XLINKS MOROCCO-UK POWER PROJECT

Scoping Report

NP00030
Xlinks MUPP
FINAL
January 2024

xlinks.co

Contents

Figures

Tables

Appendices

Appendix Number	Appendix Title
A	Transboundary Screening Matrix
B	Discretionary Advice Service Notes for Onshore Ecology
C	Offshore Ornithology

Glossary

Term	Meaning
Key Terminology	
Alverdiscott Substation	The existing National Grid Electricity Transmission substation at Alverdiscott, Devon, which comprises 400 kV and 132 kV electrical substation equipment.
Alverdiscott Substation Connection Development	The development required at the existing Alverdiscott Substation site, which is envisaged to include development of a new 400 kV substation, and other extension modification works to be confirmed by National Grid Electricity Transmission.
Alverdiscott Substation site	The National Grid Electricity Transmission substation site within which the Alverdiscott Substation sits.
Applicant	Xlinks 1 Limited.
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 (DC) to Alternating Current (AC), or vice versa.
HVAC Cables	The High Voltage Alternating Current (HVAC) cables which would bring electricity from the converter stations to the new Alverdiscott Substation Connection Development.
HVDC Cables	The High Voltage Direct Current (HVDC) cables which would bring electricity to the UK converter stations from the Moroccan converter stations.
Impact	Change that is caused by an action/Proposed Development, e.g., land clearing (action) during construction which results in habitat loss (impact).
Landfall	The proposed area in which the offshore cables make landfall in the United Kingdom (come on shore) and the transitional area between the offshore cabling and the onshore cabling. This term applies to the entire landfall area at Cornborough Range, Devon, between Mean Low Water Springs and the Transition Joint Bay inclusive of all construction works, including the offshore and onshore cable routes, and landfall compound(s).
National Grid Electricity System Operator (NGESO)	National Grid Electricity System Operator (NGESO) operates the national electricity transmission network across Great Britain. NGESO does not distribute electricity to individual premises, but its role in the wholesale market is vital to ensure a reliable, secure and quality supply to all.
National Grid Electricity Transmission (NGET)	National Grid Electricity Transmission (NGET) owns and maintains the electricity transmission network in England and Wales.
Offshore Cable Corridor	The proposed corridor within which the offshore cables are proposed to be located, which is situated within the United Kingdom Exclusive Economic Zone.
Onshore HVAC Cable Corridor	The proposed corridor within which the onshore High Voltage Alternating Current cables would be located.
Onshore HVDC Cable Corridor	The proposed corridor within which the onshore High Voltage Direct Current cables would be located.

Term	Meaning
Proposed Development	The element of the Xlinks Morocco-UK Power Project within the UK, which includes the offshore cables (from the UK Exclusive Economic Zone to landfall), landfall site, onshore Direct Current and Alternating Current cables, converter stations, road upgrade works and, based on current assumptions, the Alverdiscott Substation Connection Development.
Scoping Boundary	The term used to define the Proposed Development boundary at the time the Scoping Report was submitted.
Study area	This is an area which is defined for each environmental topic which will include the Proposed Development as well as potential spatial and temporal considerations of the impacts on relevant receptors. The study area for each topic is intended to cover the area within which an impact can be reasonably expected.
Survey area	The area within which each survey has been undertaken. This may differ from the study area as a survey area will be based on species or survey-specific guidance on the extent of survey required, which may be limited by, for example, habitat conditions, or be defined in terms of buffer areas around an area of potential impact.
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.
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’)
Further Terminology	
Access land	The Countryside and Rights of Way Act 2000 gives a public right of access to land mapped as 'open country' (mountain, moor, heath and down) or registered common land. These areas are known as ‘access land'.
Air Quality Management Area (AQMA)	An area declared by a local authority where its review and assessment of air quality shows that an air quality objective is likely to be exceeded.
Annoyance (dust)	Loss of amenity due to dust deposition or visible dust plumes, often related to people making complaints, but not necessarily sufficient to be a legal nuisance, as defined by the Institute of Air Quality Management.
Aquifer	A subsurface layer or layers of rock or other geological strata of sufficient porosity and permeability to allow either a significant flow of groundwater or the abstraction of significant quantities of groundwater.
National Landscape	An area of land designated for its natural features of outstanding beauty. The land is protected by the Countryside and Rights of Way Act 2000, in order to conserve and enhance its natural beauty. Previously referred to as an Area of Outstanding Natural Beauty.
Baseline	The status of the environment without the Proposed Development in place.

Term	Meaning
Beam trawl	A method of bottom trawling with a net that is held open by a beam, which is generally a heavy steel tube supported by steel trawl heads at each end. Tickler chains or chain mats, attached between the beam and the ground rope of the net, are used to disturb fish and crustaceans that rise up and fall back into the attached net.
Benthic	Associated with or occurring on the bottom of the seabed.
Best and Most Versatile	Agricultural land that is the best and most versatile for growing crops.
Biodiversity Net Gain (BNG)	An approach to development that leaves biodiversity in a better state than before. Where a development has an impact on biodiversity, developers are encouraged to provide an increase in appropriate natural habitat and ecological features over and above that being affected to ensure that the current loss of biodiversity through development will be halted and ecological networks can be restored.
British Fishery Limit	An area which extends up to 200 nautical miles from the baseline adjacent to the United Kingdom, the Channel Islands and the Isle of Man.
Bycatch	Catch which is retained and sold but is not the target species for the fishery.
Cetacean	An aquatic mammal constituting the infraorder Cetacea (whales, dolphins, porpoises).
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.
Climate resilience	The capacity of social, economic and ecosystems to cope with a hazardous event or trend or disturbance.
Construction Traffic Management Plan (CTMP)	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.
Cumulative Effects	The combined effect of the Proposed Development in combination with the effects from other planning applications, on the same receptor or resource.
Demersal	Living on or near the seabed.
Development Consent Order (DCO)	An order made under the Planning Act 2008, as amended, granting development consent.
Diadromous	Migrates between saltwater and freshwater.
Duration (of impact)	The time over which an impact occurs. An impact may be described as short, medium or long-term and permanent or temporary.
Dust	Solid particles suspended in air or settled out onto a surface after having been suspended in air, as defined by the Institute of Air Quality Management.
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.
Elasmobranchs	Fish with a skeletal structure composed of cartilage. Includes species such as sharks, rays and skates.

Term	Meaning
Electrical Current	Electrical Current is the rate at which electrons flow past a point in a complete electrical circuit.
Electromagnetic Fields (EMF)	EMFs are part of the natural world, and are produced wherever electricity is generated, transmitted, or used.
Environmental Impact Assessment (EIA)	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 (ES)	The document presenting the results of the Environmental Impact Assessment process.
Finfish	Bony fish in the Class Actinopterygii.
Fish stock	Any natural population of fish which an isolated and self-perpetuating group of the same species.
Fishery	A group of vessel voyages which target the same species or use the same gear.
Fishing ground	An area of water or seabed targeted by fishing activity.
Fleet	A physical group of vessels sharing similar characteristics (e.g., nationality).
Flood Risk Assessment	A flood risk assessment is an assessment of the risk of flooding from all flood mechanisms, including the identification of flood mitigation measures, in order to satisfy the requirements of the National Planning Policy Framework and Planning Practice Guidance.
Flyseine	Flyseining, also known as flyshooting or demersal seining, is a fishing method involving use of long weighted ropes to herd fish into the mouth of the trawl net to target demersal species which live or feed on or near the seabed.
Gear type	The method / equipment used for fishing.
Habitat Regulations Assessment	An assessment of the likely significant effects on a European site protected by the Conservation of Habitats and Species Regulations 2017.
Haul-out	A behaviour associated with pinnipeds temporarily leaving the water for reasons such as reproduction and rest.
Hooked gear	Fishing gears using hooks include longlines and handlines. Longlining involves setting of a long length of line with baited hooks attached at regular intervals; this rig is set on the seabed or in midwater with a marker buoy at either end and allowed to fish for a set period. Handlining involves fishing using a rod and line or a hand-held line.
ICES statistical rectangles	ICES standardise the division of sea areas to enable statistical analysis of data. Each ICES statistical rectangle is ’30 min latitude by 1 degree longitude’ in size (approximately 30 x 30 nautical miles). A number of rectangles are amalgamated to create ICES statistical areas.
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.

Term	Meaning
Kyoto Protocol	The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change, which commits its parties to reducing greenhouse gas emissions by setting internationally binding emission reduction targets, implemented primarily through national measures but also via wider market-based mechanism
Landings	Quantitative description of amount of fish returned to port for sale, in terms of value or weight.
Local Authority	A body empowered by law to exercise various statutory functions for a particular area of the United Kingdom. This includes County Councils, District Councils and County Borough Councils. The relevant Local Authorities for the Proposed Development are Devon County Council and Torridge District Council.
Local Highway Authority	A body responsible for the public highways in a particular area of England and Wales, as defined in the Highways Act 1980. The relevant Local Highway Authority for the Proposed Development is Devon County Council.
Local Planning Authority	The local government body (e.g., Borough Council, District Council, etc.) responsible for determining planning applications within a specific area.
Management Unit (MU)	Management Unit (MU) typically refers to a geographical area in which the animals of a particular species are found, to which management of human activities is applied. An MU may be smaller than what is believed to be a 'population', to reflect spatial differences in human activities and their management.
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.
Method statements	A document that describes how a particular task or action should be undertaken correctly.
Main Rivers	The term used to describe a watercourse in respect of which the Environment Agency has permissive powers in relation to its management.
Marine Net Gain	Marine Net Gain builds on the Government's progress with Biodiversity Net Gain (BNG), which applies to terrestrial areas and down to the mean low water mark. Marine Net Gain (MNG) will only be applicable to developments below the Low Water Mark and is intended to cover most new marine developments in English waters.
Marine Conservation Zone(s)	Marine Conservation Zone(s) are marine nature reserves and are areas that protect a range of nationally important, rare or threatened habitats and species.
National Policy Statement(s)	The current national policy statements published by the Department for Energy Security and Net Zero 2023.
Nets	Nets refers to a wall of netting that hangs in the water column, typically made of monofilament or multifilament nylon. Net mesh size and position in the water column vary depending upon the target species. Nets are deployed and left to soak before being hauled. In the context of this document, 'nets' includes both anchored (fixed to seabed) and suspended (drift, moves with tide or current) nets.
Nursery grounds	Areas occupied by young fish or shellfish.

Term	Meaning
Ordinary Watercourses	A river, stream, ditch, cut, sluice, dyke or non-public sewer that is not designated a main river and for which the Local Planning Authority has flood risk management responsibilities and powers.
Otter trawl	A net with large rectangular boards (otter boards) which are used to keep the mouth of the trawl net open. Otter boards are made of timber or steel and are positioned in such a way that the hydrodynamic forces, acting on them when the net is towed along the seabed, pushes them outwards and prevents the mouth of the net from closing.
Pathway	The link or interaction 'pathway' by which the effect of the activity could influence a receptor
Pelagic	Of or relating to the open sea.
Pelagic trawl	A net used to target fish species in the mid water column.
Pathway	The link or interaction 'pathway' by which the effect of the activity could influence a receptor
Pinniped	An aquatic mammal constituting the clade Pinnipedia (true seals, eared seals and walrus)
Planning Inspectorate	The agency responsible for operating the planning process for applications for development consent under the Planning Act 2008.
Policy	A set of decisions by governments and other political actors to influence, change, or frame a problem or issue that has been recognized as in the political realm by policy makers and/or the wider public.
Pots	Pots and traps are generally rigid structures into which fish or shellfish are guided or enticed through funnels that make entry easy but from which escape is difficult. There are many different styles and designs, each one has been designed to suit the behaviour of its target species.
Preliminary Environmental Information Report	A report that provides preliminary environmental information in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. This is information that enables consultees to understand the likely significant environmental effects of a project, and which helps to inform consultation responses.
Protected species	A species of animal or plant which it is forbidden by law to harm or destroy.
Protected Wrecks	High significance shipwrecks designated for their historical, archaeological or artistic importance under the Protection of Wrecks Act 1974.
Quota	A proportion of the Total Allowable Catch for a fish stock.
Ramsar Site	Wetlands of international importance that have been designated under the criteria of the Ramsar Convention. In combination with Special Protection Areas and Special Areas of Conservation, these sites contribute to the national site network.
Receptor	The element of the receiving environment that is affected.
Runoff	Runoff occurs when there is more water than land can absorb. The excess liquid flows across the surface of the land.
Scallop dredge	A method to catch scallop using steel dredges with a leading bar fitted with a set of spring loaded, downward pointing teeth. Behind this toothed bar (sword), a mat of steel rings is fitted. A heavy net cover (back) is laced to the frame, sides and after end of the mat to form a bag.

Term	Meaning
Shellfish	Exoskeleton-bearing aquatic invertebrates including molluscs and crustaceans.
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.
Site Waste Management Plan (SWMP)	A site waste management plan aims to establish and estimate how much waste is produced by the Project and sets out how resources will be managed and waste controlled at all stages during construction activities.
Source	The origin of a potential effect (noting that one source may have several impact pathways and associated receptors).
Spawning grounds	Areas whereby species produce eggs.
Special Areas of Conservation (SAC)	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 Areas (SPA)	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.
Stock assessment	An assessment of the biological stock of a species and its status in relation to defined references points for biomass and fishing mortality.
String	A series of static fishing gear (pots) joined together to form a single deployable linear line of pots.
Swept Area Ratio (SAR)	SAR (derived from VMS data) indicates the number of times in an annual period that a fishing gear makes contact with (or sweeps) the seabed surface. Surface SAR provides a proxy for fishing intensity.
Trackout	The transport of dust and dirt from the construction/demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network, as defined by the Institute of Air Quality Management.
Transboundary effects	Effects from a project within one state that affect the environment of another state(s).
Vessel Monitoring System (VMS)	A system used in commercial fishing to allow environmental and fisheries regulatory organizations to monitor, minimally, the position, time at a position, and course and speed of fishing vessels.
WiSe	The UK's national training scheme for minimising disturbance to marine wildlife.

Acronyms

Acronym	Meaning
AC	Alternating Current
AEZ	Archaeological Exclusion Zones

Acronym	Meaning
AIS	Automatic Identification System
AQMA	Air Quality Management Area
ALC	Agricultural Land Classification
AONB	Area of Outstanding Natural Beauty
ATC	Automatic Traffic Counter
AtoN	Aid to Navigation
BEIS	Department for Business Energy & Industrial Strategy
bgl	Below ground level
BGS	British Geological Survey
BNG	Biodiversity Net Gain
BMV	Best and most versatile
BoCC	Bird of Conservation Concern
BP	Before Present
BT	British Telecoms
CBRA	Cable Burial Risk Assessment
CCC	Climate Change Committee
CEA	Cumulative Effects Assessment
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CIfA	Chartered Institute for Archaeologists
CITiZAN	Coastal and Intertidal Zone Archaeological Network
COLREGs	Convention on the International Regulations for Preventing Collisions at Sea
COP	Conference of the Parties
cSAC	Candidate Special Area of Conservation
CTD	Conductivity Temperature Depth
CTMP	Construction Traffic Management Plan
CWS	County Wildlife Sites
DC	Direct Current
DCF	Data Collection Framework
DCO	Development Consent Order
DDV	Drop Down Video
Defra	Department of Environment Food and Rural Affairs
DESNZ	Department for Energy Security and Net Zero
DHER	Devon Historic Environment Record
DMRB	Design Manual for Roads and Bridges
DTM	Digital Terrain Model
EA	Environment Agency
EEZ	Exclusive Economic Zone
EHO	Environmental Health Officer
EIA	Environmental Impact Assessment
EMF	Electro-magnetic Field

Acronym	Meaning
EMODnet	European Marine Observation and Data Network
EMR	Electricity Market Reform
EPC	Early Procurement Contractor
EPUK	Environmental Protection United Kingdom
ES	Environmental Statement
ESCA	European Subsea Cables Association
EU	European Union
FLO	Fisheries Liaison Officer
FLOWW	Fishing Liaison with Offshore Wind and Wet Renewables Group
FSA	Formal Safety Assessment
FTE	Full Time Equivalent
GB	Great Britain
GCN	Great Crested Newt
GCR	Geological Conservation Review
GHI	Global Horizontal Irradiance
GHG	Greenhouse gas
GIS	Geographic Information System
GT	Gross Tonnage
HDD	Horizontal Directional Drilling
HGV	Heavy Goods Vehicle
HOCI	Habitat of Conservation Interest
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
IAQM	Institute of Air Quality Management
ICES	International Council for the Exploration of the Sea
ICNIRP	International Commission on Non-ionizing Radiation Protection
IEMA	Institute of Environmental Management and Assessment
IFCA	Inshore Fisheries and Conservation Authority
IMO	International Maritime Organization
INNS	Invasive Non-Native Species
IUCN	International Union for Conservation of Nature
JNCC	Joint Nature Conservation Committee
JFS	Joint Fishery Statement
KIS	Kingfisher Information Service
LAT	Lowest Astronomical Tide
LNR	Local Nature Reserve
LOA	Length Overall
MAFF	Ministry of Agriculture Fisheries & Food
MAIB	Marine Accident Investigation Branch
MARPOL	International Convention for the Prevention of Pollution from Ships
MBES	Multibeam Echo Sounder
MCA	Maritime and Coastguard Agency

Acronym	Meaning
MCZs	Marine Conservation Zones
MGN	Marine Guidance Note
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MMO	Marine Management Organisation
MOD	Ministry of Defence
MOHC	Met Office Hadley Centre
MPA	Marine Protected Area
MPCP	Marine Pollution Contingency Plan
MPS	Marine Protection Statement
NAVTEX	Navigational Telex
NDC	Nationally Determined Contribution
NEWS	Non-estuarine Wetland Bird Surveys
NFPD	The National Fish Populations Database
NGESO	National Grid Electricity System Operator
NGET	National Grid Electricity Transmission
NHLE	National Heritage List of England
NHSC	National Historic Seascape Characterisation
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NRA	Navigational Risk Assessment
NSIP	National Significant Infrastructure Project
NtM	Notice to Mariners
OHL	Overhead Lines
OMU	Other Marine Users
OREI	Offshore Renewable Energy Installation
OS	Ordnance Survey
PDA	Project Development Area
PDE	Project Design Envelope
PEIR	Preliminary Environmental Information Report
PLN	Port Letter and Numbers
PPG	Planning Practice Guidance
PRA	Preliminary Risk Assessment
PTS	Permanent Threshold Shift
PRoW	Public Right of Way
pSAC	Possible Special Areas of Conservation
pSPA	Possible Special Protection Area
RCP	Representative Concentration Pathway
RNLI	Royal National Lifeboat Institution
ROV	Remotely Operated Vehicle
SAC	Special Area of Conservation
SCA	Seascape Character Area

Acronym	Meaning
SBP	Sub-bottom Profiler
SFRA	Strategic Flood Risk Assessment
SMP	Seabird Monitoring Programme
SMP2	Shoreline Management Plan
SOCI	Species of Conservation Interest
SOLAS	International Convention for the Safety of Life at Sea
SPAs	Special Protection Areas
SSC	Suspended Sediment Concentration
SSS	Side Scan Sonar
SSSI	Sites of Special Scientific Interest
SWMP	Site Waste Management Plan
TAC	Total Allowable Catch
TCA	Trade and Cooperation Agreement
TCE	The Crown Estate
TJB	Transition Joint Bay
TSS	Traffic Separation Scheme
TTS	Temporary Threshold Shift
UK	United Kingdom
UKCP18	United Kingdom Climate Projections (2018)
UKHO	United Kingdom Hydrographic Office
UNFCCC	United Nations Framework Committee for Climate Change
UNCLOS	United Nations Convention of the Law of the Sea
UXO	Unexploded Ordnance
VHF	Very High Frequency
VMP	Vessel Management Plan
VMS	Vessel Monitoring System
WFD	Water Framework Directive
WHO	World Health Organisation
WSI	Written Scheme of Investigation
XLPE	Cross-linked Polyethylene
ZOI	Zone of Influence
ZTV	Zone of Theoretical Visibility

Units

Units	Meaning
GT	Gross Tonnage
GW	Gigawatt
GWh	Gigawatt hours
GWp	Gigawatt peak
ha	Hectares

Units	Meaning
kg	Kilograms
km	Kilometres
km^2	Kilometres squared
kn	Knots
m	Metres
AOD	Above ordnance datum
m/s	Metres per second
mm	Millimetres
mph	Miles per hour
Mt	Mega Tonnes
Pa	Pascals
t	Tonnes
tCO_2e	Tonnes of carbon dioxide equivalents
°C	Degrees Celsius

1 INTRODUCTION

1.1 Background

1.1.1 This Scoping Report has been prepared by RPS and APEM Group on behalf of Xlinks 1 Limited (the 'Applicant'). It proposes the scope of the Environmental Impact Assessment (EIA) process for the United Kingdom (UK) elements of the Xlinks Morocco-UK Power Project (the 'Project') (**see Figure 1.1.1**) to develop a renewable energy generation facility in Morocco, connected via sub-sea electricity cables to UK converter stations which will connect to the national grid. For ease of reference, the UK elements of the Project are referred to as the 'Proposed Development', which is the focus of this Scoping Report.

1.1.2 The Proposed Development would comprise the following elements:

- A Converter Site, which would contain two converter stations to the immediate west of the Alverdiscott Substation site, as well as associated infrastructure (e.g. access roads, security fencing, etc.) and landscaping to provide visual screening.
- A new 400 kV substation to be constructed by National Grid Electricity Transmission (NGET), inclusive of repositioning overhead lines and tower structures (referred to throughout as the 'Alverdiscott Substation Connection Development').
- A High Voltage Alternating Current (HVAC) underground cable connection between the proposed converter stations and the Alverdiscott Substation Connection Development.
- A High Voltage Direct Current (HVDC) underground cable connection of approximately 14.5 km between the proposed converter stations and the Transition Joint Bay (TJB) at the Cornborough Range, Devon (the landfall).
- Approximately 370 km of subsea HVDC cable, which would be routed from the landfall location at Cornborough Range to the UK Exclusive Economic Zone (EEZ) boundary. The offshore cable infrastructure would continue beyond the UK EEZ, however, this does not form part of the Proposed Development.
- Other works to facilitate the development, including, but not limited to, permanent road improvement works, temporary and permanent utility connections, permanent utility diversions and temporary construction compounds, drainage and access.
- There would also be opportunities for environmental mitigation, offsetting and enhancement (which may include hedgerow enhancement and planting proposals). The construction phase would also include temporary construction works, including construction compounds, drainage, and haul roads.

1.1.3 Further details on the Proposed Development are set out in **Section 4**: Project Description, of the Scoping Report. The location of the Proposed Development Scoping Boundary, which includes the converter stations, onshore cables, landfall, and offshore cables, is shown on **Figure 1.1.2** and **Figure 1.1.3.**

1.1.4 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 Project is nationally significant and directed that development consent is required for the converter stations. Therefore, the Applicant is now pursuing a Development Consent Order for the Proposed Development.

1.1.5 This Scoping Report supports the Applicant's request for a Scoping Opinion from the Secretary of State for the Proposed Development. The Scoping Report has been prepared in accordance with the EIA Regulations 2017 and the Planning Inspectorate Advice Note Seven: Environmental Impact Assessment: Preliminary Environmental Information, Screening and Scoping (The Planning Inspectorate, 2020a).

1.1.6 The Scoping Report has identified potential topics and impacts to be scoped into the EIA process based upon an understanding of the environmental conditions likely to be encountered within the technical topic study areas, which are summarised in **Table 12.1.1**. It also identifies those potential topics and impacts that are proposed to be scoped out of the EIA process, based on an understanding of the nature of the Proposed Development, including measures adopted as part of the design and the proposed location. Those topics proposed to be scoped out are summarised within **Table 12.1.4**.

1.1.7 Consultees are invited to consider the information provided in this Scoping Report and to advise on whether they agree with the conclusions reached.

1.1.8 Following receipt of the Scoping Opinion from the Secretary of State, a Preliminary Environmental Information Report (PEIR) will be produced and consulted on as part of a statutory consultation on the Proposed Development under the Planning Act 2008, as amended. This is currently anticipated to take place in Q2 2024. The PEIR will provide an initial statement of the environmental information available for the Proposed Development, including descriptions of the likely significant environmental effects, mitigation measures adopted as part of the Proposed Development, and relevant enhancement, mitigation and monitoring commitments. The PEIR is intended to allow those taking part in the consultation to understand the nature, scale, location and likely significant environmental effects of the Proposed Development, such that they can make an informed contribution to the process of pre-application consultation and to the EIA process.

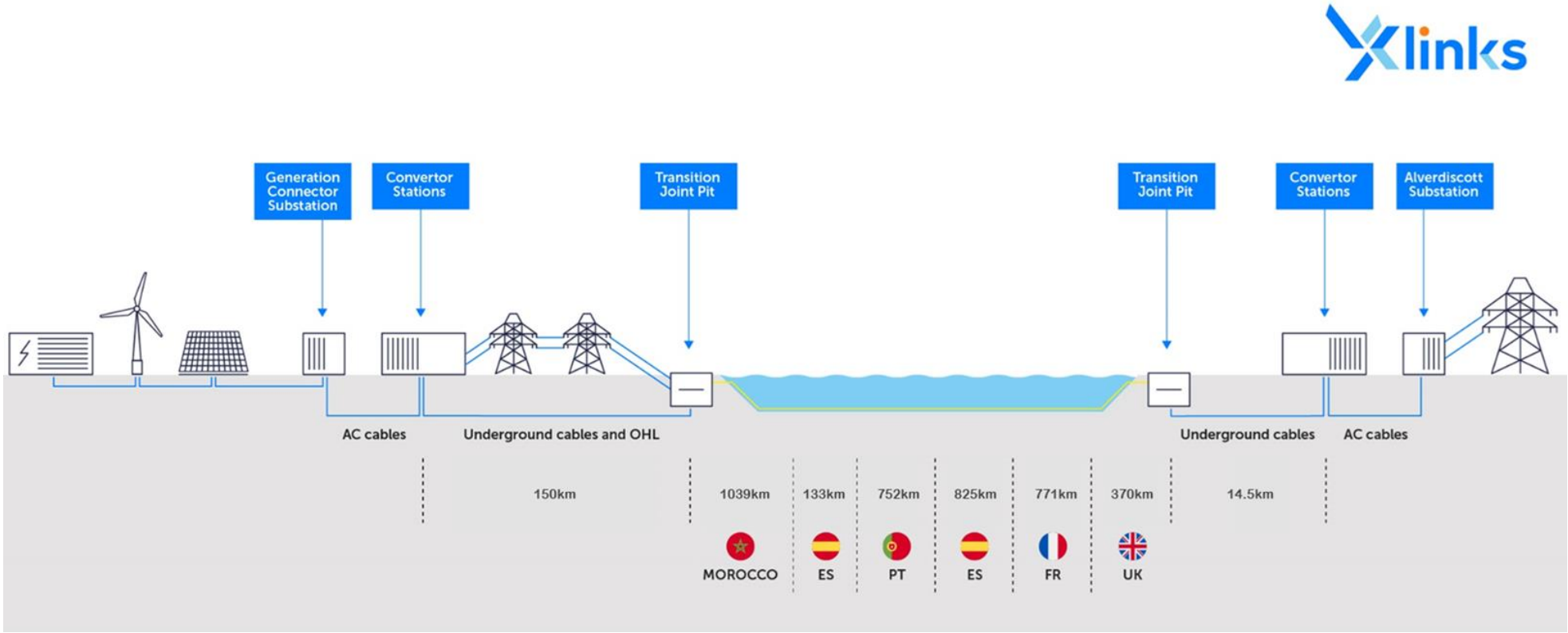

Figure 1.1.1: Xlinks Morocco-UK Power Project Schematic

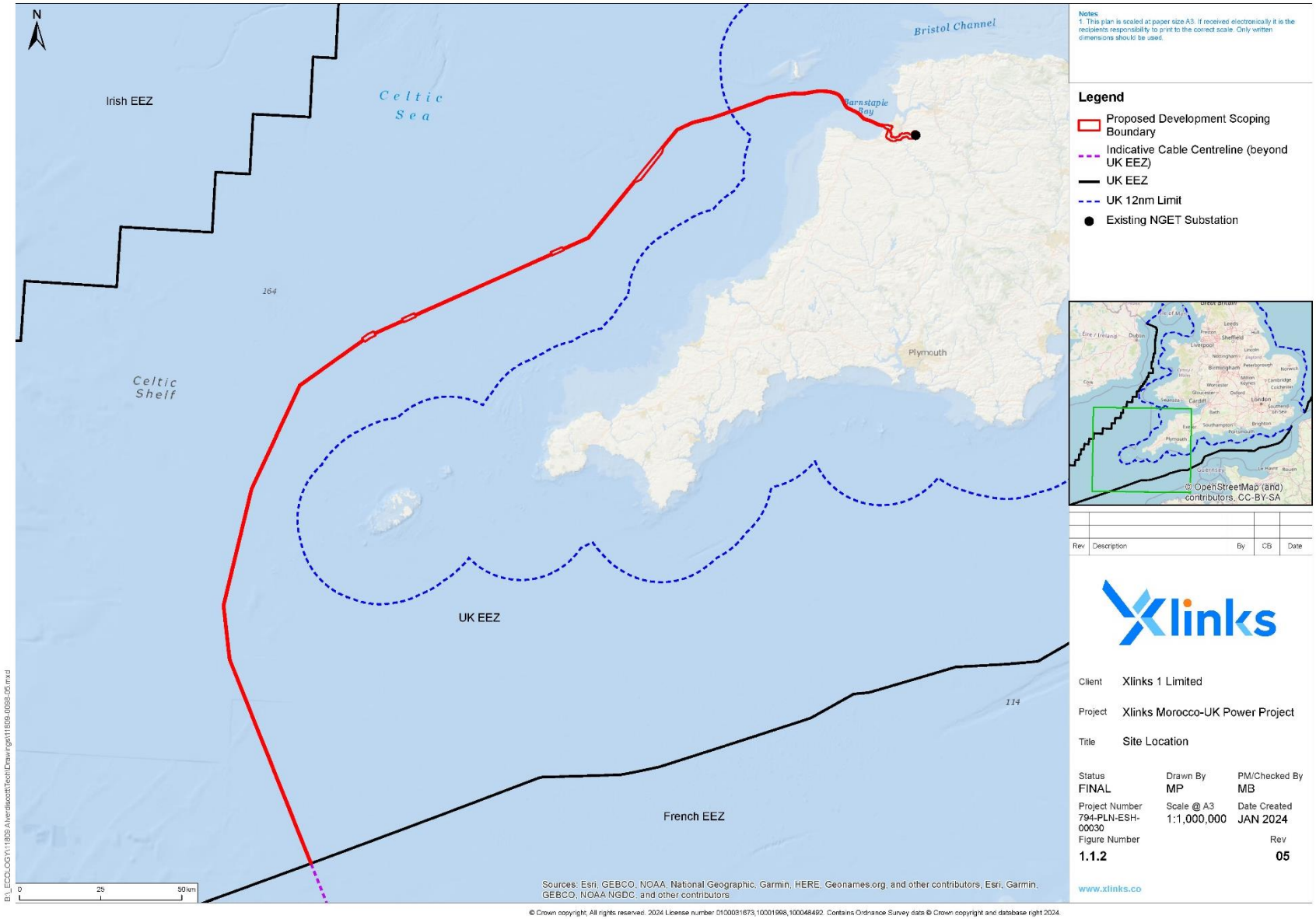

Figure 1.1.2: Site Location

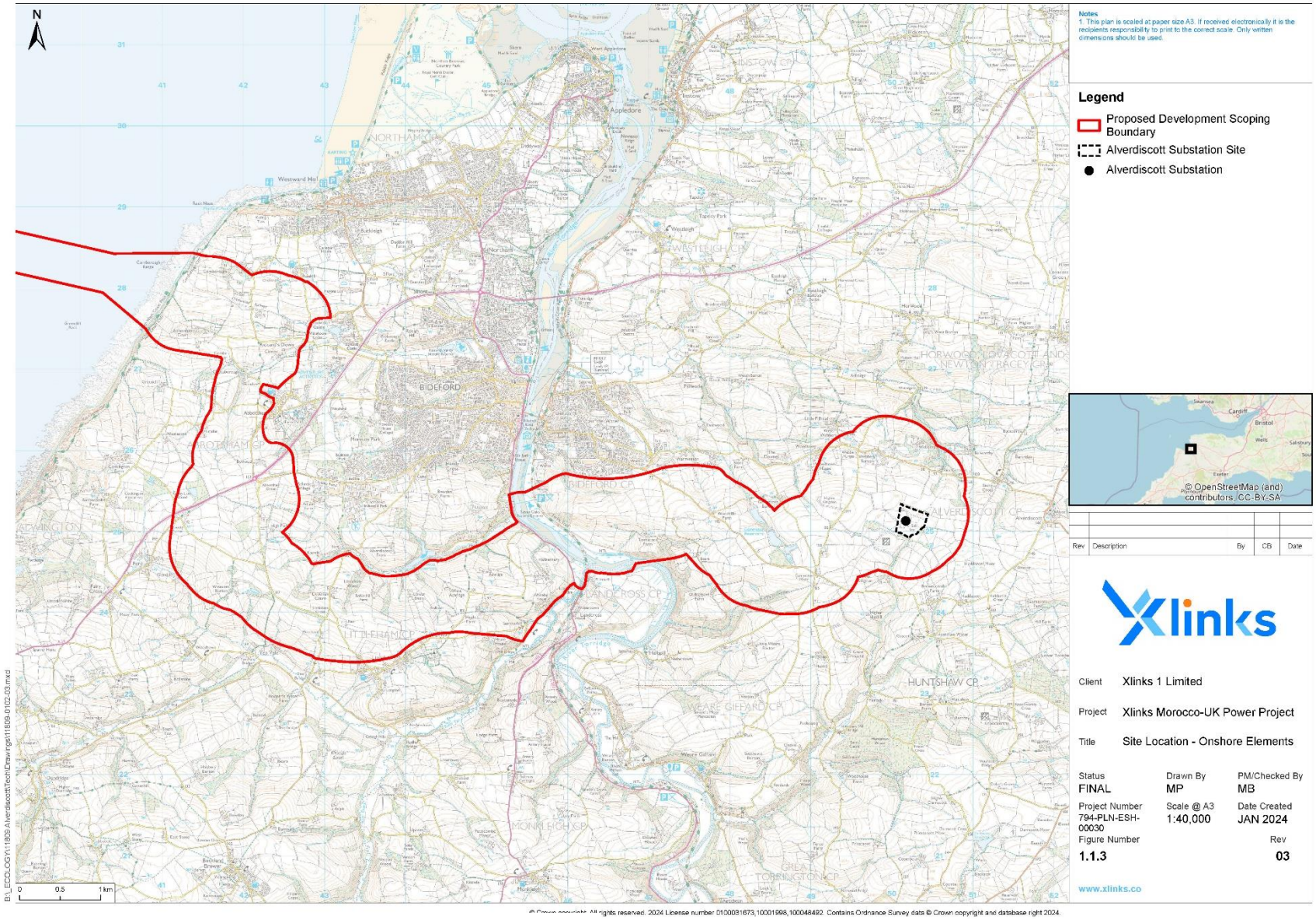

Figure 1.1.3: Site Location - Onshore Elements

1.2 Overview of the Xlinks Morocco-UK Power Project

1.2.1 The Proposed Development forms part of the wider Project proposed by the Applicant to develop a sub-sea electricity connection between Morocco and the UK. The Project includes an electricity generation facility entirely powered by solar and wind energy combined with a battery storage facility. Located in Morocco's renewable energy rich region of Guelmim Oued Noun, the Applicant proposes to install approximately 11.5 Gigawatts peak (GWp) of renewable energy capacity that would cover an approximate area of 1,500 km^2 and connect exclusively to Great Britain (GB) via four HVDC sub-sea cables, with an offshore route of approximately 4,000 km.

1.2.2 The Project proposes to facilitate the import of up to 3.6 Gigawatts (GW) of low-carbon electricity into the national grid. Once complete, the Project would be capable of supplying approximately 8 percent[1] (%) of GB's annual electricity needs. This would help the UK to diversify its energy supply, increase energy resilience and help support national carbon emission reduction targets. It would provide a reliable supply of electricity that seeks to address the needs of the GB power market, especially during periods of low offshore wind production around the UK. It would also help the UK to meet carbon reduction commitments, by increasing the proportion of electricity supplied by renewable sources.

1.2.3 The Project would utilise HVDC 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. Whilst the use of HVDC systems brings significant benefits, it requires the construction of converter stations at either end of the system to convert electricity from AC to DC at the generation point and then from DC to AC for connection to the national grid.

1.2.4 An overview of the Project is detailed within **Figure 1.1.1**, and comprises the following elements listed below. The elements which are the subject of this Scoping Report are those within the UK jurisdiction and within the scope of the Planning Act 2008.

- UK onshore:
  - Two converter stations to convert electricity from DC to AC electricity on land immediately to the west of Alverdiscott Substation site, which would include cut and fill earthworks and comprehensive landscaping to reduce visual impacts.
  - AC cables from the converter stations to the Alverdiscott Substation Connection Development.
  - The Alverdiscott Substation Connection Development to be constructed by NGET for onward connection to the GB high voltage electricity transmission network.

[1] Calculation assumes an annual national electricity demand of 45 GW (3.6 GW / 45 GW = 8%).

  - Onshore HVDC cables from the TJBs, via a route of approximately 14.5 km, to the Converter Site.
  - Local road upgrades to support the construction of the Proposed Development.
  - Temporary utility connections to supply construction compounds and permanent utility connections to support operation of the Converter Site.
  - Permanent diversions of existing utility connections within and adjacent to the Converter Site to facilitate construction on the site.
- UK offshore:
  - Offshore cable route (approximately 370 km), which would be buried in the seabed or laid on the seabed with protection.
- In the Territorial Waters and EEZ of Morocco, Portugal, Spain and France[2]:
  - Cable route of approximately 3,600 km buried in the seabed or laid on the seabed with protection.
- Morocco onshore:
  - Generation assets comprising approximately 7.5 GWp solar PV 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, 3.6 GW of power would be supplied to the national grid.
  - AC cables connecting the generation assets to the converter stations.
  - Converter stations to change electricity from AC to DC.
  - HVDC cables from the converter stations to the west coast of Morocco.
  - Transition joint to connect the onshore cables to the subsea cables.

1.3 The Applicant and EIA Team

1.3.1 The Applicant is a UK company with a mission to capture the power of nature to generate a near constant, low-cost energy supply and connect it to the point of consumption in real time. It has the vision of unlocking the potential for remote renewable energy generation to enable markets with high energy demand to achieve net zero emissions. Through the development of large-scale power infrastructure spanning land and sea, the Applicant aims to transmit reliable but flexible power from resource rich remote locations, where it can be most economically and sustainably generated at scale.

1.3.2 Wind and solar installations in the UK are an effective tool in reducing the UK's emissions. However, solar generation in the UK is low during winter when the demand for energy is highest, and wind output can vary greatly from week to week. Energy storage plays an important role in balancing out generation and demand throughout each day, but no existing technology can economically shift power between weeks or seasons.

1.3.3 RPS and APEM Group have been appointed by the Applicant to provide this Scoping Report for the Proposed Development. The scoping stage has included

[2] 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.

an initial review of the key environmental issues associated with the construction, operation and maintenance, and decommissioning of the Proposed Development to inform the Scoping Report. The EIA team responsible for drafting this report includes a number of onshore and offshore topic specialists.

1.3.4 In accordance with Regulation 14(4) of the 2017 EIA Regulations, as amended, the Environmental Statement (ES) will be prepared by competent experts. The relevant expertise and qualifications of those experts will be outlined within a statement of expertise, which will form an appendix to the ES.

1.4 Statutory Framework and Purpose of the Environmental Statement

Purpose

1.4.1 The purpose of this Scoping Report is to provide information on the Proposed Development and to allow for engagement with stakeholders on the approach and methodology for key topics to be addressed in the EIA process. In addition, scoping can be used to present the baseline data sources and assessment methodologies to be used to inform the EIA process. Guidance on EIA scoping from the European Commission sets out the following benefits (Banfi *et al.,* 2017):

- Ensures that key environmental issues to be addressed are identified at an early stage.
- Ensures resources are focused on the key environmental issues and further information is not required to be requested after the application for development consent is submitted.
- Ensures consultation with relevant consultees occurs at an early stage.
- Aids effective management and planning of resources and timescales for the production of the EIA.
- Allows for the identification of initial alternatives and mitigation measures being considered by the developers.

1.4.2 This Scoping Report has been prepared in support of a request for a Scoping Opinion from the Secretary of State in accordance with Regulation 10 of the 2017 EIA Regulations and the Planning Inspectorate Advice Note Seven: Environmental Impact Assessment: Preliminary Environmental Information, Screening and Scoping (The Planning Inspectorate, 2020a). In compliance with these regulations, this Scoping Report provides the following:

- A plan sufficient to identify the land.
- A description of the Proposed Development, including its location and technical capacity.
- An explanation of the likely significant effects of the development on the environment.
- Such other information or representations as the person making the request may wish to provide or make.

1.4.3 **Table 1.4.1** and **Table 1.4.2** summarise the information requirements and guidance set out in the 2017 EIA Regulations and Planning Inspectorate Advice Note Seven, and where these can be found in this Scoping Report.

Table 1.4.1: Scoping requirements of the 2017 EIA Regulations and where the information is included in the Scoping Report

EIA Regulation Requirement	Summary Content
A plan sufficient to identify the land.	**Section 1**: Introduction, of the Scoping Report includes a plan/map of the location of the Proposed Development (see **Figure 1.1.2** and **Figure 1.1.3**).
A description of the Proposed Development, including its location and technical capacity.	**Section 4**: Project Description, of the Scoping Report provides a description of the Proposed Development, including the proposed location of the Converter Site and associated temporary and permanent infrastructure.
An explanation of the likely significant effects of the development on the environment.	**Sections 7, 8** and **9**, of the Scoping Report provide a description of the potential likely significant effects on the environment arising from the Proposed Development.
Such other information or representations as the person making the request may wish to provide or make.	Further information is provided in **Section 10** and **Section 11**, of the Scoping Report, which includes proposed supporting technical information and identifies topics proposed to be scoped out of the ES.

Table 1.4.2: Information to be provided with a scoping request, as set out within the Planning Inspectorate Advice Note Seven

Planning Inspectorate Guidance	Summary Content
Proposed Development	
An explanation of the approach to addressing uncertainty where it remains in relation to elements of the Proposed Development (e.g., design parameters).	A Project Design Envelope (PDE) approach will be adopted for the assessment of the Proposed Development. This approach will allow for the Proposed Development to be assessed on the basis of maximum project design parameters (i.e., the worst-case scenario). Further details on the PDE approach are provided within **section 4.2.**
Referenced plans presented at an appropriate scale to clearly convey the information and all known features associated with the Proposed Development.	A site location plan has been provided on **Figure 1.1.2** and **Figure 1.1.3,** which provides the Proposed Development Scoping Boundary.
EIA Approach and Topic Areas	
An outline of the reasonable alternatives considered and the reasons for selecting the preferred option.	**Section 3:** Needs and Alternatives Considered, of the Scoping Report provides an outline of the alternatives considered, with reasons for the selection of the preferred option.
A summary table depicting each of the aspects and matters that are requested to be scoped out allowing for quick identification of issues.	A summary of the topics proposed to be scoped out are provided in **Table 12.1.4**.
A detailed description of the aspects and matters proposed to be scoped out of further assessment with justification provided.	A description of the topics proposed to be scoped out are included within tables in each topic-specific section of the Scoping Report, with justification provided (See **Sections 7, 8** and **9**).
Results of desktop and baseline studies where available and where relevant to the decision to scope in or out aspects or matters.	The results of desktop and baseline studies have been presented within the baseline environment sections of the relevant topic chapters (see **Sections 7, 8** and **9**, of the Scoping Report).

Planning Inspectorate Guidance	Summary Content
Aspects and matters to be scoped in, the report should include details of the methods to be used to assess impacts and to determine significance of effect e.g. criteria for determining sensitivity and magnitude;	The methodology to be used to assess the impacts is detailed within **section 5.5**, which includes the criteria for determining sensitivity and magnitude (see **Table 5.5.1** and **Table 5.5.3**) as well as the matrix used for assessment of significance (see **Table 5.5.4**).
Any avoidance or mitigation measures proposed, how they may be secured and the anticipated residual effects.	Embedded mitigation measures have been provided within **section 4.8** of the Scoping Report. The individual topic chapters also include further mitigation (see **Sections 7, 8** and **9,** of the Scoping Report**).**
Information Sources	
References to any guidance and best practice to be relied upon	The impact assessment methodology draws upon a number of EIA principles, regulations and guidance documents which are provided within **section 5.3**. Guidance is also included within the Relevant Policy, Legislation and Guidance sections of the topic chapters (see **Sections 7, 8** and **9,** of the Scoping Report**).**
Evidence of agreements reached with consultation bodies (for example the statutory nature conservation bodies or local authorities).	Appendix B includes notes of advice provided by Natural England, regarding Habitat Regulations Assessment for onshore elements of the Proposed Development. Furthermore, consultation is in progress and the submission of this Scoping Report forms part of this process.
An outline structure of the proposed ES.	An outline structure of the proposed ES is included within **Table 5.10.1**: Proposed structure of the ES.
Transboundary Effects	
At the same time as making a scoping request, the Applicant may also wish to provide a completed transboundary screening matrix dealing with the potential effects of the Proposed Development on other European Economic Area (EEA) States.	A transboundary screening matrix has been provided within **Appendix A**: Transboundary Impacts Screening of the Scoping Report.

Approach

1.4.4 The approach taken in the preparation of this Scoping Report has aimed to achieve the following objectives:

- To provide an overview of the baseline environment and the data collection and survey methodologies that will be implemented to inform the EIA baseline characterisation for each technical assessment.
- To propose topics and impacts to scope into the EIA process, drawing upon the existing evidence base and presenting topic-specific assessment methodologies where appropriate.
- To propose topics and impacts to be scoped out of the EIA process, drawing upon the existing evidence base where appropriate, where there is clear justification for doing so.

1.4.5 This approach will allow the EIA process to focus on those potential impacts which either have the potential to lead to a likely significant effect, or where uncertainty exists on potential effects, thereby supporting the development of a proportionate ES.

1.4.6 The PEIR and the ES, which will present the findings of the EIA process for the Proposed Development, will be informed by the Scoping Opinion provided by the Secretary of State, including responses from relevant statutory and non-statutory consultation bodies. Details of the proposed approach to stakeholder consultation are outlined in **Section 6:** Consultation Process, of the Scoping Report. The application for development consent, which will be accompanied by the ES, is planned to be submitted to The Planning Inspectorate (on behalf of the Secretary of State) in 2024.

1.4.7 The Applicant welcomes the opportunity for engagement with consultees and feedback on the Proposed Development and the scope (proposed content) of the ES.

Structure

1.4.8 The structure of this Scoping Report is presented within **Table 1.4.3**.

Table 1.4.3: Structure of the Scoping Report

Section	Topic	Summary of Content
1	**Introduction**	Background to the Proposed Development and the consenting approach; and outlines the purpose, approach and structure of the Scoping Report.
2	**Policy and Legislation**	Description of the policy and legislative context relevant to the Proposed Development.
3	**Need and Alternatives Considered**	Description of the site selection process, including the approach undertaken by the Applicant to identify the siting of the Proposed Development.
4	**Project Description**	Description of the design of the Proposed Development, based on the project design envelope and current understanding of the environment from initial site investigation studies.
5	**EIA Methodology**	Description of the proposed principles of the EIA process and the approach that will be applied in the ES to identify and evaluate the likely impacts and subsequently, evaluate the significance of effects, associated with the Proposed Development.
6	**Consultation Process**	Description of the consultation that has been carried out at the time of submission of the Scoping Report and the consultation that will be carried out in the pre-application phase.
7	**Proposed Technical Assessments – Onshore**	
7.2	Onshore Ecology and Nature Conservation	Overview of onshore ecology and nature conservation within the vicinity of the Proposed Development Scoping Boundary. Required for understanding of potential impacts to onshore ecology and nature conservation from construction, operation and maintenance and decommissioning.
7.3	Historic Environment	Overview of historic environment within the Proposed Development Scoping Boundary. Required for understanding of potential impacts to historic environment from construction, operation and maintenance and decommissioning.
7.4	Hydrology and Flood Risk	Overview of hydrology and flood risk within the Proposed Development Scoping Boundary. Required for understanding of potential impacts to hydrology and flood risk from construction, operation and maintenance and decommissioning.

Section	Topic	Summary of Content
7.5	Hydrogeology, Geology, and Ground Conditions	Overview of hydrogeology, geology and ground conditions within the Proposed Development Scoping Boundary. Required for understanding of potential impacts to geology, hydrogeology and ground conditions from construction, operation and maintenance and decommissioning.
7.6	Traffic and Transport	Overview of traffic and transport within the Proposed Development Scoping Boundary. Required for understanding of potential impacts to traffic and transport from construction, operation and maintenance and decommissioning.
7.7	Noise and Vibration	Overview of potential impacts of noise and vibration arising from the Proposed Development from construction, operation and maintenance and decommissioning.
7.8	Air Quality	Overview of air quality within the Proposed Development Scoping Boundary. Required for understanding of potential impacts to air quality from construction, operation and maintenance and decommissioning.
7.9	Land-use and Recreation	Overview of land use and recreation (including agriculture and rights of way) within the vicinity of the Proposed Development Scoping Boundary. Required for understanding of potential impacts to land use and recreation from construction, operation and maintenance, and decommissioning.
8	**Proposed Technical Assessments – Offshore**	
8.2	Benthic Ecology	Overview of the ecology of the seabed within the boundaries of the Proposed Development Scoping Boundary. Required for understanding of potential impacts to seabed ecology from construction, operation and maintenance and decommissioning.
8.3	Fish and Shellfish Ecology	Overview of the fish and shellfish ecology of the seabed within the boundaries of the Proposed Development Scoping Boundary. Required for understanding of potential impact to fish and shellfish ecology from construction, operation and maintenance and decommissioning.
8.4	Commercial Fisheries	Overview of commercial fisheries within the vicinity of the Proposed Development Scoping Boundary. Required for understanding of potential impacts to commercial fisheries from construction, operation and maintenance and decommissioning.
8.5	Marine Mammals	Overview of the marine mammals and sea turtles within the vicinity of the Proposed Development Scoping Boundary. Required for understanding of potential impacts to marine mammals and sea turtles from construction, operation and maintenance and decommissioning.
8.6	Shipping and Navigation	Overview of the baseline shipping and navigation within the vicinity of the Proposed Development Scoping Boundary. Required for understanding of potential impacts to shipping and navigation from construction, operation and maintenance and decommissioning.
8.7	Other Marine Users	Overview of other marine users within the vicinity of the Proposed Development Scoping Boundary. Required for understanding of potential impacts to other marine users from construction, operation and maintenance and decommissioning.
8.8	Marine Archaeology and Cultural Heritage	Overview of marine archaeology and cultural heritage within the vicinity of the Proposed Development Scoping Boundary. Supports understanding of impact to marine archaeology and cultural heritage from construction, operation and maintenance and decommissioning.
8.9	Physical Processes	Overview of the offshore physical environment (tidal elevations, currents, waves, bathymetry, geology, seabed sediments, suspended sediments and sediment transport) within the vicinity of the Proposed Development Scoping Boundary. Supports assessment of potential impacts to the

Section	Topic	Summary of Content
		offshore physical environment from construction, operation and maintenance and decommissioning.
8.10	Underwater Noise	Overview of approach to the assessment of underwater noise arising from the construction, operation and maintenance and decommissioning of the Proposed Development. Required for understanding of potential impact to underwater noise sensitive receptors.
9	**Proposed Technical Assessments – Combined Onshore and Offshore**	
9.2	Climate Change	Overview of climate change receptors for the Proposed Development. Required for understanding of potential impacts of the Proposed Development on the climate during construction, operation and maintenance, and decommissioning, as well as the vulnerability of the Proposed Development to future climate change.
9.3	Landscape, Seascape and Visual Resources	Overview of landscape and visual resources within the vicinity of the Proposed Development Scoping Boundary. Required for understanding of potential impacts to landscape and visual resources from construction, operation and maintenance and decommissioning.
9.4	Socio-economics	Overview of socio-economics within the vicinity of the Proposed Development Scoping Boundary, including tourism. Required for understanding of potential impacts to socio-economics from construction, operation and maintenance and decommissioning.
9.5	Human Health	Overview of human health within the vicinity of the Proposed Development Scoping Boundary. Required for understanding of potential impacts to human health from construction, operation and maintenance and decommissioning.
10	**Proposed Technical Assessments – Supporting Technical Information**	
10.2	Topics covered as a technical appendix	Overview of the topics relevant to the Proposed Development where a technical appendix only will be provided to support the relevant technical chapters of the ES.
10.3	Topics Covered Elsewhere in the ES	Overview of topics of relevance to the Proposed Development that will be covered in other technical chapters of the ES and are not proposed to be subject to standalone chapters or appendices within the ES.
11	**Topics Proposed to be Scoped out of the ES**	Justification for scoping out relevant topics for the Proposed Development.
12	**Summary**	Presents a summary of the potential impacts which are proposed to be scoped into and out of the EIA process, relevant to the Proposed Development.
13	**References**	Provides a summary of the references included within each Section or section of the Scoping Report.
	Appendices	Includes the following appendices: • Appendix A: Transboundary Impacts Screening. • Appendix B: Discretionary Advice Service Notes for Onshore Ecology. • Appendix C: Offshore Ornithology.

2 POLICY AND LEGISLATION

2.1 Legislative Context and Planning Policy

Net Zero: Opportunities for the Power Sector

2.1.1 In June 2019, the Government raised the UK's ambition of tackling climate change by legislating a net-zero Greenhouse Gas (GHG) 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.

2.1.2 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 and 237 GW of renewable capacity, be in operation by 2050.

2.1.3 The National Grid Electricity System Operator (NGESO) report, Future Energy Scenarios, published in July 2023 considers different scenarios for the future of the energy system up to 2050. It demonstrates that it is possible for the UK to reach net zero by 2050, however, it will be critical to deliver renewable technologies to effectively decarbonise the energy system.

2.1.4 These strategies culminated in the publication of the latest suite of draft Energy National Policy Statements (NPSs) by the Government in November 2023 (see below) which requires an increase in installed capacity of five times existing capacity, together with the identification of all renewable and low carbon technologies as Critical National Priority infrastructure.

2.1.5 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

2.1.6 The Net Zero Strategy (HM Government, 2021), 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 […]".

2.2 Key Legislation

Planning Act 2008

2.2.1 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.

2.2.2 Section 14 of the Planning Act 2008 defines types of projects classified as NSIPs, subject to the criteria and thresholds set out in sections 15 to 30A for different types of infrastructure.

2.2.3 In addition, Section 35(1) of the Planning Act 2008 sets out that '*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.

2.2.4 On 30 August 2023, the Applicant sought direction from the Secretary of State for Energy Security and Net Zero (the 'Secretary of State') under section 35(1) of the Planning Act to confirm that the two proposed UK converter stations for the overall Project should be treated as development for which development consent under the Planning Act 2008 is required.

2.2.5 A direction was duly made on 26 September 2023 confirming the Secretary of State's conclusion that the Project is nationally significant and directed that development consent is required for the converter stations. Therefore, the Applicant is now pursuing a Development Consent Order for the Proposed Development, which focuses on the UK elements of the Project. 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.'

2.2.6 Therefore, the Proposed Development is to be treated as development for which development consent is required.

2.2.7 The application for development consent will cover all offshore elements of the Proposed Development within the UK EEZ, as well as the onshore elements of the Proposed Development. Applications for development consent are examined by the Planning Inspectorate and determined by the Secretary of State.

2.2.8 Alongside local planning policy, in accordance with Section 104(2) of the Planning Act 2008, in determining applications for consent, the Secretary of State may have regard to:

- any national policy statement which has effect in relation to development of the description to which the application relates;
- the appropriate marine policy documents;
- any local impact report;

- any matters prescribed in relation to development of the description to which the application relates; and
- any other matters which the Secretary of State thinks are both important and relevant to its decision.

2.2.9 Section 104(3) highlights the importance of NPSs in relation to decision making, requiring applications to be decided in accordance with any relevant NPS, except where any of the following apply:

- the decision would lead to breaching of international obligations or statutory duty;
- the decision would be unlawful by virtue of any enactment;
- the adverse impact of the development is considered to outweigh its benefits; or
- a condition prescribed for deciding an application otherwise than in accordance with a national policy statement would be met.

2.2.10 This Scoping Report takes account of the national significance of the Proposed Development and that the Secretary of State has directed that it is to be treated as development for which development consent is required.

National Policy Statements

2.2.11 The following NPSs are relevant to the Proposed Development:

- Overarching NPS for Energy (EN-1) (DECC, 2011a; DESNZ, 2023a);
- NPS for Renewable Energy Infrastructure (EN-3) (DECC, 2011b; DESNZ, 2023b); and
- NPS for Electricity Networks Infrastructure (EN-5) (DECC, 2011c; DESNZ, 2023c).

2.2.12 The NPSs were originally published in 2011 and were updated in 2023. The suite of newly published versions were made public in November 2023 as a draft version, and later adopted in early January 2024.

2.2.13 The recently adopted versions of the NPSs will be given full weight and replace previous versions mentioned in the below technical chapters at PEIR stage due to the recent adoption coming at a late stage of the Scoping Report Development which will later feed into the DCO.

2.2.14 **Table 2.2.1** sets out the key aspects from the NPSs relevant to the Proposed Development and the need for and approach to consenting such infrastructure. Where relevant, the EIA process will consider the requirements of the NPSs.

Table 2.2.1: Summary of relevant NPS policy

NPS	Key Aspects
NPS EN-1	Overarching energy NPS, setting out broad basis for considering applications for consent. Sets out the Government's policy for the delivery of major energy infrastructure.
	NPS EN-1 acknowledges that '*we need a range of different types of infrastructure to deliver these objectives. This includes the infrastructure described within this NPS but also more nascent technologies, data, and innovative infrastructure projects consistent with these objectives*' (paragraph 3.2.2).

NPS	Key Aspects
	Paragraph 3.3.27 notes that renewable energy sources are intermittent and, as a result, backup sources are required when the availability of intermittent renewable sources is low.
	States that the Secretary of State should assess all applications covered by this NPS on the basis that the government has demonstrated that there is a need for those types of infrastructure which is urgent (paragraph 3.2.6) and that substantial weight should be given to this need (paragraph 3.2.7). Specifically, states that there is an urgent need for new electricity network infrastructure to meet our energy objectives (paragraph 3.3.59).
	Highlights that the '*Government has concluded that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure*.' (paragraph 3.3.62)
	Paragraph 4.1.5 of the NPS EN-1 states that in considering any proposed development, and in particular when weighing its adverse impacts against its benefits, the Examining Authority should take into account the following: • Its potential benefits, including its contribution to meeting the need for energy infrastructure, job creation and any long-term or wider benefits; and • Its potential adverse impacts, including any long-term and cumulative adverse impacts, and any measures to avoid, reduce or compensate for any adverse impacts.
	Sets out general assessment principles in relation to Environmental Impact Assessment (EIA) and key environmental topic areas. Some key principles include the following: • '*To consider the potential effects, including benefits, of a proposal for a project, the applicant must set out information on the likely significant environmental, social and economic effects of the development, and show how any likely significant negative effects would be avoided, reduced, mitigated or compensated for, following the mitigation hierarchy*.' (paragraph 4.3.4). • '*For the purposes of this NPS and the technology specific NPSs the ES should cover the environmental, social and economic effects arising from pre-construction, construction, operation and decommissioning of the project*.' (paragraph 4.3.5).
NPS EN-3	NPS for renewable energy infrastructure. Recognises the urgent need for new electricity generating capacity to help meet energy targets, such as net zero by 2050.
	The importance of the generation of electricity from renewable sources is stated in Paragraph 1.1.2 of NPS EN-3: '*Electricity generation from renewable sources of energy is an essential element in the transition to net zero and meeting our statutory targets for the sixth carbon budget*'.
	This NPS will apply to offshore transmission infrastructure projects in English waters which are directed into the NSIP regime under section 35 of the Planning Act 2008. This could include interconnectors, Multi-Purpose Interconnectors (MPIs) or 'bootstraps' to support the onshore network which are routed offshore (paragraph 2.6.3).
	Highlights the use of the 'Rochdale Envelope' method (referred to as the 'maximum design scenario' in this Environmental Statement), which allows for the maximum adverse and positive scenario to be assessed in the EIA process, with DCO granted on this basis (section 2.6).
	Sets out considerations for assessment at paragraphs 3.8.302-3.8.307, with reference to EN-5 for onshore elements.
NPS EN-5	NPS for electricity networks (including grid connections for wind farms). The infrastructure covered by the NPS for electricity networks includes transmission systems, distribution systems, and associated infrastructure (e.g., substations, converter stations, etc.).
	States that the security and reliability of the UK's energy supply, both currently and in the future, is heavily dependent on an electricity network that will allow for generation, storage, and interconnection infrastructure to meet the required rapid increase in electricity demand for the transition to net zero (paragraph 1.1.1).
	In the assessments of their designs, applicants should demonstrate how environmental, community and other impacts have been considered and how adverse impacts have

NPS	Key Aspects
	followed the mitigation hierarchy and how enhancements to the environment post construction will be achieved including Biodiversity Net Gain (BNG) and wider environmental improvements in line with the Environmental Improvement Plan and environmental targets (paragraph 2.14.2).
	Sets out assessment principles in relation assessment for electricity networks (sections 2.9-2.12).

National Planning Policy Framework

2.2.15 While not determinative under the Planning Act 2008, it is a document that may be important and relevant for the purposes of the Secretary of State's decision-making. The NPPF also provides relevant context for individual assessment topics.

2.2.16 The NPPF was published by the Ministry of Housing, Communities and Local Government (formerly the Department of Communities and Local Government) in March 2012 and was updated in July 2021 and then again in September and December 2023. The NPPF sets out the Government's planning policies and how these should be applied in England. At the time of writing the topic chapters of this Scoping Report, the December 2023 version was not available. Topic chapters will be updated to reflect the December 2023 of the NPPF, where relevant, in the PEIR and ES.

2.2.17 The NPPF does not contain specific policies for NSIPs; however, Chapter 2 of the NPPF, 'Achieving sustainable development', sets out that the planning system should contribute to the achievement of sustainable development, considering economic, social, and environmental roles.

2.2.18 Paragraph 157 of the NPPF states:

'The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure'.

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

2.2.19 The Infrastructure Planning (EIA) Regulations 2017 (the EIA Regulations) govern the EIA process relevant to NSIPs. Schedule 1 of the EIA Regulations lists those projects for which an EIA is required, and Schedule 2 lists projects which may be considered an EIA development, based on the selection criteria provided in Schedule 3 on characteristics of the development, its location and the types and characteristics of the potential impacts.

2.2.20 None of the components which make up the Proposed Development are explicitly identified under Schedule 1 or Schedule 2 of the EIA Regulations. However, the Applicant proposes to undertake an EIA, having considered the criteria in Schedule 3 regarding the characteristics of the development (size of the development and cumulation with other existing and/or approved development) and its location (environmental sensitivity of geographical areas likely to be

affected by the development) as such the Applicant will be submitting an ES with the DCO application, which will render the Project as EIA development under Regulation 6 of the EIA Regulations.

2.2.21 Part 5 of the EIA regulations sets out the EIA process. Regulation 5(2) states that the EIA:

'must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development'.

2.2.22 It states that the EIA must undertake the above in relation to several factors, including the following:

- Biodiversity.
- Land and Soils.
- Water.
- Climate Change.
- Cultural Heritage.
- Landscape and Visual.

Marine and Coastal Access Act 2009

2.2.23 A spatial planning system for the management of the marine environment was introduced by the Marine and Coastal Access Act 2009 (MCCA, 2009). This introduced a requirement to obtain a Marine Licences for works at sea.

2.2.24 The Marine Management Organisation (MMO) is responsible, under Part 4 of the MCAA, for administering marine licensing of activities related to the construction or removal of any substance or object in UK territorial waters and also for regulating activities where they are undertaken outside of the UK territorial waters, e.g., within the UK EEZ. They do so by issuing a Marine Licence.

2.2.25 Section 149A of the Planning Act 2008 enables a DCO to include provision deeming a marine licence to have been issued under Part 4 of the MCAA. The approach and provisions around marine licensing will be discussed with the MMO.

2.2.26 In addition, Section 126 of the MCAA 2009 sets out that where a public authority has the function of determining an application that is capable of affecting (other than insignificantly) the protected features of a Marine Conservation Zone (MCZ) or the processes on which those features depend, then they have a duty to consider MCZs during their decision making.

UK Marine Policy Statement 2011

2.2.27 The UK-wide Marine Policy Statement (MPS) was published in March 2011 under the Marine and Coastal Access Act 2009 to provide a framework for marine spatial planning, specifically for preparing Marine Plans and taking decisions that affect the marine environment (Defra, 2020). The MMO has taken a regional approach to developing marine plans in English waters.

2.2.28 The Marine and Coastal Access Act 2009 requires all public authorities to take authorisation or enforcement decisions that affect or might affect the UK marine area in accordance with the MPS and the relevant Marine Plans.

2.2.29 The MPS provides that the following issues should be considered by decision-makers when examining and determining applications for energy infrastructure.

- The national level of need for energy infrastructure, as set out in NPS EN-1.
- The positive wider environmental, societal and economic benefits of low-carbon electricity generation and carbon capture and storage as key technologies for reducing carbon dioxide emissions.
- The potential impact of inward investment in offshore wind, wave, tidal stream and tidal range energy-related manufacturing and deployment activity, as well as the impact of associated employment opportunities on the regeneration of local and national economies. These activities support the objective of developing the UK's low-carbon manufacturing capability (MPS, paragraph 3.3.4).

Related Assessments

2.2.30 In addition to the EIA, the Proposed Development will be assessed in accordance with the other regulatory regimes where they apply. These include the Conservation of Habitats and Species Regulations 2017, as amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (hereafter 'the Habitats Regulations') and the Conservation of Offshore Marine Habitats and Species Regulations 2017.

Habitats Regulations

2.2.31 The Habitats Regulations require the Secretary of State to consider whether a plan or project has the potential to have an adverse effect on the integrity and features of a site which is part of the National Site Network or a European Site. 'European Sites' include Special Protection Areas (SPA) and Special Areas of Conservation (SAC). The Habitats Regulations require an Appropriate Assessment if a project is likely to have a significant effect on a National Site Network site or a European Site.

Environment Act 2021

2.2.32 The Environment Act 2021 sets out targets, plans and policies for environmental protection in England.

2.2.33 Schedule 15 of the Environment Act 2021 sets out provisions for BNG and amends the Planning Act 2008. The current consultation on implementation of Schedule 15 indicates that a single 'core' BNG statement may be developed, with a view to incorporating the requirements into updated NPSs (Department for Environment, Food and Rural Affairs (Defra), 2022). The stated intention is for the requirements of the Environment Act 2021 in relation to biodiversity to be implemented no later than 2025 for Development Consent Orders.

2.2.34 It is noted that the requirement would not initially apply to elements of projects which are located in the marine environment (such as those taking place entirely below the low water mark) (Defra, 2022).

The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017

2.2.35 These regulations set out objectives for surface and groundwater bodies, including water quality with the aim of improving the water environment. Objectives are set for waterbodies in terms of their status (see **Section 7.5**: Hydrogeology, Geology and Ground Conditions, of the Scoping Report).

Flood and Water Management Act 2010

2.2.36 This Act came into effect in April 2010, with an aim to create a simplified and more effective means of managing flood risk and coastal erosion, as well as improving the sustainability of water resources.

2.2.37 Schedule 3 of the Act was introduced to establish an approving body for sustainable drainage at the county and unitary level, ensuring its delivery is mandatory. This Schedule was not enacted with the rest of the Act. However, in July 2022, it was announced that Schedule 3 would be enacted.

Environmental Permitting (England and Wales) Regulations 2016

2.2.38 The Environmental Permitting Regulations aim to ensure that authorised activities and their discharges do not endanger the environment or human health.

Local Planning Policy

2.2.39 The Local Development Plans do not carry the same weight under the Planning Act 2008 regarding decision-making on nationally significant infrastructure as they do when determining planning applications under the Town and Country Planning Act 1990. The NPSs are the primary consideration for nationally significant applications. Nevertheless, the Development Plan is still a matter which can be considered important for the consideration of nationally significant infrastructure, although in the event of any conflict, the NPS prevails.

2.2.40 The local planning policies will be considered through the EIA process where relevant.

2.2.41 In addition, relevant supplementary planning documents will also be considered where appropriate. Where study areas for individual topics extend beyond the Torridge District Council administrative area, planning documents relevant to additional administrative areas within the study areas will be taken into account.

North Devon and Torridge District Council Adopted Local Plan (2018)

2.2.42 The North Devon and Torridge District Council Local Plan was adopted in October 2018 and sets out the vision, objectives, spatial strategy, and policies for development in the area of North Devon and Torridge up to 2031.

2.2.43 Policy ST02 '*Mitigating Climate Change' notes that "Development will be expected to make a positive contribution towards the social, economic, and environmental sustainability of northern Devon and its communities while minimising its*

environmental footprint by…promoting opportunities for renewable and low-carbon energy generation whilst conserving and enhancing the natural and built environment".

2.2.44 The local plan demonstrates that as a region, it is identified as the UK's first Marine Energy Park to speed up the progress of marine technology development. Paragraph 4.49 states:

"Onshore facilities and operations required to maintain and service large-scale offshore renewable energy proposals will be supported within an existing port, where the port's existing operations and responsibilities are not compromised […]. Impact and proposed mitigation on environmental and heritage assets from landfall for cables from offshore renewable energy generation will need to be balanced against potential social, environmental, and economic benefits, recognising the national and/or international importance of some environmental assets".

3 NEED AND ALTERNATIVES CONSIDERED

3.1 Need for the Proposed Development

International and UK-Wide Energy and Climate Change Policy

Kyoto Protocol

3.1.1 The UK is a signatory to the Kyoto Protocol, an international agreement for the implementation of the United Nations Framework Convention on Climate Change (UNFCCC). The Kyoto Protocol commits industrialised countries and economies to limiting and reducing GHG emissions in accordance with agreed individual targets. The United Nations Framework Convention asks those countries to adopt policies and measures on mitigation and to report periodically. The protocol came into effect in 2005 and its commitments were transposed into UK law by the Climate Change Act 2008, as amended.

3.1.2 The protocol initially placed a duty on the UK to ensure that the net UK carbon account for the year 2050 was 80% lower than the 1990 baseline. Due to increasing awareness of the need for more urgent action, this was revised to a 'net zero target' of GHG emissions for the year 2050 to be 100% lower than the 1990 levels by the Climate Change Act 2008 (2050 Target Amendment) Order 2019.

The United Nations Adoption of the Paris Agreement (COP21)

3.1.3 In December 2015, 194 parties, including the UK, adopted the first universal, legally binding global climate deal at the Paris climate conference (COP21). The Paris Agreement (United Nations, 2015) seeks to reduce global GHG emissions and to limit the global temperature increase in this century to 2°C, while pursuing the means to limit this further to 1.5°C. In order to achieve the temperature goal, it was agreed that parties would aim to reach global peaking of GHG emissions as soon as possible.

3.1.4 The Paris Agreement (2015) was ratified by the UK Government in November 2016 and now forms part of UK Government Policy.

The Glasgow Pact COP26 and COP27

3.1.5 At the Glasgow COP26 summit in November 2021, parties voted to adopt the draft COP26 report (UNFCCC, 2021), known as the Glasgow Climate Pact. This included commitments to phase down the use of coal and supports a common timeframe and methodology for national commitments on emissions reductions. Countries were tasked to return in 2022 with more ambitious 2030 emissions reductions targets, which would keep temperature rise within 1.5°C this century rather than 2°C. The COP27 summit in November 2022 made little further progress on the emissions reduction ambitions discussed at COP26.

The UK Climate Change Act 2008 (as amended)

3.1.6 In November 2008, the Climate Change Act became law requiring the UK to reduce carbon dioxide (CO_2) emissions. Under this legislation, the UK committed to a net reduction in GHG emissions of 80% by 2050 against the 1990 baseline in line with the commitments of the Kyoto Protocol.

3.1.7 This was updated in 2019 to provide a legal basis for the target of securing a 100% reduction of GHG emissions to be achieved by 2050 (compared to 1990 levels).

3.1.8 The Climate Change Act 2008 also established the Climate Change Committee (CCC), which advises the UK and devolved governments on emissions targets and reports to Parliament on progress made in reducing GHG emissions and preparing for and adapting to the impacts of climate change. In May 2011, the CCC published the Renewable Energy Review (CCC, 2011), which explores the potential for renewable energy development and its role in achieving emissions reduction targets. The Renewable Energy Review states that renewable energy developments will provide a significant contribution to the decarbonisation of the national grid by 2030.

3.1.9 The CCC has since produced six carbon budgets, covering 2008 to 2037. These carbon budgets represent a limitation on the total quantity of GHG emissions to be emitted over the five-year period. The sixth carbon budget is the most recent, covering 2033 to 2037 (CCC, 2020a).

The UK Clean Growth Strategy 2017

3.1.10 In the context of the UK's legal requirements under the Climate Change Act, the UK's approach to reducing emissions aims to meet those requirements at the lowest possible net cost to UK taxpayers, consumers, and businesses; and to maximise the social and economic benefits for the UK from this transition. The government also aims to phase out the installation of high carbon fossil fuel heating using oil and coal in new and existing off-grid buildings.

The Sixth Carbon Budget: The UK's Path to Net Zero 2020

3.1.11 In line with the recommendation from the CCC, the UK has committed to reducing emissions by 78% by 2035 compared to 1990 levels (CCC, 2020a).

3.1.12 Meeting the recommended budget will require major investment, with the upscaling of low carbon markets and supply chains. These investments should also have climate resilience in mind to account for the impacts of future climate change. Key objectives should be:

- reducing demand and improving efficiency by requiring changes that will reduce carbon-intensive activities and the improvement of efficiency in the use of energy and resources;
- take-up of low carbon solutions and phase out fossil fuel generation by 2035;
- expansion of low carbon energy supplies including increasing renewables to 80% of generation by 2050; and

- electricity generation that will require a significant expansion of low carbon generation, including low cost renewables, with more flexible demand and storage.

3.1.13 The budget report also breaks the economy down into sectors and provides emissions projections for each, these show the necessary decarbonisation trends that must be attained to reach net zero. It is recommended that this will be achieved by fuel switching, carbon capture and storage, and improvements to resource and energy efficiency.

The HM Government Energy White Paper – Powering our Net Zero Future 2020

3.1.14 Following the Prime Minister's ten-point plan for a green revolution (HM Government, 2020a), and National Infrastructure Strategy (HM Government, 2020b), the White Paper (HM Government, 2020c) marks a significant milestone in the UK's net-zero transition, setting a net-zero target by 2050 and outlining how this may be achieved. It relates to the generation, supply and use of energy with the drive towards net zero by 2050 at its core, along with energy efficient buildings and lower household bills. It signals a decisive move away from fossil fuel generation and highlights how planned Government investment has the potential to leverage billions of pounds more in private sector funding and support for over 250,000 jobs in the green economy by 2030.

UK Net Zero Strategy: Build Back Greener 2021

3.1.15 Building on the Energy White Paper and the requirements of the Climate Change Act 2008 (2050 Target Amendment) Order 2019, the Government published its Net Zero Strategy in 2021 (HM Government, 2021). This sets out the long-term plan to end the UK's contribution to man-made climate change by 2050. A key policy in the net zero strategy includes:

'by 2035 the UK will be powered entirely by clean electricity, subject to security of supply.'

3.1.16 The Strategy proposed that the UK should lead the way in meeting the commitments made at COP26.

The UK Energy Security Strategy

3.1.17 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.

3.1.18 On 4 April 2023, the UK Government published a policy paper, 'Powering Up Britain: Energy Security Plan', under the Renewables investment section, the policy paper make a direct reference to the Xlinks Project, as stated below,

'*As we set out in the 'British Energy Security Strategy', we are actively exploring the potential for international projects to provide clean, affordable and secure power. For example, the government is interested in the Xlinks project, a proposed large scale onshore wind, solar and battery electricity generation site in*

Morocco that would exclusively supply power to the GB grid via high voltage direct current subsea cables. The government is considering – without commitment – the viability and merits of the proposal to understand if it could contribute to the UK's energy security.'

The Need for Renewable Generation Diversity

3.1.19 The UK is demonstrably actioning its commitment to the global ambition of achieving net zero emissions by 2050, both leading in the rapid decarbonisation of its own economy and by corralling international action to fulfil the Paris Climate Agreement. To reach a fully decarbonised power sector by 2035, the UK must transform UK's energy system, while ensuring it remains reliable and affordable for industry and households. Only then can its other carbon intensive sectors, such as transport and heating, decarbonise fast enough to achieve a net zero economy by 2050.

3.1.20 There is a growing body of UK energy and climate change international commitments, law, policy, and guidance which highlights an urgent need for new energy generation infrastructure, particularly from renewable sources such as solar. Alongside this drive for new energy generation, the UK Government has committed to achieving net zero greenhouse gas emissions by 2050 and decarbonisation of the energy sector by 2035.

3.1.21 Government's Powering Up Britain strategy (updated April 2023) concludes that an acceleration of the deployment of renewables is critical to the delivery of the Government's plans: "Our goal is to develop up to 50 GW of offshore wind by 2030 and to quintuple our solar power by 2035" [p7], noting that 14 GW of solar was already installed in the UK at the time of writing the report.

3.1.22 Wind and Solar generation is therefore a critical element of the plan to decarbonise the UK electricity sector with urgency and is already a leading low-cost generation technology in the UK. The national need for solar generation is urgent and the capacity required is significantly greater than the capacity of projects currently understood to be in development, therefore the Government is exploring the potential of international projects.

3.1.23 Offshore wind is core to this transition but comes with a level of instability and system vulnerability. Output can vary greatly from week to week and often periods of the highest wind generation occur during weakest electricity demand and vice versa, leading to price spikes. Electricity interconnectors facilitate the efficient cross-border trading of electricity. However, it is not clear that generation connected to our neighbours' electricity networks will always be available to British consumers at an affordable price when required. Remote generation and HVDC connections between distant geographic regions with uncorrelated weather systems will be more effective at addressing imbalances of supply and demand over longer time periods.

3.1.24 The recent UK New Energy Security Strategy could lead to 95% of the UK's electricity coming from low-carbon sources by 2030 ahead of the existing aim to decarbonise the sector by 2035. It increased the target for offshore (wind) generation to 50 GW by 2030. Direct HVDC connection from remote renewable generation provides three important benefits to the national energy requirements, affordability, sustainability and security, as described further below.

Affordability

3.1.25 Through connection of the UK direct to the dedicated facilities in Morocco, the Project would help create downward pressure on wholesale electricity prices. As with other low carbon projects, the volumes entered into the market by the Project would regularly be priced below the marginal cost units on the system today. Therefore, electricity wholesale market auctions would clear, on average, at a lower price due to the Project (all other things being equal).

Sustainability

3.1.26 The need to reduce GHG emissions in order to limit global temperature rises has resulted in the growth of significant volumes of low carbon generation around the world and plans for considerably more. Much of this generation is variable in nature and often is remote from or at the extremity of the established high voltage grid. Direct HVDC connection from other areas can both assist with the variability of local renewable generation and facilitate the connection and integration of more renewable capacity.

3.1.27 Morocco benefits from ideal solar and wind resources. It has the third highest Global Horizontal Irradiance (GHI) in North Africa, which is 20% greater than Spain's GHI and over twice that of the UK. This provides production profiles that address the needs of the GB power market, especially during periods of low offshore wind production. Over the last 10 years Morocco has become an international leader in renewable energy and a forerunner in the worldwide development of large and innovative renewable energy projects. Additionally, in terms of wind resources, the location of the wind farms in Morocco benefits from high levels of reliable Atlantic Wind, blowing at consistent times of the day and seasonally. This makes the location in Morocco more beneficial than the UK which is part of a different weather system and has a different wind system on a daily and seasonal basis.

3.1.28 The Project would unlock the potential of remote renewable energy and enable the UK to diversify its energy supply, increase resilience and help support national carbon ambitions.

Security

3.1.29 Incidences such as restrictions to gas supplies by Russia have brought a focus onto the security of Europe's energy supply.

3.1.30 Electricity security in UK and the ability to meet peak electricity demand, has been reduced through several factors:

- the closure of controllable fossil fuel generation (for economic or regulatory reasons);
- the closure of nuclear plants as they reach the end of their asset life;
- the replacement of fossil fuel and nuclear generation with large scale renewables with varying output; and,
- the lack of new controllable power plant being constructed (either for economic reasons or the time it takes to permit, finance and build).

3.1.31 With the generation infrastructure located in Morocco it would be capable of supplying approximately 8% of UK's annual electricity needs helping to meet carbon reduction commitments as well as diversifying and securing its energy supplies.

3.1.32 Alongside the consistent output from its solar panels and wind turbines, an onsite battery facility in Morocco would provide sufficient storage to reliably deliver a dedicated, near-constant source of flexible and predictable clean energy for UK each day, designed to complement other renewable energy already generated across the UK.

3.1.33 The Project would indirectly improve the security of GB electricity supply by diversifying its sources.

Overall Need – Conclusion

3.1.34 There is an urgent need for new electricity generating capacity to meet the UK's energy objectives. The UK Government has identified that demand for electricity is likely to increase significantly over the coming years and could more than double by 2050. Reflecting this, the UK's Net Zero Strategy, published in October 2021, commits to action so that by 2035, the country's electricity will come from low carbon sources, subject to security of supply, whilst meeting a 40-60% increase in demand (HM Government, 2021).

3.1.35 The British Energy Security Strategy, published in April 2022, also identifies the role renewable energy generation can play in delivering a to deliver a more independent, more secure energy system and supporting consumers to manage their energy bills (BEIS and Prime Minister's Office, 2022).

3.1.36 To reach a fully decarbonised power sector by 2035, the UK must transform Great Britain's energy system at pace, while ensuring it remains reliable and affordable for industry and households.

3.1.37 The Project has an important role to play in this transformation. It would be entirely powered by solar and onshore wind energy combined with a battery storage facility located in Morocco. Morocco benefits from ideal solar and wind resources: its Global Horizontal Irradiance (GHI) is more than double that of the UK and its shortest winter days offer more than 10 hours of sunlight. This helps in providing a reliable supply of electricity that helps address the needs of the UK power market, especially during periods of low offshore wind production. The inclusion of a 22.5 GWh/5 GW battery storage facility alongside the solar and wind generation in Morocco provides confidence that the power generated can be stored and delivered to Britain at the times when it is most needed.

3.1.38 The Project would therefore 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. Crucially, this can take place within the timeframe identified by the Government for transitioning to generating all electricity from low carbon sources.

3.2 Consideration of Alternatives

Introduction

3.2.1 Regulation 14(2)(d) of the EIA Regulations states that an ES should include:

"*a description of the reasonable alternatives studied by the applicant, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment*".

3.2.2 Section 9.3 of the Planning Inspectorate's Advice Note Seven states that a good ES is one that "*explains the reasonable alternatives considered and the reasons for the chosen option taking into account the effects of the Proposed Development on the environment"*. The ES will, therefore, include a description of the reasonable alternatives that have been considered, including a clear understanding as to the main reasons for choosing the selected option. This includes a comparison of the environmental effects. In terms of the reasonable alternatives assessment, this will focus on the site selection process, design layouts/opportunities within the Proposed Development, the alternative technologies, and finally the sizing and scale of the chosen infrastructure.

3.2.3 As noted above, the consideration of siting options and alternatives, including design refinement, is iterative during the EIA process and, therefore, this process is still ongoing. This section of the Scoping Report provides an overview of the process to date for the Proposed Development. Further details of the options considered and the reasons for the option selected, taking into account environmental effects, will be provided within the PEIR and ES.

3.2.4 The consideration of alternatives and design evolution will be undertaken with the aim of avoiding and/or reducing significant adverse environmental effects, maintaining operational efficiency and cost-effective design solution. All while considering other relevant matters such as available land and planning policy.

