
- identification and assessment of the significance of likely effects arising from the Proposed Development;
- identification of any mitigation measures, in addition to the embedded mitigation measures, proposed to avoid, reduce and if possible, remedy adverse effects;
- assessment of any cumulative effects with other proposed developments planning in the area and inter-relationships between environmental topics.

5.3.9 The Proposed Development has the potential to create a range of 'impacts' and consequent 'effects' with regard to the environment. The term 'impact' is defined as a change that is caused by an action. The term 'effect' is defined as the consequence of an impact.

5.3.10 This Non-Technical Summary sets out the significant effects identified during the EIA process at this stage.

Assessment of Cumulative Effects

5.3.11 Cumulative effects are defined as those that result from incremental changes caused by other reasonably foreseeable projects, alongside the project in question. An assessment of cumulative effects has been undertaken for the Proposed Development. This Non-Technical Summary sets out the significant effects identified during the EIA process at this stage.

Inter-related Effects

5.3.12 Inter-relationships between topics may lead to a greater environmental effect in combination with each other than they otherwise would when considered in isolation. This can take the form of different impacts within the same topic through the lifetime of the Proposed Development, (construction, operation and decommissioning stages) and the effects on receptors between different topics.

Transboundary Effects

5.3.13 Transboundary effects arise when impacts from a project within one European Economic Area state affect the environment of another state(s). The need to consider such transboundary effects has been embodied by the United Nations Economic Commission for Europe Convention on EIA in a Transboundary Context (commonly referred to as the 'Espoo Convention').

5.3.14 The Planning Inspectorate's Advice Note Twelve (Planning Inspectorate, 2020b) sets out the procedures for consultation in association with an application for development consent, where such development may have significant transboundary effects.

5.3.15 A screening matrix has been prepared for the PEIR (which will be updated for the Environmental Statement) which identifies potential significant transboundary effects to be considered within the EIA process.

6 POTENTIAL ENVIRONMENTAL EFFECTS - ONSHORE

6.1 Introduction

6.1.1 This section sets out the summary of potential significant environmental effects for individual topic chapters. The topics which are covered in the onshore section are;

- Onshore Ecology and Nature Conservation;
- Historic Environment;
- Hydrology and Flood Risk;
- Geology, Hydrogeology and Ground Conditions;
- Traffic and Transport;
- Noise and Vibration;
- Air Quality; and
- Land Use and Recreation.

6.2 Onshore Ecology and Nature Conservation

Introduction

6.2.1 The Onshore Ecology and Nature Conservation chapter (Volume 2, Chapter 1 of the PEIR) sets out the assessment of effects in relation to onshore ecology and nature conservation. Onshore ecology and nature conservation refers to the habitats and animals which live on or sufficiently close to the Proposed Development for there to be potential effects on them as a result of its construction, operation and maintenance, or decommissioning.

Approach

6.2.2 The assessment of effects has been informed by both collection of existing data including records of protected sites and species and site-specific baseline surveys.

Baseline Environment

6.2.3 The ecological and nature conservation baseline for the scheme was characterised by a series of species-specific surveys in addition to more general assessments of desk-based data and a review of habitats present. These surveys indicated that the Proposed Development site avoided direct impacts on designated sites (a site listed by a nature conservation body due to its conservation importance/value) for nature conservation and minimised effects on locally designated sites. In general, the Proposed Development passes through a largely agricultural landscape, dominated by improved grassland (grassland that has been improved through management practices) and arable habitats, occasionally crossing more ecologically interesting features such as woodlands

and streams with wooded banks. Baseline surveys have identified the presence of a number of protected species along the Onshore HVDC Cable Corridor, such as dormice, otters, bats, birds, and reptiles.

Measures Adopted as Part of the Proposed Development

6.2.4 The following measures are proposed as part of the Proposed Development to mitigate potential impacts on onshore ecology and nature conservation:

- Avoidance of designated sites and key areas of habitat (e.g. woodland) during the site selection process, where possible.
- An Onshore CEMP would be implemented during the construction phase and would include measures to reduce temporary disturbance to ecological receptors and to protect species.
- Trenchless techniques would be used to install the cables beneath the River Torridge, other watercourses, and woodland areas (e.g. Littleham Wood, Lodge Plantation and woodland south of the Converter Site).
- An Outline Landscape and Ecology Management Plan will also be developed, which will include provision for an ecological clerk of works. The Landscape and Ecology Management Plan will include details of long term mitigation and management measures. The Plan will be developed in consultation with the relevant responsible authorities.

Assessment of Effects

6.2.5 A number of potential impacts on nearby designated sites, and habitat features and protected or otherwise notable species were identified. These were associated with the construction, operation and maintenance, and decommissioning phases of the Proposed Development. These included some permanent habitat loss of typical improved grassland and arable lands and temporary habitat damage and disturbance to features such as Devon hedgerows as a result of construction of the Onshore HVDC Cable Corridor. Indirect potential impacts included disturbance and damage to habitats supporting protected species and potential contamination events to nearby designated sites. With measures adopted as part of the Proposed Development in place, the majority of these impacts result in effects of negligible or minor adverse significance. In the long-term, some of the habitat creation measures associated with the Proposed Development are likely to result in minor beneficial effects.

6.2.6 Temporary loss of Devon hedgerows as a result of the construction of the HVDC cable route is of moderate adverse significance (significant in EIA terms), although proposed reinstatement on a like-for like basis would overcome this effect in the long term.

6.2.7 Temporary and permanent habitat loss of improved grasslands, spoor semi-improved grasslands and arable lands as a result of construction of the HVDC cable route and Converter Site are of minor adverse significance (not significant in EIA terms), and all temporary losses would be reinstated in the long term.

6.2.8 Impacts on protected species such as dormice and bats would be of moderate adverse significance, primarily as a result of construction effects on Devon hedgerows. This is significant in EIA terms. Habitat creation as a result of the

Proposed Development landscape plan (including BNG commitments) are likely to see a minor positive significance of effect in the long term as these habitats establish and mature.

Cumulative Effects

6.2.9 Cumulative effects from 14 permitted and pending developments were assessed and predicted to result in no change in the significance of effects over those assessed for the Proposed Development in isolation, although magnitudes of impacts on habitat loss of improved grassland and arable land increased as a result of the cumulative assessment.

Transboundary Effects

6.2.10 No transboundary effects with regard to onshore ecology and nature conservation from the Proposed Development on the interests of other States were predicted.

6.3 Historic Environment

Introduction

6.3.1 The Historic Environment chapter (Volume 2, Chapter 2 of the PEIR) sets out the assessment of effects in relation to all aspects of the past including buried archaeological remains, presence of buried land surfaces (deposits of geoarchaeological or palaeoenvironmental interest), built heritage and the character of the historic landscape.

Approach

6.3.2 The terrestrial historic environment of the Proposed Development was examined through a combination of desk-based research, site visits and purposive fieldwork.

Baseline Environment

6.3.3 This examination revealed that the land within the Proposed Development Draft Order Limits has the potential to contain archaeological remains of all periods. No evidence has yet been found regarding the presence of deposits of geoarchaeological or palaeoenvironmental interest, although there is still potential for such deposits to be present locations not yet examined.

6.3.4 No nationally important heritage assets are present within the Proposed Development Draft Order Limits. Nationally important heritage assets located within defined study areas around the Proposed Development Draft Order Limits include Scheduled Monuments, Listed Buildings and a Registered Park and Garden of Historic Interest.

Measures Adopted as Part of the Proposed Development

6.3.5 The following measures are proposed as part of the Proposed Development to mitigate potential impacts on the historic environment:

- The Proposed Development would be designed to avoid, where possible, impacts on known buried archaeological sites and features, and avoid direct physical impacts on designated heritage assets.
- The ongoing programmes of geophysical survey and archaeological trial trenching would be completed, where practicable and where legal access is available.
- An Outline Onshore Written Scheme of Investigation will be developed. This will detail the survey and archaeological mitigation requirements in advance of and during construction.
- An Onshore CEMP would be implemented during the construction phase and would include measures to reduce temporary disturbance to heritage assets.

Assessment of Effects

6.3.6 A number of potential impacts on historic environment resources, associated with the construction, operation and maintenance, and decommissioning phases of the Proposed Development, were identified. These included direct physical impacts on buried archaeological remains and deposits of geoarchaeological or palaeoenvironmental interest, as well as impacts arising from change within the setting of historic assets and changes to the character of the historic landscape. At the current stage of scheme design, the potential for impacts to result in effects of moderate or even major adverse significance cannot be ruled out.

6.3.7 Direct physical impacts on buried archaeological remains and deposits of geoarchaeological or palaeoenvironmental interest during construction are permanent. Well-designed and targeted programmes of fieldwork undertaken ahead of construction will seek to identify such remains and deposits within the Proposed Development Draft Order Limits and hence allow impacts to be avoided or minimised through the scheme design at those locations. However, there is always the possibility that some remains and deposits may not be identified until they are encountered during construction, and this could in some circumstances includes remains and deposits of the highest level of importance. Where it is not possible to avoid or minimise impacts at that stage of construction, detailed investigation would be undertaken which would offset the impacts, but effects of major adverse significance would still be possible.

Cumulative Effects

6.3.8 Potential cumulative effects from other defined developments within the agreed study areas were assessed and predicted to result in effects no greater than those arising from the Proposed Development alone.

Transboundary Effects

6.3.9 No transboundary effects with regard to historic environment from the Proposed Development on the interests of other States were predicted.

6.4 Hydrology and Flood Risk

Introduction

6.4.1 The Hydrology and Flood Risk chapter (Volume 2, Chapter 3 of the PEIR) sets out the assessment of effects in relation to hydrology and flood risk. This includes effects on onshore surface waterbodies, including Main Rivers and ordinary watercourses.

Approach

6.4.2 Information on hydrology and flood risk has been collected through a detailed desktop review of existing studies and datasets. A Flood Risk Assessment and a Water Framework Directive assessment have also been undertaken.

Baseline Environment

6.4.3 The Proposed Development is located within the wider South West basin district. The study area is located within the North Devon and South West Transitional and Coastal Management Catchments.

6.4.4 There are multiple named watercourses located within the study area. The Environment Agency is responsible for the management of Main Rivers in England, while the Lead Local Flood Authority, Devon County Council manages ordinary watercourses. There are no Internal Drainage Boards located in the study area.

6.4.5 Flood risk is categorised into zones, with Zone 1 representing the lowest risk of flooding and Zone 3 representing the highest. The landfall and Onshore HVDC Cable Corridor are located within Flood Zones 1, 2, 3 and 3b, with flooding associated with river and tidal sources. The proposed locations of the permanent development associated with the converter stations, the Alverdiscott Substation Connection Development and the onshore HVAC Cables lie within Flood Zone 1 (i.e., having a less than 0.1% annual probability of river or sea flooding).

