

XLINKS' MOROCCO-UK POWER PROJECT

Non-Technical Summary

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For Issue

XLINKS' MOROCCO – UK POWER PROJECT

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Glossary

Term	Meaning
Abnormal Indivisible Loads route works	Potential minor works to the Abnormal Indivisible Loads (AIL) routes, which are required for the transportation of the transformers and cable drums. The proposed AIL route runs from Appledore to the Onshore Infrastructure Area.
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 carried out by National Grid Electricity Transmission. This does not form part of the Proposed Development, however, it is considered cumulatively within the Environmental Impact Assessment as it is necessary to facilitate connection to the national grid.
Alverdiscott Substation Site	The National Grid Electricity Transmission site within which the Alverdiscott Substation sits.
Applicant	Xlinks 1 Limited.
Bipole	A Bipole system is an electrical transmission system that comprises two Direct Current conductors of opposite polarity (one conductor with positive voltage and one with negative voltage).
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 Environmental Management Plan	A document detailing the overarching management principles for construction, which includes construction-related environmental management measures, pollution prevention measures, the selection of appropriate construction techniques and monitoring processes.
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.
Cumulative Effects	The combined effect of the Proposed Development in combination with the effects from other planning applications, on the same receptor or resource.
Development Consent Order	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.
Effect	The term used to express the consequence of an impact. The significance of effect is determined by correlating magnitude of the impact with the importance, or sensitivity, of the receptor or resource in accordance with defined significance criteria.
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.
Horizontal Directional Drilling	Horizontal Directional Drilling is a method of installing underground pipelines, cables and service conduit (or ducts) through trenchless methods to avoid obstacles and sensitive features (e.g. roads, watercourses, woodlands, etc.). The

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Term	Meaning
	term HDD is used here interchangeably with other similar trenchless techniques but excluding micro tunnelling or direct pipe methods.
HVAC Cables	The High Voltage Alternating Current cables which would bring electricity from the converter stations to the new Alverdiscott Substation Connection Development.
HVAC Cable Corridors	The proposed corridors (for each Bipole) within which the onshore High Voltage Alternating Current cables would be routed between the Converter Site and the Alverdiscott Substation Site.
HVDC Cables	The High Voltage Direct Current cables which would bring electricity to the UK converter stations from the Moroccan converter stations.
Impact	Change that is caused by an action/proposed development, e.g., land clearing (action) during construction which results in habitat loss (impact).
Inter-related effects	Multiple effects on the same receptor as a result of the Proposed Development. These occur when a series of the same effect acts on a receptor over time to produce a potential additive effect or where a number of separate effects, such as noise and habitat loss, affect a single receptor.
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 bays inclusive of all construction works, including the offshore and onshore cable routes, and landfall compound(s).
Marine Conservation Zone(s)	Marine Conservation Zones are marine nature reserves and are areas 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	The height of mean high water during spring tides in a year.
Mean Low Water Springs	The height of mean low water during spring tides in a year.
National Grid Electricity System Operator	National Electricity System Operator operates the national electricity transmission network across Great Britain. National Grid Electricity System Operator 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 Grid Electricity Transmission	National Grid Electricity Transmission owns and maintains the electricity transmission network in England and Wales.
National Policy Statements	The current national policy statements published by the Department for Energy Security and Net Zero in 2023 and adopted 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 infrastructure area within the Order Limits landward of Mean High Water Springs. The Onshore Infrastructure Area comprises the transition joint bays, onshore HVDC Cables, converter stations, HVAC Cables, highways improvements, utility diversions and associated temporary and permanent infrastructure including temporary compound areas and permanent accesses.
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).

Term	Meaning
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 Xlinks' Morocco-UK Power Project within the UK. The Proposed Development covers all works required to construct and operate the offshore cables (from the UK Exclusive Economic Zone to Landfall), Landfall, onshore Direct Current and Alternating Current cables, converter stations, and highways improvements.
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 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.
Transboundary effects	Effects from a project within one state that affect the environment of another state(s).
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	A transition joint bay is an underground structure at the landfall area where the offshore cables are jointed to the onshore cables.
Exclusive Economic Zone	An area of the sea, which is under territorial ownership of a single state.
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
CEMP	Construction Environmental Management Plan
CTMP	Construction Traffic Management Plan

Acronym	Meaning
DC	Direct Current
DCO	Development Consent Order
DESNZ	Department for Energy Security and Net Zero
EA	Environment Agency
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EMF	Electromagnetic Field
ES	Environmental Statement
FRA	Flood Risk Assessment
GB	Great Britain
GHG	Greenhouse Gas
GVA	Gross Value Added
HDD	Horizontal Directional Drilling
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
INNS	Invasive Non-Native Species
LEMP	Landscape and Ecology Management Plan
MCZ	Marine Conservation Zone
NGESO	National Grid Electricity System Operator
NIC	National Infrastructure Commission
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
On-CEMP	Onshore Construction Environmental Management Plan
OMU	Other Marine Users
PDE	Project Design Envelope
PEIR	Preliminary Environmental Information Report
PPP	Pollution Prevention Plan
SAC	Special Area of Conservation
SPA	Special Protection Area
SSSI	Sites of Special Scientific Interest
UK	United Kingdom
WHO	World Health Organisation
WSI	Written Scheme of Investigation

Units

Units	Meaning
%	Percent
km	Kilometres
km ²	Square kilometres
FTU	Fomazin Turbidity Units

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Units	Meaning
GW	Gigawatts
GWh	Gigawatt Hours
GWp	Gigawatts Peak
m	Metres
mm	Millimetres
m/s	Metres per second
$\mu\text{g}/\text{m}^3$	Micrograms per cubic metre

1 NON-TECHNICAL SUMMARY

1.1 Purpose of This Document

- 1.1.1 This document is the Non-Technical Summary of the Environmental Statement (ES) which has been prepared for the United Kingdom (UK) elements of Xlinks' Morocco-UK Power Project (the 'Project'). For ease of reference, the UK elements of the Project are referred to as the 'Proposed Development'.
- 1.1.2 The ES provides the findings of the Environmental Impact Assessment (EIA) process undertaken to support the application for development consent. The purpose of the Non-Technical Summary is to present a summary of the EIA findings for the Proposed Development¹.
- 1.1.3 This Non-Technical Summary has been written in 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. Further detailed information is in the ES, which presents the findings of the EIA work undertaken for the Proposed Development.

1.2 Overview

- 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 (GHG) emissions and reaching net zero by 2050. The UK government has confirmed its commitment to developing clean, renewable energy by 2030 and aim to become net zero by 2050.

The Project

- 1.2.2 The Applicant seeks to develop a renewable electricity generation facility in Morocco and a direct sub-sea electricity connection between Morocco and the UK.
- 1.2.3 The Moroccan generation facility would be 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 km². The generation facility 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 within the UK Exclusive Economic Zone (EEZ). A schematic of the Project is provided at **Plate 4.1**.

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

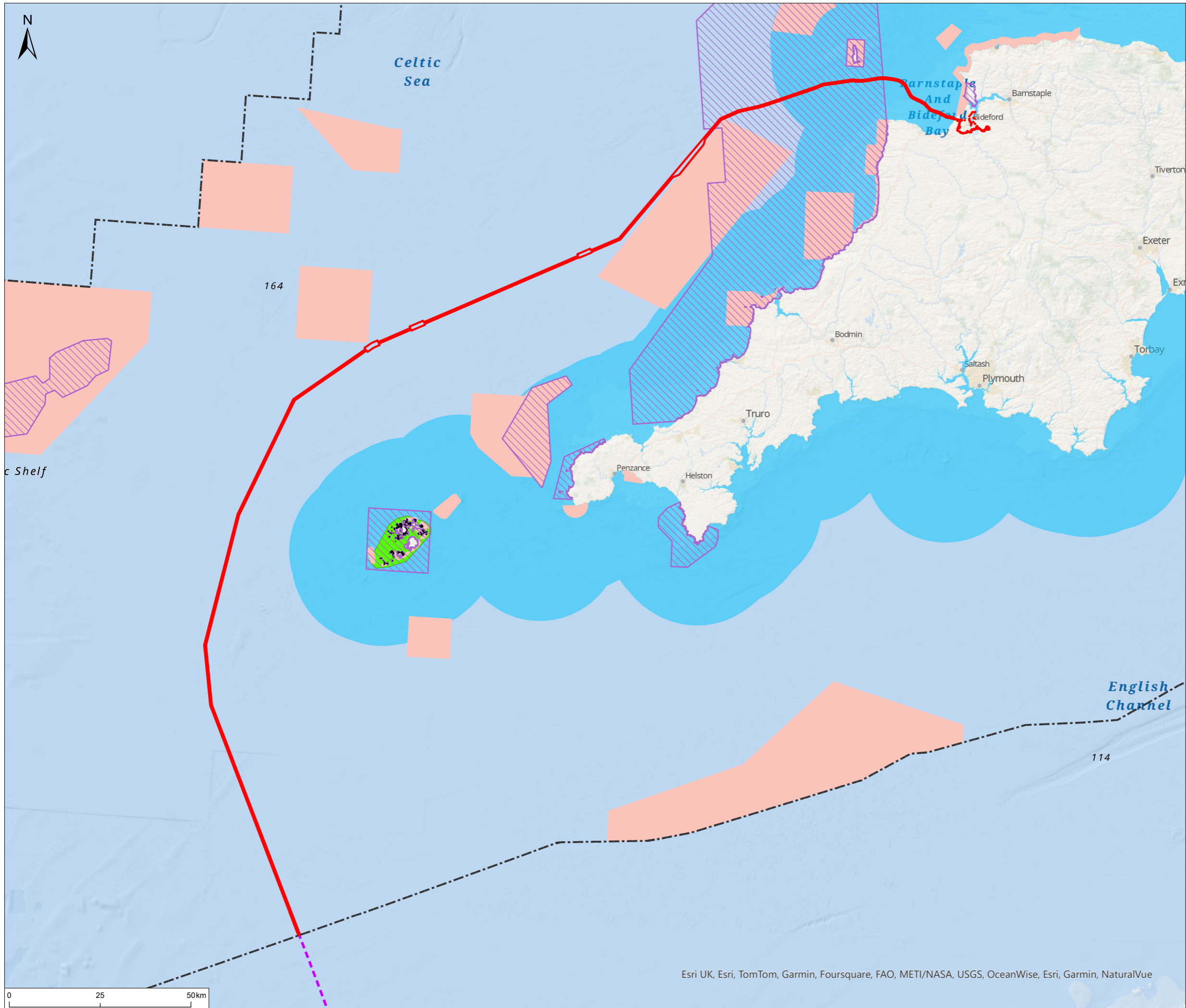
- 1.2.4 The Project proposes to facilitate the import of up to 3.6 GW of low carbon electricity into the national grid. Once complete, the Project would be capable of supplying approximately 8 percent (%) of UK's annual electricity needs.

The Proposed Development

- 1.2 The Proposed Development for which development consent is required comprises only the UK elements of the above described Project i.e. the HVDC transmission infrastructure within UK waters and onshore, the onshore infrastructure required to convert HVDC to High Voltage Alternating Current (HVAC) and the onshore HVAC transmission infrastructure required to deliver the electricity to the national grid. The Proposed Development also includes improvements and accommodation works to local roads that will aid its construction and operation. The key elements that comprise the Proposed Development is set out in **section 4.3** below.
- 1.3 The EIA, which is summarised in the ES that accompanies the application for development consent, addresses the potential significant effects of the Proposed Development i.e., only those aspects of the Project, both onshore and offshore, within the UK.
- 1.2.1 More details of the Proposed Development are provided in **section 4** of this Non-Technical Summary. The Project Description is provided in full in the Project Description chapter of the ES (document reference 6.1.3).

1.3 Site Location

- 1.3.1 The Proposed Development would be located within the Order Limits, which is shown on **Figure 1** and covers an approximate area of 206 km². This includes approximately 2 km² for the onshore elements of the Proposed Development and approximately 204 km² for the offshore elements. **Figure 1** also shows the key marine constraints along the Offshore Cable Corridor within the UK.
- 1.3.2 **Figure 2** shows the location of the Order Limits onshore and the key constraints along the Onshore HVDC Cable Corridor. **Figure 3** shows the location of the Converter Site and constraints in the immediate surrounding.
- 1.3.3 The permanent onshore elements of the Proposed Development would be located within the Onshore Infrastructure Area shown on **Figure 5**. The Order Limits also include other areas will be used for the transportation of abnormal indivisible loads (AIL) from Appledore Quay (the abnormal loads route). Save for a very small part of the abnormal roads route, which is in North Devon District Council, the vast majority of the Onshore Infrastructure Area is located within the local authority area of Torridge District Council (and Devon County Council at county level) in north Devon and extends from the Landfall at Cornborough Range to the Alverdiscott Substation Site.
- 1.3.4 The offshore elements of the Proposed Development would 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 the UK Exclusive Economic Zone (EEZ) i.e., the boundary with French Waters (see **Figure 1**).



Notes
 1. This plan is scaled at paper size A3. If received electronically it is the recipient's responsibility to print to the correct scale. Only written dimensions should be used.

- Legend**
- Order Limits
 - Indicative Cable Centreline (beyond UK Jurisdictional Boundary)
 - Jurisdictional Boundary
 - UK Inshore Waters (12nm Limit)
 - MCZ
 - SAC
 - SPA
 - Ramsar

P01	FINAL	MP	MB	18.11.24
Rev	Description	By	CB	Date



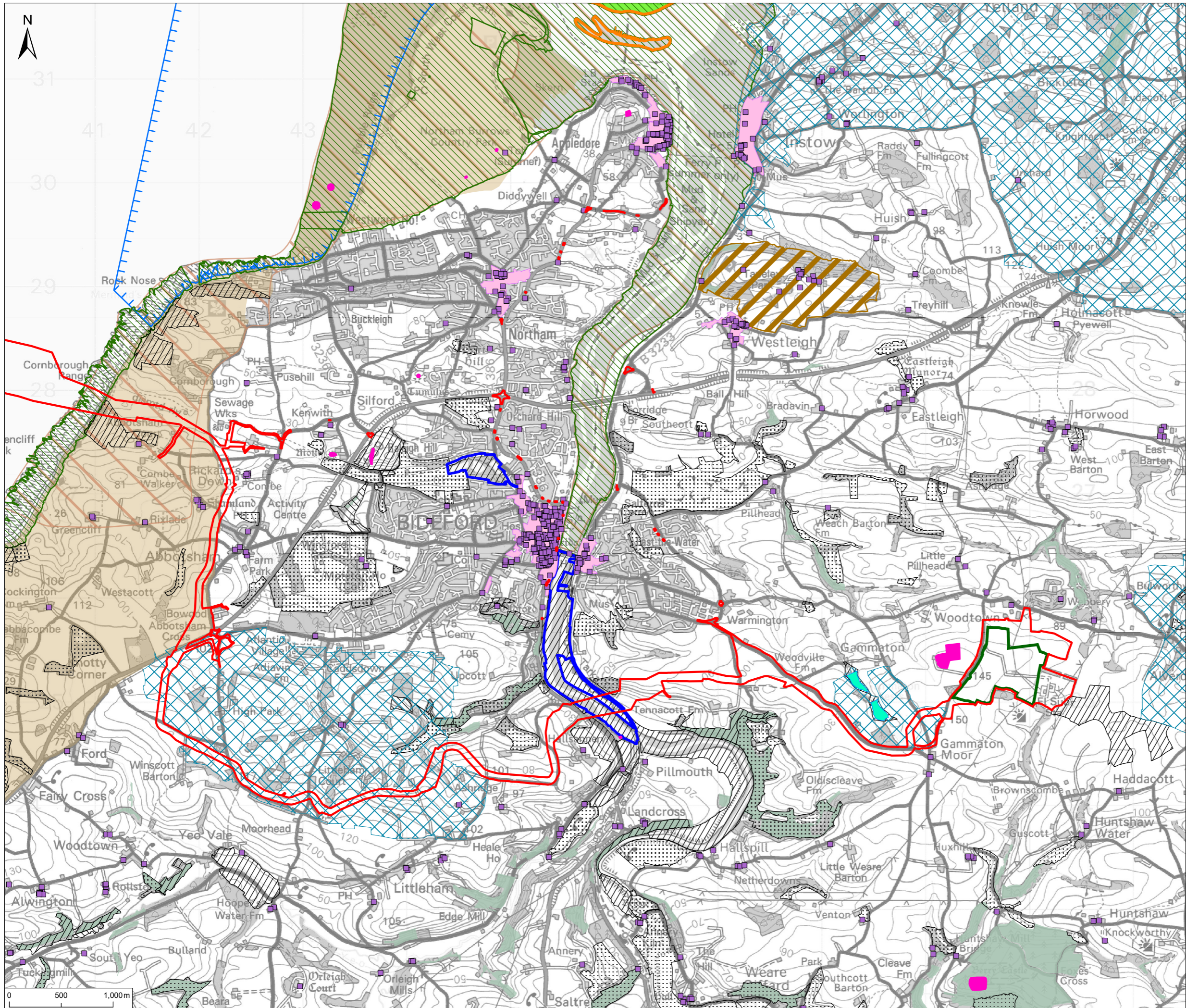
Client Xlinks 1 Limited
 Project Xlinks' Morocco-UK Power Project
 Title Offshore Location and Constraints Plan

Status **FINAL** Scale @ A3 1:1,000,000 Date Created Nov 2024
 Figure Number **1** Rev **P01**

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Notes
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- Legend**
- Order Limits
 - Converter Site
 - Landscape**
 - Core
 - North Devon Biosphere Region - Buffer
 - National Landscape
 - Ecology**
 - Marine Conservation Zone
 - Special Area of Conservation
 - Site of Special Scientific Interest
 - Local Nature Reserves
 - Ancient Woodland
 - County Wildlife Site
 - Other Sites of Wildlife Interest
 - Unconfirmed Wildlife Site
 - Hydrology**
 - Drinking Water Protected Area
 - Nitrate Vulnerable Zones
 - Heritage**
 - Scheduled Monument
 - Listed Building
 - Registered Parks and Gardens
 - Conservation Area