Do Nothing Approach

3.2.5 The challenges that the UK faces regarding climate change demonstrate that more renewable energy is required. The Proposed Development offers a safe and secure energy supply to support this aforementioned challenge.

3.2.6 In the absence of the Proposed Development, the unsatisfied national demand for renewable energy would continue to grow. This would make meeting the UK Government's climate change objectives more difficult by inhibiting future reductions in GHG emissions. As a result, the progress towards the UK targets to become net zero in all GHGs by 2050 will be negatively impacted. However, the Proposed Development would help ensure that the UK does not need to over-rely on temperamental wind and UK solar inefficiencies, therefore contributing positively to these objectives.

3.2.7 The Applicant has therefore not considered a 'do-nothing' scenario.

Constraints Analysis

3.2.8 The design work completed to date for the Proposed Development, and the UK project location, has focussed on identifying constraints/key receptors which are

relevant to the Proposed Development. The analysis of constraints is a key tool in the decision making and can help 'avoid' and 'reduce' potential impacts on environmental, engineering, and technical receptors from the outset of the design process. The main constraint types identified within the process are surrounding the technical, consenting, and commercial constraints topics.

3.2.9 The information used within these assessments is publicly accessible, alongside site surveys and desk-based research. This early design work has been used in informing the scope of the EIA.

3.2.10 The size, scale, and preferred location for the key features of the Proposed Development will continue to require some careful consideration as the design process evolves over the course of the application. The early work has focused on identifying suitable locations for the three main elements of the Proposed Development, including the following:

- Offshore Development.
- Onshore Cable Route.
- Onshore Converter Stations.

3.2.11 The approach to identifying and assessing alternative sites and routes has ensured integrated and iterative consideration of potential impacts on the environment and local communities alongside technical and engineering factors.

3.2.12 The Proposed Development has also been considered against national and local planning policies. With the overall aim of this approach being to identify sites or routes which best balance these factors in order to establish the preferred landfall and converter stations sites and preferred cable route corridors in which the Proposed Development will be finalised.

Onshore Development

3.2.13 During the initial assessment phase, a long list of potential landfalls options were identified and formed the basis of the assessment. The potential landfall options were refined following further assessment, considering the following aspects:

- Distance from the Grid Connection Point.
- The suitability of location for Horizontal Directional Drilling (HDD) operations.
- Avoiding steep topography.
- Environmental constraints both along the coast and on route to onshore connection point.
- Accessibility of landfall site.

3.2.14 It should be noted that these processes and assessments are continuing as part of the development of the scheme which will be subject to consultation. Further information on the reasonable alternatives considered will be provided in the PEIR and subsequent ES, and other documents supporting the DCO application. In order to help guide this process, specific themes have been recognised that will support the process of design for the Proposed Development. Some of these processes mentioned include the following:

- Ecology/Biodiversity – Consideration of local designations, protected habitats and species.

- Landscape and Visual – Consideration of local landscape character and visual amenity.
- Cultural Heritage – Consideration of known statutory/non-statutory designations.
- Residential properties – Consideration of amenity impacts from construction and operation activities.
- Transport and Access – Consideration of linkages to the existing highway network and Public Rights of Way (PRoW).
- Construction impacts – Consideration of high level costs and logistic requirements.
- Operational impacts – Consideration towards operational assets and maintenance.
- Flood Risk – Proximity to watercourses, and flood water.
- Land Use and Soils – Where possible, avoidance of areas of Best and Most Versatile (BMV) land based on information available. In addition, proximity to existing infrastructure, local planning allocations, and known planning applications.
- Community/Socio-Economic – Consideration of community facilities and accessibility.

3.2.15 However, following the initial assessments, one site remained as the most favourable from all perspectives (technical, commercial and consents) for the landfall Site Location. However, it should be noted that some access constraints remain, but these are considered of low-risk and have the opportunity to be mitigated.

3.2.16 The Applicant has assessed a number of landfall options for the site, with this being refined to two choices at this stage to ensure the EIA and DCO processes continue to progress, as well as establishing a focused area for onshore and nearshore geophysical and geotechnical surveys to be undertaken. These detailed site investigations will determine the exact locations where the cables will eventually make landfall and the cable corridor will be between the point of landfall and converter station. The mentioned detailed site investigations will be complete post consultation.

Offshore Development

3.2.17 During the initial assessment stage, a desktop study to identify possible route options between the Southwest of the UK and Morocco for the offshore development was undertaken. Three potential options were identified and can be summarised as;

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

3.2.18 Following engagement with the market for the supply and installation of HVDC power cables, it was established that there is a current general technical limitation in the market of HVDC power cables beyond 700 m water depth. On this basis,

the two routes where water depth exceeded 700 m were not pursued and instead focused on the option for a route that kept below 700 m water depth.

3.2.19 The currently chosen offshore cable route was then further informed through further desktop exercises with consideration of the following;

- environmentally sensitive areas e.g., MCZs and SPAs;
- known geophysical features including steep slopes, pock marks, hard seabed sediments, rock outcrops;
- metocean influences such as currents, waves, and swells;
- archaeology and avoidance of known wrecks and UXOs;
- human activities such as fishing, shipping and navigation and anchorage;
- military zones;
- existing subsea infrastructure e.g., pipelines, hydrocarbon wells, telecoms cables, fibre optic cables, power cables; and
- future developments, particularly renewable development zones

3.2.20 These considerations have been avoided altogether, but where this is not possible the impact will be reduced as far as possible, assessed and mitigations identified and consulted.

3.2.21 The assessment of the investigation results is continuing as part of the development of the scheme which will be subject to consultation. Further information on the reasonable alternatives considered will be provided in the PEIR and subsequent ES, and other documents supporting the DCO application.

4 PROJECT DESCRIPTION

4.1 Introduction

4.1.1 This section of the Scoping Report summarises the key components of infrastructure (both onshore and offshore) for the Proposed Development, as well as a description of the activities associated with their construction, operation and maintenance and eventual decommissioning.

4.1.2 The Proposed Development comprises offshore HVDC cables (from the UK EEZ to landfall), the landfall site, onshore HVDC and HVDC cables, converter stations, road upgrade works and, based on current assumptions, the Alverdiscott Substation Connection Development. It also includes temporary and permanent utility connections, permanent utility diversions at and adjacent to the Converter Site. A summary of the key components of the Proposed Development is provided in **section 4.4**.

4.2 Project Design Envelope Approach

4.2.1 The Project Design Envelope (PDE) approach (also known as the Rochdale Envelope approach) will be adopted for the assessment of the Proposed Development, in accordance with current industry best practice. This approach allows for a project to be assessed on the basis of maximum project design parameters (i.e., the worst-case scenario). This approach provides flexibility, while ensuring all potentially significant effects are assessed within the EIA process and reported in the ES. The PDE concept allows for some flexibility in project design options, in instances where the full or final details of a project design and/or its implementation methods are not known at the time of application submission.

4.2.2 This approach will be taken for the EIA process because it is not possible to provide precise final design details of the Proposed Development a number of years ahead of the time it will be constructed. Additionally, feedback received from statutory and non-statutory stakeholders will allow the Applicant to fully understand any likely significant environmental effects that need to be mitigated/ managed, which will aid the refinement of the final design.

4.2.3 HVDC infrastructure, including cabling and converter station technologies, is constantly evolving with a focus on efficiency, impact reduction and cost reduction. Therefore, improvements in technology and construction methodologies occur frequently and an unnecessarily prescriptive approach could preclude the adoption of new technology and methods.

4.2.4 The use of the PDE approach has been recognised in the Overarching National Policy Statement (NPS) for Energy (NPS EN-1) (DECC, 2011a; DESNZ, 2023a), the NPS for Renewable Energy Infrastructure (NPS EN-3) (DECC, 2011b; DESNZ, 2023b) and the NPS for Electricity Networks Infrastructure (NPS EN-5) (DECC 2011c; DESNZ, 2023c).

4.2.5 The PDE approach is also consistent with The Planning Inspectorate's Advice Note Nine: Rochdale Envelope (The Planning Inspectorate, 2018).

4.2.6 For each of the impacts to be assessed in the topic-specific EIA chapters, the maximum design scenario will be identified. The maximum design scenario assessed is therefore the scenario which would give rise to the greatest potential

impact. For example, this may be the option with the largest footprint, the greatest height or the largest area of disturbance during construction, depending on the topic under consideration. By identifying the maximum design scenario for any given impact, it can be concluded that the impact (and therefore the effect) would be no greater for any other design scenario. By employing the maximum design scenario approach, the Applicant retains some flexibility in the final design of the Proposed Development, but within certain maximum parameters, which will be assessed in the ES.

4.2.7 All assumptions regarding the PDE will be clearly set out within the Project Description Chapter of the PEIR and ES and within the topic chapters. The draft DCO will be prepared in conjunction with the ES, in order to ensure that the key parameters applied for are consistent with those assessed through the EIA process.

4.2.8 Throughout this Scoping Report (and subsequent PEIR and ES), the PDE approach is applied to allow meaningful assessments of the Proposed Development to proceed, whilst still allowing reasonable flexibility for future project design decisions.

4.3 Location and Size

4.3.1 The Proposed Development would be located within the Proposed Development Scoping Boundary shown on **Figure 1.1.2**. The Proposed Development Scoping Boundary is approximately 230.5 km^2 in area. This includes approximately 17.5 km^2 for the onshore elements of the Proposed Development and approximately 213 km^2 for the offshore elements.

4.3.2 The onshore elements of the Proposed Development Scoping Boundary are proposed to be located within the local authority area of Torridge District Council, in north Devon (see **Figure 1.1.3**). This would include the Converter Site and connection to the national grid, utility connections and diversions, permanent highways improvements as well as short-term highways alterations during construction, Onshore HVDC Cable Corridor, HVAC cables, temporary compounds and haul roads, and landfall.

4.3.3 The offshore elements of the Proposed Development Scoping Boundary, which includes the Offshore Cable Corridor, would be located within the Bristol Channel and Celtic Sea, extending from the landfall to the limit of UK EEZ, south west of the UK (see **Figure 4.1.2**).

4.3.4 The following provides further detail on the proposed location of the Converter Site (in which both of the proposed converter stations would be located), HVAC cables, Onshore HVDC Cable Corridor, landfall and the Offshore Cable Corridor.

4.4 Key Elements of Proposed Development

4.4.1 The key components of the Proposed Development are likely to include:

- Onshore elements:
  - Converter Site: the site includes two independent converter stations, known as Bipole 1 and Bipole 2, to convert electricity from DC to AC before transmission to the national grid.

  - Highway improvement works: improvements to the existing road network to facilitate access during construction and operation and maintenance, including road widening, and new or improved junctions.
  - HVAC Cables: these cables connect the Converter Site to the national grid, via the envisaged Alverdiscott Substation Connection Development. The HVAC cables would be situated within the boundaries of the Converter Site and Alverdiscott Substation site.
  - Alverdiscott Substation Connection Development – the anticipated NGET 400 kV substation would be located to the immediate east of the existing 400/132 kV facility and would be a replacement for the existing 400 kV infrastructure.
  - HVDC Cables: these cables would link the onshore converter stations to the landfall and would be located within the Onshore HVDC Cable Corridor.
  - Temporary and permanent utility connections: temporary and permanent utility connections to the construction compounds and the Converter Site.
  - Permanent utility diversions: permanent diversion of existing utility services within and adjacent to the Converter Site to facilitate construction of the Converter Site.
  - BNG offsetting: BNG planting, comprising Atlantic rainforest, scrub and species-rich grassland.
- Landfall site:
  - The site where the offshore cables are jointed to the onshore cables. This term applies to the entire landfall area between Mean Low Water Springs (MLWS) and the TJB. This includes all construction works, including the offshore and onshore cable routes, and landfall construction works compound.
- Offshore elements:
  - Offshore HVDC Cables: The HVDC cables which would bring electricity from its generation source to the landfall, which are located within the UK EEZ. The offshore HVDC cables would be situated within the Offshore Cable Corridor.

4.4.2 The onshore HVDC cables and the HVAC cables would be completely buried underground for their entire length. It is anticipated that the only visible parts of the onshore cable route would be maintenance covers, which would be located at link box locations between cable sections (see **paragraph 4.6.82**). It is anticipated that the offshore cables would be buried in the seabed or laid on the seabed with protection. No HVAC overhead pylons will be installed as part of the Proposed Development. However, the Proposed Development would require the diversion of existing utilities, including 132 kV overhead lines (OHLs), 11 kV OHLs, gas and water assets.

4.4.3 In addition to the permanent components outlined within **paragraph 4.4.1**, temporary onshore infrastructure would be required for the construction phase, including construction compounds, welfare and site offices, utility connections, haul roads and construction drainage. If decommissioning of the Proposed Development takes place (see **section 4.12**), similar temporary onshore infrastructure would be required (e.g., decommissioning compounds).

4.4.4 These components are briefly described in the following sections. Realistic worst-case parameters (dimensions and numbers where appropriate) are provided to indicate the potential scale of the Proposed Development. A further refined and detailed project description will be provided in the PEIR and ES.

4.5 Programme

4.5.1 Construction and commissioning of the Project would be timed to meet the available connection dates provided by National Grid ESO with the commissioning of Bipole 1 and Bipole 2 targeted for 2030 and 2032 respectively[3]. Subject to being granted consent, the earliest date that construction could start would be in 2026.

4.5.2 Consistent with the build-out and commissioning of the generation and transmission infrastructure in Morocco together with the connection dates offered by National Grid ESO, the Proposed Development would be constructed and commissioned in two overlapping phases.

4.5.3 The majority of onshore construction work for the Proposed Development would be initiated in the first phase for the establishment of the Converter Site and construction of the onshore HVDC cable serving both Bipoles.

4.5.4 This may be preceded by advanced enabling works that do not require consents or licences for example habitat creation, geo-environmental and archaeological surveys.

4.5.5 The Proposed Development works are anticipated to be undertaken in the following two phases but will be confirmed during detailed design.

Phase 1

4.5.6 Phase 1 of construction is anticipated to commence in 2026 and would continue through to 2030. The initial phase of construction, serving both the onshore HVDC cable corridor and the Converter Site, would include:

- works requiring licenses or permits such as habitat removal and protected species exclusion;
- enabling works such as utility connections and diversions, road improvements, new site access points and establishing compounds etc.;
- construction and completion of the onshore HVDC cable route and landfall for both Bipoles including all mitigation and restoration works, save for the landfall (see below);
- laying of offshore cables serving Bipole 1 including pulling cables through to the landfall TJB and jointing;
- ground preparation and establishment of the Converter Site, its reception facilities perimeter fencing and landscape mitigation;

[3] The Applicant has submitted Modification Applications to NG ESO to amend the connection date for Bipole 1 to 2030 (from 2027) and for Bipole 2 to 2032 (from 2030). These are expected to be signed in April 2024

- construction and commissioning of the Bipole 1 converter station including the associated HVAC cable route, its own perimeter fencing, security and drainage network; and
- Biodiversity Net Gain (BNG) planting works and associated infrastructure such as fencing.

4.5.7 The works highlighted above would be undertaken concurrently (at the same time). The National Grid connection infrastructure (to be undertaken by National Grid Electricity Transmission) at Alverdiscott Substation is also expected to be constructed in this first phase.

4.5.8 Connection to the national grid and thus, first operation of the Proposed Development, is anticipated to be achieved by 2030 following the commissioning of Bipole 1.

Phase 2

4.5.9 The second phase of construction would include:

- construction and commissioning of the Bipole 2 converter station including the associated HVAC cable route, its own perimeter fencing and drainage network;
- laying of offshore cables within the UK serving Bipole 2 including pulling cables through to the landfall TJB and jointing;
- restoration of the landfall compound and associated access; and
- restoration of all other compounds.

4.5.10 The phase 2 construction works are anticipated to commence in 2026, with commissioning of Bipole 2 expected to be in 2032.

4.5.11 Therefore, full operation of the Proposed Development is anticipated to occur in 2032, following the commissioning of Bipole 2.

Phasing Summary

4.5.12 As explained above, the majority of onshore construction work would begin in the first phase followed by a second mobilisation to the landfall to connect incoming HVDC offshore cables together with construction and installation of the converter station serving Bipole 2.

4.5.13 This means that whilst the onshore HVDC cable route can be restored after the first phase and returned where practical to its previous use, the landfall compound and associated access would be de-mobilised with the removal of all construction equipment but would remain fenced and secured until the completion of the second phase.

4.5.14 Similarly, the compounds and accesses serving the Converter Site would not be restored until completion of the converter station serving Bipole 2.

4.5.15 Construction of the offshore cable route from Morocco to UK would be implemented in two clear phases.

4.6 Onshore Elements of the Proposed Development

Introduction

4.6.1 As set out in **paragraph 4.4.1**, the permanent onshore infrastructure for the Proposed Development includes the two converter stations, highway improvement works, and HVDC and HVAC cables which provide connection to both the landfall and national grid, respectively. Additionally, the Proposed Development would require the permanent diversion of existing utilities (i.e., 132 kV OHLs and gas and water assets) at and adjacent to the Converter Site. As part of the construction of the Proposed Development, temporary infrastructure (such as construction access roads and construction compounds and associated utility connections) would be required. This section sets out the design parameters and the proposed installation and construction methods assessed within this Scoping Report for each of these components.

Converter Site

4.6.2 The proposed converter stations would convert the current of the electricity supplied through the onshore HVDC cables from DC to AC, to allow a connection to the Alverdiscott Substation.

4.6.3 The proposed Converter Site is located to the immediate west of the existing Alverdiscott Substation site and approximately 2.5 km to the east of East-the-Water (Bideford's eastern half).

Design

4.6.4 The proposed Converter Site would include two separated converter stations (Bipole 1 and Bipole 2), a main car park, a spare parts building and access control building, as well as a temporary construction laydown area during construction. The proposed purpose-built converter stations would contain the electrical equipment required to convert the transmitted electricity from DC to AC, prior to the connection with the national grid. Each converter station would typically comprise the following:

- Control building;
- Harmonic filter;
- AC switch yard;
- Transformers;
- Valve hall and reactor building; and
- DC switch yard.

4.6.5 Development of the proposed Converter Site would require cut and fill earthworks to provide level development platforms for both Bipoles and landscape bunds for visual screening.

4.6.6 The converter stations would be connected to the national grid via underground AC cables at an anticipated Alverdiscott Substation Connection Development. At this stage the NGET works are included within the Proposed Development for the

purposes of Scoping. The Applicant will continue to engage with NGET on the extent and inclusion of the NGET works within the DCO application.

4.6.7 The Alverdiscott Substation Connection Development is expected to be situated within the existing Alverdiscott Substation site. For Scoping purposes, the Applicant assumes that the Alverdiscott Substation Connection Development will be within the Applicant's Order Limits and powers will be taken to consent that development as part of the Applicant's DCO. If NGET decides to seek its own consent or indeed to not locate their substation within the Applicant's Order Limits, then NGET will be under an obligation to describe those environmental effects as appropriate.

4.6.8 The indicative design envelope for the Converter Site is provided in **Table 4.6.1**.

Table 4.6.1: Indicative parameters for Converter Site

Parameter	Design Envelope
Number of converter stations	2
Footprint of converter station buildings (m^2)	130,000
Temporary compound (m^2)	20,000
Maximum height of main structure/buildings (m)	26
Maximum height of lightning protection (m)	30

Access

4.6.9 The Converter Site would be accessed via the existing Alverdiscott Substation site entrance from the unnamed minor road running north south between Gammaton Crossroads and Webbery Barton. The current arrangement of the internal access road would need to be altered to provide a junction and dedicated access into the Converter Site and independent access to the NGET site. Other access requirements such as for farming or solar arrays would also be accommodated outside the Converter Site security cordon.

4.6.10 The Proposed Development would also include a replacement NGET access road that would run along the north of the Converter Site boundary.

4.6.11 The proposed Converter Site would comprise internal service roads, which would have a typical width of 6 m.

4.6.12 The Converter Site would be accessed 24/7 by staff working to a shift pattern. The Converter Site is anticipated to provide approximately 30 full time-equivalent (FTE) jobs, with up to 15 staff on-site at any one time during the day, reducing to approximately five overnight.

Site Security

4.6.13 The detailed design of the Converter Site would consider guidance and requirements to ensure security of critical national infrastructure, including 'Securing critical national infrastructure: an introduction to UK capability' (UK Defence and Security Exports and Department for Business and Trade, 2023).

4.6.14 For security purposes, the Converter Site would be fenced and monitored with security cameras and lighting. Additionally, both converter stations would be separated via a second layer of security fencing as complete physical and electrical separation of each bipole would be required.

4.6.15 Operational access for the Converter Site would be via the site access control building to ensure site security.

Landscape and Ecological Planting

4.6.16 An Outline Landscape and Ecology Management Plan will be prepared and submitted with the application for development consent. A Landscape and Ecology Management Plan will be developed in accordance with the Outline Landscape and Ecology Management Plan. The Landscape and Ecology Management Plan will provide details of the landscape strategy for the Converter Site, including cut and fill earthworks and wooded earth banks or bunds, providing screening together with ecological value.

4.6.17 The Landscape and Ecology Management Plan would also include details of mitigation planting at the Converter Site, including the number, location, species and details of management and maintenance of planting. Where practical, landscape mitigation planting would be established as early as reasonably practicable in the construction phase.

4.6.18 Additional infill planting would be implemented as necessary to enhance the boundary planting and increase biodiversity. A Biodiversity Net Gain (BNG) of at least 10% would be targeted through hedgerow enhancement, boundary planting, woodland planting and creating species-rich grassland, which would have a considerably greater biodiversity value than the existing agricultural landscape.

Surface Water Drainage

4.6.19 An outline operational drainage strategy will be prepared and submitted with the application for development consent. The strategy will include measures to ensure that rates of surface water is collected and attenuated such that rates of discharge are maintained at existing greenfield runoff rates. The strategy will also include measures to control surface water runoff, including measures to prevent flooding of the working areas or surrounding areas and to ensure any runoff is treated appropriately. The outline operational drainage strategy will be developed in line with the latest relevant drainage guidance notes in consultation with the Environment Agency (EA) and the Lead Local Flood Authority (LLFA).

4.6.20 Appropriate drainage systems would be established for the construction of the Proposed Development. Effective drainage strategies for temporary construction compounds would be included within construction drainage plans prior to the commencement of construction.

Foul Drainage

4.6.21 Foul drainage would be collected in one of the following ways:

- mains connection discharge to a local authority sewer system, if available; or
- septic tank located within the Converter Site boundary.

4.6.22 The preferred method for controlling foul waste will be determined during detailed design and will depend on the availability and cost of a mains connection and the number of visiting hours staff will attend site.

Lighting

4.6.23 During the construction phase of the Proposed Development, task specific lighting would be used to reduce the illumination of areas beyond the construction areas. In addition, to prevent light spill, light shield guards would be used. The operational lighting would be designed to avoid illumination of areas beyond the operational site. Operational outdoor lighting at the Converter Site boundary would normally be restricted to motion-activated security lighting.

Grid Connection

4.6.24 The Applicant has a Connection Agreement with NGESO for connection of 3.6 GW into Alverdiscott Substation in two phases of 1.8 GW each. It is anticipated that NGET would utilise land within the existing footprint of the Alverdiscott Substation site to provide this. The existing Alverdiscott Substation site is located within a grassland field, which includes a variety of OHLs crossing the land and connecting to the existing Alverdiscott Substation.

4.6.25 NGET would undertake works at the Alverdiscott Substation site to accommodate the connection and onward transmission of the Applicant's power. No new OHLs would be required; however, some local diversion and re-connection of existing wires may be required. This includes potential diversions of the existing 132 kV and 11 kV OHLs.

4.6.26 Details of the development parameters required by NGET are currently assumed to form part of the DCO application, subject to further discussion with NGET. Therefore, assessment of the Proposed Development will consider a reasonable approximation of the anticipated the Alverdiscott Substation Connection Development.

4.6.27 In the absence of a confirmed design for the grid connection infrastructure from NGET, the assessment will assume a combination of reasonable worst case parameters. For example, Air Insulated Switchgear (AIS) will require a larger footprint to Gas Insulated Switchgear (GIS) whereas a GIS building of up to 15 m in height is not required for an AIS substation.

4.6.28 The area to be set aside for the NGET Grid Connection Development amounts to up to 3.8 ha. Within that area it is assumed that the substation itself will occupy a footprint of approximately 2.8 ha, with a maximum height of 15 m, excluding connecting tower structures.

Construction of Converter Stations

4.6.29 An overview of the key construction activities associated with the development of the Converter Site is provided below.

Pre-construction surveys

4.6.30 Prior to the commencement of the onshore construction works, a number of pre-construction surveys and studies would be undertaken to inform the final design, which may include:

- topographic surveys;
- ecological surveys to update EIA findings and inform any protected species mitigation licence(s) that may be required;

- ground investigations (e.g., geotechnical and ground stability surveys);
- soil surveys;
- drainage surveys; and
- targeted archaeological excavations to confirm the findings of the EIA process. A Written Scheme of Investigation (WSI) would be developed prior to construction, which would detail the surveys and archaeological mitigation requirements during construction.

Converter Site Construction Compounds

4.6.31 The main construction compound is proposed to be located between Gammaton Road and Tennacott Lane, south of East-the-Water. The compound would include park and ride facilities for contractors working at both the Converter Site and the cable route, which would take a number of vehicles off local lanes.

4.6.32 An additional Converter Site compound would be situated within the Converter Site itself.

4.6.33 **Table 4.6.2** sets out the indicative parameters for the construction of the converter stations.

Table 4.6.2: Design envelope – construction of converter stations

Parameter	Design Envelope
Main construction compound (Gammaton Road) area (m^2)	63,000
Temporary construction compound area (m^2), includes working and laydown area (excludes permanent Converter Site footprint	20,000
Duration of construction (months)	72

Access

4.6.34 An Outline Construction Traffic Management Plan (CTMP) will be prepared and submitted with the application for development consent. A CTMP will be developed in accordance with the Outline CTMP and will include further details and necessary traffic management measures to be adhered to during the construction phase of the Proposed Development.

4.6.35 It is anticipated that construction access to the Converter Site would be routed from the A39, which connects to Barnstaple Road and then Manteo Way. Construction traffic would follow Manteo Way, through East the Water to Gammaton Road and connect to the main construction compound between Tennacott Lane and Gammaton Road. From the compound, construction traffic would utilise an off-road haul road that would run adjacent to Gammaton Road and to the minor road leading north from Gammaton Cross towards the Converter Site. This would remove the majority of construction traffic from Gammaton Road/Gammaton Cross.

4.6.36 Some construction traffic would utilise Gammaton Road during the initial site setup and enabling works, however, following this initial phase and the development of the haul road, all construction vehicles would be routed along the haul road, as highlighted above. This will be detailed within the CTMP.

Earthworks

4.6.37 To construct the site on which the converter stations would be built, the existing ground surface would be modified by removing soil from some areas and building slopes (e.g. bunds) in others. This is referred to as 'cut and fill' operations. The extent of cut and fill operations required will be determined as the design progresses.

4.6.38 This would be required as it would allow for a level development platform, in which the converter stations would sit, and provide some visual screening of the buildings (i.e. through the creation of bunds around the converter buildings). This would reduce visual impacts associated with the operation of the converter stations.

4.6.39 The entire area would be stripped of all topsoil and subsoil where required (including any vegetation and loose rocks where necessary). Where waste and excess material is encountered, it would be removed if it is unsuitable for reuse. Once the surface has been cleared, the 'cut and fill' operation would begin. Soil would be stored and managed in accordance with the Construction Code of Practice for Sustainable Use of Soils on Construction Sites (Defra, 2009) or the latest relevant available government guidance.

4.6.40 Excavated material would be utilised where possible, provided the grade and composition is suitable, within the Converter Site for landscaping (i.e. creating mitigation bunds which would reduce the visibility of the converter stations). Where there is excess material, it is anticipated that this material would be converted into products of acceptable quality for use across the Proposed Development (e.g. haul roads and compounds), where feasible. If this is not feasible, or if there is further excess following the development of haul roads and compounds, the remainder would be appropriately transported (with appropriate approvals/ permits) to locations in which it can be either re-used or disposed of at a licensed disposal site.

Highways Improvements

4.6.41 The Proposed Development would include proposed improvements to the local highway network, which would facilitate access during both construction and operation and maintenance. 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: new junction to provide access to the onshore HVDC cable route and landfall.
- Dunn Lane: development of a new private track at the southern end of Dunn Lane.
- A386: this includes the improvement of an existing junction along the A386 to provide access to the River Torridge horizontal directional drilling (HDD) compound and the haul road along the onshore HVDC cable route west of the river. An additional junction may be required along the A386 dependant on the HDD crossing location.
- Road improvement works at Gammaton Moor, including the following potential options:

- Widening of Gammaton Road in selective locations to enable full two-way movement of vehicles.
- A new junction west of Gammaton Moor Crossroads and a new section of public highway connecting Gammaton Road with the unnamed road to Converter Site.
- Potential relocation of the unnamed road to the Converter Site further to the west to facilitate utility diversions (gas and water) within and adjacent to the Converter Site. This will be confirmed during the detailed design.
- Asymmetric widening either online or offline of the unnamed road to the Converter Site to enable full two-way running.

HVDC Cable Corridor

Cable Route Location

4.6.42 The onshore HVDC cables would provide a cable connection between the transition joint pit, at the landfall site and the proposed converter stations north of Gammaton Moor and to the immediate west of Alverdiscott Substation site.

4.6.43 A single Onshore HVDC Cable Corridor is anticipated for the Proposed Development, which would include the installation of the HVDC cables in cable circuits (with each circuit typically comprising two power cables and up to three fibre optic cables).

Cable Route Details

4.6.44 As detailed above, the HVDC cable corridor would include the installation of the HVDC cables in cable circuits. A circuit containing two HVDC cables alongside each other forms a bipole. A bipole system is an electrical system that comprises two DC conductors of opposite polarity.

4.6.45 The Onshore HVDC Cable Corridor is currently anticipated to have a typical temporary width of up to 65 m during construction, within which the permanent cables would be located. This would allow for construction plant access, spoil and topsoil storage and materials laydown.

4.6.46 The typical permanent cable corridor width is expected to be 32m, however, the permanent easement would be wider in some instances. For example, the maximum permanent cable corridor width is anticipated to be 60 m at HDD locations for the HVDC cable route.

4.6.47 The Onshore HVDC Cable Corridor would comprise two separate trenches with two bipoles within each trench. Each bipole trench would include two HVDC cables and up to three fibreoptic cables, giving a total of up to ten cables for the DC cable route. The operating voltage of the power cables is expected to be 525 kV.

4.6.48 The onshore HVDC cables utilised within the Proposed Development would be the cross-linked polyethylene (XLPE) type with a typical diameter of circa 150 mm. The onshore cables themselves would consist of copper or aluminium conductors wrapped with various materials for insulation, protection, and sealing.

4.6.49 The proposed Onshore HVDC Cable Corridor would also require access tracks (referred to as ‘haul roads’) to allow the movement of construction vehicles and

the installation of the cable circuits, in addition to other related works such as temporary compounds and laydown areas. Operational access may also be required along the Onshore HVDC Cable Corridor, only in the event of cable faults that require repair or replacement works.

4.6.50 The Onshore HVDC Cable Corridor would be approximately 14.5 km in length. The indicative design envelope for the onshore HVDC cables is provided in **Table 4.6.3**.

Table 4.6.3: Indicative key parameters for the HVDC cables

Parameter	Design Envelope
Length of HVDC cable corridor (km)	14.5
Maximum number of operational HVDC cables	4
Maximum number of fibre-optic cables	6
Maximum number of cable trenches	2
Permanent cable corridor width for trenched methods (m)	32
Permanent cable corridor width at HDD locations (m)	60
Maximum voltage (kV)	525

HVAC Cable Connection

Cable Route Location

4.6.51 The connection between the proposed converter stations and the national grid, via Alverdiscott Substation Connection Development, would be achieved by the HVAC cables.

4.6.52 The HVAC cables would be located within the boundaries of the Converter Site and Alverdiscott Substation site. The HVAC cable route 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.

4.6.53 Each HVAC bipole system would be connected to the corresponding converter station (Bipole 1 and Bipole 2) and routed separately towards the Alverdiscott Substation site. However, it is expected that the two corridors would converge prior to connection with the Alverdiscott Substation Connection Development, to the east of the Converter Site. The final routing of each HVAC bipole would be refined with consideration of the final layout of the Converter Site and envisaged Alverdiscott Substation Connection Development.

Cable Route Details

4.6.54 The cable corridor for the HVAC cables (including both separate corridors) is currently anticipated to have a maximum temporary width of 65 m during construction, within which the permanent cables would be located. This would allow for construction plant access, spoil and materials laydown.

4.6.55 The typical permanent cable corridor width is expected to be 15 m for each bipole, resulting in a combined permanent width of 30 m.

4.6.56 The indicative design envelope for the HVAC cables is provided in **Table 4.6.4**.

Table 4.6.4: Indicative key parameters for the HVAC cables

Parameter	Design Envelope
Length of HVAC cable corridor (km)	1.2
Maximum number of HVAC cables	12
Maximum number of cable trenches	4
Temporary construction corridor width (m)	65 (32.5m for each bipole)
Permanent cable corridor width (m)	30 (15m for each bipole)
Maximum voltage (kV)	400

Cable Construction

4.6.57 Construction and installation of the onshore cables is anticipated to be undertaken in the following broad sequence. However, some sequencing may differ once the contractors are appointed. Sequencing may vary between the construction and installation of the HVDC cables and the construction and installation of the HVAC cables.

1. Completion of any pre-construction surveys.
2. Ecological pre-construction work (for instance, hedgerow removal).
3. Establishment of construction compounds, including temporary utility installation, and new access points from the highway where required.
4. Installation of fencing around the construction areas.
5. Site preparation works, installation of pre-construction drainage, topsoil removal and storage, establishment of temporary compounds, installation of temporary haul roads.
6. HDD works at identified locations (see further detail below).
7. Trench excavation works, installation of backfill materials and installation of ducts and protective tape and tiles.
8. Backfilling of trench to subsoil level.
9. Excavation and construction of joint bays and link boxes along the route. The link boxes include maintenance covers for access.
10. Installation of power and fibre optic cables though installed ducts between joint bays and installation of link boxes and inspection covers.
11. Jointing together of cables at joint bay locations.
12. Removal of construction drainage, removal of haul roads, removal of temporary compounds and fencing.
13. Replacement of topsoil along the cable corridor and reinstatement to previous land use.
14. Removal of temporary access points and planting of any sections of replacement hedgerow.
15. Removal/reinstatement of construction compounds.

4.6.58 Further details are provided in the following sections.

Pre-construction surveys

4.6.59 Prior to the commencement of the onshore construction works, a number of pre-construction surveys may be required to inform the final detailed design, which may include:

- topographic surveys;
- ecological surveys to update EIA findings and inform any protected species mitigation licence(s) that may be required;
- ground investigations (e.g., geotechnical and ground stability surveys);
- soil surveys;
- drainage surveys; and
- targeted archaeological excavations to confirm the findings of the EIA process and the development of an onshore WSI.

4.6.60 Any targeted investigations would be undertaken in accordance with industry best practice and applicable guidelines.

Temporary Construction Compounds

4.6.61 Construction compounds would be established early in the construction programme.

4.6.62 Compounds may include central offices, welfare facilities and stores, as well as acting as a staging post and secure storage for equipment and component deliveries, as well as for laydown and storage of materials and plant.

4.6.63 Construction compounds would be prepared by removing and storing topsoil and subsoil and then constructing hardstanding areas using crushed stone.

4.6.64 Construction compounds would also be required at locations where trenchless cable installation techniques, such as HDD, are used. HDD operations would require a compound to contain the drilling rig support equipment and the drill entry and exit pit. However, most compounds for HDD crossings would be located either side of the haul road and within the 65 m temporary construction corridor.

4.6.65 The following temporary construction compounds may be required:

- Main construction compound: proposed to be situated between Gammaton Road and Tennacott Lane, just south of East-the-Water. The compound would be utilised as the main compound for all construction work across the Onshore HVDC Cable Corridor and Converter Site.
- Secondary construction compound: proposed to be located adjacent to the A39, south west from the Abbotsham Cross roundabout. This compound would also include a HDD compound for the A39 crossing.
- Landfall compound: this compound would be situated at the landfall (Cornborough Range).
- HDD Compounds: detail provided within **paragraph 4.6.64**.
- Converter compound: detail provided within **paragraph 4.6.32**.

4.6.66 Where required, temporary utility connections would be constructed for the compounds to provide power, water, foul and communications services. The need

for these temporary services would be determined by the contractor prior to compound establishment.

4.6.67 Following the completion of construction, the temporary construction compounds would be removed, and the land restored to its former condition.

Cable Installation – Key Methods

4.6.68 The main construction techniques for the installation of the HVDC and HVAC cables would include the following:

- The Proposed Development would predominantly utilise open cut methods of cable installation.
- The trenchless crossing method called HDD (detailed in **paragraph 4.6.88**) would be utilised in locations where the cable route crosses obstacles, such as watercourses, major roads and woodland.
- Cable jointing would be required where two cable lengths meet as the length of the cable supplied on the cable drum transport would be approximately 1 km, due to weight limits. This is discussed further in **paragraph 4.6.74**.

4.6.69 Open cut methods of cable installation would involve the excavation of a trench and laying ducts in preparation for cable installation (pulling the cable through previously installed ducts). Cables are installed by winching them into the pre-installed ducts.

4.6.70 Across agricultural land (and excluding joint bays) the HVDC cables would be buried in underground ducts at an approximate depth of 1.4 m. The maximum burial depth may be exceeded at joint bays and where the route is required to cross beneath features such as utilities, pipelines, land drains, highways or rivers using trenchless or similar construction techniques.

4.6.71 As the cable route would be fully ducted, the cable lengths could be installed following the infill of trenches, which allows for quick trenching and restoration of land to the previous land-use. This would benefit both the environment and landowner.

4.6.72 Following the infilling of the trenches, cables would be installed by winching them into the pre-installed ducts, which have been fitted underground via the methods highlighted above.

4.6.73 The design envelope for the onshore cable installation is provided in **Table 4.6.5**.

Table 4.6.5: Indicative design envelope – onshore cable installation

Parameter	Indicative Design Envelope	
	HVDC Cable Route	HVAC Cable Route
Trench width at base (m)	1.6	2.1
Trench width at surface (m)	4.3	4.9
Target depth of trench (m)	1.4	1.4
Target trench depth to top of protective tile (m)	0.9	0.9
Trench depth of specialised backfill (m)	0.5	0.5
Width of construction cable corridor (temporary) (m)	65	65 (32.5 m per bipole)

Parameter	Indicative Design Envelope	
	HVDC Cable Route	HVAC Cable Route
Number of haul roads	1	1
Width of haul road (m) excluding passing bays	7	7
Duration of works (months)	36	24 (two phases of 12-months)

Cable Joint Bays and Link Boxes

4.6.74 Cables would be supplied from the factory on cable drums whose manageable transport dimensions determine the available section length. Where two cable lengths meet, they would need to be jointed together in a joint bay. Joint bays are typically concrete lined pits below ground, that provide a clean and dry environment for jointing sections of cable together.

4.6.75 The key steps are:

- cutting the two cables to be jointed to length;
- stripping back the various layers of sheath, screen and insulation;
- preparing the conductor for jointing and then jointing either by a compression ferrule for copper conductor or by welding for aluminium conductor; and
- assembling a pre-fabricated joint housing around the cables that is then filled with an insulating material such as silicone rubber.

4.6.76 Cable joints are anticipated to be required approximately every 800 m to 1,100 m along the route.

Joint Bays

4.6.77 The joint bays are an enlarged version of the standard cable trench with a concrete base installed to facilitate the jointing process and support the joints on completion. The joint bay is backfilled in the same manner as the rest of the route with Cement Bonded Sand surround, protective covers and warning tape with indigenous backfill to the surface.

4.6.78 There would be one joint bay per section for each bipole, therefore 17 joint bays per bipole would be required based on a distance of 800 m between joint bays. Each joint bay would house two HVDC cable joints.

4.6.79 For the HVAC section of the cable route, it is anticipated due to the relatively short length that no joints would be required. If joint bays are required for the HVAC route, an equivalent of the DC cable joint bay would be installed.

4.6.80 The indicative parameters for the joint bays are set out in **Table 4.6.6**. This provides a summary of the parameters for the typical joint bays along the cable route, excluding the landfall site.

Table 4.6.6: Indicative design envelope – joint bays (excluding Transition Joint Bay)

Parameter	Indicative Design Parameter
Number of joint bays	34
Width (m)	20

Parameter	Indicative Design Parameter
Length (m)	5
Depth (m)	1.4
Area of joint bay (m^2) (below ground)	100
Volume of material excavated per joint bay (per circuit) (m^3)	140
Nominal Distance between Jointing Bays (m)	800-1,100

Link Boxes

4.6.81 Link boxes are smaller pits compared to joint bays, which house connections between the cable shielding, joints for fibre optic cables and other auxiliary equipment. Link boxes would be situated close to the joint bay locations.

4.6.82 Link boxes allow electrical access to the cable sheath for maintenance testing and fault-finding purposes. Therefore, maintenance covers would be required at link box locations, which would be visible during the operation and maintenance phase. The maintenance covers would be a typical ground level chamber cover to allow access to link boxes.

4.6.83 The design envelope for the link boxes is set out in **Table 4.6.7**.

Table 4.6.7: Indicative design envelope – link boxes

Parameter	Indicative Design Parameter
Number of link boxes	34
Width (m)	1.5
Length (m)	1.5
Depth (m)	1.4
Area of link box (m^2) (below ground)	2.25
Volume of material excavated per link box (per circuit) (m^3)	3.15
Nominal Distance between link boxes (m)	800-1,100

Cable Protection

4.6.84 Onshore HVDC and HVAC buried cables would be protected from accidental damage by excavation in two ways as follows:

Warning Tape and Tiles

4.6.85 A continuous length of protective covers (or tiles) made of concrete or similar would sit directly above each cable duct. The covers are typically red in colour and bear warning text. Approximately 100 mm above the covers, a bright yellow band of plastic warning tape would be laid. The exception to this arrangement would be at trenchless crossings.

Above Ground Cable Markers and Signage

4.6.86 Similar to cross country gas pipelines, the buried cables would be marked at road crossings, watercourse crossings and field boundaries by warning markers and/or signs.

4.6.87 Marker posts buried in the ground are typically around 1.1 m long by 0.25 m wide with at least 50% or more of the post visible above ground. They would include signage to indicate the high voltage cable danger with telephone contact information.

Cable Crossings

4.6.88 The Onshore HVDC Cable Corridor would cross existing infrastructure and obstacles such as roads, rivers and other utilities. All major crossings, such as major roads and river crossings would be undertaken using trenchless technologies.

4.6.89 Trenchless crossing methods include auger boring, HDD, thrust boring, and micro-tunnelling. For the purposes of impact assessment, HDD will be assumed for the major crossings within the PEIR and ES. This is the 'reasonable worst case' assumption of construction effects compared against other trenchless methods. However, contractors may select trenchless or trenched crossing techniques at other minor features in order to minimise any disruption caused and thereby lessen any impacts identified as part of the EIA process.

4.6.90 HDD involves drilling underneath the obstacle. HDD can avoid physical disturbance to above-ground or shallow below-ground features by drilling under them but typically has a higher cost than open-cut trenching and is most suited to straight sections. HDD drilling would involve drilling of boreholes using an HDD rig up to approximately 250 tonnes.

4.6.91 Depending on the size of the duct and the ground conditions encountered, the drilling operations would take place in a series of stages:

- Drill initial small pilot hole.
- The diameter of the pilot hole is enlarged by a larger cutting tool. Bentonite is pumped to the drilling head during the drilling process to stabilise the hole and ensure that it does not collapse.
- The duct is placed inside the borehole and the cable is pulled through. These ducts are either constructed offsite or would be constructed onsite, then pulled through the drilled hole either by the HDD rig or by separate winches.

4.6.92 HDD would generally be undertaken from two construction compounds located either side of each crossing. These compounds would generally be approximately 10,000 m^2 in size and would be suitably located for the drilling works required. Temporary construction compounds would be located within the Proposed Development Scoping Boundary.

4.6.93 Where possible, HDD crossings would be undertaken by lower impact methods, in order to minimise construction impacts beyond the immediate location of works.

Construction Access

4.6.94 During construction, the A39 would be used as the primary artery for construction access, which would connect construction vehicles to the A386, B3236, and Barnstaple Road into Manteo Way. These roads would be utilised for construction traffic before leading vehicles onto temporary haul roads along the cable corridor. Temporary internal haul routes would be constructed along sections of the cable route to remove frequent vehicle movements from the public highway.

4.6.95 As there are a number of constraints associated with the narrow roads located within the local area, main construction compounds along the onshore HVDC route have been positioned in locations easily accessible from the A39, A386 and Manteo Way respectively. This would allow construction vehicles to be directed towards the relevant compounds whilst reducing movements along minor roads.

4.6.96 A CTMP would be produced prior to the commencement of construction, which would include measures to ensure that construction traffic impacts are minimised (e.g., minimising traffic congestion, restrictions on timing of vehicle movements, etc.). The CTMP would be developed in accordance with the outline CTMP, which will be provided as part of the application for development consent.

4.6.97 It is expected that vehicle types utilising the public highway during construction would include a mixture of cars, vans, articulated Heavy Goods Vehicles (HGVs) and rigid HGVs including concrete trucks. Additionally, vehicle movements generated during the separate cable pull-in and jointing operation would include HGVs bearing winches, cranes, cars and vans.

Abnormal Indivisible Loads (AILs)

4.6.98 Drums of prepared cable shipped to north Devon are Abnormal Indivisible Loads (AILs) on the public highway in terms of both weight and size. AILs would use the same route to the cable corridor and same compounds as described above. Access junctions into the compounds would be designed to accommodate the cable drum AILs.

4.6.99 Cable drums are anticipated to arrive via sea at Appledore Quay, Bideford for onward transport to the cable route and Converter Site.

Restoration of Cable Corridor

4.6.100 As set out above, the permanent corridor width for the HVDC cable route would typically be 32 m, however, this would be exceeded at HDD locations where the permanent corridor width would be up to 60 m+.

4.6.101 In terms of above ground features, once the installation work is completed, the haul road(s) would be removed and the ground reinstated to its previous use using stored subsoil and topsoil. All temporary construction compounds and temporary fencing would be removed, field drainage and/or irrigation would be reinstated and the land would be restored to its original condition. Where practicable, consideration would be given to early restoration of sections of the cable route.

4.6.102 Hedgerows would be replanted using locally sourced native species, where practicable. Suitably qualified and experienced contractors would be used to undertake the reinstatement, which would be based on restoring the hedge to match the remaining hedgerow at each location. Where appropriate, enhancement (such as planting of additional suitable species) may be undertaken. This would be detailed within the Outline Landscape and Ecology Management Plan, which would be prepared and submitted with the application for development consent.

4.6.103 Joint bays would be completely buried, with the land above reinstated. A standard size manhole cover would be provided on the surface for link boxes for access during the operation and maintenance phase.

Landfall Works

4.6.104 The proposed landfall for the Proposed Development is located at Cornborough Range on the North Devon coast, to the south-west of Cornborough and approximately 4 km west of Bideford. This part of the site lies within the North Devon Coast National Landscape and the Heritage Coast. The Mermaid's Pool to Rowden Gut Site of Special Scientific Interest (SSSI) is also situated along the coastline.

4.6.105 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 at the Transition Joint Bays. A brief description of this technique is provided below.

Transition Joint Bays

4.6.106 The offshore cables would be jointed to the onshore cables at two TJBs, situated at the landfall site (landward from the coast). The TJBs are typically underground chambers constructed of reinforced concrete base, walls and roof, which is then backfilled on completion of the jointing process, which provides a secure and stable environment for the cable joints.

4.6.107 The TJBs at landfall would require an excavation area of approximately 750 m^2 (50 m x 15 m) each and would be buried at an approximate depth of 2.5 m. However, the maximum area of concrete slab required for each TJB would be 150 m^2 (30 m x 5 m) with a thickness of 0.3 m, totalling 300 m^2 for both.

4.6.108 All underground assets would be installed in line with current best practice guidance, which provides guidance on the minimum burial depth in the relevant land-use types (e.g. to allow the ongoing use of the land for agricultural activities).

Horizontal Directional Drilling – Landfall

4.6.109 HDD boreholes would be drilled under the seabed and shoreline, and lined with underground ducts to allow the offshore HVDC cables to be pulled through (from the sea towards the land) and connected to the onshore HVDC cables at the transition joint bays.

4.6.110 A borehole would be drilled below ground and beneath the seabed surface for each power cable. A fibre optic cable (FOC) can be installed within the same bore as a power cable. A small pilot borehole would initially be used, which is then enlarged by a larger cutting tool. A duct would be placed inside the borehole, through which the cable is pulled.

4.6.111 The installation would require a temporary construction compound (approximately 10,000 m^2) and associated temporary utility services, which would contain all necessary plant and equipment plus parking and welfare facilities required for the landfall construction works.

4.6.112 Once the drill is complete, the TJB structures would be completed. As detailed above, up to two TJBs would be required (one per cable circuit).

Landfall Key Parameters

4.6.113 The indicative design parameters of the construction works at landfall are shown below in **Table 4.6.8**.

Table 4.6.8: Landfall works indicative key parameters

Infrastructure	Key Parameter	Indicative Design Parameter
Landfall HDD	Maximum number of Power Cable Ducts	8
	Number of Fibre Optic Ducts	4
	Indicative length of HDD (m)	2,110
	Number of entry pits	4
	Number of exit pits	4
	Estimated volume of excavated material (m^3) per exit pit	75 m^3 (*5 m x 5 m x 3 m*)
	Temporary construction compound (m^2)	10,000
	Duration of works (months)	18 (split over two phases)
Transition Joint Bay (TJB)	Number of TJBs	2
	TJB Approximate Depth (m)	2.5
	Volume of excavated material (m^3) per TJB	1,875 m^3 (*50 m x 15 m x 2.5 m*)
	Area of TJB (m^2) (per TJB)	150 m^2 (*30 m x 5 m*)

4.7 Offshore Elements of the Proposed Development

4.7.1 This section of the Scoping Report describes the offshore design parameters of the Proposed Development. It sets out the proposed approach and methods associated with the construction phase activities planned within the Offshore Cable Corridor. This project description forms the basis on which the offshore EIA assessments would be made.

Offshore Cable Corridor

4.7.2 The extent of the Offshore Cable Corridor assessed in this Scoping Report 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.

4.7.3 Route optimisation studies have informed the routing of the Offshore Cable Corridor; these studies have included multiple desktop studies and marine investigation surveys. Route optimisation has considered water depth, seabed 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 SAC, SPA and MCZs .

4.7.4 The Proposed Development Scoping Boundary for the Offshore Cable Corridor has a nominal width of 500 m extending up to 1500 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).

4.7.5 The width of the Offshore Cable Corridor will allow some flexibility for micro-routing of the final cable route within it. Micro-routing will be informed by the final review of information obtained from the geophysical and geotechnical surveys, in addition to potential comments from relevant stakeholders. The Offshore Cable Corridor to be assessed in this EIA Scoping Report is shown in **Figure 4.7.1**.

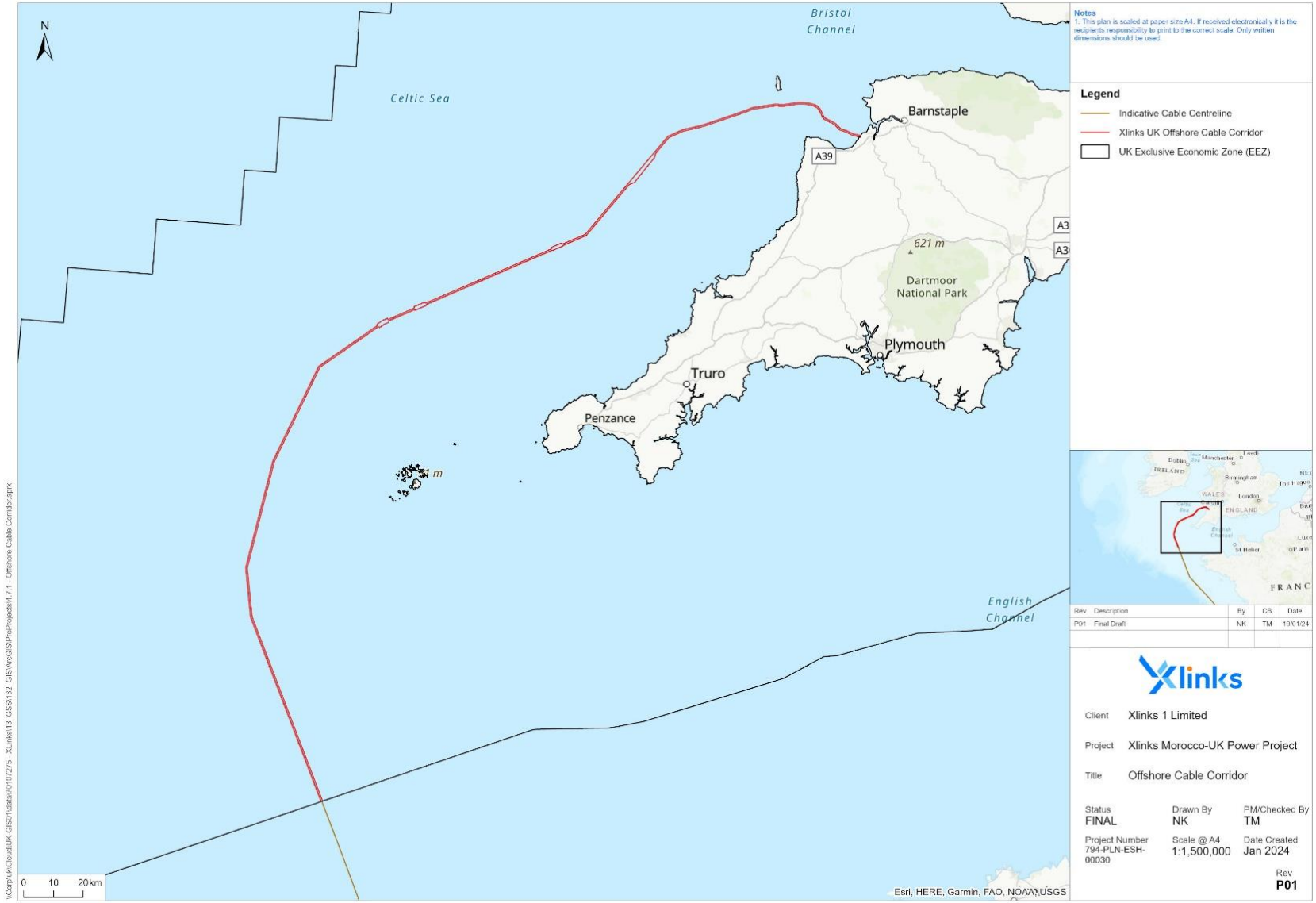

Figure 4.7.1: Offshore Cable Corridor

Offshore Cable Design

4.7.6 The offshore cables would consist of four 525 kV HVDC marine power cables which would be installed for the majority of the cable route as two bundled pairs. The bundled pairs would be separated into four individual cables approximately 1 km offshore, before the landfall HDD entry points, to allow each cable to be pulled onshore through individual HDD ducts.

4.7.7 Each offshore HVDC cable would have a diameter of approximately 175 mm and an approximate weight of 70 kg/m in air. Each cable pair (forming a bipole) would facilitate the transfer of 1.8 GW to the GB national grid, resulting in a total of 3.6 GW power supply into GB.

4.7.8 In addition to the four (total) HVDC marine power cables, two (totalFOC would provide a cable monitoring fibre system (DAS and/or DTS). Each FOC would be approximately 35 to 40 mm in diameter and laid together with the marine cables within a shared trench (one FOC per cable bundle). FOC repeaters would be required approximately every 70 km along the Offshore Cable Corridor (four to five repeaters per bipole). At each repeater location, there would be an FOC 'omega loop' installed (if required) adjacent to the cables for the installation of the repeaters and ongoing maintenance purposes. The length of the omega loops would be equal to the water depth at the loop location and would be within the boundary of the Offshore Cable Corridor. The omega loops would be buried to the same depth as the HVDC cables in accordance with the Cable Burial Risk Assessment (CBRA). It is assumed that the omega loops would be buried using the same, or less intrusive, methods as the HVDC cables.

4.7.9 At the landfall, the FOCs would be installed alongside an HVDC cable within a dedicated HDD duct, adjacent to one of the power cable ducts (within the same HDD bore the power cable duct was pulled in/pushed to).

Programme and Installation Schedule

4.7.10 Offshore installation works for Bipole 1 (first cable bundle) are scheduled to begin in 2028 and it is anticipated that these works would be completed by the end of the same year. For Bipole 2 (second cable bundle), works would begin in 2030 and are also anticipated to be completed in the same year. The landfall HDD works are provisionally scheduled to be undertaken in advance of cable laying.

4.7.11 Cable laying would be undertaken in up to five campaigns (per cable bundle). Campaigns are scheduled to be undertaken between February and October in 2028 and 2030 but could take place at other times of the year subject to weather limitations of the Cable Lay Vessel (CLV).

4.7.12 Pre-lay, burial and protection activities would progress broadly in parallel with the expectation that cable lay and the start of burial would be up to a few days apart (noting that burial and protection activities would take longer to complete than the cable lay). Guard vessels would be provisioned for any periods after the cable has been laid, but has not yet been buried or protected, to minimise the risk of interactions with other marine traffic.

Construction Phase

Horizontal Directional Drilling – Marine Works

4.7.13 As discussed earlier in **paragraph 4.6.109**, HDD would be required at the landfall to avoid disturbance of the intertidal zone, the beach and the foreshore including coastal cliffs. This section provides a summary of the marine elements of the HDD works.

4.7.14 The HDD would be undertaken in a land to sea direction. For each borehole, a pilot hole would be drilled to within approximately 50 m of the seabed exit points. The drilled bore would then be widened to its full intended diameter before the remainder of the bore is drilled. Redundant drilling fluid and cuttings would be removed and disposed of responsibly from the land-based works.

4.7.15 The primary HDD activity that interacts with the marine environment is the breakthrough, or 'punchout', of the drill from underneath the seabed.

4.7.16 During breakthrough, drilling fluid and cuttings would be released into the immediate marine environment. The use of drilling fluids that are on the OSPAR PLONOR list (Pose Little Or No Risk to the environment) would be prioritised to minimise the risk to the marine environment during breakthrough. The volume of drilling fluid and cuttings lost during breakthrough is minimised by the adopted construction approach i.e., the boreholes having already been drilled to their full diameter prior to breakthrough of the seabed and the continuous removal of drilling fluid and cuttings during this operation. Lower drilling fluid flow rates are also used during breakthrough to minimise the loss of drilling fluid.

4.7.17 An excavated trench may be required at HDD exit points on the seabed to remove sediment layers (sand and pebbles) that may jam HDD equipment on breakthrough or prevent subsequent duct installation once the boreholes have been drilled. Localised excavations are expected to be undertaken by a Trailing Suction Hopper Dredger (TSHD) with sediment removed from an area of approximately 15 m x 15 m around the exit points.

4.7.18 Exit points in the marine environment for the four drills are currently being considered at 6 m water depth (approximately 540 m offshore), or at 9 m water depth (approximately 1,360 m offshore).

4.7.19 Dependant on the contractor's design and depth of the boreholes, there would be an approximate 40 m separation between adjacent drill exit points for cables on the same circuit, and approximate 50 m separation between circuits (i.e., all four exit points would be within an area of the seabed of approximately 130 to 150 m wide).

Duct Installation

4.7.20 Following drilling of the four boreholes, ducting would be installed in each bore. Three methods are being considered for the installation of ducting: pulling the ducting from either onshore or offshore or pushing the ducting through the boreholes from onshore.

4.7.21 A pulled installation with a pulling winch onshore requires a complete string of duct to be towed (afloat) from offshore to the HDD exit points and pulled onshore through the boreholes. If the pulling winch is located offshore, then the string of duct can be fabricated at the HDD onshore site as the duct is pulled offshore.

4.7.22 A pushed installation involves the fabrication of the ducts at the HDD onshore site with the ducts fed into the entry points and driven through the boreholes using a pipe thruster. The project design team have rejected any option of moving ducting across the beach, which would effectively be isolated from the HDD works. The choice of the HDD installation method avoids potential impacts to designated sites and the intertidal zone as detailed in **Section 4.8.**Once in position, the ducts are sealed at each end until ready to receive the cables.

4.7.23 Both methods of duct installation require marine vessels, however, the pull method would require additional vessels relative to the push method.

Pre-Lay Marine Surveys

4.7.24 The baseline UK marine investigation surveys, that included geophysical surveys, subtidal drop-down video surveys and subtidal grab surveys have been completed and are not the subject of the Scoping Report.

4.7.25 Prior to cable installation, additional ground condition surveys may be required by the Contractor. These are unlikely to be required to further characterise the environmental baseline (given the high resolution baseline data collection already compiled for the Offshore Cable Corridor within UK waters, but may be required for micro-routing purposes or to identify any Unexploded Ordinance (UXO) within the Offshore Cable Corridor that may need to be avoided or cleared. If required, UXO clearance (removal or detonation) would be undertaken by a specialist contractor and any such works would be subject to a separate consenting process at the time such need is identified. As such, consideration of effects from activities associated with UXO clearance have been excluded from this EIA Scoping Report.

Route Preparation

4.7.26 The marine baseline investigation surveys and any pre power cable laying ground condition survey would inform the requirements for, and extent of, seabed preparation and clearance along the Offshore Cable Corridor in UK waters. Two types of seabed preparation could be required prior to cable installation:

- Clearance of debris and some local seabed features e.g. boulders and sandwaves; and
- Construction of crossing structures over existing in-service cables.

Seabed Debris

4.7.27 Where deemed necessary, marine debris such as abandoned, lost or discarded fishing gear that may impede the cable installation operations, would be cleared from the cable route prior to installation. This would require a pre-lay grapnel run involving towing a heavy grapnel hook of circa 1 m total width, at a max penetration depth of circa 1 m, along the centre line of each bundled cable pair route to clear debris.

4.7.28 Debris collected during the grapnel run would be recovered on board the vessel for onshore disposal at appropriately licensed disposal facilities.

Out of Service Cables

4.7.29 There are currently 28 crossings of Out of Service (OOS) cables along the UK Offshore Cable Corridor. Subject to discussions with owners of the OOS cables, a section of these OOS cables that cross the route would be cut and recovered to the vessel for onshore disposal at appropriately licensed disposal facilities.

Sandwaves and Large Ripples

4.7.30 Where the baseline marine investigation surveys have identified the presence of areas of mobile sediments (e.g. sandwaves and large sand ripples) that cannot be avoided through micro-routing within the route corridor, these features may need to be removed and the seabed flattened to facilitate burial in more stable sediment.

4.7.31 Two methods are being considered to achieve this:

- Mass Flow Excavation (MFE); and
- Seabed ‘surface plough’/leveller.

4.7.32 MFE utilises a jetting tool that uses high flow water jets to temporarily displace and suspend sediments for seabed levelling. Based on the provisional assessment of the geophysical survey data, the MFE is anticipated to be needed infrequently, if at all (to be confirmed following review of final survey reports).

4.7.33 Localised seabed levelling would be undertaken by a surface plough or leveller, with a swathe width up to 15 m wide and which is towed across the seabed to create a flatter profile.

4.7.34 The areas of disturbance from MFE and seabed levelling, if required, are unknown at the time of scoping and will be determined as the geophysical and geotechnical survey data are assessed.

Cable Installation Methods

4.7.35 The HVDC cables would be installed as two bundled pairs from a CLV. The specific CLVs that would install the HVDC cables is unknown at this stage and would be determined by the selected Cable Contractor. For the purposes of scoping and based on CLVs currently in operation, it is anticipated that two turntables would be mounted on the CLVs, each holding approximately 80 to 160 km of HVDC cable.

4.7.36 As the CLV travels along the route, the two turntables release cable at the same rate and the two cables are bundled together at the stern of the vessel and fed overboard. An additional cable turntable would contain the fibre optic cables, which would be installed as part of the bundle. Tensioners control the cable tension and cameras monitor the cable to ensure it is laid safely on target.

4.7.37 It is anticipated that the cables would be buried along the total length of the route (approximately 370 km) with the exception of crossings.

Cable Burial Method

4.7.38 Burying the cables would provide protection and avoid damage and future entanglement with fishing equipment or other marine users. A number of cable burial techniques are available. It is intended to bury the cable in a trench, which

would be excavated by either a water jet or a mechanical cutter, both of which are mounted on a Remotely Operated Vehicle (ROV).

4.7.39 Once the cables have been laid on the seabed (by the CLV), the ROV is lowered to the seabed until it straddles the cable bundle lying on the seabed. Where the water jetting ROV is deployed, two jetting legs (also known as swords) would extend down either side of the cable bundle and fluidise the seabed immediately below the cable bundle enabling it to sink under its own weight. Where the mechanical cutter ROV is deployed, the tool would lift the cables up above the seabed safely out of the way of the rotating cutting arm and would then feed the cables into the trench behind the ROV.

4.7.40 Cable burial depth would be monitored as the burial tool progresses. Where the target burial depth is not achieved on first pass of the tool, a second pass may be required using the water jet.

4.7.41 The footprint of the mechanical cutter ROV on the seabed is up to 126 m^2 (10 m in width and 12.6 m in length) and the water jet ROV up to 55.2 m^2 (6 m in width and 9.2 m in length).

4.7.42 The rate of trenching progress typically ranges from c.50 to 400 m per hour.

Additional Cable Protection

4.7.43 Provisional review of the geotechnical survey results suggests that the majority of the Offshore Cable Corridor would allow cable burial. There may be areas where the route crosses very hard seabed and/or boulders where burial (or full depth burial) is not possible. In these areas, to ensure the protection of the cables they would be covered with a layer of rock protection. Development and review of the CBRA will inform detailed understanding of the burial details along the Offshore Cable Corridor in the PEIR and ES.

4.7.44 Soft sediments may return over the rock as a result of natural seabed mobility which would promote consistency and recolonisation of benthic habitats post construction. Some burial machines push cut sediments back into the trench as they progress or collapse the ‘corners’ of the trench to encourage fill and cover (as appropriate to specific sediment types).

Cable crossings

4.7.45 Where the cables cross other in-service cables, the cable would not be buried in a trench. The trench depth would taper to seabed level at a suitable distance from the in-service cable to be crossed and the cable would cross above the in-service cable. The cable would then be buried again on the other side of the in-service cable.

4.7.46 Where the cable crosses in-service cables, whether buried or surface laid, a layer of separation in the form of a pre-lay rock berm or concrete mattresses may be installed over the crossed asset. The cable would then also require protection in the form of a post-lay rock berm. The height of the concrete mattress and rock berm would be approximately 1.4 m above the seabed. The footprint of each crossing would depend on factors such as the crossing angle, The maximum footprint of a cable crossing rock berm on the seabed is indicatively c. 3,500 m^2 (500 m length and 7 m wide).

4.7.47 It is anticipated that 21 such crossings would be required and all crossings and crossing agreements would be in line with international standards and best practice.

Cable Burial Depth, Width and Spacing

4.7.48 The intended depth at which the cables would be buried is up to a depth of 1.5 m, subject to a detailed CBRA.

4.7.49 The width of the trench in which the cable bundles would be buried typically ranges from 0.5 to 1.5m. The infrequent cable joints and FOC repeater locations may require additional trench width.

4.7.50 The cable spacing between the two bundled pairs is expected to be between 50 – 180 m (remaining within the 500 m cable corridor). Spacing may be increased to approximately 250 m in certain areas such as areas of high shipping density to reduce the risk of an anchor strike causing a fault to both cable bundles.

Installation Vessels

4.7.51 Cable installation activities would be undertaken on a 24 hour/7 day basis, unless interrupted by weather or other disruptions. This would maximise the available operational weather windows, vessel and equipment time, and minimise navigational impacts on other users of the sea.

4.7.52 A description of likely vessel groups to be utilised during the installation activities of the Proposed Development is provided below:

- Vessels for pre and post-installation surveys.
- Workboats/construction vessels and tugs for all works including route clearance/preparation, installation of rock protection/concrete mattresses, duct installation, cable pull and floating in, and dive support , depending on requirements. These workboats often deploy ROVs and would utilise geophysical survey and positioning equipment to monitor the progress of the works, and for positioning of any ROVs or other underwater equipment needed to complete the works.
- CLVs for cable laying.
- Guard vessels – as necessary, these would accompany the CLV to maintain surveillance around the worksite ensuring other vessels are kept clear, reducing the risk of collision and to protect the cable prior to burial.
- Rock placement vessel – where rock placement is required for additional cable protection (e.g. at cable crossings), a rock placement vessel may be used. Such vessels feature a rock storage hopper and equipment by which rock can be placed in situ on the seabed, such as fall pipes.
- Jack up vessel / multi-cat vessel – for the HDD works (breakthrough, duct push/pull and duct sealing works) near the landfall, jack up vessels would be deployed to enable stable and safe marine works in the tidal environment.

4.7.53 The precise number of vessels to be used is to be determined by the Cable Contractor, however, it is expected that four trenching vessels, one CLV (two for brief periods during changeovers), and 20 guard vessels stationed every 10 nm would be required.

4.7.54 It is anticipated that a maximum of two jack up / multi-cat vessels would be required for the offshore HDD works.

Offshore Works Design Parameters

4.7.55 The design parameters of the offshore works are shown below in **Table 4.7.1**

Table 4.7.1: Indicative Offshore Works Design Parameters

Infrastructure	Key Parameter	Indicative Design Parameter
Offshore Cable Corridor	Length of Offshore Cable Corridor in UK waters	370 km
	Width of Offshore Cable Corridor	500 m (extending up to 1,500 m at some locations to provision for greater micro-routing flexibility e.g. at crossings)
Offshore Cable Design	Number of HVDC marine power cables	4
	Number of FOC	2
	Number of cable bundles or bipoles (one bundle is two HVDC cables and one FOC)	2
	Number or FOC repeaters	4 to 5 per bundle (approximately one every 70 km along each bundle in UK waters)
	Number of omega loops	4 to 5 per bundle (at repeater locations)
HDD Marine Works	Number of HDD boreholes	4
	Number of offshore exit pits	4
	Area to be dredged around each exit pit	Approximately 15 m x 15 m
	Exit pit overlying water depth	6 m (approximately 540 m offshore) or 9 m (approximately 1,360 m offshore)
	Separation between exit points for cables on the same circuit	40 m
	Separation between circuits	50 m
	Drilling fluid	Bentonite
Route Preparation	Width of grapnel hook for removal of seabed debris	Approximately 1 m
	Max penetration depth of grapnel hook	Approximately 1 m
	Swathe width of surface plough for seabed levelling (where required)	15 m
Cable Installation	Number of cable trenches	2
	Cable burial depth	Up to 1.5 m
	Trench width	0.5 to 1.5 m
	Cable trench spacing	50 to 180 m (up to 250 m in certain areas e.g., areas of high shipping density)
	Footprint of mechanical cutter ROV	up to 126 m^2 (10 m in width and 12.6 m in length)
	Footprint of water jet ROV	up to 55.2 m^2 (6 m in width and 9.2 m in length)
	Number of OOS cable crossings	28
	Number of in-service cable crossings	21

Infrastructure	Key Parameter	Indicative Design Parameter
	Maximum footprint of in-service cable crossing rock berms	Approximately 3,500 m^2 (500 m in length and 7 m wide).
	Cable installation working hours	24 hours/7 day basis
	Expected number of vessels for cable installation	CLV – 1 (briefly 2 at changeovers); trenching vessels – 4; guard vessels – 20.

4.8 Embedded Mitigation Measures

4.8.1 The EIA Regulations require a description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment. A number of mitigation measures are proposed which form part of the Proposed Development and are referred to in this Scoping Report as 'embedded mitigation measures'. These include measures that are part of the design itself such as modifications to the location or design aspects and also those measures required to meet other legislative requirements or standard practices.

4.8.2 The individual topic sections of this Scoping Report identify the embedded mitigation measures of relevance to the assessment of each topic. The following tables incorporate the embedded mitigation measures that can be applicable across all Topic Sections. The onshore and offshore mitigation measures for the Proposed Development are shown in **Table 4.8.1** and **Table 4.8.2** respectively.

4.8.3 The Applicant envisages the following embedded mitigation measures provided in **Table 4.8.1** and **Table 4.8.2**. These will be reviewed and considered through the design process.

Table 4.8.1: Onshore embedded mitigation measures

Embedded Mitigation Measure	Description
Onshore Construction Environmental Management Plan (CEMP)	A CEMP incorporates additional measures which specifically focus on how adverse environmental effects would be minimised during construction. An outline CEMP will be provided with the ES.
Construction Traffic Management Plan(s) (CTMP)	The movement of construction vehicles entering and exiting construction sites as well as the utilisation of the highway network would be controlled and outlined in the CTMP(s). In doing so, potential impacts on sensitive receptors can be avoided or at least reduced. An outline CTMP will be provided with the ES.
Dust Management Plan (DMP)	A DMP will be incorporated within the CEMP in line with the Guidance on the assessment of dust from demolition and construction (Institute of Air Quality Management (IAQM), 2023). A DMP assists in the appropriate management techniques to limit dust soiling from construction and decommissioning activities.
Ecological Clerk of Works (ECoW)	An ECoW will be a requirement of the CEMP. The ECoW would instruct, oversee and manage ecology measures to be included in the CEMP during the construction of the Proposed Development. The ecology measures to be included in the CEMP will be explained to construction staff during Ecology Toolbox Talks by the ECoW.

Embedded Mitigation Measure	Description
Horizontal Directional Drilling	HDD would be used in order to reduce the disruption to any designated sites. This is also part of the Project Design.
Operational Drainage Scheme	To include measures to ensure that existing land drainage is reinstated and/or maintained. This will include measures to limit discharge rates and attenuate flows to maintain greenfield runoff rates at the Converter Site. The Operational Drainage Scheme will be developed in line with the latest relevant drainage guidance notes in consultation.
Onshore Decommissioning Plan	To be developed by the Operator prior to decommissioning in a timely manner. The Onshore Decommissioning Plan will include provisions for the removal of onshore above ground infrastructure and the decommissioning of below ground infrastructure and details relevant to flood risk, pollution prevention and avoidance of ground disturbance. The Onshore Decommissioning Plan will be in line with the latest relevant available guidance.
Soil Management Plan (SMP)	The SMP would include measures to ensure the protection, retention and potential enhancement (as part of any potential mitigation strategy) of soils during construction of the onshore elements of the Proposed Development, including any potential mitigation areas required. It is anticipated the SMP would be incorporated as an Appendix in the CEMP.
Site Waste Management Plan (SWMP)	The SWMP will incorporate the appropriate measures to manage waste produced from the onshore elements of the Proposed Development. It is anticipated the measures detailed in the SWMP would be incorporated as an Appendix in the CEMP.

Table 4.8.2: Offshore embedded mitigation measures

Embedded measure	Description
Appointment of a Fisheries Liaison Officer (FLO)	Allow for the communication and liaison between the applicant and commercial fisheries during the construction phases.
Horizontal Directional Drilling	HDD would be used in order to reduce the disruption to the intertidal zone. This is also part of the Project Design.
Horizontal Directional Drilling	Bentonite, an inert clay that is included on the OSPAR PLONOR list of substances that pose little risk to the environment, would be used as the HDD drilling fluid to limit the risk to the marine environment.
Biosecurity plan	In order to reduce the likelihood of introducing Marine Invasive Non-Native Species (INNS) during all phases of the Proposed Development, a biosecurity plan would be adhered to with the incorporation of a biosecurity risk assessment.
Cable Burial Risk Assessment	Suitable implementation and monitoring of cable protection (via burial and within trench rock protection principally) as informed by CBRA, taking into account anchoring and fishing practices.
Offshore Construction Environmental Management Plans (CEMPs)	The CEMPs (potentially multiple) will be key documents assisting the applicant and Contractor in complying with set planning conditions and relevant legislation, policy, and guidance. The CEMPs will be live documents, updated as required throughout the planning and construction process.

Embedded measure	Description
Marine Mammal Mitigation Protocol (MMMP)	An MMMP is designed to list the appropriate mitigation measures, in line with regulations, to minimise the disturbance to marine mammals and sea turtles during offshore activities.
Marine Pollution Contingency Plan (MPCP)	An MPCP will be produced as part of the CEMP and will include measures to minimise the impact of any events as well as compliance with the International Convention for the Prevention of Pollution from Ships (MARPOL).
Shipboard Oil Pollution Emergency Plan (SOPEP)	For compliance with the requirements of MARPOL, all project vessels with a gross tonnage (GT) above 400 tonnes would require a SOPEP detailing the emergency actions to be taken in the event of an oil spill.
Site Waste Management Plan (SWMP)	The SWMP will incorporate the appropriate measures to manage waste produced from the offshore elements of the Proposed Development. The measures detailed in the SWMP would be incorporated into the CEMP.
Vessel Management Plan (VMP)	The VMP will confirm the types and numbers of vessels that would be engaged on the Proposed Development and consider vessel coordination including indicative transit route planning.

4.8.4 The embedded measures presented in **Table 4.8.1** and **Table 4.8.2** have been further discussed in **section 4.9** and **section 4.10.**

4.9 Onshore Construction Environmental Management (Including Landfall)

Introduction

4.9.1 The landfall and onshore elements of the Proposed Development would be constructed in an environmentally sensitive manner. They would meet the requirements of all relevant legislation, codes of practice and standards as identified in the topic sections of this Scoping Report and would limit the adverse effects on the local community and environment as far as reasonably practicable.

4.9.2 Key environmental principles and measures during construction are set out in this section.

Construction Environmental Management

4.9.3 Construction of the Proposed Development would be managed through CEMPs that set 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. CEMPs will be prepared for each of the main works packages (i.e. offshore cables, onshore cables and Converter Site).

4.9.4 Outline CEMPs will be developed and submitted with the application for development consent. The outline CEMPs would be developed into final CEMPs, which would be agreed with Torridge District Council prior to the commencement of construction. The final CEMPs shall include the measures set out in the outline CEMPs, together with any further detail available at that time.

4.9.5 The final CEMPs would be supported by detailed Construction Method Statements to be produced by the lead construction contractor(s), which would provide method statements for construction activities detailing how the requirements for the final CEMPs are met.

4.9.6 In a similar manner, a CTMP would also be produced for each of the two onshore main works packages (onshore cables and Converter Site) prior to the commencement of construction, based on the outline CTMP provided with the application for development consent.

Construction Working Hours

4.9.7 Normal construction working hours would be Monday to Friday 07:00-18:00 and Saturday 07:00-13:00. However, some operations may require work to take place outside these times. For example, Abnormal Indivisible Loads (AILs) may be encouraged or required to travel overnight and crossings of roads may be constructed overnight to minimise disruption to traffic.

4.9.8 Additionally, continuous concrete pours or HDD works may require work outside of these normal construction working hours. These works would be agreed with Torridge District Council, if necessary. For example, The Control of Pollution Act 1974 gives the Council powers to control noise and vibration from construction sites and other works. Section 61 allows contractors to apply for Prior Consent and agree working hours, site noise levels and other measures prior to work starting.

4.9.9 Up to an hour before and after the normal construction working hours, the following activities may be undertaken:

- arrival and departure of the workforce at the site and movement around the main Proposed Development that does not require the use of plant;
- site inspections and safety checks; and
- site housekeeping that does not require the use of plant.

Construction Working Areas and Laydown

4.9.10 The main construction working, and laydown areas would be contained within the Proposed Development boundaries. Temporary construction compounds would be required along the cable route where HDD works are required, either side of HDD crossings. Additionally, there would be additional compounds at the landfall, A39, Converter Site and at the western end of Gammaton road (see **paragraph 4.6.65** for further details).

4.9.11 In line with National Highways' water preferred policy (National Highways, 2019) for transporting abnormal loads, it is anticipated that Appledore Quay, Bideford would be used for import and storage of transformers, cable drums and potentially other large items.

Temporary construction fencing

4.9.12 All temporary working areas within the Proposed Development Scoping Boundary, including the Onshore HVDC Cable Corridor, Converter Site (including HVAC cable works), and landfall, would be clearly marked and secured with appropriate fencing. The permanent Converter Site would be secured within a double security

cordon when complete. Security at the Converter Site would be carefully managed during construction commensurate with its state of completion.

4.9.13 Allowances would be made for private land access, livestock crossing and relevant ecological constraints in consultation with individual landowners.

4.9.14 The type of temporary fencing to be used would be dependent on the land use. Fencing would be installed as part of the early construction works and may consist of:

- security fencing for temporary construction compounds;
- post and rope for arable land;
- post and rail for equestrian uses; or
- post mesh and wire/barbed wire for cattle and sheep.

4.9.15 Furthermore, construction compounds may employ hoardings at the perimeter or at task specific locations.

4.9.16 Fencing details will be confirmed during detailed design in consultation with affected landowners.

Lighting

4.9.17 Directional lighting would be required during normal construction hours in winter. Outside normal construction working hours, motion-activated directional security lighting may be used at the Converter Site, and where required/on demand for the buried cable route, and at the construction compound areas.

Cable Crossings

Hedgerow Crossings

4.9.18 The design of the Proposed Development has considered the location of important ecological features, such as woodland, important hedgerows, and watercourses.

4.9.19 Design of the onshore cable route has sought to minimise the impact on mature vegetation both through routing choice and narrowing the route where it crosses important hedgerows. However, where hedgerows and trees are affected by the construction of the Onshore HVDC Cable Corridor they would be removed, except for sections of the route where HDD is proposed (such as beneath substantial areas of woodland, like Littleham Wood). In addition, hedgerow removal may be required to allow for access and to meet visibility requirements at site access points.

4.9.20 Hedgerow would be removed outside of the bird nesting season so that nesting birds are not disturbed. Hedgerow removal would be carried out under a European Protected Species (EPS) licence and would utilise a two-phased clearance to ensure the protection of dormice. The Proposed Development would include the full reinstatement of the hedge-banks on a ‘like for like’ basis that would be undertaken on completion of cabling works. Where appropriate, hedgerow enhancement would be carried out to improve the habitats and increase biodiversity within and outside the Proposed Development Scoping Boundary.

4.9.21 An Outline Landscape and Ecology Management Plan would be developed and would include a plan to monitor establishment and progress of newly created habitats (and those areas where reinstatement has been undertaken), along with ongoing management measures to ensure that new habitats fully develop and remain functional into the future.

4.9.22 As stated above, the typical corridor width would be reduced when crossing important hedgerows (as defined by the Hedgerows Regulations 1997) or where other constraints create a 'pinch point'. The reduced width would be achieved through engineering techniques such as:

- using lower thermal resistivity backfill in the cable trench; and/or
- removing spoil to a storage area further up or down the cable route (away from the reduced working width location), thereby negating the need to store spoil adjacent to the trenches.

Road Crossings

4.9.23 Where the cable route crosses local roads and private accesses, access to properties and settlements would be maintained. Where diversions on the existing road network are readily available, temporary road closures would be undertaken.

4.9.24 Road closures would be phased in order to ensure that access is retained to all villages and properties.

4.9.25 HDD would be required for the crossing of major roads (e.g. A39), as detailed within **paragraph 4.6.88**.

Construction Workforce and Access

4.9.26 Access would be required for HGVs, AILs for certain items (drill rigs, transformers, cable drums, large cranes or construction plant) and for construction workforce traffic. Cable route construction traffic would enter and leave at the main compound locations before moving along the route on purpose built temporary haul roads.

4.9.27 Access to the Converter Site during construction may similarly utilise the Onshore HVDC Cable Corridor alongside the Gammaton Road in addition to the minor road network depending upon the sequencing of the proposed road widening.

4.9.28 The construction workforce is expected to be up to 400 Full Time Equivalent (FTE) workers, for a construction programme of approximately up to 84 months. As detailed within **section 4.5**, the construction programme would be divided into two overlapping phases.

4.9.29 This would be managed through CTMP(s), which would be agreed with Torridge District Council prior to the commencement of construction. Construction workforce traffic would use the A39 as far as possible to minimise travel along local roads. However, some local roads would need to be used to reach some parts of the Onshore HVDC Cable Corridor. Temporary internal haul routes would be constructed along sections off the cable route to remove frequent vehicle movements from the public highway.

4.9.30 Measures would be implemented to minimise dust, mud and debris associated with the movement of construction vehicles. These measures would be implemented through the final CEMPs.