Measures Adopted as Part of the Proposed Development

6.4.6 The measures proposed by the Applicants are set out in the PEIR. These measures include the following.

- Horizontal Directional Drilling (HDD) (or other trenchless techniques) is proposed to be used to cross the Kenwith Stream, the River Torridge and Jennets Reservoir Tributary. HDD (or other trenchless methodology) is also proposed to be used to cross the shingle bar at Cornborough.

- HDD (or other trenchless methodology) entry and exit points will be located at least 8 m away from ordinary watercourses, 8 m from EA Main Rivers (non-tidal) and 16 m from EA Main Rivers (tidal) and the landward toe of formal and informal flood defences. Where a surface watercourse is to be crossed by HDD (or other trenchless methodology), the Onshore HVDC and HVAC Cable Corridor will be installed at least 2 m beneath the hard bed of any watercourses.
- An 8 m buffer will be maintained between the banks of ordinary watercourses, EA Main Rivers and a 16 m buffer for tidal EA Main Rivers from all temporary working areas for the Onshore HVDC and HVAC Cable Corridors, temporary construction compounds and the converter stations. The same buffer will be maintained for the permanent converter stations.
- An Outline Onshore Construction Environmental Management Plan will be prepared and submitted with the application for development consent.
- An Outline Pollution Prevention Plan (PPP) will be prepared and submitted with the application for development consent.
- During construction of piled foundations, mitigation measures as defined in the following guidance will be used: Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention (EA, 2001), or latest relevant available guidance.
- A Construction Drainage Strategy will incorporate pollution prevention and flood response measures to ensure that the potential for any temporary effects on water quality or flood risk are reduced as far as practicable during the construction stage. Such measures would be implemented through the Onshore Construction Environmental Management Plan(s).
- An Operational Drainage Strategy would include measures to ensure that existing land drainage is reinstated and/or maintained.
- The provisions of the Flood Risk Activity Permits and Land Drainage Consents will be disapplied and incorporated as protected provisions of the consent order. The design of the watercourse crossings will be agreed with the Environment Agency and/or Devon County Council.
- An Outline Onshore Decommissioning Strategy would be developed in a timely manner in consultation with the relevant stakeholders and prior to commencement of construction.
- At the compounds located within the Landfall area, construction measures will be adopted to maintain the existing level of flood protection during construction. The Flood Management Plan will enable site personnel to be evacuated from the site in a timely manner prior to a flood event occurring.
- To manage impacts to field drainage, the contractor will develop a field drainage strategy in consultation with the landowners affected.

Assessment of Effects

6.4.7 The assessment has considered:

- the impact of contaminated runoff on the quality of surface water and ground receptors;

- the impact of increased flood risk arising from additional surface water runoff;
- the impact of increased flood risk arising from damage to existing flood defences;
- the impact of damage to existing field drainage; and
- the impact of damage to existing water pipelines.

6.4.8 The Flood Risk Assessment undertaken demonstrates that the Proposed Development meet the requirements of relevant local and national planning policy in relation to flood risk and drainage.

6.4.9 Taking into account the measures proposed, the assessment has not identified any significant effects arising from the Proposed Development during the construction, operation and maintenance or decommissioning phases.

Cumulative Effects

6.4.10 Cumulative effects with other developments have been assessed. Overall, the assessment has not identified any significant cumulative effects.

Transboundary Effects

6.4.11 No transboundary effects with regard to Hydrology and Flood Risk from the Proposed Development on the interests of other States were predicted.

6.5 Geology, Hydrogeology and Ground Conditions

Introduction

6.5.1 The Geology, Hydrogeology and Ground Conditions chapter (Volume 2, Chapter 4 of the PEIR) sets out the assessment of effects in relation to geology, hydrogeology, and ground conditions. This includes consideration of effects in relation to geological features and ground conditions (including ground contamination), as well as effects on the quality of groundwater.

Approach

6.5.2 The assessments undertaken have been primarily based on a desktop review of publicly available information, online data sources and publishing and information contained in a Groundsure Enviro-Geo Insights report. This has been supplemented by a targeted site reconnaissance and preliminary ground investigation undertaken at the location of the Converter Site.

Baseline Environment

6.5.3 The Proposed Development is underlain by a thick sequence of bedrock geology with areas of superficial deposits constrained to either side of the River Torridge. The bedrock geology located at the Landfall is designated a geological Site of

Special Scientific Interest (SSSI) known as Mermaid's Pool to Rowden Gut. The deposits form an area of saltmarsh and mudflats, which are designated as a Local Nature Reserve.

6.5.4 The underlying bedrock and the Alluvium and River Terrace Deposits are classified as an important aquifer unit, which is a layer of rock that allows a significant flow or allows for abstraction of a significant quantity of groundwater. The Proposed Development which lies within the Torridge and Hartland Streams catchment contains Water Framework Directive groundwater bodies.

6.5.5 There are three localised areas in the study area, which due to historical land uses and/or activities, have the potential to cause contamination of the soil or groundwater. These are a rifle range located within the Landfall and, historical lime kilns and an infilled quarry within the area of the River Torridge Crossings and a suspected burial pit for cattle remains within the Converter Site. Two historical landfills are situated within 250 m west of the Crossings.

Mitigation Adopted as Part of the Proposed Development

6.5.6 Measures adopted as part of the Proposed Development include the following:

- The use of trenchless construction techniques (such as horizontal directional drilling) to pass beneath the geological SSSI.
- An Outline Pollution Prevention Plan will be developed and will include details of emergency spill procedures. Good practice guidance will be followed.
- A Discovery Strategy will be developed in accordance with the Onshore Construction Environmental Management Plan, to identify any contamination protocol on discovery of any currently unknown contamination.
- Appropriate Personal Protective Equipment will be used and relevant good working practices applied to avoid potential risk to human health including from any potential ground contamination, in line with relevant available guidance.

Assessment of Effects

6.5.7 A number of potential impacts on geology, groundwater (including groundwater dependent receptors) and human health, associated with the construction, operation and maintenance, and decommissioning phases of the Proposed Development, were identified. These included potential damage or loss to the geological SSSI and the potential mobilisation of existing contaminants (or release of new contaminants) during construction on groundwater and construction workers. Potential operational impacts include the heat generation from the cables on ground conditions. With the measures adopted as part of the Proposed Development in place, these impacts result in effects of either negligible or minor adverse significance.

6.5.8 The potential mobilisation of existing contaminants during construction, specifically in terms of the potential to cause a deterioration of groundwater quality in underlying aquifer units, has been considered. These effects are proposed to

be verified through further ground investigation to characterise ground and groundwater quality in potential areas of concern prior to construction to:

- inform any requirement for remediation; and
- inform a site-specific crossing method statement to ensure any ground or groundwater contamination is managed and new pathways are not created.

6.5.9 The potential loss or damage on Mermaid's Pool to Rowden Gut SSSI during construction has also been assessed given its location at the Landfall.

6.5.10 With the limited potential sources of contamination identified and the measures adopted as part of the Proposed Development e.g. the use of HDD with avoidance of key constraints (geological SSSI and known areas of contamination), the impacts on the SSSI, and groundwater quality from existing contamination are predicted to be negligible and low respectively. The significance of effect is minor adverse (not significant in EIA terms) due to the combination of high and medium sensitivity receptors to the predicted impacts.

6.5.11 In terms of the potential mobilisation of existing contamination on groundwater quality during operation, the impact is considered negligible, and the significance of effect is negligible (not significant in EIA terms).

Cumulative Effects

6.5.12 Cumulative effects from construction activities and operation of the Proposed Development with other developments within a 1 km buffer of the Proposed Development were assessed and predicted to result in effects of negligible or minor adverse significance (not significant in EIA terms).

Transboundary Effects

6.5.13 No transboundary effects with regard to geology, hydrogeology and ground conditions from the Proposed Development on the interests of other States were predicted.

6.6 Traffic and Transport

Introduction

6.6.1 The Traffic and Transport chapter (Volume 2, Chapter 5 of the PEIR) relates to the movement demand generated by the Proposed Development and its effects upon other road users and surroundings.

Approach

6.6.2 The approach to producing the baseline position has been established by obtaining publicly available traffic flow data, undertaking traffic surveys, assessing road safety and analysing public transport services and provision and facilities for pedestrians and cyclists.

Baseline Environment

6.6.3 A traffic and transport study area has been identified which includes relevant parts of the highway network likely to be used by construction vehicles associated with the Proposed Development.

Mitigation Adopted as Part of the Proposed Development

6.6.4 Measures adopted as part of the Proposed Development include the following:

- A Construction Traffic Management Plan(s) will set standards and procedures for the following:
  - Managing the numbers and routing of construction vehicles during construction;
  - Measures to manage the safe passage of Heavy Goods Vehicle traffic via the local highway network (e.g. restrictions on Heavy Goods Vehicle operating hours along sections of the highway network that provide access to local schools).
  - Measures to minimise dust and dirt associated with movements of construction vehicles.
- Temporary access points from the highway will be installed to facilitate vehicular access from the road during construction. The design of these access points will be agreed with the relevant highway authorities.
- The timing and routeing of AIL deliveries will be discussed and agreed with the relevant highway authorities to minimise delay for other highway users and to minimise risk to highway users.

Assessment of Effects

6.6.5 An impact assessment has been undertaken in the traffic and transport PEIR chapter (see Volume 2, Chapter 5: Traffic and Transport) which has identified that the effects of construction traffic associated with the Proposed Development on driver delay, severance, non-motorised user delay, non-motorised user amenity and fear and intimidation, road safety and AILs within the Traffic and Transport study area, following the implementation mitigation outlined above, were found to be of negligible or minor adverse significance, which is not significant in EIA terms.

Cumulative Effects

6.6.6 There are currently no specific projects, plans and activities which have been scoped into the Traffic and Transport cumulative effects assessment for the purposes of the PEIR.

Transboundary Effects

6.6.7 A screening of transboundary impacts has been undertaken and has identified that there is no potential for significant transboundary effects regarding Traffic and

Transport from the Proposed Development upon the interests of other states. No inter-related effects from the Proposed Development are predicted.

6.7 Noise and Vibration

Introduction

6.7.1 The Noise and Vibration chapter (Volume 2, Chapter 6 of the PEIR) sets out the assessment of effects in relation to noise and vibration. Unwanted noise and vibration can lead to adverse impacts on existing residential amenity and public health. As such, it's important that the impacts of noise and vibration predicted from the construction and operation of new developments be assessed and mitigated as best is reasonably practicable.

Approach

6.7.2 The existing sound environment in the development area for the Proposed Development was characterised via site-specific surveys where long-term and short-term sound monitoring provided data for the determination of impact assessment criteria.

6.7.3 The long-term and short-term sound surveys highlight that much of the area forming the Onshore Infrastructure Area has a low noise climate due to the rural nature of the area. The dominant sources of noise were noted to be traffic local highway networks.

Baseline Environment

6.7.4 A number of potential noise and vibration impacts associated with the construction, operational and maintenance, and decommissioning phases of the Proposed Development were identified. These included noise impacts arising from the construction of the Onshore HVDC Cable Corridor and the Converter Site. Consideration has also been given to the potential impacts due to vibration due to dynamic compaction and piling activities landward of Mean High Water Springs. Operational noise impacts due to the Converter Site and the Alverdiscott Substation Connection Development have also been assessed.