PO1	FINAL	MP	MB	18.11.24
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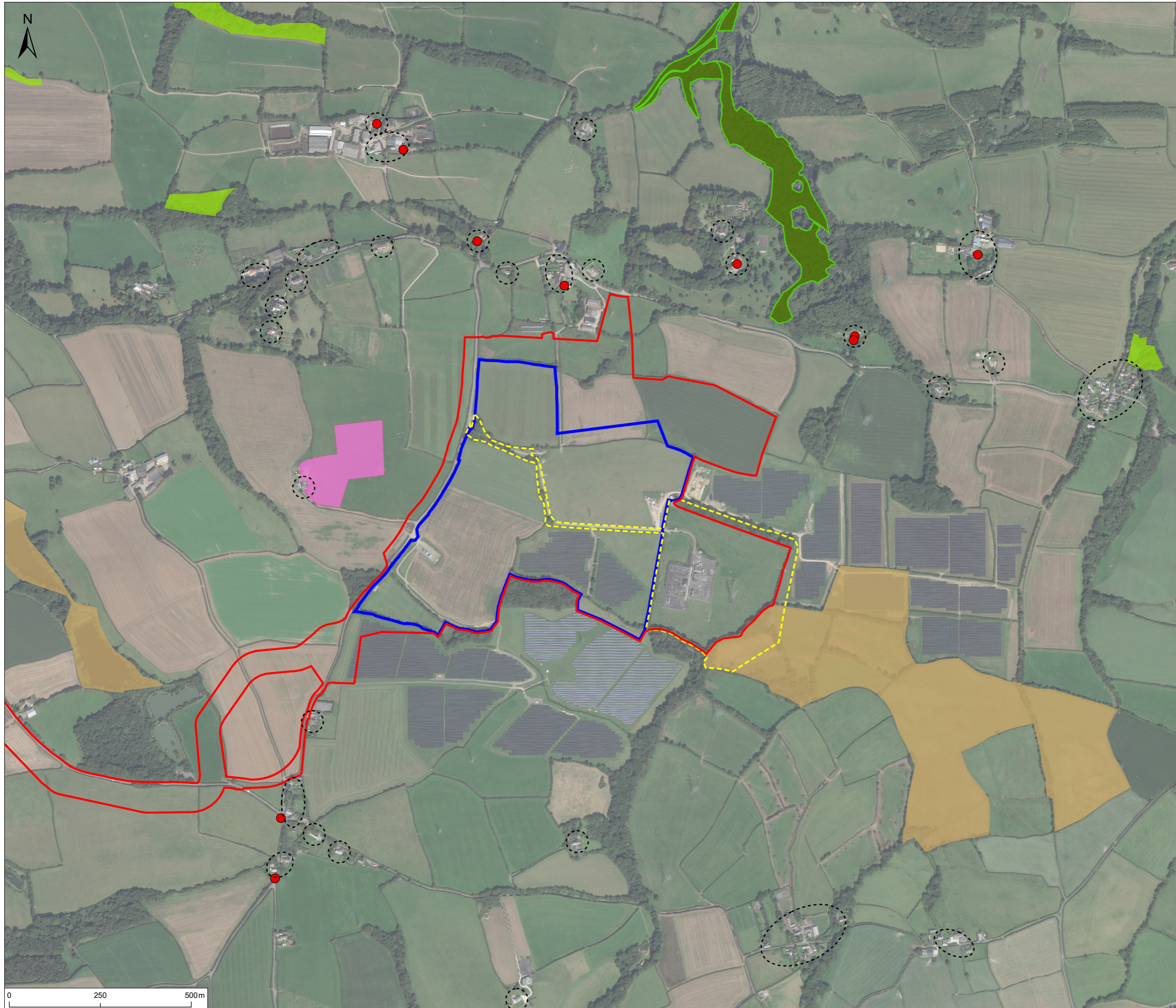


Client Xlinks 1 Limited
 Project Xlinks' Morocco-UK Power Project
 Title Onshore Location and Constraints Plan

Status FINAL Scale @ A3 1:35,000 Date Created Nov 2024
 Figure Number 2 Rev P01

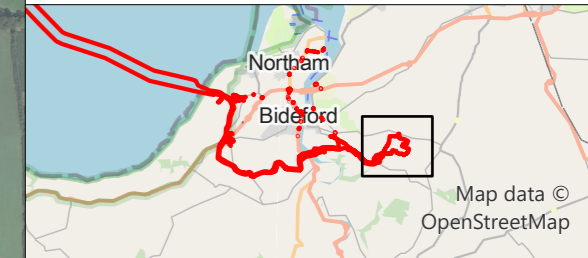
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- Legend**
- Order Limits
 - Converter Site
 - Alverdiscot Substation Site
 - Residential Areas - indicative locations
 - Scheduled Monument
 - Listed Building
 - Ancient Woodland
 - County Wildlife Site
 - Unconfirmed Wildlife Site



P01	FINAL	MP	MB	18.11.24
Rev	Description	By	CB	Date

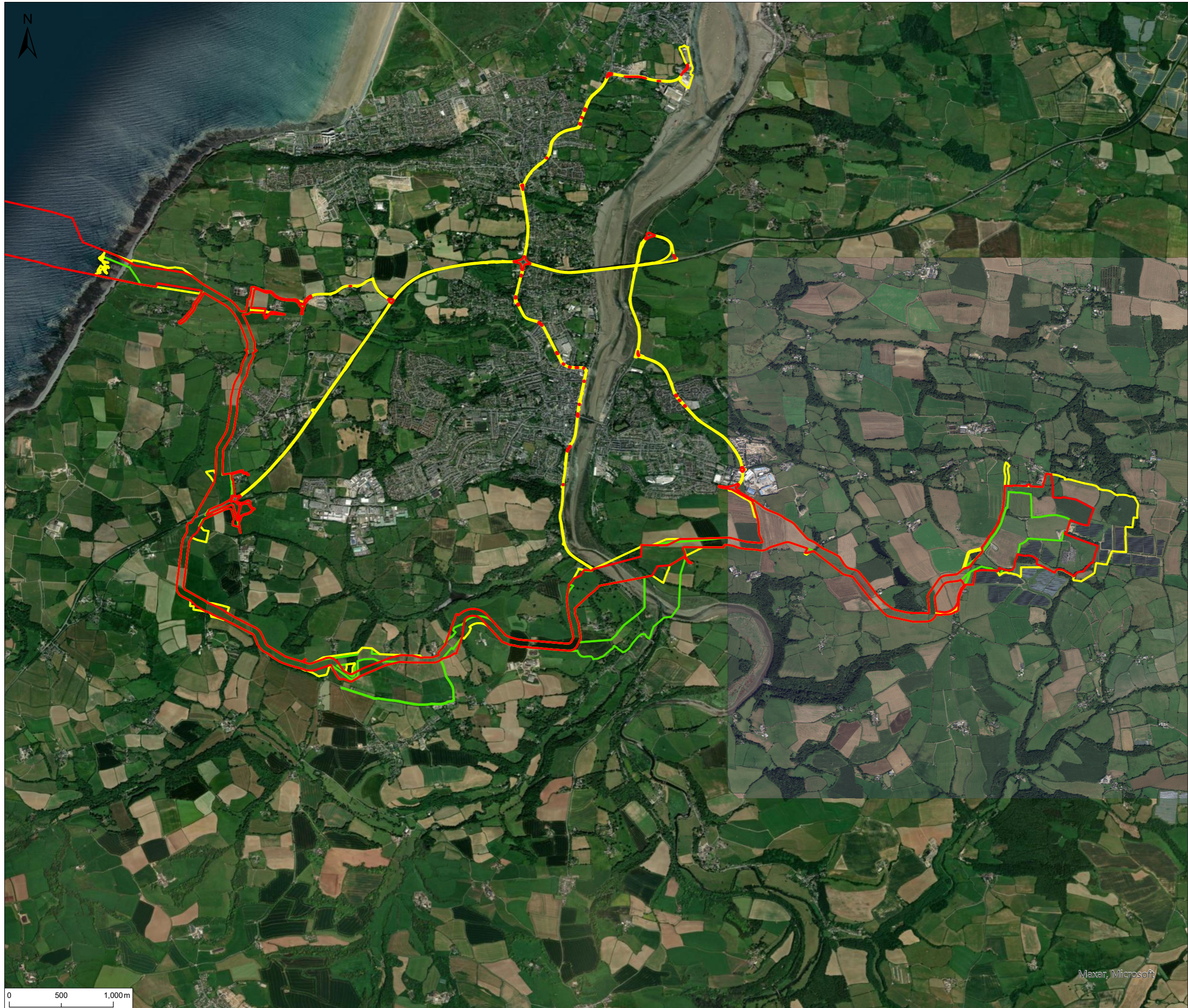


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 Project Xlinks' Morocco-UK Power Project
 Title Converter Site Constraints Plan

Status **FINAL** Scale @ A3 1:10,000 Date Created Nov 2024
 Figure Number **3** Rev **P01**

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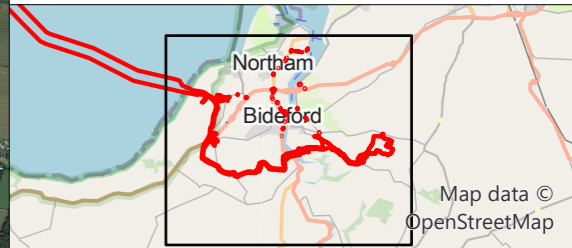
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Legend

- ▭ Order Limits
- ▭ PEIR Route
- ▭ Pre-PEIR Route



P01	FINAL	MP	MB	18.11.24
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 Project Xlinks' Morocco-UK Power Project
 Title Alternatives Considered

Status FINAL Scale @ A3 1:35,000 Date Created Nov 2024
 Figure Number 4 Rev P01

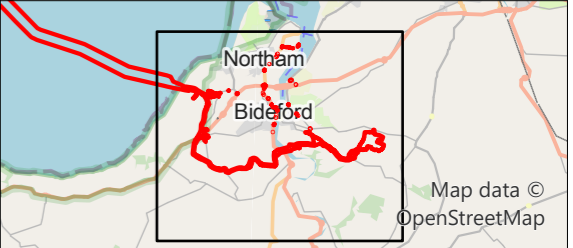
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Legend
 [Red Line] Order Limits
 [Yellow Polygon] Construction Compound



P01	FINAL	MP	MB	18.11.24
Rev	Description	By	CB	Date



Client Xlinks 1 Limited
 Project Xlinks' Morocco-UK Power Project
 Title Onshore Infrastructure Area

Status **FINAL** Scale @ A3 1:35,000 Date Created Nov 2024
 Figure Number **5** Rev **P01**

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1.4 Environmental Impact Assessment Process

- 1.4.1 EIA is the process of identifying and assessing the likely significant effects on the environment that may arise from a proposed development. This requires consideration of the likely changes to the environment where these arise as a consequence of a proposed development. For this Proposed Development, the legislative requirements for EIA are set by The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, as amended (referred to in this report as the EIA Regulations).
- 1.4.2 The results of the EIA process are summarised in an Environmental Statement (ES). The ES provides the decision maker with information on the potential likely significant effects to the environment arising from a proposed development, taking into account the scheme design and committed mitigation measures.

1.5 Consenting Process

- 1.5.1 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.
- 1.5.2 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.
- 1.5.3 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 Proposed Development is nationally significant and therefore elements of the Proposed Development (the converter stations) is development requiring development consent under the Planning Act 2008. 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.'*
- 1.5.4 Therefore, the Applicant is now pursuing a DCO for the Proposed Development.
- 1.5.5 The key stages in the Planning Act 2008 application process have been summarised in Plate 1.1.

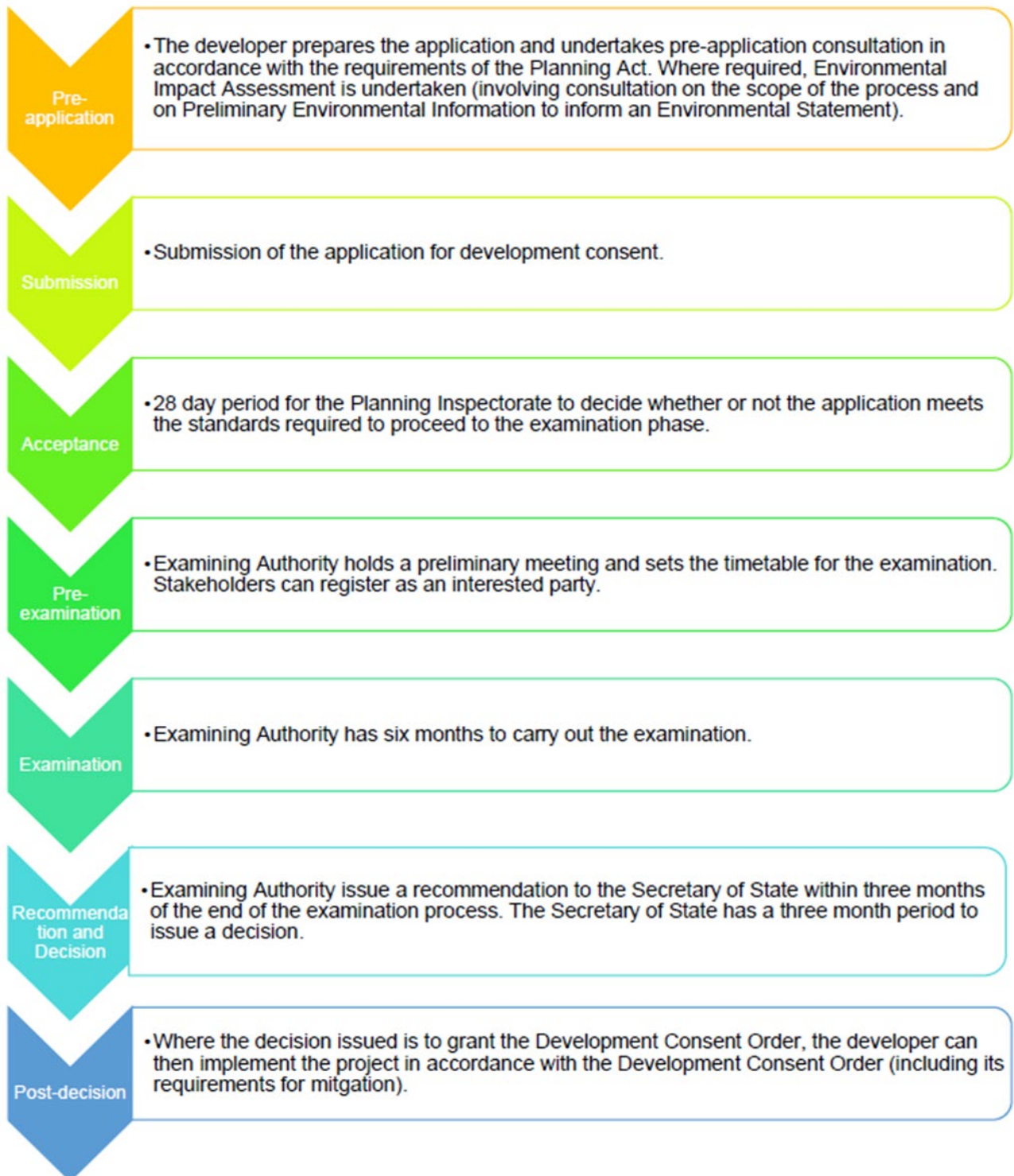


Plate 1.1: Overview of the Development Consent Order (DCO) Application Process

2 LEGISLATION AND POLICY

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 of the ES.

2.2 Legislative and Policy Context

Legislative Framework

2.2.1 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;
- Marine and Coastal Access Act 2009;
- The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017;
- The Marine Works (Environmental Impact Assessment) Regulations 2007;
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017;
- Flood and Water Management Act (2010);
- Environmental Permitting (England and Wales) Regulations 2016;
- Environment Act 2021; and
- Electricity Act 1989.

Policy Framework

National Planning Policy

2.2.2 The Planning Act 2008 makes provision for National Policy Statements (NPSs). Section 104 of the Act describes how decisions should be guided in cases where an NPS has effect and also what the Secretary of State can disregard in his decision making (s.106). A separate Planning Statement which explains the policy context in detail supports the application for development consent. (document reference 7.2).

2.2.3 The following adopted NPSs are relevant to the Proposed Development:

- 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).

- 2.2.4 In addition to the policy set out in the NPSs, the following planning policy and guidance is considered relevant:
- National Planning Policy Framework, 2023 (including the draft NPPF published for consultation in 2024);
 - Planning Practice Guidance, 2024;
 - UK Marine Policy Statement 2011; and
 - South West Inshore and South West Offshore Marine Plan 2021.
- 2.2.5 The NPPF is currently being updated and a draft version was published for consultation in July 2024 (Ministry of Housing, Communities and Local Government, 2024). The ES primarily refers to the adopted NPPF. However, where the draft NPPF contains materially different policy and requirements, these are highlighted in topic chapters of the ES.

Local Planning Policy

- 2.2.6 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 have been considered, where relevant. Relevant local documents include:
- North Devon and Torridge District Council Adopted Local Plan 2011-2031;
 - Devon Minerals Plan 2011–2033; and
 - Northern Devon Economic Strategy 2014-2020.

National Energy and Climate Change Policy

Net Zero: Opportunities for the Power Sector

- 2.2.7 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. Decarbonising the power sector is integral to achieving this goal. It requires major investment in proven technologies, such as solar, which are supported by planning policy at local and national levels.
- 2.2.8 The National Grid Electricity System Operator (2024) report, Future Energy Scenarios, published in July 2024, considers three different net zero pathways for the future of the energy system up to 2050. The report highlights that decisive action is required to deliver the fundamental change required to develop a fair, affordable, sustainable and secure net zero energy system by 2050.
- 2.2.9 The National Infrastructure Commission (NIC), the official advisor to the Government on infrastructure, subsequently produced the 'Net Zero: Opportunities for the Power Sector' report, in March 2020 (NIC, 2020), which sets out the infrastructure required to meet the 2050 target. Importantly, the NIC recommends the generation mix is up to around 90% renewables. The report recommends that across all scenarios, significant solar, onshore wind, and offshore wind, with between 129-237 GW of renewable capacity, be in operation by 2050.
- 2.2.10 Although the above figures are high-level, they demonstrate the amount of new infrastructure required to meet the urgent need to decarbonise the energy sector

in the UK. The scale of this need is such that it must be shared throughout the UK and in recognition that climate change is a national and global issue.

Net Zero Strategy: Build Back Greener

- 2.2.11 The Net Zero Strategy (HM Government, 2021a), published by the Government on 19 October 2021, builds on the Government's commitments made in the Energy White Paper (2020) and 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. Key policies in the strategy related to UK power generation include:

'By 2035, the UK will be powered entirely by clean electricity, subject to security of supply; [...] 40 GW of offshore wind by 2030, with more onshore, solar and other renewables – with a new approach to onshore and offshore electricity networks to incorporate new local carbon generation and demand in the most efficient manner that takes account of the needs of local communities [...].'

British Energy Security Strategy 2022

- 2.2.12 On 7 April 2022, the UK Government published its British energy security strategy (BEIS and Prime Minister's Office, 2022). The Energy Security Strategy emphasises the need to be more energy independent as a nation, aiming to improve energy efficiency, accelerate the transition from fossil fuels, and expand the renewable energy capacity.

Powering Up Britain: The Net Zero Growth Plan 2023

- 2.2.13 In March 2023, the UK Government published the Net Zero Growth Plan (HM Government, 2023). This plan largely restated existing policy contained within previous policy papers above. The plan confirmed the UK's commitment to having a decarbonised power system by 2035, with the majority of power generated from renewable sources such as wind and solar.

Great British Energy

- 2.2.14 Following the 2024 UK Election, the new Government has confirmed its commitment to renewable energy. This includes a commitment to making Britain a clean energy superpower by 2030, as set out in the Great British Energy founding statement (DESNZ, 2024). The new Government are aiming for a fully decarbonised power system by 2030 and aim to become net zero by 2050.

3 CONSULTATION

3.1 Background

- 3.1.1 The Proposed Development has been the subject of survey, consultation and iterative design since 2019. Initial research into site suitability and availability progressed to design development and community consultation during 2022/23 before a decision was taken to enter the DCO process in 2023.
- 3.1.2 Feedback from landowners, the community, the LPAs and information from environmental surveys contributed to the description of the Proposed Development and the receiving environment summarised in the EIA Scoping report issued to Planning Inspectorate in January 2024 (see below).
- 3.1.3 Full details of the consultation carried out and feedback received is provided in a separate Consultation Report (document reference 5.1) that accompanies the DCO application.

3.2 Informal Community Consultation

- 3.2.1 Proposals developed prior to the decision to enter the DCO regime (under the Planning Act 2008) were the subject of community consultation in November 2022 and April/May 2023.
- 3.2.2 Changes to the proposed location and layout of the Converter Site and important routing changes along the Onshore HVDC Cable Corridor were significant outcomes of that consultation process.