4.9.31 On completion of construction, temporary vehicle accesses would be reinstated to the original highway.

Construction Drainage

4.9.32 The construction phase would incorporate pollution prevention and flood response measures to ensure that the potential for any temporary effects on water quality or flood risk are reduced as far as practicable.

4.9.33 Such measures would be implemented through the CEMPs and associated Construction Method Statements, which require the following:

- installation of wheel washing facilities at the exit from all construction compounds;
- use of sediment fences along existing watercourses/waterbodies when working nearby to prevent sediment being washed into them;
- covers for lorries transporting materials to/from site to prevent releases of dust/sediment to watercourses/drains;
- bulk storage areas to be secured and provided with secondary containment (in accordance with the Oil Storage Regulations and best practice);
- storage of oils and chemicals away from existing watercourses, including drainage ditches or ponds;
- concrete to be stored and handled appropriately to prevent release to drains;
- treatment of any runoff water that gathers in the trenches would be pumped via settling tanks or ponds to remove any sediment;
- obtain consent from the relevant regulatory authority for any works (e.g., discharge of surface water) that may affect an existing watercourse. The conditions of the consent will be specified to ensure that construction does not result in significant alteration to the hydrological regime or an increase in fluvial risk;
- use of a documented spill procedure and use of spill kits kept in the vicinity of chemical/oil storage;
- storage of stockpiled materials on an impermeable surface to prevent leaching of contaminants and use of covers when not in use to prevent materials being dispersed and to protect from rain; and
- stockpiles to be kept to minimum possible size with gaps to allow surface water runoff to pass through.

Construction Waste

4.9.34 Waste would be generated as a result of the Proposed Development, with most waste expected to be generated during the construction and decommissioning phases. In accordance with Government policy contained in NPS EN-1 (DECC, 2011a; DESNZ, 2023a), consideration will be given to the types and quantities of waste that would be generated.

4.9.35 Procedures for handling waste materials will be set out in SWMP and Outline CEMP. The SWMP will describe quantities of likely waste type arising from the Proposed Development and how they would be managed (i.e., reuse, recycling,

recovery or disposal). The SWMP will also describe the duty of care requirements and identify potential management facilities in the vicinity of the Proposed Development.

4.9.36 The SWMP will be updated as further detailed design information becomes available prior to construction. A Materials Management Plan in line with the Contaminated Land: Applications in Real Environments Definition of Waste: Code of Practice will also be prepared and agreed prior to commencement of construction.

4.9.37 The Outline CEMPs will provide details of the broad types of waste produced during construction and includes good practice measures for managing waste generated during construction. All waste generated would be disposed of by a suitably licensed waste contractor to an appropriately licensed waste disposal facility.

4.9.38 Given the history of the majority of the cable route as agricultural use, potential contamination from former use of agrochemicals or other agricultural activities cannot be discounted. In addition, there are some potentially contaminative historical sources, including a quarry, lime kilns and a former rifle range, along the cable route. Measures to manage contaminated land will be outlined in the Outline and Final CEMP(s).

4.9.39 Construction of the cable routes would require the excavation of spoil. During construction, excavated material would be stored temporarily alongside the trenches in the cable corridor working width prior to replacement within the trench. In the event that any material from the site is identified as not being suitable for use on site, some material may need to be transported away from the site to a suitably licensed site.

Use of Natural Resources – Construction

4.9.40 The Outline CEMPs would require the contractors to identify the main types and quantities of materials required for the Proposed Development in order to assess the potential for sourcing materials in an environmentally responsible way. The construction specification would place preference, when options are available, on the use of materials with a high recycled content.

4.9.41 The Considerate Contractors Scheme includes measures relating to the use of resources, including categories related to minimising the use of water. All timbers used as primary structural elements would be required to be Forest Stewardship Council certified.

4.9.42 The construction process would take into account the principles of good practice in soil handling and restoration set out in the following documents, wherever possible, to reduce the possibility of damage to soil materials during the construction process:

- Ministry of Agriculture, Fisheries and Food (MAFF) (2000) Soil Handling Guide; and
- Department for Food and Rural Affairs (Defra) (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (including the Toolbox Talks).

Local Community Liaison

4.9.43 The Applicant will establish an approach for liaising with the local community and stakeholders during the construction process, which will build on the engagement undertaken prior to and throughout the EIA process. A Project website, email address and phone number will remain in place.

4.9.44 A Communications Plan will be developed to ensure communication with the local community is appropriate, timely and easily understood. The plan will include provision for a Community Liaison Officer, who will actively work with the local community to ensure the local community is kept up to date with progress and that any queries arising are dealt with appropriately. The plan will also include a procedure for dealing with enquiries or complaints from the public, local authorities or statutory consultees.

4.9.45 A Community Liaison Officer will be provided as the main point of contact for landowners, to provide project updates and to resolve any queries arising during the construction phase.

Biodiversity Net Gain

4.9.46 The Applicant aims to mitigate for effects on habitats arising as a result of the Proposed Development and to deliver at least a 10% Biodiversity Net Gain (BNG).

4.9.47 Areas will be identified where current onshore habitat condition affords an opportunity to improve habitat quality or where enhancements can be made to habitats identified as functionally linked to designated sites.

4.9.48 The identification of suitable mitigation and net gain opportunities and refinement of the approach to mitigation and net gain will be refined as the design evolves and as surveys are completed. These surveys will continue to build a more detailed understanding of the current condition, linkages and opportunities present within the Proposed Development Scoping Boundary.

4.10 Offshore Construction Environmental Management

4.10.1 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, to actively limit adverse effects on the marine environment.

4.10.2 A key aspect of this approach is the development of an Offshore CEMP (or multiple CEMPs) 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 will detail the best practice approach to offshore activities and would implement those measures and environmental commitments identified in the PEIR/ES. The Offshore CEMP will be developed in accordance with the Outline Offshore CEMP submitted with the DCO application and will be a live document that is reviewed and updated throughout the construction of the Proposed Development.

4.10.3 Key environmental principles and measures during construction are set out in this section.

Marine Pollution Prevention

4.10.4 Detailed plans for the prevention of pollution at sea, and the management of any such incidents will be developed for the Proposed Development.

4.10.5 The Offshore CEMP will include the following plans to limit the potential for pollution incidents:

- Emergency Spill Response Plan;
- Waste Management Plan;
- MPCP; and a
- SOPEP.

4.10.6 All project vessels would have control measures and shipboard plans in place. In addition, project vessels would be compliant with the requirements of the following international agreements:

- International Convention for the Prevention of Pollution from Ships (MARPOL Convention);
- International Regulations for the Prevention of Collisions at Sea (COLREGS);
- International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention).

4.10.7 Drilling fluids required for HDD operations would be carefully managed to minimise the risk of unplanned breakouts into the marine environment. The use of best practice drilling fluids such as bentonite (OSPAR PLONOR list substance) would be prioritised.

Dredging Management

4.10.8 Localised dredging may be required for seabed preparation at the HDD exit points. A Dredging Management Plan will be developed to limit seabed disturbance and suspended sediment concentrations and control the generation of sediment plumes.

4.10.9 Appropriate dredging plant will be identified for the extent and volume of material to be dredged but it is considered that a Trailing Suction Hopper Dredger (TSHD) is the most likely dredger to be used.

4.10.10 Disposal options for the dredged material will be considered as the design evolves with beneficial re-use of dredged material the preferred option. Where this is not possible, alternative disposal options in line with regulatory and consenting requirements for disposal of dredged material will be adhered to. This Scoping Report considers the dredging activity only.

Marine Vessels

4.10.11 The installation of the cables would require various vessels including:

- pre installation survey vessels;
- workboats/tugs;
- CLVs;
- guard vessels;

- trenching support vessel;
- rock placement vessels; and
- jack up vessels.

4.10.12 To ensure the safe navigation and operation of project vessels and the safety of other marine users, the following plans will be developed as part of the Offshore CEMP:

- VMP;
- Navigation Safety Plan; and a
- Lighting and Marking Plan.

4.10.13 The above plans will identify measures to be implemented through the final Offshore CEMP including, but not limited to:

- the implementation of safety exclusion zones;
- appropriate notification of activities to other marine users;
- a clear process of marine coordination of all project vessels and vessel activity including vessel transit planning; and
- appropriate marking and lighting of vessels.

4.10.14 Where vessel anchoring is required, designated anchoring areas and protocols would be employed during offshore construction activities to minimise physical disturbance of the seabed.

Waste Management

4.10.15 Prior to cable installation, a pre-lay grapnel run may be required along portions of the Offshore Cable Corridor to clear the seabed of debris. Debris would be retrieved onboard the vessel for later onshore disposal.

4.10.16 In the case of marked abandoned, lost or discarded fishing gear (ALDFG), these would be returned to the MMO/relevant Inshore Fisheries and Conservation Authority (IFCA) for return to the owner of the marked gear. Unmarked gear and other debris retrieved on deck would be disposed of onshore at appropriate disposal facilities.

4.10.17 At OOS cable crossings, a section of the OOS cable would be cut and removed. The cut section would be recovered onboard the vessel and transported ashore for disposal at an appropriate onshore facility.

4.10.18 The above measures would be implemented through the Offshore CEMP and an associated Offshore Waste Management Plan.

4.10.19 In addition, all project vessels would be required to comply with the MARPOL Convention, which requires vessels to comply with regulations regarding the prevention of pollution and the discharge of sewage and garbage at sea.

Cable Protection

4.10.20 Where the cable cannot be buried at cable crossings, cable protection in the form of a rock berm or concrete mattresses would be required.

4.10.21 The placement of such cable protection can result in the loss of seabed habitat and the permanent change to a new seabed type. The requirement for such

protection measures will be carefully planned and mapped out to minimise the area of seabed affected at each location and protection measures would only be deployed where considered necessary for the safe operation of the Proposed Development and other marine users.

4.10.22 Design of crossings will adhere to international best practice guidance.

4.10.23 Specific measures to ensure the accurate deployment of cable protection measures to minimise loss of seabed habitat, would be implemented through the final Offshore CEMP.

Marine Invasive Species

4.10.24 Measures to prevent the introduction and spread of Marine INNS would be implemented through the Offshore CEMP and associated Biosecurity Plan.

4.10.25 A Biosecurity Risk Assessment will be undertaken to identify potential pathways of introduction, and critical control points for preventing the spread of Marine INNS.

4.10.26 All project vessels (where relevant) would be compliant with the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention).

Dropped Objects Procedures

4.10.27 Objects dropped overboard during the construction activities can pose a significant hazard to the marine environment and other marine users. The potential for objects to be dropped or otherwise accidentally deposited should be minimised as far as reasonably practicable.

4.10.28 A dropped objects procedure would be developed by the Contractor within the final Offshore CEMP, detailing the requirements and procedures for vessel operators to identify, record, notify the MMO and, where possible, recover dropped objects.

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 cable route (HVDC and HVAC), and offshore cable route, are presented below.

Converter Site

4.11.2 The proposed converter stations are likely to be operated 24 hours/7 days 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 FTE jobs, with up to 15 staff on-site at any one time in the day, reducing to approximately five overnight.

4.11.3 Operation and maintenance staff would be required to undertake routine on-site checks, as well as preventative and corrective works on a regular basis. As part of the general maintenance, there would likely be requirements for replacement or upgrade of components, however, this would be infrequent. In these instances,

additional deliveries and vehicles would be required, which may include HGV movements.

4.11.4 During periods of annual (once a year) or biannual (twice a year) maintenance, there may be additional maintenance staff required on-site (approximately 30 to 40 visitors) for 1 to 2 weeks per converter station. These maintenance periods would comprise sequentially switching off each converter station, whilst carrying out necessary checks, testing and replacement of electrical equipment and components.

Onshore Cable Route

4.11.5 Following completion of construction, access to the cable route would be from access points along the existing highway.

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

4.11.7 It is not expected that the TJBs at the landfall would need to be accessed during the operation and maintenance phase. However, link boxes would be provided with inspection covers to allow for access. Link boxes would require access in the event of a cable failure requiring replacement or repair, and for testing purposes.

4.11.8 In the event of a cable failure, access to link boxes would be required to identify where along the cable section the fault has occurred. Once this is detected, a maintenance team would be required to excavate, remove and replace the section of damaged cable along the route.

Offshore Cable Route

Inspection Surveys

4.11.9 The preferred installation methods are designed to minimise the number of cable inspection surveys that would be required. However, some cable inspection surveys are expected during the operational lifetime of the Project.

4.11.10 These surveys would involve the use of a single survey vessel equipped with an inspection ROV and geophysical survey equipment including Multibeam Echo Sounder (MBES), Side Scan Sonar (SSS) and a Magnetometer.

4.11.11 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).

Maintenance and Repair

4.11.12 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.

4.11.13 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.

4.11.14 Given additional cable length would need to be added to join the cut ends at the surface, the relayed cable would take up a greater footprint than the original cable through incorporation of a 'repair loop'. Any additional footprint associated with repaired sections would be anticipated to fall within the Offshore Cable Corridor.

4.12 Decommissioning

4.12.1 The Applicant is seeking consent for the installation, operation and maintenance of two converter stations and associated development including transmission infrastructure and highways improvements.

4.12.2 The converter stations would be designed, manufactured and installed for a minimum operational lifetime, which is currently anticipated to be 50 years. The operational lifetime of the onshore and offshore electricity cables (including both HVDC and HVAC) would exceed that of the converter stations. The highways improvements would not have a forecast end of life and would not be decommissioned.

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

4.12.4 In the event that the operational lifetime of the Proposed Development is not extended, decommissioning would take place. The decommissioning sequence would generally be the reverse of the construction sequence and involve similar types 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 will be considered in the relevant sections of the PEIR and ES.

4.12.5 The following sections provide details on the approach to decommissioning for the main components of the Proposed Development.

Onshore Electrical Infrastructure Decommissioning

4.12.6 An Onshore Decommissioning Plan would be developed in a timely manner in consultation with the relevant stakeholders and prior to commencement of decommissioning. The Onshore Decommissioning Plan would include provisions for the removal of all above ground infrastructure and the decommissioning of below ground infrastructure. The plan would focus on details relevant to flood risk, pollution prevention and avoidance of ground disturbance. The Onshore Decommissioning Plan would be developed in accordance with the latest available guidance, legislation and any new technologies at the time of the Proposed Development's decommissioning.

Converter Stations and HVAC Cables

4.12.7 The operation of the proposed converter stations are intended to form permanent elements of electrical infrastructure serving the national grid, however as stated above, the minimum operational lifetime is currently anticipated to be 50 years. It is likely that this operational lifetime could be extended through refurbishment and the replacement of equipment, rather than decommissioning.

4.12.8 If the operation of the Proposed Development does not continue beyond 50 years, the proposed converter stations would be decommissioned. If complete decommissioning is required, then all the electrical infrastructure and buildings would be removed and any waste arising recycled or disposed of in accordance with the waste hierarchy and relevant regulations at the time of decommissioning. The proposed Converter Site may be re-purposed for an alternate use (separately agreed and consented) or would be reinstated to a suitable use, in accordance with the Onshore Decommissioning Plan.

4.12.9 For the purposes of EIA, decommissioning of the proposed converter stations is assumed to be similar to the construction and in reverse sequence.

Onshore HVDC Cables

4.12.10 If the Proposed Development is required to be decommissioned, the proposed underground electricity (HVDC and HVAC) cables would be decommissioned. HVDC and HVAC cables may be recovered and removed by pulling the cables through the ducts (e.g., for recycling). Otherwise, they would be left in place in the ground with the cable ends cut, sealed and securely buried as a precautionary measure. Cable ducts, joint bays and link boxes would be left in-situ, to minimise environmental disturbance.

Offshore Decommissioning

4.12.11 An Offshore Decommissioning Plan would be developed prior to decommissioning in a timely manner. The Offshore Decommissioning Plan would be developed in accordance with the latest guidance, legislation and technologies at the time of writing.

4.12.12 In the event that the Proposed Development is required to be decommissioned, the options for decommissioning the cable would be evaluated. Current best practice, and the least environmentally damaging option, is to de-energise the cable, disconnect it from the system, and secure it in place to be left in situ, thereby avoiding unnecessary seabed disturbance.

4.12.13 However, other options may include the requirement for full or partial removal of the cables. The methods for removal would be broadly similar to those used for installation with the potential for the cables to be removed by direct pulling, rather than de-burial. The requirement for any removal could also apply to other infrastructure installed as part of the project i.e. cable protection.

4.12.14 The decommissioning phase would be subject to appropriate consenting requirements and EIA at the time.

4.13 Accidents and Disasters

4.13.1 The 2017 EIA Regulations require that significant effects be assessed on population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage and the landscape. These assessments will include, where relevant, significant effects arising from the vulnerability of the Proposed Development to major accidents and disasters.

4.13.2 A description of how major accidents and disasters have been considered in the design of the Proposed Development will be outlined in the project description chapter of the PEIR and ES. The individual topic chapters of the PEIR and ES will consider the risk of major accidents and disasters relating to:

- Reduction in groundwater quality and quantity:
  - **Section 7.5:** Geology, Hydrogeology and Ground Conditions, of the Scoping Report.
- Impact on quality of surface water and watercourses:
  - **Section 7.4:** Hydrology and Flood Risk, of the Scoping Report.
- Increased flood risk:
  - **Section 7.4:** Hydrology and Flood Risk, of the Scoping Report.
- The vulnerability of the Proposed Development to climate change:
  - **Section 9.1:** Climate Change, of the Scoping Report.
- Accidental pollution:
  - **Section 7.2**: Onshore Ecology and Nature Conservation, of the Scoping Report.
  - **Section 8.6**: Shipping and Navigation, of the Scoping Report.
  - **Section 8.2:** Benthic Ecology, of the Scoping Report.
- Impact of construction traffic on accidents and safety:
  - **Section 7.6:** Traffic and Transport, of the Scoping Report.
- Impact of Abnormal Indivisible Loads on safety:
  - **Section 7.6:** Traffic and Transport, of the Scoping Report.
- Risk of vessel anchor and gear snagging:
  - **Section 8.6**: Shipping and Navigation, of the Scoping Report.
- Reduction of under keel clearance:
  - **Section 8.6**: Shipping and Navigation, of the Scoping Report.
- Risk of accidental frack-out during HDD:
  - **Section 8.2:** Benthic Ecology, of the Scoping Report.

4.13.3 During construction, normal construction good practice would be followed to ensure on-site safety of the workforce in accordance with the Construction (Design and Management) Regulations 2015. Independent health and safety advisors would be employed by the contractors during construction to report on the site's safety. It would be required that these reports take place monthly with the reports being provided to the Applicant.

5 EIA METHODOLOGY

5.1 Proposed Approach to the EIA Process

5.1.1 This section presents an outline of the EIA methodology to be employed for the Proposed Development. It outlines the methodology for the identification and evaluation of potential likely significant environmental effects and also presents the methodology for the identification and evaluation of potential cumulative and inter-related effects, and consideration of potential transboundary effects.

5.1.2 A systematic and auditable evidence-based approach is proposed to evaluate and interpret potential effects on physical, biological and human receptors.

5.1.3 The EIA process for DCO applications can be broadly summarised as consisting of four main elements that take place prior to the submission of the application, which includes the following:

- Scoping – establishing the scope of the assessment.
- PEIR preparation and submission – sets out the information that is required for the consultation bodies to develop an informed view of the likely significant effects of the Proposed Development and would be used by consultees to inform their consultation responses during statutory consultation.
- Consultation – carrying out consultation to ensure that relevant stakeholder feedback is received and can be taken into account.
- ES preparation – presents the results of the EIA, identifies the likely significant effects from the Proposed Development and identifies mitigation proposed to reduce significant effects.

5.2 Scoping Process

5.2.1 Scoping is the process of identifying the issues to consider within an ES (establishing the scope of the assessment). As described in **Section 1**: Introduction, of the Scoping Report, scoping is therefore an important preliminary procedure, which sets the context for the EIA process. Through scoping, the key environmental issues are identified at an early stage, which permits subsequent work to concentrate on those environmental topics for which significant effects may arise as a result of the Proposed Development.

5.2.2 The scoping process is iterative in nature, informed by increasing knowledge acquired through the EIA process. The scoping process is detailed below:

- Identification of an initial project description, including key components of the Proposed Development and their likely maximum parameters.
- Review the requirements of the EIA Regulations, whilst considering the project description (see above) and characteristics of the surrounding environment to provide an initial indication of the topics likely to be relevant to the Proposed Development.
- Refinement of the scope of assessment through the use of consultation and the findings of initial assessment by topic specialists.

5.2.3 This Scoping Report presents the findings of the scoping process undertaken to date. The report identifies the effects that are proposed to be considered within

the EIA process for the Proposed Development. Each topic area is considered, setting out the proposed scope of assessment and identifying any sub-topics that are proposed to be scoped out of the assessment (where no significant effects are considered likely). Within each topic chapter of this Scoping Report, the spatial scope of the assessment is set out by reference to the study area along with an explanation of how the area has been defined. This may be further refined following the PEIR and consultation responses.

5.2.4 A Scoping Opinion is requested from the Secretary of State, which will inform the scope of the EIA process, to be reported in the ES. The ES must be based on the most recent Scoping Opinion adopted.

5.2.5 As assessment work continues and surveys are completed, new issues may arise, or it may become apparent that some potential impacts are not likely to result in significant effects. Where this is the case, the findings of the assessment process will be discussed with consultees in order that the scope of the assessment may be refined as appropriate throughout the EIA process.

5.3 Legislation and Guidance

5.3.1 The impact assessment methodology will draw upon a number of EIA principles, regulations and guidance documents, including:

Legislation

- The Infrastructure Planning (EIA) Regulations 2017 (as amended) (the 2017 EIA Regulations).
- The Planning Act 2008 (as amended).

Policy

- Overarching NPS for Energy (NPS EN-1) (including draft NPS EN-1) (DECC, 2011a; DESNZ, 2023a).
- NPS for Renewable Energy Infrastructure (NPS EN-3) (including draft NPS EN-3) (DECC, 2011b; DESNZ, 2023b).
- NPS for Electricity Networks Infrastructure (NPS EN-5) (including draft NPS EN-5) (DECC, 2011c; DESNZ, 2023c).
- The UK Marine Policy Statement (Defra, 2020).
- South West Inshore and South West Offshore Coast Marine Plans (Marine Management Organisation, 2021).

Guidance

- The Planning Inspectorate Advice Note Seven: Environmental Impact Assessment: Preliminary Environmental Information, Screening and Scoping (The Planning Inspectorate, 2020a).
- The Planning Inspectorate Advice Note Nine: Rochdale Envelope (The Planning Inspectorate, 2018).

- The Planning Inspectorate Advice Note Twelve: Transboundary Impacts and Process (The Planning Inspectorate, 2020b).
- The Planning Inspectorate Advice Note Seventeen: Cumulative effects assessment (The Planning Inspectorate, 2019).
- Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2019).
- Environmental Impact Assessment Guide to: Delivering Quality Development (IEMA, 2016).
- Delivering Proportionate EIA, A Collaborative Strategy for Enhancing UK Environmental Impact Assessment Practice (IEMA, 2017).
- Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy projects (Cefas, 2012).
- Water Framework Directive Guidance: Clearing the Waters for All (Environment Agency, 2016).

5.3.2 Other topic-specific specialist methodologies and good practice guidelines will be drawn on as necessary. These are set out and described within the relevant topic sections of the Scoping Report.

5.3.3 A full account of applicable legislation and guidance taken into account within the EIA methodology will be documented within the PEIR and ES.

5.4 Key Elements of the Assessment

Overview

5.4.1 The EIA process will assess the potential impacts arising from the construction, operation and maintenance and decommissioning phases of the Proposed Development. The assessment of each environmental topic will form a separate chapter of the ES. For each environmental topic, the following will be addressed:

- Identification of the study area for the topic-specific assessments.
- Description of the planning policy and guidance context.
- Summary of consultation activity.
- Description of the environmental baseline conditions (developed through detailed baseline surveys and desk studies).
- Presentation of the impact assessment, including:
  - Identification of the maximum design scenario for each impact assessment.
  - A description of the measures adopted as part of the Proposed Development, including design measures which seek to prevent, reduce or offset environmental effects.
  - Identification of likely impacts and assessment of the significance of identified effects.
  - Identification of any further mitigation measures required in respect of likely significant effects, together with consideration of any residual effects.

- Identification of any future monitoring required.
- Assessment of any cumulative effects with other major developments, including those that are proposed, consented and under construction (including, where applicable, those projects, plans or activities that are currently operational that were not operational when baseline data was collected or that have an ongoing effect).
- Assessment of any transboundary effects (i.e., effects on other states).

5.4.2 Inter-related effects (i.e., inter-relationships between environmental topic areas) will be assessed in a separate standalone section.

Proportionate EIA

5.4.3 The aim of undertaking a proportionate EIA (as per IEMA, 2017; and the Industry Evidence Programme (The Crown Estate, 2018)) has been a key consideration in the development of this Scoping Report. A number of tools and processes will be used to aid the proportionality of the ES. This includes:

- Early informal discussions with key statutory consultees where this has been possible (see **Section 6**: Consultation Process, of the Scoping Report).
- Application of the existing evidence-base.
- Commitment to measures adopted as part of the project.

Evidence-based Approach

5.4.4 The offshore elements of the Proposed Development are routed through a section of the Bristol Channel and the Celtic Sea and the onshore elements are situated wholly within the south west of the UK, regions where there is significant data and knowledge regarding the baseline environment. It is the intention of the Applicant to maximise, where possible, the use of these data to supplement the site-specific survey data acquired for the onshore and offshore elements of the Proposed Development, to:

- Characterise the baseline environment to inform the EIA where data are sufficient and appropriate to do so.
- Scope out impacts where there is a clear evidence-base.
- Where impacts are scoped in, to draw upon the pre-existing evidence base where appropriate.

Maximum Design Scenario Approach

5.4.5 As detailed within **section 4.2**, the EIA for the Proposed Development will use the PDE approach, also known as the Rochdale Envelope approach. All assumptions regarding the PDE will be clearly set out within the project description chapter of the PEIR, ES and within the topic chapters. The draft DCO will be prepared in conjunction with the ES to ensure that the key parameters applied for are consistent with those assessed through the EIA process.

5.5 Assessment Criteria

Defining Impacts and Effects

5.5.1 The Proposed Development has the potential to create a range of impacts and effects with regard to the physical, biological and human environment. For the purposes of the EIA, 'impact' is used to define a change that is caused by an action. For example, the excavation of a cable trench (action) will result in levels of habitat loss (impact). Impacts can be defined as direct, indirect, secondary, cumulative and inter-related. They can also be either adverse or beneficial. In addition, for certain impacts, the reversibility of an impact is relevant to its overall effect. An irreversible (permanent) impact may occur when recovery is not possible, or not possible within a reasonable timescale. In contrast, a reversible (temporary) impact is one where natural recovery is possible over a short time period, or where mitigation measures can be effective at reversing the impact.

5.5.2 The term 'effect' will be used in the EIA to express the consequence of an impact. Considering the cable trenching example, the excavation of trenches (action) results in levels of habitat loss (impact), with the potential to disturb breeding birds (effect).

5.5.3 Each topic chapter within the ES will consider the magnitude of the impact alongside the sensitivity of the receptor in determining the significance of the effect, in accordance with defined significance criteria.

Mitigation and Monitoring

5.5.4 The 2017 EIA Regulations stipulate that where significant effects are identified '*a description of any features of the Project, or measures envisaged in order to avoid, prevent or reduce or, if possible, offset likely significant adverse effects on the environment'* should be included in the ES.

5.5.5 The topic chapters of the ES will therefore consider all measures that for part of the Proposed Development, including the following.

- Measures included as part of the project design (sometimes referred to as primary or embedded mitigation).
- Measures proposed to avoid effects occurring or to minimise environmental effects, such as measures to control light spillage (sometimes referred to as secondary mitigation). Where these measures are in the construction phase, they would be set out in the Onshore CEMPs and Offshore CEMPs and implemented through this.
- Measures required as part of legislative requirements or standard good practice (sometimes referred to as tertiary mitigation). While many of these measures are regulated separately, these measures will also be included in the CEMPs for completeness.

5.5.6 Within topic chapters, further mitigation measures will be identified where required. These are measures that could further prevent, reduce and, where feasible, offset any residual adverse effects on the environment.

5.5.7 In some cases, monitoring measures may be required, for example, to ensure proposed planting becomes established. For specific topics where this is required, it will be set out in the appropriate topic chapter of the ES.

5.5.8 Mitigation and monitoring measures identified to control construction effects would be implemented through the CEMPs. Where necessary, for example in relation to future management of any ecological mitigation areas, draft operational management plans will be developed. The draft DCO will be developed to be consistent with the measurements identified in the ES, Outline CEMP and any draft management plans, in order to ensure consistent implementation of the measures identified through the EIA process.

Assessment of Effects

5.5.9 The EIA Regulations require the identification of the likely significant environmental effects of the Proposed Development. Each topic chapter will take into account both the sensitivity of receptors affected and the magnitude of the likely impact in determining the significance of the effect. The overarching approach to this assessment is set out below.

Sensitivity of Receptors

5.5.10 Receptors are defined as the physical or biological resource or human user group that would be affected by the impacts of a Proposed Development. Identification of receptors will be informed by available data and the baseline studies completed in the preparation of the EIA.

5.5.11 In defining the sensitivity of each receptor, the vulnerability, recoverability and value/importance will be taken into account. The determination of these factors will be specific to each environmental topic and defined within the corresponding chapters of the ES.

5.5.12 The sensitivity of each receptor to each impact will then be defined for each topic according to the below scale:

- Negligible.
- Low.
- Medium.
- High.
- Very High.

5.5.13 As a general rule, the above sensitivity levels will be defined as set out in **Table 5.5.1**.

Table 5.5.1: Definitions of Receptor Sensitivity

Sensitivity	Typical Descriptors
Very High	Very high importance and rarity, international scale and very limited potential for substitution.
High	High importance and rarity, national scale, and limited potential for substitution.
Medium	High or medium importance and rarity, regional scale, limited potential for substitution
Low	Low or medium importance and rarity, local scale.
Negligible	Very low importance and rarity, local scale.

Magnitude of Impact

5.5.14 For each of the impacts assessed in the EIA process, a magnitude will be assigned. In assigning magnitude, the spatial extent, duration, frequency and reversibility of the impact will be considered (in line with Schedule 3, paragraph 3, of the 2017 EIA Regulations). Each of these terms is defined in **Table 5.5.2**.

Table 5.5.2: Definition of the spatial extent, duration, frequency and reversibility when defining the magnitude of an impact

Term	Definition
Spatial extent of the impact	Geographical area over which the impact may occur (CIEEM, 2016).
Duration of the impact	The time over which an impact occurs. An impact may be described as short, medium or long-term and permanent or temporary (derived from the Design Manual for Roads and Bridges (DMRB)).
Frequency of the impact	The number of times an impact occurs across the relevant phase/lifetime of a project (derived from the DMRB).
Reversibility of the impact	An irreversible (permanent) impact may occur when recovery is not possible within a reasonable timescale, or there is no reasonable chance of action being taken to reverse it. By contrast, a reversible (temporary) impact is one where recovery is possible naturally in a relatively short time period, or where mitigation measures can be effective at reversing the impact. It is possible for the same activity to cause both irreversible and reversible impacts (derived from the DMRB).

5.5.15 For each topic, the magnitude of impact will be categorised according to the below scale:

- No change.
- Negligible.
- Low.
- Medium.
- High.

5.5.16 Topic-specific definitions for each of these categories will be based on relevant guidance and specialist knowledge and will be provided in each of the topic chapters of the EIA.

5.5.17 As a general rule, the above magnitude of impact levels will be defined as set out in **Table 5.5.3**.

Table 5.5.3: Definitions of Impact Magnitude

Sensitivity	Typical Descriptors
High	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements (Adverse).
	Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality (Beneficial).
Medium	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements (Adverse).
	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality (Beneficial).
Low	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements (Adverse).

Sensitivity	Typical Descriptors
	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring (Beneficial).
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements (Adverse).
	Very minor benefit to or positive addition of one or more characteristics, features or elements (Beneficial).
No Change	No loss or alteration of characteristics, features or elements; no observable impact in either direction.

Evaluation of Significance of Effects

5.5.18 Effect is the term used to express the consequence of an impact (expressed as the 'significance of effect'). The significance of an effect will be determined by the consideration of the magnitude of impact alongside the sensitivity of the receptor. In order to ensure a consistent approach throughout the EIA, a matrix approach will be adopted to guide topic-specific assessments. An example of such an EIA matrix is given below in **Table 5.5.4**.

Table 5.5.4: Matrix used for assessment of significance, showing the combinations of receptor sensitivity and the magnitude of impact

Sensitivity	Magnitude of Impact				
	No Change	**Negligible**	**Low**	**Medium**	**High**
Negligible	No Change	Negligible	Negligible or Minor	Negligible or Minor	Minor
Low	No Change	Negligible or Minor	Negligible or Minor	Minor	Minor or Moderate
Medium	No Change	Negligible or Minor	Minor	Moderate	Moderate or Major
High	No Change	Minor	Minor or Moderate	Moderate or Major	Major
Very High	No Change	Minor	Moderate or Major	Major	Major

5.5.19 By cross-referencing the magnitude of impact with the sensitivity of the receptor, a significance of effect may be assigned for all potential impacts. The significance of effect may be one, or a range of:

- No change.
- Negligible.
- Minor.
- Moderate.
- Major.

5.5.20 These significance levels are defined in **Table 5.5.5**.

Table 5.5.5: Definition of significance levels

Term	Definition (adapted from Highways England *et al.*, 2019)
No change	No loss or alteration of characteristics, features or elements; no observable impact in either direction.
Negligible	No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.
Minor	These beneficial or adverse effects are generally, but not exclusively, raised as local factors. They are unlikely to be critical in the decision-making process but are important in enhancing the subsequent design of the project.
Moderate	These beneficial or adverse effects have the potential to be important and may influence the key decision-making process. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse or beneficial effect on a particular resource or receptor.
Major	These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision-making process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer a most damaging impact and loss of resource integrity. However, a major change in a site or feature of local importance may also enter this category. Effects upon human receptors may also be attributed this level of significance.

5.5.21 In general, a significance level of moderate or greater is considered to be a 'significant effect' in the context of the 2017 EIA Regulations. However, this will be topic-specific and dependent on relevant practitioner guidance, and therefore for each topic chapter of the ES, what is considered 'significant' will be clearly defined. In cases where a range is suggested for the significance of effect, there remains the possibility that this may span the significance threshold (for example, if the range is given as minor to moderate). In such cases the final significance is based upon expert opinion as to which outcome delineates the most likely effect, with an explanation as to why this is the case.

5.6 Addressing Uncertainty

5.6.1 There is some degree of inherent uncertainty within the EIA process. There is uncertainty in relation to future improvements to construction and design. In addition, there is uncertainty in relation to future baseline conditions, such as the potential effects of climate change on existing receptors. There is also a degree of uncertainty in terms of the margin of error within forecasting or modelling tools. The following sections set out the proposed approach to addressing uncertainty. In all cases, where uncertainty exists, this will be identified (and quantified where possible) within the relevant chapter of the PEIR and ES, together with details of the measures that have been taken to reduce uncertainty as far as reasonably practicable.

Future Baseline and Assessment Years

5.6.2 The baseline for the assessment of environmental effects will primarily be drawn from evidence collated during review of desktop data and any site-specific environmental surveys. Consideration will also be given to any likely changes between the time of data collection/survey and the future baseline for the construction and operation of the Proposed Development. In some cases, these changes may include the construction or operation of other planned developments

in the area. Where such developments are built and operational at the time of writing and data collection, these will be considered to form part of the baseline environment (unless they have an ongoing effect). Where sufficient and robust information is available, such as expected traffic growth figures, other future developments will be considered as part of the future baseline conditions. In all other cases, planned future developments will be considered within the assessment of cumulative effects.

5.6.3 The consideration of future baseline conditions will also take into account the likely effects of climate change, as far as these are known at the time of writing. It is recognised that there will be some element of uncertainty regarding future trends in environmental conditions and climate. Where accepted methodologies for identifying the likely effects of climate change are available, these will be considered in the assessment. For example, information available from the UK Climate Projections project (UKCP18), which provides information on plausible changes in climate for the UK (Environment Agency and Met Office, 2018) and in published documents such as the UK Climate Change Risk Assessment 2017 (Climate Change Committee, 2017) and subsequent updates. Recent published research will also be reviewed to inform judgements on whether specific receptors are susceptible to the effects of climate change.

Forecasting and Modelling

5.6.4 Where forecasting and modelling tools are used, care will be taken to ensure that the tool selected is appropriate for the assessment, taking into account topic-specific good practice and guidance. Model assumptions will be described, and calibration will be used to ensure a reasonable degree of accuracy in measurements. In addition, uncertainty will be addressed by undertaking modelling for a number of scenarios and at representative points across the Proposed Development, where applicable. Topic chapters within the PEIR and ES will set out measures taken to address any uncertainty with regard to modelling inputs and outputs.

5.7 Cumulative Effects Assessment

5.7.1 This section describes the proposed approach to the Cumulative Effects Assessment (CEA) for the Proposed Development. Cumulative effects are defined as those that result from incremental changes caused by other reasonably foreseeable actions or other major developments alongside the assessed project. Cumulative effects are therefore the combined effect of the assessed project cumulatively with the effects from a number of different projects, on the same single receptor/resource. A fundamental requirement of undertaking the CEA is to identify those foreseeable developments or activities with which the assessed project may interact to produce a cumulative effect. Interactions have the potential to arise during the construction and operation and maintenance phases.

5.7.2 The Planning Inspectorate's Advice Note Seventeen: Cumulative Effects Assessment Relevant to Nationally Significant Infrastructure Projects (The Planning Inspectorate, 2019) recommends that, through consultation with local authorities and other relevant consenting bodies, other major developments in the area should be taken into account when conducting CEA, including those which are:

- Under construction.

- Permitted application(s), but not yet implemented.
- Submitted application(s) not yet determined.
- Projects on the National Infrastructure Planning Portal's Programme of Projects.
- Projects identified in relevant development plans.
- Projects identified in other plans and programmes as may be relevant.

Screening Stage

5.7.3 An extensive list of plans, projects and activities will be prepared to inform the CEA, known as the CEA long list. A process will be followed to methodically and transparently screen the large number of projects and plans that may be considered cumulatively alongside the Proposed Development. This involves a stepwise process that considers the level of detail available for projects/plans, as well as the potential for interactions to occur on the following basis:

- Data confidence: data confidence is taken into account when screening projects, plans and activities into or out of the CEA. The premise here is that projects, plans and activities with a low level of detail publicly available cannot meaningfully contribute to a CEA and, as such, are screened out. The application of this screening step is consistent with Guiding Principle 7 of the RenewableUK Cumulative Impact Assessment Guidelines (RenewableUK, 2013).
- Conceptual overlap: for a conceptual overlap to occur it must be established that such an impact has the potential to directly or indirectly affect the receptor(s) in question. In EIA terms this is described as an impact-receptor pathway and is defined here as a conceptual overlap.
- Physical overlap: a physical overlap refers to the ability for impacts arising from the Proposed Development to overlap with those from other projects/plans on a receptor basis. This means that, in most examples, an overlap of the physical extents of the impacts arising from the two (or more) projects/plans must be established for a cumulative effect to arise. Exceptions to this exist for certain mobile receptors that may move between, and be subject to, two or more separate physical extents of impact from two or more projects.
- Temporal overlap: in order for a cumulative effect to arise from two or more projects, a temporal overlap of impacts arising from each must be established. It should be noted that some impacts are active only during certain phases of development, such as piling noise during construction. In these cases, it is important to establish the extent to which an overlap may occur between the specific phase of the Proposed Development and other projects/plans. The absence of a strict overlap however may not necessarily preclude a cumulative effect, as receptors may become further affected by additional, non-temporally overlapping projects.

Assessment Stage

5.7.4 Once a project has been taken forward to the assessment stage, a tiered approach is proposed for the CEA. The tiered approach provides a framework to assist the decision maker in placing relative weight upon the potential for each

project/plan assessed cumulatively to ultimately be realised, based upon the project/plan's current stage of maturity. The allocation of projects/plans into tiers is not affected by the screening process; it is a categorisation applied to all projects/plans that have been screened in for assessment.

5.7.5 The definitions of the tiers to be used will be included in the PEIR and will be broadly consistent with The Planning Inspectorate's Advice Note Seventeen (The Planning Inspectorate, 2019) and the RenewableUK Cumulative Impact Assessment Guidelines, specifically Guiding Principle 4 and Guiding Principle 7 (RenewableUK, 2013).

5.7.6 All projects/plans that have been screened into the CEA via the screening process will be allocated into one of the tiers and assessed for cumulative effect. Where practicable, the CEA methodology then follows the outline of the project-alone assessment methodology as described above in **section 5.5**. This approach allows consistency throughout the EIA and enables comparisons to be made.

5.8 Inter-related Effects

5.8.1 Regulation 5(2) of the 2017 EIA Regulations requires a consideration of the interactions or inter-relationships between EIA topics that may lead to additional environmental effects. For example, the separate impacts of subsea noise and habitat loss may together have an effect upon a single receptor, such as marine mammals.

5.8.2 Guidance on inter-related effects is provided within The Planning Inspectorate's Advice Note Nine: Rochdale Envelope (The Planning Inspectorate, 2018), which state that 'interactions between aspect assessments includes where a number of separate impacts, e.g., noise and air quality, affect a single receptor such as fauna'. The approach to interrelated effects will take into account this Advice Note, along with any other guidance that may prevail at the time.

5.8.3 The approach to the assessment of inter-related effects will consider two levels of potential effect:

- Project lifetime effects: effects that occur throughout more than one phase of the Proposed Development (e.g., construction, or operation and maintenance).
- Receptor-led effects: effects that interact spatially and/or temporally resulting in inter-related effects upon a single receptor.

5.8.4 The assessment of inter-related effects will be undertaken with specific reference to the potential for such effects to arise in relation to receptor groups (i.e., the assessment will, in the main, not assess every individual receptor assessed at the EIA stage, but rather, potentially sensitive groups of receptors).

5.8.5 The broad approach to inter-related effects assessment will follow the below key steps:

- Review of effects for individual EIA topic areas.
- Review of the assessment carried out for each EIA topic area, to identify 'receptor groups' requiring assessment.
- Identify potential inter-related effects on these receptor groups via review of the assessment carried out across a range of topics.

- Develop tables that list all potential effects on the selected receptor across the construction, operation and maintenance phases (project lifetime effects).
- Develop lists for all potential receptor-led effects.
- Qualitative assessment on how individual effects may combine to create inter-related effects.

5.8.6 It is important to note that the inter-relationships assessment will consider only effects produced by the Proposed Development, and not those from other projects (there will be considered within the CEA).

5.9 Transboundary Impacts

Legislation and Guidance

5.9.1 Transboundary effects arise when impacts from a project within one 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 Convention requires that assessments are extended across borders between Parties of the Convention when a planned activity may cause significant adverse transboundary impacts.

5.9.2 The Espoo Convention has been implemented in the UK by the 2017 EIA Regulations. Regulation 32 of the 2017 EIA Regulations sets out a prescribed process of consultation and notification. In addition, The Planning Inspectorate's Advice Note Twelve: Transboundary Impacts (The Planning Inspectorate, 2020b) sets out the procedures for consultation in association with an application for a DCO where such a development may have significant transboundary effects.

5.9.3 The Planning Inspectorate's Advice Note Twelve (The Planning Inspectorate, 2020b) also sets out the procedure for screening, consulting and assessing transboundary issues. This procedure involves the following broad steps which are divided into two stages:

- Stage 1:
  - Developer carries out pre-application consultation with other state(s).
  - Developer notifies The Planning Inspectorate of EIA potentially requiring transboundary assessment.
  - Developer prepares initial matrix to identify potential significant impacts on other state(s) and provides to The Planning Inspectorate.
  - The Secretary of State undertakes transboundary screening for potential significant impacts.
  - The Secretary of State notifies other relevant state(s), including London Gazette notice.
  - Other state(s) notify The Planning Inspectorate of their wish to participate in the consultation.
- Stage 2:
  - Developer submits DCO application, including translated nontechnical summary and a consultation report summarising pre-submission transboundary consultation that took place.

- Secretary of State undertakes consultation with other relevant state(s).
- Other state(s) consult with their public and provide comments to the Secretary of State.
- Consultation responses are taken account of by the Secretary of State in the decision-making process.

5.9.4 The Proposed Development will follow this broad process with regard to transboundary EIA, including any other guidance that may prevail at the time of undertaken the assessment.

Screening

5.9.5 Identification and screening of transboundary impacts has been undertaken and is presented in **Appendix A**: Transboundary Impacts Screening, of this Scoping Report.

5.10 Proposed Structure of the ES

5.10.1 In accordance with the guidance provided within the Planning Inspectorate Advice Note Seven (The Planning Inspectorate, 2020a), **Table 5.10.1** provides an overview of the proposed structure of the ES.

Table 5.10.1: Proposed structure of the ES

Chapter Number	Chapter Title
Non-Technical Summary	
Volume 1 - Introduction	
1	Introduction
2	Policy and Legislation Context
3	Project Description
4	Site Selection and Alternatives
5	EIA Methodology
Volume 1, Figures	
Volume 1, Appendices	
Volume 2 – Effects on the Onshore Environment	
1	Onshore Ecology and Nature Conservation
2	Historic Environment
3	Hydrology and Flood Risk
4	Hydrogeology, Geology and Ground Conditions
5	Traffic and Transport
6	Noise and Vibration
7	Air Quality
8	Land-use and Recreation
Volume 2, Figures	
Volume 2, Appendices	
Volume 3 – Effects on the Offshore Environment	
1	Benthic Ecology

Chapter Number	Chapter Title
2	Fish and Shellfish Ecology
3	Commercial Fisheries
4	Marine Mammals and Sea Turtles
5	Shipping and Navigation
6	Other Marine Users
7	Marine Archaeology and Cultural Heritage
8	Physical Processes
Volume 3, Figures	
Volume 3, Appendices	
Volume 4 – Effects on the Combined Onshore and Offshore Environment	
1	Climate Change
2	Landscape, Seascape and Visual Resources
3	Socio-economics
4	Human Health
5	Inter-relationships
Volume 4, Figures	
Volume 4, Appendices	

6 CONSULTATION PROCESS

6.1 Consultation and engagement to date

6.1.1 The approach set out in this document has been informed by the consultation and engagement carried out by the Applicant to date.

6.1.2 The Applicant conducted extensive engagement in relation to the Proposed Development before its designation as Nationally Significant. This included two rounds of public consultation, in autumn 2022 and spring 2023. Engagement at this stage focused on the onshore parts of the Proposed Development.

6.1.3 These resulted in changes to the Proposed Development, including changes to the proposed cable route to the west of Abbotsham and the relocation of the Converter Site to the Old Webbery Showground.

6.1.4 The Applicant has continued to engage with stakeholders following the designation of the Proposed Development at Nationally Significant. This has included engagement with consultation bodies identified by the EIA Regulations.

6.1.5 Meetings held include:

- 21 November 2023: an introductory meeting with lead officers at Torridge District Council, Devon County Council and North Devon Council.
- 12 December 2023: an introductory meeting with Historic England focused on the offshore parts of the Proposed Development.
- 15 December 2023: an introductory meeting with the Marine and Coastguard Agency.
- 18 December 2023: an introductory meeting with Trinity House.
- 9 January 2024: a meeting with the Joint Nature Conservation Committee (JNCC) to plan engagement going forward.

6.2 Next steps

6.2.1 The Applicant intends to meet the requirements set for consultation and notification through sections 42, 43, 44, 46, 47 and 48 of the Planning Act through a single stage of statutory consultation, currently planned for summer 2024. Further information on how this will relate to EIA consultees is set out below.

Scoping

6.2.2 The Planning Inspectorate, having received this Scoping Report, will consult with the relevant authorities and key statutory consultees to seek their comments on the scope of the Proposed Development EIA. Following consultation with statutory consultees on the scope of the EIA, the Secretary of State will provide a Scoping Opinion.

Preliminary Environmental Information Report

6.2.3 The EIA Regulations require preliminary environmental information to be provided for public consultation by those seeking development consent. The level of detail

required in the PEIR is not defined by The Infrastructure Planning (EIA) Regulations 2017; however, it must cover those areas being assessed by the ES, which will accompany the application for development consent.

6.2.4 The Applicant plans to consult upon a PEIR for the Proposed Development during 2024. The PEIR is intended to allow statutory consultees, local communities, and interested parties to understand the nature, scale, location, and likely significant environmental effects of the Proposed Development, such that they can make an informed contribution to the process of pre-application consultation under the Planning Act 2008 and to the EIA process.

6.2.5 The Applicant expects to further refine the design of the Proposed Development, in terms of the detailed consent application to be submitted, based upon the consultation responses received from the PEIR process. The final results of the EIA will be presented in the Consultation Report, both of which will accompany the application for development consent.

Application for Development Consent

6.2.6 The application for development consent is currently planned to be submitted to The Planning Inspectorate in Autumn 2024. The ES that will be submitted to accompany the application will be prepared taking into account the responses to public consultation.

6.2.7 The application for development consent will also include a Consultation Report setting out how the Applicant has met the requirements set for consultation by the Planning Act and how it has had due regard to all responses received.

7 PROPOSED TECHNICAL ASSESSMENTS – ONSHORE

7.1 Introduction

7.1.1 The following sections provide an overview of the onshore technical assessments for the Proposed Development, which should be read in conjunction with **Section 4:** Project Description and **Section 5:** EIA Methodology, of the Scoping Report. Each technical assessment provides further details on methodologies specific to the environmental topic chapter.

7.2 Onshore Ecology and Nature Conservation

Introduction

7.2.1 This section of the Scoping Report identifies the onshore ecology and nature conservation receptors relevant to the onshore elements of the Proposed Development. This section also considers the potential impacts arising from the construction, operation and maintenance, and decommissioning of the Proposed Development and identifies the proposed scope of, and methodology for, the EIA process for the onshore ecology and nature conservation chapter.

Relevant Policy, Legislation and Guidance

Legislative and Policy Context

7.2.2 The following key legislation and policy documents relevant to onshore ecology and nature conservation will be considered within the assessment process:

- Directive 92/43/EEC (the Habitats Directive);
- Directive 2009/147/EC (the Birds Directive);
- The Environment Act 2021;
- The Conservation of Habitats and Species Regulations 2017 (Amendment) (EU Exit) Regulations 2019
- Wildlife and Countryside Act 1981 (as amended);
- Countryside and Rights of Way Act 2000;
- The Natural Environment and Rural Communities Act 2006 (as amended);
- The Wild Mammals (Protection) Act 1996;
- Protection of Badgers Act 1992;
- NPS for National Networks, which provides guidance for linear projects (i.e. cable routes) (Department for Transport, 2014);
- NPS EN-1, NPS EN-3 and NPS EN-5 (DECC, 2011; DESNZ, 2023) ;
- NPPF (Ministry of Housing, Communities and Local Government, 2023); and

- North Devon and Torridge Local Plan 2011 – 2031 (Torridge District Council, 2018).

Guidance Documents

7.2.3 The assessment of onshore ecology and nature conservation for the ES chapter will be undertaken in accordance with the ecological impact assessment guidelines published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018).

7.2.4 Surveys will be undertaken in accordance with best practice guidance relevant to each survey type.

Study Area

7.2.5 The study area to be used for the assessment of onshore ecology and nature conservation will focus on the areas landward of Mean High Water Springs (MHWS). The study areas will follow the guidance set out from the CIEEM (see **paragraph 7.2.29**).

7.2.6 As such, the onshore ecology and nature conservation study area for the Proposed Development will be defined as:

- The area of land that will be temporarily or permanently occupied during construction, operation and maintenance, and decommissioning of the onshore elements of the Proposed Development.
- A surrounding Zone of Influence (ZOI) (CIEEM, 2018) that will vary according to the ecological receptors being considered. The ZOI relating to the onshore ecology and nature conservation study area will consider the following:
  - Locally designated sites, including Local Nature Reserves (LNRs) and Local Wildlife Sites (LWSs), and less mobile species located within 2 km of the onshore elements of the Proposed Development.
  - Nationally designated sites, including SSSIs and National Nature Reserves (NNRs), and species with potentially larger ranges (e.g. bats and otters) located within 5 km of the onshore elements of the Proposed Development.
  - Internationally designated sites, including SAC, possible SACs (pSACs), SPAs, possible SPAs (pSPAs), and Ramsar sites, located within 12 km of the onshore elements of the Proposed Development.

7.2.7 The onshore ecology and nature conservation study area will be reviewed and modified, if necessary, in response to feedback from consultation with stakeholders and/or regulators, refinements made to the design of the Proposed Development and/or any additional environmental and/or design constraints identified during the EIA process.

Data Sources

7.2.8 The data sources used to inform the baseline assessment will primarily comprise published material, which is publicly available online, supported by additional data from local wildlife centres and groups, and the results of site-specific surveys (see **paragraph 7.2.11**).

7.2.9 The baseline data sources identified in this Scoping Report will remain under review and may be updated in response to feedback from relevant statutory and non-statutory consultees during the EIA process, or in response to new sources of information becoming available.

Desk-based Data Sources

7.2.10 An initial desk-based review has identified a number of data sources which provide baseline data coverage of the Proposed Development Scoping Boundary. These data sources are summarised in **Table 7.2.1**.

Table 7.2.1: Baseline data sources – onshore ecology and nature conservation

Source	Summary
Devon Biodiversity Records Centre	Information on species records within 2 km or 5 km of the Proposed Development (depending on species and its potential mobility – bats and otters with greater known ranges are assessed at 5 km boundary, other species at 2 km). Information on locally-designated sites for nature conservation, such as County Wildlife Sites (CWS).
MAGIC (Defra interactive map source)	Information on statutory-designated sites (SAC, SPA, Ramsar sites, SSSI, and LNR).
Natural England Discretionary Advice Service	Opportunities to discuss and receive advice from Natural England on their expectations regarding scope of surveys, requirements for Habitat Regulations Assessment (HRA).

Site-specific Survey Data

7.2.11 In addition to the data sources identified above, the following site-specific surveys will inform the baseline assessment for onshore ecology and nature conservation in the ES:

- Phase 1 Habitat Survey:
  - The Phase 1 Habitat Survey will identify and map habitats in accordance with JNCC (2010) habitat descriptions. A baseline of description of habitats present will be developed along the Onshore HVDC Cable Corridor and Converter Site. The ecological condition and value of the habitats will be assessed using the UK Habitats system to ensure compatibility with Biodiversity Net Gain Metrics and help inform mitigation proposals.
- Dormouse surveys:
  - These surveys will determine the presence of dormouse species across the Onshore HVDC Cable Corridor and Converter Site. Using methods outlined in ‘The Dormouse Conservation Handbook’ (English Nature, 2006), surveys will be undertaken for hedgerows and woodland areas potentially affected by the Onshore HVDC Cable Corridor and Converter Site.
- Bat surveys:
  - These surveys will include both bat activity and roost/hibernation surveys. All bat surveys will be undertaken in accordance with Bat Surveys for Professional Ecologists Good Practice Guidelines 3rd Edition (Bat Conservation Trust, 2016), or subsequent updates.
  - Bat activity surveys will be undertaken to confirm areas of high potential value to foraging and commuting bats that would be impacted (e.g.

through light spill) by the onshore elements of the Proposed Development. Following engagement with Natural England, bat activity surveys will focus on locations of primary potential disturbance such as construction compounds and similar.

  - Bat roost potential surveys will be undertaken, particularly in trees and built structures across the entire cable route and Converter Site to identify potential bat roost features that could be lost or disturbed by the onshore elements of the Proposed Development. These surveys will confirm the presence/absence of a roost and identify the species of roosting bat, and type and vale of any confirmed roost.

- Otter surveys:
  - As otters are well known to be present in the Taw Torridge Estuary and catchment, otter surveys should focus on identifying potential regular foraging sites or places of rest for otters in locations potentially affected by the Proposed Development. This will include all locations where the Onshore HVDC Cable Corridor crosses watercourses irrespective of proposed methods of crossing (as most of the watercourse crossings will be via HDD or similar trenchless methods).
  - These surveys will be undertaken with regard to best practice survey guidelines (e.g., Chanin, 2003; and Crawford, 2003) to confirm presence/likely absence of otters, map areas of significant activity and identify holts/resting sites in areas that may be impacted (directly or indirectly) during construction, operation and maintenance and decommissioning of the onshore elements of the Proposed Development.
- Badger surveys:
  - Badgers are potentially present in all areas associated with the Proposed Development, although previous surveys have found that they are less frequently encountered in this area than might be expected (possibly due to ongoing licensed culling operations related to Bovine Tuberculosis).
  - These surveys will confirm the presence and map signs of activity in areas that may be impacted (directly or indirectly) during construction, operation and maintenance and decommissioning of the Proposed Development. The badger survey methods will mirror those set out in Defra/APHA guidance on surveying methods & habitat types for badgers (2022).
- Breeding bird surveys:
  - These surveys will be used to identify breeding bird species (e.g. barn owls) and map activity, with the aim of assessing the importance of areas of high potential value, which may be impacted by the construction, operation and maintenance and decommissioning of the onshore elements of the Proposed Development.
  - Breeding bird surveys are proposed to cover all parts of the Onshore HVDC Cable Corridor and Converter Site. Surveys will be based on standard survey methods using territory (registration) mapping techniques (Bibby *et al*., 2000).
- Over-wintering and migratory bird surveys:
  - These surveys will be used to identify over-wintering and migratory bird species and map activity, with the aim of assessing the importance of

areas of high potential value, which may be impacted by the construction, operation and maintenance and decommissioning of the onshore elements of the Proposed Development.

  - Over-wintering and migratory bird surveys are proposed to focus on areas likely to be of particular value for these groups, which would include the landfall (Cornborough Range) area and areas associated with the Torridge Estuary crossing point. The surveys should use standard survey methods based on Wetland Bird Survey (WeBS) (Bibby *et al.,* 2000).

- Herpetofauna surveys:
  - The Proposed Development lies outside of the two North Devon Great Crested Newt (GCN) consultation zones, therefore, these surveys are considered not required. However, habitats likely to support other common species (e.g. reptiles) are present and thus, surveys for these species will be undertaken.
  - These surveys will utilise information from the Phase 1 habitat survey to identify habitats and areas, with features likely to support reptiles, to be surveyed. The survey methods will follow those set out in the Herpetofauna Workers' Manual (Gent and Gibson, 2003) and Froglife Advice Sheet 10 – Reptile Survey (Froglife, 1999).
- Invertebrate survey
  - Initial assessments suggest invertebrate interest associated with the Proposed Development are likely to be confined to watercourse crossing locations. Habitats likely to support diverse terrestrial invertebrate populations appear to be limited by regular agricultural activity. Surveys to sample watercourses crossed by the Onshore HVDC Cable Corridor will particularly focus on those not scheduled for HDD or other trenchless methods. Standard kick sampling should follow EA 018_08 (2017) methods and samples should be analysed using in EA 024_08 (2014) and BT001.

Baseline Environment

Designated Sites

7.2.12 There are two SSSIs that fall within the 2 km of the Proposed Development Scoping Boundary, which includes Mermaid's Pool to Rowden Gut SSSI and Taw-Torridge Estuary SSSI (see **Figure 7.2.1**).

- Mermaid's Pool to Rowden Gut SSSI is located along a 5.5 km stretch of coastline behind which the landfall site would be located. This site is designated for its geological interest. However, the cables would pass under this designated site via HDD.
- Taw-Torridge Estuary SSSI is located north of the Onshore HVDC Cable Corridor. It is designated for its populations of overwintering and migratory populations of wading birds and its wide tidal range and intertidal habitats, with large areas of mudflats and sandbanks. Together with beaches and saltmarsh, these provide a rich and varied source of food for many birds and animals. The Onshore HVDC Cable Corridor would pass beneath the River Torridge.

7.2.13 Kynoch's Foreshore LNR is located along the section of the River Torridge, which coincides with the Onshore HVDC Cable Corridor. In this location, the HVDC cables would be routed beneath the River Torridge via HDD. The site was designated in 2011 and includes the largest saltmarsh in Torridge District. It incorporates areas of saltmarsh and mudflats over which the Tarka Trail passes.

7.2.14 The closest internationally designated site is Braunton Burrows, which lies approximately 7.5 km along the coast to the north of the landfall site at Cornborough Range. Braunton Burrows is designated as a SSSI and SAC. In addition, the Burrows form the Core Area of the United Nations Educational, Scientific and Cultural Organisation (UNESCO) Biosphere Reserve. North Devon's Biosphere Reserve is the first of its kind in the UK to meet UNESCO's criteria for biosphere reserves as set out in the Seville Strategy.

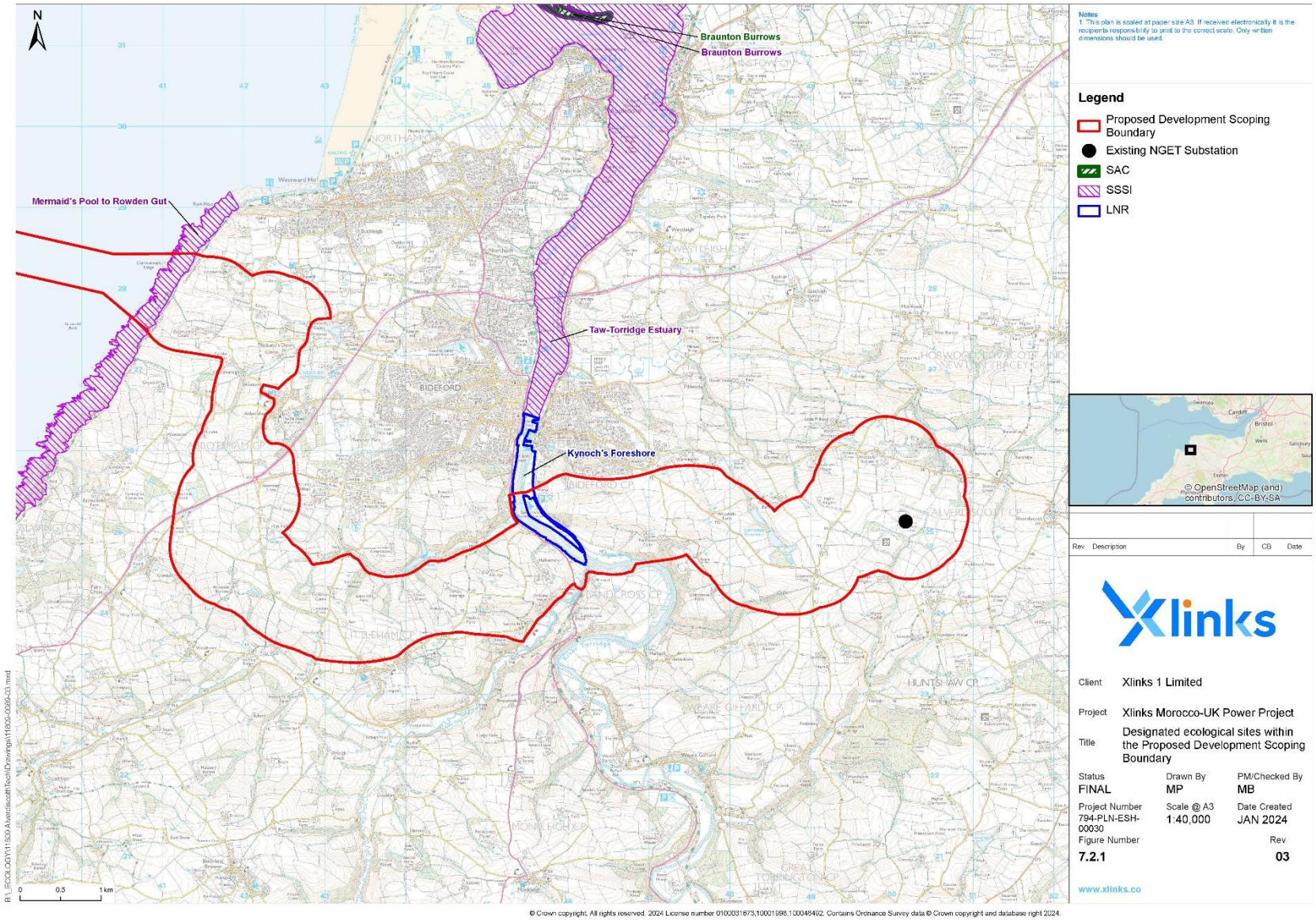

Figure 7.2.1: Designated ecological sites within the Proposed Development Scoping Boundary

Protected Species

7.2.15 A desk study undertaken in 2012 for the Atlantic Array project (Channel Energy Limited, 2013), which occupied a similar route to the Proposed Development, identified the following within 2 km of the Proposed Development Scoping Boundary:

- Six species listed on the Birds Directive.
- Thirteen listed in Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).
- Fifteen UK Biodiversity Action Plan (UK BAP) priority species.
- Eighteen birds red listed as Birds of Conservation Concern.

7.2.16 Although outdated, the information gleaned from this desk study provides a good indication of the species likely to be present in the area between Alverdiscott and the north Devon coast. The Applicant is complimenting this information with additional surveys with the survey program due for completion in 2024.

7.2.17 Protected and notable mammal species noted during the 2012 desk study, within 2 km of the onshore elements of the Proposed Development also included badger, brown hare, harvest mouse, dormouse, otter and various species of bat. The majority of species recorded are concentrated to the south of the route. Protected species surveys were undertaken for badgers, dormice, otters, and bats as part of the Atlantic Array project.

7.2.18 The 2012 desk study identified a total of seven protected or otherwise notable species of herpetofauna (reptiles and amphibian) within 2 km of the Proposed Development Scoping Boundary: common lizard; grass snake; slow worm; common frog; common toad; palmate newt and smooth newt. Two notable species of fish have also been recorded in the River Torridge. In Devon, GCNs are limited in their range and the county has identified a series of GCN Consultation Zones, which are based on a radius of 5 km around sites with known populations. In north Devon, there are two consultation zones, one based on a cluster of populations on Braunton Burrows and surrounding area, and another based on a population identified at Great Torrington. The Proposed Development Scoping Boundary falls outside of these consultation zones.

7.2.19 The above information has been used to scope a series of additional surveys (agreed with Natural England) including a desk study, updated extended Phase 1 habitat survey, wintering and breeding birds surveys, bat activity surveys (focussed on likely areas of higher disturbance, such as proposed compound locations), potential bat roosting feature surveys, otter surveys, reptile surveys, dormice surveys, badger surveys, aquatic invertebrate survey, river condition survey (of watercourses directly affected by proposed construction activity).

7.2.20 The more recent surveys have been carried out between 2021 to 2023 and will continue ongoing in 2024. These surveys will reinforce the findings of previous surveys and will confirm the presence of the following protected species groups:

- Dormice:
  - Scattered populations of dormice at various locations close to the proposed Converter Site and along the Onshore HVDC Cable Corridor. There are sufficient records from the recent surveys and those previously undertaken to suggest that it will not be possible to completely discount

the potential presence of dormice in any hedgerows or woodland areas associated with the Proposed Development.

- Bat activity:
  - During the 2022 surveys, a total of 10 species of bat were identified at various proposed locations across proposed construction compound areas. By far the most common species were *soprano pipistrelle* and *noctules*, which are relatively common bat species. Annex II bat species were recorded at low levels with occasional peaks of activity by species such as *barbastelle*. Greater levels of horseshoe bats indicate a dynamic use of the landscape where they exploit seasonally available food sources, or avoid overly exposed conditions during poor weather. The evidence from the compartments surveyed in 2022 did not suggest the presence of important commuting or foraging routes for Annex II species.
  - Bat roost potential survey of trees carried out in 2022 concentrated on the Onshore HVDC Cable Corridor. This identified four trees with high potential for bat roosting and 26 trees with moderate potential.
- Otters:
  - Surveys confirmed the continued presence of otters, mainly associated with the Taw-Torridge Estuary, but also associated with the stream running from Jennetts Reservoir. No holts, couches or other places of rest for otters were identified in any locations which would be impacted by the Onshore HVDC Cable Corridor. Given their extensive ranges, otters should be considered likely to be present along the Onshore HVDC Cable Corridor and Converter Site. Although current surveys suggest no places of rest for this species would be impacted by the proposals, the transient and peripatetic nature of the species should be borne in mind.
- Badgers:
  - Badger activity across the Proposed Development has been rather limited and somewhat less than expected. This is likely a result of the continuing licensed badger cull. Current surveys have not identified any active setts in locations which would be impacted by the Proposed Development.
- Breeding birds:
  - Breeding bird surveys have identified 70 species of birds of which 24 were confirmed to be breeding and a further seven species possibly breeding. The remaining 39 species were of non-breeding status. Of the species confirmed and possibly breeding, there were seven species of principal importance (NERC), and five Birds of Conservation Concern red listed species.
- Wintering and migratory birds:
  - The surveys recorded 12 species of conservation interest at the landfall site at Cornborough Range. These included little egret, an Annex 1 species under the Birds Directive, and curlew and herring gull, which are Red-list species. At the Torridge Estuary survey location, 13 species of conservation interest were recorded. These included little egret and kingfisher, both Annex 1 species under the Birds Directive and curlew, herring gull and lapwing, which are Red-list species.
- Reptiles and amphibians:

  - Reptile surveys carried out in September 2021 identified the presence of slow worms, grass snake, common frogs, toads, and smooth newts. These species have been identified in the desk study undertaken in 2022. In addition, common lizard are also recorded, and were identified on site during the 2012 surveys.
- Invertebrates:
  - An aquatic invertebrate survey in 2021 indicated that the watercourses surveyed had low aquatic invertebrate diversity, with assemblages dominated by *Gammarus* amphipods and chironomid larvae, and were mostly of low to moderate conservation interest, although weather conditions at the time of survey may have contributed to these results.

Habitats

7.2.21 The following habitats have been identified along the onshore elements of the Proposed Development, through the Phase 1 Habitat Survey:

- Semi-natural broadleaved woodland;
- Plantation coniferous woodland;
- Dense and scattered scrub;
- Semi-improved neutral grassland;
- Improved grassland;
- Species poor semi-improved grassland;
- Standing and running water;
- Intertidal mud and sand;
- Saltmarsh;
- Arable;
- Native species rich hedgerow with and without trees (predominantly Devon hedge); and
- Native species poor hedge (again predominantly Devon hedgerow).

Future Baseline Conditions

7.2.22 The EIA process will consider the existing baseline conditions within the study area, and future baseline conditions (as far as reasonably practicable) in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report.

7.2.23 The relationship between climate change and biodiversity in the UK has been considered by the Inter-Agency Climate Change Forum (IAACCF, 2010). They have found that the impact on species of increased temperatures can include changes in distribution and abundances, timing of seasonal events and the timing of when habitats are used. As a result, the overall species composition, habitats, and ecosystem characteristics may evolve in response to changes in climatic conditions. There is potential risk in particular to coastal habitats and watercourses because of climate change.

7.2.24 Since 1970 there has been a 13% decline in UK biodiversity (House of Commons Environmental Audit Committee Biodiversity in the UK 2021). It would also be expected that, without further significant intervention, biodiversity in the UK could continue to decline. Policy initiatives to prevent this, including Biodiversity 2020 (Defra, 2011) and emerging policy on BNG aims to reduce the speed of or halt this decline.

Scope of the Assessment

7.2.25 A range of potential impacts on onshore ecology and nature conservation have been identified which may occur during the construction, operation and maintenance, and decommissioning phases of the Proposed Development.

7.2.26 The impacts that have been scoped into the assessment are outlined in **Table 7.2.2** together with a description of any additional data collection (e.g. site-specific surveys) and supporting analyses (e.g. modelling) that will be required to enable a full assessment of the impacts.

7.2.27 Potential impacts proposed to be scoped out of the assessment are presented in **Table 7.2.3** with justification for why the impact should be scoped out.

Table 7.2.2: Impacts proposed to be scoped into the assessment for onshore ecology and nature conservation

Impact	Phase			Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
The impact of the Proposed Development on statutory designated sites (e.g., Taw Torridge Estuary SSSI, Mermaid's Pool to Rowden Gut SSSI, Kynoch's Foreshore LNR).	✓	✓	✓	Proposed Development will not directly affect the Torridge Estuary SSSI/LNR and will avoid its primary estuarine habitats by drilling under using HDD. Residual impacts on species associated with the SSSI may still occur.	Wintering and migratory bird surveys, otter surveys, phase 1 habitat assessment.	Review species activity and focus on potential for disturbance as a result of HDD activity.
The impact of the Proposed Development on non-statutory designated sites (e.g., CWS).	✓	✓	✓	Proposed Development passes through and adjacent to a number of locally designated sites.	Habitat assessment, species surveys.	Review species activity and habitats in vicinity of designated sites assess potential to affect sites from construction /decommissioning and operation of the scheme.
The impact of temporary and permanent habitat loss during construction and decommissioning of the onshore elements of the Proposed Development.	✓	×	✓	Proposed Development and its construction/decommissioning will result in temporary and permanent habitat losses as a result of construction of the Onshore HVDC Cable Corridor and converter stations.	Habitat baseline, via Phase 1 Habitat survey and UK Habitats assessment.	Identify habitats, qualify in terms of ecological value and measure likely losses, including timescales (permanent, temporary, long-term, short-term, etc). Review potential for mitigation via enhancement of replaced habitats, new habitat creation and revised management opportunities.
The impact of the Proposed Development on Protected species: dormouse habitat loss and disturbance	✓	✓	✓	Proposed Development and its construction/decommissioning may result in temporary and possibly permanent dormouse habitat losses as a result of construction of Onshore HVDC Cable Corridor and converter stations.	Dormouse surveys per "The Dormouse Conservation Handbook" (2006). These should focus on hedgerows and woodland areas crossed by or immediately adjacent to the Onshore HVDC Cable Corridor, construction compounds and the Converter Site.	Collate results and provide realistic assessment of likely extent of dormouse populations across scheme and assess impacts resulting from the scheme. Review potential for mitigation via licensing, phased construction working practices, habitat enhancement and new habitat creation (including early habitat creation options).

Impact	Phase			Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
The impact of the Proposed Development on Protected species: bats	✓	✓	✓	Proposed Development and its construction/decommissioning may result in habitat loss/severance of bat commuting and foraging routes and potential loss or disturbance to trees with potential for bat roosting as a result of the construction of the Onshore HVDC Cable Corridor and converter stations.	Primary locations where habitats could be affected are construction compounds and Converter Site. Bat activity surveys undertaken at these locations. Trees along route assessed for bat roosting potential	Identify and qualify bat populations present, and their use of features to be affected. Identify trees with moderate or high potential for bat roosting and assess likely impacts resulting from the scheme. Review potential for mitigation via licensing, modified construction practices, protection of existing habitat, new habitat creation and use of artificial roosting measures.
The impact of the Proposed Development on Protected species: otters	✓	✓	✓	Proposed Development and its construction/decommissioning may result in temporary and possibly permanent otter habitat losses as a result of construction of the Onshore HVDC Cable Corridor and converter stations.	Primary locations where otter habitats could be affected are where proposed Onshore HVDC Cable Corridor crosses watercourses. Otter presence is well known within the area, so surveys should focus on possible otter places of rest or foraging activity in these locations.	Identify locations where otter places of rest or regular foraging activity is recognised and assess potential impacts on these resulting from the scheme. Review potential for mitigation via licensing, modified construction practices, protection of existing habitat and features, habitat enhancements.
The impact of the Proposed Development on Protected species: badgers	✓	✓	✓	Proposed Development and its construction/decommissioning may result in damage to badger setts or disturbance to badgers occupying them. This could be as a result of construction of the Onshore HVDC Cable Corridor and converter stations.	Carry out surveys for presence of badgers in locations which could be affected by the scheme, providing sufficient survey buffer to allow for any potential disturbance issues beyond direct impacts of construction/operation activities.	Identify and assess setts in locations which could be at risk of damage or disturbance to badgers occupying them. Review potential for mitigation via licensed temporary or permanent sett closures, protective exclusion zones around setts and other mechanisms.
The impact of the Proposed Development on Protected species: breeding birds	✓	✓	✓	Proposed Development and its construction/decommissioning may result in temporary and possibly permanent breeding bird habitat losses as a result of construction of the Onshore HVDC Cable Corridor and converter stations.	Carry out breeding bird surveys across the Onshore HVDC Cable Corridor and Converter Site.	Qualify breeding bird populations identified and assess potential impacts upon them resulting primarily from construction/decommissioning works. Review potential for mitigation measures such as timing site clearance activities to

Impact	Phase			Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
						avoid breeding seasons, habitat enhancement and new habitat creation.
The impact of the Proposed Development on Protected species: Migratory and overwintering birds	✓	✓	✓	Proposed Development and its construction/decommissioning may result in temporary and possibly permanent migratory and overwintering bird habitat losses as a result of construction of the Onshore HVDC Cable Corridor and converter stations.	Carry out migratory and over-wintering bird surveys of areas (focussing primarily on landfall and estuary areas of the scheme as those likely to be of highest value for this group).	Qualify migratory and over-wintering bird populations and assess potential impacts upon them resulting primarily from construction/decommissioning works (but also may include permanent habitat losses). Review potential for mitigation such as timing construction activities to avoid peak bird visiting times, habitat enhancement and new habitat creation.
The impact of the Proposed Development on Protected species: Reptiles	✓	✓	✓	Proposed Development and its construction/decommissioning may result in temporary and possibly permanent reptile habitat losses as a result of construction of the Onshore HVDC Cable Corridor and converter stations.	Carry out reptile surveys of any habitat areas with potential to support reptiles.	Qualify reptile populations identified and assess potential impacts upon them resulting from the scheme.
The impact of the Proposed Development on Protected species: Invertebrates	✓	✓	✓	Proposed Development and its construction/decommissioning may result in temporary and possibly permanent invertebrate habitat losses as a result of construction of the Onshore HVDC Cable Corridor and converter stations.	Initial assessments suggest invertebrate interest associated with the scheme likely to be confined to water-course crossing locations – habitats likely to support diverse terrestrial invertebrate populations appear to be limited by regular agricultural activity.	Identify and qualify aquatic invertebrate assemblages and assess impacts resulting (likely to be primarily a result of construction/decommissioning activity).

*C=Construction, O=Operation and Maintenance, D=Decommissioning

Table 7.2.3: Impacts proposed to be scoped out of the assessment for onshore ecology and nature conservation

Impact	Justification
Effects on the terrestrial European sites (SAC, SPA, etc)	Initial discussion with Natural England suggests HRA not required for terrestrial elements of the scheme (see notes of Discretionary Advice Service 17671-358612 dated 03/08/2021 – **Appendix B**).

Measures Adopted as Part of the Proposed Development

7.2.28 The following measures adopted as part of the Proposed Development are relevant to onshore ecology and nature conservation, considered in addition to the overarching design and embedded measures in **section 4.8** and **Table 4.8.1.** These measures may evolve as the engineering design and the EIA progresses.

- Site selection of the onshore elements of the Proposed Development to avoid sites designated for nature conservation and habitats/areas of high ecological value, where practicable.
- Minimisation, wherever feasible of impacts on existing hedgerows from cable route construction, by ensuring cable routes parallel to existing hedges have sufficient stand-off to minimise the disturbance of wildlife using them and ensure that the works do not encroach and damage the hedges.
- Reduction in the width of the Onshore HVDC Cable Corridor and HVAC cables, where practicable, to reduce the impact of habitat loss and minimise impacts on habitats and species of high ecological interest. Where the cables are required to cross hedgerows, the construction corridor has been minimised by removing soil storage capacity and the need for multiple temporary haul routes and where possible finding alternative haul route options to minimise need for any through-hedge haul routing.
- Implementation, wherever possible, of HDD or similar trenchless methodologies for crossing particularly sensitive habitat features encountered by the Onshore HVDC Cable Corridor, to include the landfall of the cable, the Taw-Torridge Estuary and a number of smaller well-wooded watercourses likely to be of particular potential value to wildlife species such as bats, nesting birds, dormice and otters.
- Development of a landscape scheme design which incorporates elements of landscapes associated with recognised local landscape creation schemes, such as the inclusion of North Devon Atlantic wet forest habitat creation.
- Ecology best practice measures, including a Biosecurity Method Statement and Invasive Species Management Plan, will be incorporated into the CEMP. Any standalone documents supporting the assessment of onshore ecology and nature conservation (e.g., protected species licences) will be referenced and/or appended to the CEMP, where relevant.
- The ECoW will instruct, oversee, and manage ecology measures to be included in the CEMP during the construction of the Proposed Development. The ecology measures to be included in the CEMP will be explained to construction staff during Ecology Toolbox Talks by the ECoW.

- Site inductions for all site personnel, to ensure that all those working on site are aware of the ecological requirements, mitigation measures and the name, contact details and role of the ECoW.
- SMP – The SMP would include measures to ensure the protection, retention, and potential enhancement (as part of any potential mitigation strategy) of soils during construction of the onshore elements of the Proposed Development, including any potential mitigation areas required.
- Protected species licence applications (if required) will be agreed with Natural England and include detailed method statements, mitigation strategies and post-construction monitoring and management requirements, which will be detailed within the Landscape and Ecology Management Plan.

Proposed Assessment Methodology

7.2.29 The onshore ecology and nature conservation assessment for the onshore elements of the Proposed Development will be undertaken in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report, in addition to the following established guidance: The onshore ecology and nature conservation assessment for the onshore elements of the Proposed Development will be undertaken in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report, in addition to the following established guidance:

- Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2018)
- Guidelines for Preliminary Ecological Appraisal Second Edition (CIEEM, 2017)
- Guidelines for Baseline Ecological Assessment (Institute of Environmental Assessment, 1995)
- Advice on Ecological Assessment of Air Quality Impacts (CIEEM, 2021)
- The Biodiversity Metric 4.0 (JP039) (Natural England, 2023).

Potential Cumulative Effects

7.2.30 There is potential for cumulative effects on sensitive receptors to occur when the Proposed Development is considered together with other developments. The potential cumulative effects between the onshore elements of the Proposed Development and other developments with respect to onshore ecology and nature conservation will be considered within the PEIR and the ES.

7.2.31 The cumulative effects assessment would be undertaken in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report and CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland (2018).

Potential Inter-related Effects

7.2.32 The assessment of potential inter-related effects will be considered within the onshore ecology and nature conservation ES chapter. It will include consideration

of project lifetime effects and receptor-led effects in line with the approach outlined in **Section 5:** EIA Methodology, of the Scoping Report. For example:

- Geology, Hydrogeology and Ground Conditions:
  - Impacts from the disturbance of contaminated land, spillages of contaminants or changes in groundwater levels during construction and decommissioning of the onshore elements of the Proposed Development may impact sites designated for nature conservation and protected or notable habitats and species within the onshore ecology and nature conservation study area.
- Hydrology and Flood Risk:
  - Impacts on surface water quality, levels, and drainage, during the construction and decommissioning of the onshore elements of the Proposed Development may adversely affect sites designated for nature conservation, habitats of ecological value, and protected or otherwise notable species within the onshore ecology and nature conservation study area.
- Land-use and Recreation:
  - Impacts on soil quality during construction and decommissioning of the onshore elements of the Proposed Development may cause damage to habitats and reduce the success of habitat reinstatement within the onshore ecology and nature conservation study area.
- Noise and Vibration:
  - Noise and vibration emissions generated during construction, operation and maintenance, and decommissioning of the onshore elements of the Proposed Development may cause habitat disturbance and displacement of protected or notable species within the onshore ecology and nature conservation study area.
- Air Quality:
  - Dust and air emissions generated during construction and decommissioning of the onshore elements of the Proposed Development may impact sites designated for nature conservation and protected habitats and species within the onshore ecology and nature conservation study area.
- Waste:
  - Waste materials and management measures during construction, operation and maintenance, and decommissioning of the onshore elements of the Proposed Development may cause habitat disturbance and displacement of protected or notable species within the onshore ecology and nature conservation study area.
- Landscape and Visual Impact Assessment:
  - Light spill onto adjacent retained habitats during the construction, operation and maintenance, and decommissioning of the onshore elements of the Proposed Development may result in habitat disturbance and displacement of protected or notable species within the onshore ecology and nature conservation study area.

Potential Transboundary Impacts

7.2.33 A screening of transboundary impacts has been carried out and is presented in **Appendix A**: Transboundary Impacts Screening. This screening exercise identified that there is no potential for transboundary impacts upon onshore ecology and nature conservation due to construction and operational and maintenance impacts of the Proposed Development.