Measures Adopted as Part of the Proposed Development

6.7.5 Measures adopted as part of the Proposed Development include the following:

- The Onshore Construction Environmental Management Plan would include measures to reduce temporary disturbance to residential properties, recreational users and existing land users. This would include construction noise and vibration limits and best practice measures to mitigate noise and vibration from construction activities associated with the Proposed Development.
- The Construction Traffic Management Plan will manage the numbers and routing of construction vehicles.

- Noise control measures will be considered in the design of the converter stations, including the orientation and layout of the converter stations, the selection of quieter equipment for operation, and mitigation measures implemented where necessary (e.g. acoustic barriers).

Assessment of Effects

6.7.6 Effects of major adverse significance have been identified where trenchless techniques are required to install the Onshore HVDC Cable Corridor. This is due to the high noise levels associated with the HDD construction plant, as well as the potential need for night-time working where existing noise levels are low. The significance of this effect may be reduced by using quieter equipment, limiting night-time working where possible, and adopting mitigation measures for the construction plant items, where available. Providing such measures are adopted, it is possible the significance of this effect may be reduced to minor adverse which is not significance in EIA terms.

Cumulative Effects

6.7.7 Cumulative effects from nearby noise-generating developments (construction or operational) within 300 m of the Proposed Development were assessed and were predicted to result in minor adverse effects which is not significant in EIA terms.

Transboundary Effects

6.7.8 No transboundary effects with regard to noise and vibration from the Proposed Development on the interests of other States were predicted.

6.8 Air Quality

Introduction

6.8.1 The Air Quality chapter (Volume 2, Chapter 7 of the PEIR) sets out the assessment of effects in relation to air quality. The term air quality is a measure used to describe the level of pollutants present within the air.

Approach

6.8.2 Existing air quality data has been obtained from available sources, including the Department for Environment, Food & Rural Affairs (Defra) UK AIR Information Source national pollution maps and published results of local authority studies of air quality, including local monitoring and modelling studies.

Baseline Environment

6.8.3 The baseline conditions for this report have been characterised by drawing on information from Defra Maps (Defra, 2018) and published results of local authority Review and Assessment (R and A) studies of air quality.

6.8.4 The background annual-mean PM_{10} concentration used in this assessment has been derived from the highest concentration of 16.9 µg/m^3 measured at the nearest monitor to the site.

Measures Adopted as Part of the Proposed Development

6.8.5 The measures proposed as part of the Proposed Development are set out in the PEIR. These measures include the following.

- An Onshore CEMP would be developed in accordance with the Outline Onshore CEMP, and would be implemented during the construction phase. The Onshore CEMP would include measures to reduce temporary disturbance to residential properties, recreational users and existing land users. This will include dust control measures based on the guidance provided by the Institute of Air Quality Management.

Assessment of Effects

6.8.6 The main effect of any dust emissions during the construction phase, if not mitigated, could be annoyance due to soiling of surfaces, particularly windows, cars and laundry and the effects on human health from suspended particulate matter. However, it is normally possible, by implementation of proper control, to ensure that dust deposition does not give rise to significant adverse effects, although short-term events may occur (for example, due to technical failure or exceptional weather conditions). With the implementation of recommended mitigation measures, the residual effect is considered not significant.

6.8.7 The likely effects once the development is operational are considered not significant.

Cumulative Effects

6.8.8 Cumulative effects with other developments have been assessed. Overall, it is concluded that there will be no significant cumulative effects from dust arising from the Proposed Development alongside other projects.

Transboundary Effects

6.8.9 No transboundary effects with regard to air quality from the Proposed Development on the interests of other States were predicted.

6.9 Land-use and Recreation

Introduction

6.9.1 The Land Use and Recreation chapter (Volume 2, Chapter 8 of the PEIR) sets out the assessment of effects in relation to land use and recreation. It is important that the impacts on land use and recreation predicted from the construction, operation and maintenance, and decommissioning of new developments be assessed and mitigated as best is reasonably practicable.

Approach

6.9.2 Information on land use and recreation has been collected through a detailed desktop review of existing studies and datasets.

6.9.3 In addition, the use of site-specific surveys from Agricultural Land Classification (ALC) and soil surveys associated with the Atlantic Array offshore wind farm project from 2011 provided additional information to inform the assessment.

Baseline Environment

6.9.4 The baseline environment informed from the desk study produces information on the geology and soils, climatic data and published ALC data. Meanwhile the site survey data provides the results of the auger boring surveys undertaken in connection with the Atlantic Array project, which identified the six main types of soils.

6.9.5 In terms of land quality the overall climate poses no direct limitation other than on the highest ground in the extreme east which is limited to Grade 2 (very good quality agricultural land). However, the exposure on the land closest to the coast would be downgraded to no better than a Subgrade 3a (good quality agricultural land). Slopes along most of the proposed route are gentle or moderate and in themselves pose no agricultural limitations except immediately east of the Torridge (where land would be Grade 4 (poor quality agricultural land) due to excessively steep slopes) and a few other short stretches elsewhere on the sides of smaller valley features which are graded 3b (moderate quality agricultural land) or 4 according to the classification system.

6.9.6 The Proposed Development Draft Order Limits primarily encompasses farm holdings characterised by mainly livestock or mixed farming enterprises.

6.9.7 With respect to recreation, there are no areas of statutory access land designated under the Countryside and Rights of Way Act 2000 or other legislation within the study area. There is a section of the Coast at Cornborough within the study area, together with a number of Public Rights of Way (PRoW) including the South West Coast Path and the Tarka Trail which includes part of National Cycle Route 3. The Bideford and District Angling club facility and access to it also lies within the recreational study area.

Assessment of Effects

6.9.8 Effects of major adverse significance have been identified where it is likely permanent land take could lead to the permanent loss of the best and most versatile Subgrade 3a land, predominantly associated with the construction of the Convertor Site and associated earthworks and landscaping. The use of HDDs would ensure that there would be no physical effects on the coastal recreational asset, the South West Coast Path, the Tarka Trail or National Cycle Route 3.

6.9.9 Appropriate mitigation measures in relation to soils, farm holdings and PRoW as described in paragraph **6.9.8** above would be implemented to ensure that the Proposed Development would not give rise to other significant adverse effects on these resources during the construction period.

Cumulative Effects

6.9.10 There would be additional permanent losses of high quality Subgrade 3a land associated with a number of residential development schemes, which would be of major adverse significance cumulatively with the potential permanent loss of land associated with the Proposed development. No further significant adverse cumulative effects are assessed in relation to land use and recreation. The full assessment of cumulative developments is provided in Volume 1, Appendix 5.3: Cumulative Screening Matrix of the PEIR.

Transboundary Effects

6.9.11 No transboundary effects with regard to land-use and recreation from the Proposed Development on the interests of other States were predicted.

7 POTENTIAL ENVIRONMENTAL EFFECTS – OFFSHORE

7.1 Introduction

7.1.1 This section sets out the summary of potential significant environmental effects for individual offshore topic chapters. The topics which are covered in the offshore section are;

- Benthic Ecology;
- Fish and Shellfish Ecology;
- Commercial Fisheries;
- Marine Mammals and Sea Turtles;
- Shipping and Navigation;
- Other Marine Users;
- Marine Archaeology and Cultural Heritage;
- Physical Processes; and
- Offshore Ornithology.

7.2 Benthic Ecology

Introduction

7.2.1 The Benthic Ecology chapter (Volume 3, Chapter 1 of the PEIR) considers the impacts of the Proposed Development on benthic habitats and species.

7.2.2 Offshore benthic habitats and species are those ecological communities that are associated with the sea bed.

Approach

7.2.3 Baseline data collection was undertaken to obtain information on the extent, distribution and abundance of benthic (sea bed) habitats and species within the study area.

7.2.4 In addition to existing data, site-specific benthic and habitat assessment surveys were conducted by specialist marine survey contractors to characterise the marine habitats, including identifying any protected habitats, as well as gathering additional information on the physico-chemical and biological environment within the survey area.

Baseline Environment

7.2.5 Baseline data and site-specific surveys indicate a range of benthic habitats and species present along the proposed cable route.

7.2.6 Four species of conservation importance were identified including the crustaceans *Apherusa ovalipes*, *Harpinia laevis*, *Eriopisa elongata*, and *Thia scutellate* which are listed as being nationally scarce by the Joint Nature Conservation Committee (JNCC).

7.2.7 Additionally, several non-native species were recorded during site-specific surveys including Goniadella gracilis, Syllis garciai, Syllis parapari, Syllis pontxioi, Prosphaerosyllis chauseyensis, Lumbrinerides amoureuxi, Aricidea philbinae, Paradoneis ilvana, Spio symphyta and Vitreolina antiflexa.

7.2.8 Some limited areas of bedrock reef and stony reef were also identified which are characteristic of Annex I 'Reef' habitat (habitats listed under the Habitats Directive i.e. considered threatened across Europe).

Measures Adopted as Part of the Proposed Development

7.2.9 The measures proposed by the Applicant are set out in the PEIR. These measures include the following:

- The route of the offshore cable corridor has been developed to avoid any designated sites with listed benthic habitats.
- The final cable routes (within the offshore cable corridor) will be micro-routed to minimise any potential damage to Annex I habitats.
- Cables will be buried, up to 1.5 m below the seabed, where possible. Only when full burial is not possible will additional protection (e.g. rock placement) be installed. Cable protection would be kept level with the seabed where possible, and if above the seabed they would be kept to a maximum of 1 m above seabed level.
- An Outline Offshore Construction Environmental Management Plan (CEMP) will be prepared and submitted with the application for development consent (draft presented with this PEIR). The Outline Offshore CEMP will include measures and procedures to control and manage marine pollution prevention; waste management; marine invasive species; and dropped objects.
- An Offshore Biosecurity Plan will be developed which will include a biosecurity risk assessment.
- HDD will be used to install the cables at the Landfall avoiding any direct interaction with the intertidal zone and coastal cliffs. Bentonite will be used during the HDD (as best practice drill lubricant).

Assessment of Effects

7.2.10 A number of potential impacts on benthic ecology, associated with the construction, operational and maintenance, and decommissioning phases of the Proposed Development, were identified. These included temporary habitat loss/disturbance, temporary increase in suspended sediments and sediment deposition, changes to water quality (release of hazardous substances from sediments), introduction of Invasive Non-Native Species (INNS), underwater noise & vibration, changes in hydrodynamic regime (scour & accretion), sediment heating, electromagnetic field (EMF) effects, long-term habitat loss/change and accidental pollution.

7.2.11 With the embedded mitigation measures adopted as part of the Proposed Development in place, all of these impacts result in effects of either negligible or minor adverse significance.