3.3 Statutory Consultation

- 3.3.1 The Applicant published a Preliminary Environmental Information Report (PEIR) (and accompanying documentation) in May 2024 to form the basis of statutory consultation under the Planning Act 2008. The PEIR presented the preliminary findings of the EIA process in accordance with Regulation 12 of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the 2017 EIA Regs). Statutory consultation ran between 16 May and 11 July 2024.
- 3.3.2 Public exhibitions and online webinars were held during the statutory consultation period. At these events, the Applicant consulted stakeholders and the local community on the contents of the PEIR alongside a suite of other documents. Feedback has helped refine the design of the Proposed Development and inform the EIA process. All statutory consultation materials are available online at: <https://xlinks.co/devon/>

3.4 Targeted consultation

- 3.4.1 After the initial statutory consultation, an additional period of targeted consultation was undertaken with relevant consultees between 6 September 2024 and 7 October 2024. This provided opportunities for the relevant stakeholders to review and comment upon the further design changes and refinements, which have been taken into consideration during the EIA process.

3.5 Further Engagement

- 3.5.1 In addition to the statutory consultation, prescribed consultees and other relevant stakeholders have been in communication with the Applicant over the EIA process and emerging proposals. Stakeholders were able to interface with the development teams up to the point of documents being finalised for the DCO application.

4 PROJECT DESCRIPTION

4.1 Overview

- 4.1.1 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 possible decommissioning. The design parameters (including geographical extent) have been refined since those presented in the PEIR. Those parameters also called the Project Design Envelope (PDE) are fixed and are presented in the ES and draft DCO (document reference 3.1) that will accompany the application for development consent.
- 4.1.2 The Proposed Development would be located within the Order Limits shown on **Figure 1** and **Figure 2**. The Order Limits, which is shown on **Figure 1**, covers an approximate area of 206 km². This includes a 370 km long Offshore Cable Corridor and the Onshore Infrastructure Area comprising an Onshore HVDC Cable Corridor, which is approximately 14.5 km long, and Converter Site.
- 4.1.3 The project description contained in Volume 1, Chapter 3: Project Description of the ES (document reference 6.1.3) presents both the fixed parameters that make up the PDE as well as anticipated details that remain indicative before the detailed design phase commences. Where design details remain indicative and subject to further consultation and approval, they are nevertheless still within the fixed parameters of the PDE.
- 4.1.4 For each EIA topic, impact assessments have been conducted on a maximum design scenario which has been selected by that topic tailored to the specific requirements of each assessment. Each maximum design scenario remains within the confines of the fixed PDE parameters. This allows for each topic a reasonable maximum or 'worst case' assessment to be carried out on the likely significant effects that could be anticipated within the design envelope. Where necessary, mitigation measures have been recommended for the implementation phase of the Proposed Development. The parameters used at ES stage are depicted in schematic form at **Plate 4.3**.
- 4.1.5 The grant of DCO will essentially fix those parameters that comprise the PDE. The ongoing design process will be controlled by Requirements of the DCO that will be placed on aspects that remain uncertain at this stage. Such Requirements apply both to matters of detailed design as well as further progression of detailed management plans and will be subject to subsequent approval by the relevant regulatory body.

4.2 Locations

- 4.2.1 The boundaries of the Proposed Development called the Order Limits are shown on **Figures 1 and 2**. Volume 1, Chapter 3: Project Description of the ES (document reference 6.1.3) contains detailed description of the locations where works would be carried out.
- 4.2.2 The Onshore Infrastructure Area is located within the local authority areas of Torridge District Council and Devon County Council in north Devon (See **Plate 4.1** to **Plate 4.3**).

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

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

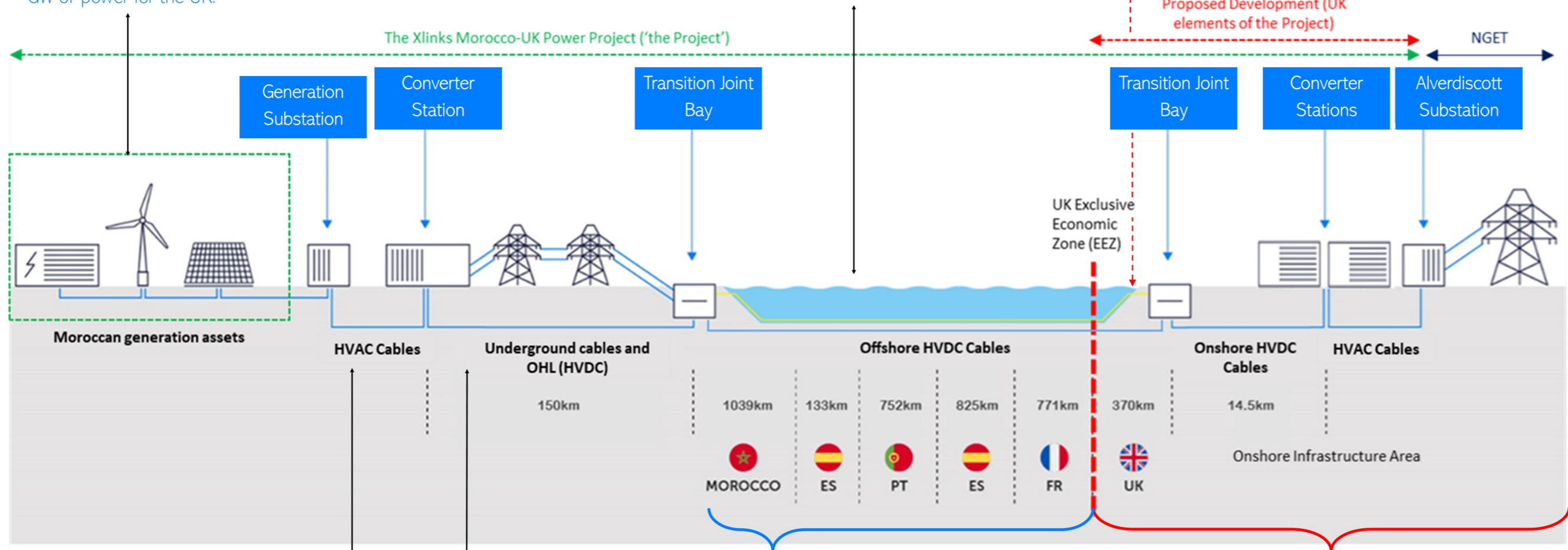
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Morocco (onshore) generation assets comprises of approximately 7.5 GWp solar photovoltaic array, 4 GWp wind turbine array and 22.5 GWh battery storage. In combination, and taking into account losses associated with generation plant and transmission, generating 3.6 GW of power for the UK.

The Project proposes to use Direct Current (DC) cable infrastructure for the long distance transmission of electricity as the technology offers significant advantages in comparison with the use of equivalent Alternating Current (AC) systems.

HVDC transmission systems provide increased reliability and efficiency when transmitting a significant load of electricity across long distances and are less susceptible to transmission losses of power.

The 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



AC Cables connecting the generation assets to the converter stations

Onshore High Voltage DC cables from the converter stations to the western coast of Morocco

The Project would include an offshore route of approximately 4,000 km, which would run through Moroccan, Spanish, Portuguese, and French Waters before arriving within the UK Exclusive Economic Zone (EEZ).

Whilst the Project is routed through the Territorial Waters and Exclusive Economic Zones of Morocco, Portugal, Spain, and France, it would not connect to the Moroccan, French, Portuguese, or Spanish grids.

The Onshore Infrastructure Area is wholly located within the local authority area of Torridge District Council, in north Devon, and extends from the Alverdiscott Substation site to the Landfall at Cornborough Range. The Onshore Infrastructure Area is located in an area that is predominantly rural. The settlements of Abbotsham, Bideford, Ford, Littleham, Landcross, East-the-Water, Gammaton Moor, Woodtown and Stony Cross are situated close to the Onshore Infrastructure Area.

The existing Alverdiscott Substation is located within the Onshore Infrastructure Area and there are existing 132 kV and 11 kV overhead lines that cross the Order Limits and connect to the existing Alverdiscott Substation.

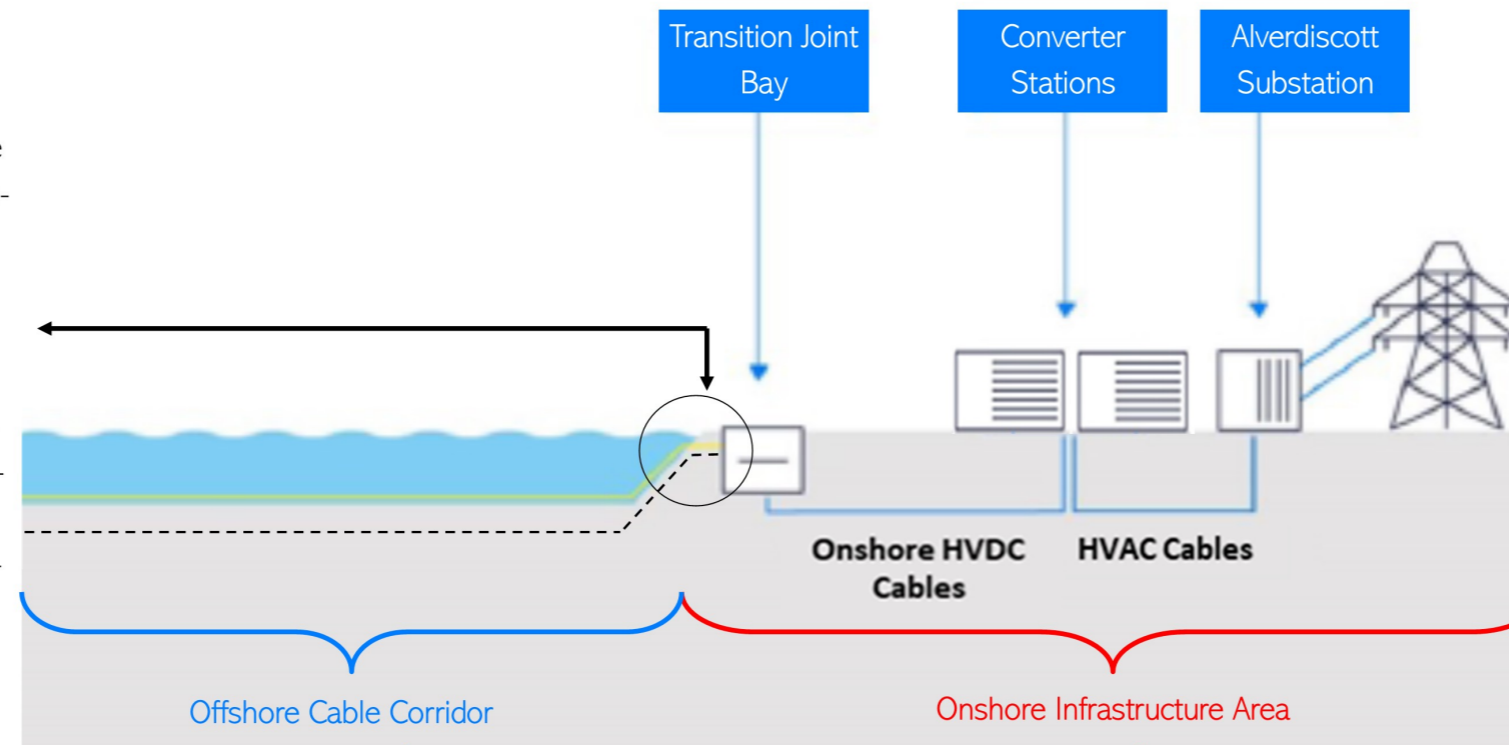


Plate 4.1: Overview of Xlinks' Morocco-UK Power Project

Proposed Development - The element of Xlinks' Morocco-UK Power Project within the UK, which includes the offshore cables (from the UK Exclusive Economic Zone to Landfall), Landfall, onshore Direct Current and Alternating Current cables, converter stations and road upgrade works.

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).

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



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. NGET would bring forward the planning and development of a new substation within the existing site (referred to as Alverdiscott Substation Connection Development), which would form a cumulative development to the Proposed Development.

Onshore Infrastructure Area - The proposed area within the Order Limits landward of the transition joint bays, which contains the onshore HVDC Cables, Converter Site, highway works and onshore HVAC Cables.

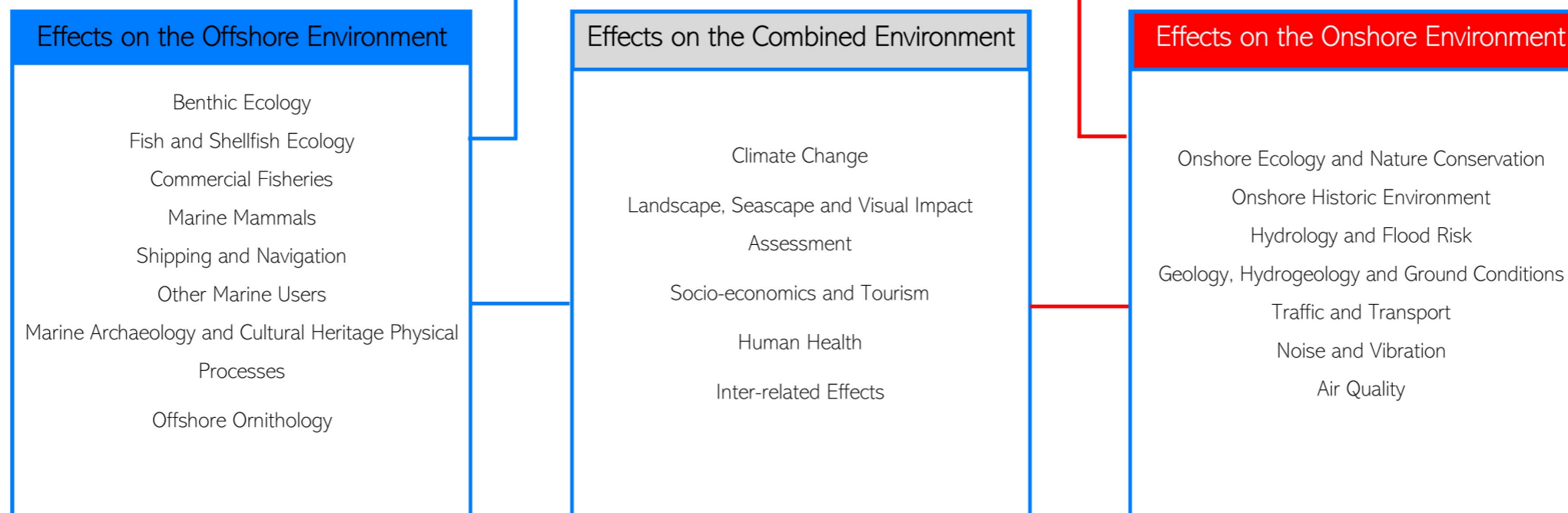


Plate 4.2: Overview of the Proposed Development

Key Project Elements and Parameters

Offshore Cable Corridor: The extent of the Offshore Cable Corridor assessed is from the UK EEZ boundary to the Landfall site at Cornborough Range on the north Devon coast. The total length of the Offshore Cable Corridor in UK waters is approximately 370 km.

The Offshore Cable Corridor has a nominal width of 500 m extending up to 1,500 m at some crossing locations (where the cable needs to cross existing power and telecoms cables for example) to provide the cables with sufficient space to cross the existing assets as close to 90 degrees as possible (and reduce the footprint of the crossing on the seabed).

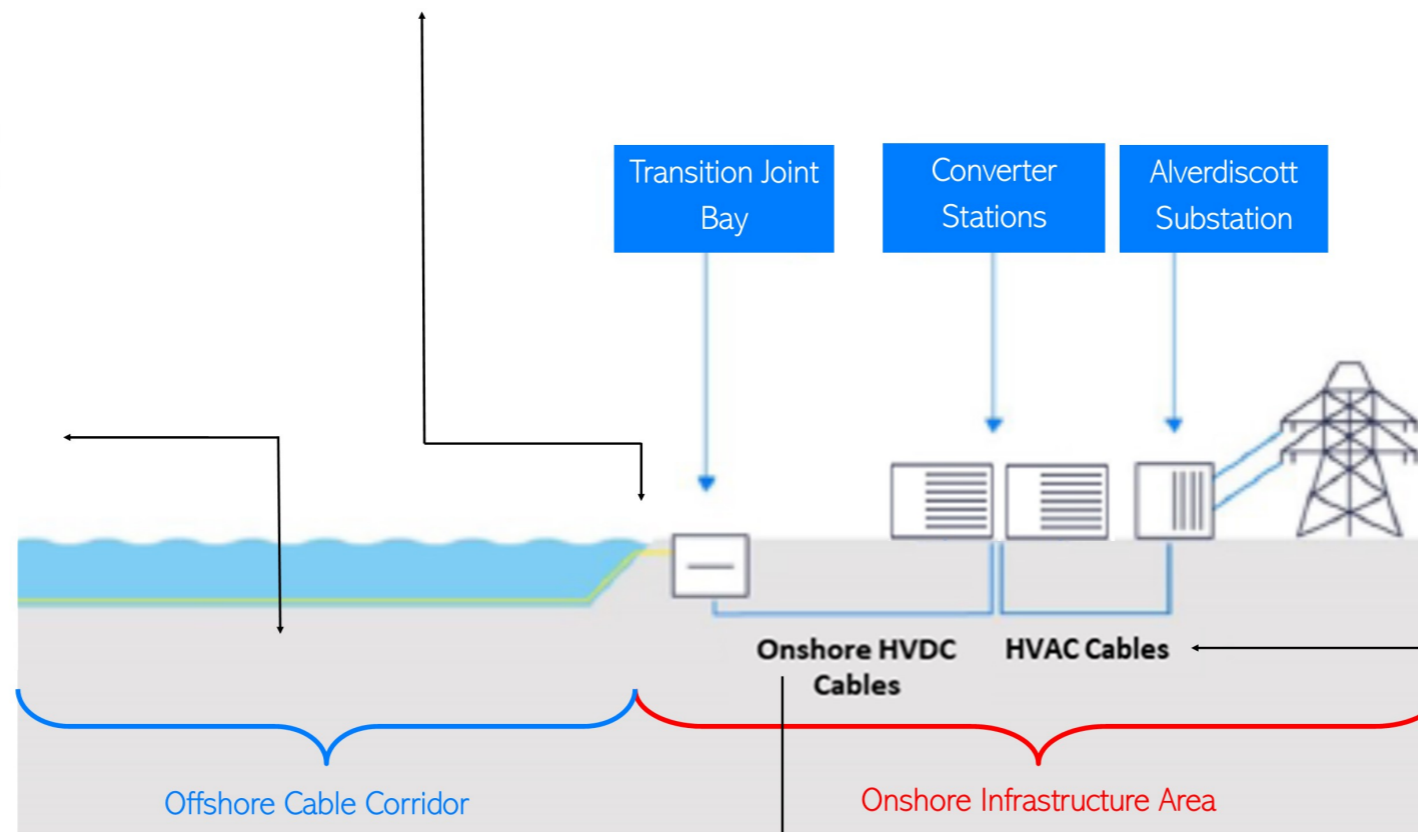
The offshore HVDC Cables would consist of four HVDC marine power cables which would be installed for the majority of the cable route as two bundled pairs

(Bipole 1 and Bipole 2). The bundled pairs would be separated into four individual cables approximately 1-2km offshore, before the Landfall Horizontal Directional Drilling (HDD) entry points.