7.3 Historic Environment

Introduction

7.3.1 This section of the Scoping Report identifies the historic environment receptors relevant to the onshore elements of the Proposed Development. This section also considers the potential impacts arising from the construction, operation and maintenance and decommissioning of the Proposed Development and identifies the proposed scope of, and methodology for, the EIA process for the historic environment ES chapter.

Relevant Policy, Legislation and Guidance

Legislative and Policy Context

7.3.2 The following key legislation and policy documents relevant to historic environment will be considered within the assessment process:

- Ancient Monuments and Archaeological Areas Act 1979 (amended by the National Heritage Act (1983) and the National Heritage Act (2002));
- Planning (Listed Buildings and Conservation Areas) Act (1990) and the Town and County Planning Act (1971);
- NPS for Electricity Networks Infrastructure (EN-5) (Department of Energy and Climate Change, 2011; Department for Energy Security and Net Zero, 2023);
- NPPF (Department for Levelling Up, Housing and Communities, 2023); and
- North Devon and Torridge Local Plan 2011 – 2031 (Torridge District Council, 2018).

Guidance Documents

7.3.3 Guidance documents relevant to the historic environment that will be considered within the assessment process include the following:

- Planning Practice Guidance (Department for Levelling Up, Housing and Communities, 2021);
- Managing Significance in Decision-Taking in the Historic Environment: Historic Environment Good Practice Advice in Planning Note 2 (Historic England, 2015);
- The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 (Historic England, 2017);

- Standard and guidance for historic environment desk-based assessment (Chartered Institute for Archaeologists (CIfA), 2014a);
- Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment (CIfA, 2014b);
- Standard and guidance for archaeological geophysical survey (CIfA, 2014c);
- Standard and guidance for archaeological field evaluation (CIfA, 2014d);
- Standard and guidance for the collection, documentation, conservation and research of archaeological materials (CIfA, 2014e); and
- Standard and guidance for the collection, compilation, transfer and deposition of archaeological archives (CIfA, 2014f).

Study Area

7.3.4 The study area for the assessment of historic environment will focus on areas landward of MLWS where potential impacts are most likely to occur on historic environment receptors. As such, historic environment study area comprises the Proposed Development and the following:

- 5 km settings study area – a circle with a radius of 5 km centred on the Converter Site within which all designated heritage assets will be identified and described;
- 1 km settings study area – a zone extending for 1 km from the edge of the Onshore HVDC Cable Corridor within which all designated heritage assets will be identified and described; and
- 500 m historic environment study area – a zone extending for 500 m from the edge of the Onshore HVDC Cable Corridor and the edge of the Converter Site within which all non-designated heritage assets will be identified and described.

Data Sources

7.3.5 The data sources used to inform the baseline assessment will be a combination of published material which is publicly available and site visits undertaken by appropriately qualified archaeologists. An initial desk-based review has identified several data sources, which provide baseline data coverage of the Proposed Development Scoping Boundary. These sources are summarised in **Table 7.3.1**.

7.3.6 The data sources identified in this Scoping Report will remain under review and may be updated in response to feedback from relevant consultees during the EIA process, or in response to new sources of information becoming available.

Table 7.3.1: Baseline data sources – historic environment

Source	Summary
Historic Environment Record (HER)	The county HER is maintained by Devon County Council.
National Heritage List for England (NHLE)	The NHLE is maintained by Historic England.
Devon Heritage Centre	Archive holding historic maps and documents.
Devon Archives and Local Studies	Archive holding historic maps and documents.
LiDAR data	Published by the Environment Agency.

Source	Summary
Geological information	Published by the British Geological Survey (BGS).
ArchSearch	Information held by the Archaeological Data Service (ADS).
Portable Antiquities Scheme (PAS)	Information regarding material found and reported by metal detectorists.
Archaeological survey data	The results of the programmes of geophysical survey and archaeological trial trenching undertaken for the Proposed Development.

7.3.7 A review of relevant documentary and archival material held in libraries and archives will be undertaken. An iterative approach will be adopted during this process to determine the scope of the above consultations/searches.

7.3.8 Further programmes of geophysical survey and archaeological trial trenching are planned for the period leading up to submission of the DCO application. The results of these programmes will be included within the baseline historic environment review.

7.3.9 The baseline data sources identified in this Scoping Report will remain under review and may be updated in response to feedback from relevant statutory and non-statutory consultees during the EIA process, or in response to new sources of information becoming available.

Baseline Environment

7.3.10 Historic environment receptors which will be considered in the EIA assessment include:

- World Heritage Sites;
- Listed buildings (both nationally and locally listed);
- Conservation Areas;
- Registered Parks and Gardens;
- Scheduled Monuments;
- Designated wrecks; and
- Buried and above ground heritage assets.

7.3.11 A review of baseline data shows that the Proposed Development Scoping Boundary coincides with multiple designated heritage assets. These designated heritage assets are presented in **Table 7.3.2** and **Figure 7.3.1**.

Table 7.3.2: Designated heritage assets within the Proposed Development Scoping Boundary

Asset	Summary
Iron Age enclosure and Roman marching camp	Scheduled Monument west of the proposed Converter Site
Kenwith Castle	Scheduled Monument comprising an 18th century garden feature
Hallsannery Lime Kiln	Scheduled Monument comprising a 19th century lime kiln
Church of St Swithun, Littleham	Grade I listed building
Church of St Helen, Abbotsham	Grade II* listed building
Old Ford	Grade II* listed building

Asset	Summary
Grade II listed buildings	Numerous – see **Figure 7.3.1**.

7.3.12 Several archaeological sites and areas of archaeological interest are known within the Proposed Development Scoping Boundary, including some that have been identified by the programmes of geophysical survey and archaeological trial trenching undertaken on behalf of the Proposed Development.

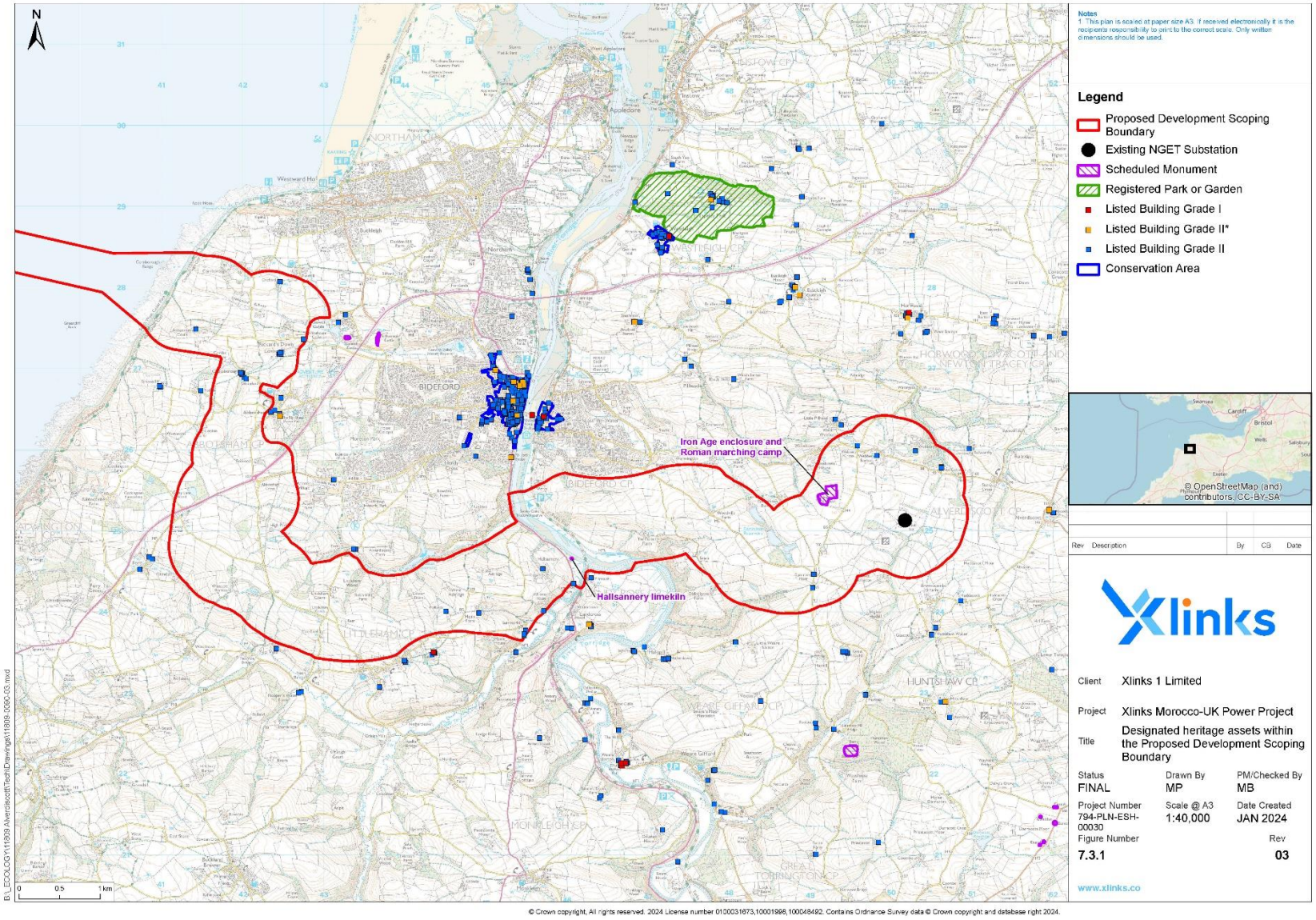

Figure 7.3.1: Designated heritage assets within the Proposed Development Scoping Boundary

Future Baseline Conditions

7.3.13 The EIA process will consider the existing baseline conditions within the study area, and future baseline conditions (as far as reasonably practicable) in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report.

7.3.14 Future changes to the historic environment baseline could include additions to the list of designated heritage assets, e.g. additional designations of Scheduled Monuments, Listed Buildings etc. or amendments to the descriptions of the assets and the area covered by the designation.

7.3.15 Other changes could occur as a result of further information being discovered regarding archaeological sites, possibly through programmes of intrusive or non-intrusive fieldwork undertaken on behalf of the Proposed Development. The results of any such investigations would be incorporated into the historic environment baseline.

7.3.16 No changes in statutory legislation on historic environment issues are currently anticipated. Additional guidance may be issued by national statutory advisors or others, including guidance on the assessment process.

7.3.17 No significant change to the historic environment baseline in this area is anticipated to occur as a result of climate change. Although no significant changes are anticipated, the following effects could occur as a result of climate change:

- Drier weather in the summer months may lead to the discovery of as yet unknown archaeological sites that become visible as cropmarks or parchmarks.
- Drier weather could also lead to some drying out of deposits (within palaeochannels) which are currently waterlogged or damp. This may result in some loss of heritage significance of these deposits in terms of palaeoenvironmental potential.
- Climate change could lead to new farming regimes as farmers respond to variations in temperature and rainfall by introducing new crops or by switching from livestock to arable farming which could impact on buried archaeological remains.
- There could be increased flooding in low-lying coastal areas associated with a rise in sea levels and a possible increase in severe storm events; this could affect historic buildings and areas as well as buried archaeological remains.

Scope of the Assessment

7.3.18 A range of potential impacts on the historic environment have been identified which may occur during the construction, operation and maintenance and decommissioning of the onshore elements of the Proposed Development.

7.3.19 The impacts that have been scoped into the assessment are outlined in **Table 7.3.3** together with a description of any additional data collection (e.g. site-specific surveys) and supporting analyses that will be required to enable a full assessment of the impacts.

7.3.20 Potential impacts proposed to be scoped out of the assessment are presented in **Table 7.3.4**, with justification for why the impact should be scoped out.

Table 7.3.3: Impacts proposed to be scoped into the assessment for historic environment

Impact	Phase			Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
Loss of, or harm to, buried archaeological remains and deposits of geoarchaeological interest.	✓	×	×	Loss or harm could occur during construction as a result of physical impacts during construction.	Desk-based assessment and field surveys.	Characterise the nature of buried archaeological remains and deposits of geoarchaeological interest, ascribe value/importance and appraise likely magnitude of impact.
Impact of the Proposed Development (other than the converter stations) on the significance of heritage assets as a result of change with their settings.	✓	×	✓	Changes within the settings of heritage assets during construction and decommissioning can result in harm to their significance.	Identify location of heritage assets in relation to proposed areas of construction.	Use the Zone of Theoretical Visibility (ZTV) to understand which heritage assets could be affected, review their current settings and appraise the likely change within the settings and the potential for this change to cause harm to the significance of the asset.
Impact of the proposed converter stations on the significance of heritage assets as a result of change with their settings.	✓	✓	✓	Changes within the settings of heritage assets during construction, operation and maintenance and decommissioning of the converter stations can result in harm to their significance.	Identify location of heritage assets in relation to Converter Site.	Use the ZTV to understand which heritage assets could be affected, review their current settings and appraise the likely change within the settings and the potential for this change to cause harm to the significance of the asset.
Impact of the Proposed Development on the character of the historic landscape.	✓	✓	✓	The character of the historic landscape could be affected by the construction and decommissioning of the Proposed Development and the operation and maintenance of the converter stations.	Review information regarding the historic landscape, including any Historic Landscape Characterisation studies that have been undertaken.	Review the likely changes to the character of the historic landscape and appraise the potential for these changes to cause harm to this character.

*C=Construction, O=Operation and Maintenance

Table 7.3.4: Impacts proposed to be scoped out of the assessment for historic environment

Impact	Justification
Loss of, or harm to, buried archaeological remains and deposits of geoarchaeological interest during operation and maintenance.	All loss of, or harm to, buried archaeological remains and deposits of geoarchaeological interest would occur during construction as a result of physical impacts.
Impact of the Proposed Development (other than the converter stations) on the significance of heritage assets as a result of change with their settings during operation and maintenance.	Changes within the settings of heritage assets would mostly be in the form of visual changes, with possibly also noise changes during construction. Following the completion of construction there would be no visual changes within the settings of heritage assets *(other than those associated with the converter stations) and no noise changes.

Measures Adopted as Part of the Proposed Development

7.3.21 The following measures adopted as part of the Proposed Development are relevant to the historic environment chapter, considered in addition to the overarching design and embedded measures in **section 4.8** and **Table 4.8.1.** These measures may evolve as the engineering design and the EIA progresses.

- Programmes of archaeological survey have been undertaken, and will continue to be undertaken, in order to identify the location and extent of buried archaeological remains and deposits of geoarchaeological interest within the land required for the construction and operation and maintenance of the Proposed Development.
- An onshore WSI would be developed prior to construction, which would detail the surveys and archaeological mitigation requirements during construction.

Proposed Assessment Methodology

7.3.22 The historic environment assessment for the onshore elements of the Proposed Development will be undertaken in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report, in addition to the following established guidance:

- DMRB LA 106 - Cultural heritage assessment (Highways England et al., 2019).
- Standard and guidance for historic environment desk-based assessments (CIfA, 2014).
- National Planning Policy Framework (NPPF), section 16. Conserving and enhancing the historic environment (MHCLG, 2021).
- Planning Practice Guidance (MHCLG, 2021).
- Principles of cultural heritage impact assessment guidance (IEMA, IHBC, CIfA, 2021).
- The Historic Environment in Local Plans: Historic Environment Good Practice in Planning 1 (Historic England, 2015).

- Managing Significance in Decision-Taking in the Historic Environment: Historic Environment Good Practice in Planning 2 (Historic England, 2015).
- The Setting of Heritage Assets: Historic Environment Good Practice in Planning 3 (Historic England, 2017).
- Code of Conduct (CIfA, 2019).
- Scheduled Monuments and nationally important but non-scheduled monuments (Department for Culture Media and Sport, 2013).

7.3.23 Despite being principally developed for the assessment of highway projects, the DMRB also provides guidance applicable to the assessment of other linear schemes, such as the onshore HVDC cables of the Proposed Development).

Potential Cumulative Effects

7.3.24 There is potential for cumulative effects on sensitive receptors to occur when the Proposed Development is considered together with other developments. The potential cumulative effects between the onshore elements of the Proposed Development and other developments with respect to historic environment will be considered within the PEIR and the ES.

7.3.25 The cumulative effects assessment would be undertaken in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report.

Potential Inter-related Effects

7.3.26 The assessment of potential inter-related effects will be considered within the historic environment ES chapter. It will include consideration of project lifetime effects and receptor-led effects in line with the approach outlined in **Section 5:** EIA Methodology, of the Scoping Report. For example:

- Landscape and Visual Impact Assessment:
  - Landscape and visual impacts during construction, operation and maintenance, and decommissioning phases of the onshore elements of the Proposed Development may impact above ground heritage assets located within the historic environment study area. In addition, the ZTV determined as part of the landscape and visual impact assessment will be used to inform the historic environment study area.
- Noise and Vibration:
  - Noise and vibration impact during construction, operation and maintenance, and decommissioning phases of the onshore elements of the Proposed Development may impact above ground historic assets and below ground and buried archaeology located within the historic environment study area.

Potential Transboundary Impacts

7.3.27 A screening of transboundary impacts has been carried out and is presented in **Appendix A**: Transboundary Impacts Screening. This screening exercise identified that there is no potential for transboundary impacts upon the historic environment due to construction, operational and maintenance and decommissioning impacts of the Proposed Development.

7.4 Hydrology and Flood Risk

Introduction

7.4.1 This section of the Scoping Report identifies the hydrology and flood risk receptors relevant to the onshore elements of the Proposed Development. This section also considers the potential impacts arising from the construction, operation and maintenance, and decommissioning of the Proposed Development and identifies the proposed scope of, and methodology for, the EIA process for the hydrology and flood risk chapter.

Relevant Policy, Legislation and Guidance

Legislative and Policy Context

7.4.2 The following key legislation and policy documents relevant to hydrology and flood risk will be scoped in within the assessment process:

- Water Framework Directive (2000/60/EC);
- Urban Wastewater Treatment Directive (91/271/EEC);
- Nitrates Directive (91/676/EEC);
- Groundwater Directive (2006/118/EC);
- Floods Directive (2007/60/EC); and
- Drinking Water Directive (2015/1787/EU).
- Reservoirs Act 1975;
- Environmental Protection Act 1990;
- Land Drainage Act 1991 (as amended);
- Water Resources Act 1991 (as amended);
- Environment Act 1995;
- Control of Pollution (Oil Storage) (England) Regulations 2001;
- Climate Change Act 2008;
- Flood Risk Regulations 2009;
- Flood and Water Management Act 2010;
- Water Act 2014;
- The Private Water Supplies (England) Regulations 2016, as amended;
- The Water Supply (Water Quality) Regulations 2016;
- The Environmental Permitting (England and Wales) Regulations 2016 (as amended);
- Water Supply (Water Quality) Regulations 2016;
- Water Environment (Water Framework Directive) (England and Wales) Regulations 2017; and
- North Devon and Torridge Local Plan 2011 – 2031.

Guidance Documents

7.4.3 Guidance documents relevant to the historic environment that will be considered within the assessment process include the following:

- Planning Practice Guidance (Ministry for Housing, Communities and Local Government, 2019b);
- Designing for Exceedance in Urban Drainage – Good Practice (C635) (CIRIA, 2006);
- Design Manual for Roads and Bridges. LA113 Road Drainage and the Water Environment (Highways England *et al*., 2020);
- Environment Agency – former Pollution Prevention Guidance Notes;
- Flood risk assessments: Climate Change Allowances (Environment Agency, 2020);
- The SuDS manual (C753) (CIRIA, 2015a);
- Site Handbook for the Construction of SuDS (C698) (CIRIA, 2007b);
- Control of Water Pollution from Construction Sites (C532) (CIRIA, 2001);
- Control of Water Pollution from Linear Construction Projects – Technical Guidance (C648) (CIRIA, 2006a);
- Control of Water Pollution from Linear Construction Projects – Site Guide (C649) (CIRIA, 2006b);
- Environmental Good Practice on Site (third edition) (C692) (CIRIA, 2010); and
- Environment Agency Groundwater Protection Policy (The Environment Agency's Approach to Groundwater Protection) (Environment Agency, 2018a).

Study Area

7.4.4 The study area to be used for the assessment of hydrology and flood risk (the hydrology and flood risk study area) will focus on areas landward of MHWS, where potential impacts are most likely to occur on surface water and flood risk receptors. The study area will be refined through the PEIR.

7.4.5 As such, the hydrology and flood risk study area to be used in the assessment will be defined as:

- The area of land to be temporarily or permanently occupied during construction, operation, maintenance and decommissioning of the onshore elements of the Proposed Development.
- Surface water receptors located within 250 m of land temporarily or permanently occupied during the construction, operation, maintenance and decommissioning of the onshore elements of the Proposed Development. The 250 m buffer is considered appropriate for data collection taking into account the likely ZOI on hydrological receptors but may be extended where hydrologically connected catchments are identified.
- Flood risk receptors located within 1 km of the Converter Site. The 1 km buffer was chosen primarily to identify any existing receptors, assets or

infrastructure that have the potential to be affected by flood risk as a result of the converter stations.

7.4.6 The hydrology and flood risk study area for surface water receptors will include temporary accesses, access routes (including haul roads), storage areas and construction compounds required to facilitate construction, operation and maintenance and decommissioning of the onshore elements of the Proposed Development.

7.4.7 The hydrology and flood risk study area will be reviewed and modified, if necessary, in response to refinements made to the design of the Proposed Development and/or any additional environmental and/or design constraints identified during the EIA process.

Data Sources

7.4.8 The data sources used to inform the baseline assessment will primarily comprise of an overview of data from the Environment Agency (EA) and Defra.

7.4.9 The baseline data sources identified in this Scoping Report will remain under review and may be updated in response to feedback from relevant statutory and non-statutory consultees during the EIA process, or in response to new sources of information becoming available.

Desk-based Data Sources

7.4.10 The data sources used to inform the baseline assessment will primarily comprise published material which is publicly available online and data that is available to purchase from the EA. An initial desk-based review has identified data sources that provide baseline data coverage of the Proposed Development Scoping Boundary. These data sources are summarised in **Table 7.4.1**.

Table 7.4.1: Baseline data sources – hydrology and flood risk

Source	Summary
DEFRA Magic Interactive Mapping System	Provides information regarding statutory and non-statutory designated sites (e.g., water dependent sites designated for nature conservation).
EA Catchment Data Explorer	Provides information regarding the water environment, including relevant River Basin Management Plans and associated waterbodies.
EA Flood Map for Planning	Provides information regarding flood risk from rivers and sea and location of flood defences.
EA Long Term Flood Risk Mapping	Provides information regarding flood risk from rivers, sea and surface water and areas benefitting from flood defences.
EA Statutory Main River Map	Provides locations of EA Main Rivers
North Devon and Somerset Shoreline Management Plan (SMP2)	Provides information regarding risks associated with coastal processes and strategic mitigation measures.
OS Digital Terrain Model (DTM) 50	Provides information regarding the topography of the study area allow the overall land slope and specific levels to be assessed.
South West river basin district river basin management plan: updated 2022	Provides information regarding the policies and measures enacted to protect and improve the water environment (includes rivers, lakes, canals, groundwater, wetlands, estuaries and coastal waters) for the wider benefits to people and wildlife.

Source	Summary
Torridge District Council Strategic Flood Risk Assessment (SFRA) Level 1 and 2	Provides area specific information regarding key sources of flooding (fluvial, tidal, groundwater, surface, sewer) as well as information on historic flooding.

Site-specific Survey Data

7.4.11 In addition to the data sources identified above, the following site-specific surveys will inform the baseline assessment for hydrology and flood risk in the ES:

- A site walkover to key site locations undertaken on 22 March 2023.

Baseline Environment

Hydrological setting

7.4.12 An initial review of published OS maps shows landfall is to be made at Cornborough Range which is covered by the North Devon and Somerset Shoreline Management Plan (SMP2). The Proposed Development Scoping Boundary is located within the North Devon Management Catchment and the wider South West River Basin District.

7.4.13 An initial review of published OS maps and EA data shows the River Torridge, a designated Main River bisects the central extent of the Proposed Development Scoping Boundary. The river outfalls to the Taw and Torridge Estuary prior to discharging to Barnstaple Bay, where the landfall site is located.

7.4.14 Ordinary watercourses are also present within the Proposed Development Scoping Boundary, including the River Yeo, Kenwith stream as well as multiple unnamed ordinary watercourses. Ordinary watercourses convey flow towards the River Torridge. A surface water plan is presented within **Figure 7.4.1**.

7.4.15 Jennetts Reservoir and the Gammaton Reservoirs are additionally present within the Proposed Development Scoping Boundary in addition to several unnamed ponds.

7.4.16 The Proposed Development Scoping Boundary is not located within an Internal Drainage Board.

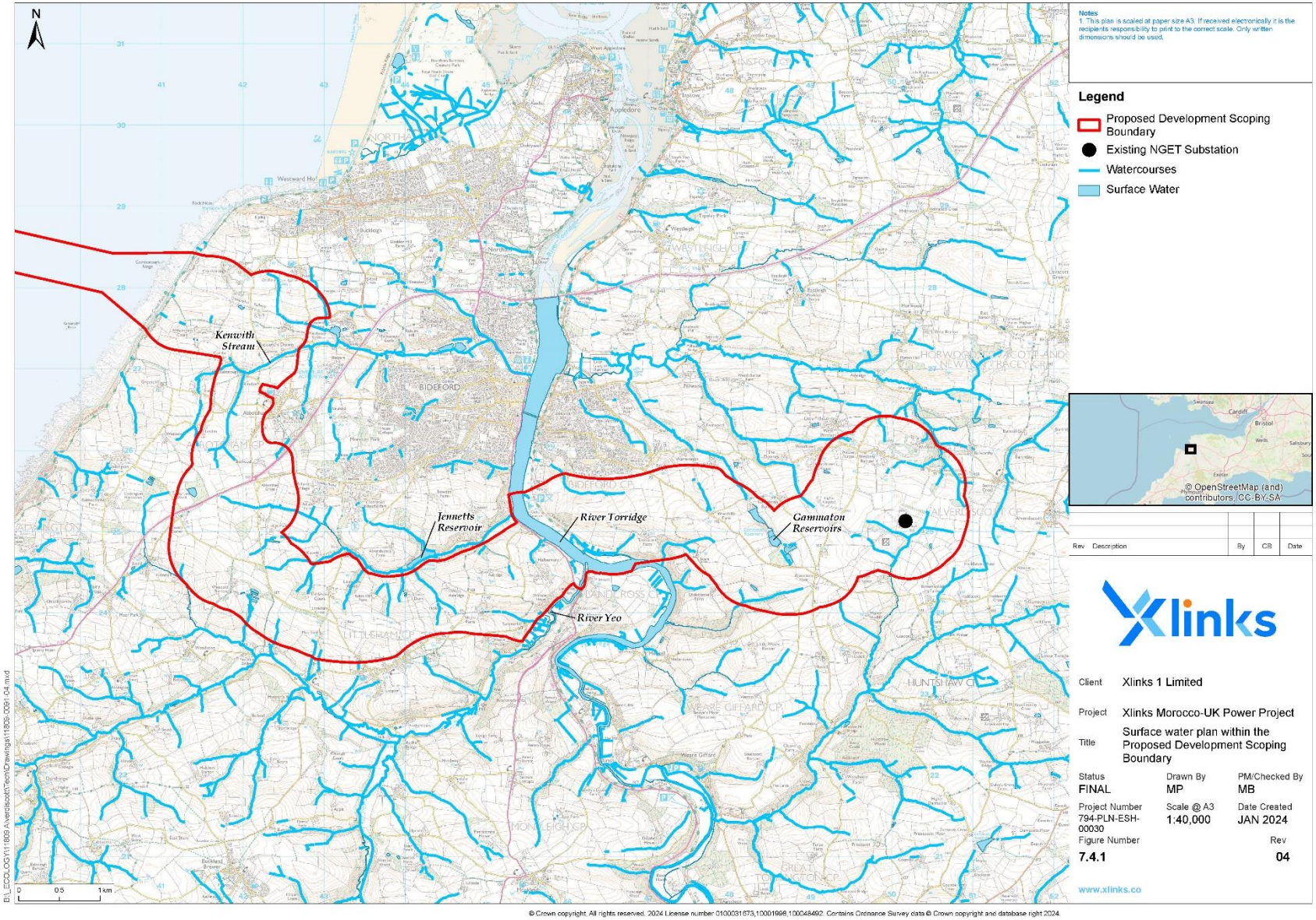

Figure 7.4.1: Surface water plan within the Proposed Development Scoping Boundary

Water Framework Directive Classification

7.4.17 Under the Water Framework Directive (WFD), hydrological features often contribute either directly or indirectly to the overall framework designation. Hydrological designations in which the study area is located are provided at an international and national level and are detailed within **Table 7.4.2**.

Table 7.4.2: Water Framework Directive Classification

Name of waterbody	Waterbody type	Classification (2022)	Overall objective
Kenwith Stream (ID: GB108050014500)	River (not designated artificial or heavily modified)	Ecological – Moderate Chemistry – Does not require assessment Overall – Moderate	Good by 2027
Horwood Stream (ID GB108050014510)	River (not designated artificial or heavily modified)	Ecological – Moderate Chemistry – Does not require assessment Overall – Moderate	Good by 2027
Upper River Yeo (Bideford)	River (not designated artificial or heavily modified)	Ecological – Poor Chemistry – Does not require assessment Overall – Poor	Good by 2027
Lower River Yeo (Bideford)	River (not designated artificial or heavily modified)	Ecological – Moderate Chemistry – Does not require assessment Overall – Moderate	Good by 2027
Huntshaw Water (GB108050014440)	River (not designated artificial or heavily modified)	Ecological – Moderate Chemistry – Does not require assessment Overall – Moderate	Good by 2027
Gammaton Upper Reservoir (GB30844798)	Lake (heavily modified)	Ecological – Moderate Chemistry – Does not require assessment Overall – Moderate	Good by 2027
Gammaton Lower Reservoir (GB30844781)	Lake (heavily modified)	Ecological – Moderate Chemistry – Does not require assessment Overall – Moderate	Good by 2027
Taw / Torridge (GB540805015500)	Transitional Water (heavily modified)	Ecological – Moderate Chemistry – Does not require assessment Overall – Moderate	Good by 2027
Barnstaple Bay (GB610807680003)	Coastal Water (not designated artificial or heavily modified)	Ecological – Moderate Chemistry – Does not require assessment Overall – Moderate	Good by 2027
Torridge and Hartland Streams (ID GB40802G800600)	Groundwater (Natural)	Quant – Good Chemistry – Poor Overall – Poor	Good by 2027

Designated Sites

7.4.18 Under the WFD, hydrological features often contribute either directly or indirectly to the overall framework designation. Hydrological designations within the study area are provided at an international and national level. The extent of the landfall crosses the Mermaid's Pool to Rowden Gut Biological SSSI and the Taw-Torridge Estuary SSSI 500 m impact zone is also located within the study area.

Flood risk from Rivers and Sea

7.4.19 The EA Flood Zones refer to the probability of flooding from rivers and sea in a given year, assuming no defences are in place and accounting for climate change. Flood zone definitions are set out within **Table 7.4.3**. Fluvial and tidal flood risk is also presented within **Figure 7.4.2.**

Table 7.4.3: Flood map for planning Flood Zones.

Flood zone	Flood zone definitions
Flood Zone 1	land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%).
Flood Zone 2	land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1%) in any year.
Flood Zone 3	land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.

7.4.20 By virtue of ground elevation, the EA flood map for planning shows the landfall area is located within a narrow band of Flood Zone 3 (land with annual probability of tidal flooding that is over 1 in 200 (0.5%) and Flood Zone 1 whereby land is assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%).

7.4.21 The study area is predominantly located within Flood Zone 1 with areas of Flood Zone 2 and 3 associated with ordinary watercourses and Main Rivers within the study area.

Flood defences

7.4.22 Formal flood defences are shown to be present along either bank of the River Torridge. At landfall, there are no formal flood defences along this part of the coast, with much of the coast to either side being higher cliffs which act as informal flood defences.

Surface Water Risk

7.4.23 The Flood Map for Planning shows areas at low to high risk of surface water flood risk predominantly along ordinary watercourses present within the study area (see **Figure 7.4.3**.

7.4.24 The mapping shows surface water flooding within limited areas of the study area with maximum depths up to 900 mm and over 0.25 m/s in velocity.

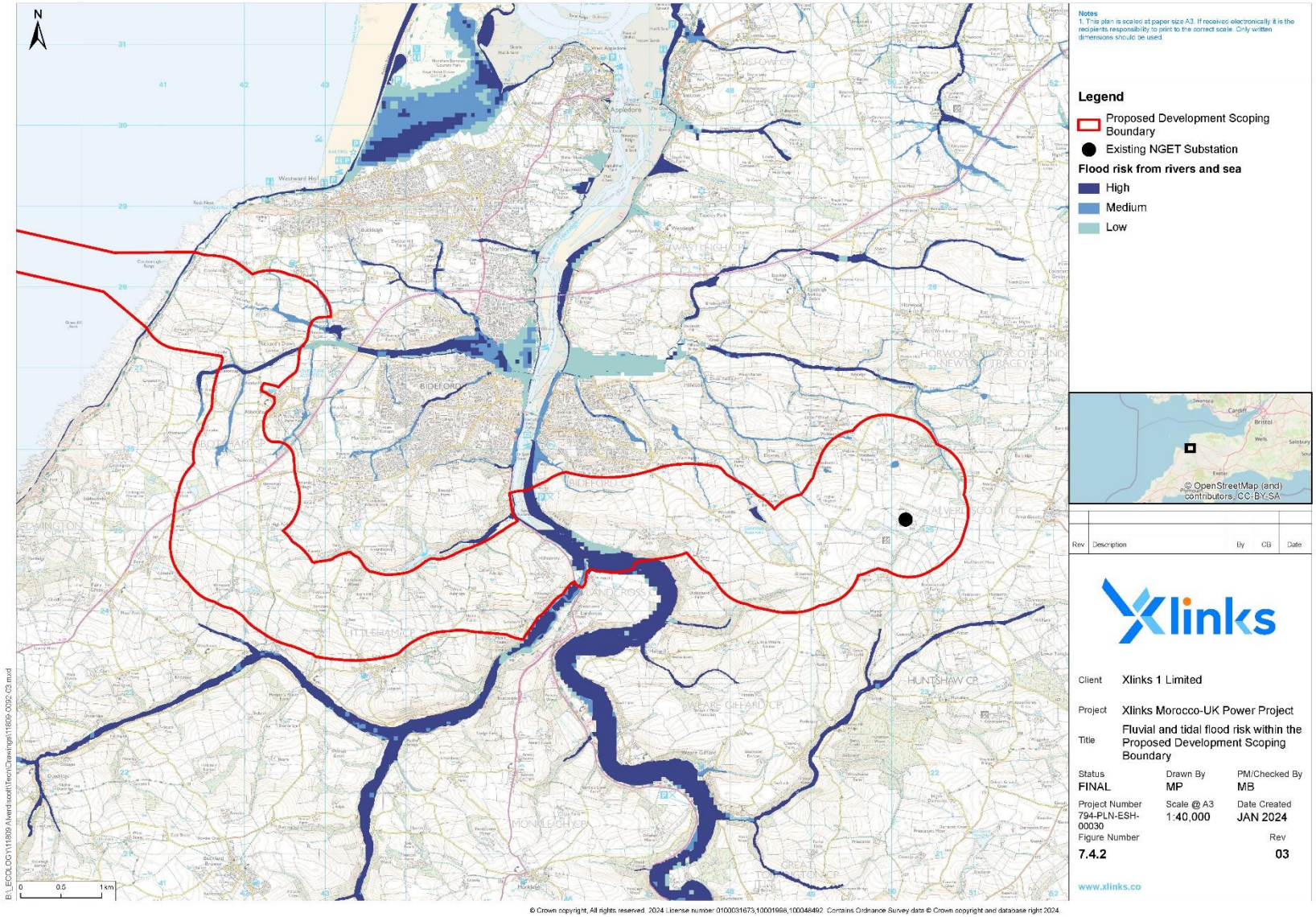

Figure 7.4.2: Fluvial and tidal flood risk within the Proposed Development Scoping Boundary

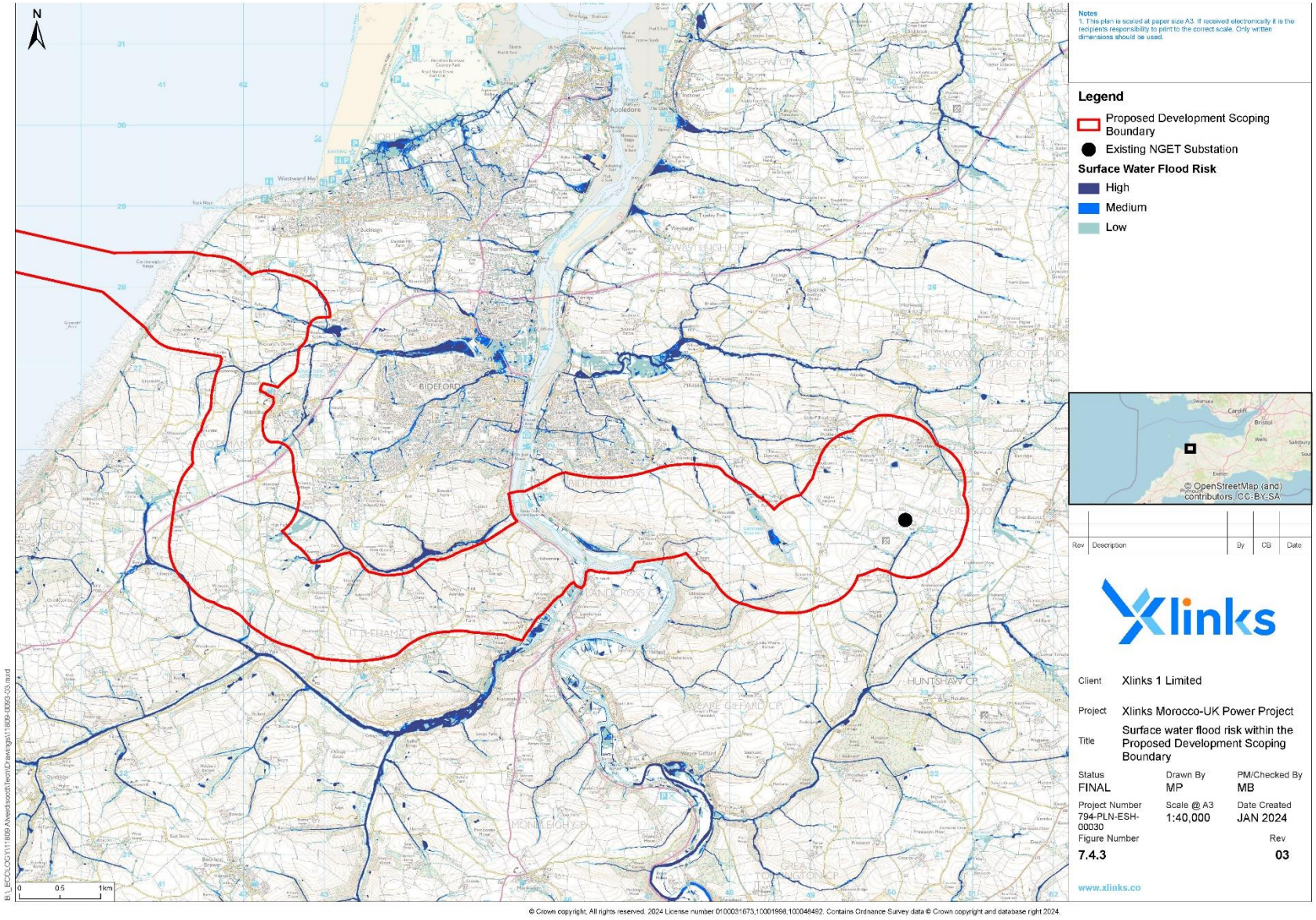

Figure 7.4.3: Surface water flood risk within the Proposed Development Scoping Boundary

Reservoir Flooding

7.4.25 The EA Long Term Flood Risk mapping indicates that, under both the wet scenario (where there is also risk of fluvial flooding) and dry scenario, an area of the central extent of the study area is at risk of reservoir flooding. This area is associated with the River Torridge and River Yeo.

Historical Flooding

7.4.26 The EA Historical Flood mapping indicates recorded historical flood outlines within the study area in association with the River Torridge and River Yeo.

Future Baseline Conditions

7.4.27 The EIA process will consider the existing baseline conditions within the study area, and future baseline conditions (as far as reasonably practicable) in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report.

7.4.28 The main impact on the hydrology and flood risk future baseline is associated with the potential effects of climate change, which may impact on future peak river flow rates, rainfall intensity and sea levels.

Scope of the Assessment

7.4.29 A range of potential impacts on hydrology and flood risk have been identified which may occur during the construction and operation and maintenance phases of the Proposed Development.

7.4.30 The impacts that have been scoped into the assessment are outlined in **Table 7.4.4** together with a description of any additional data collection (e.g., site-specific surveys) and supporting analyses (e.g., modelling) that will be required to enable a full assessment of the impacts.

7.4.31 Potential impacts proposed to be scoped out of the assessment are presented in **Table 7.4.5** with justification for why the impact should be scoped out.

Table 7.4.4: Impacts proposed to be scoped into the assessment for hydrology and flood risk

Impact	Phase			Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
The impact of contaminated runoff on the quality of ordinary watercourses, Main Rivers and ground receptors arising from the construction and decommissioning of the Proposed Development.	✓	×	✓	Activities required to facilitate the construction and decommissioning of the Proposed Development (e.g. removal of surface vegetation, excavations, dewatering, stockpiling) may generate contaminated runoff. Accidental spills/contaminant release could also occur as a result of activities. These activities could impact the chemical and biological status of ordinary watercourses and Main Rivers and ground receptors.	Ordinary watercourses, Main Rivers and ground receptors located within the hydrology and flood risk study area for the Proposed Development will be identified using desk-based analysis. The chemical/biological status and the use of waterbodies will also be identified from desk-based information where available	The impact of contaminated runoff and spills/contaminant releases on the water quality of main rivers and ordinary and private watercourses will be assessed using desk based analysis in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report, in addition to the application of professional judgement where required. No water sampling or analysis is proposed.
The impact of increased flood risk arising from additional surface water runoff during construction and decommissioning of the Proposed Development.	✓	×	✓	Activities required to facilitate the construction and decommissioning of the Proposed Development (e.g. temporary construction compounds, removal of surface vegetation, compaction of soils, excavations, dewatering) may alter drainage patterns and surface water runoff rates onsite, increasing the risk of flooding posed to the surrounding area.	Baseline flood risk within the hydrology and flood risk study area for the Proposed Development will be determined using desk-based analysis of flood risk mapping data published by EA and site specific data obtained to inform the Flood Risk Assessment (FRA).	The potential impact of flood risk arising from additional surface water runoff will be assessed and mitigated appropriately based on the results of FRA, which is to be submitted alongside the ES. This FRA will comprise desk-based assessment of flood risk from all sources of flooding, including appropriate allowances for climate change. Where appropriate, site specific surface water attenuation modelling would be undertaken, using MicroDrainage Software (or similar), to analyse surface water runoff and inform suitable mitigation measures, including the design of Sustainable Drainage Systems (SuDS). It is anticipated that modelling would primarily be limited to above ground permanent infrastructure (e.g. Converter Site).
The impact of increased flood risk arising from additional surface water runoff during operation of the Converter Site.	×	✓	×	The installation of the Converter Site would result in additional impermeable land, which may alter drainage patterns and surface water runoff rates onsite, increasing the risk of flooding within the site and the surrounding area.	Baseline flood risk within the hydrology and flood risk study area for the Proposed Development will be determined using desk-based analysis and site specific data obtained to inform the FRA.	

Impact	Phase			Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
The impact of increased flood risk arising from damage to existing flood defences during the construction and decommissioning of the Proposed Development.	✓	×	✓	If the Proposed Development is located within or near existing formal and informal flood defences, activities required to facilitate construction and decommissioning of the Proposed Development may impact the integrity (or efficacy) of flood defence infrastructure and increase the risk of flooding within the site and the surrounding area.	Existing formal and informal flood defences within the hydrology and flood risk study area for the Proposed Development will be determined using desk-based analysis of flood risk mapping data published by the EA and site specific data obtained to inform the FRA.	The potential impact of increased flood risk arising from damage to existing flood defences will be assessed using desk-based analysis in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report, in addition to the application of professional judgement where required. In addition, detailed consultation with the Lead Local Flood Authorities (LLFA) and EA would be undertaken to discuss works on or near existing flood defences.
The impact of damage to existing field drainage during the construction and decommissioning of the Proposed Development.	✓	×	✓	If the Proposed Development is located on or near existing drainage infrastructure, activities required to facilitate construction and decommissioning of the Proposed Development may damage field drainage.	Existing field drainage infrastructure located within the hydrology and flood risk study area for the Proposed Development will be identified using a desk-based analysis and site specific data obtained to inform the FRA.	The impact of increased flood risk arising from damage to existing field drainage will be assessed using desk-based analysis in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report, in addition to the application of professional judgement where required. In addition, detailed consultation with the relevant stakeholders would be undertaken to discuss works on or near existing field drainage.

Impact	Phase			Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
The impact of damage to existing water pipelines during the construction and decommissioning of the Proposed Development.	✓	×	✓	If the Proposed Development is located on or near existing water pipelines, activities required to facilitate construction and decommissioning of the Proposed Development may damage existing pipelines, interrupting the local water supply.	Existing water pipelines located within the hydrology and flood risk study area for the Proposed Development will be identified using a desk-based analysis and site specific data obtained to inform the FRA.	The impact of increased flood risk arising from damage to existing water pipelines will be assessed using desk-based analysis in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report, in addition to the application of professional judgement where required. In addition, detailed consultation with the relevant stakeholders would be undertaken to discuss works on or near existing water pipelines.

*C=Construction, O=Operation and Maintenance, D=Decommissioning

Table 7.4.5: Impacts proposed to be scoped out of the assessment for hydrology and flood risk

Impact	Justification
The impact of contaminated runoff on the chemical and biological status of surface water receptors arising from the operation and maintenance of the Onshore HVDC Cable Corridor.	Activities associated with the operation and maintenance of the Onshore HVDC Cable Corridor are unlikely to generate contaminated runoff. Therefore, the potential impact of contaminated runoff on the quality of surface water receptors during the operation and maintenance of the Onshore HVDC Cable Corridor is unlikely to be significant and is proposed to be scoped out of the assessment for hydrology and flood risk.
The impact of increased flood risk arising from additional surface water runoff during the operation and maintenance of the Onshore HVDC Cable Corridor.	The operation and maintenance of the Onshore HVDC Cable Corridor may result in a minor increase in the total area of impermeable land. However, the increase in impermeable land arising from the installation of the Onshore HVDC Cable Corridor is unlikely to result in a notable change in drainage patterns and surface water runoff rates. Therefore, the potential impact of flood risk arising from additional surface water runoff during the operation and maintenance of the Onshore HVDC Cable Corridor is unlikely to be significant and is proposed to be scoped out of the assessment.

Measures to be Adopted as Part of the Proposed Development

7.4.32 The following measures to be adopted as part of the Proposed Development are relevant to Hydrology and Flood Risk, considered in addition to the overarching design and embedded measures in **section 4.8** and **Table 4.8.1.** These measures may evolve as the engineering design and the EIA progresses.

- Surface and Foul Water Management Plan - This would include measures to manage foul water and mitigate surface water flooding and the implementation of SuDS where necessary.
- Onshore CEMP(s) - Construction of the Proposed Development would be undertaken in accordance with the relevant best practice measures such as those recommended in CIRIA C648 (CIRIA, 2006) – 'Control of water pollution from linear construction projects' and other relevant guidance, including measures for handling oils, fuels, or other harmful substances as to avoid pollution of surface and ground water receptors due to accidental spillages/contaminant release. It is anticipated that separate CEMPs will be prepared for each main work package, e.g. separate CEMPs for the Onshore HVDC Cable Corridor and Converter Site.

Proposed Assessment Methodology

7.4.33 The hydrology and flood risk assessment for the onshore elements of the Proposed Development will be undertaken in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report, in addition to the following established guidance:

- National Planning Policy Framework (MHCLG, 2021).

- Planning Practice Guidance (MHCLG, 2021).
- Control of water pollution from linear construction projects. Site guide (C649D) (CIRIA, 2006).
- Design Manual for Roads and Bridges (DMRB) LA 104 – Environmental assessment and monitoring (Highways England, Transport Scotland, Welsh Government, Department for Infrastructure, 2020).
- DMRB LA 113 - Road drainage and the water environment (Highways England, Transport Scotland, Welsh Government, Department for Infrastructure, 2020).
- Torridge District Council SFRA Level 1 and 2

7.4.34 In accordance with the National Planning Policy Framework (MHCLG, 2021), a FRA will be undertaken for the onshore elements of the Proposed Development to determine baseline and future flood risk from all sources of flooding. The FRA will include calculations of surface water run-off rates and evidence of how surface water will be attenuated. The methodology and scope of the FRA, including mitigation proposals, will be agreed through consultation with the EA and LLFA.

7.4.35 The FRA will be used to inform the design of the onshore elements of the Proposed Development and mitigation measures, including the Surface and Foul Water Management Plan. The conclusions of the FRA will be referred to in the assessment of hydrology and flood risk in the ES where relevant. The FRA will form a technical appendix to the ES.

Potential Cumulative Effects

7.4.36 There is potential for cumulative effects on sensitive receptors to occur when the Proposed Development is considered together with other developments. The potential cumulative effects between the onshore elements of the Proposed Development and other developments with respect to hydrology and flood risk will be considered within and the ES.

7.4.37 The cumulative effects assessment would be undertaken in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report.

Potential Inter-related Effects

7.4.38 The assessment of potential inter-related effects will be considered within the hydrology and flood risk ES chapter. It will include consideration of project lifetime effects and receptor-led effects in line with the approach outlined in **Section 5:** EIA Methodology, of the Scoping Report. For example:

- Onshore Ecology and Nature Conservation:
  - The contamination of surface water receptors within the hydrology and flood risk study area during the construction and decommissioning of the onshore elements of the Proposed Development may impact water dependent sites designated for conservation, which could support protected or notable species.
- Air Quality:
  - Dust and air emissions generated during the construction and decommissioning of the onshore elements of the Proposed Development

may impact the quality of surface water receptors located within hydrology and flood risk study area.

- Geology, Hydrogeology, and Ground Conditions:
  - The mobilisation of existing contaminants or the release of contaminants into soil and groundwater during construction and decommissioning of the onshore elements of the Proposed Development may impact hydraulically linked surface water receptors within the hydrology and flood risk study area.

Potential Transboundary Impacts

7.4.39 A screening of transboundary impacts has been carried out and is presented in **Appendix A**: Transboundary Impacts Screening. This screening exercise identified that there is no potential for transboundary impacts upon hydrology and flood risk due to construction and operational and maintenance impacts of the Proposed Development.

7.5 Hydrogeology, Geology and Ground Conditions

Introduction

7.5.1 This section of the Scoping Report identifies the hydrogeology, geology, and ground conditions receptors relevant to the onshore elements of the Proposed Development. This section also considers the potential impacts arising from the construction, operation and maintenance, and decommissioning of the Proposed Development and identifies the proposed scope of, and methodology for, the EIA process for the hydrogeology, geology and ground conditions ES chapter.

7.5.2 The assessment uses the term ‘ground conditions’ in the broad sense and primarily considers issues relating to soils and ground contamination. Groundwater (and surface water) is considered within the context of potential pollution issues and the potential impact of the Proposed Development on existing groundwater (and surface water) abstractions within the study area. Geology is assessed in terms of potential impact on identified mineral safeguarding areas and designated geological conservation sites listed by the JNCC in the Geological Conservation Review (GCR), a database to identify those sites of national and international importance for sediments, rocks, fossils, and features of the landscape. These sites are typicallly notified as SSSIs or are being considered for notification as such.

Relevant Policy, Legislation and Guidance

Legislative and Policy Context

7.5.3 The following key legislation and policy documents relevant to hydrogeology, geology and ground conditions will be considered within the assessment process:

- National Planning Policy Framework (NPPF) 2023;
- Water Framework Directive 2000;

- The Groundwater Directive 2006;
- Environmental Liability Directive 2004;
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017;
- Groundwater (England and Wales) Regulations 2009;
- The Water Supply (Water Quality) Regulations 2016, as amended;
- The Private Water Supplies (England) Regulations 2016, as amended;
- The Water Resources Act 1991 (as amended);
- The Water Act 2014;
- The Environment Act 1995;
- Environmental Protection Act (EPA) 1990 (as amended);
- Contaminated Land (England) Regulations 2006 (as amended);
- Environmental Permitting (England and Wales) Regulations 2016 (as amended);
- Wildlife and Countryside Act 1981 (as amended); and
- North Devon and Torridge Local Plan 2011 – 2031.

Guidance Documents

7.5.4 Guidance documents relevant to hydrogeology, geology and ground conditions that will be considered within the assessment process include the following:

- Land Contamination: Risk Management (Environment Agency, 2020 and amended 2023);
- British Standard BS 10175 Investigation of Potentially Contaminated Sites (BSI, 2011 and amended 2017);
- Construction Industry Research and Information Association (CIRIA) Document C665: Assessing Risks Posed by Hazardous Ground Gases to Buildings (CIRIA, 2007);
- British Standard requirements for the 'Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings' (BS8485:2015+A1:2019) (BSI, 2015); and
- Defra Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance (Defra, 2012).

Study Area

7.5.5 The study area to be used for the assessment of geology, hydrogeology, and ground conditions will focus on areas located above MHWS.

7.5.6 Based on the refined locations for the onshore elements of the Proposed Development, the study area will include the Onshore HVDC Cable Corridor and Converter Site. The potential effects of land contamination sources outside of the Proposed Development Scoping Boundary will be considered and a nominal 250 m radius buffer around the extent of the Proposed Development Scoping Boundary will be used for the assessment of possible off-site contaminations

sources considered to have the potential to impact on the Proposed Development through the migration of gaseous or liquid contaminants.

7.5.7 As such, the geology, hydrogeology, and ground conditions study area will be defined as:

- The area of land to be temporarily or permanently occupied during the construction, operation and maintenance and decommissioning of the onshore elements of the Proposed Development.

7.5.8 The geology, hydrogeology and ground conditions study area will be reviewed and modified, if necessary, in response to refinements made to the design of the Proposed Development and/or any additional environmental and/or design constraints identified during the EIA process.

Data Sources

7.5.9 The data sources used to inform the baseline assessment will primarily comprise published information/data from local, regional and national agencies and findings of site specific surveys previously undertaken and will be assimilated into a desk top study and Preliminary Risk Assessment Report prepared by RPS in support of the DCO application for the Proposed Development and as an annex to the ES chapter.

7.5.10 The baseline data sources identified in this Scoping Report will remain under review and may be updated in response to feedback from relevant statutory and non-statutory consultees during the EIA process, or in response to new sources of information becoming available.

Desk-based Data Sources

7.5.11 An initial desk-based review has identified a number of data sources which provide baseline data coverage of the hydrogeology, geology and ground conditions study area. These data sources are summarised in **Table 7.5.1.**

Table 7.5.1: Baseline data sources – hydrogeology, geology and ground conditions

Source	Summary
British Geological Survey	Published geological mapping and available borehole records
Detailed Desk Study (Stage 2) for Potential Unexploded Ordnance (UXO) Contamination (RPS, 2022)	Detailed unexploded ordnance data including WWII bombing density and bombing decoy sites
Groundsure GeoInsight Report	Geological and hydrogeological information provided by BGS and Environment Agency (EA)
Groundsure EnviroInsight Report	Landfill permitted sites and other contaminative land use information provided by the EA, local planning authorities and the BGS
Groundsure Insight Report	Historical maps at large and small scales
Groundsure CON29M Coal Mining Search Report	Coal mining information including presence or otherwise of mine entries and past/historical shallow or deep mine workings
Open University Geological Society, South West Branch Website (2015): Coal Mining in Devon	History of coal mining in the county

Source	Summary
Zetica UXO Risk Mapping	UXO risk maps

Site-specific Survey Data

7.5.12 In addition to the data sources identified above, the following site-specific surveys will inform the baseline assessment for hydrogeology, geology and ground conditions in the ES:

- The findings of a targeted site walkover undertaken in January 2023 by an RPS Geo-environmental Consultant to ground truth the historical information identifying possible sources of contamination and to identify any additional existing sources of potential contamination.
- The results of a previous intrusive ground investigation undertaken in February 2023 by RPS, specifically on the Converter Site in the east, in order to provide information for geotechnical design purposes.
- Additional ground condition surveys to be undertaken in 2024 to supplement the 2023 surveys.

Baseline Environment

7.5.13 The assessment of baseline conditions has been utilised to determine the environmental and hydrogeological setting, evidence of potential land contamination, risk of ground instability and location in relation to identified Local Authority registered mineral sites/safeguarding zones.

Site History

7.5.14 The historical map review undertaken has indicated a primarily agricultural historical land usage for the majority of the study area since the 1880s, the Proposed Development predominantly crossing fields, minor roads, and woodland.

7.5.15 The main observations from the historical maps with regard to possible sources of contamination of the Proposed Development are:

- Rifle Range in the west (map editions of between 1904 and 1905);
- Infilled quarry (map editions from 1887 to 1904); and
- Former Lime Kilns (map editions from 1884 to 1904).

7.5.16 The main observations from the historical maps with regard to possible sources of contamination within the study area are:

- Infilled old quarries (map editions from 1886 to 1932); and
- Railway (map editions from 1904 to 1932).

Geology

Published Geology

7.5.17 The Proposed Development is shown to be underlain by outcropping bedrock strata of the Bude Formation and Crackington Formation, the former typically

comprising interbedded mudstones and siltstones with rare thin coal seams (culm) or thick bedded silty sandstones, the Crackington Formation typically comprising interbedded mudstones and siltstones.

7.5.18 Superficial (drift) deposits are generally absent in the study area other than where the Proposed Development crosses the River Torridge to the south of Bideford. Here exposures of Alluvium (variable clay, silt, sand or gravel) are recorded on either side of the waterbody overlying River Torridge Terrace Deposits (silty clay with sandstone gravel), both of which are overlain by Tidal Flat Deposits (unconsolidated clays, silts and sands).

7.5.19 Bedrock faulting is inferred across much of the study area, with unknown displacement. The general geological sequence in the vicinity of the Proposed Development Scoping Boundary comprises a complex series of anticlinal and synclinal bedrock strata, generally dipping steeply to the south. The bedrock sequence has been locally fluvially eroded by the River Torridge resulting in deposition of superficial fluvial deposits of Alluvium and River Terrace Deposits over estuarine Tidal Flat Deposits.

Site-Specific Geology

7.5.20 There is little existing site-specific geological information available for the Proposed Development Scoping Boundary from BGS published records. A preliminary ground investigation for the Converter Site was undertaken by RPS in February 2023, comprising eight machine excavated trial pits down to 3.05 m below ground level (bgl) and four rotary cored boreholes down to 9.00 m bgl.

7.5.21 The exploratory holes identified no evidence of Made Ground. A thin cover of topsoil was encountered overlying a profile of weathered mudstone and siltstone strata comprising gravelly clays and silts becoming intact rock. These strata are assumed to be the Bude Formation.

Site-Specific Contamination Testing Results

7.5.22 Ten shallow soil samples from the Converter Site investigation were selected for laboratory analysis for a range of organic and inorganic contaminations. An assessment of these results in relation to typical soil background concentrations and generic published screening criteria (primarily Suitable 4 Use Levels (LQM/CIEH, 2015)) for a commercial land use represented in the **Table 7.5.2** below.

Table 7.5.2: Summary of soil analytical results

Determinant	Range of Recorded Results (mg/kg)	Typical Background Concentrations# (mg/kg)	Generic Acceptance Criteria – commercial land use (mg/kg) 6% SOM unless otherwise stated.
Arsenic	4.1 - 13	15	640
Lead*	20 - 52	100	2300*
Cadmium	<0.1 – 0.1	1.8	190
Chromium III	39.1 - 56.4	60-90	18,000

Determinant	Range of Recorded Results (mg/kg)	Typical Background Concentrations# (mg/kg)	Generic Acceptance Criteria – commercial land use (mg/kg) 6% SOM unless otherwise stated.
Chromium VI	<0.3	N/A	33
Nickel	24.2 – 56.3	15-30	980
Mercury	<0.1 – 0.2	N/A	58
Selenium	1 - 3	N/A	12,000
Zinc	76 - 180	N/A	730,000
Naphthalene^	<0.04	N/A	190
Acenaphthylene^	<0.03	N/A	83,000
Acenaphthene^	<0.05	N/A	84,000
Fluorene^	<0.04	N/A	63,000
Phenanthrene^	<0.03	N/A	22,000
Anthracene^	<0.04	N/A	520,000
Fluoranthene^	<0.03	N/A	23,000
Pyrene^	<0.03	N/A	54,000
Benzo(a)anthracene^	<0.06	N/A	170
Chrysene^	<0.02	N/A	350
Benzo(bk)fluoranthene^	<0.07	N/A	1,200
Benzo(a)pyrene^	<0.04	N/A	35
Indeno (123cd) pyrene^	<0.04	N/A	500
Dibenzo(ah)anthracene^	<0.04	N/A	3.5
Benzo(ghi)perylene^	<0.04	N/A	3,900
Total cyanide	<0.5	N/A	34
Benzene^	<0.005	N/A	27
Toluene^	<0.005	N/A	56,000
Ethylbenzene^	<0.005	N/A	5,700
o-xylene^	<0.005	N/A	6,600
m-p xylene^	<0.005	N/A	5,900
TPH CWG Aliphatics >C5-C6^	<0.1	N/A	3,200
TPH CWG Aliphatics >C6-C8^	<0.1	N/A	7,800
TPH CWG Aliphatics	<0.1	N/A	2,000

Determinant	Range of Recorded Results (mg/kg)	Typical Background Concentrations# (mg/kg)	Generic Acceptance Criteria – commercial land use (mg/kg) 6% SOM unless otherwise stated.
>C8-C10^			
TPH CWG Aliphatics >C10-C12^	<0.2	N/A	9,700
TPH CWG Aliphatics >C12-C16^	<4	N/A	59,000
TPH CWG Aliphatics >C16-C21^	<7	N/A	1,600,000
TPH CWG Aliphatics >C21-C35^	<7	N/A	1,600,000
TPH CWG Aromatics >C5-EC7^	<0.1	N/A	26,000
TPH CWG Aromatics >EC7-EC8^	<0.1	N/A	56,000
TPH CWG Aromatics >EC8-EC10^	<0.1	N/A	3,500
TPH CWG Aromatics >EC10-EC12^	<0.2	N/A	16,000
TPH CWG Aromatics >EC12-EC16^	<4	N/A	36,000
TPH CWG Aromatics >EC16-EC21^	<7	N/A	28,000
TPH CWG Aromatics >EC21-EC35^	<7	N/A	28,000
Asbestos	None identified	N/A	N/A

BGS Estimated background Soil Chemistry

^ 1 % SOM for commercial land use

* C4SL for commercial land use (6% SOM)

7.5.23 There are no exceedances of the General Acceptance Criteria applicable to the designated future land use at the Converter Site. Other than nickel. Metal, metal concentrations in natural soils are below or in accord with the BGS typical background concentrations.

Designated and Non-designated Geological Conservation Sites

7.5.24 Through inspection of the on-line GCR database maintained by the JNCC, all statutory and non-statutory designated geological sites located in the Devon County Council area have been identified. It is concluded that the coastal landfall is located within the SSSI designated 'Mermaid's Pool to Rowden Gut' listed as '*The combination of a major lateral change from Crackington to Bideford Formation facies and the associated biostratigraphical control makes the Abbotsham Coast a site of very major importance for regional and national palaeoenvironmental and palaeographical studies'.*

Hydrogeology

7.5.25 The bedrock strata of the Bude Formation and Crackington Formation are identified as Secondary A Aquifers, as are the superficial Alluvium and River Torridge Terrace Deposits. Tidal Flat Deposits are classified as a Secondary Undifferentiated Aquifer.

7.5.26 There are no groundwater Source Protection Zones and no EA licensed groundwater abstractions within the study area.

Surface Water

7.5.27 There are a number of surface water bodies within the study area including Gammaton Reservoirs, Horwood Stream and the River Torridge in addition to the sea at the point of landfall. The River Torridge had a WFD overall quality classification of 'Moderate' in 2019. There is a licensed surface water abstraction within the study area, this is identified as an 'unnamed pond at Bideford' and is located to the south of the Proposed Development Scoping Boundary in the vicinity of Hollands Court.

Ground Instability and Mining

7.5.28 BGS Ground stability Hazard Ratings for the Proposed Development are identified as follows;

Table 7.5.3: BGS Ground Stability Hazard Ratings

Ground Stability hazard	BGS Risk Rating
Collapsible Ground	Negligible/Very Low
Compressible Ground	Negligible to Moderate (Moderate rating applies to identified suprficial deposits of Tidal Flat Deposits and Alluvium only)
Ground dissolution	Negligible
Landslide	Very Low to Moderate (Moderate rating only applicable to valley sides of River Torridge)
Running Sand	Negligible to Moderate (Moderate Rating only indicative of exposures of Tidal Flat Deposits)
Shrinking or swelling clay	Negligible/Very Low

7.5.29 Negligible to very low ratings indicate no significant development constraints, however the moderate ratings for running sands indicate constraints may apply to land uses involving excavation or the addition or removal of water.

7.5.30 The Moderate rating for compressible ground links to possible localised compressibility and uneven settlement hazards at the river crossing.

7.5.31 Landslide risk potential of Moderate refers to the identification of slope instability problems that are probably present or have occurred in the past.

7.5.32 An area of development high risk linked to the conjectured outcrop of a coal (culm) seam is identified on the Coal Authority website to the north of the Converter Site. The seam location is to the north of the proposed construction compound.

7.5.33 Information obtained from the published BGS sheet memoir and Open University Geological Society (2015) indicates that the seam is known locally as a culm and is recorded as ‘carbonaceous material’ rather than coal and has been sporadically worked since the Middle Ages for burning of lime or collection of pigment. The seams are recorded as being steeply dipping and were worked in a similar way to metalliferous mining.

7.5.34 There are no Coal Authority recorded former mine entries within the study area. It is also apparent that there is no historical map evidence of any former mining activity across the study area. The Coal Authority report obtained for the DTS and PRA states there are no current underground coal workings within influencing distance of the Proposed Development Scoping Boundary, and it is not within an area designated for any future workings.

7.5.35 There is no confirmed evidence of non-coal mining within the study area from historical maps or BGS records. The BGS have concluded that there is potential for restricted sporadic mining of vein minerals or Bideford Black (culm as referred to above).

Environmental Data

7.5.36 No recorded landfill sites have been identified within the Proposed Development Scoping Boundary although it has been established that there are two former landfill sites identified within the study area listed as licensed for disposal of Inert, Industrial, Commercial, Household wastes.

7.5.37 One current Environmentally Permitted activity is identified within the study area covering the use of Bulk Cement.

7.5.38 There are two records for discharge of substances identified on List II of European Directive E 2006/11/EC within the study area. Each listed as Typo Electronics, authorised to discharge chromium, copper, cyanide, lead, nickel and zinc and Bideford (Cornborough) STW, authorised to discharge chromium, copper, iron, lead, nickel and zinc, both have active status, with the latter releasing discharge into the tidal River Torridge.

Unexploded Ordnance

7.5.39 Reference to the Zetica Unexploded Bomb Risk mapping indicates that the study area is in an area of low potential risk from Unexploded Bombs. Historically it has been identified that in the west of the Proposed Development Scoping Boundary there was a rifle range circa 1904/1905.

7.5.40 A detailed UXO desk study was undertaken by RPS in November 2022, and indicated that Proposed Development was at a low risk from Defensive Positions and Military Training/Presence. The report concluded that Explosives Safety and Awareness Briefings/Site Safety Guidelines will need to be undertaken prior to works in each area of the Proposed Development Scoping Boundary.

Mineral Resources

7.5.41 The NPPF (2023) requires mineral planning authorities to define Mineral Safeguarding Areas and Mineral Consultation Areas. Devon County Council have adopted the following definitions:

- Mineral Safeguarding Areas – reflect the surface extent of the mineral resource, quarrying planning permission, processing facility or transport infrastructure.
- Mineral Consultation Areas – areas where consultation with Devon County Council and the minerals industry is required to ensure that future extraction of resources or operation of infrastructure is not sterilised or constrained.

7.5.42 Reference to the Devon Minerals Plan (2017) and accompanying Policies Map confirms that there are no designated Mineral Safeguarding Areas or Mineral Consultation Areas within the study area.

Future Baseline Conditions

7.5.43 The EIA process will consider the existing baseline conditions within the study area, and future baseline conditions (as far as reasonably practicable) in accordance with the methodology set out in **section 5**.

7.5.44 The primary sources of future change with respect to the baseline are changes in land use and climate change.

Scope of the Assessment

7.5.45 A range of potential impacts on geology, hydrogeology and ground conditions have been identified which may occur during the construction and operation, maintenance, and decommissioning phases of the Proposed Development.

7.5.46 The impacts that have been scoped into the assessment are outlined in **Table 7.5.4** together with a description of any additional data collection (e.g. site-specific surveys) and supporting analyses (e.g. modelling) that will be required to enable a full assessment of the impacts.

7.5.47 Potential impacts proposed to be scoped out of the assessment are presented in **Table 7.5.5** with justification for why the impact should be scoped out.

Table 7.5.4: Impacts proposed to be scoped into the assessment for hydrogeology, geology and ground conditions

Impact	Phase			Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
The impact of ground contamination on human health receptors (including future on and off-site users)	✓	×	✓	Construction phase Potential for airborne migration, dermal contact and ingestion of contaminants where present. Potential for localised Made Ground that contains elevated concentrations of contaminants, particularly around any areas of reprofiled/infilled historical mineral workings and lime kilns in the central and western sections and former rifle range in the west. There is also a potential for agrochemicals to be present within shallow soils in areas of agricultural land usage. Operational phase No change Decommissioning phase Potential impacts from the decommissioning phase are assumed to be similar in nature as those during construction, as some groundworks would be required to remove the cables and other infrastructure installed.	Review of desk based information sourced and findings of site specific surveys to complete Preliminary Risk Assessment (PRA) Review of available chemical testing results from Converter Site ground investigation and preparation of Generic Quantitative Risk Assessment to identify and human health risks from soils.	Preparation of Conceptual Site Model (CSM) using pollutant (source–pathway-receptor) linkage approach. Where the CSM identifies a potential for significant harm to sensitive receptors through active pollutant linkages, further investigation or more detailed risk assessment may be required or, if residual risk remains, remediation or mitigation measures may be appropriate.
The impact of ground contamination to controlled water receptors	✓	×	✓	Construction phase Potential runoff from construction areas and if present in groundwater, potential to migrate to surface waters. Potential for pollution of coastal waters from sediment runoff, spillages from machinery/vehicles, or discharges during construction. Operational phase No change	Review of desk based information sourced and findings of site specific surveys to complete PRA. Review of locations of private water abstractions to supplement EA licensed records included in the baseline summary.	Preparation of Conceptual Site Model (CSM) using pollutant (source–pathway-receptor) linkage approach. Where the CSM identifies a potential for significant harm to sensitive receptors through active pollutant linkages, further investigation or more detailed risk assessment may be required or, if residual risk remains, remediation or mitigation measures may be appropriate.

Impact	Phase			Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
				Decommissioning phase Potential impacts from the decommissioning phase are assumed to be similar in nature as those during construction, as some groundworks would be required to remove the cables and other infrastructure installed.		
The impacts resulting from contact with Unexploded Ordnance (UXO)	✓	×	×	Construction phase Potential for injury to occur during construction activities if UXO is encountered Operational phase No change. Decommissioning phase No change, as the area would have previously been excavated during the construction phase.	Detailed UXO desk study report already completed. No further data collection or analysis required	Recommendations from report to be included in construction briefings and in CEMP.
The impact of the Proposed Development on Geological Conservation Sites	✓	×	×	Construction phase Geological SSSI designated 'Mermaid's Pool to Rowden Gut' at point of landfall has been identified and suitable engineering design through using HDD techniques included to mitigate disturbance of this feature. However, there is potential risk frack out or Bentonite leakage. Operational phase No change. Decommissioning phase No change.	Review of desk based information sourced and findings of site specific surveys to complete PRA.	Assessed qualitatively using desk-based assessment. The desk-based assessment would consider the design and construction specifications of the onshore elements of the Proposed Development, in relation to the location, size and importance of any geological and geomorphological sites.

*C=Construction, O=Operation and Maintenance, D=Decommissioning

Table 7.5.5: Impacts proposed to be scoped out of the assessment for hydrogeology, geology and ground conditions

Impact	Justification
The impact of the Proposed Development on Mineral Resources	The study area does not fall within a Mineral Safeguarding or Consultation Area.
The impact of ground contamination on construction workers	It is expected that any relevant pollutant linkages will be managed by appropriate health and safety measures. As construction workers are protected under existing health and safety legislation, any potential effects will be avoided, prevented and reduced through the implementation of standard mitigation measures (including personal protective equipment, training and toolbox talks) as included in a CEMP. Work will be carried out in accordance with relevant Construction Design Management (CDM) Regulations 2015.

Measures to be Adopted as Part of the Proposed Development

7.5.48 The following measures proposed to be adopted as part of the Proposed Development are relevant to hydrogeology, geology and ground conditions, and should be considered in addition to the overarching design and embedded measures in **section 4.8** and **Table 4.8.1.** These measures may evolve as the engineering design and the EIA progresses.

- A discovery strategy will be prepared to identify any suspected areas of contamination, and any remedial measures which may be required. The discovery strategy would comprise a watching brief that would be undertaken by suitably trained personnel during construction activities such as ground clearance and earthworks. The strategy would also include a procedure for construction workers to follow in the event that previously unknown contamination is discovered.
- Excavated materials (soils and rocks) generated by the Proposed Development to be reused, wherever possible to minimise waste generation. The reuse of these materials would require demonstration that they are both environmentally and geotechnically suitable.
- A UXO watching brief is to be undertaken prior to any ground clearance or earthworks being undertaken, and a set of guidelines produced that will need to be adhered to in relation to unexploded ordnance.

Proposed Assessment Methodology

7.5.49 The geology, hydrogeology and ground conditions assessment will follow relevant legislative requirements, including Part IIA of the Environmental Protection Act 1990, the Water Framework Directive (WFD) (2000/60/EC), Groundwater Directives (GWD) (2006/118/EC) and the Environmental Permitting (England and Wales) Regulations (2016). The assessment methodology will also consider the requirements of the existing and emerging NPSs.

7.5.50 In addition, the geology, hydrogeology, and ground conditions assessment will be undertaken with due regard to the framework outlined in relevant regulatory and industry guidance, most notably:

- Assessing Risks Posed by Hazardous Ground Gases to Buildings, CIRIA C665 (CIRIA, 2007).
- Contaminated Land Risk Assessment: A Guide to Good Practice, CIRIA 552 (CIRIA, 2001a).
- Control of water pollution from linear construction projects: Site guide, CIRIA C649 (CIRIA, 2006).
- Control of water pollution from linear construction projects: Technical guidance CIRIA C648 (CIRIA, 2006).
- Design Manual for Roads and Bridges (DMRB) LA 104 – Environmental assessment and monitoring (Highways England, Transport Scotland, Welsh Government, Department for Infrastructure, 2020).
- DMRB LA 109 – Geology and soils (Highways England, Transport Scotland, Welsh Government, Department for Infrastructure, 2019). DMRB LA 113 - Road drainage and the water environment (Highways England, Transport Scotland, Welsh Government, Department for Infrastructure, 2020).
- Groundwater protection technical guidance (EA, 2017).
- The EA's approach to groundwater protection, Version 1.2 (EA, February 2018).

7.5.51 With regards to consideration of land and groundwater contamination the geology, hydrogeology and ground conditions assessment will adopt the standard pollutant (source–pathway-receptor) linkage approach. This approach identifies potential sources of contamination within the geology, hydrogeology and ground conditions study area, the location and sensitivity of environmental receptors and the pathways by which the receptors may be affected.

Potential Cumulative Effects

7.5.52 There is potential for cumulative effects on sensitive receptors to occur when the Proposed Development is considered together with other developments. The potential cumulative effects between the onshore elements of the Proposed Development and other developments with respect to geology, hydrogeology and ground conditions will be considered within PEIR and the ES.

7.5.53 The cumulative effects assessment would be undertaken in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report.

Potential Inter-related Effects

7.5.54 The assessment of potential inter-related effects will be considered within the geology, hydrogeology and ground conditions ES chapter. It will include consideration of project lifetime effects and receptor-led effects in line with the approach outlined in **Section 5:** EIA Methodology, of the Scoping Report. For example:

- Onshore Ecology and Nature Conservation:

  - The contamination of groundwater receptors during the construction and decommissioning of the onshore elements of the Proposed Development may impact groundwater dependent habitats or sites designated for conservation, within the geology, hydrogeology and ground conditions study area.
- Hydrology and Flood Risk:
  - Surface watercourses are often hydraulically linked to groundwater; contamination of groundwater or reduction in groundwater levels as a result of dewatering may impact on the quality and flow of surface watercourses.

Potential Transboundary Impacts

7.5.55 A screening of transboundary impacts has been carried out and is presented in **Appendix A**: Transboundary Impacts Screening. This screening exercise identified that there is no potential for transboundary impacts upon geology, hydrogeology and ground conditions due to construction and operational and maintenance impacts of the Proposed Development.

7.6 Traffic and Transport

Introduction

7.6.1 This section of the Scoping Report sets out how the traffic and transport receptors relevant to the onshore elements of the Proposed Development will be identified. This section also considers the potential impacts arising from the construction, operation and maintenance and decommissioning of the Proposed Development and identifies the proposed scope of, and methodology for, the EIA process for the traffic and transport chapter.

Relevant Policy, Legislation and Guidance

Legislative and Policy Context

7.6.2 The following key legislation and policy documents relevant to traffic and transport will be considered within the assessment process:

- Overarching NPS for Energy (NPS EN-1), 2011;
- Draft Overarching NPS for Energy (NPS EN-1), 2023;
- National Planning Policy Framework (NPPF), 2023
- Devon and Torbay Local Transport Plan 3, 2011 to 2026;
- North Devon and Torridge Local Plan 2011 to 2031.

Guidance Documents

7.6.3 Guidance documents relevant to traffic and transport that will be considered within the assessment process include the following:

- Environmental Assessment of Traffic and Movement, IEMA, 2023;

- Planning Practice Guidance: Travel Plans, Transport Assessments and Statements (Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government, 2014); and
- DMRB LA104: Environmental Assessment and Monitoring (Highways England, Transport Scotland, Welsh Government and Department for Infrastructure Northern Ireland, 2020).

Study Area

7.6.4 The study area for the assessment of traffic and transport (the traffic and transport study area) is proposed to focus on areas where potential impacts are most likely to occur. This includes areas located near construction sites and access routes to be used by construction traffic and will be defined using the 'Rule 1' and 'Rule 2' methodology set out in **paragraph 7.6.36** In using this methodology, the traffic and transport study area will also include all accesses (whether temporary or permanent) and/or any road improvements required to facilitate the construction of the onshore elements of the Proposed Development.

7.6.5 A proposed traffic and transport study area has been defined on **Figure 7.6.1** using judgement and the proposed routes to be used by construction vehicles before which they would dissipate to levels where impacts would be not significant.

7.6.6 Agreement will be sought with the relevant highway authorities regarding any additional parts of the highway network that may need to be considered in the traffic and transport assessment.

7.6.7 The traffic and transport study area will be reviewed and modified, if necessary, in response to any refinements that may be made to the design of the onshore elements of the Proposed Development and/or any additional environmental and/or design constraints identified during the EIA process.

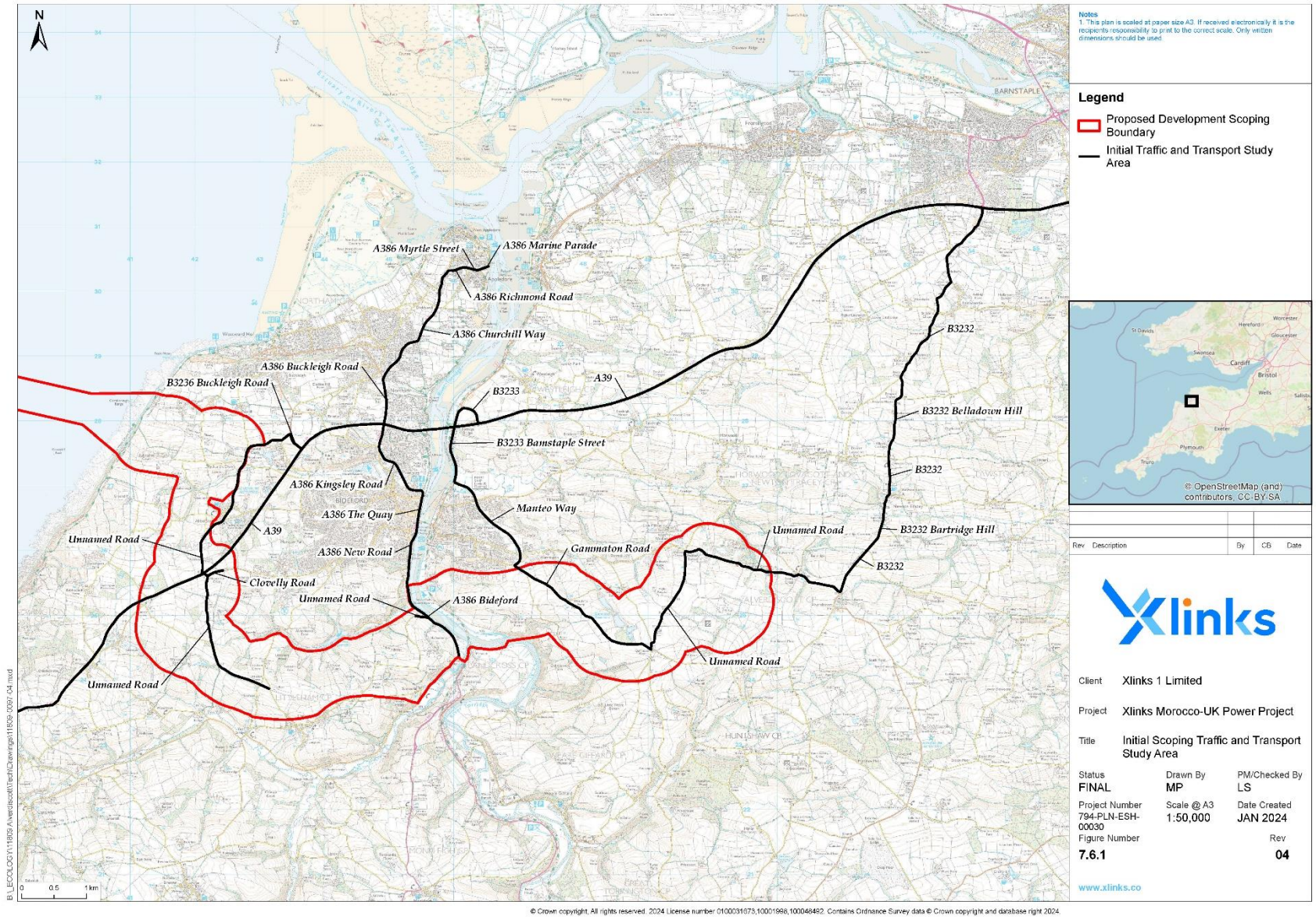

Figure 7.6.1: Initial scoping traffic and transport study area

Data Sources

7.6.8 The data sources used to inform the baseline assessment will primarily comprise published material, which is publicly available and material available to purchase from the highway authorities. These data sources are supplemented by site visits undertaken by competent experts and the analysis of newly commissioned (on behalf of the Applicants) traffic survey data.

7.6.9 The baseline data sources identified in this Scoping Report will remain under review and may be updated in response to feedback from relevant statutory and non-statutory consultees during the EIA process, or in response to new sources of information becoming available.

Desk-based Data Sources

7.6.10 An initial desk-based review has identified a number of data sources which provide baseline data coverage of the traffic and transport study area. These data sources are summarised in **Table 7.6.1**.