7.2.12 Those that were considered to be of potential minor significance are listed here:

- Temporary habitat loss/disturbance is assessed to be of minor adverse significance (not significant in EIA terms) to benthic ecology receptors, as the proportion of habitat loss/disturbance is predicted to be small in the context of available habitats within the study area.
- Temporary increase in suspended sediments and sediment deposition is assessed to be of negligible to minor adverse significance (not significant in EIA terms) to benthic ecology receptors, as suspended sediments would be dispersed across a very localised spatial extent and the impact would have short-term duration for any specific area of habitat (any suspended sediment will disperse quickly).
- Changes to water quality (release of hazardous substances from sediments) is assessed to be of negligible to minor adverse significance (not significant in EIA terms) to benthic ecology receptors, as changes to water quality are predicted to be of local spatial extent and of short-term duration (with any released chemicals likely rapidly diluted and dispersed in the water column).
- Introduction and spread of INNS is assessed to be of minor adverse significance (not significant in EIA terms) to benthic ecology receptors. Due to the implementation of the embedded mitigation measures, the risk of the introduction and spread of INNS is low.
- Underwater noise & vibration is assessed to be of minor adverse significance (not significant in EIA terms) to benthic ecology receptors, due to the low extent and short duration of the predicted impact.
- Changes in hydrodynamic regime (scour & accretion) is assessed to be of minor adverse significance (not significant in EIA terms) to benthic ecology receptors. It is anticipated that any changes in hydrodynamic regime as a result of cable protection will only affect a small proportion of the habitats immediately adjacent to the Offshore Cable Corridor.
- Long-term habitat loss/change is assessed to be of minor adverse significance (not significant in EIA terms) to benthic ecology receptors, as the proportion of long-term habitat loss/change is predicted to be small in the context of available habitats within the benthic ecology Study Area.
- Accidental pollution is assessed to be of minor adverse significance (not significant in EIA terms) to benthic ecology receptors, due to the implementation of mitigation measures and because accidental pollution is predicted to be of local spatial extent and short-term duration (any pollutant will be quickly dispersed) and highly intermittent (unlikely).

Cumulative Effects

7.2.13 Cumulative effects from a range of other projects and plans including proposed seaweed cultivation sites, offshore wind and interconnector cables were assessed and predicted to result in effects no greater than the project alone upon benthic ecology (none are significant in EIA terms).

Transboundary Effects

7.2.14 There is potential for transboundary impacts on benthic ecology due to construction, operational (and maintenance) and decommissioning impacts of the Proposed Development. However, it is concluded that there is no potential for significant transboundary effects on benthic ecology receptors from the Proposed Development upon the interests of other states.

7.3 Fish and Shellfish Ecology

Introduction

7.3.1 The Fish and Shellfish ecology chapter (Volume 3, Chapter 2 of the PEIR) considers the impacts of the Proposed Development on fish and shellfish species.

Approach

7.3.2 Baseline data collection was undertaken to obtain information on the extent, distribution and abundance of fish and shellfish species and associated spawning and nursery grounds within the fish and shellfish study area .

7.3.3 Existing data, including a number of recent marine and estuarine fish survey data sets are sufficient to characterise the baseline environment and as such site-specific fish and shellfish surveys were not considered necessary.

7.3.4 The site specific benthic survey data provides further information on the fish and shellfish ecology of the area.

Baseline Environment

7.3.5 Baseline data indicates a diversity of bottom dwelling and open water fish, as well as a range of shellfish species. Commercially important species within the study area include hake, megrim, haddock, whelk, European lobster and sole. Several internationally important species have been identified including common skate, Atlantic salmon, lampreys, twaite shad and allis shad.

7.3.6 Baseline data indicates an overlap of the Proposed Development with spawning and / or nursery grounds for several species, including cod, hake, horse mackerel, ling, mackerel, plaice, sand eel, sole, whiting, lemon sole, sole, sprat, common skate, spotted ray, spurdog and thornback ray.

Measures Adopted as Part of the Proposed Development

7.3.7 The measures proposed by the Applicant are set out in the PEIR. These measures include the following:

- An Outline Offshore CEMP will be prepared and submitted with the application for development consent (draft presented with this PEIR). The Outline Offshore CEMP will include measures and procedures to control and manage marine pollution prevention; waste management; marine invasive species; and dropped objects.

- Cables will be buried, up to 1.5 m below the seabed, where possible. Only when full burial is not possible will additional protection (e.g. rock placement) be installed. Cable protection would be kept level with the seabed where possible, and if above the seabed they would be kept to a maximum of 1 m above seabed level.
- At Landfall an HDD drill fluid system that allows for the monitoring of pressure loss will be used to allow for the rapid identification of potential break outs. Also a self-sealing platelet grout lubricant will be used to minimise risk of break out.

Assessment of Effects

7.3.8 A number of potential impacts on fish and shellfish species, associated with the construction, operational and maintenance, and decommissioning phases of the Proposed Development, were identified. These included temporary habitat loss, increased suspended sediment concentrations and deposition, injury and disturbance for underwater noise, electromagnetic field effects and long-term habitat loss. With the embedded measures adopted as part of the Proposed Development in place, all of these impacts result in effects of either negligible or minor adverse significance (not significant in EIA terms).

7.3.9 Temporary habitat loss / disturbance is of negligible to minor adverse significance (not significant in EIA terms) to fish and shellfish receptors, as the proportion of habitat loss/disturbance is predicted to be small in the context of available habitats and spawning/nursery grounds for key species within the Study Area.

7.3.10 Injury and disturbance from noise and vibration is predicted to be of minor adverse significance (not significant in EIA terms) to fish and shellfish receptors, due to the low extent and short duration of the impact.

7.3.11 Electromagnetic field effects are predicted to be of minor adverse significance (not significant in EIA terms) to fish and shellfish receptors, due to being restricted to within metres of the cable and short term behavioural changes.

Cumulative Effects

7.3.12 Cumulative effects from other projects including other offshore renewable developments were assessed and predicted to result in effects of negligible or minor adverse significance (not significant in EIA terms) upon fish and shellfish species within a 30 km buffer of the Proposed Development.

Transboundary Effects

7.3.13 There is potential for transboundary impacts on fish and shellfish due to the mobile and often migratory nature of many of these species. However, any transboundary impacts that do occur as a result of the Proposed Development are predicted to be short-term and intermittent, with the recovery of fish and shellfish characteristics to baseline levels following the completion of the work. Therefore, transboundary effects of a maximum minor or negligible adverse significance are predicted (not significant in EIA terms).

7.4 Commercial Fisheries

Introduction

7.4.1 The Commercial Fisheries chapter (Volume 3, Chapter 3 of the PEIR) sets out the assessment of effects of the Proposed Development in relation to commercial fisheries activities.

7.4.2 Commercial fisheries activity refers to fishing activity legally undertaken where the catch is sold for taxable profit.

Approach

7.4.3 The commercial fisheries baseline relevant to the Proposed Development was characterised via review of a series of publicly available data sources, supplemented by engagement with the fishing industry.

Baseline Environment

7.4.4 Baseline analysis identified the following key receptors (i.e. fishing fleets) active in the study area and to be considered in impact assessment: the UK beam trawl fleet, the UK netting fleet, the UK potting fleet, the UK demersal trawl fleet, the UK pelagic trawl fleet, the UK dredge fleet and European Union trawl fleets.

Measures Adopted as Part of the Proposed Development

7.4.5 The measures proposed by the Applicant are set out in the PEIR. These measures include the following:

- Route optimisation studies, including multiple desktop studies and marine investigation surveys, have informed the routing of the Offshore Cable Corridor to ensure the Proposed Development avoids sensitive locations for commercial fisheries where possible.
- Cables will be buried, up to 1.5 m below the seabed, where possible. Only when full burial is not possible will additional protection (e.g. rock placement) be installed. Cable protection would be kept level with the seabed where possible, and if above the seabed they would be kept to a maximum of 1 m above seabed level. All above seabed rock protection will be installed to best practice guidelines.
- Cable crossings will adhere to international best practice design, which will allow them to be overtrawlable.
- A Fisheries Liaison Officer (FLO) will support ongoing liaison and ensure clear communication between the Applicant and commercial fisheries parties.

Assessment of Effects

7.4.6 A number of potential impacts on commercial fisheries, associated with the construction, operational and maintenance, and decommissioning phases of the

Proposed Development, were identified. These included: reduction in access to, or exclusion from established fishing grounds, displacement leading to gear conflict and increased fishing pressure on adjacent grounds, displacement or disruption of commercially important fish and shellfish resources, increased vessel traffic associated with the Proposed Development within fishing grounds leading to interference with fishing activity, and the physical presence of Proposed Development infrastructure leading to fishing gear snagging.

7.4.7 With the measures adopted as part of the Proposed Development in place, the majority of these impacts result in effects of minor adverse significance (not significant in EIA terms).

7.4.8 An exception to this was the impact of temporary loss of fishing grounds and associated displacement during the construction phase for the UK potting fleet, for which a potential moderate adverse impact significance was identified. This reflects that in some instances the removal or relocation of static gear may be required during the construction phase.

7.4.9 Where this is the case, appropriate mitigation will be implemented for affected vessels following an evidence-based approach, in line with The Fishing Liaison with Offshore Wind and Wet Renewables Group guidance, via the establishment of co-operation agreements, which will reduce the significance of the effect to minor adverse (not significant in EIA terms).

Cumulative Effects

7.4.10 Cumulative effects that may arise with other projects (including proposed seaweed cultivation sites, subsea cables and other offshore renewable developments) were assessed and predicted to result in effects of minor adverse significance (not significant in EIA terms) upon commercial fisheries.

Transboundary Effects

7.4.11 No transboundary effects with regard to commercial fisheries from the Proposed Development on the interests of other States were predicted.

7.5 Marine Mammals and Sea Turtles

Introduction

7.5.1 The marine mammal and sea turtle chapter (Volume 3, Chapter 4 of the PEIR) refers to cetaceans (the collective term for whales, dolphins and porpoise), seals and sea turtle species known to occur within the Bristol Channel and Celtic Sea.

Approach

7.5.2 A desk-based study collated the most up to date research on baseline marine mammals and sea turtle distributions, for experts to assess potential impacts against.

7.5.3 Marine megafauna are highly mobile and can travel hundreds and thousands of km to forage or migrate to breeding grounds. Due to these large ranges, species

are considered under management units or areas for abundance and distribution studies.

Baseline Environment

7.5.4 The region where the Proposed Development is situated was highlighted as an important region to the following species: harbour porpoise, bottlenose dolphin, common dolphin, Risso's dolphin, minke whale, grey seal and leatherback turtle.

Measures Adopted as Part of the Proposed Development

7.5.5 The measures proposed by the Applicant are set out in the PEIR. These measures include the following:

- An Outline Offshore CEMP will be prepared and submitted with the application for development consent (draft presented with this PEIR). The Outline Offshore CEMP will include measures and procedures to control and manage marine pollution prevention; waste management; marine invasive species; and dropped objects.
- A Vessel Management Plan will be developed which will set out pre-agreed vessel routes, speeds, safety measures, communication expectations etc.
- Avoidance of activities that produce impulsive noise sources, such as piling.