- Maximum number of Offshore HVDC Cable (within UK EEZ): 4 nos
- Maximum length of Offshore HVDC Cable (within UK EEZ): 370 km

Landfall Works: The Landfall at Cornborough Range would be constructed using HDD under the seabed and shoreline, pulling the offshore cables (from the sea towards the land) through underground ducts and connecting to the onshore cables transition joint bays

Maximum Parameters for Converter Site
Number of converter stations: 2 Nos (Bipole 1 and Bipole 2)
Height of converter buildings (excluding lightning protection, aerials, etc.): 26 m
Combined footprint of converter stations: 130,000 m ²
Permanent footprint of converter site (combined), including converter station buildings, landscape bunding, planting and drainage: 395,000 m ²



Onshore HVDC Cable Corridor (Underground Cables): The onshore HVDC Cables would provide a cable connection between the transition joint bay, at Landfall, and the proposed converter stations. An Onshore HVDC Cable Corridor has been identified, within which the HVDC Cables are proposed to be located. The Onshore HVDC Cable Corridor stretches for approximately 14.5 km and has been divided into seven zones, dictated by existing engineering restrictions (including major roads, rivers, etc.), running from the Landfall to Converter Site. The typical permanent cable corridor width is expected to be 32 m; however, the permanent easement would be wider in some instances, for example at Horizontal Directional Drilling (HDD) locations.

HVAC Cable Connection; The connection between the proposed converter stations and the national grid would be achieved by the HVAC Cables over a maximum length of 1.2 km. The HVAC Cables would be located within the boundaries of the Converter Site and Alverdiscott Substation site.

The HVAC Cable Corridors would include the installation of HVAC Cables in cable circuits (with each circuit typically comprising three power cables). It is anticipated that two cable circuits (six cables), buried across two separate trenches would form one Bipole for the AC system, and may include communication cables. The typical permanent cable corridor width is expected to be 15 m for each Bipole, resulting in a combined permanent width of 30 m. The temporary construction corridor width is likely to be maximum of 65 m (32.5 m for each Bipole).

- Maximum number of HVAC Cables: 12 nos
- Maximum length of HVAC Cable: 1.2 km

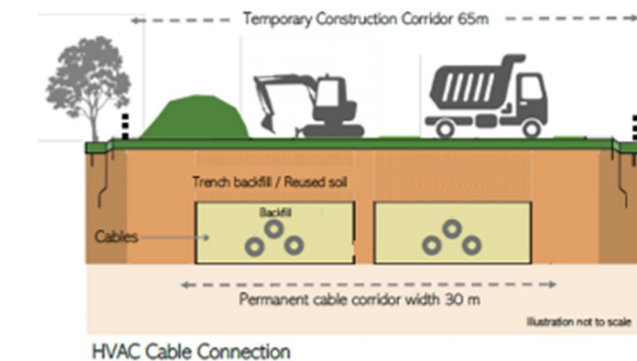


Plate 4.3: Key Proposed Development elements and parameters

4.3 Key Elements

4.3.1 The Order Limits include the following areas:

- Onshore Infrastructure Area - comprising both temporary and permanent areas (landward of Mean High Water Springs) associated with the following:
 - Converter Site: where the two converter stations are proposed to be located, including temporary and permanent accesses, landscaping, drainage, and other works and utility diversions.
 - HVAC Cable Corridors: where the HVAC Cables are proposed to be located. These corridors would be situated within the boundaries of the Converter Site and existing Alverdiscott Substation Site.
 - Onshore HVDC Cable Corridor: where the onshore HVDC Cables are proposed to be located to connect the converter stations to Landfall, including temporary construction compounds, temporary and permanent accesses, utility connections and drainage;
 - Highways improvements: improvements to the existing road network to facilitate access during construction and operation and maintenance, including road widening, and new or improved junctions.
- Abnormal Indivisible Load (AIL) route works – the proposed sections of the AIL routes for the transport of abnormal loads (e.g., transformers and cable drums) from Newquay Dock at Appledore to the Onshore HVDC Cable Corridor and Converter Site, which require minor works to the highway (e.g., removal of verges, bollards, etc.).
- Landfall – The temporary and permanent areas between MLWS and the transition joint bays at Cornborough Range.
- Offshore Cable Corridor – where the offshore HVDC Cables are proposed to be located in order to bring electricity from its generation source to the Landfall, which are located within the UK EEZ.

4.3.2 All of the above elements will be located within the Order Limits shown in **Figure 1**.

4.3.3 Key summary parameters have been illustrated in **Plate 4.1** to **Plate 4.3** and summarised in **Table 4.1**.

Table 4.1: Key summary parameters for the Proposed Development

Element	Max Parameter
Order Limits area (km ²)	206
Onshore Infrastructure	
Number of converter stations	2
Height of the tallest converter station building above ground floor level (mAOD)	26
Height of ground floor level upon which converter station building heights are measured from (mAOD)	127
Number of HVAC Cables	12
Number of onshore HVDC Cables	4
Number of onshore fibre optic cables	6

Element	Max Parameter
Length of HVAC Cable Corridors (km)	1.2
Length of Onshore HVDC Cable Corridor (km)	14.5
Offshore Infrastructure	
Number of offshore HVDC Cables (within the UK EEZ)	4
Number of offshore fibre optic cables (within the UK EEZ)	2
Length of Offshore Cable Corridor (km)	370

4.4 Programme

- 4.4.1 At this stage, the timing of construction activities set out within the ES are indicative.
- 4.4.2 The construction programme comprises several parallel activities that would be timed to align with the available connection dates provided by the National Electricity System Operator (NESO) with the full commissioning (i.e., commercial operation) of Bipole 1 and Bipole 2 anticipated to be 2031 and 2033 respectively. For the purposes of assessment, it is anticipated that the earliest construction start date for the Proposed Development would be mid to late 2026.
- 4.4.3 Consistent with the build-out and commissioning of the generation and transmission infrastructure in Morocco together with the connection dates offered by NESO, the Proposed Development would be constructed in a single phase that allows for the staggered commissioning of the two bipoles. However, within the single construction phase, there will be a number of overlapping stages of construction starting and finishing at different times.
- 4.4.4 The likely programme for the onshore elements of the Proposed Development is provided in **Table 4.2** and **Plate 4.4**.

Table 4.2: Construction programme for key elements of the Proposed Development

Key Element of the Proposed Development	Expected Duration (working time only) (months)
Converter Site	72
Preliminary Activities	6
Main Construction Works	60
Testing & Commissioning	6
HVAC Cable Corridors	12¹
Construction & Installation of HVAC Cables for Bipole 1	6
Construction & Installation of HVAC Cables for Bipole 2	6
Onshore HVDC Cable Corridor	36
Landfall	24²
Offshore Cable Corridor	18³

1. The construction and installation of the HVAC cables (per Bipole) would occur over two separate periods of 3 months with a space between these construction periods.

2. Construction works at the Landfall comprise an initial 18 months of works, with a space between the second phase of works. The second phase of works at the Landfall would continue for a further six 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.

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	2026				2027				2028				2029				2030				2031				2032				2033			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Onshore																																
Preliminary Activities																																
Converter Site - Construction, Restoration and Commissioning (Bipole 1)																																
Converter Site - Construction, Restoration and Commissioning (Bipole 2)																																
HVAC Cables - Construction and Installation (Bipole 1)																																
HVAC Cables - Construction and Installation (Bipole 2)																																
Onshore HVDC Cables - Construction and Installation																																
Landfall																																
Landfall Works																																
Offshore																																
Seabed Preparation Activities																																
Laying of Bipole 1 Offshore Cables																																
Laying of Bipole 2 Offshore Cables																																
Restoration and re-instatement works																																
Restoration and re-instatement works																																

Key
 Pre-Construction & Main Construction Activities ■
 Testing and Commissioning ■

Plate 4.4: Indicative construction programme

4.5 Construction Access and Highways Improvements

- 4.5.1 The access strategy for the Proposed Development comprises of both temporary and permanent alterations to roads. During construction, traffic would be routed to one of five temporary construction compounds shown on **Figure 5** accessed directly from the highway each of which will require new or improved junctions.
- 4.5.2 The Onshore HVDC Cable Corridor would be constructed using purpose-built temporary haul roads which allow construction traffic to navigate the Onshore HVDC Cable Corridor without using local roads. Once construction vehicles have accessed their relevant compound, they would be able to access the associated section of cable corridor 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 and avoids the obvious geometric constraints of Devon lanes.
- 4.5.3 This strategy also applies to the Converter Site, where arrivals to the Gammaton Road compound (see below) would be directed to a smaller compound at the Converter Site via an off-road haul route.
- 4.5.4 The following improvements are proposed on both the public highway and on private land as part of the Proposed Development, noting that the improvements are subject to further detailed design. As such all potential improvements are included below and may be refined through detailed design:
- Cornborough Sewage Treatment Works access road: expanded junction and widened private track to provide access to the Onshore HVDC Cable Corridor section north of Kenwith Stream Horizontal Directional Drilling (HDD) and the Landfall HDD compound.
 - A39 West: A compound access will be created off the unnamed road to Abbotsham approximately 120 m west of the A39 Abbotsham Cross roundabout. This access will be used as the main logistics base for the Onshore HVDC Cable Corridor as well as the HDD under the A39 and the haul road leading to the south side of Kenwith Stream HDD. This access will be the main marshalling compound for the Onshore HVDC Cable Corridor.
 - A39 East: A site access will be created on the unnamed road towards Littleham approximately 165m south of Clovelly Road². This access will be used for all Onshore HVDC Cable Corridor works west of West Ashridge HDD.
 - A386: this includes the permanent improvement of an existing junction along the A386 with an unnamed road towards Littleham as well as to provide access to the River Torridge HDD compound and the haul road along the Onshore HVDC Cable Corridor between the River Torridge (west) and West Ashridge HDDs.
 - Gammaton Road Compound: a new access will be created approximately 70 m east of Tennacott Lane. Gammaton Road compound will be used to serve the Converter Site as well as the Onshore HVDC Cable Corridor east of the River Torridge HDD. The Gammaton Road compound will be the main

² Please note that two alternatives (existing and future baseline) have been proposed for this access because a new housing development on the east side of the road may have been completed before the Xlinks construction programme begins.

marshalling compound for the Converter Site and the Onshore HVAC Cable Corridor.

- Road improvement works at Gammaton Moor, including the following:
 - Temporary symmetrical (on just one side) widening of Gammaton Road (south side) between Manteo Way and the Gammaton Road compound access to enable full two-way movement of construction vehicles in and out of the compound.
 - Permanent widening of pinch points along Gammaton Road in selective locations (south side only) to facilitate the movement of AILs during operation.
 - Reserved rights to install a temporary junction west of Gammaton Cross and construction of a short section of private track bypassing Gammaton Cross. The private track would only be used by AILs destined for the Converter Site and as such will be gated and locked when not in use.
 - Permanent asymmetric (on either side) widening of the unnamed road running north between Gammaton Cross and Webbery Cross as far as the new operational Converter Site access.

4.5.5 As mentioned in **paragraph 4.5.2**, the Onshore HVDC Cable Corridor and associated temporary haul roads would be required to cross minor roads under traffic management. Trenchless technology would be used at key road crossings including the A39 and A386, meaning that the cables would be routed beneath the roads with no impact on traffic.

4.5.6 During the laying of cables, it is likely that local roads would be crossed (trenched) at surface whilst the cable ducts are laid and backfilled. In most cases, this would involve short-term temporary closures until the trenches can either be back-filled or covered with plates. 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 or a banksman.

4.5.7 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.

4.5.8 Three Public Rights of Way (PRoW)/routes with public access would be crossed by the Onshore HVDC Cable Corridor. In two cases, a crossing point would be created giving priority to PRoW traffic with gated access across the haul routes controlled by banksmen. There is one requirement for the temporary closure and temporary diversion of a PRoW around the north of the Kenwith Stream HDD (south) compound for a short period.

4.6 Approach to Design and Mitigation

4.6.1 Converter Site and Landfall site selection and the routing of the Offshore Cable Corridor, Onshore HVDC Cable Corridors and HVAC Cable Corridors has sought to avoid the most sensitive areas in the study area. A detailed description of the options considered by the Applicant in the siting/routing of the Proposed Development is provided separately in the Project Development and Consideration of Options which forms Appendix 2 of the Planning Statement (document reference 7.2).

Approach to Design Onshore

- 4.6.2 Minimising potential negative environmental effects and maximising possible environmental benefits requires a staged approach to:
- avoidance by design of sensitive receptors e.g., via routing around or under such areas;
 - amelioration of potential negative effects e.g., by adding stand-off buffers, intervening screening, attenuation, insulation, architectural treatment etc;
 - minimising anticipated impacts e.g., though reducing the duration and/or footprint of activities;
 - managing likely significant effects through adherence to mitigation/management plans that follow the most up to date best practice.
- 4.6.3 Master-planning design of the Converter Site has sought to improve:
- land-use efficiency of the twin converter stations and their relationship to the Alverdiscott Substation and solar developments;
 - minimising the length of HVAC cable connections;
 - maximising the potential for on-site landscape screening and habitat creation; and
 - retaining all bulk materials and drainage infrastructure within the site boundaries.
- 4.6.4 The detailed design of the Converter Site and related landscape treatment would be controlled by the DCO including a Design Principles Statement (document reference 7.4) and a Landscape and Ecology Management Plan (LEMP) (document reference 7.10) both of which are submitted in outline with the application for development consent.
- 4.6.5 More details on the approach to design is provided separately in the Design Approach Document (document reference 7.3).

Approach to Design Offshore

- 4.6.6 The Offshore Cable Corridor has a nominal width of 500 m within which the cable bundles will be installed. The 500 m provides flexibility within the cable corridor for micro routing of the eventual cable placement with the corridor for sensitive habitats, cultural heritage etc.
- 4.6.7 The cables will be installed as two bundled pairs (each pair within its own trench). This minimises potential environmental impacts by only requiring two trenches and reduces installation times. The location and siting of the Offshore Cable Corridor has been informed by a site selection, route optimisation and consultation process. Multiple desktop studies and marine investigation surveys have been completed, as well as formal and informal consultation with key stakeholders. Route optimisation had consideration for water depth, seabed (benthic) features and geohazards, metocean influences, 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).

Approach to Construction

4.6.8 Detailed consideration of the construction strategies for both the onshore and offshore works includes the following considerations:

Onshore

- careful consideration of a construction logistics strategy that avoids significant impacts on the local population and road users;
- avoiding all nationally and locally designated sites for nature conservation and heritage;
- passing beneath major roads, rivers, recreational routes and the beach via trenchless technology;
- selecting the shortest distance from a sea port to site for Abnormal Loads;
- returning the landscape and habitats to their pre-existing condition or better along the Onshore HVDC Cable Corridor; and
- committing to a ground engineering and landscaping strategy for the Converter Site that will reduce the visibility of buildings and substantially increase on-site biodiversity.

Offshore

- cables will be buried (where possible) up to approximately 1.6 m below the seabed. Only when full burial is not possible will additional protection be installed;
- where possible, introduced cable protection i.e., rock placement would be kept level with the seabed, and if above the seabed would be kept to a maximum of 1 m above seabed level;
- micro-routing of the cables will be undertaken to minimise any potential damage to Annex I habitats, to avoid sand waves or large ripples, and to avoid direct impacts where possible on archaeology and cultural heritage assets and submerged land surfaces;
- HDD methods will be employed to avoid any direct disturbance of the intertidal, the foreshore and the coastal cliffs;
- the HDD drill system and the associated fluid (bentonite) will allow for the monitoring of pressure loss and therefore provision for the rapid identification of potential break outs;
- 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 where possible (including known sites of archaeological interest);
- all potential sediment disturbance activities in Bideford Bay will avoid peak spring tides and significant wave activity - to limit any potential for sediment mobilisation; and
- all construction activities undertaken on the seabed including boulder clearance activities will remain entirely within the Offshore Cable Corridor, and a minimum distance of 20 m from any MCZ boundary.

Detailed design

- 4.6.9 The detailed design of the Converter Site inclusive of its landscape scheme would be controlled by the DCO including a Design Principles Statement (document reference 7.4).

Management Plans

- 4.6.10 The full list of proposed measures designed to control the potential adverse effects of constructing and operating the Proposed Development are provided in the Commitments Register (document reference 6.1.3.1).
- 4.6.11 Restoration and ongoing management of the completed works will be controlled by a LEMP which is submitted in outline (document reference 7.10) with the application for development consent.
- 4.6.12 Mitigation of construction effects will be controlled through a Construction Environmental Management Plan (CEMP) (both onshore and offshore) and a Construction Traffic Management Plan (CTMP). These plans, which will be submitted in outline with the application for development consent, are briefly described below.

4.7 Onshore Construction Environmental Management (including Landfall)

- 4.7.1 Construction of the Proposed Development would be managed through final Onshore Construction Environmental Management Plans (On-CEMP(s)) 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 On-CEMP has been submitted (document reference 7.7) and the final On-CEMP(s) as approved, will be substantially based on the Outline On-CEMP.

Construction Working Hours

- 4.7.2 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, AILs may be encouraged or required to travel overnight and crossings of roads may be constructed overnight to minimise disruption to traffic.
- 4.7.3 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

- 4.7.4 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.

4.8 Offshore Construction Environmental Management

4.8.1 The Applicant would adopt best practice environmental management measures for the offshore elements of the Proposed Development, in line with the requirements of all relevant legislation, codes of practice and standards as identified in the topic chapters of this ES to actively limit adverse effects on the marine environment. 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) will detail the best practice approach to offshore activities and would implement those measures and environmental commitments identified in the EIA. The Offshore CEMP(s) will be developed in accordance with an Outline Offshore CEMP submitted with the DCO application (document reference 7.9) and it will be a live document that is reviewed and updated throughout the construction of the Proposed Development.

4.9 Construction Traffic Management

4.9.1 Working in concert with the final On-CEMP(s), the final CTMP will:

- manage the numbers and routing of construction vehicles during construction of the Proposed Development;
- manage construction working hours;
- manage the safe passage of Heavy Goods Vehicle traffic along 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);
- manage the requirement for wheel cleaning methods at appropriate locations to eliminate the risk of mud and debris on the highway;
- minimise dust and dirt associated with movements of construction vehicles; and
- manage the timing and routing of Abnormal Indivisible Loads deliveries will be discussed and agreed with the relevant highway authorities to minimise delay for and risk to other highway users.

4.10 Biodiversity Mitigation and Enhancement

4.10.1 The Applicant aims to mitigate for unavoidable impacts on habitats arising as a result of the Proposed Development and to explore potential habitat and biodiversity enhancements, where practicable. To a greater degree, this includes the temporary loss of sections of Devon hedgerows during cable laying works.

4.10.2 Even though the hedgerows will be re-built and replanted, the time elapsed before full recovery to their pre-existing condition is treated as a loss to the environment. Therefore, the Applicant has sought to find further improvements to hedgerow habitat quality in areas beyond the Converter Site.

- 4.10.3 Significant biodiversity improvements are proposed as part of the landscaping scheme for the Converter Site including the planning of hedgerows, woodlands and species rich grasslands. The indicative landscaping scheme submitted with the application for development consent is provided in the Outline Landscape and Ecological Management Plan (document reference 7.10).

4.11 Operation and Maintenance

- 4.11.1 The Proposed Development would be designed to operate on a continuous basis throughout the year. Details of the operation and maintenance activities associated with the Proposed Development, including converter stations, onshore cables (HVDC and HVAC), offshore cables and Landfall are presented in further detail below.