Table 7.6.1: Baseline data sources – traffic and transport

Source	Summary
Local Highway Authority and National Highways	Existing traffic flow information from the Local Highway Authority (and National Highways where relevant) to identify the current operation of the road network. This will include results from automatic traffic counts and manual classified counts.
www.crashmap.co.uk and the Local Highway Authority	Personal Injury Accident data for road traffic collisions will also be obtained from Crashmap and the Local Highway Authority.
Bus and rail service operators	Records of existing bus and rail services will be obtained from a desktop analysis of route maps and timetables published by the relevant service operators.
Local Highway Authority	Records of existing PRoWs and cycle routes will be obtained from the Local Highway Authority.
	Records of the adopted highway boundary will be obtained from the Local Highway Authority.
Sustrans Interactive Mapping System Great Britain: National Cycle Network Map	Details of National Cycle Network routes located within each Local Planning Authority area within the traffic and transport study area.

Site-specific Survey Data

7.6.11 In addition to the data sources identified above, the following site-specific surveys will inform the baseline assessment for traffic and transport in the ES:

- Automatic Traffic Counters (ATCs) placed at key locations on the highway between Thursday 2 March 2023 to Wednesday 8 March 2023 where the highway authorities do not hold any such data to inform the baseline assessment for traffic and transport. ATCs recorded total traffic volumes, vehicle classifications and vehicle speeds via pneumatic tubes installed across the carriageway at key sections of the highway over a seven day period.

Baseline Environment

Highway Network

7.6.12 The traffic and transport study area is characterised by the A39 forming part of the principal road network through it. It routes broadly north east to south west between Barnstaple (and beyond) and Fairy Cross (and beyond) respectively and will form a key access route for construction vehicles travelling to and from the onshore elements of the Proposed Development.

7.6.13 To the south east of Barnstaple, the A361 connects with the A39 that bypasses the south of Barnstaple and continues to the west towards Bideford. This section of the A39 is a single carriageway and is subject to the national speed limit. The A39 passes the B3232 that forms a roundabout junction at Roundswell.

7.6.14 The B3232 runs north to south. To the south, the B3232 continues to Alverdiscott village, approximately a mile to the east of the Alverdiscott Substation site and Converter Site via St Johns Chapel and Newton Tracey. At Alverdiscott, the B3232 forms a junction with a local lane adjacent to the church. This lane travels west towards Webbery via Stony Cross to Alverdiscott Lane from which the Alverdiscott Substation site is accessible.

7.6.15 The A39 continues to the west to pass over the River Torridge to the north of Bideford. To the east of the bridge the A39 forms a priority junction with a short section of road that connects to a roundabout approximately 400 m to the north. The A39 is subject to a 40 mph speed limit in the vicinity of this junction.

7.6.16 The roundabout provides access to the B3233 that runs towards Instow and Yelland to the north and Bideford to the south. To the north of Bideford, the B3233 provides access to Manteo Way which in turn provides access to Gammaton Road, Tennacott Lane, Gammaton Moor and Alverdiscott Road from which the Alverdiscott Substation site is accessible.

7.6.17 To the west of the Torridge Bridge, the A39 forms a roundabout junction with the A386. This provides access to Northam, Westward Ho! and Appledore to the north and Bideford to the south.

7.6.18 The A39 then continues to the south west and forms a signalised junction with the B3236 Buckleigh Road that provides access to Abbotsham, Buckleigh and Westward Ho!. Continuing south west the A39 forms a roundabout junction at Abbotsham Cross with Clovelly Road that provides access to Handy Cross and Littleham via Littleham Road and with Abbotsham Road that provides access to Abbotsham. The A39 then continues to the south west towards Bude via Fairy Cross.

Other Transport Receptors

7.6.19 There is one National Cycle Network route that coincides with the traffic and transport study area:

- Route 3, which runs parallel to the B3233 on its western side as an off-road cycle route.

7.6.20 There are several PRoWs located within and surrounding the traffic and transport study area.

7.6.21 There are several built up and urban areas within and adjacent to the traffic and transport study area. Within each of these urban areas there are a range of sensitive receptors, all of which will be considered as part of the baseline environment.

7.6.22 The location of other transport receptors, including National Cycle Network routes and PRoWs is presented in **section 7.9:** Land use and Recreation, of the Scoping Report.

Future Baseline Conditions

7.6.23 The EIA process will consider the existing baseline conditions within the study area, and future baseline conditions (as far as reasonably practicable) in accordance with the methodology set out in **Section 5,** EIA Methodology, of the Scoping Report.

Scope of the Assessment

7.6.24 A range of potential impacts on traffic and transport have been identified which may occur during the construction, operation and maintenance and decommissioning phases of the Proposed Development.

7.6.25 The impacts that have been scoped into the assessment are outlined in **Table 7.6.2** together with a description of any additional data collection (e.g. site-specific surveys) and supporting analyses (e.g. modelling) that will be required to enable a full assessment of the impacts.

7.6.26 Potential impacts proposed to be scoped out of the assessment are presented in **Table 7.6.3** with justification for why the impact should be scoped out.

Table 7.6.2: Impacts proposed to be scoped into the assessment for traffic and transport

Impact	Phase			Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
The impact of increases in traffic flows as a result of construction traffic or works due to, for example, cable trenching, upon driver (including public transport) and pedestrian delay and fear and intimidation (non-motorised user amenity) for users of the highway network.	✓	×	×	Additional vehicle movements or works required to facilitate construction of the Proposed Development may impact the effective operation of the highway network and other transport receptors (e.g., PRoWs) and cause driver (including public transport) and pedestrian delay/impact on fear and intimidation (non-motorised user amenity).	The highway network and other transport receptors located within the traffic and transport study area will be identified using desk-based analysis. Records of existing public transport services will be obtained from the relevant public transport service operators. Existing traffic flow information for the highway network, including ATCs and manual classified counts, will be obtained from the highway authorities. In addition, existing traffic data will be supplemented by further site-specific surveys, if required. The scope of any site-specific surveys will be agreed with the highway authorities. These baseline data sources will be discussed with the highway authorities to enable a single baseline year and future reference year scenarios to be created on an agreed basis	The type, number, frequency and assignment of additional vehicle movements on the highway network generated during construction of the Proposed Development will be predicted using first principles, from an understanding of the construction process, likely material quantities and construction programme. The location of any crossings or cable trenching within any local roads will be identified. Where predicted traffic flows within the traffic and transport study area exceed Rule 1 and Rule 2 of the Environmental Assessment of Traffic and Movement (IEMA, 2023), or where any cable trenching would be within a local road, the impact of these upon driver (including public transport) and pedestrian delay, fear and intimidation (non-motorised user amenity) and severance for users of the highway network will be assessed in accordance with Environmental Assessment of Traffic and Movement (IEMA, 2023). The impact of additional vehicle movements upon the effective operation and performance of key highway links and junctions of the highway network (in terms of highway capacity) will be assessed
The impact of increases in traffic flows as a result of construction traffic or works due to, for example, cable trenching upon severance for users of the highway network.	✓	×	×	Additional vehicle movements or works required to facilitate construction of the Proposed Development could limit the mobility/access of users of the highway network and other transport receptors (e.g., PRoW), causing severance between communities.		

Impact	Phase			Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
						as part of a Transport Assessment (to be prepared alongside the ES), which will undergo an independent scoping process in consultation with the highway authorities. Assessments will be undertaken in accordance with Planning Practice Guidance: Travel Plans, Transport Assessments and Statements (MHCLG, 2014), Environmental Assessment of Traffic and Movement (IEMA, 2023) and DMRB LA104: Environmental Assessment and Monitoring (Highways England, Transport Scotland, Welsh Government and Department for Infrastructure Northern Ireland, 2020).
The impact of increases in traffic flows as a result of construction traffic or works due to, for example, cable trenching upon road safety for users of the highway network and other transport receptors.	✓	×	×	Additional vehicle movements required to facilitate construction of the Proposed Development could impact the safety of users of the highway network and other transport receptors (e.g., PRoW).	The highway network and other transport receptors located within the traffic and transport study area will be identified using desk-based analysis. Personal Injury Accident data for the highway network will be obtained using a combination of Crashmap and records held by the Local Highway Authority.	The type, number, frequency and assignment of additional vehicle movements on the highway network generated during construction of the Proposed Development will be predicted using first principles, from an understanding of the construction process, likely material quantities and construction programme. An analysis of Personal Injury Accident data, including Crashmap, will be undertaken to identify locations on the highway network which exhibit concentrations of collisions with similar patterns or collision rates above the national average.

Impact	Phase			Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
						These locations on the highway network will be considered as receptors sensitive to changes in traffic flows and will be subject to further detailed impact assessment. The impact of these additional vehicle movements on road safety for users of the highway network will be assessed in accordance with Environmental Assessment of Traffic and Movement (IEMA, 2023), in addition to the application of professional judgement where required.
The impact of Abnormal Indivisible Loads (AILs) on the safety of users of the highway network and other transport receptors.	✓	×	×	Construction of the Proposed Development will require the transportation of AILs, which may impact the safety of users of the highway network and other transport receptors (e.g., PRoW).	The highway network and other transport receptors located within the traffic and transport study area will be identified using desk-based analysis.	A qualitative assessment of the impact of AILs on the safety of users of the highway network and other transport receptors will be undertaken using professional judgement where required. This will comprise analysis to identify sections of the highway network which may require modifications to facilitate the transport of AILs to the Proposed Development

*C=Construction, O=Operation and Maintenance, D=Decommissioning

Table 7.6.3: Impacts proposed to be scoped out of the assessment for traffic and transport

Impact	Justification
The impact of additional vehicle movements on the highway network on driver (including public transport) and pedestrian delay, fear and intimidation (non-motorised user amenity), severance and road safety during operation and maintenance of the Proposed Development.	Operation and maintenance of the Proposed Development is likely to generate a limited number of additional vehicle movements on the highway network. The Proposed Development does not require any manned facilities and requires only infrequent maintenance activities. Therefore, the potential impact of additional vehicle movements on the highway network and other transport receptors during operation and maintenance of the Proposed Development is unlikely to result in significant effects and is proposed to be scoped out of the assessment for traffic and transport.
The impact of additional vehicle movements on the highway network on driver (including public transport) and pedestrian delay, fear and intimidation (non-motorised user amenity), severance and road safety during decommissioning of the Proposed Development.	Decommissioning of the Proposed Development will generate a lower number of additional vehicle movements on the highway network than the construction phase. This is because retired infrastructure/equipment will either be left in situ or transported away from site in bulk, reducing the number of additional vehicle movements required to facilitate decommissioning of the Proposed Development. In addition, measures to be included in the Construction Traffic Management Plan, updated as necessary, will also be employed during the decommissioning phase. Therefore, the potential impact of additional vehicle movements on the highway network and other transport receptors during decommissioning of the Proposed Development based upon future year baseline conditions that could be estimated at this time would be no higher than those impacts during the construction phase and is proposed to be scoped out of the assessment for traffic and transport.

Measures to be Adopted as Part of the Proposed Development

7.6.27 The following measures are proposed to be adopted as part of the Proposed Development are relevant to traffic and transport, considered in addition to the overarching design and embedded measures in **section 4.8** and **Table 4.8.1.** These measures may evolve as the engineering design and the EIA progresses.

7.6.28 The requirement for and feasibility of any mitigation measures will be dependent on the significance of effects and will be consulted upon with statutory and non-statutory consultees throughout the EIA process.

7.6.29 Requirements for any additional mitigation measures will be determined through discussions with the relevant authorities and interested parties likely to be affected as part of the traffic and transport assessment.

Proposed Assessment Methodology

7.6.30 Additional vehicle movements generated during construction of the Proposed Development will be determined using first principles, from an understanding of the construction process, likely material quantities and construction programme as the design progresses.

7.6.31 A detailed analysis of the highway network will then be undertaken to identify key locations where potential traffic and transport impacts may occur. This analysis will identify road network constraints and inform the access strategy for construction related vehicles (i.e., types, numbers, frequency and timings).

7.6.32 The access strategy to be utilised during the construction of the Proposed Development will be consulted and agreed upon with the highways authorities.

7.6.33 The traffic and transport assessment will predict the traffic flows generated on the highway network during the construction of the Proposed Development using first principles, from an understanding of the construction process, likely material quantities and construction programme. These predicted traffic flows will be assessed against forecast baseline traffic flows to determine if an impact is likely to occur. The scope and duration of predicted impacts will be quantified for each phase of the construction programme.

7.6.34 In addition, the ES will include an outline of the proposed construction compounds, which will be further developed as the design progresses, to indicate the potential size and broad spread of construction compounds that are likely to be required.

7.6.35 The traffic and transport assessment will be based on the guidance documents set out above.

7.6.36 In terms of the assessment of the environmental impacts of traffic and movement, the IEMA guidelines sets out the following two 'rules' to delimit the geographic extent of assessment:

- Rule 1 – Include highway links where traffic flows will increase by more than 30% or where the number of HGVs will increase by more than 30%.
- Rule 2 – Include any other specifically sensitive areas where traffic flows have increased by 10% or more.

7.6.37 The assessment will therefore identify the sensitivity of affected transport routes, taking into account the presence and location of sensitive receptors or route users. The definition of sensitivity in this chapter uses professional judgement, guidance provided in the IEMA guidelines and the criteria outlined in Table 7.6.4.

Table 7.6.4: Definitions of Sensitivity

Sensitivity	Definition
High	High concentration of receptors with greatest sensitivity due to site-specific characteristics which make them particularly sensitive to changes in traffic flow, accident black spots (with reference to accident data and PIA rates being well above the national average), urban/residential/built-up roads without commensurate footway provision, high footfall, severely congested junctions.
Medium	Some concentrations of receptors with some sensitivity to traffic flows including congested junctions, doctors' surgeries, hospitals, shopping areas with roadside frontage, roads with narrow footways, unsegregated cycleways, community centres, parks, recreation facilities, roads with PIA rates close to the national average.
Low	Low concentrations of receptors with some sensitivity to traffic flows including places of worship, public open space, nature conservation areas, listed buildings, tourist attractions, urban/residential/built-up areas with good footway provision commensurate for its use and footfall and other receptors with low sensitivity to traffic flows and those sufficiently distant from affected roads and junctions.
Negligible	Receptors with negligible sensitivity to traffic flows and those sufficiently distant from affected roads and junctions or where no receptors are present.

7.6.38 Rules 1 and 2 are used as a tool to delimit the geographic extent of assessment. Highway links which are identified as low or medium sensitivity will be considered against the Rule 1 threshold. Highway links which are identified as high sensitivity will be considered against the Rule 2 threshold. Where predicted changes in

traffic flow fall beneath these levels, a full assessment of effects will not be required and no significant effects upon that highway link would be predicted.

7.6.39 Consistent with the IEMA guidelines, the following will be considered within the traffic and transport assessment:

- Driver delay (including public transport).
- Severance.
- Pedestrian delay.
- Fear and intimidation (non-motorised user amenity).
- Road safety.
- AILs.

7.6.40 Based upon the advice contained within the IEMA guidelines, **Table 7.6.5** sets out the considerations for defining the magnitude of change.

Table 7.6.5: Magnitude of Change

Sensitivity	Negligible	Low	Medium	High
Driver Delay	Defined in conjunction with the Transport Assessment and a review of the change in operation of a junction or highway link with a particular focus on the weekday peak hour periods when baseline traffic flows are at their highest.			
Severance	Change in total traffic flow of less than 30%	Change in total traffic flow of 30% to 60%	Change in total traffic flow of 60% to 90%	Change in total traffic flows of over 90%
Pedestrian Delay	Defined from a review of a locations' urban / rural context, site specific local considerations and pedestrian infrastructure, baseline traffic flows and the change in traffic flows.			
Fear and intimidation (non-motorised user amenity)	No step changes in the level of fear and intimidation	One step change in the level of fear and intimidation, with <400 vehicle increase in average 18hr vehicle movements and / or <500 HGV increase in total 18hr HGV flow	One step change in the level of fear and intimidation, but with >400 vehicle increase in average 18hr vehicle movements and / or >500 HGV increase in total 18hr HGV flow	Two step changes in the level of fear and intimidation
Road Safety	Defined from a review of PIA data along highway links and the predicted changes in traffic flow.			
Abnormal Indivisible Loads	Defined by an assessment of the suitability of the access routes to accommodate AILs.			

Potential Cumulative Effects

7.6.41 There is potential for cumulative effects on sensitive receptors to occur when the Proposed Development is considered together with other developments. The potential cumulative effects between the onshore elements of the Proposed Development and other developments with respect to traffic and transport will be considered within the PEIR and the ES.

7.6.42 Other emerging developments that are predicted to generate traffic within the initial traffic and transport study area during construction of the onshore elements

of the Proposed Development, which may contribute to a cumulative effect, will be identified in the cumulative effect assessment.

7.6.43 Other development proposals that emerge at the same time will be treated together and will be cumulatively assessed against the baseline scenario to determine their cumulative effect and any cumulative highway and transport mitigation requirements (if required).

7.6.44 The predicted traffic flows generated within the initial traffic and transport study area by each relevant emerging development, as part of the cumulative effect assessment, will be quantified (where data is available) using the methodology as that set out above.

Potential Inter-related Effects

7.6.45 The assessment of potential inter-related effects will be considered within the traffic and transport ES chapter. It will include consideration of project lifetime effects and receptor-led effects in line with the approach outlined in **Section 5:** EIA Methodology, of the Scoping Report. For example:

- Onshore Ecology and Nature Conservation:
  - Noise, vibration and air emissions generated by additional vehicle movements on the highway network during construction and decommissioning may impact sites designated for conservation and protected habitats and species within the traffic and transport study area.
- Land-use and Recreation:
  - Access to recreational resources may be disrupted by additional vehicle movements on the highway network during construction and decommissioning of the onshore elements of the Proposed Development.
- Noise and Vibration:
  - Additional vehicle movements predicted as part of the Transport Assessment will be used to identify areas within the noise and vibration study area for Proposed Development which require further detailed noise and vibration assessment.
- Air Quality:
  - Additional vehicle movements predicted as part of the Transport Assessment will be used to identify areas within the air quality study area which require further detailed air quality assessment, if the traffic generated exceeds the threshold for air quality assessment.
  - Effects of dust generated by construction and decommissioning vehicles will be considered in the detailed air quality assessment.
- Human Health:
  - Additional vehicle movements predicted as part of the Transport Assessment will be used to identify areas within the human health study area for Proposed Development which require further detailed assessment.

Potential Transboundary Impacts

7.6.46 A screening of transboundary impacts has been carried out and is presented in **Appendix A**: Transboundary Impacts Screening. This screening exercise identified that there is no potential for transboundary impacts upon traffic and transport due to construction and operational and maintenance impacts of the Proposed Development.

7.7 Noise and Vibration

Introduction

7.7.1 This section of the Scoping Report identifies the noise and vibration receptors relevant to the onshore elements of the Proposed Development. This section also considers the potential impacts arising from the construction, operation and maintenance and decommissioning of the Proposed Development and identifies the proposed scope of, and methodology for, the EIA process for the noise and vibration ES chapter.

Relevant Policy, Legislation and Guidance

Legislative and Policy Context

7.7.2 The following key legislation and policy documents relevant to noise and vibration will be considered within the assessment process:

- NPPF (Ministry of Housing, Communities and Local Government, 2023)
- NPSE (Department for Environment, Food and Rural Affairs, 2010)
- Planning Practice Guidance (PPG) – Noise (Department for Levelling Up, Housing and Communities,2019)
- Control of Pollution Act 1974;
- Noise Insulation Regulations 1975 and Noise Insulation (Amendment) Regulations 1988;
- Environmental Protection Act 1990;
- North Devon and Torridge Local Plan 2011 – 2031.

Guidance Documents

7.7.3 Guidance documents relevant to the historic environment that will be considered within the assessment process include the following:

- Calculation of Road Traffic Noise (Department of Transport, 1988);
- DMRB LA111 – Noise and Vibration (Highways England *et. al.,* 2020);
- BS 4142:2014+A1:2019 – Methods for rating and assessing industrial and commercial sound (BSI, 2014a);
- BS 5228:2009+A1:2014 – Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise and Part 2: Vibration, (BSI, 2014b);

- BS 7445-1:2003 – Description and measurement of environmental noise. Guides to quantities and procedures (BSI, 2003); and
- Environmental Noise Guidelines for the European Region (World Health Organization Europe, 2018).

Study Area

7.7.4 The proposed study area for the assessment of noise and vibration impacts (noise and vibration study area) will consider the potential impacts on noise sensitive receptors arising from the construction, operation and maintenance, and decommissioning of the Proposed Development.

7.7.5 The noise and vibration study area has been defined in line with best practice guidance and consider the regions in which potential impacts are most likely to occur at receptors sensitive to noise and vibration.

7.7.6 The construction and decommissioning noise and vibration study area has been defined with reference to the guidance in DMRB LA111 – Noise and Vibration. Note 1 of paragraph 3.5 of DMRB LA111 states the following regarding noise sensitive receptors:

"A study area of 300 m from the closest construction activity is normally sufficient to encompass noise sensitive receptors."

7.7.7 Similarly, Note 1 of paragraph 3.29 of DMRB LA111 states the following regarding vibration sensitive receptors:

"A study area of 100 m from the closest construction activity with the potential to generate vibration is normally sufficient to encompass vibration sensitive receptors."

7.7.8 The assessment of operation and maintenance noise impacts will be undertaken at the noise sensitive receptors most likely to affected by noise during the operation and maintenance phase of the Proposed Development. These have been identified as being situated within a study area of 500 m from the location of the operational noise sources associated with the Proposed Development.

7.7.9 In summary, the noise and vibration study areas to be used in the assessment will be defined as:

- the area of land temporarily or permanently occupied during the construction, operation and maintenance, and decommissioning of the Proposed Development;
- noise sensitive receptors located within 300 m of construction activities;
- vibration sensitive receptors located within 100 m of construction activities with the potential to generate vibration; and
- noise sensitive receptors located within 500 m of the operational noise sources.

Data Sources

7.7.10 The data sources used to inform the baseline assessment will primarily comprise baseline sound monitoring at locations representative of the nearest noise sensitive receptors to the Proposed Development.

7.7.11 The locations will be determined from a desk-based review of mapping data and satellite imagery.

Desk-based Data Sources

7.7.12 An initial desk-based review has identified a number of data sources which provide baseline data coverage of the noise and vibration study area. These data sources are summarised in **Table 7.7.1**.

Table 7.7.1: Baseline data sources – noise and vibration

Source	Summary
Ordnance Survey	OS raster data has been used to obtain a regional view of the area surrounding the Proposed Development. Additionally, OS AddressBase Plus data has been obtained to identify the locations of the noise and vibration sensitive receptors within the noise and vibration study area.
Google Earth Imagery	Satellite imagery has supplemented the OS raster data as part of the review of the area surrounding the Proposed Development.

Site-specific Survey Data

7.7.13 A number of baseline sound surveys have been undertaken at the site as detailed below:

- The first survey was undertaken at multiple locations along the Proposed Development Onshore HVDC Cable Corridor from 22 to 30 November 2022. The locations selected for this survey were selected based on the development proposals at that time, the majority of which are consistent with the Proposed Development Scoping Boundary.
- The second survey was undertaken from 22 to 29 March 2023 and was undertaken to include additional positions along the Onshore HVDC Cable Corridor for the Proposed Development.
- The third survey was undertaken from 8 to 16 June 2023 at an additional location selected to obtain representative sound levels in the vicinity of the Converter Site.

7.7.14 The monitoring locations were determined through a desk-based review of OS mapping data and satellite imagery to identify the relevant noise sensitive receptors within the proposed study area.

7.7.15 A weather station was deployed at two locations to record site-specific meteorological conditions during the baseline survey periods and, following analysis, omit any periods which may have been affected by adverse weather conditions.

7.7.16 The baseline sound surveys were undertaken in accordance with the relevant guidance including BS 4142:2014+A1:2019 – ‘Methods for rating and assessing industrial and commercial sound’ and BS 7445-2:1993 – ‘Description and measurement of environmental noise. Guide to the acquisition of data pertinent to land use’.

7.7.17 Additional baseline sound survey measurements will be identified and undertaken using the methodology outlined in **paragraphs 7.7.14** to **7.7.16** above. Data will likely be required at measurement locations representative of noise sensitive receptors near the A39 and the River Torridge.

7.7.18 The locations and methodology proposed will be agreed with the relevant stakeholders prior to deployment of the survey equipment.

7.7.19 The baseline data sources identified in this Scoping Report will remain under review and may be updated in response to feedback from relevant statutory and non-statutory consultees during the EIA process, or in response to new sources of information becoming available.

Baseline Environment

7.7.20 During the baseline surveys undertaken on-site, it was noted that a large proportion of the Proposed Development Scoping Boundary is located within a rural and agricultural setting and, as such, ambient sound levels were low. However, ambient sound levels within the Proposed Development Scoping Boundary increased in areas located in proximity to urban areas (such as towns and villages) and areas in the vicinity of local highway networks.

7.7.21 There are no statutory or non-statutory designations specifically related to matters of noise and vibration, or how it should be controlled. However, early engagement with the relevant Local Planning Authority Environmental Health Officer (EHO) has been undertaken to and will continue to ensure the noise and vibration assessment is robust and proportionate.

Future Baseline Conditions

7.7.22 The EIA process will consider the existing baseline conditions within the study area, and future baseline conditions (as far as reasonably practicable) in accordance with the methodology set out within **Section 5:** EIA Methodology, of the Scoping Report.

7.7.23 As the proportion of road traffic vehicles which are electrically powered increases, it is possible that traffic noise levels may reduce slightly due to the lower engine-noise levels, although on open roads and motorways, there will still be influence from noise due to tyre-road interaction and aerodynamic deflections over the vehicle surface.

7.7.24 The study area comprises a mixture of fields and farmland with residential settlement areas and open roads. As such, it is not anticipated that the future baseline scenario will change significantly in the absence of the development.

7.7.25 National planning policy (such as the NPPF, NPSE and PPG) require that all reasonable steps are taken to mitigate and minimise adverse noise effects on health. As such, any future developments will be required to demonstrate compliance with these requirements.

Scope of the Assessment

7.7.26 A range of potential impacts on noise and vibration have been identified which may occur during the construction, operation and maintenance and decommissioning phases of the Proposed Development.

7.7.27 The impacts that have been scoped into the assessment are outlined in **Table 7.7.2** together with a description of any additional data collection (e.g., site-specific surveys) and supporting analyses (e.g., modelling) that will be required to enable a full assessment of the impacts.

7.7.28 Potential impacts proposed to be scoped out of the assessment are presented in **Table 7.7.3** with justification for why the impact should be scoped out.

Table 7.7.2: Impacts proposed to be scoped into the assessment for noise and vibration

Impact	Phase			Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
The impact of noise and vibration generated by construction and decommissioning activities for the Proposed Development on human receptors.	✓	×	✓	Activities required for the construction and decommissioning of the Proposed Development would generate noise and vibration emissions which could adversely affect the health and quality of life of human receptors.	Human receptors sensitive to noise and vibration located within the noise and vibration study area will be identified using desk-based analysis. Where existing baseline data coverage is insufficient, and where significant effects may occur, baseline sound levels will be obtained through sound monitoring surveys. The locations and durations of baseline sound surveys will be suitably representative, focused on key areas of impact and agreed with the EHO from the relevant Local Planning Authority.	Predicted noise and vibration levels arising from onsite construction and decommissioning activities will be calculated using modelling, in accordance with the methodology in BS 5228, where applicable. Consideration will also be given to recreational receptors (such as the Southwest Coast Path), where necessary, to protect the amenity of the local natural environment for the general public. The impact of noise and vibration on human receptors and historic assets will be assessed in accordance with BS 5228 guidance. The significance of likely effects will be determined in accordance with IEMA Guidelines for Environmental Noise Impact Assessment (2014).
The impact of noise generated by additional vehicle movements on the local highway network during the construction and decommissioning phases for the Proposed Development on human receptors.	✓	×	✓	Additional vehicle movements on the local highway network required to facilitate construction and decommissioning of the Proposed Development would generate noise emissions which could adversely affect the health and quality of life of human receptors.	Human receptors sensitive to noise and vibration located within the noise and vibration study area will be identified using desk-based analysis. Where existing baseline data coverage is insufficient, baseline sound levels will be obtained through sound monitoring surveys. The locations and durations of baseline sound surveys will be suitably representative and agreed with the EHO from the relevant Local Planning Authority.	Predicted noise levels arising from additional vehicle movements during the construction and decommissioning phase will likely be calculated using the Calculation of Road Traffic Noise (CRTN). If the traffic volumes fall below the thresholds of CRTN then an alternative method may be used, or corrections may be applied to the data, as appropriate. The guidance in DMRB LA 111 Noise and Vibration will be used as a basis for the impact of traffic noise on human receptors. However, as this is not a new

Impact	Phase			Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
					The number of additional vehicle movements required to facilitate construction and decommissioning of the Proposed Development will be determined as part of the assessment for Traffic and Transport (see **section 7.6**: Traffic and Transport, of the Scoping Report).	road scheme, this guidance is not directly applicable, and a full assessment would not be required. The details of the scenarios to be assessed will be evaluated following receipt of the traffic data. The significance of likely effects will be determined in accordance with the IEMA Guidelines for Environmental Noise Impact Assessment (2014).
The impact of noise generated during the operation and maintenance of the converter stations on human receptors.	×	✓	×	Operation of the converter stations would generate noise emissions which could adversely affect the health and quality of life of human receptors.	Human receptors sensitive to noise and vibration located within the noise and vibration study area will be identified using desk-based analysis. Where existing baseline data coverage is insufficient, baseline sound levels will be obtained through sound monitoring surveys. The locations and durations of baseline sound surveys will be suitably representative and agreed with the EHO from the relevant Local Planning Authority.	Predicted noise levels arising from operation of the converter stations will be calculated using computational modelling software implementing the methodology in ISO 9613-2. The impact of noise on human receptors will be assessed in accordance with BS 4142 and relevant World Health Organisation guidance. The significance of likely effects will be determined in accordance with the IEMA Guidelines for Environmental Noise Impact Assessment (2014).

*C=Construction, O=Operation and Maintenance, D=Decommissioning

Table 7.7.3: Impacts proposed to be scoped out of the assessment for noise and vibration

Impact	Justification
The impact on human receptors and heritage assets arising from vibration generated by additional vehicle movements on the local highway network during construction and decommissioning of the Proposed Development	Additional vehicle movements on the local highway network during construction and decommissioning of the Proposed Development are unlikely to generate high levels of vibration. Therefore, the potential impact of vibration from additional vehicle movements on human receptors and heritage assets during construction of the Proposed Development is unlikely to result in significant effects and is proposed to be scoped out of the assessment for noise and vibration.
The impact on human receptors and heritage assets arising from vibration generated during the operation and maintenance of the Proposed Development.	Operation and maintenance of the Proposed Development is unlikely to generate high levels of vibration. The plant strategy for the converter stations will incorporate vibration control as part of the design. Therefore, the potential impact on human receptors and heritage assets during the operation and maintenance of the Proposed Development is unlikely to result in significant effects and is proposed to be scoped out of the assessment for noise and vibration.
The impact of noise and vibration generated during the operation and maintenance of the onshore cable and associated infrastructure.	Operation and maintenance of the onshore cable and associated infrastructure is unlikely to generate high levels of noise and vibration. The impact of noise and vibration on sensitive receptors during maintenance activities would be intermittent, short term and temporary in nature. Additional vehicle movements associated with operation and maintenance of the onshore HVDC cable and associated infrastructure would also be intermittent, short term and temporary in nature and unlikely to exceed the thresholds that would warrant an assessment with the DMRB LA 111. Therefore, the potential impact on human receptors and heritage assets during operation and maintenance of the HVDC cables and associated infrastructure is unlikely to be significant and is proposed to be scoped out of the assessment for noise and vibration.

Measures Adopted as Part of the Proposed Development

7.7.29 The following measures are proposed to be adopted as part of the Proposed Development are relevant to noise and vibration, considered in addition to the overarching design and embedded measures in **section 4.8** and **Table 4.8.1.** These measures may evolve as the engineering design and the EIA progresses.

- Onshore CEMPs – Construction of the Proposed Development would be undertaken in accordance with the relevant best practice measures as recommended in BS 5228.
- The following noise control measures will be considered in the design of the converter stations.
  - The orientation and layout of the onshore converter stations will be designed to minimise noise levels at nearby receptors.

- Quieter equipment will be selected, where available and practicable and mitigation measures such as acoustic barriers and enclosures will be specified where necessary.

7.7.30 The requirement for and feasibility of any mitigation measures will be dependent on the significance of effects and will be consulted upon with statutory and non-statutory consultees throughout the EIA process.

7.7.31 Any requirements for additional noise and vibration mitigation measures will be determined through discussions with the EHOs from each Local Planning Authority likely to be affected as part of the noise and vibration assessment.

Proposed Assessment Methodology

7.7.32 The noise and vibration assessment for the Proposed Development will be undertaken in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report, in addition to the following established guidance:

- BS 4142:2014+A1:2019 – Methods for rating and assessing industrial and commercial sound (2019).
- BS 5228:2009+A1:2014 - Code of practice for noise and vibration control on construction and open sites – Part 1: Noise and Part 2: Vibration (2014).
- BS 7445:2003 – Description and measurement of environmental noise. Guide to quantities and procedures (2003).
- Calculation of Road Traffic Noise (1988).
- DMRB – LA111 – Noise and Vibration (Highways England, Transport Scotland, Welsh Government and Department for Infrastructure Northern Ireland, 2020).
- IEMA - Guidelines for Environmental Noise Impact Assessment (2014).
- ISO 9613-2:1996 - Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation (1996).
- World Health Organisation - Guidelines for Community Noise (2000).

7.7.33 Although principally developed for the assessment of highway projects, the DMRB also provides guidance applicable to the assessment of other linear schemes, including the Proposed Development (e.g., HVDC cables).

7.7.34 The approach to assessment and level of detail will depend on the element of the Proposed Development under consideration and whether effects are temporary or permanent.

Potential Cumulative Effects

7.7.35 There is potential for cumulative effects on sensitive receptors to occur when the Proposed Development is considered together with other developments. The potential cumulative effects between the onshore elements of the Proposed Development and other developments with respect to noise and vibration will be considered within PEIR and the ES.

7.7.36 The cumulative effects assessment would be undertaken in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report.

Potential Inter-related Effects

7.7.37 The assessment of potential inter-related effects will be considered within the noise and vibration ES chapter. It will include consideration of project lifetime effects and receptor-led effects in line with the approach outlined in **Section 5:** EIA Methodology, of the Scoping Report. For example:

- Onshore Ecology and Nature Conservation:
  - Noise and vibration emissions generated during construction, operation and maintenance, and decommissioning of the Proposed Development may impact sites designated for nature conservation and protected habitats and species within the noise and vibration study area. The assessment will be led by the ecologists.
- Historic Environment:
  - Noise and vibration generated during construction, operation and maintenance, and decommissioning of the Proposed Development may impact the setting/integrity of designated heritage assets located within the noise and vibration study area. The assessment will be led by the heritage consultants.
- Traffic and Transport:
  - Additional vehicle movements generated during construction and decommissioning of the Proposed Development would be used to identify areas within the noise and vibration study area which require further detailed assessment.

Potential Transboundary Impacts

7.7.38 A screening of transboundary impacts has been carried out and is presented in **Appendix A**: Transboundary Impacts Screening. This screening exercise identified that there is no potential for transboundary impacts upon noise and vibration due to construction and operational and maintenance impacts of the Proposed Development.

7.8 Air Quality

Introduction

7.8.1 This section of the Scoping Report identifies the air quality receptors relevant to the onshore elements of the Proposed Development. This section also considers the potential impacts arising from the construction, operation and maintenance and decommissioning of the Proposed Development and identifies the proposed scope of, and methodology for, the EIA process for the air quality ES chapter.

Relevant Policy, Legislation and Guidance

Legislative and Policy Context

7.8.2 The following key legislation and policy documents relevant to air quality will be considered within the assessment process:

- Environment Act 1995;
- The Air Quality Standards Regulations 2010 (amended in 2016);
- NPS' (EN-1, EN-3 and EN-5 current and drafts, as appropriate) (Department of Energy & Climate Change, 2011) and updated NPSs (Department for Energy Security and Net Zero, 2023);
- NPPF (Ministry of Housing, Communities and Local Government, 2023); and
- North Devon and Torridge Local Plan 2011 – 2031.

Guidance Documents

7.8.3 Guidance documents relevant to air quality that will be considered within the assessment process include the following:

- Local air quality management technical guidance TG22 (Defra, 2022);
- Guidance on the assessment of dust from demolition and construction (Institute of Air Quality Management, 2023); and
- Land-use planning and development control: planning for air quality (Institute of Air Quality Management and Environmental Protection UK, 2017).

Study Area

7.8.4 The study area for the assessment of air quality impacts in the ES will be based on the Institute of Air Quality Management (IAQM) Guidance on the assessment of dust from demolition and construction (IAQM, 2023) (referred to hereafter as the IAQM dust guidance).

7.8.5 The air quality assessment will consider the potential impacts of the onshore elements of the Proposed Development on the following receptors landward of the MHWS:

- People and property located within 350 m of the construction work area for the onshore elements of the Proposed Development.
- Ecological receptors sensitive to dust located within 50 m of the construction work area for the onshore elements of the Proposed Development.
- People, property and ecological receptors sensitive to dust located within 50 m of roads used by construction vehicles.
- People, property and ecological receptors sensitive to dust located within 500 m of the entrance to a construction work area for the onshore elements of the Proposed Development.

7.8.6 The air quality study area will be reviewed and modified in response to refinements made to the onshore elements of the Proposed Development and additional environmental and/or design constraints identified during the EIA process.

Data Sources

7.8.7 The data sources used to inform the baseline assessment will primarily comprise published material which is publicly available online. An initial desk-based review

has identified several data sources which provide baseline data coverage of the Proposed Development Scoping Boundary.

Desk-based Data Sources

7.8.8 An initial desk-based review has identified a number of data sources which provide baseline data coverage of the air quality study area. These data sources are summarised in **Table 7.8.1**.

Table 7.8.1: Baseline data sources – air quality

Source	Summary
Defra	2018-based background mapping data for NO_2, PM_{10} and $PM_{2.5}$
Defra Interactive Air Quality Map	AQMA Boundaries Map based on information reported by local authorities for 2023.
Relevant Local Planning Authority websites	Air Quality Annual Status Reports which describe the status of air quality, including AQMAs within each Local Planning Authority area.

7.8.9 The baseline data sources identified in this Scoping Report will remain under review and may be updated in response to feedback from relevant statutory and non-statutory consultees during the PEIR process, or in response to new sources of information becoming available.

Baseline Environment

Air Quality Management Areas

7.8.10 Torridge District Council has not designated any Air Quality Management Areas (AQMAs) within the district, indicating that air quality in the area is generally good. The nearest AQMA is north Devon AQMA No1, which is located in Braunton, north Devon, approximately 10.5 km north from the Proposed Development Scoping Boundary.

Ecological Receptors

7.8.11 The location of sites designated for nature conservation in relation to the Proposed Development Scoping Boundary is presented in **section 7.2:** Onshore Ecology and Nature Conservation, of the Scoping Report.

7.8.12 The Mermaid's Pool to Rowden Gut SSSI is within 50 m of the Proposed Development Scoping Boundary but this has been designated for its geological features. As such, it is not sensitive to air pollution. In this application, there are no ecological receptors sensitive to air pollution within 50 m and ecological effects are proposed to be scoped out.

7.8.13 No other ecologically designated sites are located within 50 m of the Proposed Development Scoping Boundary.

7.8.14 Further information regarding the ecological baseline and potential impacts of the onshore elements of the Proposed Development on sites designated for conservation is presented in **section 7.2,** Onshore Ecology and Nature Conservation, of the Scoping Report.

Human Receptors

7.8.15 Human receptors located within the Proposed Development Scoping Boundary include the occupiers of residential properties associated with towns (or villages). The occupiers of rural properties situated outside of existing settlements, but within the air quality study area, will also be considered in the air quality assessment.

Future Baseline Conditions

7.8.16 The EIA process will consider the existing baseline conditions within the study area, and future baseline conditions (as far as reasonably practicable) in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report.

7.8.17 In terms of future baseline conditions for air quality, baseline pollutant concentrations are expected to reduce over time as cleaner, less polluting vehicles become a larger proportion of the fleet. For the purpose of this assessment and to remain conservative, no reduction is baseline concentrations will be applied.

Scope of the Assessment

7.8.18 A small number of potential impacts on air quality have been identified which may occur during the construction, operation and maintenance and decommissioning phases of the Proposed Development.

7.8.19 The impacts that have been scoped into the assessment are outlined in **Table 7.8.2** together with a description of any additional data collection (e.g., site-specific surveys) and supporting analyses (e.g., modelling) that will be required to enable a full assessment of the impacts.

7.8.20 Potential impacts proposed to be scoped out of the assessment are presented in **Table 7.8.3** with justification for why the impact should be scoped out.

Table 7.8.2: Impacts proposed to be scoped into the assessment for air quality

Impact	Phase			Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
The impact of dust soiling (nuisance) on property arising from dust emissions generated by onsite construction and decommissioning activities.	✓	×	✓	Activities required for the construction and decommissioning of the Proposed Development e.g., earthworks, vehicle track-out) would generate dust emissions which could result in dust soiling effects on human receptors, including people and property.	Property sensitive to dust located within the air quality study area will be identified using desk-based analysis.	The impact of deposited dust on property will be assessed qualitatively, utilising a risk-based assessment to assess the potential impacts of dust generated by construction and decommissioning activities and the relative sensitivity of identified receptors. The risk-based assessment of dust will be undertaken in accordance with the IAQM Guidance on the assessment of dust from demolition and construction (2023).
The impact of increases in suspended particulate matter on human receptors arising from dust emissions generated by onsite construction and decommissioning activities.	✓	×	✓	Activities required for the construction and decommissioning of the Proposed Development (e.g., earthworks, vehicle track-out) would generate dust emissions which could result in adverse effects on the health of human receptors.	Human receptors located within the air quality study area will be identified using desk-based analysis	The impact of suspended particulate matter on property will be assessed qualitatively, utilising a risk-based assessment to assess the potential impacts of dust generated by construction and decommissioning activities and the relative sensitivity of identified receptors. The risk-based assessment of dust will be undertaken in accordance with the IAQM Guidance on the assessment of dust from demolition and construction (2023).

*C=Construction, O=Operation and Maintenance, D=Decommissioning

Table 7.8.3: Impacts proposed to be scoped out of the assessment for air quality

Impact	Justification
The impact on human receptors arising from air emissions generated by vehicles during the construction phase.	The Environmental Protection UK (EPUK) & IAQM Land-Use Planning and Development Control: Planning For Air Quality document (EPUK & IAQM, 2017) indicates that air quality assessments should include developments that increase annual average daily Light Duty Vehicle traffic flows by more than 100 within or adjacent to an AQMA and more than 500 elsewhere. These criteria are highly unlikely to be exceeded. The EPUK & IAQM states that: *'If none of the criteria are met then there should be no requirement to carry out an air quality assessment for the impact of the proposed development on the local area, and the impacts can be considered to have insignificant effects.'*
The impact on ecological receptors arising from dust emissions generated by onsite construction activities.	Only one SSSI within 50 m of the Proposed Development Scoping Boundary, which has been designated for its geological features and therefore is not sensitive to air quality.
The impact on ecological receptors arising from air emissions generated by vehicles during the construction phase.	
The impact on human and ecological receptors (dust soling and human health) arising from fugitive dust emissions generated during operation and maintenance of the onshore elements of the Proposed Development.	Activities associated with the operation and maintenance of the onshore elements of the Proposed Development are unlikely to generate dust. Therefore, the potential impact on human or ecological receptors arising from fugitive dust emissions generated during operation and maintenance of the onshore elements of the Proposed Development is unlikely to result in significant effects and is proposed to be scoped out of the onshore elements of the Proposed Development assessment for air quality.
The impact on human and ecological receptors arising from air emissions generated by plants or stacks during operation and maintenance of the onshore elements of the Proposed Development.	The Proposed Development does not include proposals for any plant or emissions stacks which could give rise to air emissions during operation of the onshore elements of the Proposed Development. Therefore, the potential impact on human or ecological receptors arising from plant or stack emissions would not occur and would not result in significant effects and is proposed to be scoped out of the assessment for air quality.

Measures Adopted as Part of the Proposed Development

7.8.21 At this stage, there are no additional measures proposed as part of the Proposed Development that are relevant to air quality, aside from those detailed within **section 4.8** and **Table 4.8.1,** which includes the development of an onshore CEMP, which would include relevant air quality and dust mitigation measures.

7.8.22 Any requirements for additional air quality and/or dust mitigation measures will be determined through discussions with the EHOs from each Local Planning Authority likely to be affected as part of the air quality assessment.

Proposed Assessment Methodology

7.8.23 The air quality assessment for the onshore elements of the Proposed Development will be undertaken in accordance with the methodology set out in

Section 5: EIA Methodology, of the Scoping Report, in addition to the following established guidance:

- Local Air Quality Management Technical Guidance: LAQM.TG22 (Defra, 2022)
- Land-Use Planning & Development Control: Planning for Air Quality (EPUK & IAQM, 2017)
- Guidance on the assessment of dust from demolition and construction (IAQM, 2023)

Potential Cumulative Effects

7.8.24 There is potential for cumulative effects on sensitive receptors to occur when the Proposed Development is considered together with other developments. The potential cumulative effects between the onshore elements of the Proposed Development and other developments with respect to air quality will be considered within the PEIR and the ES.

7.8.25 The cumulative effects assessment would be undertaken in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report.

7.8.26 It is considered that most of the potential impacts as a result of construction and decommissioning phases are likely to be limited to within the air quality study area.

7.8.27 However, there is potential for cumulative impacts to occur on sensitive receptors between the Proposed Development and other developments. The potential cumulative impacts between the Proposed Development and other developments with respect to air quality will be considered within the ES.

7.8.28 It is not considered that operation and maintenance of the Proposed Development will result in significant impacts on air quality either alone or cumulatively with other developments. Therefore, it is proposed that the potential impacts arising from operation of Proposed Development are scoped out of the cumulative impact assessment for air quality.

Potential Inter-related Effects

7.8.29 The assessment of potential inter-related effects will be considered within the air quality ES chapter. It will include consideration of project lifetime effects and receptor-led effects in line with the approach outlined in **Section 5:** EIA Methodology, of the Scoping Report.

7.8.30 As outlined in **Table 7.8.3**, there are no designated ecological sites sensitive to air quality in the study area and the amount of traffic generated by the construction phase is expected to be below the EPUK & IAQM threshold criteria and detailed assessment has been scoped out. On that basis, there are not expected to be any inter-related effects.

Potential Transboundary Impacts

7.8.31 A screening of transboundary impacts has been carried out and is presented in **Appendix A**: Transboundary Impacts Screening. This screening exercise identified that there is no potential for transboundary impacts upon air quality due

to construction and operational and maintenance impacts of the Proposed Development.

7.9 Land-use and Recreation

Introduction

7.9.1 This section of the Scoping Report identifies the land-use and recreation receptors relevant to the onshore elements of the Proposed Development. This section also considers the potential impacts arising from the construction, operation and maintenance and decommissioning phases of the Proposed Development and identifies the proposed scope of, and methodology for, the EIA process for the land-use and recreation chapter.

Relevant Policy, Legislation and Guidance

Legislative and Policy Context

7.9.2 The following key legislation and policy documents relevant to land-use and recreation will be considered within the assessment process:

- NPS' (EN-1, EN-3 and EN-5 current and drafts, as appropriate) (Department of Energy & Climate Change, 2011) and updated NPSs (Department for Energy Security and Net Zero, 2023);
- NPPF (Ministry for Housing, Communities and Local Government, 2023); and
- North Devon and Torridge Local Plan 2011 – 2031.

Guidance Documents

7.9.3 Guidance documents relevant to agricultural land use and recreation that will be considered within the assessment process include the following:

- DMRB LA109 Geology and Soils (Highways England et. al., 2019);
- DMRB LA112 Population and Human Health (Highways England et. al. 2020);
- Planning Practice Guidance: Environmental Impact Assessment (Ministry of Housing, Communities & Local Government, 2019a);
- Planning Practice Guidance: Natural Environment (Ministry of Housing, Communities & Local Government, 2019b);
- Code of Construction Practice for the Sustainable Use of Soils on Construction Sites (Defra, 2011);
- A New Perspective on Land and Soil in Environmental Impact Assessment, IEMA (2022); and
- Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land (MAFF, 1988).

Study Area

7.9.4 The proposed study area to be used for the assessment of land use and recreation (the land use and recreation study area) will be defined as land landward of MHWS to be temporarily or permanently occupied during construction and operation and maintenance of the Proposed Development.

7.9.5 The recreational study area will also include land immediately adjacent to the onshore elements of the Proposed Development or linking to it and any areas that may be required to mitigate for any temporary or permanent effects arising as a result of the Proposed Development.

7.9.6 The agricultural study area will also include the areas of wider agricultural land holdings associated with any land affected by the Proposed Development.

7.9.7 With regard to the amenity of recreational resources, the potential impact of the onshore elements of the Proposed Development (e.g. traffic, noise, vibration, air quality, visual effects) will be considered in relevant topic chapters of the ES.

7.9.8 The land use and recreation study area will be reviewed and modified, if necessary, in response to refinements made to the design of the Proposed Development and/or any additional environmental and/or design constraints identified during the EIA process.

Data Sources

7.9.9 The data sources used to inform the baseline assessment will primarily include published material, which is publicly available.

Desk-based Data Sources

7.9.10 An initial desk-based review has identified a number of data sources which provide baseline data coverage of the land-use and recreation study area. These data sources are summarised in **Table 7.9.1**.

Table 7.9.1: Baseline data sources – land-use and recreation

Source	Summary
BGS Geology of Britain Viewer (classic)	Provides information regarding superficial and bedrock geology.
Definitive PRoW maps produced by the relevant local authorities	Provides information regarding the location of PRoW.
Department for Environment, Food & Rural Affairs (Defra) Agriculture (2016) Local authority level breakdown of cropping and livestock areas	Provides detailed annual statistics on the structure of the agricultural industry, including land and crop areas, livestock populations and agricultural workforce estimates.
Defra MAGIC Interactive Mapping System Agricultural Land Classification – Post 1988 (England) (2021)	Provides information regarding soil types and agricultural land.
High resolution satellite imagery	Provides information regarding the location of recreational resources.
Natural England Agricultural Land Classification Map South West Region (ALC006) (2010)	Provides information regarding soil types and agricultural land.

Source	Summary
OS mapping data	Provides mapping data for land and recreational resources.
Sustrans Interactive Mapping System Great Britain: National Cycle Network Map	Provides information regarding the location of the National Cycle Network.
Soil Survey of England and Wales 1:250,000 - Sheet 5 South West England	Provides information regarding soil types and agricultural land.

Site-specific Survey Data

7.9.11 In addition to the data sources identified above, site visits would be undertaken to verify the data. These surveys would be undertaken to establish the specific characteristics of agricultural land and soils permanently affected by the Proposed Development, the nature of farm holdings affected and to provide an understanding of the use of recreational resources within and linking to the land use and recreation study area.

7.9.12 All surveys will be subject to gaining land access. Where access to land cannot be reasonably achieved, these surveys will be supplemented using secondary data sources and consultation with relevant stakeholders where possible.

7.9.13 The baseline data sources identified in this Scoping Report will remain under review and may be updated in response to feedback from relevant statutory and non-statutory consultees during the EIA process, or in response to new sources of information becoming available.

Baseline Environment

7.9.14 The assessment will consider the potential land use and recreation impacts of the onshore elements of the Proposed Development on the following sensitive receptors:

- Soil types and patterns of soils which are located within the land use and recreation study area.
- The quality of agricultural land within the land use and recreation study area, in accordance with the Ministry of Agriculture, Fisheries and Food Agricultural Land Classification (ALC) Guidelines (MAFF, 1988), including ‘best and most versatile’ Grade 1, 2 and 3a ALC land.
- Farm holdings and/or enterprises which are located within the land use and recreation study area.
- Recreational resources (e.g., recreational facilities, areas of public access and PRoW located within the land use and recreation study area).
- Users of recreational resources, including pedestrians, cyclists, equestrians, and other recreational users.

Agricultural Land

7.9.15 The provisional ALC mapping indicates that land within the Proposed Development Scoping Boundary predominantly comprises Grade 3 (good to moderate) land with comparatively smaller areas of Grade 4 (poor quality) land in the vicinity of the A39 and near Winscott Barton and Littleham. There is a small

area of Grade 2 land, situated to the east of the landfall, on the periphery of the Proposed Development Scoping Boundary.

7.9.16 The quality of agricultural land within the Proposed Development Scoping Boundary, according to the provisional ALC mapping, is presented in **Figure 7.9.1**.

7.9.17 A number of areas around Bideford have been subject to the more detailed examination by Defra using the 1988 revised ALC system. The results of the survey show that in a section of the cable route corridor adjacent to west of Gammaton is classified as subgrade 3a and 3b. This is detailed within **Figure 7.9.2**.

7.9.18 There is no detailed soil map for the route and so the only source of published information on the soils is the relevant sheet of the 1:250,000 scale National Soil Map (Sheet 5 South West England). The two main Associations shown within the project area are Association 541k Denbigh 2 in areas underlain by the Bideford and Crackington Formations, i.e. the areas underlain mainly by mudstones and siltstones, and Association 611c Manod where the bedrock is the Bude Formation i.e. mainly but not entirely consisting of sandstones.

7.9.19 The agricultural land use within the Proposed Development Scoping Boundary is dominated by grassland livestock enterprises which are supported by limited acreages of arable cropping.

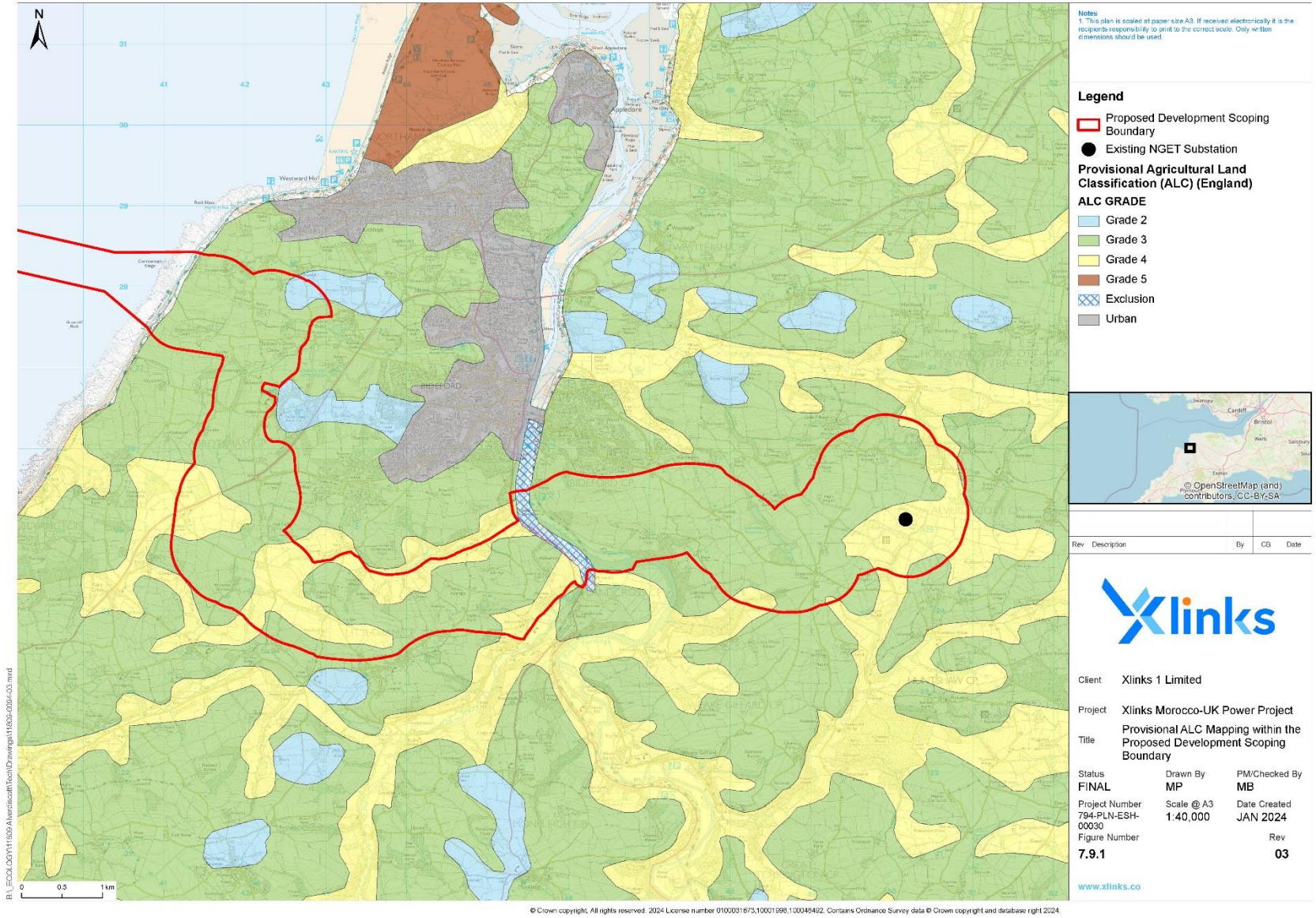

Figure 7.9.1: Provisional ALC mapping within the Proposed Development Scoping Boundary

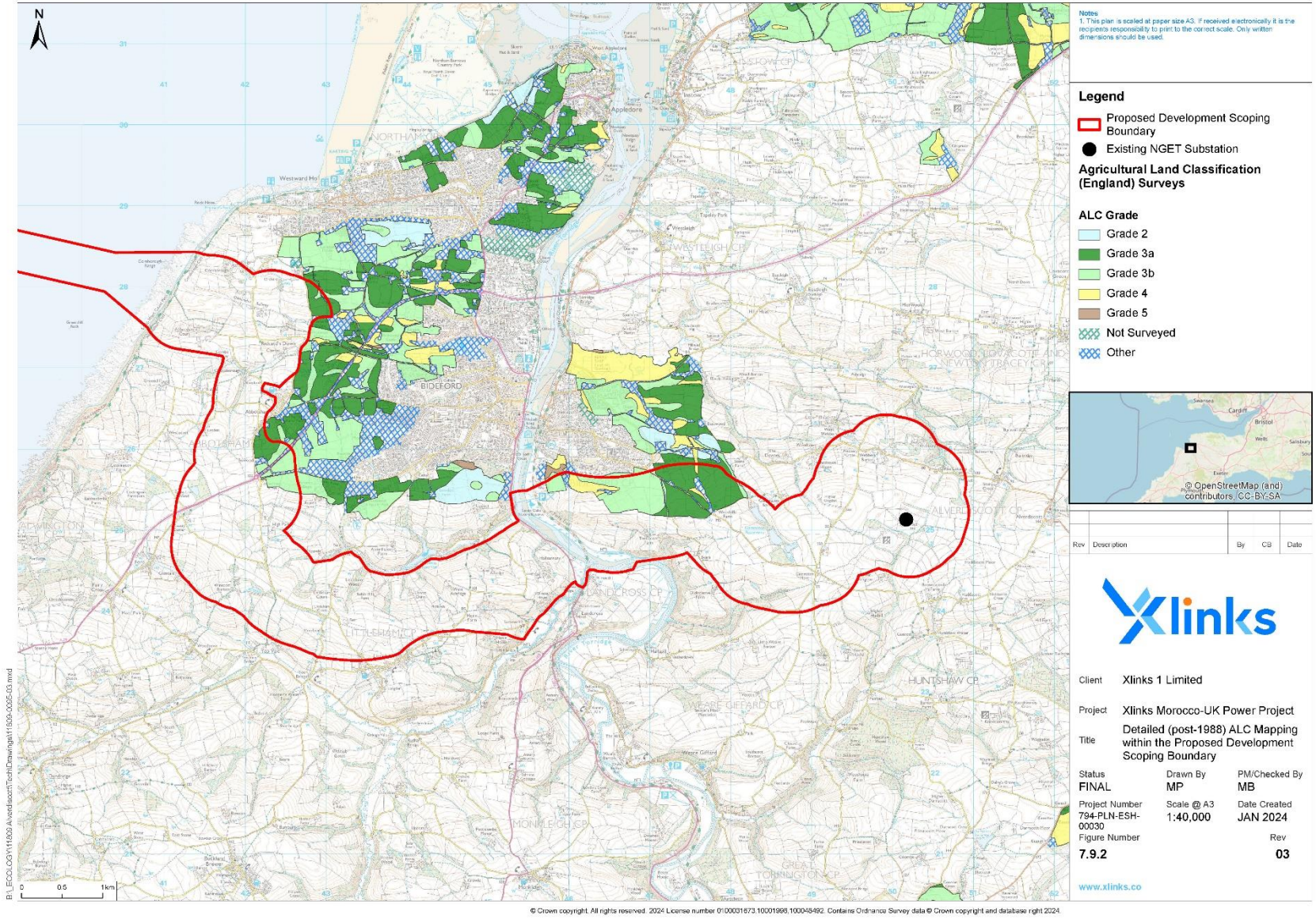

Figure 7.9.2: Detailed (post-1988) ALC mapping within the Proposed Development Scoping Boundary

Access Land, Common Land and Village Greens

7.9.20 There are no areas of statutory access land designated under the Countryside Rights of Way Act 2000 or other legislation within this study area. The beach at Cornborough Range is publicly accessible via the coastal path from Westward Ho! to the north or from the south and is used by the local population and tourists.

7.9.21 Other recreational uses of land within the Proposed Development Scoping Boundary will be considered following more detailed land surveying following consultation.

Public Rights of Way and Cycle Routes

7.9.22 The distribution of PRoW and Cycle Routes are shown on **Figure 7.9.3**.

7.9.23 North Devon contains an extensive network of public footpaths and bridleways, some of which are within or proximate to the study area. These, together with the network of local roads in the area, are used for pedestrian, equestrian and cycling activities.

7.9.24 The South West Coast Path runs north to south through the onshore study area and is a National Trail running for 630 miles along the coast from Minehead on the edge of the Exmoor National Park to Poole Harbour in Dorset.

7.9.25 The study area includes The Tarka Trail which runs along the east bank of the River Torridge south of Bideford. The Trail forms part of Devon's Cycling Coast to Coast Route between Ilfracombe and Plymouth and between Braunton and Meeth is designated as a National Cycle Route 3, providing over 30 miles of well surfaced off-road cycle path utilising the route of the former railway line.

7.9.26 In addition to cyclists, the trail is well used by walkers and dog walkers and due to the shallow gradients it is also suitable for disabled visitors or visitors with pushchairs. Horse riding is not currently allowed along this stretch of the Trail.

Other Recreational Resources

7.9.27 Recreational resources immediately adjacent to the Proposed Development Scoping Boundary include the A coarse fishing lake to the south of Gammaton Reservoirs and the north of Gammaton Road, approximately 130 m from the Onshore HVDC Cable Corridor. This is the club lake for the Bideford and District Angling Club.

7.9.28 Other resources in close proximity to the Proposed Development would also be considered and would include the 'Big Sheep' farm park located just off the A39 at Abbotsham and the Gammaton Reservoirs located near Gammaton Barton.

Future Baseline Conditions

7.9.29 The EIA process will consider the existing baseline conditions within the study area, and future baseline conditions (as far as reasonably practicable) in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report.

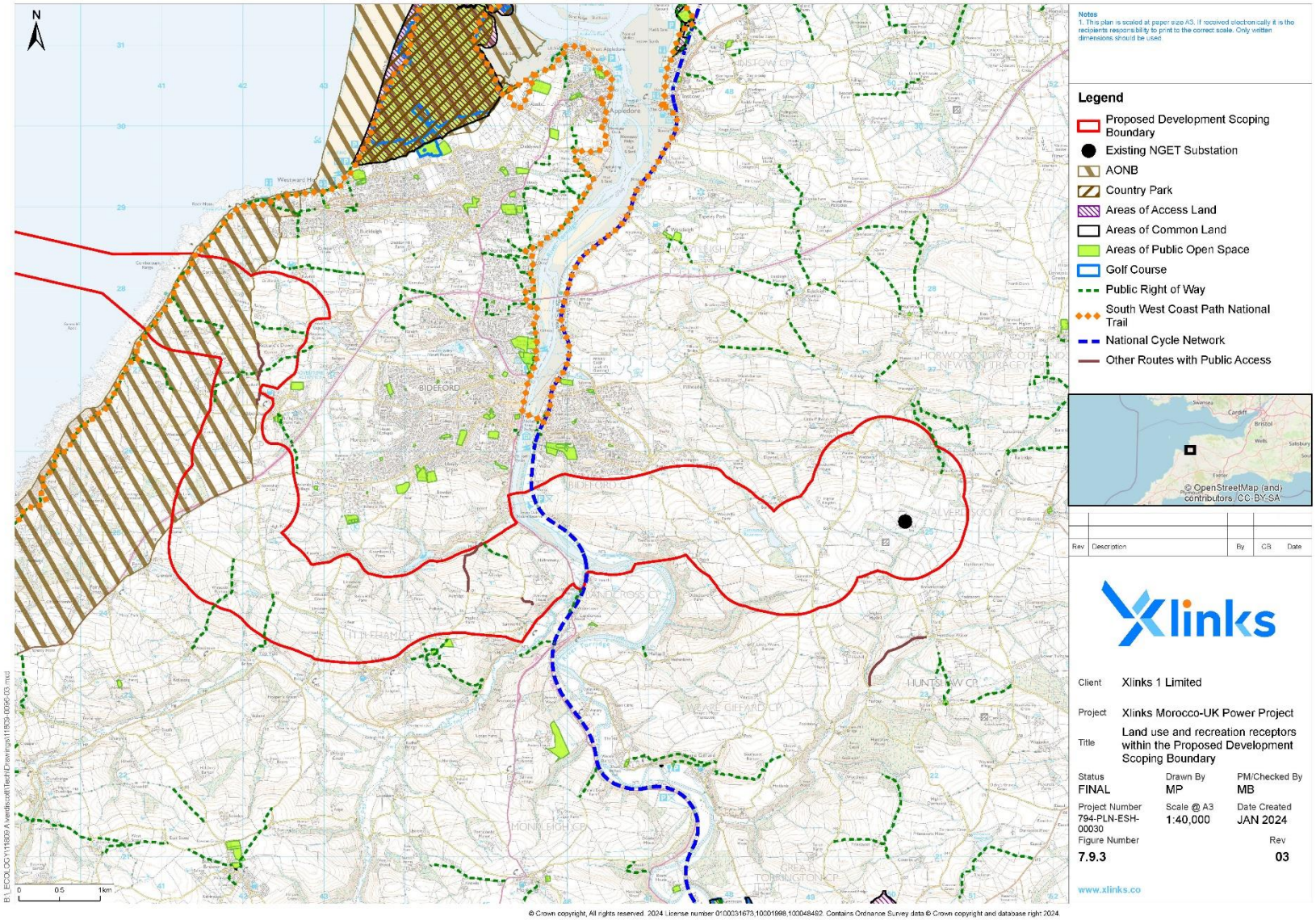

Figure 7.9.3: Land use and recreation receptors within the Proposed Development Scoping Boundary

Scope of the Assessment

7.9.30 A range of potential impacts on land use and recreation have been identified which may occur during the construction, operation and maintenance and decommissioning phases of the onshore elements of the Proposed Development.

7.9.31 The impacts that have been scoped into the assessment are outlined in **Table 7.9.2** together with a description of any additional data collection (e.g. site-specific surveys) and supporting analyses that will be required to enable a full assessment of the impacts.

7.9.32 Potential impacts proposed to be scoped out of the assessment are presented in **Table 7.9.3**, with justification for why the impact should be scoped out.

Table 7.9.2: Impacts proposed to be scoped into the assessment for land use and recreation

Impact	Phase			Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
The permanent loss of agricultural land, including the best and most versatile (BMV) land, arising from the Proposed Development	✓	×	×	Construction of the converter stations, and, where applicable, very small additional areas of land associated with inspection covers within the cable route alignment.	The quality and area of agricultural land within the land use and recreation study area to be permanently lost as a result of construction will be determined using desk based analysis and ALC surveys (where existing baseline data provides insufficient coverage and where access is possible). The desk-based analysis and ALC surveys will be undertaken in accordance with the MAFF ALC Guidelines (1988). In addition, the permanent impact on farm holdings and farming operations within the land use and recreation study area will be informed through direct discussions with farmers and their representatives.	The impact of loss of land and disruption and reduced access to agricultural land on farming operations will be assessed in accordance with the Design Manual for Roads and Bridges (DMRB) – LA 109 Geology and Soils (Highways England *et al*., 2019) and DMRB – LA 112 Population and Human Health (Highways England et al., 2020). The assessment will also consider information provided during discussions with farmers and/or representatives where relevant.
The temporary impact of disruption and reduced access to agricultural land during construction and decommissioning phases of the Proposed Development.	✓	×	✓	Construction activities could cause disruption to agricultural land quality, soils and farming operations and reduce the area of land available to farmers during the construction and decommissioning phases.	The quality and area of agricultural land within the study area to be temporarily lost during construction will be determined using desk top analysis and available survey data in accordance with the MAFF ALC Guidelines 1988. The temporary impact on farm holdings will be informed by direct discussions with farmers and their representatives.	The impact of temporary disruption and reduced access to agricultural land on farming operations will be assessed in accordance with the DMRB – LA 109 Geology and Soils (Highways England et al., 2019) and DMRB – LA 112 Population and Human Health (Highways England *et al*., 2020). The assessment will also consider information provided during discussions with farmers and/or representatives where relevant.
The impact of disruption and reduced access to recreational	✓	×	✓	Construction and decommissioning of the development could cause disruption and reduce access to	Recreation resources located within the land use and recreation study area will be identified using desk-based analysis. In addition, targeted on-site	The impact of disruption and reduced access to recreational resources will be assessed qualitatively, utilising professional judgement where required

Impact	Phase			Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
resources (e.g., access land, common land and village greens, PRoW, cycle routes, other recreational resources) during the construction and decommissioning phases.				recreational resources during the construction.	surveys may be undertaken (where required) to establish the relative importance of recreational resources within the land use and recreation study area to the wider community	to determine the impact magnitude and sensitivity of identified receptors.

*C=Construction, O=Operation and Maintenance, D=Decommissioning

Table 7.9.3: Impacts proposed to be scoped out of the assessment for land use and recreation

Impact	Justification
The impact of disruption and reduced access to agricultural land during operation and maintenance phase.	Impacts arising during of the operation of the onshore development will be limited to maintenance and repair activities (e.g., investigation of onshore HVDC cables) and would be small in magnitude, short term and infrequent. In addition, any land impacted during maintenance and repair activities would be reinstated to its original condition. Any permanent effects on agricultural land would occur during the construction phase and would be assessed as part of the assessment of effects for construction (as set out in the table above). Therefore, the potential impact on agricultural land during operation and maintenance of the onshore infrastructure is unlikely to result in significant effects and is proposed to be scoped out of the assessment for land use and recreation.
The impact of disruption and reduced access to recreation resources (e.g., access land, common land, village greens, PRoW, cycle routes and other recreational resources) during operation and maintenance phase.	Impacts arising during of the operation of the onshore development will be limited to maintenance and repair activities (e.g., investigation of onshore HVDC cables) and would be small in magnitude, short term and infrequent. Therefore, the potential impact on recreation resources during operation and maintenance of the onshore infrastructure is unlikely to result in significant effects and is proposed to be scoped out of the assessment for land-use and recreation.

Measures Adopted as Part of the Proposed Development

7.9.33 The following measures are proposed to be adopted as part of the Proposed Development are relevant to land use and recreation, considered in addition to the overarching design and embedded measures in **section 4.8** and **Table 4.8.1**. These measures may evolve as the engineering design and the EIA progresses.

- Onshore CEMPs - Construction of the onshore elements of the Proposed Development would be undertaken in accordance with the relevant best practice measures as recommended in the CEMP for the Sustainable Use of Soils on Construction Sites (Defra, 2009) and the Good Practice Guide for Handling Soils in Mineral Workings (Institute of Quarrying, 2021).

7.9.34 The requirement for and feasibility of any mitigation measures will be dependent on the significance of effects and will be consulted upon with statutory and non-statutory consultees throughout the EIA process.

Proposed Assessment Methodology

7.9.35 The land use and recreation assessment for the onshore elements of the Proposed Development will be undertaken in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report, in addition to the following established guidance:

- Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land (MAFF, 1988).
- DMRB LA 109 - Geology and Soils (Highways England, Transport Scotland, Welsh Government, Department for Infrastructure, 2019)
- DMRB LA 112 - Population and Human Health (Highways England, Transport Scotland, Welsh Government, Department for Infrastructure, 2020).
- A New Perspective on Land and Soil in Environmental Impact Assessment, IEMA (2022).

7.9.36 Although principally developed for the assessment of highway projects, the DMRB also provides guidance applicable to the assessment of other linear schemes, including the onshore elements of the Proposed Development (e.g., HVDC cables).

Potential Cumulative Effects

7.9.37 There is potential for cumulative effects on sensitive receptors to occur when the Proposed Development is considered together with other developments. The potential cumulative effects between the onshore elements of the Proposed Development and other developments with respect to land use and recreation will be considered within the PEIR and the ES.

7.9.38 The cumulative effects assessment would be undertaken in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report.

Potential Inter-related Effects

7.9.39 The assessment of potential inter-related effects will be considered within the land use and recreation ES chapter. It will include consideration of project lifetime effects and receptor-led effects in line with the approach outlined in **Section 5:** EIA Methodology, of the Scoping Report. For example:

- Landscape and Visual Resources:
  - Construction, operation and maintenance, and decommissioning of the onshore elements of the Proposed Development may impact the visual amenity of PRoWs and other recreational resources within the land use and recreation study area.
- Traffic and Transport:
  - Additional vehicle movements required to facilitate construction and decommissioning of the onshore elements of the Proposed Development may impact the accessibility of PRoWs and other recreational resources.
- Noise and Vibration:
  - Noise generated during the construction, operation and maintenance, and decommissioning of the onshore elements of the Proposed Development may impact the amenity of PRoWs and other recreational resources within the land use and recreation study area.
- Socio-economics:
  - Construction and decommissioning of the onshore elements of the Proposed Development may cause disruption and reduce the area of land

available to farmers, which may impact the economic viability of farming operations within the land use and recreation study area.

Potential Transboundary Impacts

7.9.40 A screening of transboundary impacts has been carried out and is presented in **Appendix A**: Transboundary Impacts Screening. This screening exercise identified that there is no potential for transboundary impacts upon land use and recreation due to construction and operational and maintenance impacts of the Proposed Development.

8 PROPOSED TECHNICAL ASSESSMENTS – OFFSHORE

8.1 Introduction

8.1.1 The following sections provide an overview of the offshore technical assessments for the Proposed Development, which should be read in conjunction with **Section 4:** Project Description and **Section 5:** EIA Methodology, of the Scoping Report. Each technical assessment overview provides further details on the methodologies specific to the environmental topic chapter.

8.2 Benthic Ecology

Introduction

8.2.1 This section of the Scoping Report identifies the benthic ecology receptors relevant to the offshore elements of the Proposed Development. This section also considers the potential impacts arising from the construction, operation and maintenance, and decommissioning of the Proposed Development and identifies the proposed scope of, and methodology for, the benthic ecology EIA process.

Relevant Policy, Legislation and Guidance

Legislative and Policy Context

8.2.2 The following key legislation and policy documents relevant to Benthic Ecology will be considered within the assessment process:

International

- Convention on the Conservation of Migratory Species of Wild Animals (the 'Bonn Convention');
- Convention on the Conservation of European Wildlife and Natural Habitats (the 'Bern Convention');
- Marine Strategy Framework Directive 2008 (EU Directive 2008/56/EC).
- Ramsar Convention (1976);
- OSPAR Convention (1992);
- Convention on Biological Diversity (1993);
- Espoo Convention (1997);
- EU Invasive Alien Species Regulation (Regulation No 1143/2014); and
- International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM).

National

- The Conservation of Habitats and Species Regulations 2017 (as amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019); considered within the assessment process;
- Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended);
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017;
- Planning Act 2008 (as amended);
- Marine and Coastal Access Act 2009;
- Infrastructure Planning (EIA) Regulations 2017 (as amended);
- Marine Works (EIA) Regulations 2007 (as amended);
- Environment Act 2021;
- Natural Environment and Rural Communities (NERC) Act 2006 (England); and
- Wildlife and Countryside Act (1981 as amended).

Guidance Documents

8.2.3 The benthic ecology assessment will refer to the CIEEM guidelines for Ecological Impact Assessment for Terrestrial, Freshwater and Coastal Environments (2018).

Study Area

8.2.4 The study area for the benthic ecology assessment in the PEIR and ES will be determined based on the pathway for effect that is likely to have the greatest spatial extent, which is expected to be suspended sediment carried in plumes as a result of cable burial activities. This may be refined ahead of PEIR and subsequent ES chapter based on the development of physical processes understanding (**section 8.9**: Physical processes, of the Scoping Report).

8.2.5 For scoping, a precautionary approach has been adopted to more than encompass the potential ZOI of the works and this is anticipated to be refined for the assessment in the PEIR and ES. The benthic ecology scoping phase study area (**Figure 8.2.1**) extends from the landfall at Cornborough Range near Bideford, Devon to the EEZ boundary and extends up to 15 km from the 500 m Offshore Cable Corridor, ensuring a precautionary assessment.

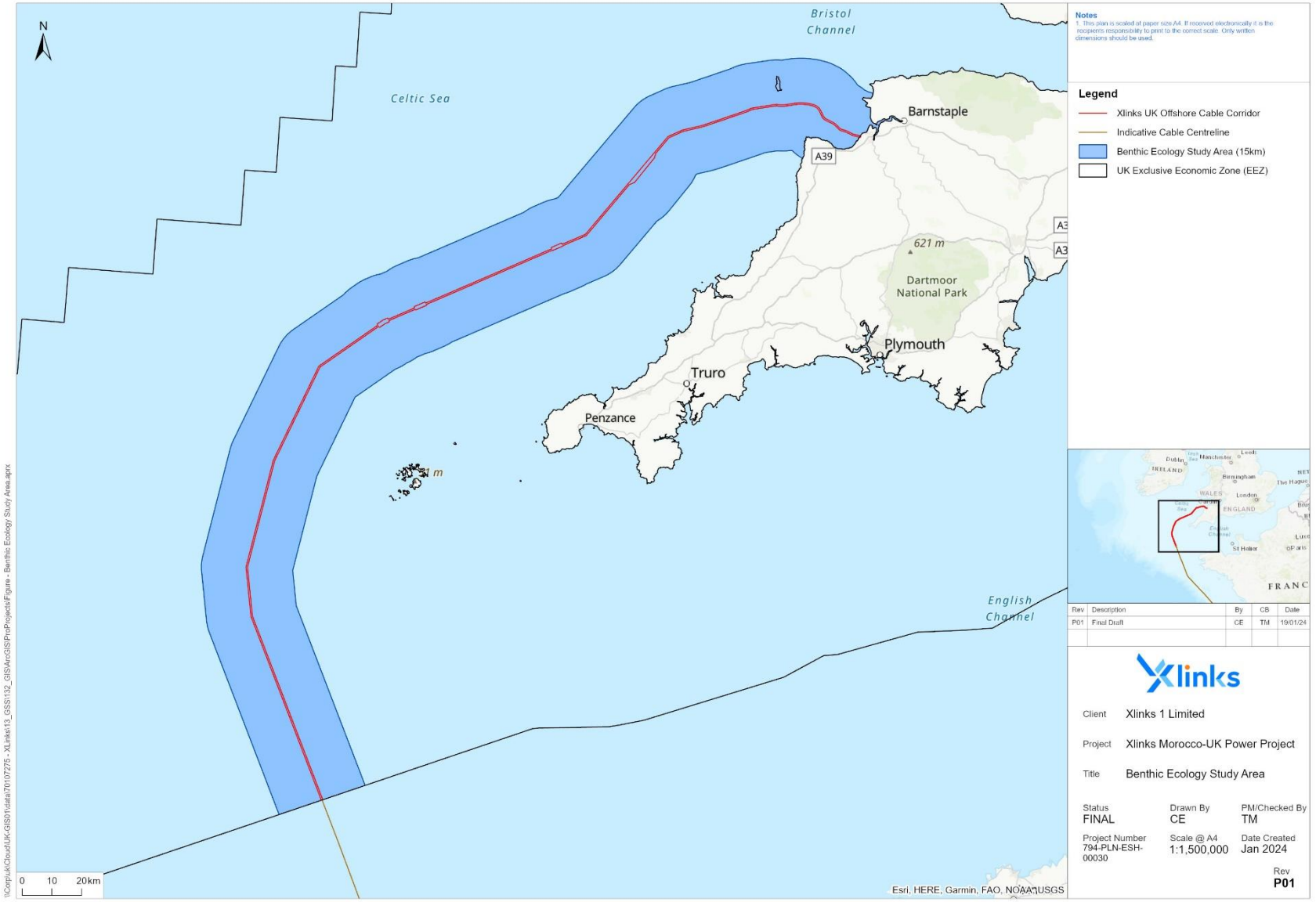

Figure 8.2.1: Benthic Ecology Study Area

Data Sources

8.2.6 A range of public data sources will be used to inform site characterisation. An initial desk-based review has identified several data sources which provide baseline data coverage of the Proposed Development Scoping study area.

8.2.7 In addition, project-specific surveys have been conducted to obtain data to inform site characterisation as set out below.

8.2.8 The baseline data sources identified in this EIA Scoping Report will remain under review and may be updated in response to feedback from relevant statutory and non-statutory consultees during the EIA process, or in response to new sources of information becoming available.

Desk-based Data Sources

8.2.9 To inform this section, a high-level desk-based assessment has been conducted for benthic ecology receptors using a range of existing ecological data (**Table 8.2.1**).

Table 8.2.1: Baseline data sources – benthic ecology

Source	Summary
European Marine Observation and Data Network (EMODnet)	Benthic habitat classification mapping
National Biodiversity Network (NBN) Atlas	Occurrence data for benthic species (excluding entries not licensed for commercial use)
Defra Magic Map	Geographic information about the natural environment from across government.

Site-specific Survey Data

8.2.10 In addition to the data sources identified above, the following site-specific surveys in **Table 8.2.2** will inform the baseline assessment for benthic ecology in the ES.

Table 8.2.2: Site-specific surveys - benthic ecology

Survey	Summary
Geophysical surveys	Geophysical surveys included acquisition of seabed data using a MBES, SSS, magnetometer and Sub-bottom Profiler (SBP) Shallow and Deep SBP Dura Spark 400 for seismic data. The SSS and bathymetry from the MBES were interpreted to inform the survey plan for Drop Down Video (DDV) and grab surveys.
Subtidal DDV surveys	Seabed video footage was acquired to ground-truth all grab locations, features of interest and to facilitate a habitat assessment. A total of 61 camera transects were acquired across the survey area using a STR Seabug system mounted on a camera sled or a Freshwater Lens system.
Subtidal Grab surveys	51 grab stations were sampled along the UK section of the Offshore Cable Corridor. The majority of stations were sampled with a Dual Van Veen (DVV) grab (2 x 0.1 m^2) with stations with coarser sediments sampled with a 0.01 m^2 mini-Hamon grab. Samples were acquired to provide data on physico-chemistry and macrofauna at sampling stations. Water sampling using a multi-parameter Conductivity Temperature Depth (CTD) sensor was conducted at every third station in the deeper offshore sections of the cable route, increasing to every station in water depths of less than 50 m.

Survey	Summary
Intertidal Phase I and Phase II Rocky Shore surveys	It is proposed that Phase I biotope mapping and Phase II quadrat surveys are undertaken at the landfall in the area the HDD will be conducted. These would be conducted using standard approaches as set out in Wyn *et al.* (2006); Davies *et al.* (2001); and JNCC (2004).

Baseline Environment

8.2.11 To inform this Scoping Report section, a high-level desk-based assessment has been conducted of designated sites with benthic ecology qualifying features and intertidal and subtidal habitats and species. Information is then provided on more general benthic habitat and species information including a high-level summary of results of the project-specific surveys.