Assessment of Effects

7.5.6 A number of potential impacts on marine mammals and sea turtles, associated with the construction, operational (and maintenance), and decommissioning phases of the Proposed Development, were identified. These included disturbance from man-made noise, predominantly occurring during the construction phase resulting from e.g. cable lay activities, and increased vessel disturbance (noise and presence) during construction, maintenance and decommissioning. With the embedded measures adopted as part of the Proposed Development in place, the majority of these impacts result in effects of either negligible or minor adverse significance (not significant in EIA terms).

7.5.7 Disturbance from anthropogenic noise is of minor adverse significance (not significant in EIA terms) to marine mammals or sea turtles in the Proposed Development's study area, as any behavioural response resulting from the activities will be temporary and localised. Increased vessel disturbance is also considered of minor adverse significance (not significant in EIA terms) due to the short-term nature of impact and local spatial extent.

Cumulative Effects

7.5.8 Cumulative effects from other projects including offshore energy developments, and other cable projects were assessed and predicted to result in effects of negligible adverse significance (not significant in EIA terms). The cumulative marine mammal and sea turtle assessment applied a buffer area around the Proposed Development which accounted for potential changes in prey species distribution or impacts.

Transboundary Effects

7.5.9 No significant transboundary effects with regard to marine mammals and sea turtles from the Proposed Development on the interests of other States were predicted.

7.6 Shipping and Navigation

Introduction

7.6.1 The Shipping and Navigation chapter of the PEIR (Volume 3, Chapter 5 of the PEIR) considers impacts from the Proposed Development on the navigation of vessels in the area.

Approach

7.6.2 The baseline Shipping and Navigation environment was characterised using desk-based data sources including Automatic Identification System data, maritime incident data and nautical charts.

Baseline Environment

7.6.3 Based on 12 months of Automatic Identification System data, there was an average of 90 unique vessels per day recorded within 5 nautical miles of the Offshore Cable Corridor. The most common vessel types were cargo vessels, which made up 50% of vessel traffic, followed by tankers (20%) and fishing vessels (15%). Key vessel routes in the area were associated with vessels using the English Channel and the Traffic Separation Schemes around the Isles of Scilly. Fishing activity was recorded throughout the study area, with single (otter) demersal trawlers and beam trawling being the most common types of fishing. Recreational activity was also recorded throughout the study area, particularly in nearshore areas. Limited anchoring activity was recorded in the study area.

Measures Adopted as Part of the Proposed Development

7.6.4 The measures proposed by the Applicant are set out in the PEIR. These measures include the following:

- Cables will be buried, up to 1.5 m below the seabed, where possible. Only when full burial is not possible will additional protection (e.g. rock placement) be installed. Cable protection would be kept level with the seabed where possible, and if above the seabed they would be kept to a maximum of 1 m above seabed level.
- An Outline Offshore CEMP will be prepared and submitted with the application for development consent (draft presented with this PEIR). The Outline Offshore CEMP will include measures and procedures to control and manage marine pollution prevention; waste management; marine invasive species; and dropped objects.

- Compass deviation effects will be minimised through cable design and burial, and separation distance between the two trenches. A compass deviation assessment will be undertaken post-consent, once the detailed design and cable configuration is available, to confirm interference with magnetic position-fixing equipment is within acceptable limits. If it cannot be demonstrated that Maritime and Coastguard Agency (MCA) deviation requirements can be met pre-construction, a post-construction compass deviation survey of the 'as laid' Offshore Cable Corridor will be undertaken.
- A Vessel Management Plan will be developed which will set out pre-agreed vessel routes, speeds, safety measures, communication expectations etc.
- Passing vessels will be requested to maintain a "safe" distance from installation vessels restricted in manoeuvrability. This will be monitored by guard vessels.
- Relevant policy guidance on water depth reduction will be followed during the design and construction of the project. Preliminary findings suggest that no areas are at risk of reducing water depth by more that the MCA stipulated 5%.
- Information will be promulgated via Notice to Mariners (NtM), Kingfisher bulletins, the Kingfisher Information Service – Offshore Renewable & Cable Awareness (KIS-ORCA) service, Radio Navigational Warnings on Very High Frequency (VHF) radio, Navigational Telex (NAVTEX), and/or broadcast warnings in advance of and during the offshore works.
- International legislation will be complied with, both for Project vessels and third-party vessels. This includes the Convention on International Regulations for Preventing Collisions at Sea and the International Convention for the Safety of Life at Sea.
- A Fisheries Liaison Officer (FLO) will support ongoing liaison and ensure clear communication between the Applicant and commercial fisheries parties.
- The cable will be clearly marked on Admiralty Charts with associated notes about anchoring, trawling or seabed preparation.

Assessment of Effects

7.6.5 A number of potential impacts on Shipping and Navigation, associated with the construction, operation and maintenance, and decommissioning phases of the Proposed Development, were identified. These included increases in vessel-to-vessel collision risk, disruption to routeing and timetables, fishing, recreational and third-party vessels, risks involving anchor or fishing gear interaction with subsea cables, increased grounding risk due to external cable protection and a reduction in port access. With the mitigation measures in place considered, all risks were assessed to be broadly acceptable or tolerable adverse significance (using navigation risk assessment terms), which is considered not significant in EIA terms.

Cumulative Effects

7.6.6 Cumulative impacts were assessed to be equivalent to those associated with the Proposed Development in isolation. Therefore, it is concluded that there will be no significant cumulative effects from the Proposed Development alongside other projects / plans.

Transboundary Effects

7.6.7 No transboundary effects with regard to Shipping and Navigation from the Proposed Development on the interests of other States were predicted.

7.7 Other Marine Users

Introduction

7.7.1 The Other Marine User chapter (Volume 3, Chapter 6 of the PEIR) considers impacts from the Proposed Development on other marine users.

7.7.2 Other marine users is a broad term to describe those significant human activities and infrastructure occurring or planned in the marine and coastal environment. For the purposes of the PEIR, other marine users include offshore wind projects, military activities, subsea cables, recreational boating and sailing, diving and water sports and recreational fishing and aquaculture.

Approach

7.7.3 Other marine users receptors have been identified through a desktop-based study using publicly available information from a variety of industry and regulator sources.

Baseline Environment

7.7.4 The desktop study identified several planned offshore windfarms, military practice and exercise areas and numerous subsea cables within the study area. Key areas of recreational boating, sailing, water sports, and dive sites have also been identified to inform other activities that occur in the study area. Recreational fishing and aquaculture sites have also been identified. Baseline data will continue to be reviewed and updated to inform the ES following consultation at the PEIR stage.

Measures Adopted as Part of the Proposed Development

7.7.5 The measures proposed by the Applicant are set out in the PEIR. These measures include the following:

- HDD will be used to install the cables at the Landfall avoiding any direct interaction with the intertidal zone and coastal cliffs.
- Cables will be buried, up to 1.5 m below the seabed, where possible. Only when full burial is not possible will additional protection (e.g. rock placement) be installed. Cable protection would be kept level with the seabed where possible, and if above the seabed they would be kept to a maximum of 1 m above seabed level.
- Cable crossing and proximity agreements with recognised subsea cables and pipeline operators will be obtained. Crossing design will adhere to international best practice.

- An Outline Offshore CEMP will be prepared and submitted with the application for development consent (draft presented with this PEIR). The Outline Offshore CEMP will include measures and procedures to control and manage marine pollution prevention; waste management; marine invasive species; and dropped objects.
- A Vessel Management Plan will be developed (alongside the final CEMP) which will set out pre-agreed vessel routes, speeds, safety measures, communication expectations etc.
- Information will be promulgated via NtM, Kingfisher bulletins, the Kingfisher Information Service – Offshore Renewable & Cable Awareness (KIS-ORCA) service, Radio Navigational Warnings on Very High Frequency (VHF) radio, Navigational Telex (NAVTEX), and/or broadcast warnings in advance of and during the offshore works.
- The cable will be clearly marked on Admiralty Charts with associated notes about anchoring, trawling or seabed preparation.
- International legislation will be complied with, both for Project vessels and third-party vessels. This includes the COLREGs and SOLAS.
- Passing vessels will be requested to maintain a “safe” distance from installation vessels restricted in manoeuvrability. This will be monitored by guard vessels.

Assessment of Effects

7.7.6 A number of potential impacts on other marine users associated with the construction, operation and maintenance and decommissioning phases of the Proposed Development were identified. These included an increase in vessel traffic, the physical presence of infrastructure and safe passage zones, increases in suspended sediment concentrations and increases in subsea noise. With the measures adopted as part of the Proposed Development in place, no likely significant effects have been identified at this stage in relation to other marine users.

7.7.7 No likely significant effects have been identified in relation to temporary increases to vessel traffic resulting from the construction, operation and maintenance and decommissioning of the Proposed Development on other marine users. Other marine users may experience an increase in vessel traffic, however such increases will be temporary and minor in the context of the number of existing vessel movements in the study area.

7.7.8 No likely significant effects have been identified in relation to the physical presence of infrastructure and safe passing zones from the construction, operation and maintenance or decommissioning of the Proposed Development on other marine users. The construction of the Proposed Development will interact with several subsea cables, however crossing and proximity agreements will be established to reduce any potential impacts to these cables. Safe passing zones around vessels involved in construction, operation and decommissioning will temporarily limit vessel movements or activities in these areas for other marine users, however these temporary passing areas will only be temporary and over a small spatial scale.

7.7.9 No likely significant effects have been identified in relation to increases in suspended sediment concentrations from the construction, operation and

maintenance or decommissioning of the Proposed Development on other marine users. Potential increases in suspended sediment concentrations will be temporary, reducing to normal levels within 5 hours and travelling a maximum distance of 3.9 km from source in the worst-case, therefore activities that require visibility such as scuba diving, spearfishing and snorkelling will not be significantly affected.

7.7.10 No likely significant effects have been identified in relation to increases in subsea noise from the construction, operation and maintenance and decommissioning of the Proposed Development. Safe passing zones surrounding vessels will limit human exposure to subsea noise particularly for activities such as scuba diving, spearfishing and snorkelling.

Cumulative Effects

7.7.11 Cumulative effects from the Proposed Development in combination with other identified plans and projects were assessed and no likely significant cumulative effects have been identified.

Transboundary Effects

7.7.12 No likely significant transboundary effects on other marine users have been identified in relation to the construction, operation and maintenance and decommissioning of the Proposed Development.

7.8 Marine Archaeology and Cultural Heritage

Introduction

7.8.1 The Marine Archaeology and Cultural Heritage chapter (Volume 3, Chapter 7 of the PEIR) considers impacts from the Proposed Development on the marine historic environment.

7.8.2 The marine historic environment (archaeology and cultural heritage) comprises potential submerged prehistoric landscapes and evidence of historic environmental conditions, archaeological remains of watercraft, aircraft crash sites and structural remains other than watercraft.

Approach

7.8.3 The data assessed includes designated heritage assets, which are protected by law. Information on Marine Archaeology and Cultural Heritage within the study area was collected through a detailed review of existing studies and datasets.