Onshore Operation and Maintenance

Converter Site

- 4.11.2 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 jobs, with up to 15 staff on-site at any one time in the day, reducing to approximately five overnight.
- 4.11.3 There would also be periods of annual (once a year) or biannual (twice a year) maintenance, which requires additional maintenance staff to be on-site (approximately between 30 and 40 visitors) for 1-2 weeks per converter station.

Onshore Cable and Landfall

- 4.11.4 The operation and maintenance requirements for the onshore HVDC and HVAC Cables would involve infrequent on-site inspections of the link boxes, which would be situated at intervals along the onshore route. The operation and maintenance would also include corrective maintenance activities. The cables would be continuously monitored remotely.
- 4.11.5 It is not expected that the transition joint bays at the Landfall would need to be accessed during the operation and maintenance phase. Link boxes would be provided along the Onshore HVDC Cable Corridor with inspection covers to allow for access for both routine inspection and in the event of cable failure. Once this is detected, a maintenance team would excavate, remove and replace the section of damaged cable.
- 4.11.6 A replaced overland section can either be between existing joint bays or via the creation of a supplementary joint bay.
- 4.11.7 Failed cable sections within HDDs, including Landfall can only be replaced by removing and replacing the whole section between entry and exit locations.

Offshore Operation and Maintenance

Offshore Cable

- 4.11.8 The preferred installation methods are designed to minimise the number of cable inspection surveys that will be required. However, some cable inspection surveys are expected during the operational lifetime of the Proposed Development.
- 4.11.9 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).
- 4.11.10 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 due to changes in seabed morphology or the activities of third parties.
- 4.11.11 Repair works for cable failure would require the exposure of the cable at the point of failure, which would require de-burial of the cable from the trench. The cable would then be cut, recovered to the surface, repaired using a section of spare cable and redeployed for reburial using similar methods to those used for installation.

4.12 Decommissioning

- 4.12.1 Although the Proposed Development is not time-limited and consent is not sought for decommissioning, the impacts of a possible future decommissioning phase have been assessed in the EIA for completeness.
- 4.12.2 As the Applicant is not seeking consent for decommissioning, any future decommissioning would need to be the subject of a separate consent sought at the appropriate time. Therefore, in order to make an assessment of the potential for effects to occur during decommissioning it has been necessary to make assumptions about what that could entail and the controls that may be put in place by a consenting regime in the future.
- 4.12.3 The converter stations would be designed, manufactured and installed for a minimum operational lifetime, which is currently anticipated to be 50 years. The permanent highways improvements would not have a forecast end of life and would not be decommissioned.
- 4.12.4 In the event that the operational lifetime of the Proposed Development is not extended, the decommissioning sequence would generally be the reverse of the construction sequence and involve similar types and numbers of vehicles, vessels and equipment. Therefore, it is likely that the effects of decommissioning on the environment would be no worse than those effects identified during the construction phase. Notwithstanding, decommissioning is considered in the relevant sections of this ES.
- 4.12.5 An Outline Decommissioning Strategy, which provides an overview of the strategy for decommissioning, has been developed and submitted as part of the application for development consent (document reference 7.17). It is assumed that if necessary, decommissioning plans covering the onshore and offshore elements would be developed prior to decommissioning, in accordance with the Outline Decommissioning Strategy, and such plans would be agreed with the local planning authority prior to commencement of decommissioning activities.

5 NEED AND ALTERNATIVES

5.1 Need for the Proposed Development

- 5.1.1 The Project is a renewable energy project that would deliver nationally significant amounts of clean power directly to the UK. The detailed justification for the need for the Proposed Development is provided separately in the Statement of Need (document reference 7.1).
- 5.1.2 Although the role of the ES is not to justify the need of the project, there are no limits or ceilings placed on the amount of renewable power generated in/supplied to the UK. Volume 1, Chapter 4: Needs and Alternatives of the ES (document reference 6.1.4) contains a short section that summarises the above document but briefly it explains the following.
- There is a compelling need for global action to decarbonise the global economy. The U.N. Intergovernmental Panel on Climate Change published its 2023 assessment of global climate change. The report concludes that the world is likely to pass a dangerous temperature threshold within the next ten years, pushing the planet past the point of catastrophic warming — unless nations drastically transform their economies and immediately transition away from fossil fuels.
 - 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 GHG emissions by 2050 and decarbonising the energy sector by 2035.
 - 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 will end the UK's contribution to global warming by 2050.
 - 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) and so even if the existing day to day use of electricity in homes and businesses didn't increase, the need to shift away from fossil fuels used in heating and transport will mean that the total amount of electricity required will need to significantly increase.
- 5.1.3 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.

5.2 Connection options

- 5.2.1 The Applicant has a series of requirements for the overall Project that include a suitable connection into the national grid. Suitability includes timely, cost effective as well as numerous electrical engineering and other criteria. An application

process to the National Energy System Operator (NESO) was followed which culminated in a firm offer for connection of 2 x 1.8 GW at Alverdiscott Substation in North Devon.

- 5.2.2 The EIA has focused on the study area governed by the selection of Alverdiscott Substation in North Devon as the preferred point of connection for 3.6 GW into the national grid. No other alternative connection points were studied and reported in the ES. Further details of potential grid connection points rejected at an earlier stage are provided separately in Appendix 2 of the Planning Statement – Project Development and Consideration of Options Report (document reference 7.2). The document includes the electrical and other considerations that were factored-in by NESO around the amount of existing and planned capacity on the regional transmission circuits and the extent of the upgrades likely required.

5.3 Approach to Route and Site Selection

- 5.3.1 Once a firm offer of connection was made by NESO, the Applicant needed to satisfy themselves of the offer's suitability. The below section summarises how the Applicant has confirmed that key environmental, land use and engineering criteria were met in the selection and refinement of the Proposed Development boundaries. It goes on to explain the design evolution of all the individual elements which has improved performance against such criteria.
- 5.3.2 The selection process for the point of Landfall, the Converter Site and Onshore and Offshore Cable Corridors was an iterative process that has occurred over a number of years. The separate elements of Converter Site, Landfall, Onshore and Offshore Cable Corridors are not capable of being selected in isolation meaning that all parts of the Proposed Development need to fit the Applicant's requirements both individually and as package.
- 5.3.3 The selection process has considered numerous factors that have influenced the site selection and design of the Proposed Development. The specific factors considered by the Applicant include:
- Environmental – Considering the relative sensitivity of different options in terms of National Designations, landscape, ecology, historic environment, hydrology, noise, traffic, recreational value, land use and other environmental factors.
 - Social and Economic - Utilising the available capacity within the existing network, the social-economic impacts and benefits by considering the generation of low-carbon electricity, security of supply, and cost of development to manage the affordability of electricity for consumers.
 - Electrical – Consider the effect of the additional power input into the existing National Grid Electricity Transmission system to identify available capacity and existing assets.
 - Engineering – Considering the technical constraints arising from constructing and maintaining different options, such as those associated with using cable drilling techniques.

5.4 Alternative Design Development

- 5.4.1 The following sections summarise the main alternatives considered within the EIA process for each element of the Proposed Development to date.

- 5.4.2 Alternatives considered in the EIA are described in the following section. They are the iterations of the environmental decision making process which has sought to improve the preferred options' environmental performance.
- 5.4.3 Alternatives have been considered for each element of the Proposed Development. This process has been informed by:
- Project requirements;
 - Other engineering and technical criteria;
 - Land use and land ownership constraints; and
 - The ongoing environmental appraisal process.
- 5.4.4 The above considerations are described in more detail in The Design Approach Document (document reference 7.3).
- 5.4.5 The Applicant's overarching requirements for the Project and the PDE has controlled the maximum design scenario and need for a proportionate EIA. Taken together, these are the limits that have controlled the way within which alternatives have been considered. Certain elements of the Proposed Development were the subject of community consultation, and in some cases, local knowledge helped the design refinements. Statutory Consultation feedback has further informed the design of the development as proposed.
- 5.4.6 The consideration of alternatives throughout the EIA process has been reported at the following milestones:
- As a draft proposal for a local planning application under the Town and Country Planning Act 1990
 - Torridge District Council Pre-Application Consultation May to October 2021 – Torridge District Council made helpful suggestions for the use of excavation and copse planting to obscure the Converter buildings from longer views.
 - First Community Consultation November 2022 – The Onshore HVDC Cable Corridor included a short section close to the school and church in Abbotsham. The proposed Converter Site was at Great Huxhil near Huntshaw.
 - Second Community Consultation April & May 2023 – Responding to concerns raised, the Onshore HVDC Cable Corridor was proposed to bypass Abbotsham. The proposed Converter Site was moved to the old Webbery Showground site.
 - Following acceptance into the DCO regime (via s.35 of the Planning Act 2008)
 - EIA Scoping Report submitted January 2024
 - PEIR submitted May 2024
 - Final design for DCO application - refinement of the project design following review of statutory consultation responses and further EIA studies
- 5.4.7 The environmental appraisal process has informed the optimisation of:
- Cable Corridors both onshore and offshore;
 - the Landfall;
 - Converter Site layout and arrangement;

- Highways Improvements; and
- Construction methodologies and construction logistics planning for the above.

5.4.8 The three main iterations of the Order Limits are shown on **Figure 4**.

5.4.9 The Consultation Report (document reference 5.1) contains the full details of the feedback received throughout the evolution of the Proposed Development. Each topic chapter of the ES contains a short summary table setting out how consultation relevant to that specialism was considered in the refinement of the application design.

5.4.10 Volume 1, Chapter 4 Need and Alternatives of the ES (document reference 6.1.4) includes a full description of the iterative design process over 4 main stages that led to the Proposed Development. The Proposed Development is described in detail at Volume 1, Chapter 3 Project Description of the ES (document reference 6.1.3).

6 ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

6.1 Introduction

6.1.1 The EIA process and methodology is detailed within Volume 1, Chapter 5: Environmental Impact Assessment Methodology of the ES (document reference 6.1.5). 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 likely significant adverse impacts are identified, suitable measures are proposed to avoid, prevent, reduce, or offset their effect on the environment. The EIA process informs the project design and is taken into account by the decision-making body when determining consent.

6.2 Overview of the EIA Process

6.2.1 As detailed within **section 1.4**, EIA is 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.

6.2.2 The following provides a summary of the EIA process undertaken for the Proposed Development from the initial scoping stages to the development of the ES.

- Scoping process - the Applicant submitted a Scoping Report in January 2024 to the Planning Inspectorate, which established the proposed scope of the assessment. A Scoping Opinion was issued by the Planning Inspectorate on 7 March 2024, which provided feedback to consider.
- PEIR – a preliminary assessment was undertaken, in accordance with the Scoping Opinion and relevant guidance, which was presented within a PEIR. The PEIR was published in May 2024.
- Statutory Consultation – statutory consultation was undertaken between 16 May and 11 July 2024. This provided opportunities for consultees to review the contents of the PEIR and provide feedback to be incorporated into the progression of the design evolution and environmental assessment.
- ES – the ES has been prepared in accordance with the 2017 EIA Regulations and Planning Inspectorate Advice Note Seven (The Planning Inspectorate, 2020). It considers the feedback provided as part of the scoping process, statutory consultation, and further consultation throughout the EIA process.

6.3 EIA Scoping

6.3.1 Scoping is the process of identifying the relevant environmental topics to consider within the EIA process (establishing the scope of the assessment). Scoping is therefore an important preliminary stage, which sets out the context for the EIA process. Through scoping, the key environmental impacts are identified at an

early stage, which permits subsequent work to concentrate on those topics for which significant effects may arise.

- 6.3.2 Consultation on the approach to EIA was undertaken at the EIA scoping stage. In January 2024, 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 decommissioning phases of the Proposed Development. Following consultation with the appropriate statutory bodies, the Planning Inspectorate provided a Scoping Opinion on 7 March 2024.
- 6.3.3 The key comments received (as presented within the published Scoping Opinion) have been summarised in each specialist topic chapter of the ES with an explanation as to how and where those comments were addressed in the respective assessments.

6.4 Approach to EIA

Environmental Baseline

- 6.4.1 In order to undertake an assessment of likely significant effects, it is essential to develop an understanding of the current condition of the environmental baseline both now and when the Proposed Development is expected to be implemented (the future baseline).
- 6.4.2 The current baseline for the assessment of environmental effects has primarily been drawn from evidence collated during the review of desktop data, consultation and any site-specific environmental surveys. Where necessary, predictions of how conditions might change in the future in the absence of the Proposed Development have been made to arrive at an assumed future baseline.

Assessment of Effects

- 6.4.3 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 ES, the following have been addressed and are detailed within section 7, 8 and 9 of this Non-Technical Summary. This includes:
- 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; and
 - assessment of any cumulative effects with other proposed developments planning in the area and inter-relationships between environmental topics.
- 6.4.4 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.

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

Assessment of Cumulative Effects

- 6.4.6 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.

Inter-related Effects

- 6.4.7 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 maintenance, and decommissioning) and the effects on receptors between different topics.

Transboundary Effects

- 6.4.8 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'). The Espoo Convention requires that assessments are extended across borders between parties of the Espoo Convention when a planned activity may cause significant adverse transboundary effects.
- 6.4.9 The Planning Inspectorate's Nationally Significant Infrastructure Projects: Advice on Transboundary Impacts and Process (Planning Inspectorate, 2024) sets out the procedures for consultation in association with an application for development consent, where such development may have significant transboundary effects.
- 6.4.10 A screening matrix has been prepared which identifies potential significant transboundary effects to be considered within the EIA process (document reference 6.1.5.2).

Downstream Effects

- 6.4.11 For completeness, when interpreting the requirements of the EIA Regulations, the EIA has also had regard to the recent judgment of the Supreme Court in R (on the application of Finch on behalf of the Weald Action Group) v Surrey County Council concerning the assessment of 'likely downstream impacts'. In this judgement, it was found that the likely downstream impacts on climate change of an oil extraction project included the eventual combustion of the oil. Those impacts should therefore be within the scope of a compliant EIA.
- 6.4.12 As part of this EIA, the individual topics assessments consider the likely direct and indirect impacts arising during the construction, operation and maintenance, and decommissioning phases of the Proposed Development. In addition to the likely

direct and indirect impacts of the Proposed Development, Volume 4, Chapter 1: Climate Change of the ES (document reference 6.4.1) also assesses the cumulative effect of the overall Project. In relation to downstream impacts, the climate change chapter has considered:

- The use of the low/zero carbon electricity (i.e., estimating the potential savings in Greenhouse Gas emissions resulting from the use of the low/zero carbon renewable energy generated by the Project); and
- the end of life of the Project (i.e., decommissioning effects).

6.4.13 However, as the uses of the electricity once transmitted to the national grid are extremely wide, it is not possible to undertake a meaningful and proportionate assessment of the specific downstream uses of the low/zero carbon electricity beyond its contribution to decarbonising the national grid.

7 POTENTIAL ENVIRONMENTAL EFFECTS – ONSHORE

7.1 Introduction

7.1.1 This section sets out the potential significant environmental effects for the following:

- 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.

7.1.2 Key onshore environmental constraints are shown on **Figure 2**.

7.2 Onshore Ecology and Nature Conservation

Introduction

7.2.1 Volume 2, Chapter 1: Onshore Ecology and Nature Conservation of the ES (document reference 6.2.1) 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

7.2.2 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

7.2.3 The ecological and nature conservation baseline was established using a series of species-specific surveys and desk-based research. Complete survey data has not been obtained due to restrictions in access to some areas of the Proposed Development by landowners. Therefore, further surveys are proposed post-application to capture outstanding survey data, which will be reported during the examination process in the form of ES addendums.

7.2.4 The baseline assessment indicated that the Onshore Infrastructure Area avoids direct impacts to sites designated 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, fish aquatic invertebrates and reptiles.

Measures Adopted as Part of the Proposed Development

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

- Final On-CEMP(s) will be prepared in accordance with the Outline On-CEMP (document reference 7.7), which has been submitted as part of the DCO application. The On-CEMP(s) will contain measures to reduce temporary disturbance to ecological receptors and to protect species.
- A final LEMP will be prepared in accordance with the Outline LEMP (document reference 7.10), which has been submitted as part of the DCO application. The LEMP which will include provision for an ecological clerk of works and details of long term mitigation and management measures.
- The following measures will be pursued in the selection and implementation of the final cable routes:
 - Avoidance of sites designated for nature conservation and key areas of habitat (e.g., woodland) during the site selection process and application of buffers to works, where possible.
 - Trenchless techniques would be used to install the cables beneath the River Torridge, other watercourses, and woodland areas (e.g. Lodge Plantation).
 - Minimisation of width of works where the Onshore HVDC Cable Corridor passes through hedgerows, where possible. Hedgerows to be reinstated fully on a “like for like” basis, with enhancements of selected hedgerows along the Onshore HVDC Cable Corridor included.
- The Draft DCO (document reference 3.1) includes a Requirement to seek further approval for a detailed design of the Converter Site inclusive of its landscaping scheme. The habitats created will maximise areas of habitat suitable for important protected species, such as dormice, bats and reptiles and will maintain and improve links across the local countryside to important habitat features in the vicinity.

Assessment of Effects

7.2.6 Due the linear nature of the Proposed Development, surveys of mobile species are unlikely to ever definitively rule out presence of mobile species. Baseline species surveys have been carried out since 2021 and are ongoing with the aim of identifying the habitats of greatest sensitivity/use by important species such as dormice, bats reptiles etc.

- 7.2.7 Although further survey data pre and post application may serve to refine mitigation methods, assumptions regarding the potential presence of protected or otherwise notable species have been necessary in the selection of a reasonable worst case scenario for the purpose of the EIA. In addition to desk study material, these assumptions have been based on publicly-available data from nearby schemes and from historic proposed developments, such as the Atlantic Array scheme and other solar farm projects, which have completed surveys on the same or adjacent land in the past.
- 7.2.8 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 Infrastructure Area. Indirect potential impacts included disturbance and damage to habitats supporting protected species. With measures adopted in the design of the Proposed Development and the careful management of its implementation through management plans, 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.
- 7.2.9 Temporary loss of Devon hedgerows as a result of the construction of the Onshore HVDC Cable Corridor and road improvement works is of moderate adverse effect, which is significant, although proposed reinstatement on a like-for-like basis would overcome this effect in the long term. There is also a small amount of permanent hedgerow loss as a result of construction of the Converter Site, which would result in a moderate adverse effect, which is significant. There will be additional Devon hedgerow creation as a result of the landscape scheme associated with this element.
- 7.2.10 Temporary and permanent habitat loss of improved grasslands, semi-improved grasslands and arable lands as a result of construction of the Onshore HVDC Cable Corridor and Converter Site are of minor adverse significance, which is not significant, and all temporary losses would be reinstated in the long term.
- 7.2.11 Impacts on protected species such as dormice and bats would be moderate adverse, which is significant, primarily as a result of construction effects on Devon hedgerows, but also from potential disturbance as a result of construction activity. Habitat creation proposed as part of the Outline LEMP (document reference 7.10) (including biodiversity enhancements) would reduce this down to a minor adverse effect in the long term with respect to dormice as these habitats establish and mature.
- 7.2.12 Impacts on protected species such as dormice (and possibly bats) will require licensing under the Conservation of Habitats and Species Regulations 2017. As explained above, in the selection of a reasonable worst case scenario and given the widespread occurrence of dormice in the areas affected by the Proposed Development and the locations of primary woodland habitats close to many of the hedgerows affected, the presence of dormice in all hedgerows affected by the proposed development cannot be discounted, and a licensed methodology to mitigate impacts on dormice by phased clearance is proposed.
- 7.2.13 Presence of confirmed bat roosts has yet to be finalised, but it is likely that there will be direct impacts on up to five trees with moderate or high potential for roosting bats. Surveys to establish if bat roosts are present will be undertaken and

if necessary, a licence under the Conservation of Habitats and Species Regulations 2017 will be sought.