Designated Sites

8.2.12 There are several SACs and MCZs within the benthic ecology study area (**Figure 8.2.2).**

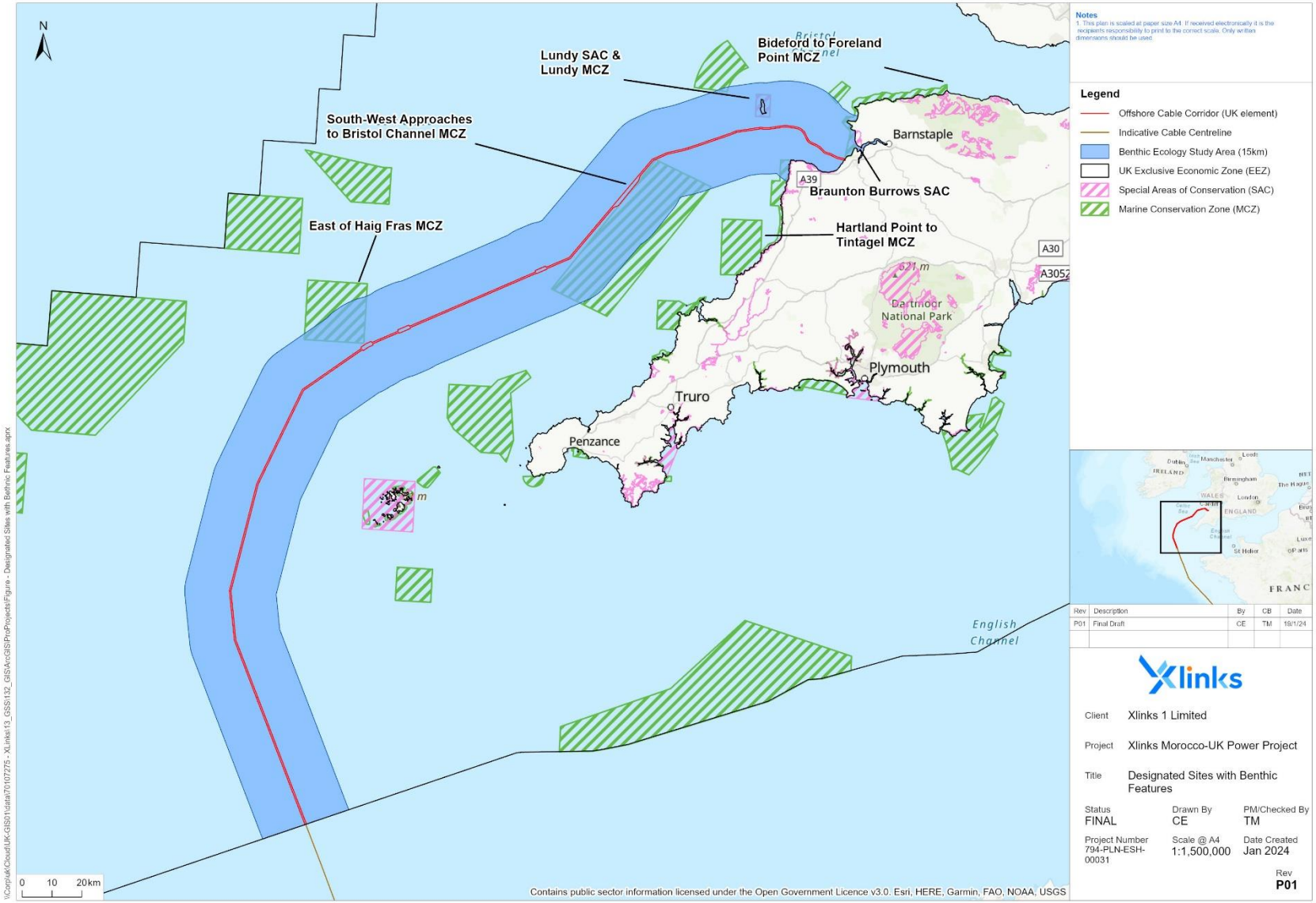

Figure 8.2.2: Designated Sites with Benthic Features

8.2.13 The Offshore Cable Corridor overlaps with the Bristol Channel Approaches/Dynesfeydd Môr Hafren SAC, however, the SAC is not designated for any benthic features.

8.2.14 Lundy SAC is approximately 3.5 km north of the Offshore Cable Corridor and 'Reefs' (code 1170) are the primary feature of the site, while 'Sandbanks which are slightly covered by sea water all of the time' (code 1110) and 'Submerged or partly submerged sea caves' (code 833) are present as qualifying features, but not a primary reason for selection of this site.

8.2.15 The Braunton Burrows SAC is approximately 5.5 km north of the landfall. It is designated for terrestrial features, however, 'Mudflats and sandflats not covered by seawater at low tide' (code 1140) are present as a qualifying feature, but not a primary reason for selection of this site.

8.2.16 In addition to the SACs, there are several MCZs within the study area. The Bideford to Foreland Point MCZ, which is 500 m north of the landfall site is designated for the following Habitats of Conservation Interest (HOCI):

- Honeycomb worm, *Sabellaria alveolata* reefs;
- Intertidal under boulder communities;
- Fragile sponge and anthozoan communities on subtidal rocky habitats;
- Pink sea-fan, *Eunicella verrucosa*;
- Spiny lobster, *Palinurus elephas*;
- Low energy intertidal rock;
- Moderate energy intertidal rock;
- High energy intertidal rock;
- Intertidal coarse sediment;
- Intertidal mixed sediments;
- Intertidal sand and muddy sand;
- Littoral chalk communities;
- Moderate energy infralittoral rock;
- High energy infralittoral rock;
- Moderate energy circalittoral rock;
- High energy circalittoral rock;
- Subtidal coarse sediment;
- Subtidal mixed sediments; and
- Subtidal sand and low energy infralittoral rock.

8.2.17 The proposed Offshore Cable Corridor runs directly adjacent to the south west approaches to the Bristol Channel MCZ which has the following designated features:

- Subtidal coarse sediment; and
- Subtidal sand.

8.2.18 The East of Haig Fras MCZ is approximately 650 m northwest of the Offshore Cable Corridor and is designated for the following features:

- Sea-pen and burrowing megafauna communities;
- Fan mussel, *Atrina fragilis*;
- High energy circalittoral rock;
- Moderate energy circalittoral rock;
- Subtidal coarse sediment / subtidal mixed sediments mosaic;
- Subtidal sand; and
- Subtidal mud.

8.2.19 Hartland Point to Tintagel MCZ is approximately 8.5 km south of the Offshore Cable Corridor. It is designated to protect the following features:

- Honeycomb worm (*Sabellaria alveolata)* reefs;
- Pink sea-fan, *Eunicella verrucosa*;
- Fragile sponge & anthozoan communities on subtidal rocky habitats;
- Coastal saltmarshes and saline reedbeds;
- Low energy intertidal rock;
- Moderate energy intertidal rock;
- High energy intertidal rock;
- Intertidal coarse sediment;
- Intertidal sand and muddy sand;
- Moderate energy infralittoral rock;
- High energy infralittoral rock;
- Moderate energy circalittoral rock;
- High energy circalittoral rock;
- Subtidal coarse sediment; and
- Subtidal sand.

8.2.20 Lundy MCZ is 3.5 km from the Offshore Cable Corridor and is designated for spiny lobster (*Palinurus elephas*).

8.2.21 The North West of Lundy MCZ is approximately 13.5 km north of the Offshore Cable Corridor and is designated to protect the feature Subtidal coarse sediment.

8.2.22 The Morte Platform MCZ is approximately 14.5 km north of the Offshore Cable Corridor. It is designated to protect the features:

- High energy circalittoral rock;
- Moderate energy circalittoral rock; and
- Subtidal coarse sediment.

8.2.23 The North West of Lundy MCZ is approximately 13.5 km north of the Offshore Cable Corridor and is designated to protect the feature Subtidal coarse sediment.

Benthic Subtidal and Intertidal Habitats and Species

Intertidal Benthic Ecology

8.2.24 The Bideford to Foreland Point MCZ 500 m to the north of the landfall was surveyed in 2013 when intertidal rocky shore surveys were conducted (Natural England, 2014). The area closest to the landfall location was recorded to have 'Fucus vesiculosus on full salinity moderately exposed to sheltered mid eulittoral rock' (JNCC: LR.LLR.F.Fves.FS, EUNIS: A1.3131) and Chthamalus spp. on exposed eulittoral rock (JNCC: LR.HLR.MusB.Cht, EUNIS: A1.112) rocky shore biotopes backed by 'Fucus spiralis on full salinity sheltered upper eulittoral rock' (JNCC: LR.LLR.F.Fspi.FS, EUNIS: A1.3121).

8.2.25 It is likely that habitat at the landfall location will be similar. The foreshore location at the landfall is backed by cliffs.

8.2.26 As indicated in **Table 8.2.2**, site-specific intertidal surveys at the landfall are proposed to inform the PEIR and ES stages.

Subtidal Benthic Ecology

8.2.27 The EUSeaMap (2023) habitat types (MSFD benthic broad habitats) by EMODnet indicates the subtidal habitat is likely to be Circalittoral sand up to 18 km from the landfall (**Figure 8.2.3**). Beyond this point subtidal habitats may include:

- Circalittoral coarse sediment;
- Circalittoral rock and biogenic reef;
- Offshore circalittoral coarse sediment;
- Offshore circalittoral mixed sediment;
- Offshore circalittoral sand; and
- Offshore circalittoral mud.

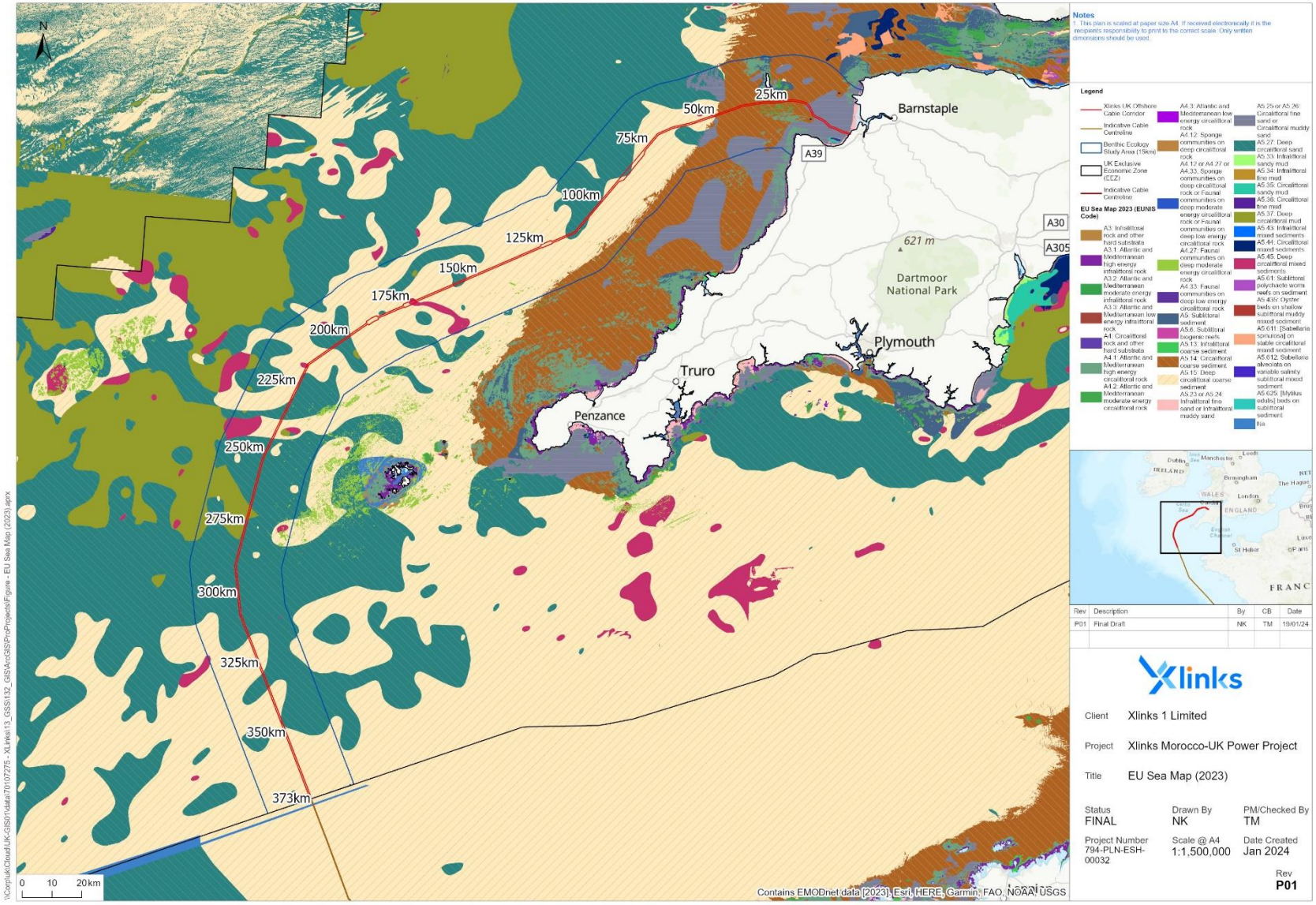

Figure 8.2.3: EUSeaMap (2023) habitat types (MSFD benthic broad habitats) by EMODnet

8.2.28 Benthic characterisation surveys have been conducted of the subtidal environment from the landfall to the EEZ boundary. These included subtidal grab surveys using a DVV grab and a mini-Hamon grab, water quality sampling and DDV surveys (**Table 8.2.2**). The results of these surveys will be used to inform the full ES.

8.2.29 Early results indicate that the shallow nearshore section of the Offshore Cable Corridor from station UK_ENV_GRAB_52 to stations UK_ENV_GRAB_61 (up to distance of 9.5 km offshore), which make up the stations in the Barnstaple Bay area, were very consistent and comprised fine sand (**Figure 8.2.4** and **Figure 8.2.5**).

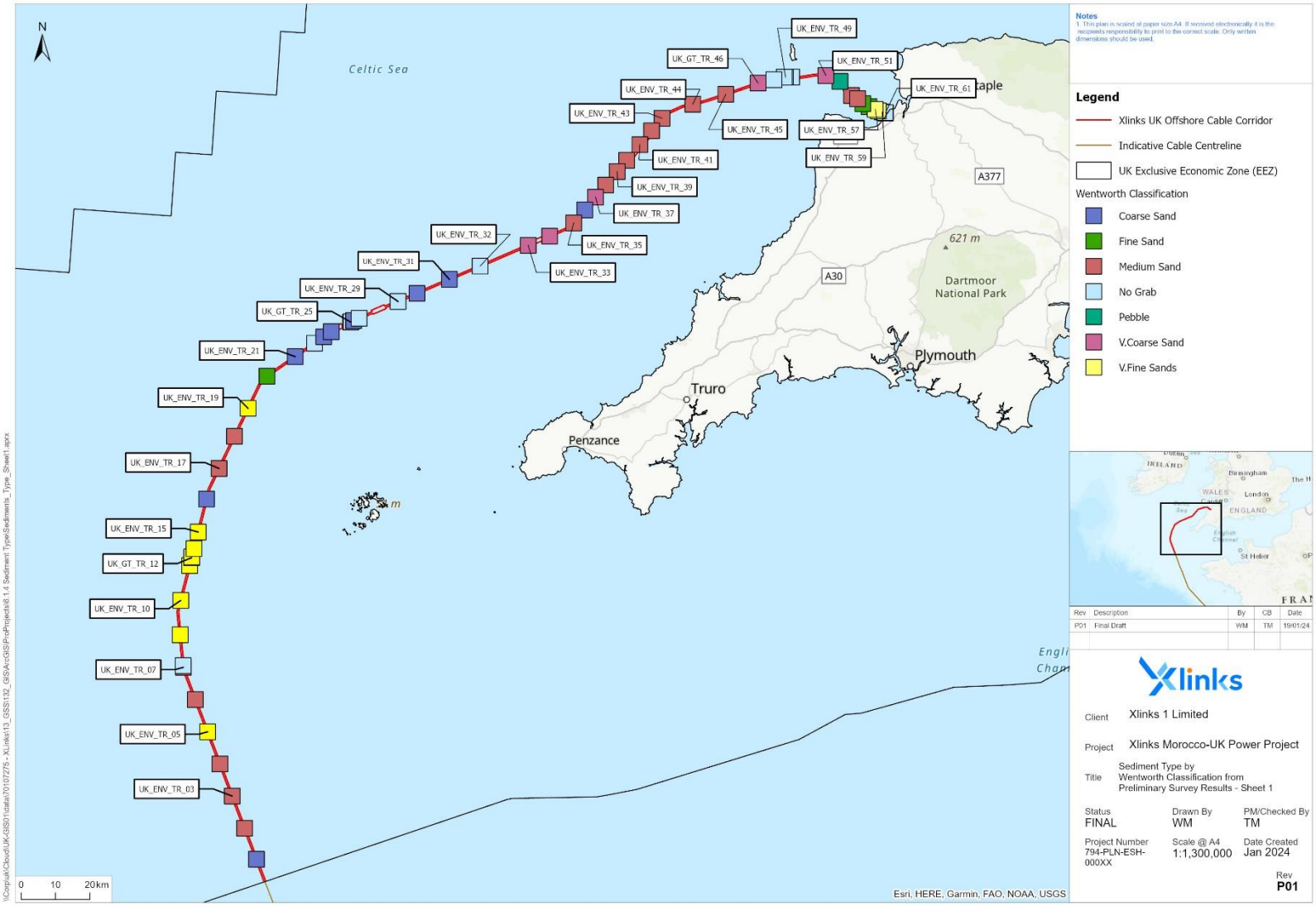

Figure 8.2.4: Sediment type by Wentworth classification from preliminary survey results – sheet 1

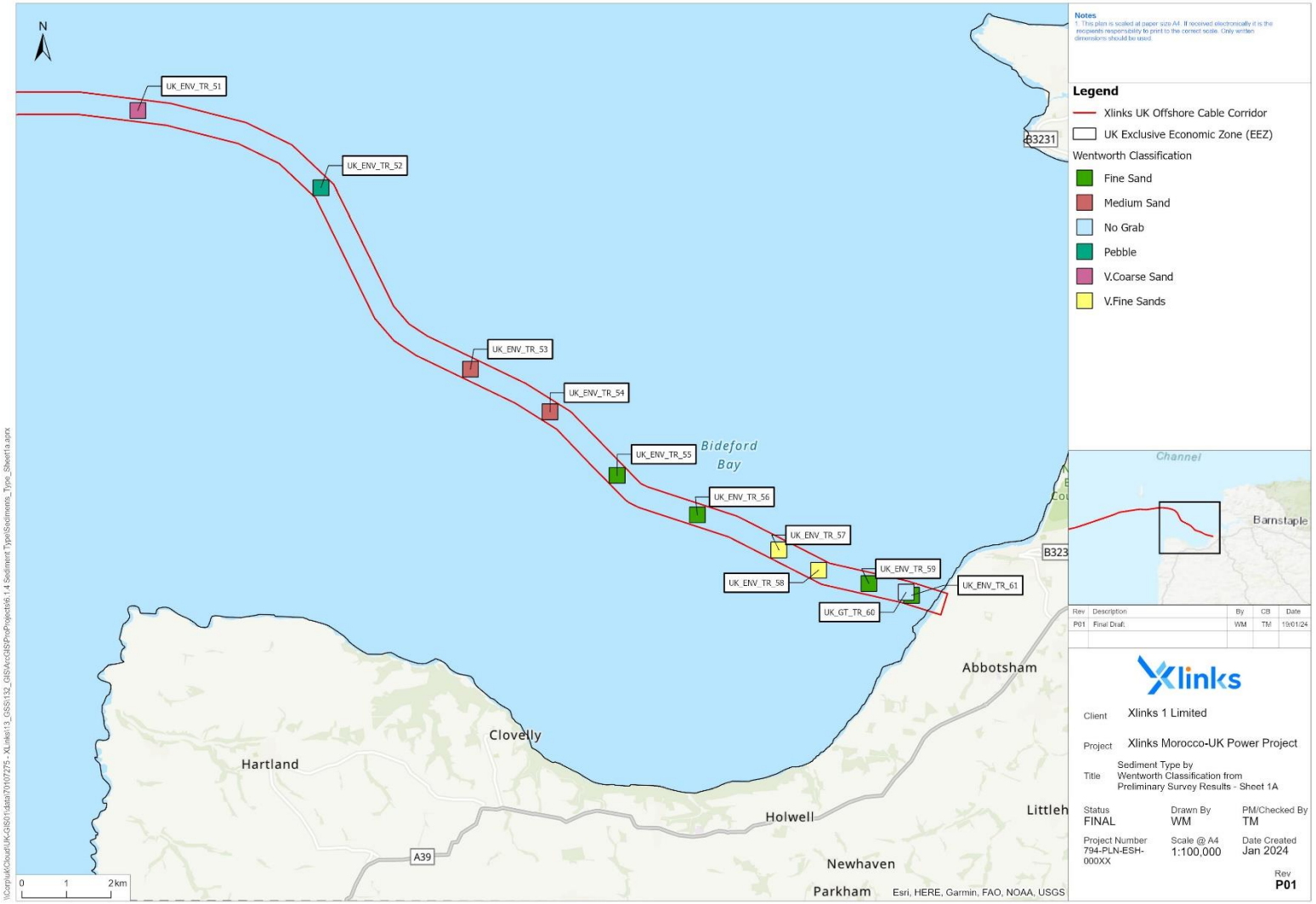

Figure 8.2.5: Sediment type by Wentworth classification from preliminary survey results – sheet 1A

8.2.30 Upon initial investigation of the underwater imagery data, the epifauna observed in the camera transects at these stations (UK_ENV_GRAB_52 to stations UK_ENV_GRAB_61) was very sparse. Review of the grab samples recovered also demonstrated relatively low diversity, comprising relatively few bivalve and polychaete species, and a single gastropod (likely *Buccinum undatum*).

8.2.31 Close to the Isles of Scilly and the East of Haig Fras MCZ, the sediment is rippled gravelly coarse sand with cobbles and boulders. An abundance of cobbles and boulders were observed in an area of silty sandy gravel with shell debris at station UK_ENV_GRAB_19. The cobbles and boulders were often colonised by *Hymedesmiidae*, *Caryophyllia sp*. and *Amphilectus fucorum*, with numerous hydroids and bryozoans protruding from the coarse seabed. These areas of cobble and boulders may be classed an Annex I 'stony reef' within the Habitats Directive (**Figure 8.2.6**), however the degree of reefiness is dependent on extent, degree of colonisation, species observed within these areas and the distinctiveness from the surrounding seabed. This will be reviewed during the EIA process to determine if these areas should be classed as Annex I 'stony reef'.

Figure 8.2.6: Examples of potential stony reef and bedrock from stations UK_ENV_TR_50 and UK_ENV_TR_48

8.2.32 An area of outcropping bedrock was evident from the video and stills data at station UK_ENV_GRAB_14. Bedrock was observed rising out from the silty sand seabed, forming distinctive outcrops that were often colonised by numerous species including hydrozoans, bryozoans, encrusting sponges and cup corals. From the images reviewed, this habitat also supports mobile fauna, such as several species of fish and crustaceans. Exposed bedrock may fall within the Annex I habitat 'bedrock reef'. A similar habitat was observed closer inshore from station UK_ENV_GRAB_47 to UK_ENV_GRAB_50, with K_ENV_GRAB_50 having more resemblance to stony reef than bedrock formations.

8.2.33 Stations on the south west to western side of the Isles of Scilly (UK_ENV_GRAB_09 to UK_ENV_GRAB_13 and UK_ENV_GRAB_15) exhibited more fines with a visible silty rippled sand seabed with shell debris and occasional gravel/cobble areas with sparse boulders. Evidence of burrowing and mobile benthic fauna was apparent from the stills and video footage at these stations, with a high density of lebensspuren (biologically formed sediment structures).

8.2.34 In the deeper stations (122 m to 129 m), south-south west from the Isles of Scilly (UK_ENV_GRAB_01 to UK_ENV_GRAB_08), the overall sediment type was rippled sand with shell debris and occasional gravel/cobbles (**Figure 8.2.7**).

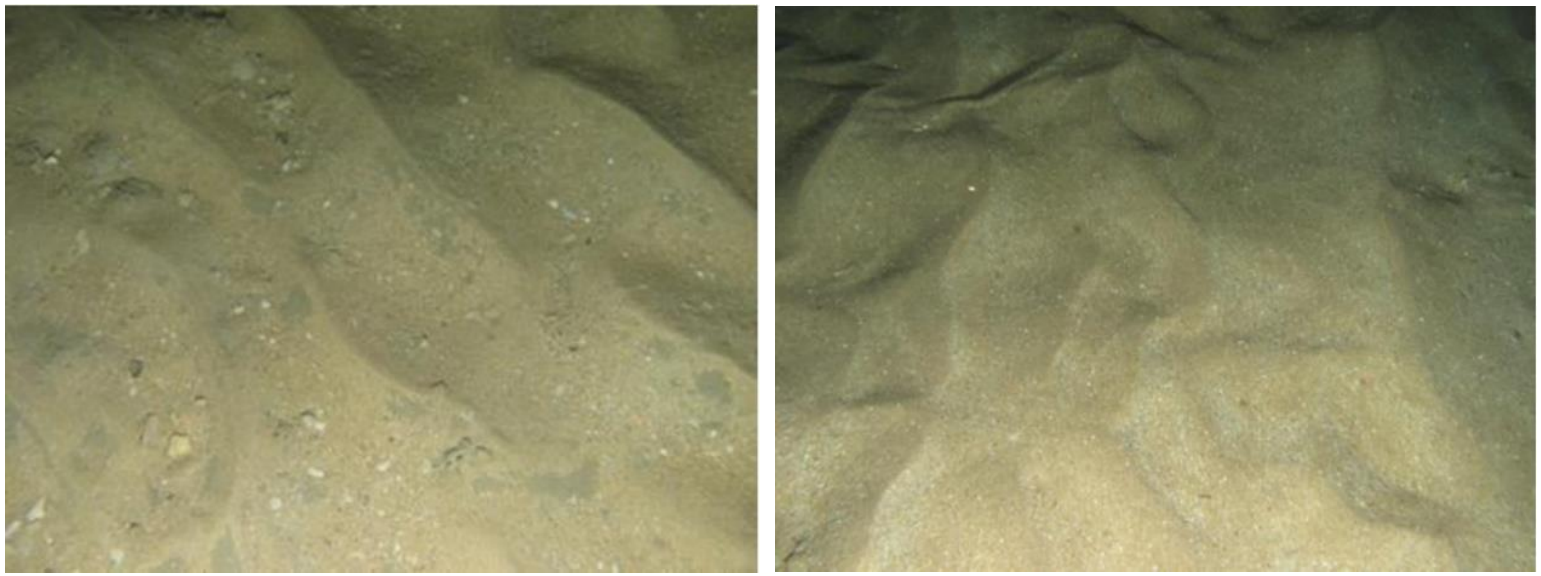

Figure 8.2.7: Example of rippled sand from stations UK_ENV_TR_01 and UK_ENV_TR_02

8.2.35 Close to the coast, the EUNIS biotope classification has been recorded as offshore circalittoral sand (EUNIS: MD52/ JNCC: SS.SSa.Osa) (Figure 8.2.8). Other biotope classifications for the rest of the Offshore Cable Corridor within UK waters included:

- Circalittoral coarse sediment (EUNIS: MC32/ JNCC: SS.SCS.CCS);
- Circalittoral fine sand or Circalittoral muddy sand (EUNIS: MC52/ JNCC: SS.SMu, CSaMu);
- Mixed faunal turf communities (EUNIS: A4.13 (EUNIS 2019)/ JNCC: CR.HCR.Xfa)
- Circalittoral coarse sediment (EUNIS: MC32/ JNCC: SS.SCS.CCS) with Mixed faunal turf communities;
- Circalittoral fine sand or Circalittoral muddy sand (EUNIS: MC52/ JNCC: SS.SMu.CSaMu/) with a band of Mixed faunal turf communities;
- Offshore circalittoral mixed sediment (EUNIS:MC42/ JNCC: SS.SMx.Omx); and
- Offshore circalittoral sand (EUNIS: MD52/ JNCC: SS.SSa.Osa).

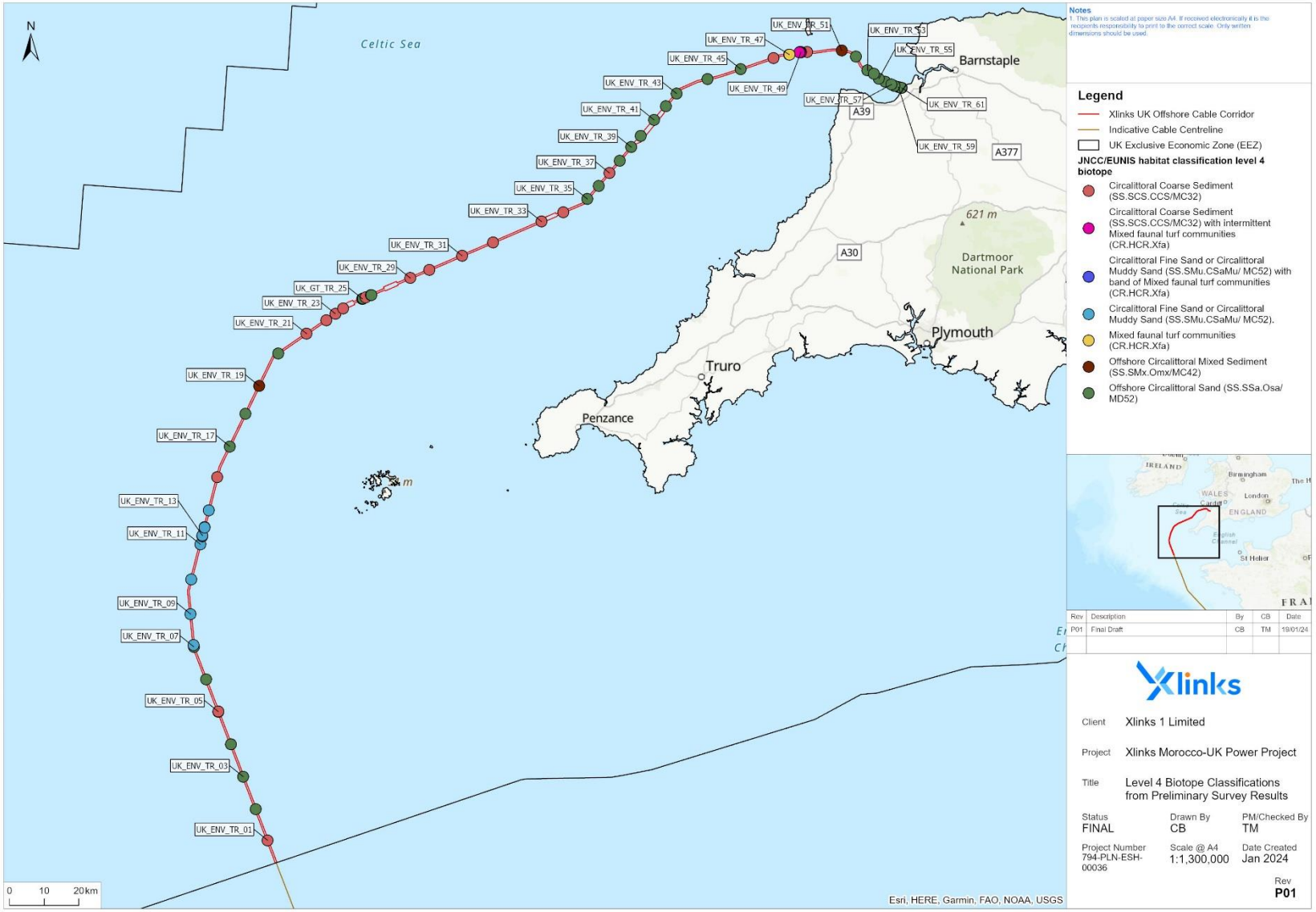

Figure 8.2.8: Level 4 Biotope Classifications from preliminary survey results

8.2.36 Records from the NBN Atlas from within the study area collected between 2013 and 2023 indicated a total of 7,081 individuals across 766 taxa within the benthic subtidal and intertidal study area (NBN Trust, 2023). Records indicated a faunal community rich in *cnidarians*, *porifera* and *arthropods*, with two taxa of *cnidarians* and five taxa of *porifera* within the top 10 recorded species (**Table 8.2.3**).

Table 8.2.3: Top 10 Benthic Species by number (n), from NBN Atlas Species Occurrence Data

Taxa	Taxonomic Group	Count, n
Axinella dissimilis	*Porifera*	218
Caryophyllia (Caryophyllia) smithii	*Cnidaria*	190
Raspailia (Raspailia) ramosa	*Porifera*	128
Cliona celata	*Porifera*	118
Eunicella verrucosa	*Cnidaria*	118
Marthasterias glacialis	*Echinodermata*	104
Serpulidae	*Annelida*	92
Homaxinella subdola	*Porifera*	90
Axinella	*Porifera*	81
Henricia	*Echinodermata*	79

8.2.37 OneBenthic indicated that faunal cluster groups (biotopes) were characterised by cluster group D2c within the Barnstaple Bay area with some a small area of cluster group D2d present (OneBenthic, 2023; **Table 8.2.4**; **Figure 8.2.9**). Through the SAC this becomes cluster group D2a which is the cluster group for the majority of the offshore sections of the route. Other cluster groups within the benthic ecology study area are shown in **Figure 8.2.9**and listed in **Table 8.2.4**.

Table 8.2.4: Characterising Taxa for Faunal Cluster Groups Identified Within the Benthic Subtidal and Intertidal Study Area and Surrounding area (Cooper and Barry, 2017). (A) = Amphipod crustacean, (B) = Bryozoan, (BC) = Barnacle Crustacean, (BM) = Bivalve Mollusc,

Cluster	Taxa
A2a	*Sabellariidae* (P)
A2b	*Sabellariidae* (P), *Serpulidae* (P), *Syllidae* (P), *Terebellidae* (P), *Spionidae* (P), *Capitellidae* (P), *Polynoidae* (P), *Styelidae* (T), *Lumbrineridae* (P), *Porcellanidae* (D), *Amphiuridae* (E), *Cirratulidae* (P), *Verrucidae* (BC)
B1b	*Spionidae* (P), *Serpulidae* (P), *Syllidae* (P), *Galatheidae* (D), *Glyceridae* (P), *Terebellidae* (P), *Phyllodocidae* (P), *Amphiuridae* (E), *Polynoidae* (P), *Capitellidae* (P), *Nemertea* (N), *Scalibregmatidae* (P), *Fibulariidae* (E), *Eunicidae* (P), *Lumbrineridae* (P), *Cirratulidae* (P)
C1a	*Spionidae* (P), *Terebellidae* (P), *Serpulidae* (P), *Syllidae* (P), *Capitellidae* (P), *Lumbrineridae* (P), *Sabellariidae* (P), *Nemertea* (N), *Polynoidae* (P), *Phyllodocidae* (P), *Glyceridae* (P), *Maldanidae* (P)
C1b	*Spionidae* (P), *Capitellidae* (P), *Terebellidae* (P), *Lumbrineridae* (P), *Ampeliscidae* (A), *Nemertea* (N), *Cirratulidae* (P), *Semelidae* (BM), *Ampharetidae* (P), *Phyllodocidae* (P), *Pholoidae* (P)
D2a	*Spionidae* (P), *Glyceridae* (P), *Nemertea* (N), *Terebellidae* (P), *Capitellidae* (P), *Fibulariidae* (E), *Syllidae* (P), *Phyllodocidae* (P), *Cirratulidae* (P), *Opheliidae* (P), *Lumbrineridae* (P), *Goniadidae* (P), *Polynoidae* (P), *Nephtyidae* (P), *Dorvilleidae* (P)

Cluster	Taxa
D2c	*Nephytidae* (P), *Spionidae* (P), *Opheliidae* (P), *Glyceridae* (P), *Bathyporeiidae* (A), *Nemertea* (N), *Terebellidae* (P), *Orbiniidae* (P), *Electridae* (B), *Urothoidae* (A), *Semelidae* (BM), *Capitellidae* (P), *Ophiuridae* (E), *Cirratulidae* (P), *Mysidae* (M), *Mactridae* (BM), *Phyllodocidae* (P), *Magelonidae* (P), *Lumbrineridae* (P), *Tellinidae* (BM)
D2d	*Bathyporeiidae* (A), *Spionidae* (P), *Magelonidae* (P), *Nephytidae* (P), *Tellinidae* (BM), *Cirratulidae* (P), *Semelidae* (BM), *Nemertea* (N),

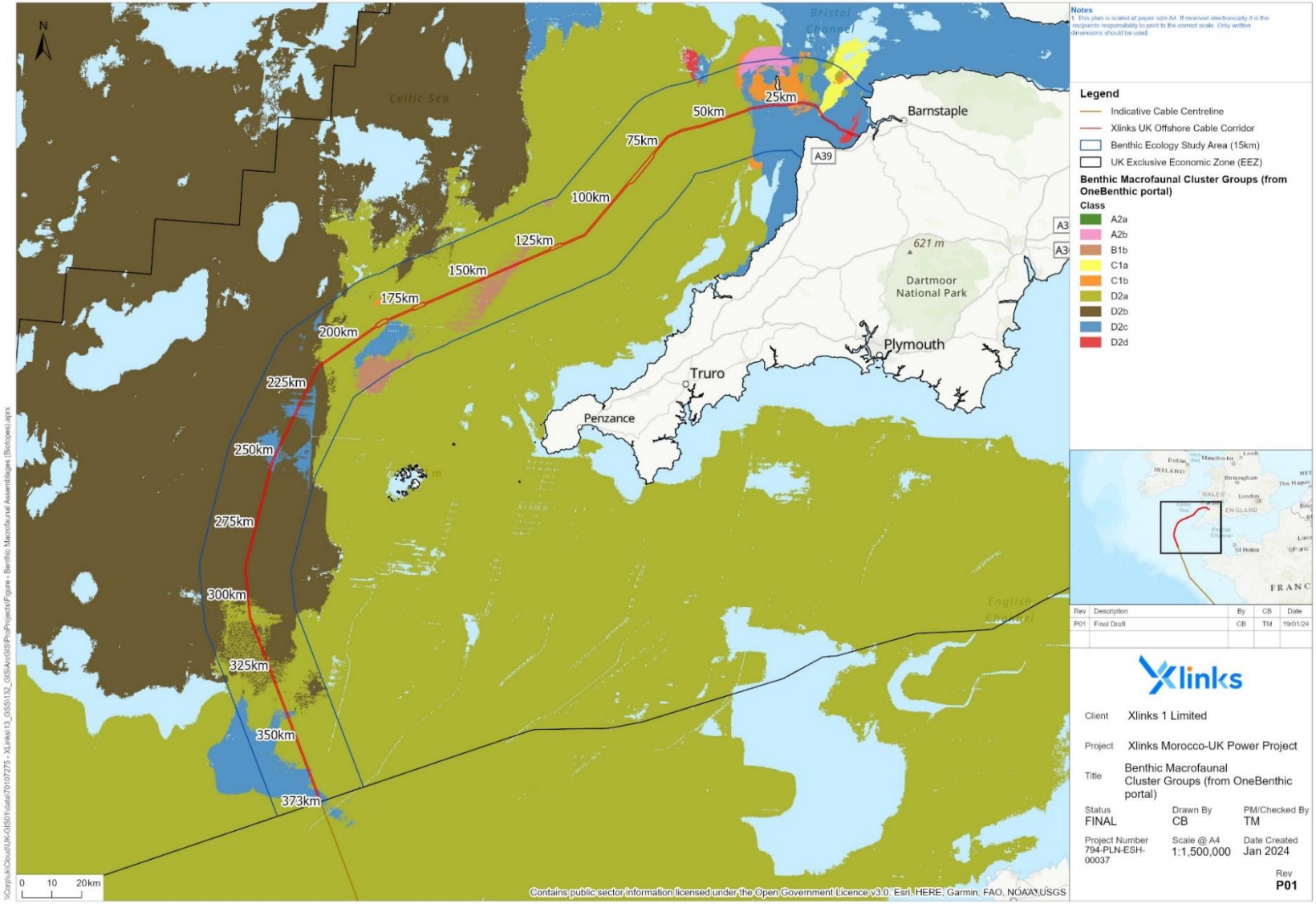

Figure 8.2.9: Benthic macrofaunal assemblages (biotopes) cluster groups modelled (from the OneBenthic portal) database

Annex I Habitats

8.2.38 In addition to Habitats Directive Annex I habitats protected within SACs as described above in the 'Designated Sites' Section, the subtidal DDV surveys identified areas of potential reef. There were areas of exposed bedrock that may be classified as Annex I 'bedrock reef' habitat. Areas of large cobbles and boulders were also observed in areas surrounding bedrock and were observed to contain large densities of colonising and encrusting fauna as well as numerous mobile fauna. These areas of cobble and boulders may be classed an Annex I 'stony reef', however the degree of 'reefiness' is dependent on extent, degree of colonisation, species observed within these areas and the distinctiveness from the surrounding seabed. The full extent of the areas showing characteristics of Annex I reefs will be analysed as part of the subsequent EIA process.

Future Baseline Conditions

8.2.39 The EIA process will consider the existing baseline conditions within the study area, and future baseline conditions (as far as reasonably practicable) in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report.

8.2.40 This will include consideration of the possibility of further marine protected areas becoming designated over the lifetime of the project as well as climate change effects.

8.2.41 There are numerous models covering the UK which simulate the possible change in climate and the UKCP18 (Defra 2019) indicate there could be increases in mean summer temperatures in the longer term and milder winters (influencing sea water temperature), changes in rainfall distribution and seasonality, more extremes of weather and sea level rise (Defra 2019).

8.2.42 A review of the anticipated changes in benthic ecology in the study area as a result of climate change will be provided within the EIA including consideration of the UKCP18 modelling outputs.

Scope of the Assessment

8.2.43 A range of potential impacts on benthic ecology have been identified, which may occur during the construction, operation and maintenance, and decommissioning phases of the Proposed Development.

8.2.44 The impacts that have been scoped into the assessment are outlined in **Table 8.2.5** together with a description of any additional data collection (e.g., site-specific surveys) and supporting analyses (e.g. modelling) that are proposed to enable a full assessment of the impacts.

8.2.45 Effects related to any potential UXO clearance works have been excluded from this Scoping Report and if required would be subject to a separate licence application.

Table 8.2.5: Impacts proposed to be scoped into the assessment for benthic ecology

Impact	Phase					Justification	Data collection and analysis proposed to characterise the baseline environment	Summary of the proposed approach to assessment
	C	Op	Op repair	D_{in} -situ	D remove			
Direct habitat loss	✓	×	✓	×	✓	Cable laying activities (trenching and construction disturbance) and laying rock protection e.g. over cable crossings, will result in a loss of habitat. During operation and maintenance, if cables need to be repaired, they will be exposed and replaced which would lead to further, temporary habitat loss. If cables are removed during decommissioning there may be a temporary loss of habitat. During HDD at the landfall there is potential for a 'frack-out' to occur that could result in a temporary loss of habitat.	Benthic ecology receptors located within the study area will be identified via desk-based review and review and analyses of the project-specific subtidal benthic ecology survey data.	The impact of habitat loss on benthic ecology will be assessed by reviewing the habitat and species community within the footprint of construction and decommissioning activities.
Physical habitat change	✓	✓	✓	✓	×	Rock berms (or concrete mattresses) will be required as armour protection for the cable at crossings (or in isolated very hard seabed areas) which will create new hard substrate habitat.		The impact of a physical change in habitat on benthic ecology will be assessed by reviewing the habitat and species community within the footprint of rock armouring activities.
Physical disturbance and displacement (disturbance of bottom sediments)	✓	×	✓	×	✓	Trenching, jetting activities, localised sediment movement (e.g. backfill pushing) and laying of cable protection will disturb bottom sediments. During HDD at the landfall there is potential for a 'frack-out' to occur that could result in physical disturbance and displacement at the site of the frack-out.		The impact of physical disturbance and displacement of bottom sediments on benthic ecology will be assessed by reviewing the habitat and species community within the likely sediment plume extent.

Impact	Phase					Justification	Data collection and analysis proposed to characterise the baseline environment	Summary of the proposed approach to assessment
	C	Op	Op repair	D_{in} -situ	D remove			
Changes to water quality (resuspension of sediments and increased sediment loading)	✓	×	✓	×	✓	Dredging and jetting activities will disturb bottom sediments and cause resuspension of sediments.		The impact of changes in water quality on benthic ecology will be assessed by reviewing the habitat and species community within the likely sediment plume extent and will be informed by the assessment on water quality.
Changes to water quality (release of hazardous substances)	✓	×	✓	×	✓	Trenching and jetting activities will cause resuspension of sediments that may contain hazardous substances (e.g., heavy metals, hydrocarbons or other toxic materials). HDD at the landfall also has the potential to release drilling fluids (e.g., 'breakout' of HDD drill slurry) which could be hazardous to benthic species. A small volume of inert fluid will be released during 'breakthrough' of the hole opening. There is also a risk of accidental spillages from vessels of oil and other hazardous substances.		The impact of changes in water quality on benthic ecology will be assessed by reviewing the habitat and species community within the likely sediment plume extent and will be informed by the assessment on water quality. An assessment of the likelihood of a breakout and the HDD 'exit' methods will also be conducted.
Introduction and spread of INNS	✓	×	✓	×	✓	Project vessels may bring invasive non-native species on their hulls or in ballast water to the project site. INNS can also be introduced and spread by introduction of structures (crossing infrastructure) to the marine environment.		The impact of the introduction of invasive non-native species on benthic ecology will be assessed by reviewing the habitat and species community currently present and assessing the potential for invasive species to be introduced to the project site.

Impact	Phase					Justification	Data collection and analysis proposed to characterise the baseline environment	Summary of the proposed approach to assessment
	C	Op	Op repair	D_{in} -situ	D remove			
Change in hydrodynamic regime (scour & accretion)	×	✓	×	✓	×	Changes in seabed bathymetry as a result of rock berms have the potential to create changes in the hydrodynamic regime that could create localised areas of scour and accretion.		The impact of changes in hydrodynamic regime on benthic ecology will be assessed by reviewing the habitat and species community within the study area and will be informed by the assessment on hydrodynamics.
Underwater noise and vibration	✓	×	×	×	×	Horizontal Directional Drilling (HDD) at the landfall will generate underwater noise and vibration that may affect some benthic invertebrate species.		Information relating to the potential effect of underwater noise and vibration on benthic invertebrates is limited. However, published information relating to effects on benthic species at different noise levels will be referred to as appropriate, and where available.
Sediment heating	×	✓	✓	×	×	HVDC cables generate heat that can be transferred to the nearby sediment, heating up the benthic habitat.		The impact of sediment heating on benthic ecology will be assessed by reviewing the habitat and species community within the study area and will be informed by literature/desk based review of heat generation associated with this cable type.
EMFs from the cable	×	✓	✓	×	×	HVDC cables generate EMFs that could have an effect on some EMF-sensitive benthic species. The magnitude of potential EMF will be characterised at PEIR and ES, noting that for HVDC cables EMF generation is generally very low.		The impact of EMF on benthic ecology will be assessed by reviewing the habitat and species community within the study area and will be informed by literature/desk based review of EMF associated with this cable type.

*C=Construction phase, Op=Operational phase, Op_{repair}=Operational phase repair activities, $D_{in\text{-}situ}$=Decommissioning phase assuming cable de-energised and left *in-situ,* D_{remove}=Decommissioning phase assuming cable removed

8.2.46 No impacts have been proposed to be scoped out of the assessment for benthic ecology, however, some activities have been excluded as set out in **paragraph 8.2.45**.

Measures Adopted as Part of the Proposed Development

8.2.47 The following measures adopted as part of the Proposed Development are relevant to benthic ecology, considered in addition to the overarching design and embedded measures in **section 4.8** and **Table 4.8.2.** These measures may evolve as the engineering design and the EIA progresses.

- In addition to the Biosecurity Plan, to further minimise the risk of introducing non-native species, particularly contained in ballast water, all ships subject to the Ballast Water Management Convention (2017) requirements will be obliged to conduct ballast water management in accordance with the Convention.
- All hazardous materials will be required to be stored and managed in accordance with best practice guidance.
- Bentonite will be used during HDD as the best practice lubricant. Bentonite acts as a clay platelet grout, effectively sealing fractures.
- A pressurised drill fluid system would be used during HDD that allows monitoring of pressure loss at all times, meaning that any loss of pressure and potential break out will be identified quickly.
- The majority of HDD drill arisings and used fluid from HDD will be collected and disposed of responsibly from the landward drill entry site. It should be noted that a small volume of drill fluid will be lost when the HDD breaks through the seabed.

Proposed Assessment Methodology

8.2.48 The benthic ecology assessment for the offshore elements of the Proposed Development will be undertaken in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report, in addition to the following established guidance:

- Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2018)

8.2.49 The assessment approach will be based on the conceptual ‘source-pathway-receptor’ model. This model identifies likely environmental effects resulting from the construction, operation, maintenance and decommissioning of the Proposed Development. This process provides an easy to follow assessment route between effect sources and potentially sensitive receptors ensuring a transparent impact assessment. The parameters of this model are defined as follows:

- source: the origin of a potential effect (noting that one source may have several impact pathways and associated receptors); e.g. a construction activity;
- pathway: the link or interaction ‘pathway’ by which the effect of the activity could influence a receptor; and

- receptor: the element of the receiving environment that is affected.

8.2.50 Iterative steps involved in the assessment approach will include:

- determination of potential interactions between the Proposed Development and ecological receptors (for construction and operation and maintenance phases);
- definition of benthic ecology environment within the influence of the Proposed Development;
- assessment of the value and sensitivity of benthic ecological receptors;
- assessment of the magnitude of impact;
- assessment of the significance of effects;
- proposal of mitigation measures to reduce, prevent or where these are not possible, to offset, any adverse significant effects;
- assessment of the residual effects after any mitigation measures have been considered; and
- assessment of cumulative effects.

8.2.51 In some instances, the Proposed Development will retain flexibility in terms of the options for methods and approaches to be applied during the construction phase. Where this is the case, for each combination of effect and receptor, the assessment will be based on the PDE (**paragraph 5.4.5**) and where this approach has been taken it will be clearly indicated in the ES chapter together with a definition of the maximum design scenario for the specific assessment.

Potential Cumulative Effects

8.2.52 There is potential for cumulative effects on sensitive receptors to occur when the Proposed Development is considered together with other developments. The potential cumulative effects between the offshore elements of the Proposed Development and other developments with respect to benthic ecology will be considered within the PEIR and the ES.

8.2.53 The cumulative effects assessment would be undertaken in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report and CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland (2018).

Potential Inter-related Effects

8.2.54 The assessment of potential inter-related effects will be considered within the benthic ecology EIA. It will include consideration of project lifetime effects and receptor-led effects in line with the approach outlined **Section 5:** EIA Methodology, of the Scoping Report. The following inter-related effects have been identified for consideration:

- Fish and Shellfish Ecology:
  - Impacts on benthic ecology receptors will affect prey availability for some species of fish and shellfish.
- Water and sediment quality change (Physical Processes change):

- Impacts from the disturbance of sediment (including potentially contaminated sediment) during construction of the offshore elements of the Proposed Development may impact benthic habitats and species within the benthic ecology study area.

8.2.55 Where effects on marine mammals and ornithology receptors are assessed to have the potential to be significant, the inter-related effects with benthic ecology receptors will be considered.

Potential Transboundary Impacts

8.2.56 A screening of transboundary impacts has been carried out and is presented in **Appendix A**: Transboundary Impacts Screening. This screening exercise identified that there is potential for transboundary impacts upon benthic ecology due to construction, operational and maintenance and decommissioning impacts of the Proposed Development.

8.2.57 The suspension of sediment as a result of dredging during pre-lay activities and burial activities during cable laying will result in a sediment plume that could potentially cause some transboundary effects, particularly close to the French EEZ.

8.2.58 No other effects on benthic ecology receptors are likely to be transboundary other than those occurring at the boundary of the UK EEZ.

8.3 Fish and Shellfish Ecology

Introduction

8.3.1 This section of the Scoping Report identifies the fish and shellfish ecology receptors relevant to the offshore elements of the Proposed Development. The potential impacts arising from the construction, operation and maintenance, and decommissioning of the Proposed Development are considered. An outline is provided of the proposed scope of, and methodology for, the EIA process for the fish and shellfish ecology section.

Relevant Policy, Legislation and Guidance

Legislative and Policy Context

8.3.2 The following key legislation and policy documents specific to fish and shellfish ecology will be considered within the assessment process.

International

- The Convention on the Conservation of Migratory Species of Wild Animals (the 'Bonn Convention');
- The Convention on the Conservation of European Wildlife and Natural Habitats (the 'Bern Convention');
- The OSPAR Convention;
- EU Directive 2008/56/EC – Marine Strategy Framework Directive;

- The European Biodiversity Strategy to 2030;
- Ramsar Convention (1976);
- Espoo Convention (1997); and
- International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM).

National

- The Conservation of Habitats and Species Regulations 2017 (as amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019);
- Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended);
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017;
- Planning Act 2008 (as amended);
- Marine and Coastal Access Act 2009;
- Infrastructure Planning (EIA) Regulations 2017 (as amended);
- Marine Works (EIA) Regulations 2007 (as amended);
- Environment Act 2021;
- The Eels (England and Wales) Regulations 2009;
- Natural Environment and Rural Communities (NERC) Act 2006 (England); and
- Wildlife and Countryside Act (1981 as amended).

Guidance Documents

8.3.3 Guidance documents relevant to fish and shellfish ecology that will be considered within the assessment process include the following:

- UK Marine Policy Statement;
- Sound Exposure Guidelines for Fish (Popper et al., 2014); and
- CIEEM guidelines for Ecological Impact Assessment for Terrestrial, Freshwater and Coastal Environments (2018).

Study Area

8.3.4 The fish and shellfish ecology study area comprises the Offshore Cable Corridor with a 30 km buffer area (**Figure 8.3.1**). It is anticipated that this study area will allow for robust characterisation of the mobile fish and shellfish species, as well as encompassing the ZOI.

8.3.5 The study area will be informed by physical processes and underwater noise modelling which, depending on extent, may form specific study areas for consideration of those impact pathways. The study area will be further refined through the PEIR, as informed by consultation with statutory and non-statutory consultees with the final study area presented in the ES.

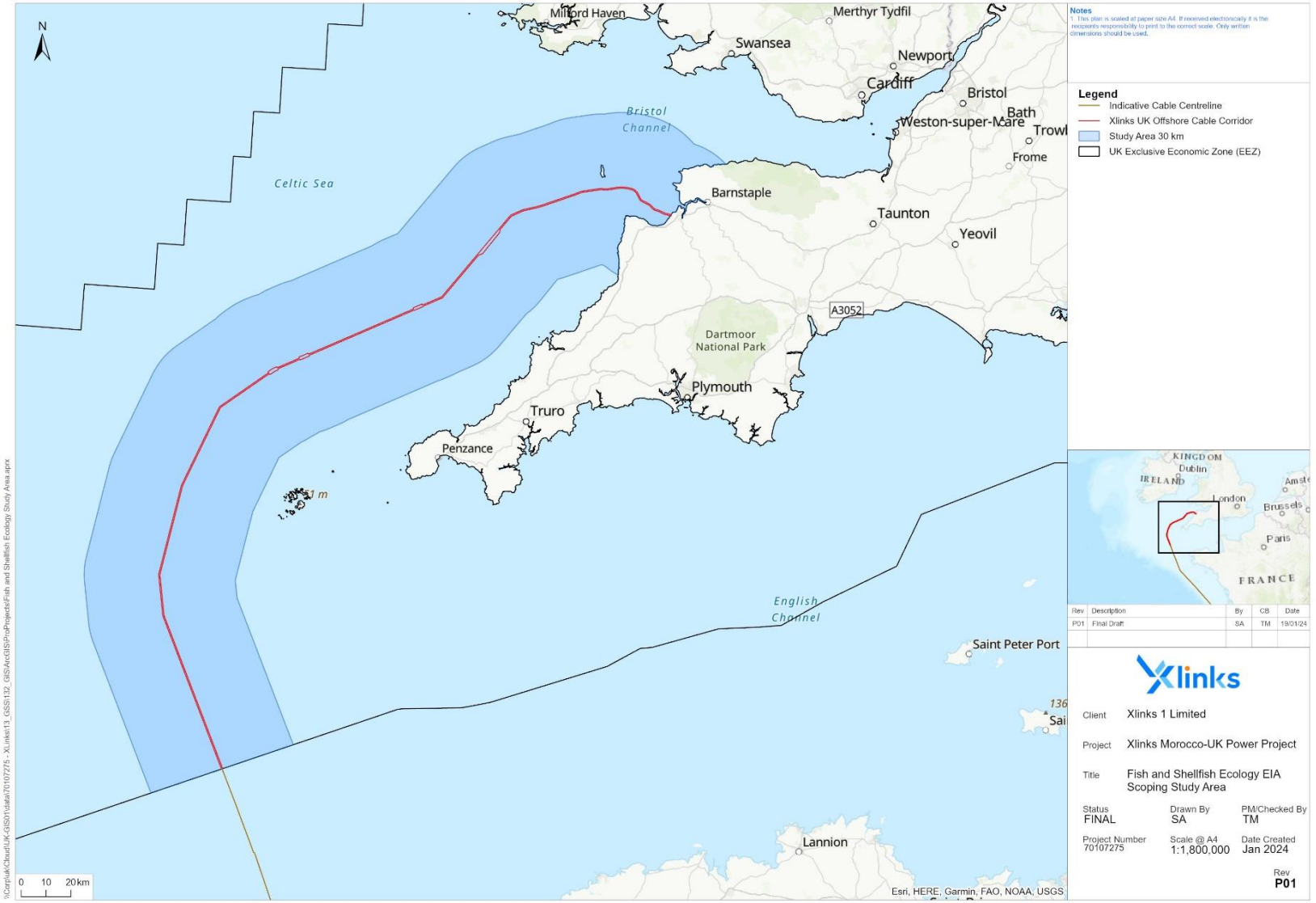

Figure 8.3.1: Fish and shellfish study area

Data Sources

8.3.6 The data sources used to inform the baseline assessment will primarily comprise published material which is publicly available online. An initial desk-based review has identified several data sources which provide baseline data coverage of the study area.

8.3.7 Existing data from the desktop study is sufficient for the Proposed Development due to the presence of a number of recent marine and estuarine fish survey data sets (e.g. EA, 2023; Lynam and Ribeiro, 2022). As such site-specific fish and shellfish surveys are not considered necessary. Site specific data collected as part of benthic characterisations provides further information on the fish and shellfish ecology of the area.

8.3.8 The baseline data sources identified in this Scoping Report will remain under review and may be updated in response to feedback from relevant statutory and non-statutory consultees during the EIA process, or in response to new sources of information becoming available.

Desk-based Data Sources

8.3.9 To inform this Scoping Report section, a high-level desk based assessment has been conducted for fish and shellfish receptors using a range of existing ecological data (**Table 8.3.1**).

Table 8.3.1: Desk based baseline data sources – fish and shellfish

Source	Summary
European Marine Observation and Data Network (EMODnet), 2023	Predicted benthic habitat map to inform likely fish and shellfish assemblages.
Lynam and Ribeiro, 2022	Northeast Atlantic groundfish data from scientific trawl (beam and otter) surveys 1983 to 2020.
Environment Agency - The National Fish Populations Database (NFPD), 2023a; 2023b	Fish Counts for Estuaries surveyed using a range of techniques (e.g., fyke, seine, trammel nets) 1981 to 2023. Fish Counts for freshwater environments surveyed, including diadromous species, using a range of techniques (e.g., electric fishing, seine netting) 1975 to 2023.
Marine Management Organisation (MMO), 2023	Landing statistics between 2014 and 2022 by International Council for the Exploration of the Sea (ICES) rectangle.
Ellis *et al*., 2012	Shapefiles of spawning and nursery grounds for key fish species.
Bendall *et al*., 2012; 2013	Spurdog, porbeagle and common skate bycatch and movements.
Queiroz *et al*., 2010	Short-term movements of satellite-tracked blue sharks.
Bloomfield and Solandt, 2006	The Marine Conservation Society Basking Shark Watch 20-year report.
Southall *et al*., 2005	Spatial distribution patterns of basking sharks on the European shelf: preliminary comparison of satellite-tag geolocation, survey and public sightings data.
Sims *et a*l., 2003	Seasonal movements and behaviour of basking sharks from archival tagging.
Coull *et a*l., 1998	Shapefiles of spawning and nursery grounds for key fish species.

Source	Summary
Defra Magic Map	Geographic information about the natural environment from across government.

Site-specific Survey Data

8.3.10 In addition to the data sources identified above, the results from the following benthic site-specific surveys in **Table 8.3.2** will inform the baseline assessment for fish and shellfish receptors.

Table 8.3.2: Site-specific surveys – fish and shellfish

Source	Summary
Subtidal Grab surveys	51 grab stations along the UK section of the Offshore Cable Corridor. The majority of stations were sampled with a DVV grab (2 x 0.1 m^2) with stations with coarser sediments sampled with a 0.01 m^2 mini-Hamon grab. Samples were acquired during Autumn 2023 to provide data on physico-chemistry and macrofauna at sampling stations. Water sampling using a multi-parameter CTD sensor was taken at every third station in the deeper offshore sections of the Offshore Cable Corridor, with samples increasing to every station in water depths of less than 50 m.
Subtidal Drop-Down Video (DDV) surveys	Seabed video footage was acquired during Autumn 2023 to ground-truth all grab locations, features of interest and to facilitate a habitat assessment. A total of 61 camera transects were acquired across the survey area using a STR Seabug system mounted on a camera sled or a Freshwater Lens system.

Baseline Environment

8.3.11 The assessment of the fish and shellfish ecology baseline environment seeks to determine the receptors which may be impacted by the Proposed Development and subsequently require assessment in the fish and shellfish section of the ES.

8.3.12 The Proposed Development is located in the Celtic Sea, with landfall in the Bristol Channel (Cornborough, North Devon), following a path West of the Cornish coast and Isle of Scilly to the EEZ boundary. An array of sediment types is expected to occur along the Offshore Cable Corridor, including sand, coarse sediment, muddy sand, mixed sediment and circalittoral rock.

Designated Sites

8.3.13 Sites designated for the protection of fish or shellfish within the study area are illustrated in **Figure 8.3.2**. The features included are those that inhabit the marine environment at some point in their lifecycle (i.e., not wholly freshwater features).

8.3.14 East of Haig Fras Marine Protected Area (MPA) is designated for fan mussel *Atrina fragilis* and Bideford to Foreland Point MPA is designated for spiny lobster *Palinurus elephas.* Both of these sites are located within the study area.

8.3.15 Shellfish water protected areas are waters designated (under the WFD Regulations 2017) to protect and develop economically significant shellfish production. Taw-Torridge Estuary, Torridge Estuary and Taw Estuary WFD Shellfish Water Protected Areas are located 4.7 km north of the landfall and are designated for the production of bivalves (Defra, 2022).

8.3.16 No other sites with fish or shellfish as designated features overlap with the study area. However, it should be noted that the Severn Estuary SAC, Pembrokeshire Marine/Sir Benfro Forol SAC and Carmarthen Bay and Estuaries/Bae Caerfyrddin ac Aberoedd SAC are located 79 km, 51 km and 42 km away from the Offshore Cable Corridor.

8.3.17 Severn Estuary SAC is designated for sea lamprey *Petromyzon marinus*, river lamprey *Lampetra fluviatilis* and twaite shad *Alosa fallax*. Carmarthen Bay and Estuaries SAC has twaite shad listed as a species of primary reason for selection, with sea lamprey, river lamprey and allis shad *Alosa alosa* listed as qualifying features that are not the primary reason for site selection. Sea lamprey, river lamprey, allis shad and twaite shad are listed as qualifying features that are not the primary reason for site selection for Pembrokeshire Marine SAC.

8.3.18 The Severn Estuary is also designated as a Ramsar Site, which has migratory fish species as a qualifying feature. This includes sea lamprey, river lamprey, twaite shad, allis shad, Atlantic salmon *Salmo salar*, sea trout *Salmo trutta* and European eel *Anguilla anguilla*. Estuarine and marine fish species are also listed as sub features and include species such as sprat *Sprattus sprattus*, herring *Clupea harengus*, bib *Trisopterus luscus*, conger eel *Conger conger*, red mullet *Mullus barbatus* and Norway pout *Trisopterus esmarkii*. Many of these species are highly migratory and are therefore likely to migrate through and utilise areas within the study area. For example, twaite shad tagged within the River Severn have been found to utilise the Taw-Torridge Estuary during the marine phase of their life cycle (Davies *et al*., 2020).

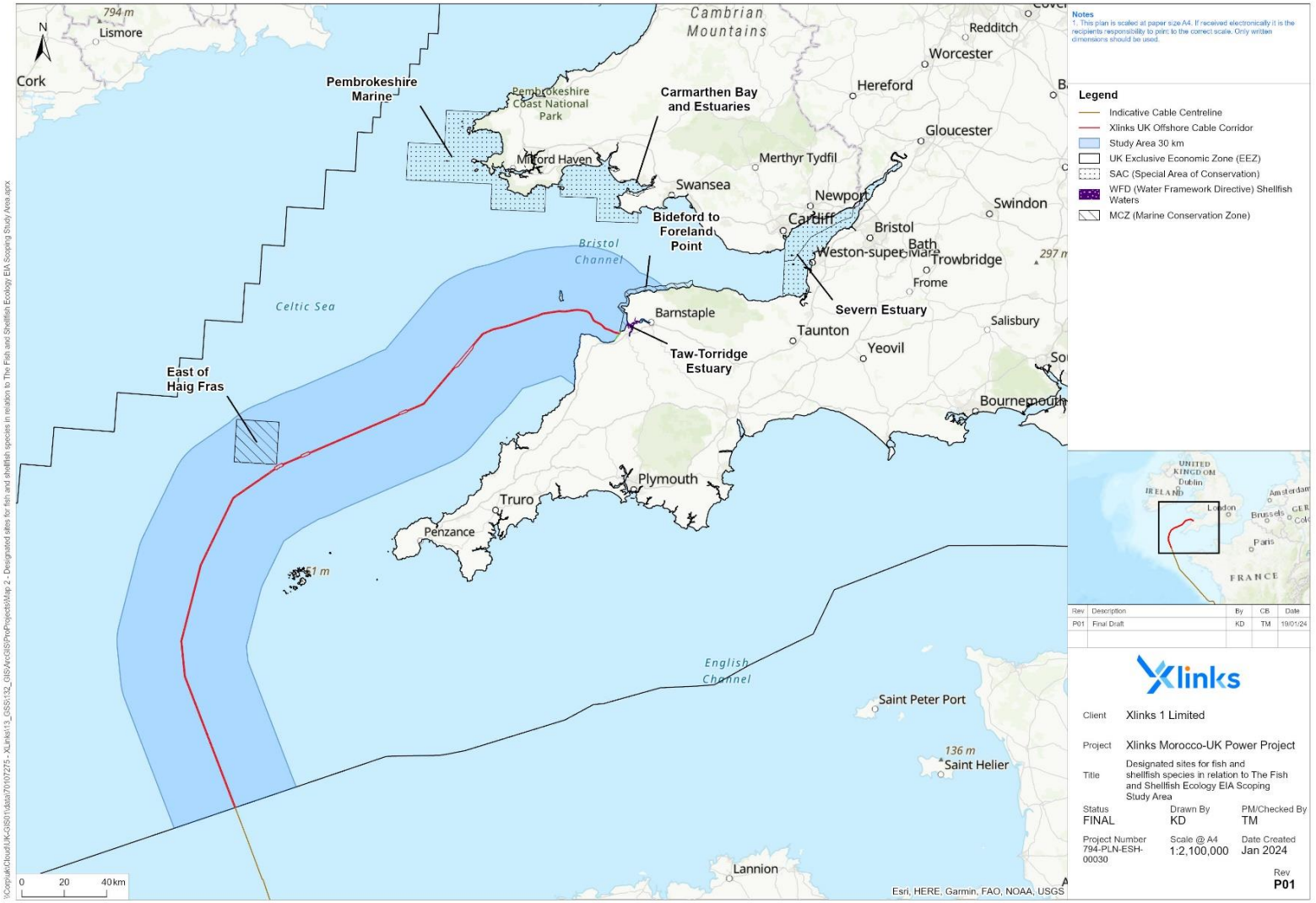

Figure 8.3.2: Designated sites with fish and shellfish features

Fish and Shellfish

Finfish

8.3.19 Benthic and demersal finfish of commercial importance in the study area include hake *Merluccius merluccius*, megrim *Lepidorhombus whiffiagonis*, anglerfish *Lophius* sp., haddock *Melanogrammus aeglefinus*, lemon sole *Microstomus kitt*, sole *Solea solea*, turbot *Scophthalmus maximus* and plaice *Pleuronectes platessa* (Lynam and Ribeiro, 2022; MMO, 2023). Pelagic species of commercial importance include horse mackerel *Trachurus trachurus*, mackerel *Scomber scombrus*, herring and sprat. Additionally, there are many species of finfish with little commercial value including scaldfish *Arnoglossus imperialis*, common dragonet *Callionymus lyra*, boar fish *Capros aper*, Norwegian topknot *Zeugopterus norvegicus* and goby *Pomatoschistus* sp. (Lynam and Ribeiro, 2022).

8.3.20 Beam trawl and seine net surveys conducted at the mouth of the River Taw and River Torridge (approximately 5 km from landfall) found an assemblage typical of sand habitats with an abundance of common goby *Pomatoschistus microps*, lesser weaver *Echiichthys vipera*, plaice, sand smelt *Atherina presbyter*, lesser sand eel *Ammodytes tobianus* and sea bass *Dicentrarchus labrax*. Other species caught included brill *Scophthalmus rhombus*, dab *Limanda limanda*, sprat, sand goby *Pomatoschistus minutus*, greater sand eel *Hyperoplus lanceolatus* and common dragonet.

Elasmobranchs

8.3.21 Elasmobranchs are fish with a skeletal structure composed of cartilage and many are listed on the International Union for Conservation of Nature (IUCN) Red List. Species of skate and ray previously found within the study area include common skate complex *Dipturus batis*, shagreen ray *Leucoraja fullonica*, cuckoo ray *Leucoraja naevus*, blonde ray *Raja brachyura*, thornback ray *Raja clavata*, small eyed ray *Raja microocellata*, spotted ray *Raja montagui* and deep-water ray *Rajella bathyphila* (Lynam and Ribeiro 2022; MMO, 2023). Of these, common skate is listed as Critically Endangered on the IUCN Red List, with Shagreen ray, blonde ray, thornback ray and small eyed ray being listed as Near Threatened.

8.3.22 Small catches of undulate rays *Raja undulata* have been recorded across the study area (MMO, 2023) and there are records of electric ray *Torpedo marmorata* from trawls conducted off the north coast of Cornwall (Lynam and Ribeiro, 2022). However, records are sparse and as such the study area is unlikely to support large populations of undulate ray or electric ray.

8.3.23 Shark species recorded in the study area, from otter and beam trawls, include lesser spotted catshark *Scyliorhinus canicula*, tope *Galeorhinus galeus*, spurdog *Squalus acanthias*, nursehound *Scyliorhinus stellaris* and smoothhound *Mustelus* sp. (Lynam and Ribeiro 2022; MMO, 2023). Spurdog is listed as Endangered on IUCN Red List, nursehound and starry smoothhound *Mustelus asterias* is listed as Near Threatened and tope and common smoothhound *Mustelus mustelus* are listed as Vulnerable.

8.3.24 Basking sharks are a highly mobile migratory species with migration routes covering large distances from the north of Scotland to North Africa, and occasionally between the UK and America (Johnston *et al.*, 2019). Geolocations

from tagged sharks, survey sightings and public sightings indicate an abundance of basking sharks around the coast of Devon and Cornwall and in the East Celtic Sea (Southall *et al*., 2005; Bloomfield and Solandt, 2006; Doherty *et al*., 2017; de Boer *et al*., 2018). Basking sharks are listed as Endangered on IUCN Red List and protected under various international conventions including Convention on the Conservation of Migratory Species (Bonn Convention) and the United Nations Convention of the Law of the Sea (UNCLOS).

8.3.25 Other species of large migratory shark likely to occur within the study area include blue shark *Prionace glauca* and porbeagle *Lamna nasus*, with records of blue shark off the south coasts of Devon and Cornwall (Queiroz *et al*., 2010; de Boer *et al*., 2018; MMO, 2023) and porbeagle off the North and South coasts of Cornwall (Bendall *et al*., 2012; 2013). Blue shark is listed as Near Threatened and porbeagle as Critically Endangered on the IUCN Red List.

Shellfish

8.3.26 Shellfish communities contribute to the biodiversity of the benthic ecosystem and are an important link in the food chain, both as predators and prey. Key commercial species along the Offshore Cable Corridor include common whelk *Buccinum undatum*, brown crab *Cancer pagurus*, nephrops *Nephrops norvegicus*, European lobster *Homarus gammarus*, king scallop *Pecten maximus* and queen scallop *Aequipecten opercularis* (MMO, 2023). Other commercially important species include spider crab *Maja brachydactyla*, cuttlefish (*Sepia* sp.), octopus (*Eledone cirrhosa* & *Octopus vulgaris*), squid (various species), crawfish *Palinurus elephas* and velvet swimming crabs *Necora puber*.

8.3.27 Beam trawls conducted within the study area between 2016 and 2019 have indicated an abundance of common cuttlefish *Sepia officinalis*, velvet swimming crab, king scallop, brown crab and European lobster (Lynam and Ribeiro, 2022). Other commercially important species have included queen scallop *Aequipecten opercularis*, long-finned squid *Loligo forbesi* and elegant cuttlefish *Sepia elegans*. Non commercially important shellfish species likely to occur within the study area includes shrimp *Crangon allmanni*, harbour crab *Liocarcinus depurator*, shiny nut clam *Nucula nucleus*, hermit crab *Pagurus* sp. and bobtail squid *Sepiola* sp. (Doyle *et al*., 2011).

8.3.28 Mapped Nephrops grounds can be found approximately 20 km west of the Offshore Cable Corridor at ICES statistical rectangles 28E2 and 29E3 (Doyle *et al*., 2011). Additional records of Nephrops caught in trawls exist 5 km east of the Offshore Cable Corridor in ICES rectangle 28E3 and 28 km west in ICES rectangle 27E2 (Lynam and Ribeiro, 2022).

Diadromous

8.3.29 Diadromous species are those which move between the marine environment and freshwater at different stages of their life cycle and may migrate along or through the study area. The Severn Estuary and Bristol Channel are home to several diadromous species including allis shad, twaite shad, Atlantic salmon, sea trout, river and sea lamprey and European eel (Davies *et al*., 2020; EA, 2023a). Atlantic salmon, European eel, brown/sea trout, river lamprey and twaite shad also occur within the Taw-Torridge Estuary and connected tributaries, the mouth of which is located 4.7 km north of the landfall (Davies *et al*., 2020; EA, 2023a; 2023b).

8.3.30 With the exception of sea trout and eels, all of these migratory fish species are listed on Annex II of the Habitats Directive (Council Directive 92/43/EEC) which makes provision for their protection through designation of SACs. No SACs designated for diadromous species are within the study area, however a number of SACs and Ramsar sites designated for diadromous species exist within the Bristol Channel and adjacent areas.

Spawning and Nursery Grounds

8.3.31 A number of fish species are known to have spawning and/or nursery areas in the study area and also along the Offshore Cable Corridor. Data from Cefas (Ellis *et al*., 2012) and fisheries sensitivity maps (Coull *et al*., 1998) provides spatially explicit maps of the nursery/spawning areas for key species.

8.3.32 Spawning grounds are defined as areas whereby species produce eggs. The study area and Offshore Cable Corridor overlaps with spawning grounds for cod, hake *Merluccius merluccius*, horse mackerel, ling *Molva molva*, mackerel, plaice, sand eel, sole, whiting *Merlangius merlangus*, lemon sole, sole and sprat (Coull *et al*., 1998; Ellis *et al*., 2012).

8.3.33 Nursery grounds are defined as areas occupied by young fish or shellfish. The study area and Offshore Cable Corridor overlaps with nursery grounds for anglerfish *Lophius piscatorius*, blue whiting *Micromesistius poutassou*, common skate, hake, ling, mackerel, plaice, sand eel, sole, spotted ray, spurdog, thornback ray, tope, whiting and lemon sole (Coull *et al*., 1998; Ellis *et al*., 2012). Nephrops spawning and nursery grounds are located 8 km west at 29E3 (Coull *et al*., 1998).

Future Baseline Conditions

8.3.34 The EIA process will consider the existing baseline conditions within the study area, and future baseline conditions (as far as reasonably practicable), in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report.

8.3.35 This will include consideration of the possibility of further marine protected areas becoming designated over the lifetime of the project as well as climate change effects.

8.3.36 There are numerous models covering the UK which simulate the possible change in climate and the UKCP18 (Defra 2019) indicate there could be increases in mean summer temperatures in the longer term and milder winters (influencing sea water temperature), changes in rainfall distribution and seasonality, more extremes of weather and sea level rise (Defra 2019).

8.3.37 The baseline environment will exhibit some degree of natural change over time, even if the Proposed Development was not to proceed. A key consideration in assessing the future baseline conditions is the influence of climate change on fish and shellfish communities. Climate change has the potential to alter fish and shellfish species distribution and abundance. For example, by altering spawning periods, growth, maturation and migratory cues.

Scope of the Assessment

8.3.38 A range of potential impacts on fish and shellfish receptors have been identified, which may occur during the construction, operation and maintenance, and decommissioning phases of the Proposed Development.

8.3.39 The impacts that have been scoped into the assessment are outlined in **Table 8.3.3** together with a description of any additional data collection (e.g., site-specific surveys) and supporting analyses (e.g., modelling) that will be required to enable a full assessment of the impacts.

8.3.40 Potential impacts scoped out of the assessment are presented in **Table 8.3.4** with justification for why the impact may be scoped out.

Table 8.3.3: Impacts proposed to be scoped into the assessment for fish and shellfish ecology

Impact	Phase					Justification	Data collection and analysis proposed to characterise the baseline environment	Summary of the proposed approach to assessment
	C	Op	Op repair	$D_{in-situ}$	D remove			
Direct habitat loss	✓	×	✓	×	✓	Seabed preparation activities, laying of cables and laying of rock berms e.g. over cable crossings will result in temporary and/or long term habitat loss. During operation and maintenance, if cables need to be repaired they will be exposed and replaced which would lead to temporary habitat loss. If cables are removed during decommissioning, there may be a loss of habitat. Frack-out along the HDD may cause loss of intertidal habitat; this is unlikely but is scoped in for assessment within the PEIR and ES.	Fish and shellfish ecology receptors located within the study area will be identified using desk-based analysis, with benthic ecology desk-based analysis and site-specific surveys informing habitat type and sediment characteristics.	The impact of temporary habitat loss on fish and shellfish ecology will be assessed by reviewing the receptors within the footprint of construction, operation and maintenance and decommissioning activities.
Temporary increase in suspended sediments and sediment deposition	✓	×	✓	×	✓	Seabed preparation activities, cable burial, repairs and removal may cause an increase in suspended sediments, which may result in smothering of eggs, blockage of feeding apparatus and may form a temporary barrier to movements and migration.	Fish and shellfish ecology receptors located within the study area will be identified using desk-based analyses.	The impact of suspended sediments on fish and shellfish ecology will be assessed by reviewing the receptors within the (impact specific) ZOI and will be informed by physical processes modelling (quantitative or qualitative).

Impact	Phase					Justification	Data collection and analysis proposed to characterise the baseline environment	Summary of the proposed approach to assessment
	C	Op	Op repair	$D_{in-situ}$	D remove			
Injury and disturbance from noise and vibration	✓	×	✓	×	✓	Noise generating activities (construction type activities) — including trenching and HDD at the landfall — will generate underwater noise and vibration that may affect fish and shellfish species.	Fish and shellfish ecology receptors located within the study area will be identified using desk-based analyses.	The potential effect of underwater noise and vibration on fish and shellfish will be assessed using published data on noise thresholds and will be informed by underwater noise modelling where required.
EMF effects	×	✓	✓	×	×	Power cables generate EMFs that could have an effect on some EMF-sensitive species (particularly elasmobranch species). The magnitude of potential EMF will be characterised at PEIR and ES, noting that for HVDC cables EMF generation is generally very low.	Fish and shellfish ecology receptors located within the study area will be identified using desk-based analysis.	The impact of EMF on fish and shellfish ecology will be assessed by reviewing the species community within the study area and will be informed by characterisation/data of cable EMF.
Habitat alteration	×	✓	✓	×	×	Cable protection (rock berms) may result in long term habitat alteration by creating new hard substratum habitats. This may negatively impact species that depend on the baseline sediment type (e.g. for spawning activities) but also has the potential to positively impact receptor groups that favour rocky substratum.	Fish and shellfish ecology receptors located within the study area will be identified using desk-based analysis, with benthic ecology desk-based analysis and site-specific surveys informing habitat type and sediment characteristics.	The impact of habitat alteration on fish and shellfish ecology will be assessed by reviewing the receptors within the footprint of rock protection and rock berm laying.
Collision risk to basking shark	✓	×	✓	×	✓	Increased vessel activity during the construction,	Desk based analysis will identify the distribution and abundance of basking shark	The impact of collision risk to basking sharks will be

Impact	Phase					Justification	Data collection and analysis proposed to characterise the baseline environment	Summary of the proposed approach to assessment
	C	Op	Op repair	$D_{in-situ}$	D remove			
from vessel activities						operation (e.g. repairs) and decommissioning poses a collision risk to basking sharks, which spend extended time at the surface.	within the study area, as well as the importance of the area for this species.	assessed based on the number of vessels and trips across the construction, operation and maintenance and decommissioning phases.
Changes to water quality from resuspension of sediments	✓	×	✓	×	✓	Trench cutting and jetting activities will disturb bottom sediments and cause resuspension of sediments.	Fish and shellfish ecology receptors located within the study area will be identified using desk-based analysis.	The impact of resuspension of sediments on fish and shellfish ecology will be assessed by reviewing the receptors within the ZOI and will be informed by the water quality assessment (**section 8.9**: Physical Processes, of the Scoping Report).
Changes to water quality as a result of accidental pollution	✓	×	✓	×	✓	HDD at the landfall has the potential to release drilling fluids (e.g. 'breakout' of HDD drill slurry) which could impact fish and shellfish species. There is also a risk of accidental spillages from vessels of oil and other hazardous substances.	Fish and shellfish ecology receptors located within the study area will be identified using desk-based analysis.	The impact of accidental pollution on fish and shellfish ecology will be assessed by reviewing the receptors within the study area and will be informed by the water quality assessment.
Change in hydrodynamic regime	×	✓	✓	×	×	Changes in seabed bathymetry as a result of rock berms have the potential to create changes in the hydrodynamic regime that could create localised areas of scour and accretion.	Fish and shellfish ecology receptors located within the study area will be identified using desk-based analysis.	The impact of changes in hydrodynamics on fish and shellfish ecology will be assessed by reviewing the receptors within the study area and will be informed by the physical processes assessment.

Impact	Phase					Justification	Data collection and analysis proposed to characterise the baseline environment	Summary of the proposed approach to assessment
	C	Op	Op repair	$D_{in-situ}$	D remove			
Sediment heating	×	✓	✓	×	×	HVDC cables generate heat that can be transferred to the nearby sediment, heating up the benthic habitat.	Fish and shellfish ecology receptors located within the study area will be identified using desk-based analysis.	The impact of sediment heating on fish and shellfish ecology will be assessed by reviewing the receptors within the study area and will be informed by sediment heating characterisations.
Introduction of INNS	✓	×	✓	×	✓	Project vessels may bring INNS on their hull or in ballast water to the Proposed Development.	Fish and shellfish ecology receptors located within the study area will be identified using desk-based analysis.	The impact of INNS on fish and shellfish ecology will be assessed by reviewing the receptors within the study area and assessing the likelihood of introduction during the Proposed Development.