7.8.4 To inform the PEIR assessment, assumptions have been used in regard to the survival of the potential remains and the importance of those remains.

7.8.5 The results of the site-specific sub-bottom profiler, sidescan sonar, magnetometer and multibeam echosounder surveys are currently undergoing archaeological review and are not available to inform the PEIR assessment. The results will be used to refine the importance / sensitivity of receptors and inform the assessment of effects and bespoke mitigation strategies (where necessary) reported within the Environmental Statement chapter.

Baseline Environment

7.8.6 A review of the existing archival research and available data from the Devon Historic Environment Record, United Kingdom Hydrographic Office, and Historic England databases has shown that the study area contains potential for remains from the early prehistoric periods through to the modern period.

Measures Adopted as Part of the Proposed Development

7.8.7 The measures proposed by the Applicant are set out in the PEIR. These measures include the following:

- The Offshore Cable Corridor has undergone multiple route optimisations, which have included avoidance of known marine archaeological features.
- Potential impacts on marine archaeology and cultural heritage will be proactively managed throughout the project. Micro-routing of the offshore cable corridor will be undertaken where possible and archaeological exclusion zones applied to avoid direct impacts on archaeology and cultural heritage assets and submerged land surfaces beneath marine sediments where possible.
- Mitigation leading to preservation *in situ* will be advocated and Archaeological Exclusion Zones (recommended of at least 50 m) will be implemented around cultural heritage assets.
- Any additional offshore geophysical and geotechnical campaigns undertaken pre-construction will be subject to archaeological review, where relevant in consultation with Historic England.
- Relevant results from geotechnical surveys will be released / shared with ADS, with the aim to enhance the palaeogeographic knowledge and understanding of the area.
- Additional unknown or unexpected cultural heritage and marine heritage receptors identified during the project stages will be reported utilising the project specific Protocol for Archaeological Discoveries (PAD), which will form part of the final Offshore CEMP.
- The final Offshore CEMP will include protocols should archaeological features be identified, which will be linked to the Offshore Outline Archaeological WSI.
- Measures will be put in place to report and record items of potential archaeological interest. For example, site-specific WSIs will be produced (for highest value identified assets) prior to commencing construction, to inform specific investigation activities, to record cultural heritage assets and subsequently the production of a post-excavation report.

Assessment of Effects

7.8.8 At PEIR stage, the archaeological and cultural heritage reviews of the survey data are ongoing and as such the baseline characterisations and resultant impact assessment on maritime heritage receptors is provisional and precautionary.

7.8.9 The impacts would be direct, through impacts from penetration or compression during seabed preparation, and indirect through potential changes in the geomorphology of the seabed during all phases of the development.

7.8.10 All impacts to Marine Archaeological and Cultural Heritage receptors would be permanent.

7.8.11 As part of the design process a number of adopted mitigation measures are proposed to reduce the potential for impacts on Marine Archaeological and Cultural Heritage receptors. For the PEIR, it has been assumed the impacts to the assets would be mitigated through archaeological watching brief or, in the case of inadvertent discovery, a Protocol for Archaeological Discovery, both of which are preservation by record mitigation techniques which would constitute a worst-case scenario. The effects have been preliminarily assessed as up to major adverse.

7.8.12 Impacts from truncation or removal of marine archaeological remains as a result of seabed preparation works, cable trench excavation etc would have a major adverse significance of impact which after mitigation would be reduced to a moderate adverse effect (significant) assuming that the mitigation used is preservation by record only. Impacts from physical, chemical, and biological degradation on marine archaeological remains during construction, operation, and decommissioning phases as a result of potential changes to local seabed form, would have a major adverse significance of impact which after mitigation would be reduced to a moderate adverse effect (significant) assuming that the mitigation used is preservation by record only.

7.8.13 Impact significances are expected to reduce following the asset clarification from the archaeological review of the geophysical data (and development of feature specific mitigation, including Archaeological Exclusion Zones).

Cumulative Effects

7.8.14 Cumulative effects from the construction, operation, maintenance and decommissioning activities of other schemes including other offshore renewable developments were assessed. Impacts from nearby proposed windfarms and planned cable projects have the potential to impact on the same marine archaeology and cultural heritage receptors where the developments overlap, cross or run adjacent. The impacts would be direct, through impacts from penetration or compression and impacts during seabed preparation, and indirect through changes in the geomorphology of the seabed. The significance of effect would be dependent on the type of receptor impacted and the footprint of impact (detailed characterisation of receptors is not considered complete at PEIR stage).

Transboundary Effects

7.8.15 Provisional assessment of potential transboundary impacts suggests that activities including pre-lay activities, jetting during cable laying and cable repairs, which are carried out in the vicinity of the UK EEZ border may cause hydrodynamic and geomorphological changes in this area. Thus there is potential to affect marine archaeological receptors in other jurisdictions. However, the provisional assessments of any such pathways change (presented within the Physical Processes PEIR assessment) suggests negligible change in deep water. The potential for transboundary impacts will be reviewed further at ES stage.

7.9 Physical Processes

Introduction

7.9.1 This chapter (Volume 3, Chapter 8 of the PEIR) considers likely impacts to physical processes, which includes metocean conditions (notably waves and currents), seabed geology sediment transport, and water/sediment quality.

Approach

7.9.2 The baseline physical processes have been characterised by a desktop study of extensive publicly available information supplemented by site-specific surveys including geophysical surveys, water quality samples and subtidal grab samples that were analysed for sediment type and chemical contamination.

Baseline Environment

7.9.3 The findings from the baseline study indicate that the seabed typically has a shallow, uniform slope with no unusual or irregular bathymetric / morphological features. The largest waves originate from the west/west-south-westerly directions. The typical annual significant wave height increases (up to 6.5 m – based on measured and modelled data) as the distance from Bideford Bay increases. Tidal current velocities vary, between 0.5 m/s and 1 m/s, with greater velocities experienced within Bideford Bay.

7.9.4 Results from project-specific sediment surveys involving grab samples demonstrated that the sediments along the Offshore Cable Corridor are classified as ‘Very Fine’ to ‘Medium’ sands, with median particle size (d50) values between 0.07 mm and 0.47 mm. Analysis of the sediment sample contamination concentrations against Cefas Action Levels revealed Arsenic concentrations above the Level 1 threshold at eight of the 51 locations sampled. However, levels of Arsenic are less than the Probable Effect Level. Turbidity was considered to be reasonably low across stations located in deep waters, with occasional increases where suspended material was present. In shallower waters, turbidity varied between 0 Formazin Turbidity Units (FTU) and approximately 66 FTU.

Measures Adopted as Part of the Proposed Development

7.9.5 The measures proposed by the Applicant are set out in the PEIR. These measures include the following:

- The Offshore Cable Corridor has undergone multiple route optimisations, which have included consideration of substrate types, with e.g., outcropping bedrock avoided where possible.
- Micro-routing within the Offshore Cable Corridor will allow, where possible, the avoidance of sand waves or large ripples that would otherwise require pre-lay seabed flattening.
- HDD will be used to install the cables at the Landfall avoiding any direct interaction with the intertidal zone and coastal cliffs.

- Cables will be buried, up to 1.5 m below the seabed, where possible. Only when full burial is not possible will additional protection (e.g. rock placement) be installed. Cable protection would be kept level with the seabed where possible, and if above the seabed they would be kept to a maximum of 1 m above seabed level.
- Where crossings of existing in-service cables are required, these will be constructed adhering to international best practice design (and may include concrete mattresses and/or shallow rock berms and are deemed overtrawlable).

Assessment of Effects

7.9.6 A number of potential impacts on physical processes, associated with the construction, operation and maintenance, and decommissioning phases, were identified. These included changes to metocean conditions, sediment disturbance or seabed change, and changes to water quality. With the measures adopted as part of the Proposed Development in place, all of these impacts result in effects of either negligible or minor adverse significance (not significant in EIA terms).

7.9.7 In addition to mitigations already included, it is recommended that the construction of the HDD exit pits avoids working during peak spring tides and significant wave activity.

Cumulative Effects

7.9.8 Cumulative effects (e.g. from other offshore renewable developments) were assessed and predicted to result in no additional cumulative impacts on physical processes receptors.

Transboundary Effects

7.9.9 No transboundary effects on physical processes receptors, from the Proposed Development, on the interests of other States were predicted.

7.10 Offshore Ornithology

Introduction

7.10.1 Offshore ornithology covers all ornithological receptors present beyond the Mean Low Water Springs within the UK EEZ.

Approach

7.10.2 The offshore ornithology baseline was established via a thorough desk study; it was not considered necessary to complete site specific surveys based on currently available information and the scale of the Proposed Development activities.

Baseline Environment

7.10.3 The desk study indicated that while large numbers of foraging birds are likely to be present within the (outer) Bristol Channel and Celtic Sea, particularly during the breeding season, the study area is not of greater importance for any species listed than the surrounding habitat outside the study area. It is considered unlikely that these species would be present within the study area in notable densities relative to the surrounding sea area.

Measures Adopted as Part of the Proposed Development

7.10.4 The measures proposed by the Applicant are set out in the PEIR. These measures include the following:

- Impacts on sensitive ornithology receptors (including designated sites) have been minimised when determining the offshore cable corridor. For example, SPAs designated for breeding seabirds have been avoided, which will result in no direct impacts at breeding colonies.
- A Vessel Management Plan (VMP) will be developed which will set out pre-agreed vessel routes, speeds, safety measures, communication expectations etc. The VMP will include protocols for vessel movements around rafts of birds.

Assessment of Effects

7.10.5 Although there would be no direct impacts on designated sites, there is potential for breeding seabirds associated with designated sites to forage within the study area. However, based on the low magnitude, highly localised and limited, short-term duration of effects, all impacts on offshore ornithology receptors are deemed to be of negligible significance (not significant in EIA terms).

Cumulative Effects

7.10.6 Cumulative effects (e.g. from other offshore renewable developments) were assessed and predicted to result in no additional cumulative impacts on offshore ornithology receptors.

Transboundary Effects

7.10.7 An assessment of transboundary effects has been undertaken to determine potential effects on any sites and species outside of the UK EEZ, which determined negligible impacts on all receptors.

8 POTENTIAL ENVIRONMENTAL EFFECTS – COMBINED ONSHORE AND OFFSHORE

8.1 Climate Change

Introduction

8.1.1 The Climate Change chapter (Volume 4, Chapter 1 of the PEIR) sets out the assessment of effects in relation to climate change. Climate change in this context refers to the long-term shifts in temperatures and weather patterns that are fundamentally driven by human activities.

8.1.2 The assessment considers the potential impacts and effects of the Proposed Development on climate change during construction, operation and maintenance, and decommissioning phases. The purpose of the Proposed Development is to connect the generation assets in Morocco (by cables routed through Morocco, Spain, Portugal, France and UK waters) to the national grid, contributing to:

- the UK Government's ambition to achieve Net Zero by 2050;
- securing the UK energy supply;
- delivering affordable energy for UK customers; and
- supporting the UK growth agenda.