Cumulative Effects

- 7.2.14 Cumulative effects from 28 permitted and pending developments were assessed. It was concluded that there were the following likely significant adverse cumulative effects as a result of the Proposed Development alongside other projects/plans.
- Permanent moderate adverse cumulative effect due to the loss of Devon hedgerows as a result of construction of Converter Site in combination with minor hedgerow losses for other schemes considered.
 - Temporary moderate adverse cumulative effect on bats during construction due to damage to hedgerows used for foraging, migration and flight lines, removal of trees supporting bat roosts, disturbance to habitats and bat roosts and loss of foraging habitat.
 - Temporary and permanent moderate adverse cumulative effect on dormouse due to damage and disturbance of dormouse habitat (hedgerows) during construction.
 - Temporary moderate adverse cumulative effect on breeding birds as a result of habitat disturbance and loss of potential nesting habitats during construction.

Transboundary Effects

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

7.3 Historic Environment

Introduction

- 7.3.1 Volume 2, Chapter 2: Historic Environment of the ES (document reference 6.2.2) sets out the assessment of effects in relation to the historic environment. The historic environment encompasses all aspects of the past including buried archaeological remains, built heritage and the character of the historic landscape.

Approach

- 7.3.2 The assessment of effects on the historic environment has been informed by a combination of desk-based research, site visits and site-specific fieldwork.

Baseline Environment

- 7.3.3 The land within the Order Limits contains a wide range of archaeological sites and features ranging from the Prehistoric period through to the Modern period.

- 7.3.4 Designated heritage assets present within the defined settings study area include scheduled monuments, registered parks and gardens of special historic interest and listed buildings.

Measures Adopted as Part of the Proposed Development

- 7.3.5 Several measures are proposed as part of the Proposed Development to mitigate potential impacts on the historic environment:
- Historic environmental constraints, including designated heritage assets and buried archaeological remains formed a key part of the iterative design process for the Proposed Development. As such, the design of the Proposed Development has avoided direct physical impacts (e.g. damage) and minimised non-physical impacts on a range of designated heritage assessment and buried archaeological remains, where practicable.
 - Final On-CEMP(s) will be prepared in accordance with the Outline On-CEMP (document reference 7.7), which has been submitted as part of the DCO application. The final On-CEMP(s) will include measures to avoid or minimise direct and indirect effects on identified heritage assets and buried archaeological resources during construction of the Proposed Development.
 - An Onshore Written Scheme of Investigation (WSI) will be developed in accordance with the Outline Onshore WSI (document reference 7.8), which has been submitted as part of the DCO application. The Onshore WSI will be used to determine the methodology and approach for archaeological investigations post-application (e.g. trial trenching). The works described in the Outline Onshore WSI (document reference 7.8) will be undertaken in advance of and/or during construction.
 - An ongoing programme of archaeological trial trenching will be completed as soon as possible post-application and prior to the commencement of construction works. Archaeological trial trenching will be used to inform the requirements for further mitigation to be included in the relevant management plans, such as the final On-CEMP(s).

Assessment of Effects

- 7.3.6 The assessment of the likely significant effects of the Proposed Development on the historic environment has considered the following impacts:
- loss of, or harm to, buried archaeological remains;
 - the impact of the Proposed Development on designated heritage assets because of change within their setting; and
 - the impact of the Proposed Development on the character of the historic landscape.
- 7.3.7 No designated above ground heritage assets (e.g. schedule monuments, listed buildings, register parks and gardens etc) would be directly physically impacted during construction, operation and maintenance and decommissioning of the Proposed Development.

7.3.8 Taking into account the mitigation measures adopted as part of the Proposed Development, the following likely significant effects have been identified with respect to the historic environment:

- Moderate to Major adverse effect due to the loss of, or harm to, buried archaeological remains and deposits of geoarchaeological and palaeoenvironmental interest during construction. This has been identified on a precautionary basis and the likelihood of this may reduce or disappear as the programme of archaeological evaluation continues;
- Moderate adverse effect due the change within the settings of designated heritage assets during construction, operation and maintenance and decommissioning of the converter stations and associated landscaping. The impact may reduce over time as any proposed landscape planting reaches maturity.

Cumulative Effects

7.3.9 The following likely significant cumulative effects have been identified between the Proposed Development and other projects/plans with respect to the historic environment:

- Moderate to Major adverse cumulative effect due to the loss of, or harm to, buried archaeological remains and deposits of geoarchaeological and palaeoenvironmental interest during construction. This has been identified on a precautionary basis and the likelihood of this may reduce or disappear as the programme of archaeological evaluation continues;
- Moderate adverse cumulative effect due the change within the settings of designated heritage assets during construction, operation and maintenance and decommissioning of the converter stations and associated landscaping. The impact may reduce over time as any proposed landscape planting reaches maturity.

Transboundary Effects

7.3.10 No transboundary effects with regard to Historic Environment from the Proposed Development on the interests of European States were predicted.

7.4 Hydrology and Flood Risk

Introduction

7.4.1 Volume 2, Chapter 3: Hydrology and Flood Risk of the ES (document reference 6.2.3) 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

7.4.2 Information on hydrology and flood risk has been collected through a detailed desktop review of existing studies and datasets and through site survey information. The existing and future hydrological environment has been compared

against the application parameters in all phases of the proposed development in order to identify any potential negative impacts and to recommend mitigation measures.

- 7.4.3 A Flood Risk Assessment (FRA) been undertaken for the Converter Site where there will be a permanent change in the drainage regime and routine discharges of rainwater into an adjacent watercourse. Both the FRA and operational hydrology assessment have been informed by an Outline Operation Drainage Strategy (document reference 7.22) for the Converter Site.
- 7.4.4 In addition to the hydrological changes that would occur from the permanent changes at the Converter Site, the hydrology assessment has looked at the potential for negative impacts to occur from the construction or decommissioning phases.
- 7.4.5 A Water Framework Directive assessment has also been undertaken focussing on the potential for any changes in the water quality status of the affected catchments.

Baseline Environment

- 7.4.6 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. The Water Framework Directive assessment provides an assessment of anticipated impacts to identified catchments arising from the Proposed Development.
- 7.4.7 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.
- 7.4.8 Flood risk is categorised into zones, with Zone 1 representing the lowest risk of flooding and Zone 3 representing the highest. A Flood Risk Assessment has been undertaken to assess flood risk to and from the Proposed Development. The landfall, Onshore HVDC Cable Corridor, Converter Site, onshore HVAC Cables and associated temporary construction compounds and haul roads assessed to have a low risk of flooding from fluvial and tidal sources until the end of the operational period. This considers the expected impacts of climate change to peak river flows, peak rainfall intensities and sea level rise. The Flood Risk Assessment also concludes the Onshore Infrastructure Area has a low risk of flooding from all other assessed sources.
- 7.4.9 A number of designated sites relating to hydrology and flood risk have been identified within the study area including Mermaid's Pool to Rowden Gut Site of Special Scientific Interest (SSSI), Taw-Torridge Estuary SSSI and several Nitrate Vulnerable Zones (Jennetts reservoir, Gammaton lower reservoir and Taw-Torridge estuary).
- 7.4.10 Volume 2, Hydrology and Flood Risk Appendix 3.3: Surface Water Abstraction Licences, Discharge Consents and Pollution Incidents (document reference 6.2.3.3) informs how surface water is used within the study area, and how human activities have impacted water quality and flow.

7.4.11 Due to the predominantly agricultural land use, field drainage has been assessed to be likely to be present across the study area. It is additionally expected both public and private water supply and drainage infrastructure is likely to be present.

Measures Adopted as Part of the Proposed Development

7.4.12 Several measures are proposed as part of the Proposed Development to mitigate potential impacts on the hydrology and flood risk:

- Trenchless crossing techniques are proposed to be used to cross and avoid direct impacts to Kenwith Stream, the River Torridge, Jennets Reservoir Tributary and the shingle bar at Cornborough Range.
- Trenchless crossing entry and exit points will be located at least 8 m away from ordinary watercourses, 8 m from Environment Agency (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 are to be crossed via trenchless techniques, the minimum depth below watercourses would be as follows:
 - 5 m for Kenwith Stream;
 - 9 m for the tributary of Jennets Reservoir; and
 - 15 m for the River Torridge.
- A 10 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 Converter Site.
- The preparation of an Operational Drainage Strategy in accordance with the Outline Operational Drainage Strategy (document reference 7.22), which has been submitted with the DCO application. The Operational Drainage Strategy will include measures to ensure that existing land drainage is reinstated and/or maintained during the operation of the Proposed Development.
- The preparation of a final On-CEMP(s) in accordance with the Outline On-CEMP (document reference 7.7), which has been submitted with the DCO application. The On-CEMP(s) will include measures to avoid or minimise impacts on hydrology and flood risk during construction of the Proposed Development. A Construction Drainage Strategy, Flood Management Plan and Field Drainage Strategy will also be included as part of the final On-CEMP(s).
- The preparation of a Pollution Prevention Plan (PPP) in accordance with the Outline PPP, which has been submitted with the DCO application as an appendix to the Outline On-CEMP (document reference 7.7). The PPP will include measures and best practices for waste management and procedures for responding to and reporting pollution incidents.
- If ground surveys confirm the presence of contamination, the piled foundations would be constructed in accordance with Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention (EA, 2001), or latest relevant available guidance.

- Land Drainage consents will be sought where required from the Devon County Council (as Lead Local Flood Authority) in consultation with the Environment Agency.
- Onshore Decommissioning Strategies will be prepared in accordance with the Outline Onshore Decommissioning Strategy (document reference: 7.17), which has been submitted with the DCO application. The Onshore Decommissioning Strategies will be prepared to the commencement of decommissioning works and include measures to avoid impacts to hydrology and flood risk during decommissioning of the Proposed Development.

Assessment of Effects

- 7.4.13 The assessment of the likely significant effects of the Proposed Development on the hydrology and flood risk has considered the following impacts:
- 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 supply and drainage infrastructure.
- 7.4.14 The Flood Risk Assessment undertaken demonstrates that the Proposed Development meets the requirements of relevant local and national planning policy in relation to flood risk and drainage.
- 7.4.15 Taking into account the measures adopted as part of the Proposed Development, the assessment has not identified any significant effects arising during construction, operation and maintenance or decommissioning of the Proposed Development.

Cumulative Effects

- 7.4.16 No significant cumulative effects were identified between the Proposed Development and other projects/plans on hydrology and flood risk.

Transboundary Effects

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

7.5 Geology, Hydrogeology and Ground Conditions

Introduction

- 7.5.1 Volume 2, Chapter 4: Geology, Hydrogeology and Ground Conditions of the ES (document reference 6.2.4) 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 and possible risks to private water supplies.

Approach

- 7.5.2 The assessments undertaken have been primarily based on a desktop review of publicly available information, online data sources and information contained in a Groundsure Insights report. A site reconnaissance survey was also conducted to locate suspected private water supplies.

Baseline Environment

- 7.5.3 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 SSSI known as Mermaid's Pool to Rowden Gut (the geological SSSI). The strata at this location is the only exposure of the complete geological sequence through the Bideford Formation bedrock.
- 7.5.4 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.
- 7.5.5 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 and former railway located within the Landfall and, historical lime kilns and an infilled quarry within the area of the River Torridge Crossing and a suspected burial pit for cattle remains within the Converter Site. Two historical landfills (sources of potential off-site contamination) are situated within 250 m west of the River Torridge Crossing.

Measures Adopted as Part of the Proposed Development

- 7.5.6 Several measures are proposed as part of the Proposed Development to mitigate potential impacts on geology, hydrogeology and ground conditions:
- The use of trenchless construction techniques (such as horizontal directional drilling) to pass beneath the Mermaid's Pool to Rowden Gut SSSI and beach at Landfall.
 - The preparation of a final On-CEMP(s) in accordance with the Outline On-CEMP (document reference 7.7) which has been submitted with the DCO application. The On-CEMP will include measures to avoid and minimise impacts on geology, hydrogeology and ground conditions during construction of the Proposed Development. A Discovery Strategy will be included as part of the final On-CEMP(s) to identify any contamination protocol on discovery of any currently unknown contamination.

- The preparation of a PPP in accordance with the Outline PPP, which has been submitted with the DCO application as an appendix to the Outline On-CEMP (document reference 7.7). The PPP will include measures and best practices for waste management and procedures for responding to and reporting pollution incidents.

Assessment of Effects

- 7.5.7 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, which is not significant.
- 7.5.8 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.
- 7.5.9 The potential loss or damage on the geological SSSI during construction has also been assessed given its location at the Landfall.
- 7.5.10 With the limited potential sources of contamination identified and the measures adopted as part of the Proposed Development e.g. the use of HDD (or other trenchless crossing) 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, which is not significant, due to the combination of high and medium sensitivity receptors to the predicted impacts.
- 7.5.11 In terms of the potential mobilisation of existing contamination impacting on groundwater quality during operation, the effect is assessed as negligible, which is not significant in EIA terms.

Cumulative Effects

- 7.5.12 No significant cumulative effects were identified between the Proposed Development and other projects/plans on geology, hydrogeology and ground conditions.

Transboundary Effects

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

7.6 Traffic and Transport

Introduction

- 7.6.1 Volume 2, Chapter 5: Traffic and Transport of the ES (document reference 6.2.5) sets out the assessment of effects in relation to traffic and transport. This includes consideration of likely impacts on traffic and transport receptors during the construction phase the potential impacts on the operation of the highway network.

Approach

- 7.6.2 A traffic and transport study area for the assessment of environmental traffic and transport impacts has been identified and includes active travel routes and parts of the highway network most likely to be used by construction vehicles generated by the Proposed Development where impacts would likely occur.
- 7.6.3 Information on traffic and transport within the study area was collected through a detailed desktop review of existing data sources comprising primarily of published material, which is publicly available, as well as material available to purchase from Devon County Council as the Local Highway Authority. In addition to the baseline data sources, site-specific surveys were undertaken by Auto Surveys in 2023 and Advanced Transport Research in 2024 to inform the baseline assessment for traffic and transport.

Baseline Environment

- 7.6.4 The publicly available information and the site-specific surveys were used to obtain and establish 2024 base traffic flows for all parts of the highway network within the study area. The base traffic flows include total vehicles (all classifications of vehicles) and Heavy Goods Vehicles which comprise all vehicles more than 7.5 tonnes gross weight (including buses).
- 7.6.5 A 2028 future baseline scenario for the traffic and transport study area has been created to reflect the anticipated peak year of the Proposed Development construction programme and therefore assess the potential environmental impacts of the Proposed Development on traffic and transport receptors.

Measures Adopted as Part of the Proposed Development

- 7.6.6 Several measures are proposed as part of the Proposed Development to mitigate potential impacts on traffic and transport:
- The preparation of a final CTMP in accordance with the Outline CTMP (document reference 7.7), which has been submitted with the DCO

application. The final CTMP will set standards and procedures for the following:

- Managing the numbers and routing of construction vehicles during construction of the Proposed Development;
 - Managing construction working hours;
 - Managing the safe passage of Heavy Goods Vehicle traffic along 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);
 - Managing the requirement for wheel cleaning methods at appropriate locations to eliminate the risk of mud and debris on the highway; and
 - Minimising dust and dirt associated with movements of construction vehicles.
- The timing and routing of Abnormal Indivisible Loads deliveries will be discussed and agreed with the relevant highway authorities to minimise delay for and risk to other highway users during construction of the Proposed Development.

Assessment of Effects

- 7.6.7 Taking the mitigation measures adopted as part of the Proposed Development into account, the assessment determined that the effects of construction vehicles on driver delay, severance, non-motorised user delay, non-motorised user amenity and fear and intimidation and road safety within the study area would be negligible or minor adverse, which is not significant.

Cumulative Effects

- 7.6.8 The assessment determined that the cumulative effects of construction vehicles on driver delay, severance, non-motorised user delay, non-motorised user amenity and fear and intimidation and road safety within the study area would be negligible or minor adverse, which is not significant.

Transboundary Effects

- 7.6.9 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 European States.

7.7 Noise and Vibration

Introduction

- 7.7.1 Volume 2, Chapter 6: Noise and Vibration of the ES (document reference 6.2.6) 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

- 7.7.2 The existing sound environment local to 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.
- 7.7.3 The long-term and short-term sound surveys highlight that much of the area close to the Onshore Infrastructure Area has a low noise climate due to its rural nature. The dominant sources of noise were noted to be traffic on local highway networks.
- 7.7.4 Several 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. Operational noise impacts of the Converter Site have also been assessed.

Baseline Environment

- 7.7.5 The baseline sound surveys were undertaken in November 2022, March 2023, and June 2023 to quantify the baseline sound climate at the nearest noise-sensitive receptors to the Proposed Development. The existing sound climate is dominated primarily by distant traffic on local roads.

Measures Adopted as Part of the Proposed Development

- 7.7.6 Several measures are proposed as part of the Proposed Development to mitigate potential impacts on noise and vibration. The below measures are subject to further consultation and approval either as part of the detailed design of the operational Converter Site or as management plans that will control the construction phase:
- Converter Site Detailed Design
 - Setting noise limits at the nearest residential properties that the operational Converter Site will need to comply with;
 - Locating noise generating equipment within the Converter Site as far as possible from noise-sensitive receptors;
 - Substantially changing the local topography such that the Converter Site will be screened by earth mounds;
 - Construction Sites
 - The preparation of final On-CEMP(s) in accordance with the Outline On-CEMP (document reference 7.7), which has been submitted with the DCO application. The final On-CEMP(s) will include measures to reduce temporary noise disturbance to residential properties, recreational users and existing land users. For example, the implementation of construction

noise and vibration limits and best practice measures to mitigate noise and vibration during construction of the Proposed Development.

- Construction Traffic
 - Keeping construction traffic off local roads as much as possible through the use of off-road haul roads;
 - The preparation of final CTMP(s) in accordance with the Outline CTMP (document reference 7.12), which has been submitted with the DCO application. The CTMP will include measures to manage the numbers and routing of construction vehicles to minimise noise disturbance during construction of the Proposed Development.

Assessment of Effects

7.7.7 Taking the mitigation measures adopted as part of the Proposed Development into account, the following significant adverse effect has been identified with respect to noise and vibration:

- Temporary moderate adverse effect of noise generated during construction of the Onshore HVDC Cable Corridor due to the high noise levels associated with the HDD (or other trenchless crossing) construction plant, as well as the potential need for night-time working where existing noise levels are low.

7.7.8 However, 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 significant.

Cumulative Effects

7.7.9 The assessment of 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.

Transboundary Effects

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

7.8 Air Quality

Introduction

7.8.1 Volume 2, Chapter 7: Air Quality of the ES (document reference 6.2.7) 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

- 7.8.2 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

- 7.8.3 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.
- 7.8.4 The background annual-mean PM₁₀ concentration used in this assessment has been derived from the highest concentration of 16.9 µg/m³ measured at the nearest monitor to the site.