*C=Construction phase, Op=Operational phase, Op_{repair}=Operational phase repair activities, $D_{in-situ}$=Decommissioning phase assuming cable de-energised and left *in-situ,* D_{remove}=Decommissioning phase assuming cable removed

Table 8.3.4: Impacts proposed to be scoped out of the assessment for fish and shellfish

Impact	Justification
Injury and/or disturbance to fish and shellfish from vessel activities	Underwater noise generated from vessels is likely to be low and effects would only occur if fish species remained within immediate vicinity of the vessel (i.e. within metres) for a number of hours which is highly unlikely, as fish will move away from any noise. Collision risk is only likely to be a risk to species which spend extended periods on the surface (e.g. basking sharks). This impact has therefore been scoped out of the assessment for all fish species, other than basking shark.

Measures Adopted as Part of the Proposed Development

8.3.41 The following measures adopted as part of the Proposed Development are relevant to fish and shellfish ecology receptors, considered in addition to the overarching design and embedded measures in **Section 4.8** and **Table 4.8.2.** These measures may evolve as the engineering design and the EIA progresses.

- In addition to the Biosecurity Plan, to further minimise the risk of introducing non-native species, particularly contained in ballast water, all ships subject to the Ballast Water Management Convention (2017) requirements will be obliged to conduct ballast water management in accordance with the contractual provisions and those within the Convention.
- All hazardous materials will be required to be stored and managed in accordance with best practice guidance. The likelihood of accidental pollution events occurring will be reduced through the implementation of Offshore CEMPs. The Offshore CEMPs will include a specific MPCP.
- To further minimise the risk of accidental spillage of hazardous materials, regulations that implement MARPOL and its various annexes and protocols will be followed.
- Bentonite will be used during HDD as the best practice drill lubricant. Bentonite acts as a clay platelet grout, effectively sealing fractures.
- The use of a HDD drill fluid system that allows for the monitoring of pressure loss and therefore allows for the rapid identification of potential break outs.
- HDD drill arisings and used fluid from HDD will be collected and disposed of responsibly from the landward drill entry site. It should be noted that a small volume of drill fluid will be lost when the HDD breaks through the seabed.
- Cables will be buried (where possible) up to 1.5 m below the seabed, subject to a detailed CBRA.
- A VMP will be developed and adhered to.

Proposed Assessment Methodology

8.3.42 The fish and shellfish ecology assessment for the offshore elements of the Proposed Development will be undertaken in accordance with the methodology

set out in **Section 5**: EIA Methodology, of the Scoping Report, in addition to the following established guidance:

- Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2018)

8.3.43 The assessment approach will be based on the conceptual 'source-pathway-receptor' model. This model identifies likely environmental effects resulting from the proposed construction, operation and maintenance and decommissioning of the Proposed Development. This process provides an easy-to-follow assessment route between effect sources and potentially sensitive receptors ensuring a transparent impact assessment. The parameters of this model are defined as follows:

- source: the origin of a potential effect (noting that one source may have several impact pathways and associated receptors) e.g. a construction activity;
- pathway: the link or interaction 'pathway' by which the effect of the activity could influence a receptor; and
- receptor: the element of the receiving environment that is affected.

8.3.44 Iterative steps involved in the assessment approach will include:

- determination of potential interactions between the Proposed Development and ecological receptors (for construction and operation and maintenance phases);
- definition of fish and shellfish receptors within the influence of the Proposed Development;
- assessment of the sensitivity of fish and shellfish receptors;
- assessment of the magnitude of impact;
- determination of the significance of effects;
- proposal of mitigation measures to reduce, prevent or where these are not possible, to offset, any adverse significant effects;
- assessment of the residual effects after any mitigation measures have been considered; and
- assessment of cumulative effects.

8.3.45 In some instances, the Proposed Development will retain flexibility in terms of the options for methods and approaches to be applied during the construction phase. Where this is the case, for each combination of effect and receptor, the assessment will be based on the maximum design scenario and where this approach has been taken it will be clearly indicated in the ES chapter together with a definition of the maximum design scenario for the specific assessment.

Potential Cumulative Effects

8.3.46 There is potential for cumulative effects on sensitive receptors to occur when the Proposed Development is considered together with other developments. The potential cumulative effects between the offshore elements of the Proposed Development and other developments with respect to fish and shellfish ecology will be considered within the PEIR and the ES.

8.3.47 The cumulative effects assessment would be undertaken in accordance with the methodology set out in **Section 5**: EIA Methodology, of the Scoping Report and CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland (2018).

Potential Inter-related Effects

8.3.48 The assessment of potential inter-related effects will be considered within the fish and shellfish EIA chapter. It will include consideration of project lifetime effects and receptor-led effects in line with the approach outlined in **Section 5**: EIA Methodology, of the Scoping Report. The following inter-related effects have been identified for consideration:

- Benthic Ecology:
  - Impacts on benthic ecology receptors (**section 8.2**) may affect prey and habitat availability for some fish and shellfish receptors.
- Marine Mammals:
  - Impacts on fish and shellfish receptors will affect prey availability for some marine mammal receptors Note the scale of this inter-related effect has already been considered and scoped out as part of **section 8.5**.
- Offshore Ornithology:
  - Impacts on fish and shellfish receptors will affect prey availability for some bird receptors. Note the scale of this inter-related effect has already been considered and scoped out as part of **section 8.5**.
- Water and Sediment Quality change:
  - Impacts from the disturbance of sediment during construction of the offshore elements of the Proposed Development (Physical Processes – **section 8.9**) may impact fish and shellfish receptors.
- Underwater Noise and Vibration:
  - Impacts from underwater noise and vibration (**section 8.10**) during construction of the Proposed Development may impact fish and shellfish receptors.

Potential Transboundary Impacts

8.3.49 A screening of transboundary impacts has been carried out. This screening exercise identified that there is potential for transboundary impacts upon fish and shellfish ecology due to construction, operational and maintenance and decommissioning impacts of the Proposed Development.

8.3.50 The suspension of sediment as a result of dredging during pre-lay activities, jetting and excavation during cable laying and cable repairs will result in a sediment plume that may cause some transboundary effects, particularly close to the EEZ boundary.

8.3.51 No other effects on fish and shellfish ecology receptors are likely to be transboundary other than those occurring within the immediate boundary of the UK EEZ.

8.4 Commercial Fisheries

Introduction

8.4.1 This section of the Scoping Report identifies the commercial fisheries receptors relevant to the offshore elements of the Proposed Development. This section also considers the potential impacts arising from the construction, operation and maintenance, and decommissioning of the Proposed Development and identifies the proposed scope of, and methodology for, the EIA process for the commercial fisheries assessment.

8.4.2 For the purpose of this Scoping Report, 'commercial fisheries' is defined as any form of fishing activity legally undertaken where the catch is sold for taxable profit.

Relevant Policy, Legislation and Guidance

Legislative and Policy Context

8.4.3 The following key legislation and policy documents relevant to commercial fisheries will be considered within the assessment process:

- The UK Fisheries Act (2020) (23 Nov 2020), which sets out a series of objectives for management of commercial fisheries;
- The Joint Fishery Statement (JFS) was published in November 2022 and outlines commitments for delivery of Fisheries Management Plans (FMPs) for delivery by UK fisheries administrators;
- Overarching National Policy Statement (NPS) for energy (EN-1) and the NPS for renewable energy infrastructure (EN-3) (Department for Energy Security and Net Zero, 2023);
- The UK Marine Policy Statement (MPS; HM Government 2011) which explicitly expresses support for the fishing sector, and with regard to displacement, advocates "seeking solutions such as co-location of activity wherever possible"; and
- The South West Inshore and South West Offshore Marine Plan (Defra, 2021), which includes policy statements specific to fisheries.

Guidance documents

8.4.4 Guidance documents relevant to commercial fisheries that will be considered within the assessment process include the following:

- Best Practice Guidance for Fishing Industry Financial and Economic Impact Assessments (United Kingdom Fisheries Economic Network and Seafish, 2012);
- Fisheries Liaison with Offshore Wind and Wet Renewables group (FLOWW) Recommendations for Fisheries Liaison: Best Practice guidance for offshore renewable developers (FLOWW, 2014 and BERR, 2008);
- FLOWW Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Disruption Settlements and Community Funds (FLOWW, 2015);

- Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy projects. Contract report: ME5403 (Centre for Environment, Fisheries and Aquaculture Science [Cefas], 2012);
- Good Practice Guidance for assessing fisheries displacement by other licensed marine activities (Scottish Government, 2022);
- Guidelines for liaison with the fishing industry on the UCKS – Issue 8 (Offshore Energies UK, 2023);
- Fishing and Submarine Cables–- Working Together (International Cable Protection Committee, 2009); and
- European Subsea Cables Association (ESCA) Guideline 01 and Appendices (ESCA, 2018).

Study Area

8.4.5 The commercial fisheries study area is informed by the International Council for the Exploration of the Sea (ICES) reporting areas. The Offshore Cable Corridor is located within ICES Division 7f (Bristol Channel) and Division 7e (western English Channel) statistical areas.

8.4.6 For the purpose of recording fisheries landings, ICES Divisions 7f and 7e are divided into statistical rectangles which are consistent across all Member States operating in the Bristol Channel and English Channel.

8.4.7 The Project is located within ICES rectangles 26E3, 27E2, 27E3, 28E2, 28E3, 29E3, 30E3, 30E4, 31E4 and 31E5, as shown in **Figure 8.4.1**. The commercial fisheries study area has been defined as these ten ICES rectangles, noting however that rectangles 26E3 and 27E3 are partially located outside the UK EEZ.

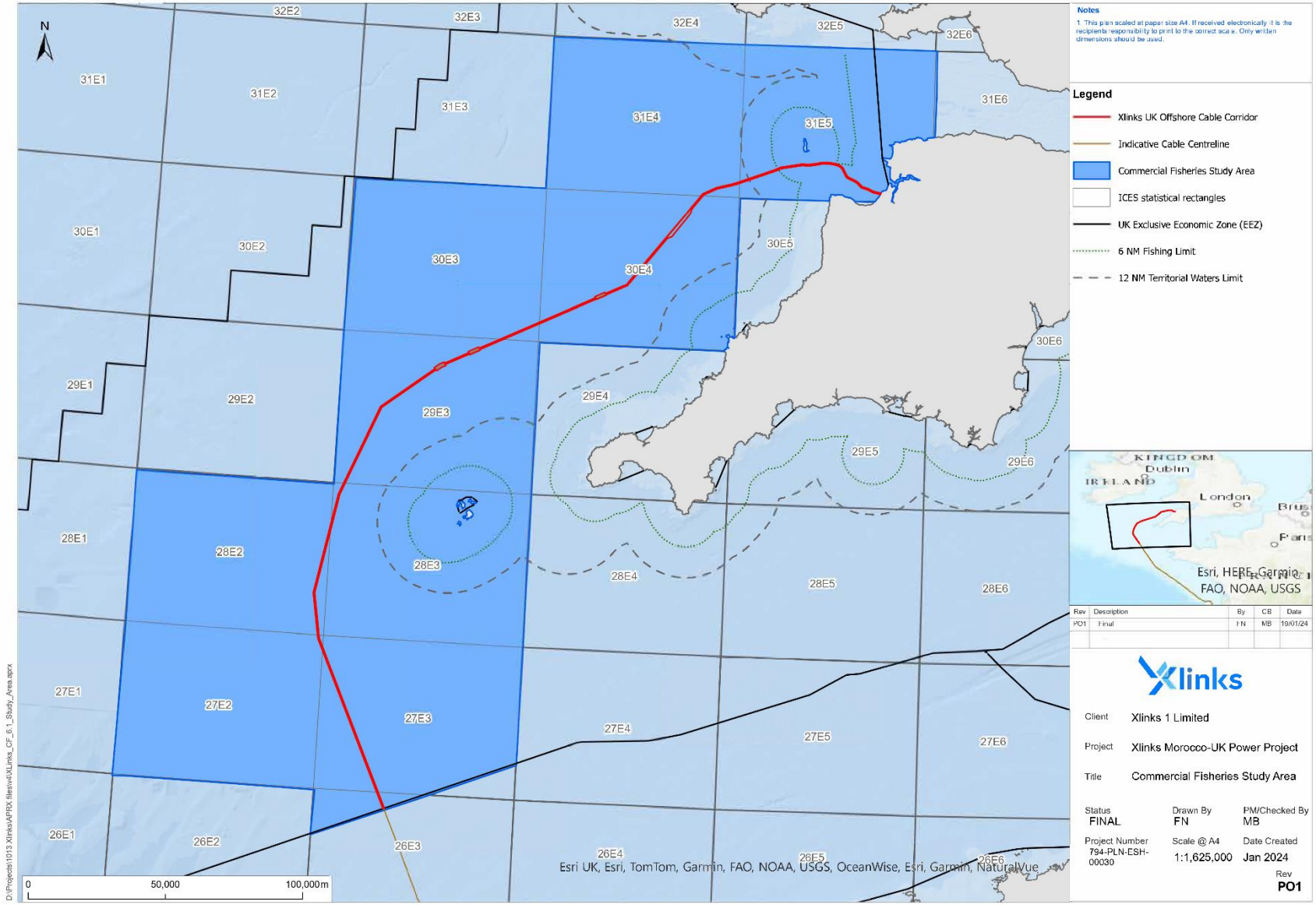

Figure 8.4.1: Commercial fisheries study area

Data Sources

8.4.8 The data sources used to inform the baseline assessment will primarily comprise published material which is publicly available online. An initial desk-based review has identified several data sources which provide baseline data coverage of the Proposed Development Scoping Boundary. Baseline data will also be gathered via engagement with fisheries stakeholders and this exercise has already commenced via the appointed company FLO.

8.4.9 No site surveys have been or will be undertaken specific to commercial fisheries. This reflects the good availability of existing baseline information, further validated by FLO-led engagement with fisheries interests.

8.4.10 The baseline data sources identified in this Scoping Report will remain under review and may be updated in response to feedback from relevant statutory and non-statutory consultees during the EIA process, or in response to new sources of information becoming available.

Desk-based Data Sources

8.4.11 To inform this Scoping Report section, a high-level desk-based assessment has been conducted for commercial fisheries receptors using a range of existing data (**Table 8.4.1**). As well as UK data sources, data has been sourced from European fisheries bodies. Relevant literature from a number of additional sources has also been reviewed and are referenced throughout as appropriate.

Table 8.4.1: Desk based baseline data sources – commercial fisheries

Source	Summary
UK annual fisheries landings statistics Marine Management Organisation (MMO), 2018 to 2022	Fisheries landings data for registered fishing vessels landing to their home nation ports.
UK Vessel Monitoring System (VMS) data MMO, 2016 to 2020	VMS data for fishing vessels greater than 15 m in length. Note that UK vessels ≥12 m in length have VMS on board, however, to date, the MMO provide amalgamated VMS datasets for ≥15 m vessels only. VMS data sourced from MMO displays the first sales value (£) of catches.
European Union (EU) annual fisheries landings statistics Scientific, Technical and Economic Committee for Fisheries (STECF), 2012 to 2016	Fisheries landings data for registered fishing vessels landing to their home nation ports.
EU VMS data ICES, 2016 to 2020	VMS data for fishing vessels greater than 12 m in length. VMS data sourced from ICES displays the surface Swept Area Ratio (SAR) of catches by different gear types and covers EU (including UK) registered vessels 12 m and over in length. Surface SAR indicates the number of times in an annual period that a demersal fishing gear makes contact with (or sweeps) the seabed surface.
Fishing vessel route density data	Fishing vessel route density, based on vessel Automatic Information System (AIS) positional data. AIS is required to be fitted on fishing vessels ≥15 m length.

Source	Summary
European Maritime Safety Agency (EMSA), 2021	Note that the most recent data has been presented in this Scoping Report, but that longer term datasets will be analysed within the ES.
Key species stock assessments ICES, Cefas, various publication dates	Assessments of the status of commercially targeted fish and shellfish stocks.
Fishing vessel surveillance sightings MMO, 2018 to 2023 (information request submitted to MMO; data awaited)	Sightings (visual observations) of fishing vessels recorded from aerial and vessel surveillance vessels in UK territorial waters. Provides an indication of the distribution of fishing activity, fishing methods and nationality.

8.4.12 It should be noted that the quantitative datasets identified in **Table 8.4.1** do not in isolation capture all commercial fisheries activity in the commercial fisheries study area.

8.4.13 For instance, the VMS datasets only covers vessels ≥12 m (ICES data) or ≥15 m (MMO data) in length. However, in addition to VMS data, other published data can be expected to provide a useful insight into commercial fisheries activity undertaken in inshore areas (e.g., including a number of Inshore Fisheries and Conservation Authority (IFCA) publications and surveillance data) and consultation with fisheries stakeholders and industry is expected to further inform assessment in the ES. Consultation will be undertaken to seek to corroborate the findings of desk-based baseline data analysis and to provide insight into specific fishing grounds and activity of any vessels active in the area. Consultation will also be important to inform gear specifications for vessels active in the area, which will allow a full understanding of how different vessels and different gear configurations may be affected.

8.4.14 Limitations of landings data include the spatial size of ICES rectangles which can misrepresent actual activity across the Offshore Cable Corridor and care is therefore required when interpreting the data. A further limitation of landings data is the potential under-reporting of landings associated with potting vessels, which may occur as a result of estimating catches (as opposed to accurate weighing) and not reporting catches that fall below the acceptable limit as defined within the UK Registration of Buyers and Sellers (RBS) (i.e., when purchases of first sale fish direct from a fishing vessel are wholly for private consumption, and less than 30 kg is bought per day). Registered buyers are legally required to provide sales notes of all commercially sold fish and shellfish due to the 2005 Registration of Buyers and Sellers of First-Sale Fish Scheme (RBS legislation) (MMO, 2021). The RBS legislation is applicable to licenced fishing vessels of all lengths and requires name and PLN of the vessel which landed the fish to be recorded in relation to each purchase. For the 10 m and under sector, landing statistics are recorded on sales notes provided by the registered buyers (MMO, 2021). Information that may not be formally recorded on the sales note, such as gear and fishing area, is added by coastal staff based on local knowledge of the vessels they administer. For example, from observations of the vessel during inspections at ports or from air and sea surveillance activities as well as discussions with the owner and/or operator of the vessel (MMO, 2021).

8.4.15 In addition to RBS sales notes data, the Catch App was implemented in early 2022 for under 10 m vessels registered in England and Wales. The Catch App requires vessel owners / skippers to submit catch records for under 10 m vessels operating in UK waters. Data from 2022 onwards is being incorporated into the

MMO iFISH database to form a more robust and verified record of landings by the under 10 m fleet.

8.4.16 Variations and trends in commercial fisheries activity are an important aspect of the baseline assessment and is the principal reason for considering up to five years of key baseline data. Given the time periods considered in this scoping exercise (i.e., 2018 to 2022), existing baseline data is expected to capture potential changes in commercial fisheries activity resulting from the COVID-19 pandemic, which is understood to have temporarily affected market demand and supply chains. However, ongoing changes in fishing patterns resulting from the withdrawal of the UK from the EU and the introduction of new fisheries byelaws and associated fishing restrictions would be expected in future data sets, which include data for 2022 onwards. Long term environmental and climatic changes may be expected to be detectable within the five-year time series but may benefit from longer-term analysis dependant on the target species. Inclusion of such longer-term analysis will be informed by stakeholder consultation.

8.4.17 Following withdrawal of the UK from the EU, a Trade and Cooperation Agreement (TCA) has been agreed between parties, applicable on a provisional basis from 1 January 2021. The TCA sets out fisheries rights and confirms that from 1 January 2021 and during a transition period until 30 June 2026, UK and EU vessels will continue to access respective EEZs (12 to 200 nm) to fish. In this period, EU vessels will also be able to fish in allocated parts of UK waters, typically between 6 and 12 nm, where historic rights allow access by the fishing fleets of authorised EU Members States. Access rights of foreign vessels to UK EEZ waters will remain until at least the end of 2026 with reducing quotas, after which rights will be subject to the conclusion of negotiated agreements. In addition to access rights, the TCA requires that 25% of the EU's fisheries quota in UK waters will be transferred to the UK over the five-year transition period. Overall, the biggest gains for UK fleets targeting the North Sea are for pelagic and demersal stocks, including mackerel, sole and herring. The PEIR and ES will further consider likely changes to the future baseline, primarily associated with withdrawal from the EU, taking into account planned changes in quota allocation.

Baseline Environment

Landings Data

UK Fishing Activity

8.4.18 Landings from the commercial fisheries study area by UK-registered vessels had an average value of £14.2 million across the period 2018 to 2022 (MMO, 2023). **Figure 8.4.2** shows landings values across this time period for each ICES rectangle within the study area, highlighting relatively high landings values in rectangles 30E4 (accounting for over 25% of landings from the study area by value), off the Cornish coast. Across the 2018 to 2022 time period, UK landings show a relative peak in 2019 and were at their lowest in 2021.

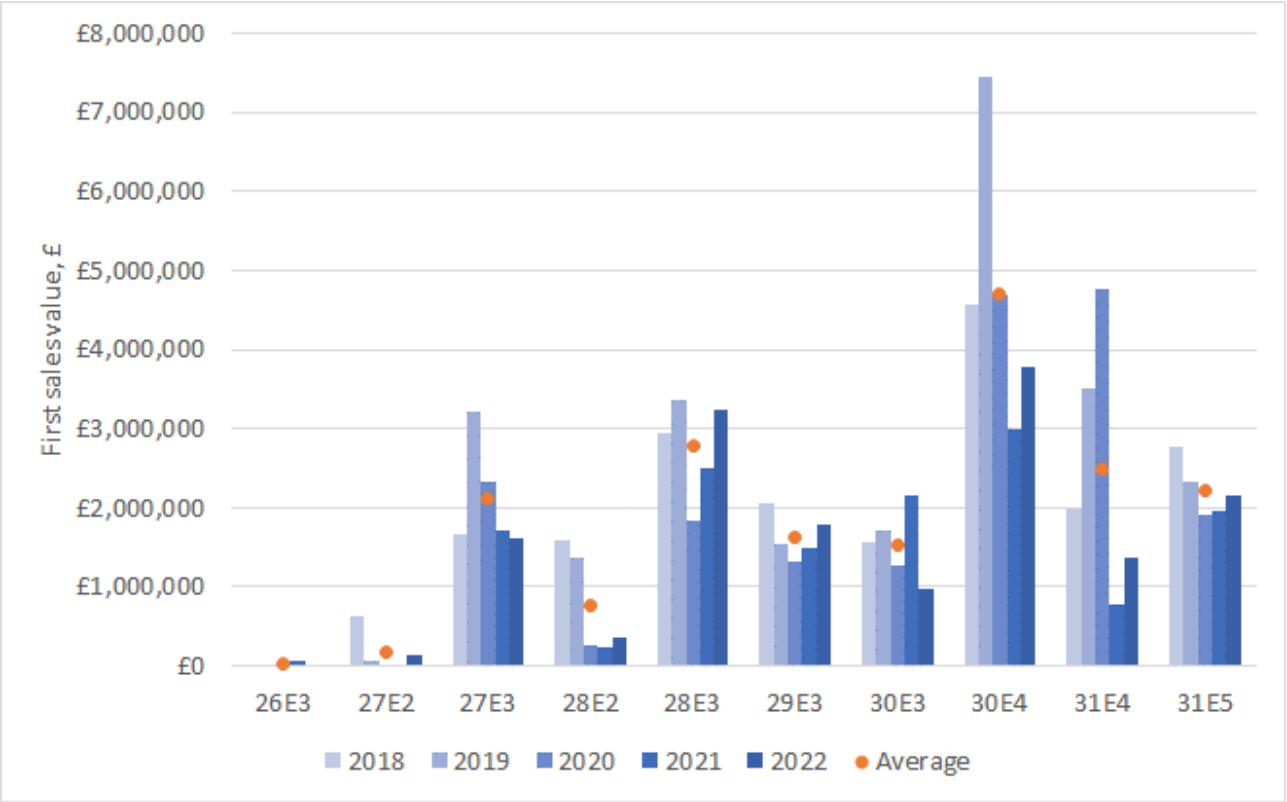

Figure 8.4.2: Annual landings value (pound sterling) by UK-registered vessels from the study area, by ICES rectangle, between 2018 and 2022 (MMO, 2023)

8.4.19 **Figure 8.4.3** shows the top ten species landed from the study area by value. **Figure 8.4.4** shows equivalent landings data but based on landed weight.

8.4.20 Approximately 75% of landings by value (and 58% by weight) are of demersal fish species. Key species are sole *Microstomus kitt,* hake *Merluccius merluccius*, monks and anglers *Lophius piscatorius* and megrim *Lepidorhombus whiffiagonis*. Landings of demersal species across the 2018 to 2022 period show a relative peak in 2019 and have been relatively constant across 2021 and 2022.

8.4.21 Key shellfish species are brown crabs *Cancer pagurus*, lobster *Homarus gammarus*, whelks *Buccinum undatum* and nephrops *Nephrops norvegicus*. Shellfish landings have remained relatively consistent across the five-year period.

8.4.22 Pelagic fisheries primarily target horse mackerel *Trachurus trachurus*. Landings of pelagic species have fluctuated across the time series, with more notable catches in 2019 and 2022.

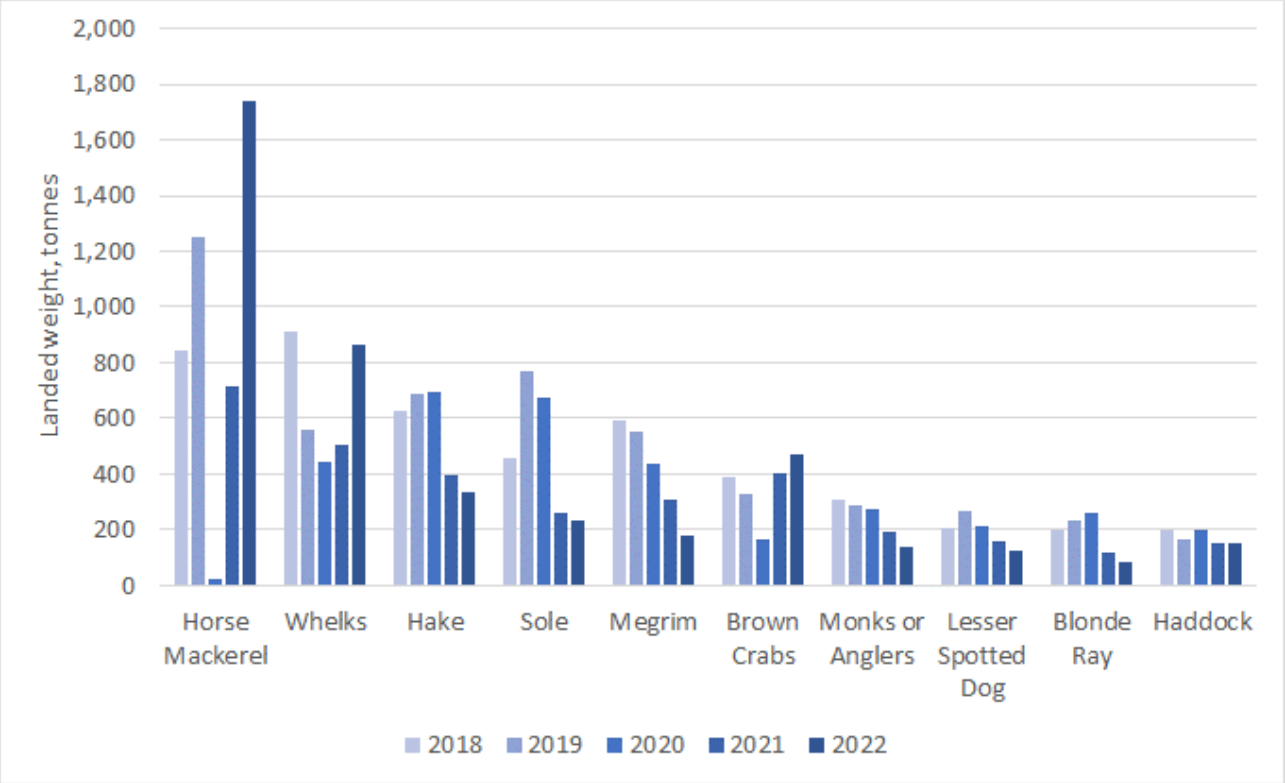

Figure 8.4.3: Annual landings value (pound sterling) by UK-registered vessels from the study area, by key species, between 2018 and 2022 (MMO, 2023).

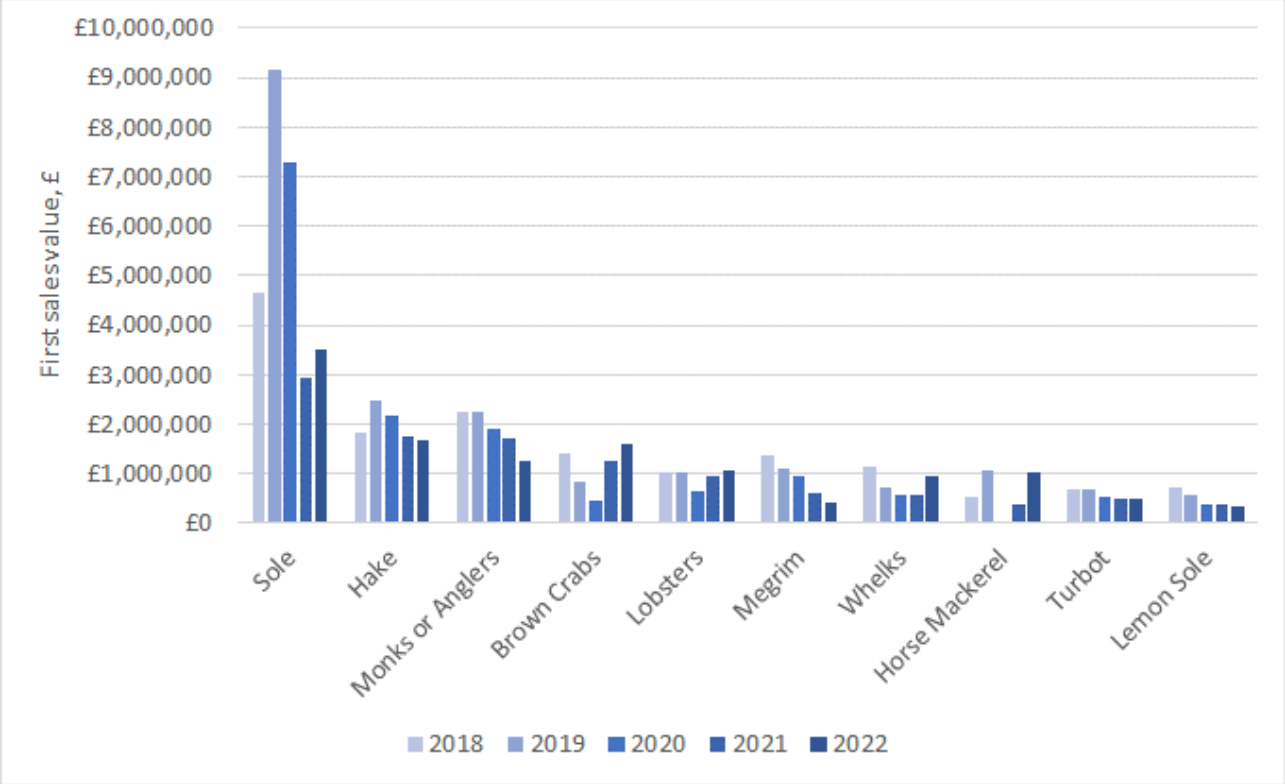

Figure 8.4.4: Annual landings weight (tonnes) by UK-registered vessels from the study area, by key species, between 2018 and 2022 (MMO, 2023).

8.4.23 **Figure 8.4.5** shows the key fishing gear types utilised across the study area. The largest proportion of landings are attributed to beam trawl gear, with landings from this gear type showing relative decline across 2021 and 2022. Drift and fixed nets, pots and traps and demersal trawls are also routinely deployed across the study area, with pelagic trawl activity being more sporadic reflecting the wide-ranging nomadic nature of pelagic trawl fisheries.

8.4.24 Landings data indicates that across the 2018 to 2022 period, and across the study area, English-registered fishing vessels accounted for approximately 70% of total landings, with relatively limited landings attributed to Scottish and Welsh-registered vessels. Key UK landings port utilised by UK vessels fishing in the study area include Newlyn and Milford Haven, Ilfracombe and Padstow. Vessels accounting for the majority of landings by value were within the following vessel length categories: 24 to 40 m, 18 to 24 m and under 12 m.

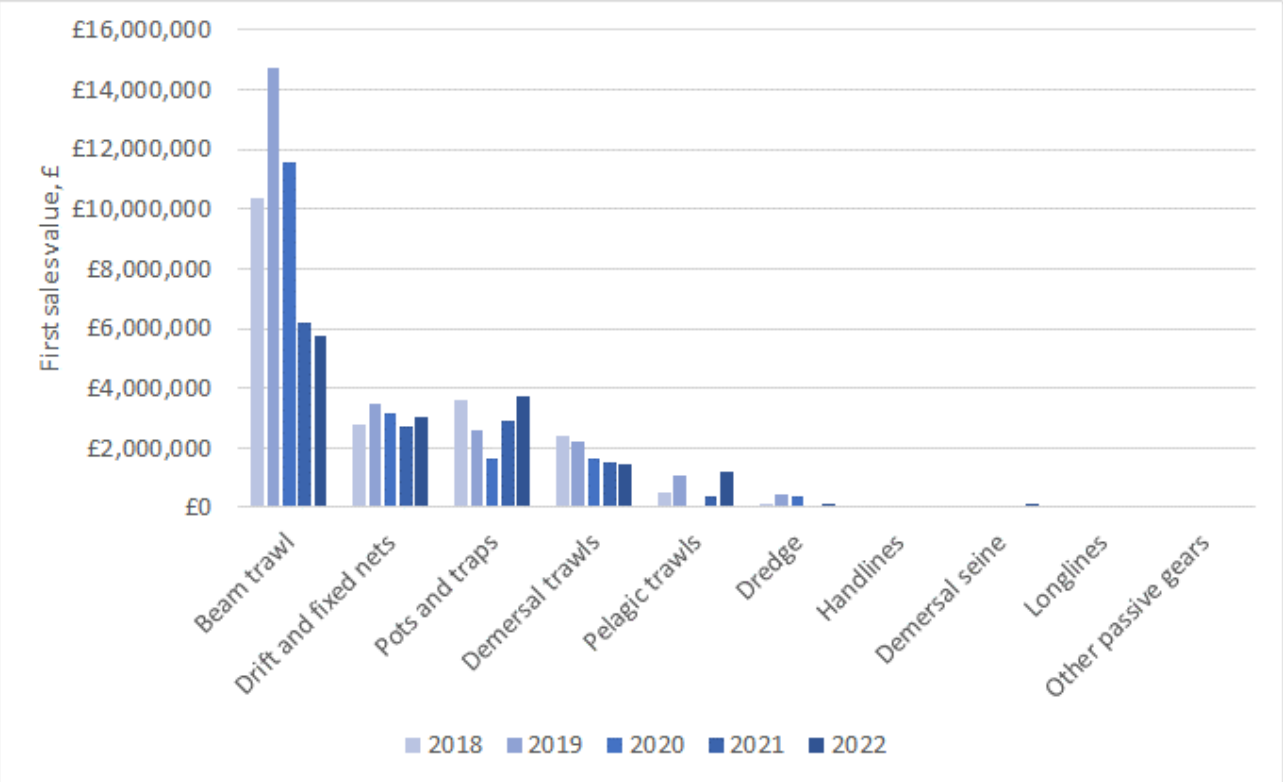

Figure 8.4.5: Annual landings value (pound sterling) by UK-registered vessels from the study area, by key fishing gear, between 2018 and 2022 (MMO, 2023).

8.4.25 Landings from the commercial fisheries study area by EU-registered vessels have been analysed using data sourced from the EU DCF database covering two different time periods. The first source covers the period 2012 to 2016 and is usefully disaggregated at the level of individual ICES rectangle. The second source provides landings data up to 2021 but is available only at ICES division level (i.e., the Bristol Channel, and the western English Channel) and so whilst more recent, is less helpful in terms of understanding EU fishing activity across the study area.

8.4.26 Figure 8.4.6 presents landings by both UK and non-UK fishing vessels from the study area (at ICES rectangle scale) between 2012 and 2016. The data indicates activity by French, Belgian and Irish vessels within the study area, with notable landings from French-registered vessels in particular. Figure 8.4.7 presents

landings by EU fishing vessels from ICES divisions 7f and 7e, operating in the UK EEZ (i.e., an area of significantly greater extent than the study area) from 2018 to 2022. The data again indicates the presence of French vessels targeting mixed demersal species, with potential for activity associated with Belgian, Dutch and Irish fleets.

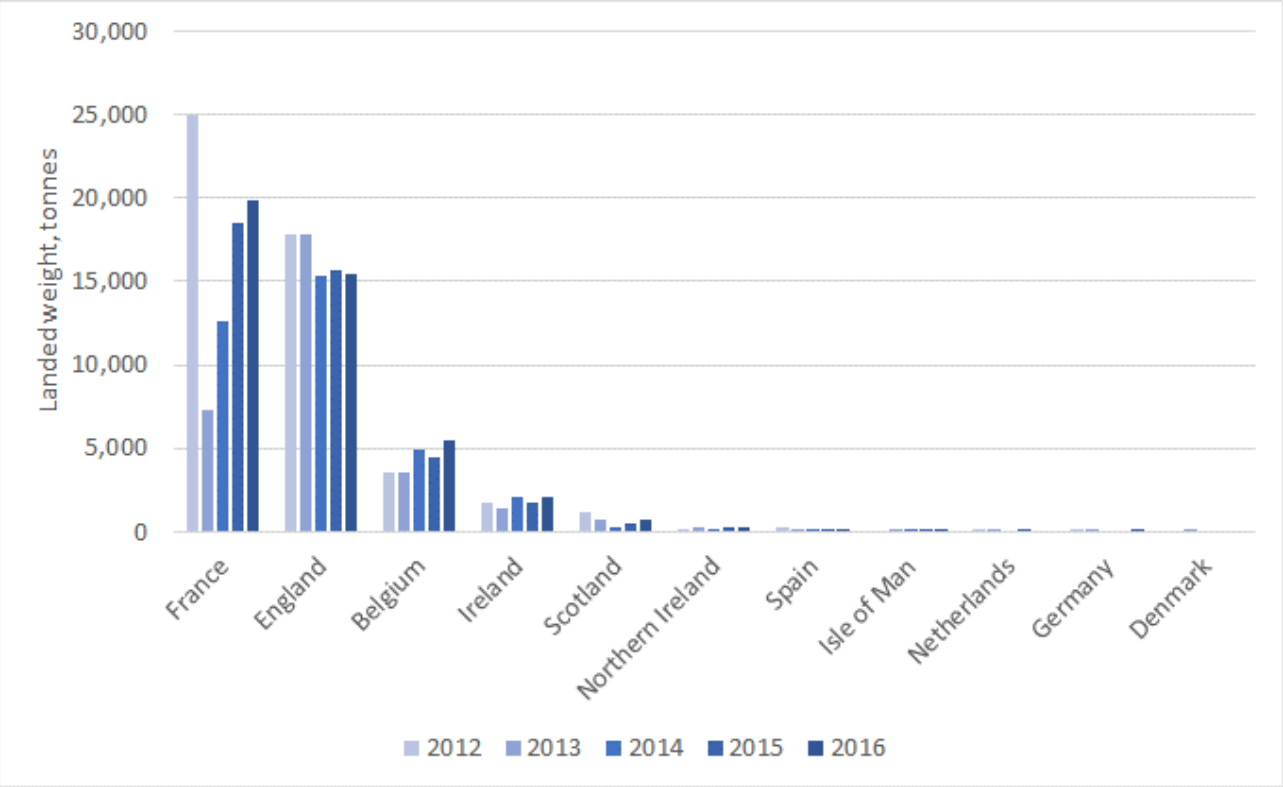

Figure 8.4.6: Landed weight (tonnes) by UK and non-UK vessels from the study area, by ICES rectangle, between 2012 and 2016 (EU DCF, 2023).

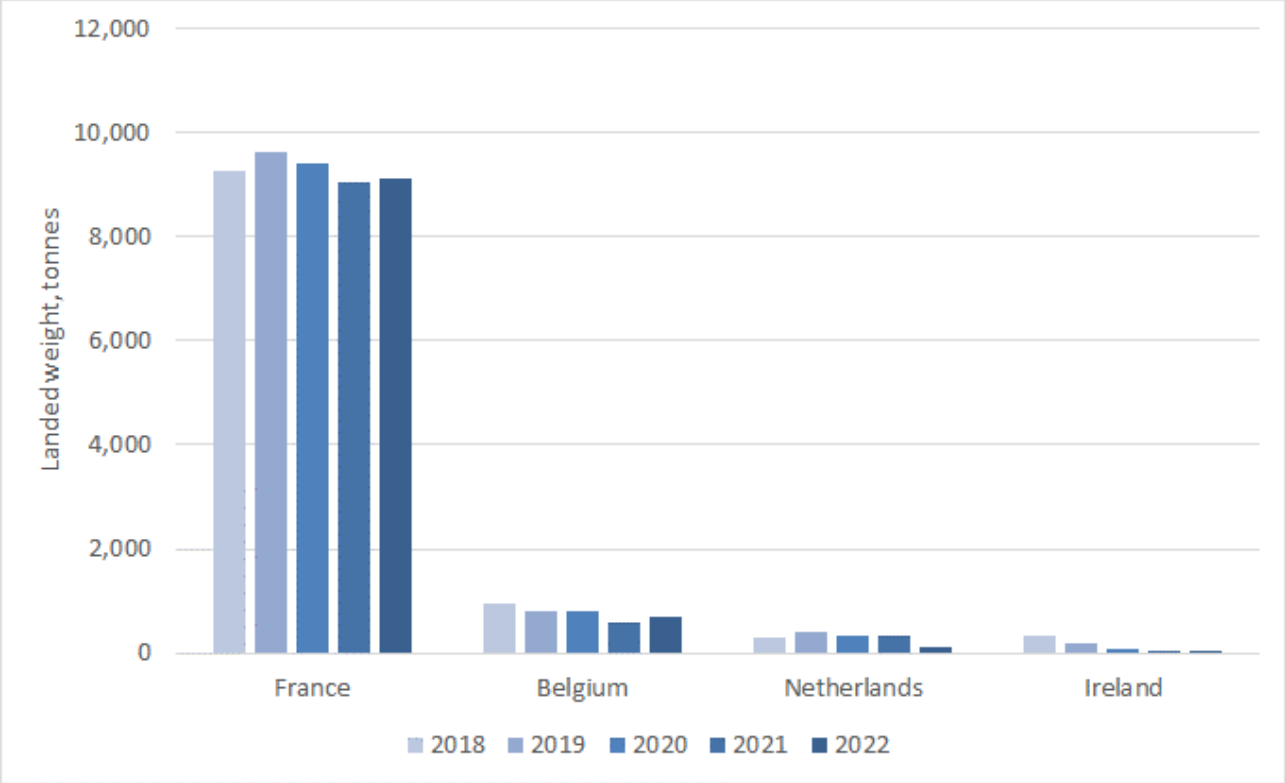

Figure 8.4.7: Landed weight (tonnes) by EU vessels in ICES Divisions 7e and 7f in the UK EEZ 2018 to 2022, by country (EU DCF, 2023).

Spatial Data

8.4.27 In addition to landings data, VMS data have been mapped for EU vessels (including the UK) within the commercial fisheries study area.

8.4.28 **Figure 8.4.8**, which presents VMS data for UK and EU registered fishing vessels using mobile gears (including beam trawl, demersal trawl, demersal seine, dredge), indicates relatively high levels of mobile gear fishing activity along two portions of the Offshore Cable Corridor; one northwest of the Cornish coastline and one southwest of the Scilly Isles. These high levels of activity broadly align with the landings data by ICES rectangle.

8.4.29 **Figure 8.4.9** to **Figure 8.4.12** show the same data, with activity apportioned to specific fishing gear types. Beam trawl activity is most notable in ICES rectangle 30E4 to the north west of the Cornish coast. The same area supports notable demersal otter trawl activity, which also peaks to the south west of the Scilly Isles. Demersal seine activity is focused primarily to the northwest and southeast of the study area, but with some activity noted in the same two locations already highlighted. Data indicates potential for dredge activity again to the north west of the Cornish coastline, though with relatively higher levels of activity focused in the English Channel to the south east of the study area.

8.4.30 UK VMS data has also been analysed and indicates the likely presence of netting activity along the middle portion of the Offshore Cable Corridor. Potting activity by UK vessels over 15 m length takes place along the portion of the Offshore Cable Corridor as it approaches landfall, with limited evidence of potting activity by larger vessels further offshore along the corridor.

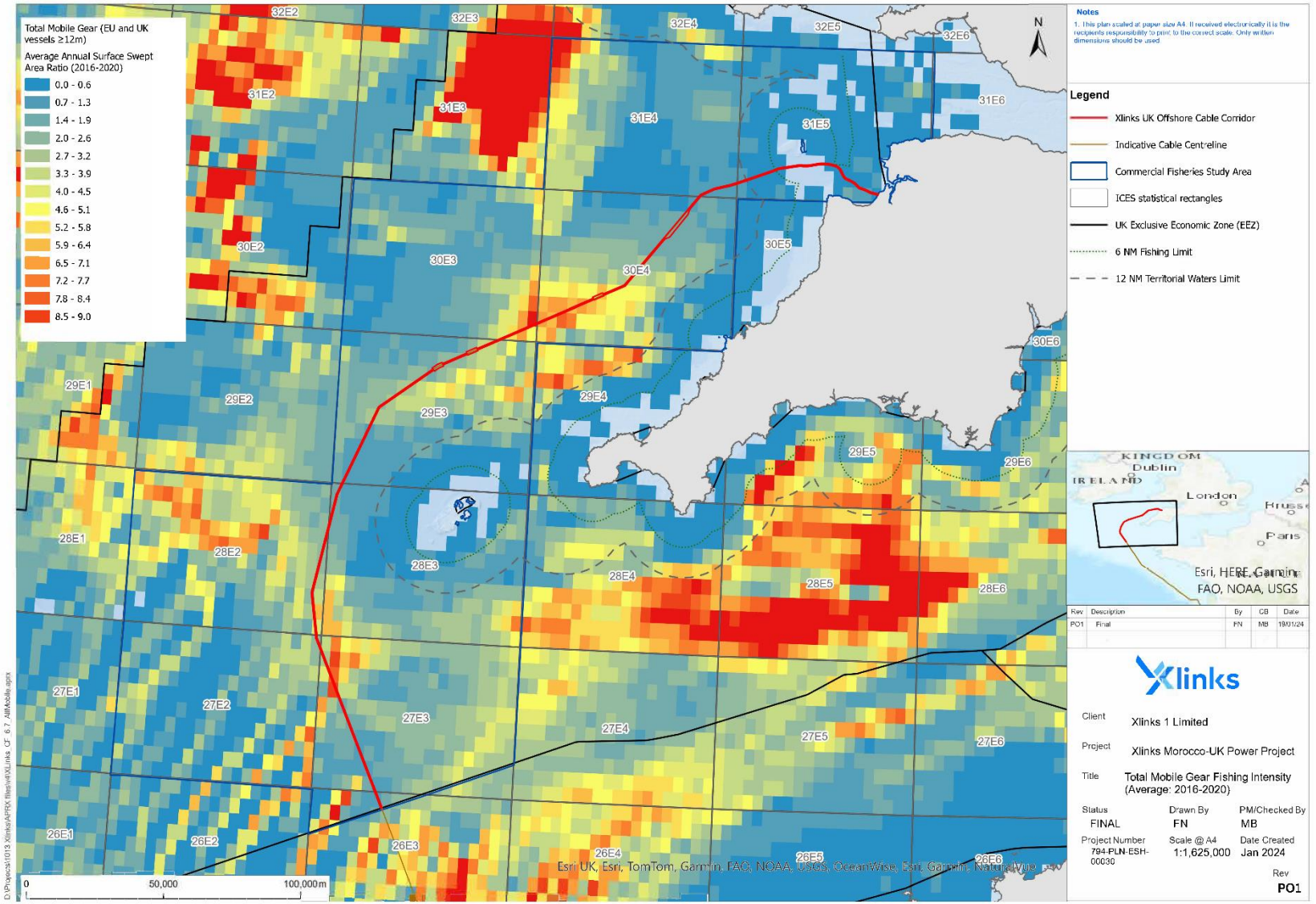

Figure 8.4.8: VMS data for UK and EU registered fishing vessels using mobile gears (including beam trawl, demersal trawl, demersal seine, dredge)

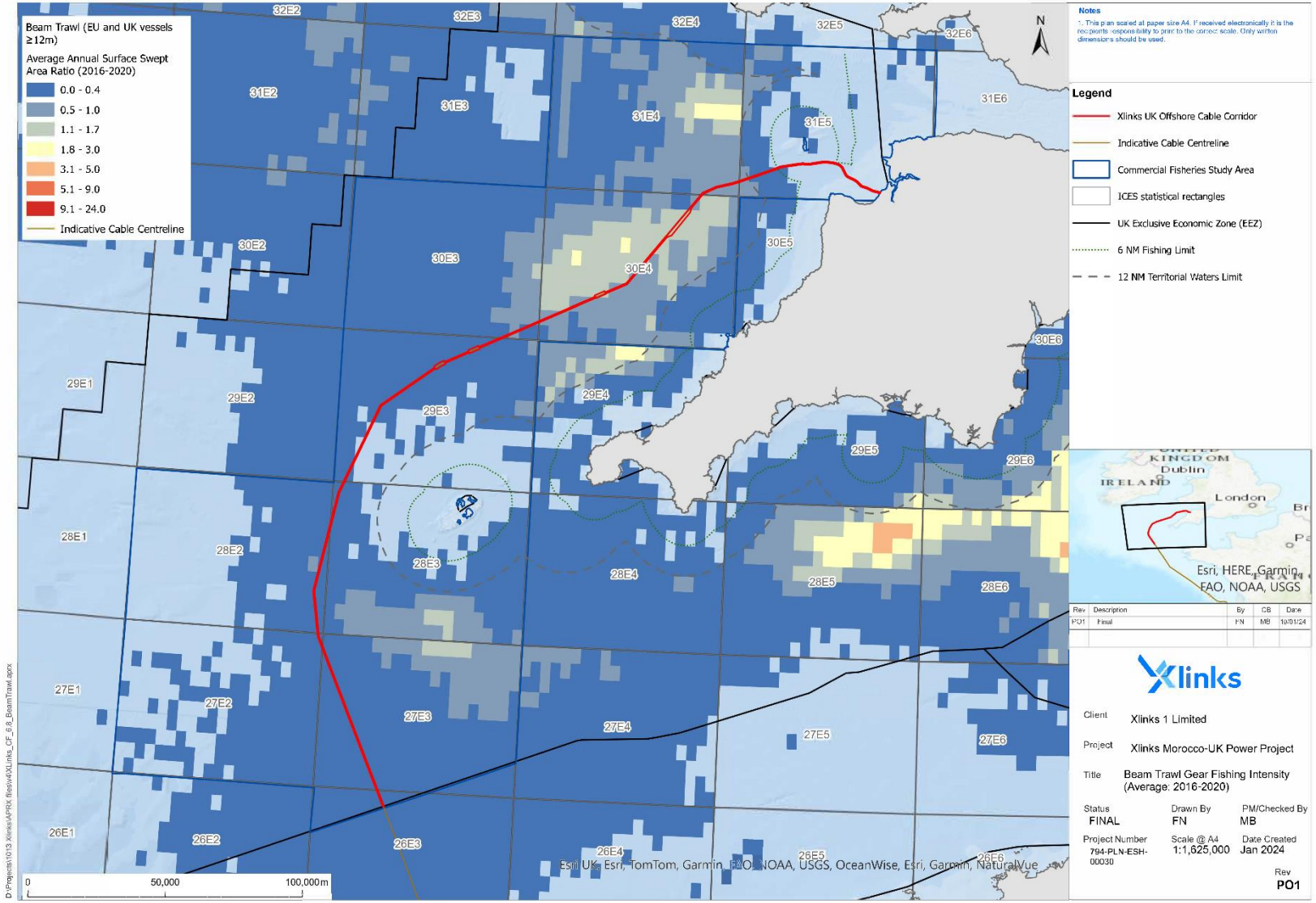

Figure 8.4.9: Surface Swept Area Ratio 2016 to 2020 for EU (including UK) vessels ≥ 12 m length using beam trawl gear (Data Source: ICES, 2021)

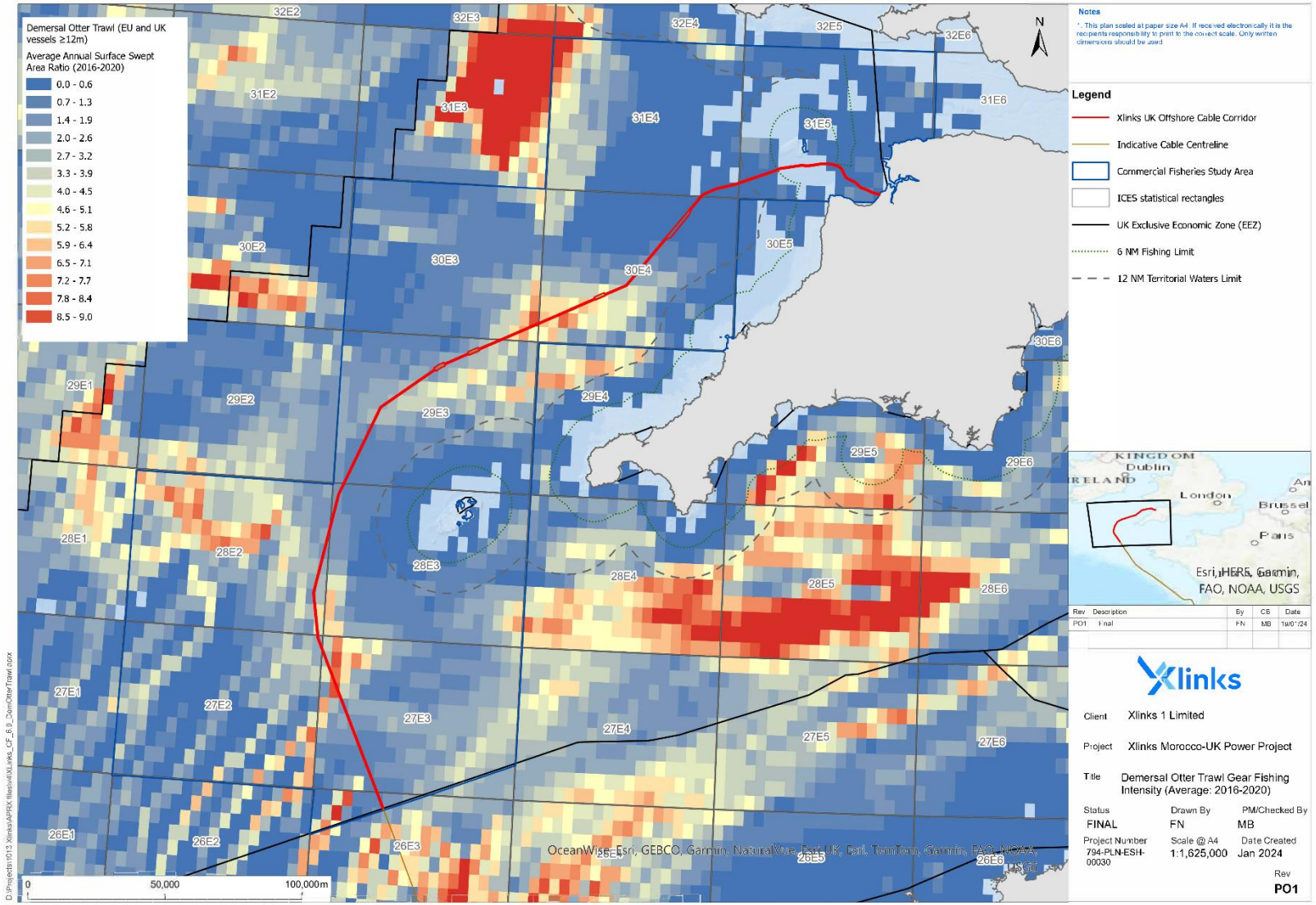

Figure 8.4.10: Surface Swept Area Ratio 2016 to 2020 for EU (including UK) vessels ≥ 12 m length using demersal otter gear (Data Source: ICES, 2021)

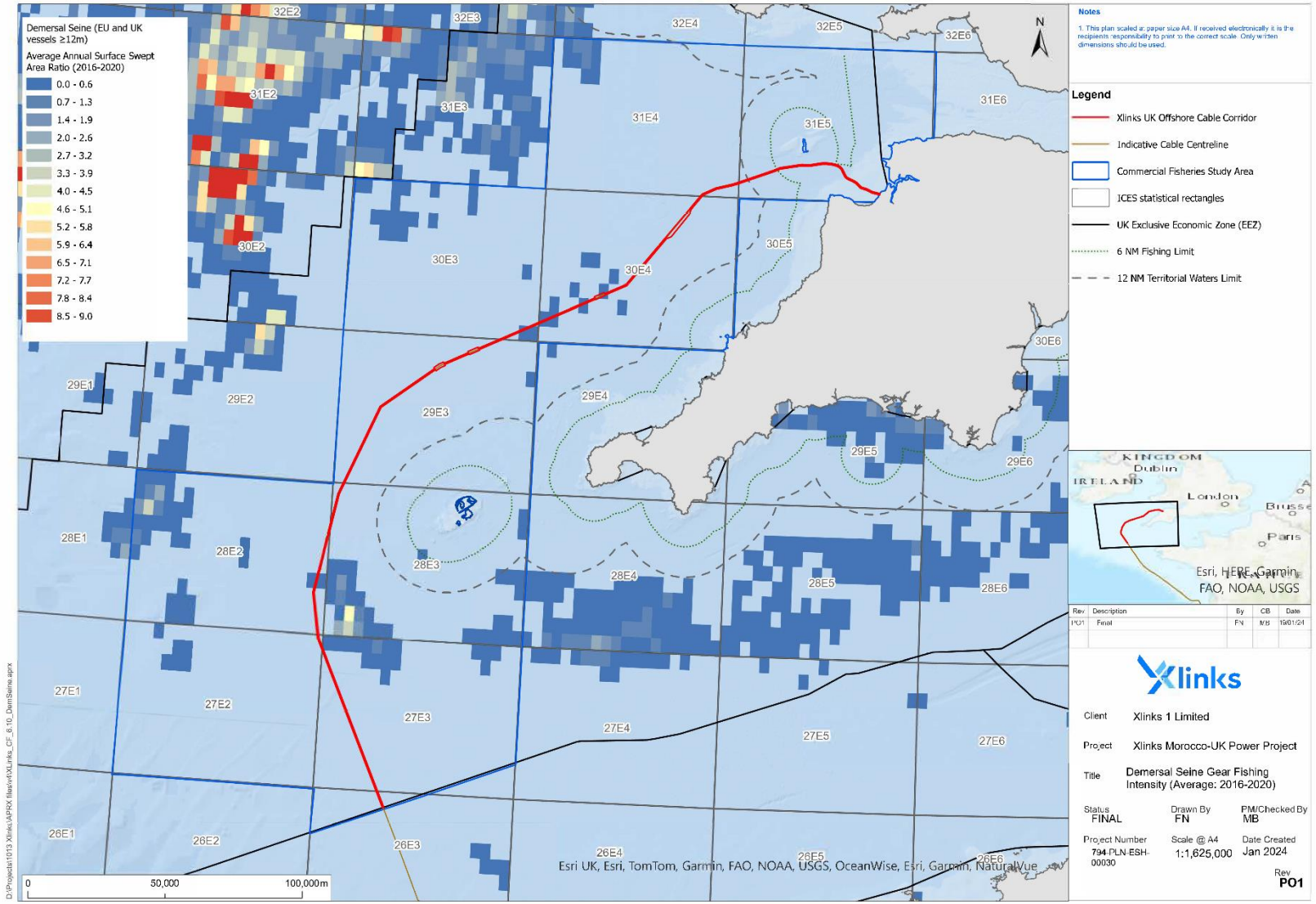

Figure 8.4.11: Surface Swept Area Ratio 2016 to 2020 for EU (including UK) vessels ≥ 12 m length using demersal seine gear (Data Source: ICES, 2021)

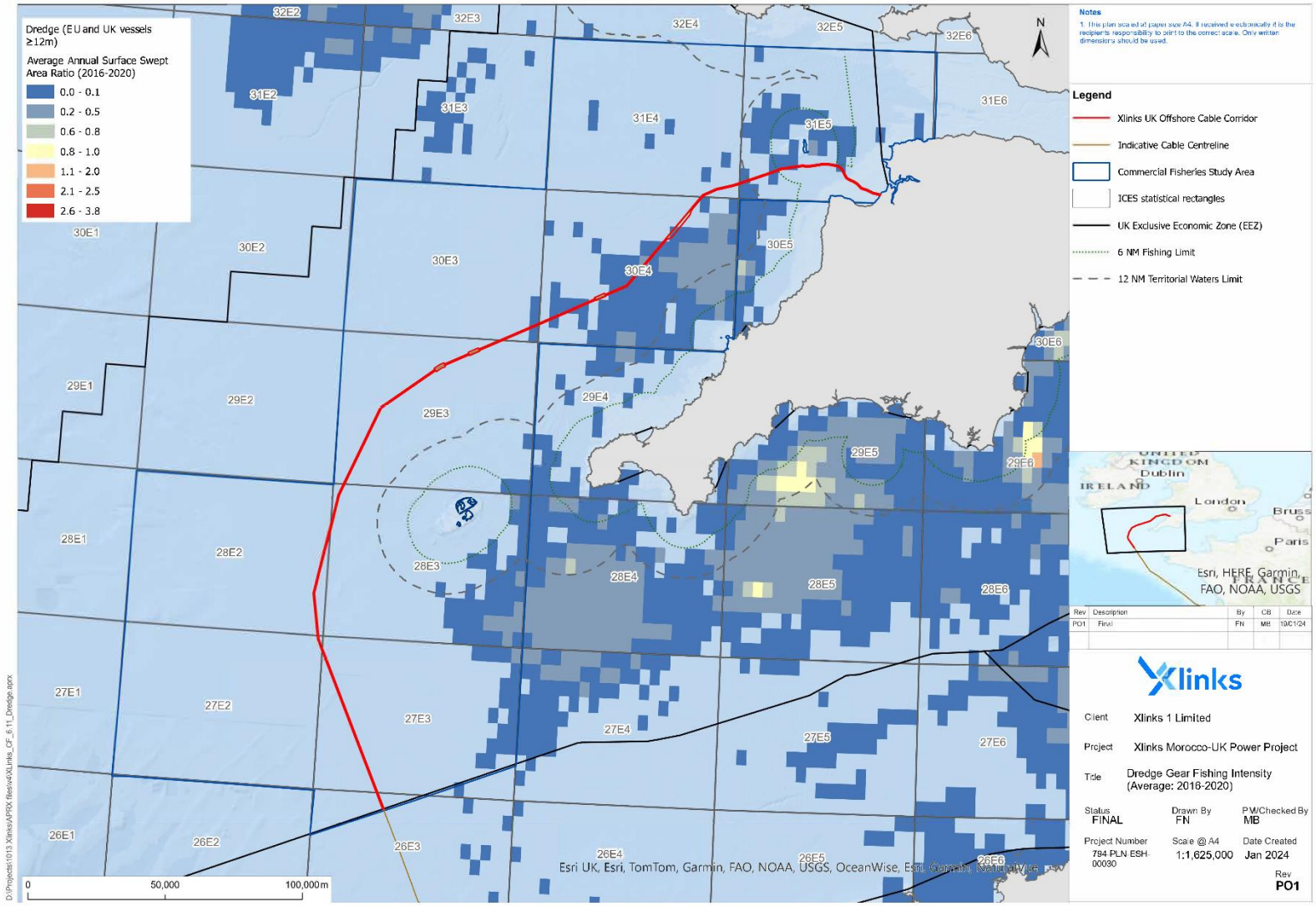

Figure 8.4.12: Surface Swept Area Ratio 2016 to 2020 for EU (including UK) vessels ≥ 12 m length using dredge gear (Data Source: ICES, 2021)

Baseline Summary

8.4.31 In summary, based on the data gathered to inform this scoping exercise, the key fleets operating across the study area include (in no particular order):

- demersal otter trawl targeting nephrops and mixed fish species including sole, rays, monks and anglers;
- beam trawl targeting whitefish species, including sole and monks and anglers;
- netters targeting whitefish species, including hake and turbot;
- pelagic trawl targeting horse mackerel;
- dredge targeting scallops; and
- potting targeting crab, lobster and whelk.

Fishing Restrictions

8.4.32 Limits on catch volumes are in place for many commercially fished species, taking the form of Total Allowable Catches (TACs) and quotas. Species targeted in the study area for which TACs are set include sole, plaice, turbot and Nephrops. Key shellfish species targeted in the study area, including lobster and brown crab, are not subject to TACs, but are subject to national and local fisheries management measures.

8.4.33 In addition to limits on catch volumes, a number of restrictions are in place based primarily on fisheries byelaws, intended to protect fish stocks and their habitats. These restrictions include limits on minimum landings sizes, technical measures relating to fishing gear design and use, limits on fishing effort, and temporary and permanent fishery closures.

8.4.34 Within the study area several spatial restrictions are in place that are relevant to the Offshore Cable Corridor. These include (but are not limited to):

- MMO Land's End and Cape Bank European Marine Site (Specified Areas) Bottom Towed Gear Byelaw 2009, prohibiting the use of bottom towed fishing gear in the specified area.
- MMO closed area for the conservation of cod in ICES divisions 7f and 7g whereby from 1 February to 31 March each year, it shall be prohibited to conduct any fishing activity in the following ICES statistical rectangles: 30E4, 31E4, 32E3.
- Devon and Severn, Cornish and Isles of Scilly IFCA byelaws which include a number of byelaws that seek to manage fishing activity within IFCA waters (i.e., inside of the 6 nm limit).

Future Baseline Conditions

8.4.35 The EIA process will consider the existing baseline conditions within the study area, and future baseline conditions (as far as reasonably practicable), in accordance with the methodology set out in **Section 5**: EIA Methodology, of the Scoping Report**.**

8.4.36 Commercial fisheries patterns change and fluctuate based on a range of natural and management-controlled factors. This includes the following:

- market demand: commercial fishing fleets respond to market demand, which is impacted by a range of factors, an example being the COVID pandemic;
- market prices: commercial fishing fleets respond to market prices by focusing effort on higher value target species when prices are high and markets in demand;
- stock abundance: fluctuation in the biomass of individual species stocks in response to status of the stock, recruitment, natural disturbances (e.g., due to storms, sea temperature etc.), changes in fishing pressure etc.;
- fisheries management: including new management for specific species where overexploitation has been identified, or changes in TACs leading to the relocation of effort, and/or an overall increase/decrease of effort and catches from specific areas;
- environmental management: including the potential restriction of certain fisheries within protected areas;
- improved efficiency and gear technology: with fishing fleets constantly evolving to reduce operational costs e.g., by moving from beam trawl to demersal seine; and
- sustainability: with seafood buyers more frequently requesting certification of the sustainably of fish and shellfish products, such as the Marine Stewardship Council certification, industry is adapting to improve fisheries management and wider environmental impacts.

8.4.37 The variations and trends in commercial fisheries activity are an important aspect of the baseline assessment and forms the principal reason for considering up to five years of key baseline data. Given the time periods assessed, the future baseline scenario would typically be reflected within the current baseline assessment undertaken. However, in this case, existing baseline data does not capture all potential changes in commercial fisheries activity resulting from the withdrawal of the UK from the EU.

8.4.38 Following the withdrawal of the UK from the EU, the UK and the EU have agreed to a TCA, applicable on a provisional basis from 01 January 2021. The TCA sets out fisheries rights and confirms that from 1 January 2021 and during a transition period until 30 June 2026, UK and EU vessels will continue to access respective EEZs, (between 12 nm and 200 nm) to fish. In this period, EU vessels will also be able to fish in specified parts of UK waters between 6 nm and 12 nm.

8.4.39 Over the five-year transition period, 25% of the EU's fisheries quota in UK waters will be transferred to the UK; a significant proportion of this (60% by 2021) has already been transferred. Overall, the biggest gains in terms of UK quota share by volume relevant to the study area are for North Sea horse mackerel and whiting. In terms of additional quota value, the relevance of North Sea sole, herring and cod UK uplifts are noted.

8.4.40 Based on changes in quota allocation, it could be expected that between 2021 and 2026, UK vessels could be catching relatively more quota species, with EU fleets catching relatively less. In summary, levels of fishing activity within the study area are likely to remain consistent with the current baseline but be undertaken in a slightly greater proportion by UK vessels.

8.4.41 In relation to EU access to UK territorial waters, provision has been made for EU vessels with a track record of fishing between 6 nm and 12 nm to be issued with licences to continue fishing. This licencing process is ongoing, and it is unknown

how many EU vessels this is applicable to. Therefore, fishing activity within the study area is likely to remain consistent with the current baseline in terms of the fleets and Member States in operation.

8.4.42 In relation to the effects of the COVID pandemic, MMO annual reporting notes that the effects of the pandemic on the UK fishing industry were felt from March 2020. The MMO UK Sea Fisheries Statistics 2021 report observes that an increase in overall UK landings quantity and value in 2021 (relative to 2020) largely reflected recovery from the COVID period and additional quota available to the UK fleet after leaving the EU (MMO, 2022).

Scope of the Assessment

8.4.43 A range of potential impacts on commercial fisheries have been identified, which may occur during the construction, operation and maintenance, and decommissioning phases of the Proposed Development.

8.4.44 The impacts that have been scoped into the assessment are outlined in **Table 8.4.2** together with a description of any additional data collection and supporting analyses that will be required to enable a full assessment of the impacts.

8.4.45 No potential impacts are scoped out of the assessment.

Table 8.4.2: Impacts proposed to be scoped into the assessment for commercial fisheries

Impact	Phase					Justification	Data collection and analysis proposed to characterise the baseline environment	Summary of the proposed approach to assessment
	C	Op	Op_{repair}	$D_{in-situ}$	D_{remove}			
Reduction in access to, or exclusion from established fishing grounds	✓	✓	✓	✓	✓	Installation, Operational-repair and decommissioning-removal activities have potential to create loss of fishing opportunities. No loss of access associated with normal operation and maintenance phase (all rock protection and crossing points will be overtrawlable).	Detailed analysis of baseline datasets will be undertaken in the EIA to characterise long-term (i.e., over several years, typically a five-year period) patterns in commercial fisheries activity across the study area and predict potential impacts upon future activity. Consultation with the commercial fishing industry will be undertaken to ground-truth available baseline data and gain further understanding of commercial fisheries activity by smaller vessels across the inshore portion of the study area. Analysis of data and the results of consultation will provide an extended baseline characterisation of the study area, which will underpin and inform the impact assessment.	The commercial fisheries impact assessment will follow the EIA methodology set out in **Section 5:** EIA Methodology, of the Scoping Report and in accordance with the guidance listed in this section. Impacts will be assessed for each relevant fleet/fishery scoped into the EIA. Where relevant assessment will be informed by the outcomes of the fish and shellfish ecology impact assessment, and it will be assumed that commercial fisheries will be affected as a result of any loss of resources. Where relevant assessment will be informed by the outcomes of the shipping and navigation impact assessment.
Displacement leading to gear conflict and increased fishing pressure on adjacent grounds	✓	✓	✓	✓	✓	Any (temporary) reduced access to fishing grounds creates the potential for displacement of fishing activity.		
Displacement or disruption of commercially important fish and shellfish resources	✓	✓	✓	✓	✓	Installation and decommissioning activities, and the presence of cable infrastructure and maintenance activities may lead to disturbance of commercially important fish and shellfish resources, including effects of electromagnetic fields (noting EMF generation during operation and maintenance anticipated to be minimal-to be characterised at PEIR and ES) and changes to habitat, and		

Impact	Phase					Justification	Data collection and analysis proposed to characterise the baseline environment	Summary of the proposed approach to assessment
	C	Op	Op_{repair}	$D_{in-situ}$	D_{remove}			
						therefore displacement or disruption of fishing activity. Note, operation and maintenance phase cable infrastructure designed to best practice designs which are over trawlable.		Further description of installation methods including crossing design will be integrated at PEIR and ES stage.
Increased vessel traffic associated with the Proposed Development within fishing grounds leading to interference with fishing activity	✓	×	✓	×	✓	Movement of vessels associated with installation, operation and maintenance and decommissioning of the cable, adding to the existing volume of marine traffic in the area, may lead to interference of fishing activity.		

Impact	Phase					Justification	Data collection and analysis proposed to characterise the baseline environment	Summary of the proposed approach to assessment
	C	Op	Op_{repair}	$D_{in\text{-}situ}$	D_{remove}			
Physical presence of infrastructure leading to gear snagging	n/a	✓	n/a	✓	n/a	Presence of offshore infrastructure can (in general) pose a snagging risk to fishing vessels, which can result in loss or damage to fishing gear. Best practice industry protocols will be adopted by the Proposed Development, including expectation that close to the entire UK cable length will be buried with the exception of crossing points and very isolated hard bedrock areas. Entire length (including crossings) to be over trawlable. Note, impact not scoped out at this stage to allow further details/justifications to be provided at PEIR stage.		

*C=Construction phase, Op=Operational phase, Op_{repair}=Operational phase repair activities, $D_{in\text{-}situ}$=Decommissioning phase assuming cable de-energised and left in-situ, D_{remove}=Decommissioning phase assuming cable removed

Measures Adopted as Part of the Proposed Development

8.4.46 The following measures adopted as part of the Proposed Development are relevant to commercial fisheries, considered in addition to the overarching design and embedded measures in **section 4.8** and **Table 4.8.2.** These measures may evolve as the engineering design and the EIA progresses.

- The FLO will support ongoing liaison and ensure clear communication between the Applicant and commercial fisheries during the construction phase. Good practice guidance on the approach to fisheries liaison and mitigation shall be implemented and a procedure for the claim of loss of/or damage to fishing gear will be developed.
- Advance warning and accurate location details of construction, maintenance and decommissioning operations, associated safety/clearance zones and advisory passing distances will be given via Notices to Mariners, supported by Radio Navigational Warnings, Navigational Telex (NAVTEX) and/or broadcast warnings as appropriate. Details to be set out in the VMP.
- Cables will be buried (where possible) targeting a depth of up to 1.5 m below the seabed, subject to the detailed CBRA. This will reduce the likelihood of damage to the cable (and associated risks and accidents) associated with anchor strike, or fishing activity.
- Cable crossing design will adhere to international best practice design, which will allow them to be overtrawlable.
- In the event that cable exposures are identified during the operation and maintenance phase of the Project, the location of these will be shared with fisheries stakeholders and where appropriate, additional temporary measures put in place (e.g., marker buoys, use of guard vessels, etc.), until a repair or remediation can be implemented.

Proposed Assessment Methodology

8.4.47 The commercial fisheries assessment for the offshore elements of the Proposed Development will be undertaken in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report, in addition to the established guidance listed in this section.

8.4.48 Detailed analysis of baseline datasets will be undertaken in the EIA to characterise long-term (i.e., over several years, typically a five-year period) patterns in commercial fisheries activity across the study area and predict potential impacts upon future activity. Consultation with the commercial fishing industry will be undertaken to ground truth available baseline data and gain further understanding of commercial fisheries activity by smaller vessels across the inshore portion of the study area. Such consultation has already commenced and is being led by the appointed company FLO. Analysis of data and the results of consultations will provide an extended baseline characterisation of the study area, which will underpin and inform the impact assessment.

8.4.49 Where relevant, the assessment of impacts on commercial fisheries will be informed by the assessments in the following sections:

- **Section 8.3**: Fish and Shellfish Ecology; and
- **Section 8.6**: Shipping and Navigation assessments.

Potential Cumulative Impacts

8.4.50 There is potential for cumulative effects on sensitive receptors to occur when the Proposed Development is considered together with other developments. The potential cumulative effects between the offshore elements of the Proposed Development and other developments with respect to commercial fisheries will be considered within the PEIR and the ES.

8.4.51 The cumulative effects assessment would be undertaken in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report and CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland (2018).

8.4.52 Projects and activities relevant to the assessment of cumulative impacts on commercial fisheries will be identified through a screening exercise. The potential impacts considered in the cumulative assessment as part of EIA will be in line with those described for the project-alone assessment, though it is possible that some will be screened out on the basis that the impacts are highly localised (i.e., they occur only within Proposed Development boundaries) or where management measures in place for the Proposed Development and other projects will reduce the risk of impacts occurring.

8.4.53 For the purposes of cumulative impact assessment, it will be assumed that already-operational projects and active licensed activities constitute part of the existing baseline environment, as commercial fisheries would already be adapted to them and any effect they might have had will be reflected in the baseline characterisation undertaken to inform impact assessment.

Potential Inter-related Effects

8.4.54 The assessment of potential inter-related effects will be considered within the commercial fisheries ES chapter. It will include consideration of project lifetime effects and receptor-led effects in line with the approach outlined in **Section 5**: EIA Methodology, of the Scoping Report.

8.4.55 Effects on commercial fisheries are not anticipated to interact in such a way as to result in combined effects of greater significance than the assessments presented for each individual project phase.

Potential Transboundary Impacts

8.4.56 Baseline data indicates the presence of foreign fishing fleet activity. Consultation with stakeholders in other relevant Member States, and data gathered from other relevant Member States, will inform the scope of any future transboundary impact assessment within the ES.

8.5 Marine Mammals and Sea Turtles

Introduction

8.5.1 This section of the EIA Scoping Report identifies the marine mammal and sea turtle receptors relevant to the offshore elements of the Proposed Development. This section also considers the potential impacts arising from the construction, operation and maintenance, and decommissioning of the Proposed Development and identifies the proposed scope of, and methodology for the EIA process in relation to marine mammals and sea turtles.

8.5.2 Pre-installation surveys, such as UXO clearance and geophysical surveys, are to be licensed separately, as required, from the Proposed Development and as such are not considered within this Scoping Report.

Relevant Policy, Legislation and Guidance

8.5.3 The lists in this Section should be read in conjunction with **Section 2**: Policy and Legislation, of the Scoping Report.

Legislative and Policy Context

8.5.4 The following key legislation and policy documents relevant to marine mammals and/or sea turtles will be considered within the assessment process:

- The Convention on the Conservation of Migratory Species of Wild Animals (the 'Bonn Convention');
- The Convention on the Conservation of European Wildlife and Natural Habitats (the 'Bern Convention');
- The Convention for the Protection of the Marine Environment of the North East Atlantic (the 'OSPAR Convention');
- The Convention on Biological Diversity and the Aichi Biodiversity Targets;
- Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas (ASCOBANS);
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) 1973;
- The Marine Strategy Framework Directive (MSFD);
- The Conservation of Habitats and Species Regulations 2017 (as amended) and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) (collectively known as the 'Habitats Regulations');
- The Marine and Coastal Access Act 2009; and
- Wildlife and Countryside Act 1981 (as amended).

Guidance documents

8.5.5 Guidance documents relevant to marine mammals and sea turtles that will be considered within the assessment process include the following:

- Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM 2019);
- Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects (Southall *et al*., 2019);
- Marine mammal noise exposure criteria: assessing the severity of marine mammal behavioural response to human noise (Southall *et al*., 2021);
- The Protection of Marine EPS from Injury and Disturbance: Draft Guidance for the Marine Area in England and Wales and the UK Offshore Marine Area (JNCC *et al*., 2010);
- Guidance for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise SACs (JNCC, 2020);
- National Oceanic and Atmospheric Administration (NOAA) technical guidance for assessing the effects of anthropogenic sound on marine mammal hearing (NMFS, 2018);
- Wildlife Safe (WiSe) Scheme Code of Conduct for best practices for wildlife watching; and
- Sound Exposure Guidelines for Fishes and Sea Turtles (Popper *et al*., 2014).

Study Area

8.5.6 The study areas will cover the Offshore Cable Corridor, which is then extended over a wider area, as described for each species below, to account for the scale of movement and population structure for each species as appropriate.

8.5.7 Therefore, the marine mammal and sea turtle study area will be considered at two separate scales i.e., a broad scale and a more site-specific scale. The site-specific scale more accurately reflects the extent of potential disturbance and/or indicative information on local species densities.

8.5.8 The site-specific study area for all marine mammals is the Offshore Cable Corridor which runs from the MLWS to the EEZ boundary, with a precautionary 5 km buffer.

8.5.9 The site-specific study area is based on a precautionary ZOI of the works, using the Effective Deterrence Range (EDR) for harbour porpoises from '*other geophysical surveys*' recommended in the JNCC Guidance for assessing noise disturbance in harbour porpoise SACs. There are no EDRs presented in the guidance for geotechnical works, which would have a lower impact radius than any geophysical surveys, with respect to underwater noise.

8.5.10 The precautionary EDR of 5 km has been used, as there is potential to disturb and/or displace marine mammals and sea turtles present in the Offshore Cable Corridor, due to noise disturbance during the construction and decommissioning phase of the Proposed Development.

8.5.11 For each species the broad scale study area is largely defined by the appropriate species Management Unit (MU) (defined by the Inter Agency Marine Mammal Working Group, IAMMWG) (IAMMWG, 2023) .

8.5.12 At the broad MU scale, the Proposed Development is located within the following specific cetacean MUs:

- Harbour porpoise: Celtic and Irish Seas MU;
- Bottlenose dolphin: Offshore Channel, Celtic Sea & South West England MU;

- Common dolphin: Celtic and Greater North Seas MU;
- Risso's dolphin: Celtic and Greater North Seas MU; and
- Minke Whale: Celtic and Greater North Seas MU.

8.5.13 A cetacean MU typically refers to a geographical area in which the animals of a particular species are found, to which management of human activities is applied. It may be smaller than what is believed to be a 'population' (which is defined as a collection of individuals of the same species found in the same area, where genetic variation occurs within the population and between other populations), to reflect spatial differences in human activities and their management (IAMMWG, 2023). Using MUs in the assessment of cetacean species allows consideration of the scale of movement of a species and its respective populations, whilst taking account of jurisdictional boundaries and the management of human activities. The broad scale study area for cetaceans is shown in **Figure 8.5.1**.

8.5.14 Seal Management Units (SMU) also refer to a geographical area which are defined based on the distribution of seal haul-out sites, for pragmatic reasons such as the ability to survey an SMU within one season, and the locations of jurisdictional boundaries (SCOS, 2022). SMUs are not explicit management divisions and should be combined appropriately when management is considered. The broad scale study area for seals is shown in **Figure 8.5.2.**

8.5.15 The broad scale study area for sea turtles (**Figure 8.5.3**) is based upon the OSPAR Region III: Celtic Seas (OSPAR, 2022), in view of the wide-ranging distribution of sea turtles throughout the region.