8.1.3 The Proposed Development, therefore, has an important part to play in securing the timely delivery of the Government's renewable energy strategy and achieving legally binding emissions reduction targets.

8.1.4 The focus of this PEIR is the Proposed Development, however, given its purpose to facilitate the import of renewable energy, it would never operation without the generation assets in Morocco. As such, the cumulative impacts of the Proposed Development with the generation assets on the global Greenhouse Gas emissions (GHG) have been assessed.

Approach

8.1.5 The assessment undertaken considers both the effect of GHG emissions caused directly or indirectly by the Proposed Development, which have the potential to contribute to climate change (e.g. emissions arising from the manufacturing, installation, operation and decommissioning of the Proposed Development) and the potential effect of changes in climate on the Proposed Development. Desk studies were undertaken to determine the GHG emissions produced from the Proposed Development, in addition to the impact of climate change on the Proposed Development and on its other environmental impacts (i.e. in-combination climate impacts).

Baseline Environment

Greenhouse Gas Emissions Assessment Baseline Environment

Onshore

8.1.6 The current baseline for the Proposed Development is primarily agricultural land that is categorised as good to moderate land with smaller pockets of poor-quality land. Of most importance is any land that is high in carbon stores, i.e., woodland and peat. However, this land does not have high soil or vegetation carbon stocks (e.g. peat) that would be subject to disturbance by construction.

The Proposed Development Draft Order Limits includes land occupied by existing and planned renewable energy development, including the following:

- Cleave Solar Farm; and
- Planning application 1/1057/2021/FULM.

Offshore

8.1.7 The baseline consists of various subtidal habitats of sand, mud, rock, coarse sediment, mixed sediment, biogenic reef, and diverse benthic communities.

Climate Change Risk Assessment Baseline Environment

Onshore

8.1.8 Baseline temperatures are consistent with regional climate patterns for the south west of England and south Wales. The south west of England and south Wales can be considered as a region that is exposed to high rainfall in comparison to the rest of the UK.

8.1.9 It can be predicted that the Proposed Development will be susceptible to higher wind speeds throughout the year due to its coastal location.

Offshore

8.1.10 With regards to climate change risk, the offshore baseline environment is characterised by varied temperature, rainfall and wind speeds in the South West of the UK. Furthermore, land adjacent to the coast and estuaries within the south west has been identified as vulnerable to storms and coastal flooding (Environment Agency, 2022) with changes in mean sea-level.

Measures Adopted as Part of the Proposed Development

8.1.11 The mitigation measures proposed as part of the Proposed Development in relation to climate change include the following:

- The Onshore CEMP will set out measures to reduce Greenhouse Gas emissions associated with the construction phase.

- The Applicant will explore opportunities to reduce construction related emissions, including the following mitigation measures:
  - explore the use of materials with a lower embodied carbon and higher recycled content.
  - identification of opportunities to reduce emissions via the supply chain; and
  - explore the use of low carbon construction techniques (including lower carbon fuel) and energy efficient machinery/vehicles.
- A Site Waste Management Plan would include measures to manage waste and re-use materials, where practicable.

Assessment of Effects

8.1.12 A number of potential impacts, associated with the construction, operational and maintenance, and decommissioning phases of the Proposed Development, were identified. These included:

- the impact of GHG emissions arising from land use changes;
- the impact of GHG emissions arising from the manufacturing and installation of the Proposed Development;
- the impact of climate change on the Proposed Development during the construction, operation and maintenance, and decommissioning phases.

8.1.13 Without mitigation there will be a significant adverse effect at the construction phase due to greenhouse gas emissions from the manufacturing and installation of the Proposed Development. However, with mitigation in place as described in **paragraph 8.1.11**, there will not be a significant effect.

Cumulative Effects

8.1.14 The Proposed Development forms a key element of the wider proposed Project, which includes a proposed solar and wind farm in Morocco. The Proposed Development enables the renewable energy generated by the generation assets to be transported to the UK electricity grid.

8.1.15 Overall, the cumulative effect of the Proposed Development, together with the wider Project, on global climate will be beneficial.

8.2 Landscape, Seascape and Visual Resources

Introduction

8.2.1 This section presents a summary of the assessment of landscape, seascape and visual resources during construction, operation and decommissioning of the Proposed Development (Volume 4, Chapter 2 of the PEIR). The assessment considered the potential impacts of the Proposed Development on seascape and landscape character, views and visual amenity.

Approach

8.2.2 The assessment considered two distinct but connected aspects; landscape and seascape character, including nationally and locally designated landscapes, and the visual baseline, including visual receptors. Both resources were collated via a desktop analysis of publicly available data, site-specific surveys and fieldwork, and consultation with stakeholders to agree viewpoints.

8.2.3 The visual baseline analysis involved a desktop exercise and consultation process to identify appropriate visual receptors and representative viewpoints. A Zone of Theoretical Visibility has been created, which is a computer-generated tool which identifies the likely extent (theoretical) of visibility of the Proposed Development and helps to identify locations for representative viewpoints.

8.2.4 The representative viewpoints have been selected to represent a broad range of locations and sensitive visual receptors across the study area. Fieldwork was undertaken to verify the visual receptors and representative viewpoint locations and photography captured in both summer and winter conditions.

Baseline Environment

8.2.5 Two designated landscapes were identified within the study area which could be affected by the Proposed Development, North Devon UNESCO World Biosphere Reserve and North Devon Coast National Landscape.

8.2.6 The following national and county landscape areas were identified as likely to be impacted by the Proposed Development:

- Special features of the North Devon Biosphere Reserve, including hedgerows, Devon hedge banks, tranquillity and nocturnal darkness;
- Key characteristics of National Character 149: The Culm, including hedge banks;
- Key characteristics of the Devon County Landscape Character Area, including sunken rural lanes, high banked lanes, topography (ridges), farmland; and
- North Devon and Torridge District Landscape Character Type 5A, including elevated land, rushy/wet meadow with its associated mature species-rich (wet oak) field boundaries and elevated land.

8.2.7 Three main visual receptor groups identified as likely to be impacted by the Proposed Development. These comprised people using PRoW, Access land, people using roads and the sea and people at work. With regard to private views, no residential properties have the potential to experience a degree of harm over and above substantial to make considering private views a public interest matter. Consequently, private views were not considered further in the assessment.

8.2.8 A total of 47 representative viewpoints (from publicly accessible locations) have been selected and agreed with Torridge District Council to inform the assessment. Of these, six representative viewpoints relate to the Landfall, 14 representative viewpoints relate to the Onshore HVDC Cable Corridor and 27 relate to the Converter Site. Photographs from representative viewpoints have been taken and used to generate pre-liminary visualisations of the Proposed Development.

Measures Adopted as Part of the Proposed Development

8.2.9 The following measures are proposed as part of the Proposed Development to mitigate potential impacts on seascape, landscape and visual resources:

- The preparation of a detailed Landscape and Ecology Management Plan in general accordance with the Outline Landscape and Ecology Management Plan, which will be submitted with the application for development consent. The Outline Landscape and Ecology Management will set out design commitments to avoid impacts on landscape character and visual receptors. This includes: burying Onshore HVDC and HVAC Cables below ground; the utilisation of cut and fill techniques (and land-modelling) to reduce the visibility of the Converter Site; and landscape planting at the Converter site and along the Onshore HVDC Cable Corridor to assist with softening and screening views.
- The preparation of Design Principles Document, which will be submitted with the application for development consent. The Design Principles Document will ensure the Converter Station adopts an architectural design that is sympathetic to the surrounding area and uses appropriate materials, colours and finishes.

Assessment of Effects

8.2.10 Taking into account the mitigation measures described above, the following likely significant effects are likely to occur with respect to the landscape and visual receptors:

- Adverse effect on the characteristic landscapes, tranquillity and nocturnal darkness of the North Devon Biosphere Reserve during construction and operation of the Proposed Development, which are locally significant;
- Adverse effect on the Bideford Bay Coast Landscape Character Area, including sunken rural lanes and high hedge banks during construction of the Proposed Development;
- Adverse effect on the Torridge Valley Landscape Character Area, including hedge banks during construction of the Proposed Development;
- Adverse effect on the High Culm Ridges Landscape Character Area, including ridges and farmland during construction and operation of the Proposed Development;
- Adverse effect on the North Devon and Torridge District Landscape Character Type 5A Inland Elevated Undulating Land during construction and operation of the Proposed Development;
- Adverse effect on users of South West Coast Path, Tarka Trail and people using the beach and sea near Landfall during construction of the Proposed Development;
- Adverse effect on recreational sailors in proximity to the Landfall and Onshore HVDC Cable Corridor during construction of the Proposed Development;

- Adverse effect on cyclists and people using roads during the construction and operation of the Proposed Development;
- Adverse effect on people at work during construction and operation of the Proposed Development;
- Adverse effect on views from representative viewpoints 23, 27, 29, 32, 33 during construction of the Proposed Development; and
- Adverse effect on views from representative viewpoints 27, 29, 32 and 33 during operation of the Proposed Development.

Cumulative Effects

8.2.11 An assessment of the potential cumulative effects between the Proposed Development and other plans/projects on seascape and landscape character and visual resources was undertaken. With respect to landscape character, the assessment determined that there would be an adverse cumulative effect on the local landscape fabric of inland elevated land during construction of the Proposed Development, which is significant. All other potential cumulative effects on seascape and landscape character and visual resources during construction and operation of the Proposed were assessed as unlikely to be significant.

Transboundary Effects

8.2.12 No transboundary effects with regard to seascape, landscape and visual resources from the Proposed Development on the interests of other States were predicted.

8.3 Socio-economics and tourism

Introduction

8.3.1 The assessment of socio-economic and tourism considers how the Proposed Development could influence the economic conditions of the study areas, with a particular focus on the tourism economy (Volume 4, Chapter 3 of the PEIR). These impacts can occur directly, because of expenditure within the supply chain and the employment this supports, or indirectly by environmental effects or other elements of the Proposed Development interacting with tourism assets in each area. These impacts have been modelled using a supply chain impact model, to estimate the effects on employment and Gross Value Added (GVA), and by considering how other environmental effects will interact with tourism receptors.

Approach

8.3.2 The socio-economic and tourism assessment considered the impacts on expenditure and employment through the supply chain and impacts on tourism receptors and the economy. All impacts were assessed relative to the current performance of the economies in each study area and the sensitivity of each receptor to any change.

Baseline Environment

8.3.3 The Local Area, of Torridge and North Devon, has a total population of 169,100 and this population is older than that of the UK. The labour market in the area performs better than the national average in some metrics, for example it has a lower level of unemployment (2.2%) and has experienced a higher rate of jobs growth than the UK. However, the industrial structure of the area is more reliant on seasonal and low paid sectors of the economy, such as tourism or agriculture. As a result, the level of income and GVA per head in the Local Area (includes the areas of North Devon and Torridge) is notably lower than the UK.

8.3.4 The tourism economy has an important role in the local economy and visitors are attracted to the beaches, coastal paths, attractions within Bideford and major attractions such as the Big Sheep. The tourism sector in the Local Area is seasonal and accommodation is in high demand during the summer months. The Local Area has experienced a decrease in the number of properties available for long term rent since 2018/19.