Measures Adopted as Part of the Proposed Development

- 7.8.5 Several measures are proposed as part of the Proposed Development to mitigate potential impacts on air quality:
- The preparation of final On-CEMP(s) in accordance with the Outline On-CEMP (document reference 7.7) which has been submitted with the DCO application. The On-CEMP(s) will include measures to reduce temporary disturbance to residential properties, recreational users and existing land users.
 - The preparation of a Dust Management Plan in accordance with the Outline Dust Management Plan, which forms an appendix of the Outline CEMP (document reference 7.7) and has been submitted with the DCO application. The Dust Management Plan will include measures to control dust generated by construction activities in accordance with relevant guidance provided by the Institute of Air Quality Management.
 - The preparation of a final CTMP in accordance with the Outline CTMP (document reference 7.7), which has been submitted with the DCO application. The final CTMP will set standards and procedures for the following:
 - Managing the requirement for wheel cleaning methods at appropriate locations to eliminate the risk of mud and debris on the highway; and
 - Minimising dust and dirt associated with movements of construction vehicles.

Assessment of Effects

- 7.8.6 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.
- 7.8.7 However, it is normally possible, via the 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).

- 7.8.8 Following the implementation of measures adopted as part of the Proposed Development, no significant adverse effects are likely to occur with respect to air quality during the construction, operation and maintenance and decommissioning phase.

Cumulative Effects

- 7.8.9 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 plans/projects.

Transboundary Effects

- 7.8.10 No transboundary effects with regard to air quality from the Proposed Development on the interests of European States were predicted.

7.9 Land Use and Recreation

Introduction

- 7.9.1 Volume 2, Chapter 8: Land Use and Recreation of the ES (document reference 6.2.8) 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 far as reasonably practicable.

Approach

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

- 7.9.3 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.
- 7.9.4 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 cable 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.

- 7.9.5 With respect to the Converter Site, the 2011 survey work determined that the area of land included within the survey which is graded lower quality Subgrade 3b and Grade 4. Where the better drained soils of the Denbigh soil Association are encountered Subgrade 3a is identified.
- 7.9.6 The Proposed Development primarily encompasses farm holdings characterised by mainly livestock or mixed farming enterprises.
- 7.9.7 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 several 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 study area.

Measures Adopted as Part of the Proposed Development

- 7.9.8 Several measures are proposed as part of the Proposed Development to mitigate potential impacts on land use and recreation:
- The utilisation of trenchless techniques to avoid direct impacts to the coastal recreational asset, the South West Coast Path, the Tarka Trail or National Cycle Route 3 during construction of the Proposed Development.
 - The preparation of final On-CEMP(s) in accordance with the Outline On-CEMP (document reference 7.7), which has been submitted as part of the DCO application. The On-CEMP(s) will include measures to maintain the operation of the farm holdings where reasonably practicable during construction of the Proposed Development.
 - The preparation of a Soil Management Plan in accordance with the Outline Soil Management Plan (Appendix D to the Outline On-CEMP, document reference 7.10), which has been submitted with the DCO application. The Soil Management Plan will include measures to maintain the quality of soils during construction of the Proposed Development and requirements for the reinstatement of land post-construction.
 - The preparation of a PRow Management Plan in accordance with the Outline PRow Management Plan (document reference 7.11), which has been submitted with the DCO application. The PRow will ensure access to the PRow network is maintained during construction of the Proposed Development via the implementation of suitable management measures.

Assessment of Effects

- 7.9.9 Taking the measures adopted as part of the Proposed Development into account, the following significant adverse effects have been identified with respect to land use and recreation:
- Permanent major adverse effect because of the loss of agricultural land quality during construction of the Proposed Development.

Cumulative Effects

- 7.9.10 There would be additional permanent losses of high quality Subgrade 3a land associated with several residential development schemes. This would result in a major adverse cumulative effect, which is significant.

Transboundary Effects

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

8 POTENTIAL ENVIRONMENTAL EFFECTS – OFFSHORE

8.1 Introduction

8.1.1 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.

8.1.2 Key offshore environmental constraints are shown on **Figure 1**.

8.2 Benthic Ecology

Introduction

8.2.1 Volume 3, Chapter 1: Benthic Ecology of the ES (document reference 6.3.1) considers the impacts of the Proposed Development on benthic habitats and species.

8.2.2 Benthic ecology refers to the communities of animals and plants which live on or in the seabed and the relationships that they have with each other and with the physical environment.

Approach

8.2.3 The subtidal and intertidal benthic ecology of the Proposed Development was characterised via existing studies, datasets and a series of site-specific surveys using geophysical, grab sampling, underwater video and intertidal Phase I methodologies.

Baseline Environment

8.2.4 Intertidal surveys indicated that the area at the Landfall of the Proposed Development supports a range of intertidal habitats that are considered to be characteristic of moderately exposed rocky shorelines. Most of the survey area was composed of sandstone bedrock covered by barnacles with zonation of the fucoids *Fucus spiralis*, *Fucus vesiculosus* and *Fucus serratus* from the upper to

lower littoral. The dog whelk *Nucella lapillus*, which is on the OSPAR list of threatened and/or declining species and habitats for OSPAR regions II, III (the Proposed Development is in this region) and IV, was observed on the lower shore. However, *N. lapillus* is common on rocky shores in the UK. Tubes of the honeycomb worm *Sabellaria alveolata* were observed across most of the mid to lower shore. However, *S. alveolata* tubes were present in the form of veneers on the bedrock surface with canopies of fucoids over the top and did not qualify as reef habitat.

- 8.2.5 Subtidal surveys indicated that the seabed within the study area supports a variety of subtidal benthic communities and habitats across the Offshore Cable Corridor. Key habitats recorded included subtidal sand, subtidal coarse and subtidal mixed sediment habitats. Underwater video and geophysical surveys identified bedrock and stony reef habitat which can be characteristic of the Annex I habitat 'Reef' under the European Commission Habitats Directive. Bedrock reef was classed as 'Annex I bedrock with low biodiversity' at four locations and 'Annex I bedrock reef with high biodiversity' at one location across the Offshore Cable Corridor. Stony reef classed as Annex I 'medium stony reef' was observed at only one location across the Offshore Cable Corridor.

Measures Adopted as Part of the Proposed Development

- 8.2.6 The measures proposed by the Applicant to mitigate impacts are set out in the ES. 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 Offshore CEMP will detail the best practice approach to offshore activities and will include measures and procedures to control and manage marine pollution prevention, waste management, marine invasive species and dropped objects. An Outline Offshore CEMP (document reference 7.9) has been submitted as part of the DCO (with a final Offshore CEMP finalised by offshore contractor).
 - In order to reduce the likelihood of introducing Marine Invasive Non-Native Species (INNS), an Offshore Biosecurity Plan will be adhered to with the incorporation of a biosecurity risk assessment.
 - HDD (or other trenchless crossing) 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 (or other trenchless crossing) (as best practice drill lubricant).

Assessment of Effects

- 8.2.7 A number of impacts on benthic subtidal and intertidal communities/species, 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 and spread of INNS, underwater noise & vibration, change in hydrodynamic regime (scour & accretion), sediment heating, Electromagnetic Field (EMF) effects, long-term habitat loss/change and accidental pollution. With the embedded mitigation measures adopted as part of the Proposed Development in place, these impacts will result in effects of either negligible or minor adverse significance.
- 8.2.8 Temporary habitat loss/disturbance is of negligible to minor adverse significance (not significant in EIA terms) to benthic receptors across all phases of the Proposed Development, as the proportion of habitat lost is predicted to be small in the context of available habitats in the study area.
- 8.2.9 Temporary increases in suspended sediments and sediment deposition are also of negligible to minor adverse significance (not significant in EIA terms) across all phases of the Proposed Development due to the short-term nature of the impact based on assessments of potential sediment transport for the Proposed Development and the fact that the majority of benthic ecology receptors have a low sensitivity to this type of impact. Additionally, no significant effects were predicted on protected potential reef habitats within the study area, on the assumption that mitigation via microrouting will be implemented where possible to avoid direct impacts to these features.
- 8.2.10 Long-term habitat loss/change is of minor adverse significance (not significant in EIA terms) across the operational and decommissioning phases of the Proposed Development, as despite the long-term nature of the impact, the proportion of habitat lost is predicted to be small in the context of available habitats in the study area.

Cumulative Effects

- 8.2.11 Cumulative impacts from other projects including offshore renewable developments were assessed to determine the significance of likely significant effects, which are predicted to result in effects of negligible or minor adverse significance (not significant in EIA terms) upon subtidal and intertidal benthic communities within a 15.2 km buffer of the Proposed Development.

Transboundary Effects

- 8.2.12 No transboundary effects with regard to benthic subtidal and intertidal ecology from the Proposed Development on the interests of European States were predicted.

8.3 Fish and Shellfish Ecology

Introduction

- 8.3.1 Volume 3, Chapter 2: Fish and Shellfish Ecology of the ES (document reference 6.3.2) considers the impacts of the Proposed Development on fish and shellfish species.

Approach

- 8.3.2 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.
- 8.3.3 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. Furthermore, site-specific benthic survey data provides further information on the fish and shellfish ecology of the area.

Baseline Environment

- 8.3.4 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 blue skate, Atlantic salmon, lampreys, twaite shad and allis shad.
- 8.3.5 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, blue skate, bass, spotted ray, spurdog and thornback ray.

Measures Adopted as Part of the Proposed Development

- 8.3.6 The measures proposed by the Applicant to mitigate impacts are set out in the ES. These measures include the following:
- An Offshore CEMP will detail the best practice approach to offshore activities and will include measures and procedures to control and manage marine pollution prevention, waste management, marine invasive species and dropped objects. An Outline Offshore CEMP (document reference 7.9) has been submitted as part of the DCO (with a final Offshore CEMP finalised by offshore contractor).
 - 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 a 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 (such as Bentonite) will be used to minimise risk of break out.

Assessment of Effects

- 8.3.7 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, EMF 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).
- 8.3.8 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.
- 8.3.9 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.
- 8.3.10 EMF 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

- 8.3.11 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

- 8.3.12 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).

8.4 Commercial Fisheries

Introduction

- 8.4.1 Volume 3, Chapter 3: Commercial Fisheries of the ES (document reference 6.3.3) considers the impacts of the Proposed Development on commercial fisheries.

- 8.4.2 Commercial fisheries are understood to involve fishing activity legally undertaken where the catch is sold for taxable profit.

Approach

- 8.4.3 Commercial fishing activity in and around the Proposed Development has been characterised through collation and analysis of various publicly available fisheries datasets and literature, and further validated via engagement with fisheries stakeholders.

Baseline Environment

- 8.4.4 Baseline characterisation has identified that the following UK fishing fleets are active in and around the Proposed Development: beam trawl fleet, netting fleet, potting fleet, demersal trawl fleet, pelagic trawl fleet and dredge fleet. The following European Union fishing fleets – inclusive of French, Belgian, Dutch and Irish-registered vessels - are present: beam trawl fleet, demersal fleet and pelagic trawl fleet. Vessels in these fleets target a variety of fish and shellfish species using static and mobile fishing gears.

Measures Adopted as Part of the Proposed Development

- 8.4.5 The measures proposed by the Applicant to mitigate impacts are set out in the Commercial Fisheries ES chapter (document reference 6.3.3). 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.
 - Cable crossing design will adhere to international best practice design, which will allow them to be over trawlable.
 - 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.
 - A Fisheries Liaison Officer will support ongoing liaison and ensure clear communication between the Applicant and commercial fisheries parties.
 - Development of a Vessel Management Plan which would set out pre-agreed vessel routes, speeds, safety measures and communication expectations.
 - The cable will be clearly marked on Admiralty Charts with associated note/warning about anchoring, trawling or seabed preparation.

Assessment of Effects

- 8.4.6 Several potential impacts on commercial fisheries associated with the construction, operational and maintenance, and decommissioning phases of the

Proposed Development, were identified and assessed. 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; physical presence of infrastructure leading to gear snagging; and increased vessel traffic associated with the Proposed Development within fishing grounds leading to interference with fishing activity.

- 8.4.7 In general terms the appraisal of the impact of the Proposed Development on commercial fisheries receptors identified impacts not exceeding minor significance and therefore additional mitigation, beyond embedded mitigation, is not considered necessary. An exception to this is 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 noting that in some instances the removal or relocation of static gear may be required during the construction phase. Where this is the case, appropriate mitigation will be implemented for affected vessels via the establishment of co-operation agreements, which will reduce the significance of the effect to minor adverse, which is considered to be not significant in EIA terms.

Cumulative Effects

- 8.4.8 Cumulative effects resulting from interactions between the Proposed Development and offshore wind, subsea cable and aquaculture developments were assessed and predicted to result in effects of minor adverse significance (not significant in EIA term) upon commercial fisheries.

Transboundary Effects

- 8.4.9 Transboundary effects with regards to commercial fisheries have been considered. Effects of the Proposed Development on the interests of European States are predicted to result in effects of minor adverse significance (not significant in EIA term) upon commercial fisheries.

8.5 Marine Mammals and Sea Turtles

Introduction

- 8.5.1 Volume 3, Chapter 4: Marine Mammal and Sea Turtles of the ES (document reference 6.3.4) considers the likely impacts and effects of the Proposed Development on marine mammals (cetaceans and pinnipeds) and sea turtles.

Approach

- 8.5.2 The characterisation of the marine mammal and sea turtle baseline was informed by extensive literature review of existing studies and datasets to provide an overview of species ecology, behaviour and distributions. No site-specific surveys took place.

Baseline Environment

- 8.5.3 A review of data available confirmed the likely presence of the following species within the vicinity of the Proposed Development and have been brought forward to the assessment:
- harbour porpoise;
 - bottlenose dolphin;
 - risso's dolphin;
 - common dolphin;
 - minke whale;
 - grey seal; and
 - leatherback turtle.

Measures Adopted as Part of the Proposed Development

- 8.5.4 The measures proposed by the Applicant to mitigate impacts are set out in the ES. These measures include the following:
- An Offshore CEMP will detail the best practice approach to offshore activities and will include measures and procedures to control and manage marine pollution prevention, waste management, marine invasive species and dropped objects. An Outline Offshore CEMP (document reference 7.9) has been submitted as part of the DCO application (with a final Offshore CEMP finalised by offshore contractor).
 - Development of a Vessel Management Plan which would set out pre-agreed vessel routes, speeds, safety measures and communication expectations.

Assessment of Effects

- 8.5.5 Several potential impacts on marine mammal species and leatherback turtle were identified i.e. auditory injury and temporary changes in hearing, disturbance from anthropogenic noise, increased vessel disturbance, vessel collision risk, indirect effects on prey species, EMF impacts on leatherback turtles, indirect impacts through changes to the seabed, and removal of hard substrate.
- 8.5.6 With the measures adopted as part of the Proposed Development in place, these impacts result in effects of either negligible or minor adverse significance.
- 8.5.7 Injury and temporary changes in hearing from anthropogenic noise is of negligible adverse significance (not significant in EIA terms) to marine mammal and leatherback turtle receptors. Underwater noise from all activities from the Proposed Development are not estimated to reach the level of permanent threshold shift onset, in addition to being of short-term and transient nature and of a non-impulsive nature.
- 8.5.8 Disturbance from anthropogenic noise is of negligible or minor adverse significance (not significant in EIA terms) to marine mammal and leatherback turtle receptors. While behavioural responses may occur, they are expected to be temporary and localised.

- 8.5.9 Disturbance from increased vessel disturbance is of negligible or minor adverse significance (not significant in EIA terms), due to any potential behavioural responses being temporary and localised.

Cumulative Effects

- 8.5.10 Cumulative effects associated with other developments (marine aggregate, dredging and coastal developments, cables and pipelines and other offshore renewable developments) were assessed and predicted to result in effects of minor adverse significance (not significant in EIA terms) on marine mammal receptors within a 5 km Zone of Influence of the Proposed Development.

Transboundary Effects

- 8.5.11 The Proposed Development is predicted to result in transboundary effects, limited to minor or negligible adverse significance for leatherback turtles and marine mammals.

8.6 Shipping and Navigation

Introduction

- 8.6.1 Volume 3, Chapter 5: Shipping and Navigation of the ES (document reference 6.3.5) considers impacts from the Proposed Development on the navigation of vessels in the area.

Approach

- 8.6.2 The baseline Shipping and Navigation environment was characterised using desk-based data sources including Automatic Identification System data, maritime incident data and nautical charts. Extensive consultation with stakeholders including the Maritime and Coastguard Agency, Trinity House, UK Chamber of Shipping, Royal Yachting Association, Cruising Association, the Ministry of Defence, ferry operators and the Port of Bideford was also carried out to verify the baseline assessment and ensure all impacts were assessed.

Baseline Environment

- 8.6.3 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 Scheme's 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

- 8.6.4 The measures proposed by the Applicant to mitigate impacts are set out in the ES. 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.
 - Development of a Vessel Management Plan which would set out pre-agreed vessel routes, speeds, safety measures and communication expectations.
 - Compass deviation effects will be minimised through cable design and burial.
 - Relevant policy guidance on water depth reduction to be followed during the design and construction of the project.
 - Liaison with pilotage service at Bideford to reduce impact on vessel access and disruption to activities.
 - The cable will be clearly marked on Admiralty Charts with associated note/warning about anchoring, trawling or seabed preparation.

Assessment of Effects

- 8.6.5 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, which is considered not significant in EIA terms.

Cumulative Effects

- 8.6.6 Cumulative impacts were assessed in line with the Cumulative Effects Assessment methodology. All 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

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

8.7 Other Marine Users

Introduction

- 8.7.1 Volume 3, Chapter 6: Other Marine Users of the ES (document reference 6.3.6) considers impacts from the Proposed Development on Other Marine Users (OMU).
- 8.7.2 OMU 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 ES, these include offshore wind projects, military activities, subsea cables, recreational boating and sailing, diving and water sports and recreational fishing and aquaculture.

Approach

- 8.7.3 OMU receptors have been identified through a desktop-based study using publicly available information from a variety of industry and regulator sources.

Baseline Environment

- 8.7.4 The desktop study identified several planned offshore windfarms within the study area, military practice and exercise areas and numerous subsea cables. 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 and uses have also been identified. Baseline data has been reviewed and updated to inform this ES following consultation.

Measures Adopted as Part of the Proposed Development

- 8.7.5 The measures proposed by the Applicant to mitigate impacts are set out in the ES. 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.
 - Development of a Vessel Management Plan which would set out pre-agreed vessel routes, speeds, safety measures and communication expectations.
 - The cable will be clearly marked on Admiralty Charts with associated note/warning about anchoring, trawling or seabed preparation.

Assessment of Effects

- 8.7.6 A number of potential impacts on OMU 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 potential impacts of the Proposed Development on OMU.

- 8.7.7 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 OMU. OMU receptors 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.
- 8.7.8 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 OMU. 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 work vessels involved in construction, operation and decommissioning will temporarily limit vessel movements or activities in these areas for OMU, however these temporary passing areas will only be temporary and over a small spatial scale.
- 8.7.9 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 OMU. Potential increases in suspended sediment concentrations will be temporary, localised and reducing to normal levels within 6 hours, therefore activities that require visibility such as scuba diving, spearfishing and snorkelling will not be significantly affected.
- 8.7.10 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

- 8.7.11 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

- 8.7.12 No likely significant transboundary effects have been identified in relation to the construction, operation and maintenance and decommissioning of the Proposed Development, with regard to Other Marine Users on the interests of European States.