Measures Adopted as Part of the Proposed Development

8.3.5 The following measures are proposed as part of the Proposed Development to mitigate potential impacts on socio-economics and tourism:

- The preparation of an Onshore CEMP in general accordance with the Outline Onshore CEMP, which will be submitted with the application for development consent. The Outline Onshore CEMP will include the requirement for construction activities to take place during particular times of the day, measures to manage waste and store materials onsite and procedures for maintaining suitable drainage.
- The preparation of a Construction Traffic Management Plan in general accordance with the Outline Construction Traffic Management Plan, which will be submitted with the application for development consent. The Outline Construction Traffic Management Plan will include measures to reduce disruption to the local road network, such as set hours for vehicle movements, temporary haul roads and avoid usage of small roads (where practicable).

8.3.6 In addition to the measures outlined above, the Applicant will engage with the local community and stakeholders prior to application to identify requirements for further measures to minimise disruption and minimise potential socio-economic effects of the Proposed Development. Any additional measures will be set out in the relevant sections of the ES.

Assessment of Effects

8.3.7 The main economic impacts will occur when the Proposed Development is under construction. During this period it was estimated that the peak annual impacts would be:

- £9.3 million GVA and 110 jobs in the Local Area;
- £64 million GVA and 290 jobs in Devon; and

- £225 million GVA and 3,030 jobs across the UK.

8.3.8 The effect of these impacts were assessed as being Minor (beneficial) for the Local Area and Negligible (beneficial) for the Devon and UK economies, which are not significant.

8.3.9 There were no significant effects identified on individual tourism receptors, however the effect on the tourism economy has been assessed as Minor (adverse), which is not significant. This is because it is expected that the transient workforce required to construct the Proposed Development will displace tourist from accommodation and reduce spending in the wider tourism economy. This impact is expected to be temporary and concentrated in the summer months when demand for visitor accommodation is highest.

Cumulative Effects

8.3.10 Cumulative effects from other onshore and offshore developments in the area were assessed and predicted to result in effects of negligible or minor significance, which are not significant. The only exception to this is the cumulative impact on the tourism economy, which has been assessed as Moderate (adverse), which is significant. This is because of the cumulative demand for workforce accommodation will result in an even greater level of displacement of tourists.

Transboundary Effects

8.3.11 No significant transboundary effects with regard to socio-economics and tourism from the Proposed Development on the interests of other States were predicted.

8.4 Human Health

Introduction

8.4.1 Population health refers to the health outcomes of a group of individuals, including the distribution of such outcomes within the group. Population health varies, given factors such as personal choice, location, mobility and exposure. These factors that influence health are called determinants of health and span environmental, social, behavioural, economic, and institutional aspects. The Proposed Development has the potential to change determinants of health, with beneficial and adverse effects, either directly, indirectly, or cumulatively (Volume 4, Chapter 4 of the PEIR).

8.4.2 The chapter uses the World Health Organization (WHO) definition of health, which states that health is a *'state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity'* (WHO, 1948). The chapter also uses the WHO definition for mental health as a *'state in which every individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community'* (WHO, 2022).

8.4.3 The chapter follows best practice to assess human health as part of EIA. The methods follow the health in EIA guidance set out by IEMA. The assessment provides reasoned conclusions for the identification and assessment of any likely significant effects of the Proposed Development on population health. Physical

health, mental health and health inequalities are considered across a broad range of determinants of health.

8.4.4 The health assessment looks at the potential effects for both the general population and for vulnerable groups. Vulnerability relates to experiencing effects differently due to age, income level, health status, degree of social disadvantage or the ability to access services or resources. The health assessment considers localised population effects and also considers wider population effects at the regional and national and international levels.

Approach

8.4.5 The health assessment is informed by the findings of other PEIR chapters, including hydrology and flood risk, traffic and transport, noise and vibration, air quality and land use and recreation. The health assessment has also been informed by a review of relevant public health evidence sources, including scientific literature, baseline data, health policy, local health priorities and health protection standards.

Baseline Environment

8.4.6 An overall baseline health profile was gathered for relevant local authorities and wards in Torridge District Council, using regional (South-West) and national (England) data as comparators. Data was gathered from publicly available public health evidence sources. This data shows that overall physical health indicators (e.g., heart health, respiratory health) and lifestyle indicators (e.g., diet, childhood obesity) perform worse in the local study area compared to national averages. The indicators do not suggest increased sensitivity to change in the area as a whole, however this does not exclude vulnerable groups.

Measures Adopted as Part of the Proposed Development

8.4.7 The following measures are proposed as part of the Proposed Development to mitigate potential impacts on human health:

- The preparation of a detailed Onshore CEMP in general accordance with the Outline Onshore CEMP, which will be submitted with the application for development consent. The Outline Onshore CEMP will include a Dust Management Plan, which will provide measures to the manage the potential effects of dust generated during construction of the Proposed Development on nearby human receptors (e.g. people and property).
- The preparation of a detailed Construction Traffic Management Plan in general accordance with the Outline Construction Traffic Management Plan, which will be submitted with the application for development consent. The Outline Construction Traffic Management Plan will set out traffic management measures to maintain access and provide early notice of any route changes.

Assessment of Effects

8.4.8 A number of potential impacts on human health associated with the construction, operation and maintenance and decommissioning phases of the Proposed Development were identified. These included transport modes, access and connections; access to open space, leisure and play; housing; employment and income opportunities; air quality; water quality; land quality; noise and vibration; and health and social care services. With the measures adopted as part of the Proposed Development in place, the all these impacts result in effects of minor adverse or minor beneficial significance, which are not significant.

8.4.9 Construction and decommissioning of the Proposed Development has the potential to result in temporary and short-term disruption of public open spaces and public rights of way, affecting recreational activities for local people. This effect is assessed as being of minor adverse significance, which is not significant. Temporary increase in demand for housing is assessed as being of minor adverse and minor beneficial significance, which are not significant.

8.4.10 Temporary disruption to local vehicle traffic (private and public transport) as well as active travel along highways (pedestrians and cyclists) due to construction works, including construction vehicles and corridor construction is assessed as being of minor adverse, which is not significant. This is due to the short-term duration of the construction works, reversal of any adverse effects on health behaviours and outcomes on completion of the construction works and mitigation in terms of early and ongoing information sharing with emergency and healthcare services. Additionally, no significant effects were predicted with respect to changes in air quality; water quality; fishing access and noise and vibration during construction of the Proposed Development.

8.4.11 The Proposed Development will result in improved wider societal infrastructure and resources associated with renewable energy generation and energy security. For example, having power to safely cook and refrigerate food, regulating temperature and lighting of homes and schools, and operating health and social care services. This is assessed to have a moderate beneficial effect on population health, which is significant. Operation of the Proposed Development has the potential to result in community concerns related to electrical infrastructure, and associated effects on mental health and wellbeing. Public understanding of risk will be addressed through continued communication and reassurance that actual risks are mitigated through design and adherence to relevant guidelines and the government voluntary code of practice on electromagnetic fields. The resultant effect is assessed to be negligible, which is not significant.

Cumulative Effects

8.4.12 Cumulative effects from the Proposed Development alongside other large-scale developments that are similar in location and timing have been assessed for the same population. The combined effect from the Proposed Development with other local developments has the potential to contribute to a reduction in open space, road safety and accessibility, air quality, water quality and land quality including changes in noise and vibration. The Proposed Development assessed cumulatively with other local developments would also provide enhanced energy security.

8.4.13 Cumulative effects were assessed and predicted to result in effects of minor adverse significance for open space, road safety and accessibility, air quality, water quality, land quality and noise and vibration.

8.4.14 Operation of the Proposed Development was predicted to result in moderate beneficial effects for wider societal infrastructure and resources, which is significant. Cumulative effects in terms of actual risks or public understandings of risk in relation to EMFs are not expected. Further details will be set out in the application for development consent.

Transboundary Effects

8.4.15 No transboundary effects with regard to population health from the Proposed Development on the interests of other States were predicted.

8.5 Inter-related Effects

8.5.1 An assessment of inter-related effects has been undertaken.

8.5.2 These have been reviewed to identify receptors likely to be affected by project life time effects (effects throughout construction, operation and maintenance and decommissioning) and one or more of the environmental topics.

8.5.3 Following the implementation of mitigation measures adopted as part of the project and further mitigation (if required), project lifetime effects arising during the construction, operation and maintenance, and decommissioning phases of the Proposed Development are generally unlikely to result in effects of greater significance than those reported individually in the PEIR.

8.5.4 For the provisional marine archaeology assessment at PEIR stage, there is potential for inter-related effects (between different project phases) given the precautionary assumption that any effects on marine heritage features are irreversible and therefore susceptible to cumulative impact. This assessment will be reviewed in detail at ES stage, when additional baseline characterisation of potential features of interest will be available.

8.5.5 The assessment of impacts deriving from scour (e.g. local scour of bed sediments as a result of the interaction of currents with rock protection) will be described at ES stage. Scour impacts have the potential to affect multiple receptors, hence the potential for inter-related effects (both project lifetime and receptor-led) will be further characterised and reported at ES stage.

8.5.6 Further to the specific examples above, all potential inter-related effects (both project lifetime and receptor led) will be reviewed for the ES following design refinements for the application for development consent.

9 NEXT STEPS

9.1.1 Consultees are invited to consider all the information provided in this Non-Technical Summary and the PEIR and to advise on whether they agree with the conclusions. There are a number of ways that stakeholders can provide feedback on the PEIR as part of statutory consultation.

9.1.2 The Applicant expects that the design of the Proposed Development will be further refined based upon the consultation responses received from the statutory consultation in addition to environmental constraints identified during the EIA process.

9.1.3 As part of the consultation process, the Applicant will hold public exhibitions and online webinars. At these events, the Applicant will specifically consult stakeholders and the local community on the contents of the PEIR. Anyone who could potentially be affected by, or may have an active interest in, the Proposed Development is encouraged to attend.

9.1.4 The timings and locations of the consultation events are provided on the Xlinks website: https://xlinks.co/morocco-uk-power-project/

9.1.5 Comments on the PEIR for the Xlinks Morocco-UK Power Project should be made in writing and submitted using one of the following methods specified below:

- **Post**: Xlinks Morocco-UK Power Project Consultation, Freepost Sec, Newgate, UK, Local;
- **Email**: hello@xlinks.co; or
- **Feedback Form**: available on the Xlinks website: https://xlinks.co/morocco-uk-power-project/, at public exhibitions or by request from the consultation team.

9.1.6 The deadline for receipt of comments on the statutory consultation is 11.59pm on 27 June 2024. Any comments received during the statutory consultation period will be provided to the Planning Inspectorate and may be made public.

9.1.7 The final results of the EIA will be presented in an ES and a summary of all consultation responses received will be presented in a Consultation Report, both of which will accompany the application for development consent, which is planned to be submitted to the Secretary of State in Autumn 2024.