8.8 Marine Archaeological and Cultural Heritage

Introduction

- 8.8.1 Volume 3, Chapter 7: Marine Archaeology and Cultural Heritage of the ES (document reference 6.3.7) considers impacts from the Proposed Development on the marine historic environment.
- 8.8.2 The marine historic environment (archaeology and cultural heritage) comprises potential submerged prehistoric landscapes and palaeoenvironmental remains, archaeological remains of watercraft, aircraft crash sites and structural remains other than watercraft.

Approach

- 8.8.3 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 and site-specific surveys including sidescan sonar, multibeam bathymetric, and magnetometer.

Baseline Environment

- 8.8.4 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 high potential for remains from the early prehistoric periods through the modern period. To inform the assessment, assumptions have been used in regard to the survival of the potential remains and the importance of those remains. The results of the site-specific sub-bottom profiler, sidescan sonar, magnetometer and multibeam echosounder surveys are integrated into the assessment. The results are used to refine the importance/sensitivity of receptors and inform the assessment of effects reported within the Environmental Statement chapter.

Measures Adopted as Part of the Proposed Development

- 8.8.5 The measures proposed by the Applicant to mitigate impacts are set out in the ES. These measures include the following:
- The Offshore Cable Corridor has undergone multiple route optimisations, which have included avoidance of known marine archaeological features.
 - 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 will be implemented around cultural heritage assets.
 - Any additional offshore geophysical surveys (including future Unexploded Ordnance surveys as necessitated) and offshore geotechnical campaigns

undertaken pre-construction will be scoped with archaeological advice and the results will be subject to archaeological review, in consultation with Historic England where relevant.

- 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, 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 (document reference 6.3.7.5).
- 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

- 8.8.6 The key potential impacts would be direct, via activities involving penetration or compression of the seabed, and indirect through potential changes to the geomorphology of the seabed during all phases of the development. All impacts to Marine Archaeological and Cultural Heritage receptors are considered permanent. 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. The primary means of mitigation will be avoidance through the implementation of Archaeological Exclusion Zones for receptors with high archaeological potential or via micro-routing for assets with moderate or low archaeological potential. Receptors that cannot be avoided would be mitigated through archaeological investigation or, in the case of inadvertent discovery, a Protocol for Archaeological Discovery.
- 8.8.7 Impacts from truncation or removal of marine archaeological remains as a result of seabed preparation works, and cable trench excavation could have significant adverse effects which after mitigation would be reduced to a no change assuming that the mitigation used is preservation by avoidance. Impacts from physical, chemical, and biological degradation on marine archaeological remains during construction, operation, and decommissioning phases as a result of potential changes to the geomorphology; all residual impacts are assessed as not significant in EIA terms.

Cumulative Effects

- 8.8.8 Cumulative effects from the construction, operation, maintenance and decommissioning activities of the Proposed Development were assessed. Impacts from nearby proposed developments 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.

Transboundary Effects

- 8.8.9 There is the potential for transboundary impacts as a result of disturbance type activities in the vicinity of the UK EEZ boundary. However, given the Proposed Developments' commitment to develop archaeological mitigation strategies along the entire Project length, no residual significant impacts (following mitigation strategies) are anticipated.

8.9 Physical Processes

Introduction

- 8.9.1 Volume 3, Chapter 8: Physical Processes of the ES (document reference 6.3.8) considers likely impacts from the Proposed Development to physical processes, which includes metocean conditions (notably waves and currents), seabed geology, sediment transport, and water/ sediment quality.

Approach

- 8.9.2 The baseline physical processes have been characterised by a desktop study and site-specific surveys including geophysical surveys and subtidal grab samples.

Baseline Environment

- 8.9.3 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 largest 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 (depth-averaged), with greater velocities experienced within Bideford Bay.
- 8.9.4 Results from project-specific sediment surveys involving grab samples demonstrated that the sediments along the Offshore Cable Corridor are mostly classified as 'Very Fine' to 'Medium' sands, with median particle size (d_{50}) 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, particularly across stations located in deep waters. In shallower waters, turbidity varied up to a maximum of approximately 66 FTU.

Measures Adopted as Part of the Proposed Development

- 8.9.5 The measures proposed by the Applicant to mitigate impacts are set out in the ES. These measures include the following:
- 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.

- Route optimisation studies have included consideration of substrate types, with e.g., outcropping bedrock avoided where possible.
- Where crossings of existing cables are required, these will be constructed adhering to international best practice design (and may include concrete mattresses and/or shallow rock berms).
- Where additional rock protection is required, the preference will be placement within the trench i.e. the finished level of rock cover will be below seabed level. The least favourable option (where protection/full protection via other techniques is not possible) is to result in rock protection above the level of the existing sea bed.
- HDD methods will be employed at landfall to avoid any direct disturbance of the intertidal, the foreshore and the coastal cliffs.

Assessment of Effects

- 8.9.6 A number of potential impacts on physical processes, associated with the construction, operation and maintenance, and decommissioning phases, were identified. These included potential 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.
- 8.9.7 However, in addition to the mitigation already included, it is recommended (as further additional good practice) that all construction activities in Bideford Bay, including the construction of the HDD exit pits avoids working during peak spring tides and significant wave activity.

Cumulative Effects

- 8.9.8 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

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

8.10 Offshore Ornithology

Introduction

- 8.10.1 Volume 3, Chapter 9: Offshore Ornithology of the ES (document reference 6.3.9) considers impacts from the Proposed Development on offshore ornithology.
- 8.10.2 Offshore ornithology refers to bird communities which make use of marine environments, largely for foraging and commuting, many of which breed at coastal or island colonies.

Approach

- 8.10.3 The offshore ornithology baseline was established through a desk study, and it was not necessary to undertake any specific baseline surveys.

Baseline Environment

- 8.10.4 The desk study established that the Celtic Sea is used by large numbers of birds, some of which could forage within the Offshore Cable Corridor and immediately adjacent habitats. It was determined that due to seabirds very large foraging ranges, there is the potential for seabirds breeding at colonies distant to the Proposed Development to be impacted, including those associated with statutory designated sites.

Measures Adopted as Part of the Proposed Development

- 8.10.5 The measures proposed by the Applicant to mitigate impacts are set out in the ES. These measures include the following:
- Impacts on sensitive ornithology receptors (particularly 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.
 - Adherence to standard pollution prevention measures (which will be ensured via an Offshore CEMP).
 - Development of a Vessel Management Plan which would set out pre-agreed vessel routes, speeds, safety measures and communication expectations.

Assessment of Effects

- 8.10.6 Three main impact pathways associated with the construction, operational and maintenance, and decommissioning phases of the Proposed Development, were identified: visual and noise disturbance, indirect impacts due to loss of habitats/prey and pollution incidents. With the measures adopted as part of the Proposed Development in place, all of these impacts result in effects of negligible adverse significance.
- 8.10.7 All impacts were assessed as being of negligible adverse significance (not significant in EIA terms) to offshore ornithology receptors in the study area, as the magnitude of impacts is negligible, and the area within which birds could be disturbed is extremely small in the context of their overall foraging range, while birds will also be habituated to vessel disturbance due to the existing disturbance associated with shipping.

Cumulative Effects

- 8.10.8 Cumulative effects from other offshore renewable developments were assessed and predicted to result in effects of negligible or minor adverse significance (not significant in EIA terms) upon subtidal and intertidal benthic communities within a

30 km buffer of the Proposed Development. No significant inter-related effects were predicted.

Transboundary Effects

- 8.10.9 Due to the large foraging ranges of seabirds, there is the potential to impact species which breed at Irish and French colonies, and therefore a Transboundary assessment was undertaken. As for UK receptors, all impacts were assessed as being of negligible adverse significance (not significant in EIA terms) due to the short-term localised nature of effects which are of negligible magnitude.

9 POTENTIAL ENVIRONMENTAL EFFECTS – COMBINED ONSHORE AND OFFSHORE

9.1 Introduction

9.1.1 This section sets out the potential significant environmental effects for the following:

- climate change;
- landscape, seascape and visual resources;
- socio-economics; and
- inter-related effects.

9.2 Climate Change

Introduction

9.2.1 Volume 4, Chapter 1: Climate Change of the ES (document reference 6.4.1) 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.

9.2.2 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.

9.2.3 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.

9.2.4 The focus of this ES is the Proposed Development, however, given its purpose to facilitate the import of renewable energy, it would never operate without the generation assets in Morocco. As such, the cumulative impacts of the Proposed Development with the remainder of the Project (generation assets and onshore and offshore transmission assets in Morocco, international offshore cables) as well as the Alverdiscott Substation Connection Development on the global GHG emissions have been assessed.

Approach

- 9.2.5 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

- 9.2.6 The baseline environment in the UK relevant to the Order Limits have been reviewed in terms of the land and sea bed resources present and the risks posed to them now and in the future by climate change.

Greenhouse Gas Emissions Assessment Baseline Environment

Onshore

- 9.2.7 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. The Proposed Development does not cause disturbance to land that contains carbon stores, such as woodland or peat.
- 9.2.8 The Order Limits includes land occupied by a permitted solar farm development (planning application reference 1/1057/2021/FULM), which is currently under construction.

Offshore

- 9.2.9 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

- 9.2.10 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.
- 9.2.11 It can be predicted that the Proposed Development will be susceptible to higher wind speeds throughout the year due to its coastal location.

Offshore

- 9.2.12 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

- 9.2.13 Implementation of the Proposed Development will be controlled by management plans which are Requirements of the DCO (document reference 3.1). The management plans which are submitted in outline initially and subject to approval post-consent, contain all mitigation measures described in the ES to further avoid or reduce possible environmental effects. The management plans relevant to climate change are:
- Onshore and Offshore CEMP(s) will be prepared in accordance with the Outline Onshore and Offshore CEMPs (document reference 7.7 & 7.9 respectively), which have been submitted as part of the DCO application. The final On-CEMP(s) and offshore CEMP(s) would set out measures to reduce GHG emissions associated with the construction phase and will contain a daughter document:
 - An Outline Site and Resource Waste Management Plan has been submitted as part of the Outline On-CEMP (document reference 7.7, Appendix B) and includes measures to manage waste and re-use materials, where practicable.

Assessment of Effects

- 9.2.14 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 construction, operation and maintenance, and decommissioning phases of the Proposed Development;
 - the impact of climate change on the Proposed Development during the construction, operation and maintenance, and decommissioning phases.
- 9.2.15 Without mitigation, there would be a significant adverse effect at the construction phase due to GHG emissions from the manufacturing and installation of the Proposed Development (during construction stage).

Cumulative Effects

- 9.2.16 The Proposed Development forms a key element of the wider proposed Project, which includes a proposed solar and wind farm in Morocco and the international transmission assets that convey power to the UK. The Proposed Development (the UK only part of the Project) enables the renewable energy to be connected to the national grid.

- 9.2.17 Overall, the cumulative effect of the Proposed Development, together with the wider Project and the Alverdiscott Substation Connection Development, on the global climate will be beneficial.

Transboundary Effects

- 9.2.18 All developments that emit GHG emissions contribute towards the atmospheric mass of GHGs as a receptor, and so may have a transboundary impact on climate change.
- 9.2.19 It is noted that over the lifetime of the Proposed Development, when considered cumulatively with the Moroccan generation assets and international transmission assets as part of the rest of the Project outside of the UK EEZ, potential transboundary impacts and resulting effects will be beneficial.

9.3 Landscape, Seascape and Visual Impact Assessment

Introduction

- 9.3.1 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: Landscape, Seascape and Visual Resources of the ES (document reference 6.4.2). The assessment considered the potential impacts of the Proposed Development on seascape and landscape character, views and visual amenity.

Approach

- 9.3.2 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.
- 9.3.3 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.
- 9.3.4 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

- 9.3.5 Two designated landscapes were identified within the study area which could be affected by the Proposed Development, North Devon United Nations Educational, Scientific and Cultural Organization World Biosphere Reserve and North Devon Coast National Landscape.

- 9.3.6 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 Area 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.
- 9.3.7 Three main visual receptor groups identified as likely to be impacted by the Proposed Development. These comprised people using P_{RoW}, 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.
- 9.3.8 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

- 9.3.9 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 LEMP in general accordance with the Outline LEMP (document reference 7.10) which has been submitted with the application for development consent. The Outline LEMP 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 (document reference 7.4) has been submitted with the application for development consent. The Design Principles Statement ensures the Converter Station adopts an architectural design that is sympathetic to the surrounding area and uses appropriate materials, colours and finishes.

Assessment of Effects

- 9.3.10 Taking into account the mitigation measures described above, the following likely significant effects are likely to occur with respect to the seascape, landscape and visual receptors:
- adverse effect on the characteristic landscapes, tranquillity and nocturnal darkness of the North Devon Biosphere Reserve during construction, operation and maintenance and decommissioning of the Proposed Development, which are locally significant;
 - adverse effect on dark night skies in the North Devon Coast National Landscape during construction of the Proposed Development;
 - adverse effect on hedgebanks in National Character Area 149: The Culm during construction of the Proposed Development, which is 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 3H Secluded Valleys during construction 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, people using PRow where managed crossings would be put into place 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;
 - adverse effect on views from representative viewpoints 27, 29, 32 and 33 during operation of the Proposed Development; and
 - adverse effect at night time due to lighting during the construction and operation of the Proposed Development.

Cumulative Effects

- 9.3.11 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 Development were assessed as unlikely to be significant.

Transboundary Effects

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

9.4 Socio-economics and Tourism

Introduction

- 9.4.1 Volume 4, Chapter 3: Socio-economics and Tourism of the ES (document reference 6.4.3) considers how the Proposed Development could have an effect on the economic conditions of the study areas, with a particular focus on the tourism economy.

Approach

- 9.4.2 These impacts can occur directly, as a result of expenditure within the supply chain and the employment this supports, or indirectly by environmental effects or other elements of the project 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.

Baseline Environment

- 9.4.3 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 as a whole. 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 as a whole. 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 is notably lower than the UK as a whole.
- 9.4.4 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

- 9.4.5 The approach to design of the Proposed Development relevant to the socio-economic assessment include sensitive routeing, design and siting of the Onshore HVDC and HVAC Cable Corridors.
- 9.4.6 Implementation of the Proposed Development will be controlled by management plans which are Requirements (document reference 3.1) of the DCO. The management plans which are submitted in outline initially and subject to approval post-consent, contain all mitigation measures described in the ES to further avoid or reduce possible environmental effects. The management plans relevant to land use and recreation are:
- A final On-CEMP(s) will be prepared in accordance with the Outline On-CEMP (document reference 7.7), which has been submitted as part of the DCO application. The On-CEMP will contain as daughter documents as follows:
 - A Soil Management Plan will be prepared in general accordance with the Outline Soil Management Plan (document reference 7.10) which has been submitted with the DCO application.
 - A PRoW Management Plan will be prepared in general accordance with the Outline PRoW Management Plan (document reference 7.11) that has been submitted as part of the DCO application.
 - An Outline LEMP (document reference 7.10) has been submitted as part of the DCO application that will be used to manage the restoration of agricultural land and landscapes relevant to the assessment of Socio Economics and Tourism.
- 9.4.7 The above will minimise any significant impacts on the attractiveness of study area to tourists which is an important economic activity locally and regionally.

Assessment of Effects

- 9.4.8 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.
- 9.4.9 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:
- £7.2 million GVA and 70 jobs in the Local Area;
 - £18.5 million GVA and 190 jobs in Devon; and
 - £179.8 million GVA and 2,050 jobs across the UK.
- 9.4.10 The effect of these impacts were assessed as being Negligible (beneficial) for the Local Area, the Devon and UK economies.

- 9.4.11 There were no significant effects identified on individual tourism receptors, however the effect on the tourism economy has been assessed as Minor (adverse) 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

- 9.4.12 Cumulative effects from other onshore and offshore developments in the area, including the Alverdiscott Substation Connection Development, were assessed and predicted to result in effects of negligible or minor significance. The only exception to this is the cumulative impact on the tourism economy, which has been assessed as moderate (adverse) because the cumulative demand for workforce accommodation will result in an even greater level of displacement of tourists.

Transboundary Effects

- 9.4.13 No transboundary effects with regard to Socio Economics and Tourism from the Proposed Development on the interests of European States were predicted.

9.5 Human Health

Introduction

- 9.5.1 Volume 4, Chapter 4: Human Health of the ES (document reference 6.4.4) assesses the Proposed Development's potential to change determinants of health, with beneficial and adverse effects, either directly, indirectly, or cumulatively. 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.
- 9.5.2 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).
- 9.5.3 The chapter follows best practice to assess human health as part of EIA. The methods follow the health in EIA guidance set out by the Institute of Environment Management and Assessment. 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.

- 9.5.4 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

- 9.5.5 The health assessment is informed by the findings of other ES chapters, including Hydrology and Flood Risk (document reference 6.2.3), Traffic and Transport (document reference 6.2.5), Noise and Vibration (document reference 6.2.6), Air Quality (document reference 6.2.7) and Land Use and Recreation (document reference 6.2.8). 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

- 9.5.6 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

- 9.5.7 The following measures are proposed as part of the Proposed Development to mitigate potential impacts on human health:
- The preparation of a final On-CEMP in general accordance with the Outline On-CEMP (document reference 7.7), submitted with the application for development consent.
 - The preparation of a detailed CTMP in general accordance with the Outline CTMP (document reference 7.12), which is submitted with the application for development consent. The Outline CTMP sets out traffic management measures to maintain access and provide early notice of any route changes.
 - The Outline On-CEMP includes an Outline Dust Management Plan (document reference 7.7, Appendix C), which provides measures to manage the potential effects of dust generated during construction of the Proposed Development on nearby human receptors (e.g. people and property).
 - Measures adopted in the Outline On-CEMP (document reference 7.7) would avoid and contain any spills or appropriately respond to historic contamination encountered.
 - Implementation of mitigation measures described in the IAQM construction dust guidance.

- A detailed Soil Management Plan would be prepared in general accordance with the Outline Soil Management Plan submitted as part of the application for development consent. An Outline Soil Management Plan (document reference 7.7 Appendix D) has been prepared as part of the wider Outline On-CEMP (document reference 7.7), secured as a requirement of the DCO.
- The On-CEMP, secured as a requirement of the DCO, will include construction noise and vibration limits and BPM to mitigate noise and vibration from construction activities associated with the Proposed Development.

9.5.8 Continued community consultation and sharing of non-technical information relating to the Proposed Development (e.g., explaining compliance with public exposure guidelines, actual risks associated with the Proposed Development), to allow people to express concerns and gain awareness of actual health effects. This will partially be met through the application process, including ES and the EIA Non-Technical Summary. Non-technical information and a point of contact for community liaison can also be provided on the Proposed Development website.

Assessment of Effects

- 9.5.9 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, all these impacts result in effects of minor adverse or minor beneficial significance, which are not significant.
- 9.5.10 Construction and decommissioning of the Proposed Development has the potential to result in temporary and short-term disruption of public open spaces and PRoW, 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.
- 9.5.11 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.
- 9.5.12 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

- 9.5.13 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.
- 9.5.14 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.
- 9.5.15 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

- 9.5.16 No transboundary effects with regard to population health from the Proposed Development on the interests of European States were predicted.

9.6 Inter-related Effects

- 9.6.1 An assessment of inter-related effects has been undertaken and provided in Volume 4, Chapter 5: Inter-related Effects of the ES.
- 9.6.2 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.
- 9.6.3 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 ES.
- 9.6.4 For receptor-led effects, overall, it is unlikely that receptors would experience increased significance of inter-related effects than that which has already been reported in the individual chapters for the identified receptors. Therefore, there is no change resulting from the inter-related assessment.

10 REFERENCES

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