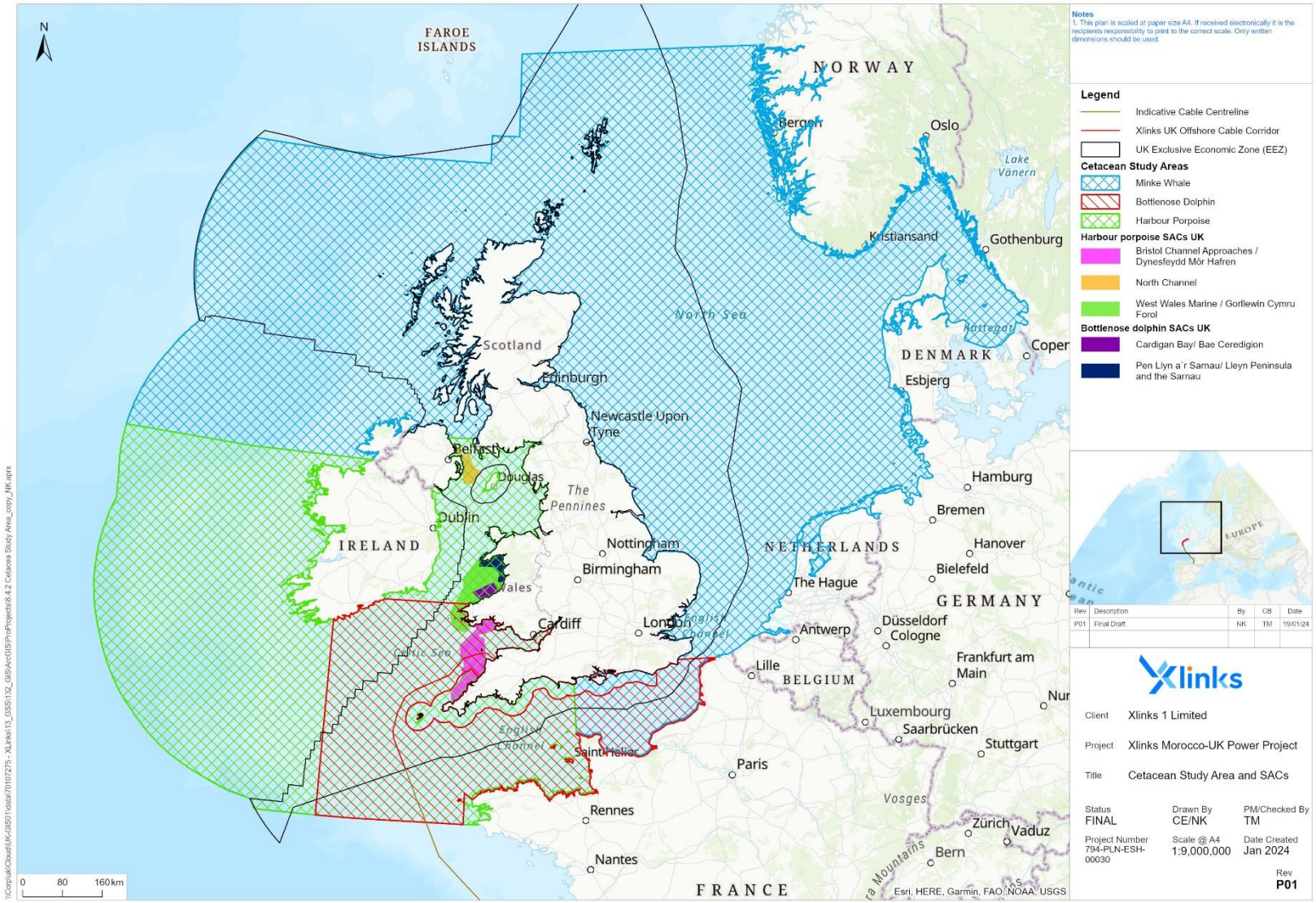

Figure 8.5.1: Cetacean Study Area

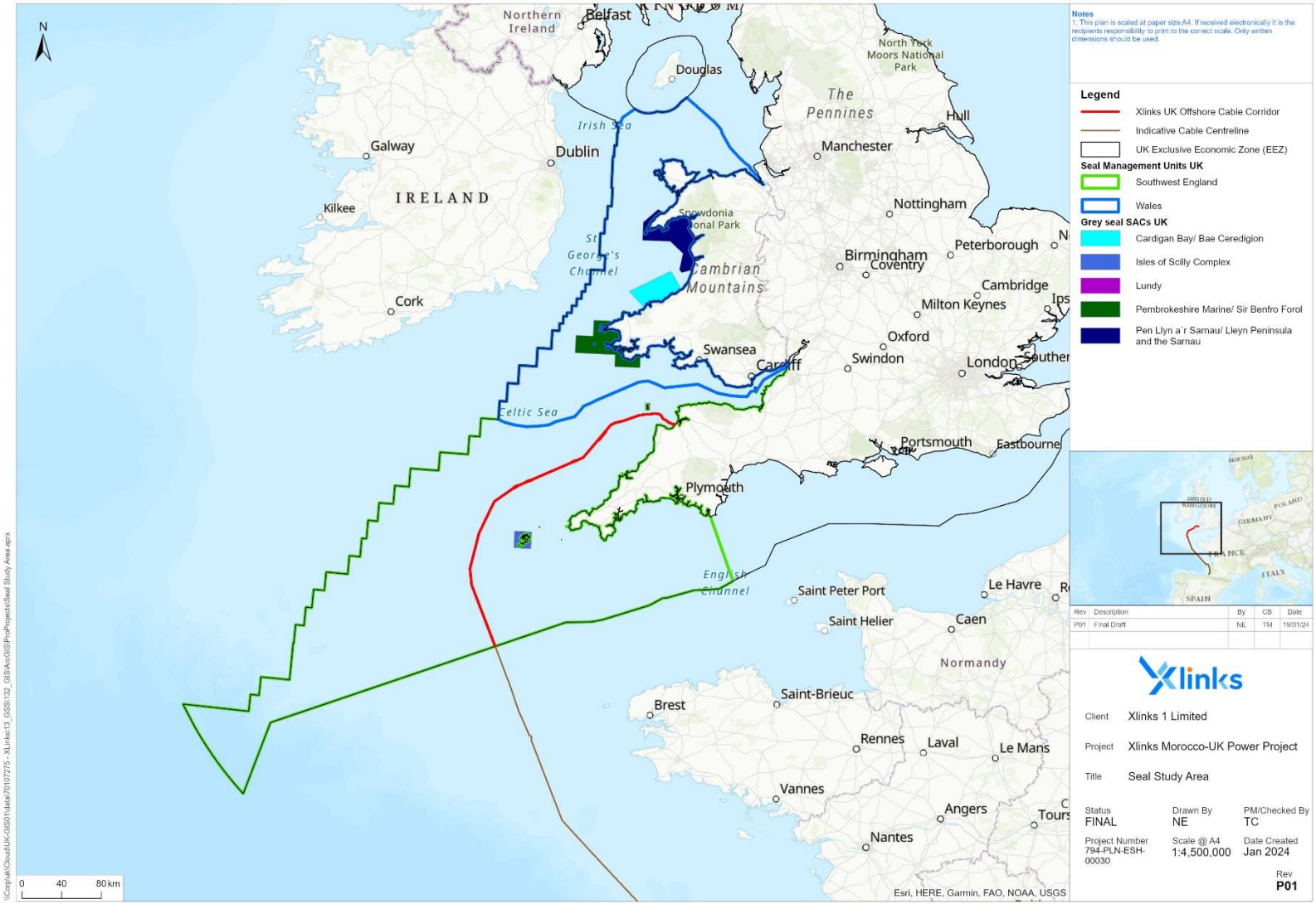

Figure 8.5.2: Seal Study Area

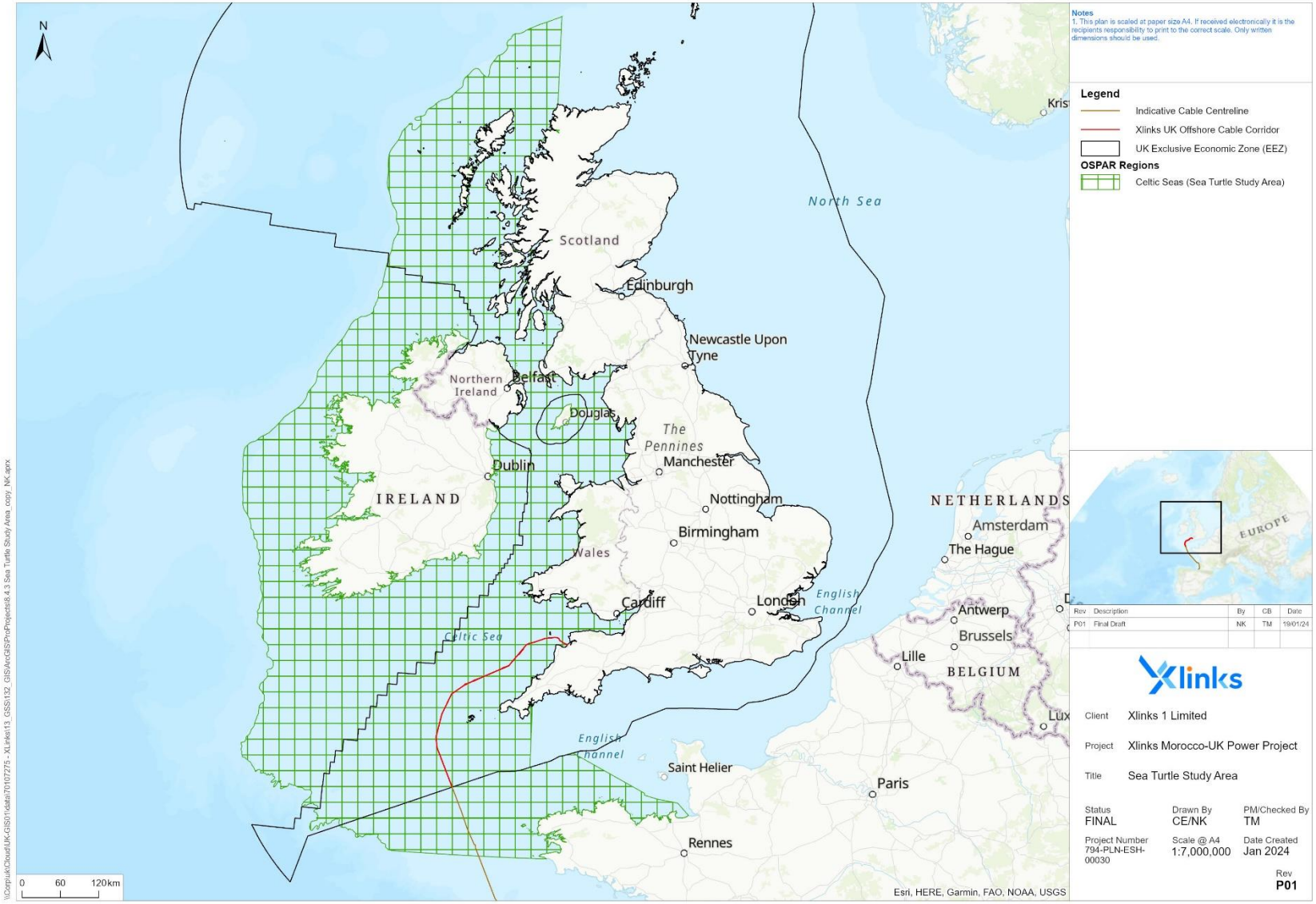

Figure 8.5.3: Sea Turtle Study Area

Data Sources

8.5.16 The data sources used to inform the baseline assessment will primarily comprise published material which is publicly available online. An initial desk-based review has identified several data sources which provide baseline data coverage of the species specific broad scale marine mammal and sea turtle study areas.

8.5.17 The baseline data sources identified in this Scoping Report will remain under review and may be updated in response to feedback from relevant statutory and non-statutory consultees during the EIA process, or in response to new sources of information becoming available.

Desk-based Data Sources

8.5.18 To inform this Scoping Report section, a high-level desk-based assessment has been conducted for marine mammal and sea turtle receptors. The sources used in this assessment are listed in **Table 8.5.1.**

Table 8.5.1: Desk based baseline data sources – Marine mammals and sea turtles

Source	Summary
Estimates of cetacean abundance in European Atlantic waters in summer 2022 from the SCANS-IV aerial and shipboard surveys (Gilles *et al.*, 2023)	Aerial and boat-based surveys were conducted in 2022 to provide large-scale estimates of small cetacean abundance in European Atlantic waters, including for the harbour porpoise, bottlenose dolphin, Risso's dolphin, common dolphin, and minke whale. The relevant survey blocks are CS-C and CS-B.
Estimates of cetacean abundance in European Atlantic waters in summer 2016 from the SCANS-III aerial and shipboard surveys (Hammond *et al*., 2021)	Aerial and boat-based surveys were conducted in 2016 to provide large-scale estimates of small cetacean abundance in European Atlantic waters, including for the harbour porpoise, bottlenose dolphin, Risso's dolphin, common dolphin, and minke whale. The relevant survey blocks are B and D.
Modelled density surfaces of cetaceans in European Atlantic waters in summer 2016 from the SCANS-III aerial and shipboard surveys (Lacey *et al.*, 2022)	Aerial and boat-based surveys were conducted in 2016 to provide information on summer distribution in European Atlantic waters by modelling the data in relation to spatially linked environmental features to generate density surface maps, including for the harbour porpoise, bottlenose dolphin, common dolphin, and minke whale.
Sympatric Seals, Satellite Tracking and Protected Areas: Habitat-Based Distribution Estimates for Conservation and Management (Carter *et al.,* 2022)	Large scale deployment of GPS telemetry tags of grey seals around the UK and estimates of at-sea distribution of grey and harbour seals around the UK, using new and pre-existing data.
Habitat-based predictions of at-sea distribution for grey and harbour seals in the British Isles (Carter *et al.,* 2020)	Estimates of at-sea distribution for both grey and harbour seals from haul-outs in the British Isles. The predictions are based on regional models of habitat preference.
Updated seal usage maps: the estimated at-sea distribution of grey and harbour seal (Russell *et al.,* 2017)	At-sea usage and total usage (at-sea and on land) maps for grey and harbour seals around the UK and Republic of Ireland.
Atlantic Array Offshore Wind Farm: Environmental Statement Volume 1: Offshore Chapter 9: Marine Mammals (Channel Energy Ltd, 2013b)	Atlantic Array Offshore Wind Farm site located in the Outer Bristol Channel. Includes information on site specific sightings of common dolphins, harbour porpoise, minke whale and grey seals.

Source	Summary
Special Committee on Seals (SCOS) (SCOS, 2021; 2022; 2023)	Scientific advice to government on matters relating to the management of UK seal populations. Includes UK wide haul-out surveys of harbour and grey seals.
Joint Cetacean Protocol (JCP) Phase III (Paxton *et al*., 2016)	Aerial, vessel, and land-based surveys of UK waters, 1994 to 2010.
Marine Ecosystems Research Programme (MERP) maps (Waggitt *et al*., 2020)	Collation of vessel and aerial survey data from MERP, gathered between 1980 to 2018, covering European Atlantic Waters. Modelled distribution maps provide spatially broad-scale relative densities and distribution over several decades for several cetacean species.
Modelled Distributions and Abundance of Cetaceans and Seabirds of Wales and Surrounding Waters (Evans and Waggitt, 2023)	Modelled distribution maps provide spatially broad-scale relative densities and distribution between 1990 to 2020 for several cetacean species. Covers territorial seas of Wales and adjacent areas of the Republic of Ireland, Northern Ireland, Isle of Man, north west and south west England, including all of the Irish Sea, Bristol Channel, and adjacent Celtic Sea.
Seaquest Southwest Annual Report (2022)	Marine citizen science recording scheme run by the Cornwall Wildlife Trust to record the presence and behaviours of marine megafauna found in Cornish waters; including porpoises, dolphins, whales, seals, sharks, turtles, and fish.
Citizen science data to assess the vulnerability of bottlenose dolphins to human impacts along England's South Coast (Corr *et al.*, 2023)	English Channel sightings of bottlenose dolphins, including estimate abundance, distribution and ranging behaviour. The Site 1 area of the study, which covers Cornwall and North Devon, is most relevant to this assessment.
Grey and harbour seals in France: Distribution at sea, connectivity and trends in abundance at haulout sites (Vincent *et al.,* 2017)	Haul-out site census, aerial surveys, and telemetry data of grey and harbour seals in the French Coast of the English Channel. Includes connectivity assessment with the British Isles, relevant to grey seals using the southwest British Isles (Isle of Scilly and Cornwall).
JNCC MPA mapper (2020)	Interactive resource containing information on the MPAs designated in the UK and Crown Dependency waters. Used to identify SACs in the Proposed Development and their qualifying features.
Atlas of Cetacean distribution in north-west European Waters (Reid *et al*., 2003)	Account and snapshot of the distribution of all 28 cetacean species that are known to occur in the water off north-west Europe.
The State of Cetaceans 2023 (ORCA, 2023)	This report builds on the 17 years' worth of sightings and environmental data collected during the 1,117 dedicated ORCA surveys conducted between 2006 and 2022 using vessels of opportunity.
WDCS/Greenpeace Survey Report: Small cetaceans along the coasts of Wales and Southwest England (de Boer and Simmonds, 2003)	Results from a cetacean survey carried out over a five day period in November 2022 which provided an overview of the distribution of four cetacean species (harbour porpoise, common dolphin, bottlenose dolphin and Risso's dolphin) and sightings frequencies, relative indices of abundance and the relation between oceanic features and cetacean distribution.

Source	Summary
Recent Sightings (Sea Watch Foundation, 2023)	The most recent cetacean sightings around the coats of south west England and South Wales reported by SWF volunteers. Description of species, number of individuals, location, time, date and observer name.
Assessing harbour porpoise populations in south-west Wales, data issues and implications for conservation and management (Oakley *et al*., 2016)	Assessment of harbour porpoise population distribution within the Bristol Channel Approaches SAC, filling an important research gap by bringing together an extensive ten-year dataset collected by multiple organisations. Results intended to inform government agencies and potential marine renewable energy developers.
Atlas of the Marine Mammals of Wales (Baines and Evans, 2012)	Description of temporal and spatial distribution and relative abundance of marine mammal species within Welsh waters, focusing on the most regularly occurring species.
OSPAR Assessment Portal: State Assessment 2022 – Leatherback turtle (OSPAR, 2022)	This status assessment summaries the range, distribution, abundance estimates for leatherback turtles in the North East Atlantic region, with identifying potential threats, knowledge gaps and measures addressing key conservation pressures.
Annex 1 to Initial Assessment : Marine Environment. EU Project Grant No: EASME/EMFF/2015/1.2.1.3/03/SI2.742089. Supporting Implementation of Maritime Spatial Planning in the European Northern Atlantic (SIMNORAT) (Morel *et al*., 2018)	This report is centred on the Marine Strategy Framework Directive 'Good Environmental Status' Descriptor 1, and aims to identify specific ecological characteristics, including the distribution, abundance and ecology of marine turtle species recorded throughout the North Atlantic European waters.
Jellyfish aggregations and leatherback turtle foraging patterns in a temperate coastal environment (Houghton *et al.,* 2006)	This study employed aerial surveys to map jellyfish and identified the relationship between leatherback turtle distribution and jellyfish aggregation in the North East Atlantic.
Long-term insights into marine turtle sightings, strandings and captures around the UK and Ireland (Botterell *et al.,* 2020)	This paper presents the spatial and temporal occurrence of marine turtles in the UK and Ireland between 1910 and 2018.
British & Irish Marine Turtle Strandings & Sightings Annual Report 2020 (Penrose and Westfield, 2023)	This report collates and provides information on the sighting and stranding records of sea turtle species in the British Isles and Ireland throughout 2012 to 2022.

Baseline Environment

8.5.19 Marine mammals considered in this Scoping Report include cetaceans (whales, dolphins and porpoises) and pinnipeds (seals).

8.5.20 There are five cetacean species which are abundant or common in the south-west of England, these are: harbour porpoise *Phocoena phocoena*, short-beaked common dolphin *Delphinus delphis*, bottlenose dolphin *Tursiops truncatus*, Risso's dolphin *Grampus griseus* and minke whale *Balaenoptera acutorostrata* (e.g., de Boer and Simmonds, 2003; ORCA, 2023).

8.5.21 Other species recorded infrequently or rarely within the south west of England and wider Celtic Sea region include fin whale *Balaenoptera physalus*, killer whale *Orcinus orca*, long-finned pilot whale *Globicephala melas*, humpback whale *Megaptera novaeangliae*, sei whale *Balaenoptera borealis*, pygmy sperm whale *Kogia breviceps*, northern bottlenose whale *Hyperoodon ampullatus*, striped dolphin *Stenella coeruleoalba*, Atlantic white-sided dolphin *Lagenorhynchus acutus*, white-beaked dolphin *Lagenorhynchus albirostris*, false killer whale *Pseudorca crassidens*, sperm whale *Physeter macrocephalus*, blue whale

Balaenoptera musculus and beaked whale species (e.g. de Boer and Simmonds, 2003).

8.5.22 Two seal species, grey seal *Halichoerus grypus* and harbour seal *Phoca vitulina*, are present within the UK. In the south west of England, harbour seals are rarely recorded, whereas grey seals are common (SCOS, 2022).

8.5.23 Within UK and Irish waters, six species of sea turtles have been documented (Botterell *et al*., 2020). Of these, the leatherback turtle is the most common species and the only regularly encountered in British waters (Botterell *et al*., 2020).

8.5.24 From the initial desk-based assessment, the following key marine mammal and sea turtle species were identified as regularly occurring in the region:

- Harbour porpoise *Phocoena phocoena*;
- Common dolphin *Delphinus delphis*;
- Bottlenose dolphin *Tursiops truncatus;*
- Risso's dolphin *Grampus griseus*;
- Minke whale *Balaenoptera acutorostrata*;
- Grey seal *Halichoerus grypus*; and
- Leatherback turtle *Dermochelys coriacea.*

8.5.25 This section provides a high level summary of the baseline characterisation of the receiving environment and a high level summary of the existing environment and key marine mammal and sea turtle species listed above.

Harbour Porpoise

8.5.26 Harbour porpoise are the most abundant cetacean species in UK waters where they are recorded year round with peaks over the summer months. They prefer a near shore habitat with a water depth between 50 m and 150 m and are regularly sighted along the south west coastline (SWF, 2023).

8.5.27 Harbour porpoise diet consists of small shoaling fish such as sandeels *Ammodytidae* and whiting *Merlangius merlangus*, from demersal and pelagic habitats and cephalopods, with a preference for prey found on or near the seabed. Harbour porpoises have a high metabolic rate which requires them to eat up to 10% of their body weight in food per day (Booth, 2019).

8.5.28 Harbour porpoises have a gestation period of 10 to 11 months and give birth to one calf per year between May and August (Blanchet *et al*., 2008). Breeding and nursery areas for harbour porpoise have been identified within the Bristol Channel Approaches SAC, which has a calf-adult ratio of 1:13 (Oakley *et al*., 2016).

8.5.29 The harbour porpoise density estimate for SCANS blocks CS-B and CS-C is 0.0587 (CV=0.399) and 0.0157 (CV=0.506) animals/km², respectively (Gilles *et al*., 2023). Within the Bristol Channel Approaches SAC, there is an estimated harbour porpoise density of 0.58 animals/km² (Oakley *et al*., 2016). Abundance estimates for harbour porpoise are provided below in **Table 8.5.2.**

8.5.30 The overall trend in conservation status of harbour porpoise within UK waters is unknown due to insufficient data to establish a population trend (JNCC, 2019a).

8.5.31 The relevant legislation protecting harbour porpoises in UK waters is outlined in **Table 8.5.3.**

Common Dolphin

8.5.32 Common dolphins occur throughout waters off the south west of England, where they commonly inhabit continental shelf waters and may occur in both inshore and offshore areas (Baines and Evans, 2012).

8.5.33 Common dolphins prey on a variety of fish and cephalopod species but prefer feeding on vertically migrating mesopelagic schooling fishes in the surface waters at dusk and early night (Pusineri *et al*., 2006).

8.5.34 Recordings from bycaught individuals in the North East Atlantic show that the average age at sexual maturity was 8.2 years for females and 11.9 years for males (Murphy *et al*., 2021). Considering common dolphins are reported to live up to 30 years in the North East Atlantic and have an extended calving interval period of approximately four years, it is thought females could have up to four to five calves throughout their lifetime (Murphy *et al*., 2009).

8.5.35 The common dolphin density estimate for SCANS blocks CS-B and CS-C is 1.0310 (CV=0.244) and 0.8410 (CV=0.264) animals/km², respectively (Gilles *et al*., 2023). Abundance estimates for common dolphin are provided below in **Table 8.5.2.**

8.5.36 The current conservation status and short-term trends for common dolphin within UK waters are unknown, due to insufficient data for the species (JNCC, 2019b).

8.5.37 The relevant legislation protecting common dolphins in UK waters is outlined in **Table 8.5.3**.

Bottlenose Dolphin

8.5.38 Bottlenose dolphins are a resident species in the UK and are regularly recorded in coastal areas including along the coast of the south west of England (Corr *et al*., 2023; SWF, 2023). This small, wide-ranging population inhabit the coastal waters from North Cornwall to Sussex (Corr *et al*., 2023).

8.5.39 Bottlenose dolphin diet consists of several species of fish, such as cod *Gadus morhua*, saithe *Pollachius virens* and whiting *Merlangius merlangius*, and they occasionally prey on cephalopods, crabs, and shrimp (Santos *et al*., 2001).

8.5.40 Female bottlenose dolphins reach sexual maturity from 6 to 13 years old (Robinson *et al*., 2017) and males from their tenth year (Harrison and Ridgwa,1971). The gestation period lasts for 12 months and females average calving intervals are around three to five years (Harrison and Ridgwa,1971; Robinson *et al*., 2017).

8.5.41 The bottlenose dolphin density estimate for SCANS blocks CS-B and CS-C is 0.0599 (CV=0.402) and 0.4195 (CV=0.406) animals/km², respectively (Gilles *et al.,* 2023). Abundance estimates for bottlenose dolphin are provided below in **Table 8.5.2**.

8.5.42 The current conservation status and short-term trends for bottlenose dolphin within UK waters are unknown, due to insufficient data for the species (JNCC, 2019c).

8.5.43 The relevant legislation protecting bottlenose dolphins in UK waters is outlined in **Table 8.5.3**.

Risso's Dolphin

8.5.44 Risso's dolphin are present year-round in the UK, where they inhabit both offshore, shelf waters and inshore coastal waters (Hague *et al*., 2020).

8.5.45 Risso's dolphins predate on cephalopods, primarily squid and octopus (MacLeod *et al*., 2014). Little is known about Risso's dolphin life history, but sexual maturity is believed to be reached at 8 to 10 years of age for females and 10 to 12 years for males (Baird, 2009). Risso's dolphin have an estimated 13 to 14-month gestation period, with a 2.4 year calving interval. The calving season is unknown for Irish and UK waters, but the presence of young calves in some groups observed during cetacean surveys indicates that calving does occur in nearby Irish waters (Wall *et al*., 2013).

8.5.46 The Risso's dolphin density estimate for SCANS blocks CS-B and CS-C is 0.0425 (CV=0.736) and 0.0057 (CV=1.004) animals/km², respectively (Gilles *et al*., 2023). Abundance estimates for Risso's dolphin are provided below in **Table 8.5.2**.

8.5.47 The current conservation status and short-term trends for Risso's dolphin within UK waters are unknown due to insufficient data (JNCC, 2019d).

8.5.48 The relevant legislation protecting Risso's dolphins in UK waters is outlined in **Table 8.5.3.**

Minke Whale

8.5.49 Minke whales are the most abundant baleen whale in UK waters and are commonly recorded off the coast of South West England (Hague *et al*., 2020; SWF, 2023).

8.5.50 Minke whale diet consist of pelagic schooling fish such as sandeel, sprat, herring and mackerel (Lysaght and Marnell, 2016).

8.5.51 North East Atlantic minke whales are thought to reach sexual maturity between three and six years old, but some can take up to 13 years to reach physical maturity (Olsen and Sunde, 2002). The gestation period lasts for 10 months, and the calving interval lasts at least one-to-two years (Christiansen *et al*., 2014).

8.5.52 The minke whale density estimate for SCANS blocks CS-B and CS-C is 0.0016 (CV=1.128) and 0.0079 (CV=0.822) animals/km², respectively (Gilles *et al*., 2023). Abundance estimates for minke whale are provided below in **Table 8.5.2**.

8.5.53 The current conservation status and short-term trends for minke whales within UK waters is unknown due to insufficient data (JNCC, 2019e).

8.5.54 The relevant legislation protecting minke whales in UK waters is outlined in **Table 8.5.3**.

Table 8.5.2: Cetacean abundance estimates within SCANS-IV and UK portion of Management Unit (MU) blocks. Source: Gilles et al. (2023), Hammond et al. (2021) and IAMMWG (2023).

Species	SCANS-IV blocks CS-B and CS-C	SCANS-III blocks B and D	Management Units (MUs)
Harbour porpoise	CS-B: 5,258 (95% CI=1,967-10,039)	B: 3,374 (95% CI=102-8,078)	Celtic and Irish Seas (CIS): 16,777 (CV=0.2; 95% CI=11,216-25,096)
	CS-C: 564 (95% CI=104-1,183)	D: 5,734 (95% CI=1,697-12,452)	
Common dolphin	CS-B: 92,409 (95% CI=55,856-149,382)	B: 92,893 (95% CI=52,766-149,494)	Celtic and Greater North Seas (CGNS): 57, 417 (CV=0.32; 95% CI=30,850-106,863)
	CS-C: 30,301 (95% CI=17,888-51,902)	D: 18,187 (95% CI=18,187-	
Bottlenose dolphin	CS-B: 5,366 (95% CI=1,699-10,45)	B: 6,926 (95% CI=2,713-13,389)	Offshore Channel, Celtic Sea & South-west England (OCSW): 3,573 (CV=0.35; 95% CI=1,851-6,898)
	CS-C: 15,118 (95% CI=4,966-29,157)	D: 2,938 (95% CI=914-5,867)	
Risso's dolphin	CS-B: 3,814 (95% CI=215-11,458)	B: 799 (95% CI=0-2,770)	Celtic and Greater North Seas (CGNS): 8,686 (CV=0.63; 95% CI=2,810-26,852)
	CS-C: 205 (95% CI=3-721)	D: No abundance estimate	
Minke whale	CS-B: 147 (95% CI=1-641)	B: 289 (95% CI=0-962)	Celtic and Greater North Seas (CGNS): 10,266 (CV=0.26; 95% CI=6,210-17,042)
	CS-C:284 (95% CI=3-921)	D: 543 (95% CI=0-1,559	

Grey Seal

8.5.55 Grey seals have a wide distribution and regularly occur off the south west of England, where they are present year round. Foraging ranges of up to 448 km from a haul-out have been reported for grey seals, based on the analysis of telemetry data (Carter *et al*., 2022). However, typical foraging distances tend to be shorter, for example, McConnell *et al*., (1999) reported that 88% of trips undertaken were local and repeated and were within 65 km of the haul-out site.

8.5.56 They are generalist feeders and mainly forage on the seabed where they take prey such as gadoids (cod, whiting, haddock, ling), and flatfish (plaice, sole, flounder, dab, with sandeels being their predominant prey source (SCOS, 2023).

8.5.57 The two largest breeding sites in the region are the Isles of Scilly and Lundy Island (SCOS, 2022). In the south west of Britain, pups are generally born between August and October, with peaks in September and October, and the annual moult occurs shortly afterwards, between December and April (Sayer *et al*, 2020; SCOS, 2023). In Cornwall, there is a notable increase in grey seal presence during the moulting and breeding periods compared to during the summer months (Leeney *et al*., 2010).

8.5.58 The at sea population estimate for grey seal in the south west of England ranges from 0-0.01% (Carter *et al*., 2022). Pup production within the south west of England, including estimates for the Isles of Scilly and Lundy, is estimated at 450 in the most recent annual count (SCOS, 2023).

8.5.59 Grey seals in the UK have been assessed as having a favourable conservation status with an improving conservation status trend (JNCC, 2019f).

The relevant legislation protecting grey seals in UK waters is outlined in **Table 8.5.3.**

Leatherback turtle

8.5.60 Leatherback turtles have a wide distribution and have regularly been observed within European waters where their habitat of preference is oceanic waters (Morel *et al*., 2018). They occur in greater numbers in the UK over the summer and autumn months between June and October, with most sightings, strandings and incidental captures of the species occurring in the west of the UK and Ireland, and in the English Channel (Botterell *et al*., 2020). They have regularly been observed in waters off the southwest of England.

8.5.61 Leatherback turtles forage on gelatinous prey (Medusozoa spp.) during the summer and autumn months in the UK, with jellyfish aggregations coinciding with turtle presence (Botterell *et al*., 2020).

8.5.62 The species nest on tropical and subtropical beaches and return to the same nesting sites every 2-4 years (Botterell *et al*., 2020). They do not breed or nest within any OSPAR maritime regions.

8.5.63 For leatherback turtles, there is a lack of information on density, abundance and fine-scale distribution in the OSPAR maritime area, including the south west of England region.

8.5.64 The overall trend in conservation status of leatherback turtles within UK waters is unknown and there is no evidence on which to base an assessment of conservation status (JNCC, 2019g).

8.5.65 The relevant legislation protecting leatherback turtle in UK waters is outlined in **Table 8.5.3**.

Table 8.5.3: Legislative protection - Marine mammals and sea turtles

Marine Mammal and Sea Turtle Species	Protected legislation
Bottlenose dolphin *Tursiops truncatus*	European Protected Species under Annex IV of the European Commission Habitats Directive Annex II of the Habitats Directive UK Biodiversity Action Plan (BAP) priority habitat that continues to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework Schedule 5 and 6 of the Wildlife and Countryside Act 1981
Harbour porpoise *Phocoena phocoena*	European Protected Species under Annex IV of the European Commission Habitats Directive Annex II of the Habitats Directive Annex V of the OSPAR (Oslo-Paris) convention UK BAP priority habitat that continues to be regarded as conservation priorities in subsequent UK Post-2010 Biodiversity Framework Schedule 5 and 6 of the Wildlife and Countryside Act 1981
Minke whale *Balaenoptera acutorostrata*	European Protected Species under Annex IV of the European Commission Habitats Directive UK BAP priority habitat that continues to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework Schedule 5 of the Wildlife and Countryside Act 1981
Short beaked common dolphin *Delphinus delphis*	European Protected Species under Annex IV of the European Commission Habitats Directive UK BAP priority habitat that continues to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework Schedule 5 and 6 of the Wildlife and Countryside Act 1981
Risso's dolphin *Grampus griseus*	European Protected Species under Annex IV of the European Commission Habitats Directive UK BAP priority habitat that continues to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework Schedule 5 of the Wildlife and Countryside Act 1981
Grey seal *Halichoerus grypus*	Annex II and V of the European Commission Habitats Directive Wildlife and Countryside Act 1981 Conservation of Seals Act 1970 Conservation of Habitats and Species Regulations 2017 Conservation of Offshore Marine Habitats and Species Regulations 2017 Wild Mammals (Protection Act) 1996
Leatherback turtle *Dermochelys coriacea*	European Protected Species under Annex IV of the European Commission Habitats Directive UK Biodiversity Action Plan (BAP) priority habitat that continues to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework Schedule 5 of the Wildlife and Countryside Act 1981

Designated Sites

8.5.66 There are three designated sites for marine mammals within or close to the species specific broad scale study areas. These are identified in **Table 8.5.4** below.

Table 8.5.4: Designated sites - Marine mammals

Site	Designation	Species	Minimum distance from Proposed Development
Bristol Channel Approaches	SAC	Harbour porpoise (primary reason)	0 km
Lundy	SAC	Grey seal (qualifying feature)	3.6 km
Isles of Scilly Complex	SAC	Grey seal (qualifying feature)	32 km

Future Baseline Conditions

8.5.67 The EIA process will consider the existing baseline conditions within the species specific broad scale study areas, and future baseline conditions (as far as reasonably practicable), in accordance with the methodology set out in **Section 5**: EIA Methodology, of the Scoping Report.

8.5.68 Cable laying in UK waters will be undertaken in up to five campaigns (per cable bundle). Campaigns are scheduled to be undertaken between February and October in 2028 and 2030 but could take place at other times of the year subject to weather limitations of the CLV. Existing data is considered appropriate to characterise the project baseline for these periods.

8.5.69 The future baseline will include consideration of any proposed marine protected areas becoming designated over the lifetime of the project, based on current knowledge, as well as climate change effects.

8.5.70 Changes in species populations are likely to occur due to climate change, independent of the Proposed Development being constructed or not. The main impacts are geographic range shifts, reduction in suitable habitats, food web alterations and increased prevalence of disease. Around the UK, evidence of range shift is increasing, with a shift north by some warmer water species (Martin *et al*., 2023). Baseline conditions are likely to exhibit some degree of change over time independent of the Proposed Development.

Scope of the Assessment

8.5.71 A range of potential impacts on marine mammals and sea turtles have been considered, which may occur during the construction, operation and maintenance, and decommissioning phases of the Proposed Development.

8.5.72 The potential impacts that have been scoped into the assessment are outlined in **Table 8.5.5** together with a summary of the proposed approach to assessment.

8.5.73 Potential impacts scoped out of the assessment are presented in **Table 8.5.6** with justification for why they can be scoped out.

8.5.74 Pre-installation surveys, such as geophysical surveys and UXO clearance (where required), are to be licensed separately to the Proposed Development; therefore, they have not been considered in this Scoping Report.

Table 8.5.5: Impacts proposed to be scoped into the EIA for marine mammals and sea turtles

Impact	Phase*					Justification	Summary of the proposed approach to assessment
	C	Op	Op_{repair}	$D_{in-situ}$	D_{remove}		
Increased disturbance by anthropogenic noise from ground condition surveys, seabed preparation, route clearance, cable lay, and burial activities. Includes similar construction type activities where required during Op_{repair} and D_{remove} phases.	✓	×	✓	×	✓	Increased underwater noise may result in behavioural disturbances and/or displacement of marine mammal and sea turtle species. All the species specific broad scale study areas overlap with Bristol Channel Approaches SAC, for which harbour porpoises are a designated feature.	As activities are anticipated to have small (less than 5 km EDRs), behavioural disturbance and displacement will be assessed qualitatively. Should quantitative approaches be required, commonly used underwater noise modelling approaches (e.g., spherical spreading) would be used, and impact radius would be assessed alongside available thresholds for behavioural disturbance and density surface estimates of relevant species (where available) to quantify the number of animals impacted.
Increased vessel disturbance	✓	×	✓	×	✓	Increased vessel presence in the area creates a potential for increased disturbance for marine mammal species and sea turtles. All the species specific broad scale study areas overlap with the Bristol Channel Approaches SAC, for which harbour porpoises are a designated feature.	The presence of vessels associated with the site-specific study area will not significantly increase the amount of vessel traffic which uses the area, as this is already an area of high shipping activity. The assessment will consider the range of potential vessels used and the spatial and temporal scale of the uplift in vessel activity. Information on impact ranges and species-specific responses will be obtained from the relevant literature to inform the assessment. Assessment of impact will be based on the most up to date scientific evidence on the effect of construction vessels on marine mammals and sea turtles.

*C=Construction phase, Op=Operational phase, Op_{repair}=Operational phase repair activities, $D_{in-situ}$=Decommissioning phase assuming cable de-energised and left in-situ, D_{remove}=Decommissioning phase assuming cable removed

Table 8.5.6: Impacts proposed to be scoped out of the assessment for Marine Mammals

Impact	Justification
Collision with vessels	The risk of collision between marine mammals and vessels is directly influenced by the type of vessel and the speed with which are travelling (Laist *et al,* 2001). Vessels travelling at higher speeds (14 knots) pose a higher risk. Smaller vessels (such as guard vessels) are also able to avoid marine mammals (when detected) due to better manoeuvrability compared to larger vessels (Schoeman *et al,*2020). Vessels during construction and decommissioning will have low to moderate working speeds, hence a reduced risk of collision. In addition, vessels will likely be following predefined routes (as defined in the Vessel Management Plan; VMP) when working on installation. This is a known key aspect in minimising the potential risks imposed by vessel traffic (Nowacek *et al*., 2001; Lusseau 2003, 2006). The maximum number of vessels involved across the phases of the Proposed Development will vary, with the highest numbers occurring during construction activities (and similar expected during decommissioning). This will consist of four trenching vessels, one CLV (two for brief periods during changeovers), and 20 guard vessels. During infrequent operation and maintenance activities generally only one vessel will be present. The Shipping and Navigation Section notes that the Proposed Development area has an average of 89 vessels per day, with a maximum of 112 recorded. It can be considered that the additional 26 vessels associated with the Proposed Development, as a maximum during the construction phase, will not significantly increase the amount of vessel traffic which uses the area and, coupled with measures outlined in the VMP, would not present a significant risk of collision, as compared to baseline conditions.
Hearing damage and auditory injury (e.g. permanent threshold shift; PTS), and temporary changes in hearing (e.g. temporary threshold shift; TTS) caused by increased anthropogenic noise from ground condition surveys, seabed preparation, route clearance, cable lay and burial activities	The noise levels associated with the proposed activities will not result in instantaneous PTS or TTS for marine mammals or sea turtles. Cumulative PTS or TTS is also extremely unlikely to occur. Quantitative assessments of similar projects have demonstrated this (Greenlink, 2019; Nedwell and Barham, 2012).
Accidental pollution	The impact of pollution, including accidental spills and contaminant releases associated with the construction of infrastructure and use of supply/service vessels may lead to direct mortality of marine mammals and sea turtles or a reduction in prey availability, either of which may affect species' survival rates. It is considered that accidental pollution poses an extremely low risk; nevertheless, a MPCP for the Proposed Development (as part of the Offshore CEMP(s)) will be implemented and this will further reduce the risk and will include measures to minimise the impact of any events, should they occur. Compliance with MARPOL will further reduce risks in this regard.

Impact	Justification
Presence of EMF	There is no evidence of EMF having any impact (either positive or negative) on marine mammals (Copping, 2018). There is no evidence that seals can detect or respond to EMF and, whilst some species of cetaceans may be able to detect variations in magnetic fields, these species do not occur in UK or European waters (Normandeau *et al.,* 2011). The presence of EMF is unlikely to have an impact on leatherback turtles. They are known to use magnetic cues during two life stages: the hatching stage (which occurs in tropical and sub-tropical waters) and as reproductive adults, where they use multiple cues, including EMF, for navigation (Tricas and Gill, 2011). As turtles use multiple cues, and the EMF relating to the project will be localised, the risk of navigational miscues as a result of EMF relating to the development is considered negligible.
Indirect impacts resulting from impacts on marine mammal prey species	There is the potential for an indirect effect on marine mammals and sea turtles should their prey species be subject to any impacts during the construction, operation and maintenance and/or decommissioning. However, impacts are likely to be short-term and localised, and marine mammals and sea turtles are highly mobile and could exploit other prey resources nearby. Consequently, any indirect impacts on marine mammals and sea turtles due to impacts on their prey species would also be short-term and localised.
Disturbance at seal haul-outs	There are no grey seal haul-outs sites in the vicinity of the Proposed Development. The closest known haul-out sites for grey seals are Lundy Island and the Isles of Scilly which are 3.6 km and 32 km from the Proposed Development. Considering the distance from the haul-out sites and the nature of the construction activities relative to activities which are generally reported to cause disturbance to seals at haul-outs (e.g., kayaks and fast-moving vessels within a few hundred metres), it is not expected that activities during construction will directly impact seal haul-outs.
Water quality changes	Increases in Suspended Sediment Concentration (SSC) may arise from construction type activities (all project phases) decreasing light availability in the water column and producing turbid conditions. The maximum impact range is expected to be localised with sediments rapidly dissipating. Marine mammals are well known to forage in tidal areas where water conditions are turbid and visibility conditions poor. For example, harbour porpoise and harbour seals in the UK have been documented foraging in areas with high tidal flows (e.g., Pierpoint, 2008; Marubini *et al*., 2009; Hastie *et al*., 2016); therefore, low light levels, turbid waters and high suspended sediments are unlikely to negatively impact marine mammal foraging success. Furthermore, due to the highly mobile nature of marine mammals, if changes in water quality did have an impact, it would be short term and localised, and marine mammals could exploit alternative adjacent habitat. Similarly, sea turtles are wide ranging and mobile species, and could exploit alternative adjacent habitat.

Measures Adopted as Part of the Proposed Development

8.5.75 The following measures adopted as part of the Proposed Development are relevant to marine mammals and sea turtles, considered in addition to the overarching design and embedded measures in **section 4.8** and **Table 4.8.2.** These measures may evolve as the engineering design and the EIA progresses.

- Development of, and adherence to, an agreed MMMP. This will mitigate potential impacts on marine mammals as well as sea turtles and fish from underwater noise in particular, to ensure good practice is followed where relevant. The MMMP will be agreed with the MMO and follow JNCC guidelines for minimising the risk of injury to marine mammals from geophysical surveys (JNCC,2017).
- Development of and adherence to a VMP. The VMP will confirm the types and numbers of vessels that will be engaged on the Proposed Development and consider vessel coordination including indicative transit route planning.
- Adherence to a project specific MPCP– which will form part of the Offshore CEMP(s).

8.5.76 Due to the commitment to implement these measures, as well as various standard sectoral practices and procedures, which are considered inherently part of the design of the Proposed Development, these have been considered in the assessment presented below.

Proposed Assessment Methodology

8.5.77 The marine mammal and sea turtle assessment for the offshore elements of the Proposed Development will be undertaken in accordance with the methodology set out in **Section 5:** EIA Methodology**,** of the Scoping Report, in addition to the following established guidance:

- Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2018)

8.5.78 The assessment approach will be based on the conceptual 'source-pathway-receptor' model. This model identifies likely environmental effects resulting from the proposed construction and operation and maintenance of the Proposed Development. This process provides an easy-to-follow assessment route between effect sources and potentially sensitive receptors ensuring a transparent impact assessment. The parameters of this model are defined as follows:

- source: the origin of a potential effect (noting that one source may have several impact pathways and associated receptors); e.g., a construction activity;
- pathway: the link or interaction 'pathway' by which the effect of the activity could influence a receptor; and
- receptor: the element of the receiving environment that is affected.

8.5.79 Iterative steps involved in the assessment approach will include:

- determination of potential interactions between the Proposed Development and ecological receptors (for all project phases);
- definition of marine mammal and sea turtle environment within the influence of the Proposed Development;
- assessment of the value and sensitivity of marine mammal and sea turtle receptors;
- assessment of the magnitude of impact;
- assessment of the significance of effects;

- proposal of mitigation measures to reduce, prevent or where these are not possible, to offset, any adverse significant effects;
- assessment of the residual effects after any mitigation measures have been considered; and
- assessment of cumulative effects.

8.5.80 In some instances, the Proposed Development will retain flexibility in terms of the options for methods and approaches to be applied during the construction phase. Where this is the case, for each combination of effect and receptor, the assessment will be based on the worst-case scenario and where this approach has been taken it will be clearly indicated in the PEIR and ES together with a definition of the worst-case scenario for the specific assessment.

Assessment criteria

8.5.81 Terminology used in this assessment, will be based on consideration of activities with associated impacts (and impact pathways). It will then assess whether these impacts could have potential effects on supporting habitats and/or the relevant species directly. A number of aspects will be considered when assessing potential impacts and/or effects including:

- nature of effect on habitat and/or species i.e. beneficial / adverse; direct / indirect;
- extent of the impact (geographical area e.g. site-wide, local, district, regional, and the size of the population affected);
- likelihood of effect occurring;
- value of receptor;
- sensitivity of receptor;
- magnitude of impact; and
- duration - temporary or permanent effect.

8.5.82 If the effect occurs on all of, or a proportion of, a community/population and/or the supporting habitat on a continual basis, or the effect has the potential to always occur due to the Proposed Development even if it is not continual, it can be considered to be permanent (e.g., a continual or intermittent discharge). If it is not on a continual basis or it is known the effect will cease at some point when considering the community/population and/or the supporting habitat, it can be described as temporary (e.g., cable laying during construction).

8.5.83 Timing and frequency of impacts in relation to potential periods of increased sensitivity e.g., grey seal breeding season will also be considered in the assessment.

Likelihood

8.5.84 Likelihood will be considered based on criteria in **Table 8.5.7**. Likelihood is generally determined to help convey the confidence in a particular impact assessment, rather than to influence directly the impact significance.

Table 8.5.7: Likelihood of Effect Occurring and Confidence in Assessment

Likelihood	Probability	Definition
Certain	Probability estimated at 95% chance or higher.	Based on the consideration of the same pressures arising from similar activities, acting on the same type of receptor in comparable areas (i.e., UK). Previous studies indicate consistent magnitude of impact. Scientific evidence and/or construction information is detailed/extensive.
Likely	Probability estimated above 50% but below 95%	Based on the consideration of the same pressures arising from similar activities, acting on the same type of receptor in comparable areas (i.e., UK) or similar pressures on receptor/similar receptor in other areas (i.e., outside UK). Previous studies indicate a possible range of magnitude of impact. There may be some limitations to scientific evidence base and/or construction information partially reducing certainty of assessment.
Unlikely	Probability estimated above 5% but less than 50%	Based on the consideration of the same pressures arising from similar activities, acting on the same type of receptor in comparable areas (i.e., UK) or similar pressures on the receptor/similar receptor in other areas (i.e., outside UK). Previous studies do not indicate consistent effect or range of magnitude.
Extremely unlikely	Probability estimated at less than 5%	Based on the consideration of the same pressures arising from similar activities, acting on the same type of receptor in comparable areas (i.e., UK) or based on similar pressures on the receptor/similar receptor in other areas (i.e., outside UK). There may be few if any previous studies to indicate any effect on the sensitive receptor.

Value and Sensitivity

8.5.85 It should be noted that high value and high sensitivity are not necessarily linked within a particular impact. A receptor could be of high value (e.g., an interest feature of a SAC) but have a low or negligible physical/ecological sensitivity to an impact and vice versa.

8.5.86 Value and/or Sensitivity will be considered when assessing effects. Information used to determine (the significance of effect) will be clearly indicated in the assessment narrative.

8.5.87 The definitions of value for marine mammal and sea turtle receptors are provided in **Table 8.5.8**. The definitions of sensitivity for marine mammal and sea turtle receptors are provided in **Table 8.5.9.**

Table 8.5.8: Definition of level of value for marine mammal receptors

Value	Definition
Very High	• An internationally designated site or candidate site (SPA, pSPA, SAC, cSAC, pSAC, Ramsar site etc.) or an area which the country agency has determined meets the published selection criteria for such designation, irrespective of whether or not it has yet been notified. • Internationally significant and viable areas of a habitat type listed in Annex I of the Habitats Directive or species on Annex II of the Habitats Directive. • Globally threatened species (i.e., Critically endangered or endangered on IUCN Red list) or species listed on Annex 1 of the Bern Convention. • Regularly occurring populations of internationally important species that are rare or threatened in the UK or of uncertain conservation status. • A regularly occurring, nationally significant population/number of any internationally important species. • Habitat/species highly regarded for their important biodiversity, social/community value and/or economic value.
High	• A nationally designated site (SSSI, NNR, MNR, MCZ) or a discrete area, which the country conservation agency has determined meets the published selection criteria for national designation (e.g., SSSI selection guidelines) irrespective of whether or not it has yet been notified. • Regularly occurring, globally threatened species (i.e., Vulnerable or lower on IUCN Red list) or species listed on Annex 1 of the Bern Convention. • Previously UKBAP habitats and species; S41 species of NERC Act. • Habitat/species which have important biodiversity, social/community value and/or economic value.
Medium	• Significant populations of a regionally/county important species. • Habitat/species possess moderate biodiversity, social / community value and/or economic value.
Low	• Species are abundant, common or widely distributed. • Habitat/species have low biodiversity, social/community value and/or economic value.
Negligible	• Negligible or no value and/or economic value.

Table 8.5.9: Definition of level of sensitivity for marine mammal and sea turtle receptors

Sensitivity	Description
Very High	The species has very limited tolerance to sources of disturbance such as noise, prey disturbance and vessel movements.
High	The species has limited tolerance to sources of disturbance such as noise, prey disturbance and vessel movements.
Medium	The species has some tolerance to sources of disturbance such as noise, prey disturbance and vessel movements.
Low	The species is generally tolerant to sources of disturbance such as noise, prey disturbance and vessel movements.
Negligible	Negligible or no sensitivity to disturbance.

Magnitude

8.5.88 Magnitude of impact will be assessed taking into account aspects/features designed into the Proposed Development to avoid or minimise environmental

effects (i.e. embedded mitigation). Guidelines to assign the magnitude of impact are provided (**Table 8.5.10**).

Table 8.5.10: Definition of level of magnitude for marine mammal and sea turtle receptors

Magnitude	Magnitude of Impact
High	A change in the size or extent of distribution of the relevant biogeographic population or the population that is the interest feature of a specific protected site that is predicted to irreversibly alter the population in the short-to-long term and to alter the long-term viability of the population and/or the integrity of the protected site. Recovery to baseline levels from that change predicted to be achieved in the long-term (i.e., more than five years) following cessation of the development activity.
Medium	A change in the size or extent of distribution of the relevant biogeographic population or the population that is the interest feature of a specific protected site that occurs in the short- and long-term, but which is not predicted to alter the long-term viability of the population and/or the integrity of the protected site. Recovery to baseline levels from that change predicted to be achieved in the medium-term (i.e., no more than five years) following cessation of the development activity.
Low	A change in the size or extent of distribution of the relevant biogeographic population or the population that is the interest feature of a specific protected site that is sufficiently small-scale or of short duration to cause no long-term harm to the feature/population. Recovery to baseline levels from that change predicted to be achieved in the short term (i.e., no more than one year) following cessation of the development activity.
Negligible	Very slight change from the size or extent of distribution of the relevant biogeographic population or the population that is the interest feature of a specific protected site. Recovery to baseline levels from that change predicted to be rapid (i.e., no more than ca. six months) following cessation of the development activity.
No Change	The activity will have no interaction with the receptor.

Significance

8.5.89 For the purposes of assessment, and in line with common practice, only those effects that are of moderate or major significance have been considered to represent those with the potential to be 'significant' in EIA terms.

8.5.90 The significance of effect is based on the sensitivity of the receptor and the predicted magnitude of the potential impact, and the overall significance of an effect will be determined using the matrix defined in **Section 5**: EIA Methodology, of the Scoping Report.

Mitigation Measures

8.5.91 The significance of effect will be determined after consideration of embedded mitigation. For any effects considered to be of moderate or higher significance, further mitigation/enhancement measures (beyond embedded measures) will be proposed to reduce the significance of effect to minor or lower.

Residual Effects

8.5.92 Residual effects on marine mammal and sea turtle receptors (i.e., effects following implementation of specific mitigation measures) will then be identified and their significance determined.

Potential Cumulative Effects

8.5.93 There is potential for cumulative effects to occur on marine mammals and sea turtles when the Proposed Development is considered together with other developments. The potential cumulative effects between the offshore elements of the Proposed Development and other developments with respect to marine mammals and sea turtles will be considered within the PEIR and the ES.

8.5.94 The cumulative effects assessment would be undertaken in accordance with the methodology set out in **Section 5**: EIA Methodology, of the Scoping Report and CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland (2018).

Potential Inter-related Effects

8.5.95 The assessment of potential inter-related effects will be considered. It will include consideration of project lifetime effects and receptor led effects in line with the approach outlined in **Section 5:** EIA Methodology, of the Scoping Report. The following sections and considerations will be reviewed for potential inter-related effects:

- Benthic Ecology:
  - Impacts on benthic ecology receptors may affect prey availability for some species of marine mammals and sea turtles.
- Fish and Shellfish Ecology:
  - Impacts on benthic ecology receptors, underwater noise and vibration, water and sediment quality change (physical process change), and electromagnetic fields may affect prey availability for some species of fish and shellfish which, may in turn, affect prey availability for some species of marine mammals and sea turtles.
- Underwater Noise and Vibration:
  - Impacts from underwater noise and vibration during construction of the Proposed Development may impact marine mammal and sea turtle receptors.

Potential Transboundary Impacts

8.5.96 There is a potential for transboundary impacts on marine mammals due to the mobile nature of marine mammal species and the geographical scale of MUs, particularly where these extend beyond the limits of UK waters. For example, grey seals can travel large distances of up to 1,200 km and have been recorded crossing the English Channel moving from France to haul-out sites in the south-west of the British Isles (Vincent *et al*., 2017).

8.5.97 There is a potential for transboundary impacts on sea turtles due to their highly mobile nature. Leatherback turtles travel large distances during seasonal migrations and have been recorded throughout the English Channel and wider European waters (Botterell *et a*l., 2020).

8.5.98 Direct impacts may occur during the construction and decommissioning phases of the Proposed Development, the extent cannot be determined at this stage and will be subject to assessment in the EIA. However, based on the activities outlined in

Section 4, the majority of impacts during construction (and similar activities during other project phases) are likely to be localised, short-term and temporary.

8.5.99 It is proposed that impacts to marine mammal receptors are subject to transboundary assessment in the EIA. Likely significant effects upon European Sites with marine mammals as qualifying features will be assessed within the HRA.

8.5.100 It is proposed that impacts to sea turtle receptors are subject to transboundary assessment in the EIA. There are no European Sites with leatherback turtles as qualifying features to be assessed within the HRA.

8.5.101 Only impacts scoped in for the Proposed Development in isolation will be considered in the transboundary impact assessment.

8.6 Shipping and Navigation

Introduction

8.6.1 This section of the Scoping Report identifies the shipping and navigation receptors relevant to the offshore elements of the Proposed Development. This section also considers the potential impacts arising from the construction, operation and maintenance, and decommissioning of the Proposed Development and identifies the proposed scope of, and methodology for, the EIA process for shipping and navigation.

Relevant Policy, Legislation and Guidance

8.6.2 The lists in this section should be read in conjunction with **Section 2**: Policy and Legislation, of the Scoping Report.

Legislative and Policy Context

8.6.3 The following key legislation and policy documents relevant to shipping and navigation will be considered within the assessment process:

- Convention on International Regulations for Preventing Collisions at Sea (COLREGs), International Maritime Organization (IMO), 1972/78;
- International Convention for the Safety of Life at Sea (SOLAS) Chapter V, Safety of Navigation, IMO, 1974;
- United Nations Convention on the Law of the Sea (UNLCOS), United Nations, 1982;
- Submarine Telegraph Act 1885, UK Government;
- Overarching National Policy Statement (NPS) for energy (EN-1), the NPS for renewable energy infrastructure (EN-3) and the NPS for electricity networks infrastructure (EN-5) (DESNZ), 2023;
- UK Marine Policy Statement, Department for Environment, Food and Rural Affairs (Defra), 2011; and
- South West Marine Plan, Marine Management Organisation, 2021.

Guidance documents

8.6.4 Guidance documents relevant to shipping and navigation that will be considered within the assessment process include the following:

- IMO, 2018. Revised Guidelines for Formal Safety Assessment (FSA) for Use in the IMO Rule-Making Process;
- Marine Guidance Note (MGN) 654 (Merchant and Fishing) Safety of Navigation: Offshore Renewable Energy Installations (OREIs) – Guidance on UK Navigational Practice, Safety and Emergency Response and its annexes[4]; and
- MGN 661 (Merchant and Fishing) Navigation – Safe and Responsible Anchoring and Fishing Practices.

Study Area

8.6.5 The study area for the shipping and navigation scoping exercise covers an area of 5 nm around the Offshore Cable Corridor from MHWS to the EEZ boundary and is shown in **Figure 8.6.1**. This is standard practice and is sufficient to characterise the shipping activity and navigational features close to the Offshore Cable Corridor and to encompass any vessel traffic that may be impacted by the cable and associated operations, while also remaining project-specific in terms of the vessel activity and navigational features that it captures. Where navigational features have been identified outside of the study area, this is done for context and wider discussion purposes.

[4] Although this guidance is focused on offshore renewables, it highlights issues to be taken into consideration when assessing the effects of offshore developments on navigational safety and includes guidance on cable protection and burial within UK waters.

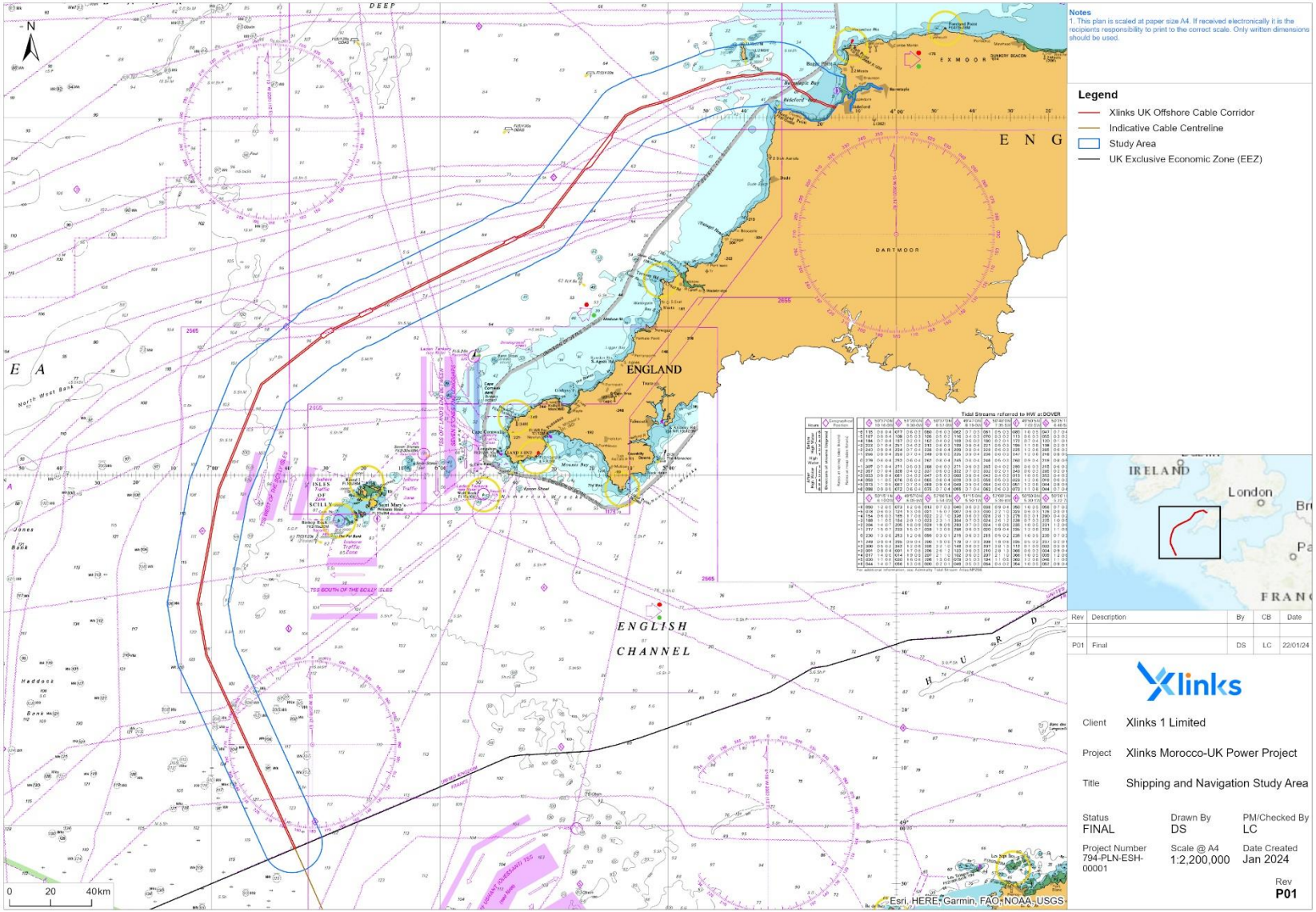

Figure 8.6.1: Shipping and navigation study area

Data Sources

8.6.6 The data sources used to inform the baseline assessment will primarily comprise published material which is publicly available online. An initial desk-based review has identified several data sources which provide baseline data coverage of the study area.

8.6.7 Due to the length of the Offshore Cable Corridor, collecting radar data is not feasible and therefore no site-specific surveys are planned.

8.6.8 The baseline data sources identified in this section will remain under review and may be updated in response to feedback from relevant statutory and non-statutory consultees during the EIA process, or in response to new sources of information becoming available.

Desk-based Data Sources

8.6.9 To inform this Scoping Report section, a high-level desk-based assessment has been conducted for shipping and navigation receptors using a range of existing data (**Table 8.6.1**).

Table 8.6.1 Desk based baseline data sources - Shipping and navigation

Source	Summary
Automatic Identification System (AIS) Data (January & July 2023)	Two months of AIS data offering complete coverage of the study area. January and July 2023 selected to offer coverage of seasonal variations in vessel traffic.
United Kingdom Hydrographic Office (UKHO) Admiralty Sailing Directions	Admiralty Sailing Directions NP37 West Coast of England Pilot used to inform on navigational features in the area.
UKHO Admiralty Charts	UKHO Admiralty Charts (1121, 1123, 1164, 1178, 117, 2565, 2649, 2675) used to inform on navigational features in the area.
Aggregate Dredging Areas	GIS for aggregate dredging areas in England, Wales and Northern Ireland available from The Crown Estate.
Wind Site Agreements	GIS for wind farm sites in England, Wales and Northern Ireland available from The Crown Estate.
Marine Accident Investigation Branch (MAIB) Incident Data 2012-2021	Incident data provided by the MAIB providing details of marine incidents recorded within the study area between 2012 and 2021.
Royal National Lifeboat Institution (RNLI) Incident Data 2013-2022	Incident data provided by the RNLI providing details of lifeboat launches recorded within the study area between 2013 and 2022.

Baseline Environment

8.6.10 The following sections present the baseline environment for the study area established at scoping. This includes a review of key navigational features in the area, existing vessel traffic, and a discussion of how the baseline is anticipated to change in the future.

Navigational Features

8.6.11 **Figure 8.6.2** presents the charted navigational features in the vicinity of the Proposed Development. Focus has been given to those within the study area, however significant navigational features outside the study area have also been identified. **Figure 8.6.3** presents a more detailed view of the navigational features.

8.6.12 There are several ports and harbours along the coast of England, three of which lie inside the study area. These are Appledore, Bideford and Yelland, which are located in the Rivers Taw and Torridge. The Port of Bideford accommodates vessels of up to 96 m in length, including fishing vessels, a regular ferry to Lundy and vessels exporting clay to Europe. Pilotage is compulsory for all vessels greater than 350 GT entering the Port of Bideford, with the pilot boarding area located close to the entrance to the estuary, 2.6 nm north of the landfall of the Offshore Cable Corridor. It is noted in the Admiralty Sailing Directions that anchorage is available within Bideford Bay or on the east side of Lundy for vessels waiting to enter Bideford. Appledore is a harbour typically used by recreational and fishing vessels, which is also planned to be used for the transportation of Project infrastructure such as onshore cable drums and transformers. Yelland is a small quay suitable for recreational users.

8.6.13 Other harbours along the coast include Padstow, Port Isaac, Newquay, Perranporth, Portreath, St Ives, Penzance and Porth Mellin. In addition to the harbours on the English mainland, there are also a number of harbours on the Isles of Scilly. Due to the international nature of the shipping in the area, ports of relevance to the shipping traffic may be further afield, such as Southampton, Rotterdam and a number of ports on the north coast of France.

8.6.14 Traffic Separation Schemes (TSS) are in place around the Isles of Scilly, with the westernmost of these being at the eastern edge of the study area. Inshore traffic zones are in place inshore of each TSS.

8.6.15 There are three charted MOD firing practice areas, with two overlapping zones (D110 and X5105) located approximately 3.3 nm north of the landfall. The third is D001 located approximately 6 nm to the east of the Offshore Cable Corridor. A chart note states that these firing practice areas are operated using a clear range procedure, meaning that firing and exercises take place when the areas are considered to be clear of shipping. No restriction is placed on the right to transit the firing practice areas at any time.

8.6.16 The closest marine aggregate dredging area to the Offshore Cable Corridor is located approximately 20 nm north east of the route, at NOBEL banks in the Bristol Channel.

8.6.17 There are a number of charted wrecks located throughout the study area, with none located within the Offshore Cable Corridor (noting that archaeological and heritage features were avoided when developing the route). The closest wreck to the Offshore Cable Corridor is located just outside of its boundary, within Bideford Bay.

8.6.18 There are several charted Aids to Navigation (AtoN) in the vicinity of the study area. AtoN within the study area are generally located close to the landfall and at Lundy, with AtoNs elsewhere located inshore of the Offshore Cable Corridor. A set of six buoys mark a seaweed farm, located approximately 250 m to the north of the Offshore Cable Corridor within Bideford Bay, while other AtoN mark entrances to harbours along the coast, as well as lighthouses on Lundy and along the mainland coast including at Hartland Point and Bull Point.

8.6.19 There a number of charted subsea cables located within the study area along the length of the Offshore Cable Corridor. These may include disused subsea cables, however, such cables may still be of navigational interest if they remain on the seabed. There are several cables making landfall close to Penzance and St Just on the southwest of England. A number of cable landfalls are also located at Bude, further north, approximately 16 nm south of the Offshore Cable Corridor. A further two cables have landfalls close to the study area, 5.4 nm to the north of the Offshore Cable Corridor. There are a total of 19 charted cables that would be crossed (a total of 21 times) by the Offshore Cable Corridor in UK waters. The Celtic Interconnector is also planned to be constructed in proximity to the Offshore Cable Corridor, however the route for this has not yet been charted.

8.6.20 There are no operational or under construction offshore wind farms in proximity to the Offshore Cable Corridor, although there are a number of planned wind farms in the area, discussed in the Marine Incident Review section below.

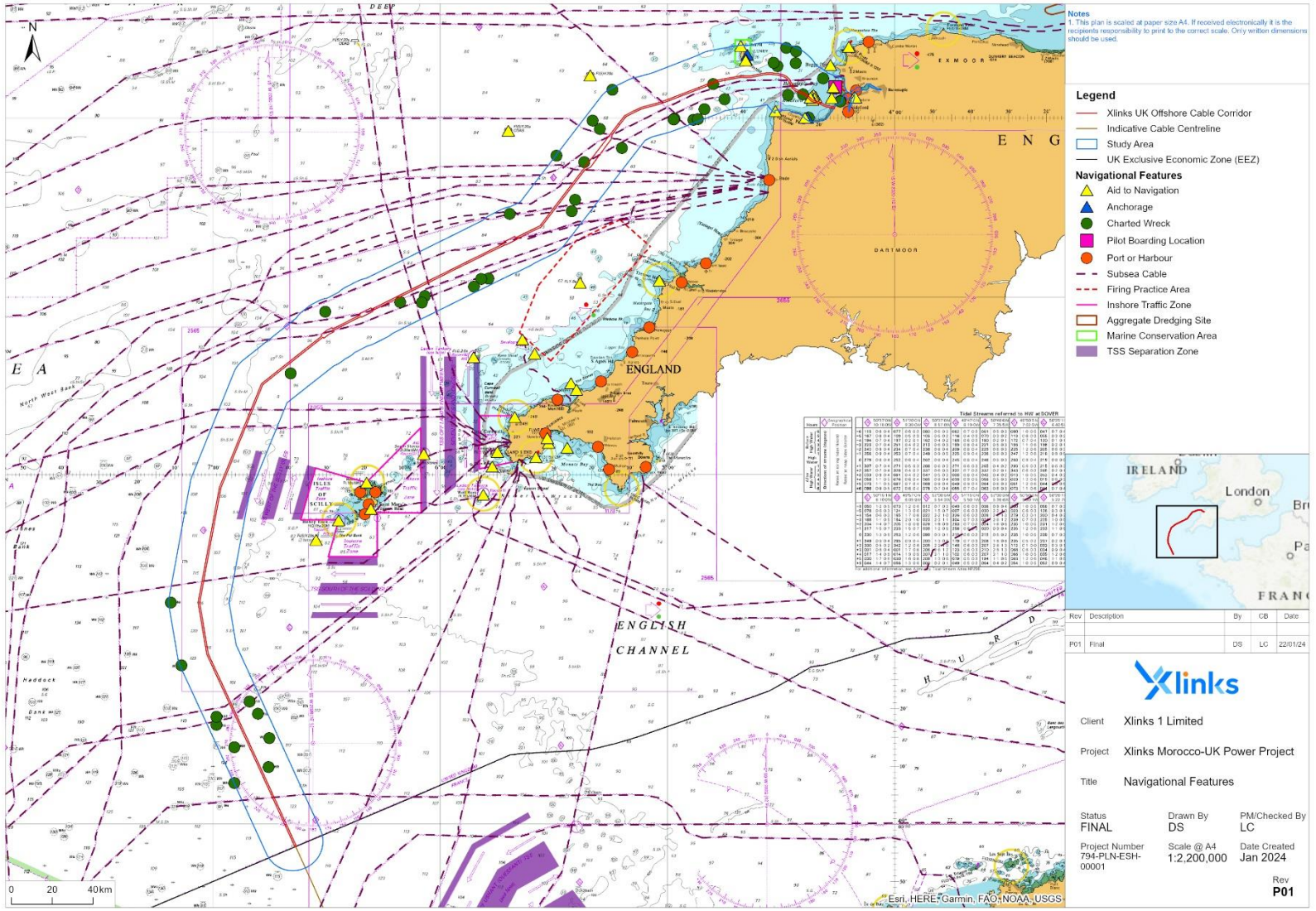

Figure 8.6.2: Navigational features

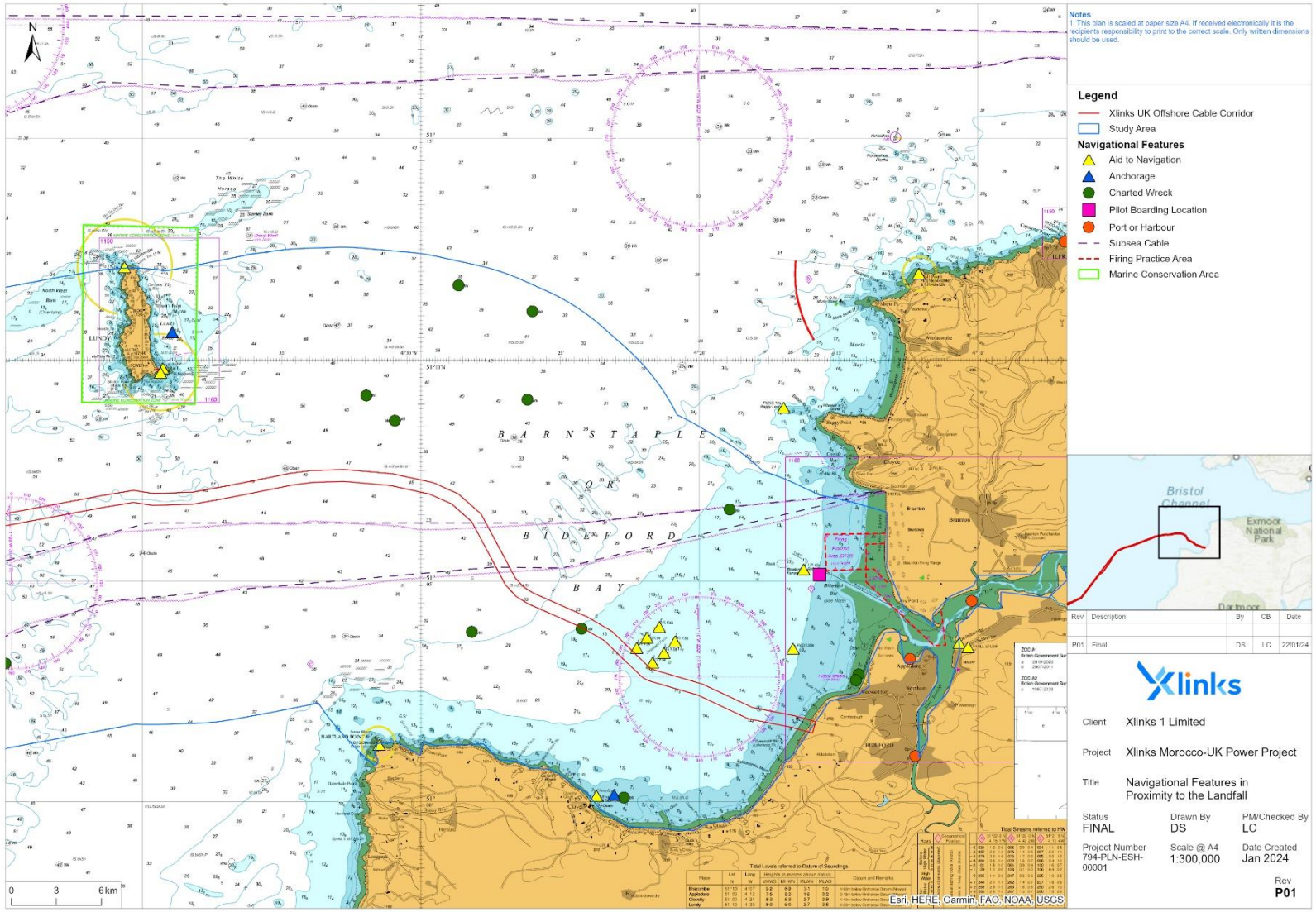

Figure 8.6.3: Navigational features in proximity to the landfall

Vessel Traffic Baseline

8.6.21 Two months of AIS data from January and July 2023 were analysed within the study area. The carriage of AIS is required on board all vessels of greater than 300 GT engaged on international voyages, cargo vessels of more than 500 GT not engaged on international voyages, passenger vessels irrespective of size built on or after 1 July 2002, and fishing vessels over 15 m LOA. It is noted that small fishing vessels, recreational vessels and military vessels may be under-represented on AIS.

8.6.22 **Figure 8.6.4** and **Figure 8.6.5** present the tracks of vessels recorded within the study area in January and July 2023, respectively, colour-coded by vessel type.

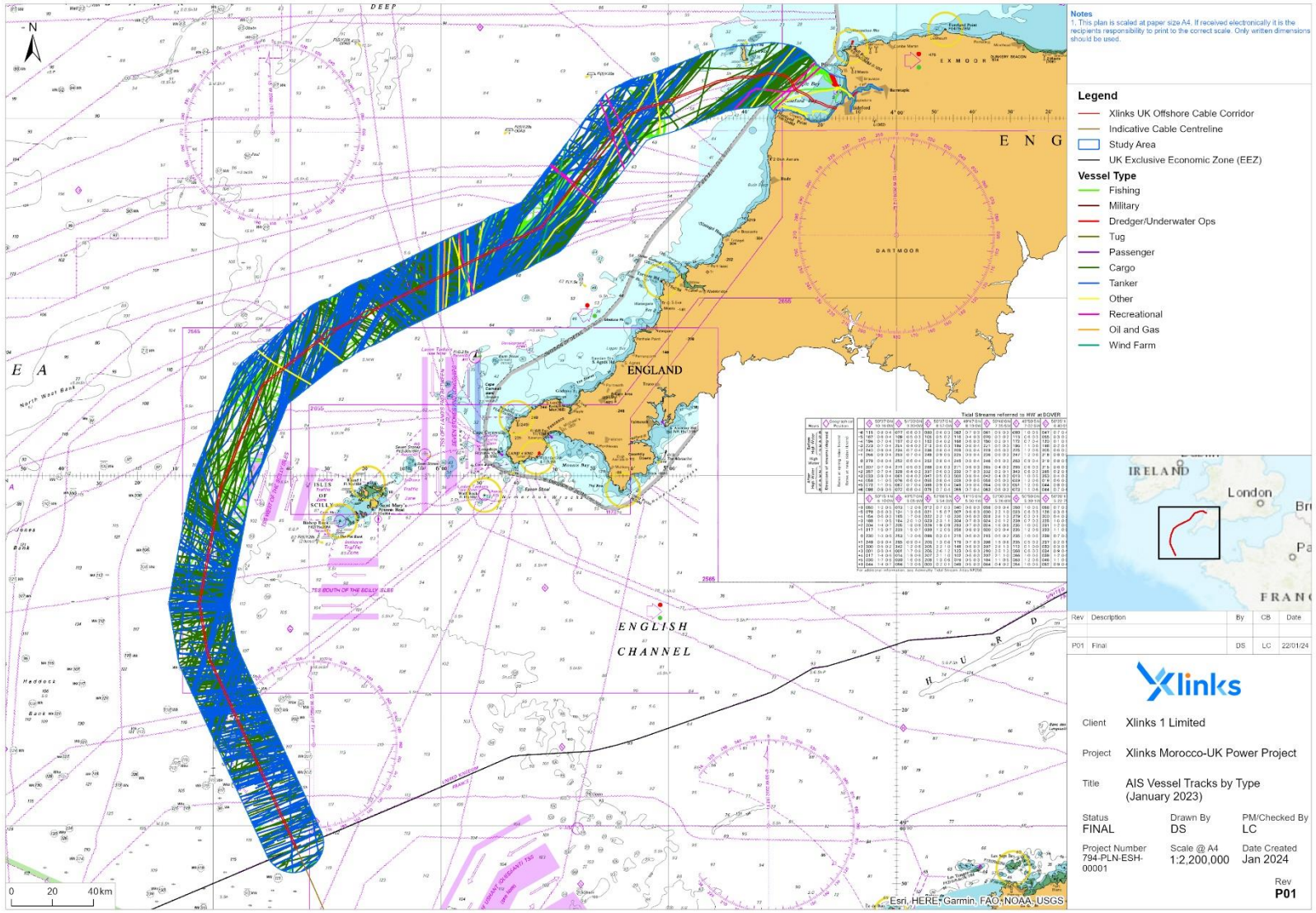

Figure 8.6.4: AIS vessel tracks by type (January 2023)

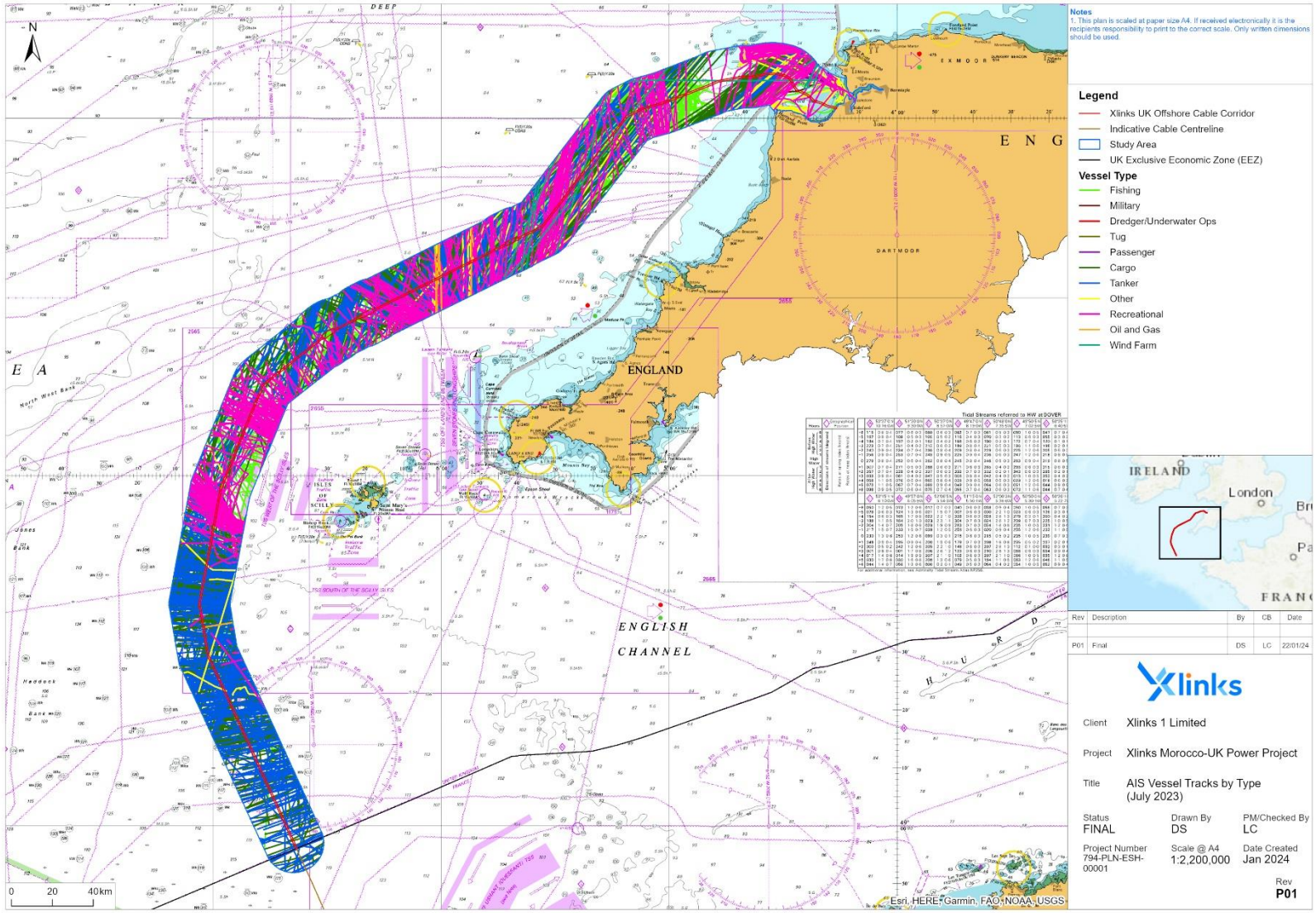

Figure 8.6.5: AIS vessel tracks by type (July 2023)

8.6.23 An average of approximately 89 vessels per day were recorded over the two months, with 112 recorded per day in July and 67 per day in January. Approximately 72 vessels per day were recorded crossing the Offshore Cable Corridor within the two month period. The most common vessel types in both months were cargo vessels (59%), tankers (25%) and fishing vessels (16%), while recreational vessels also made up a significant proportion of the traffic in July. The distribution of vessel types per month is presented in **Figure 8.6.6**.

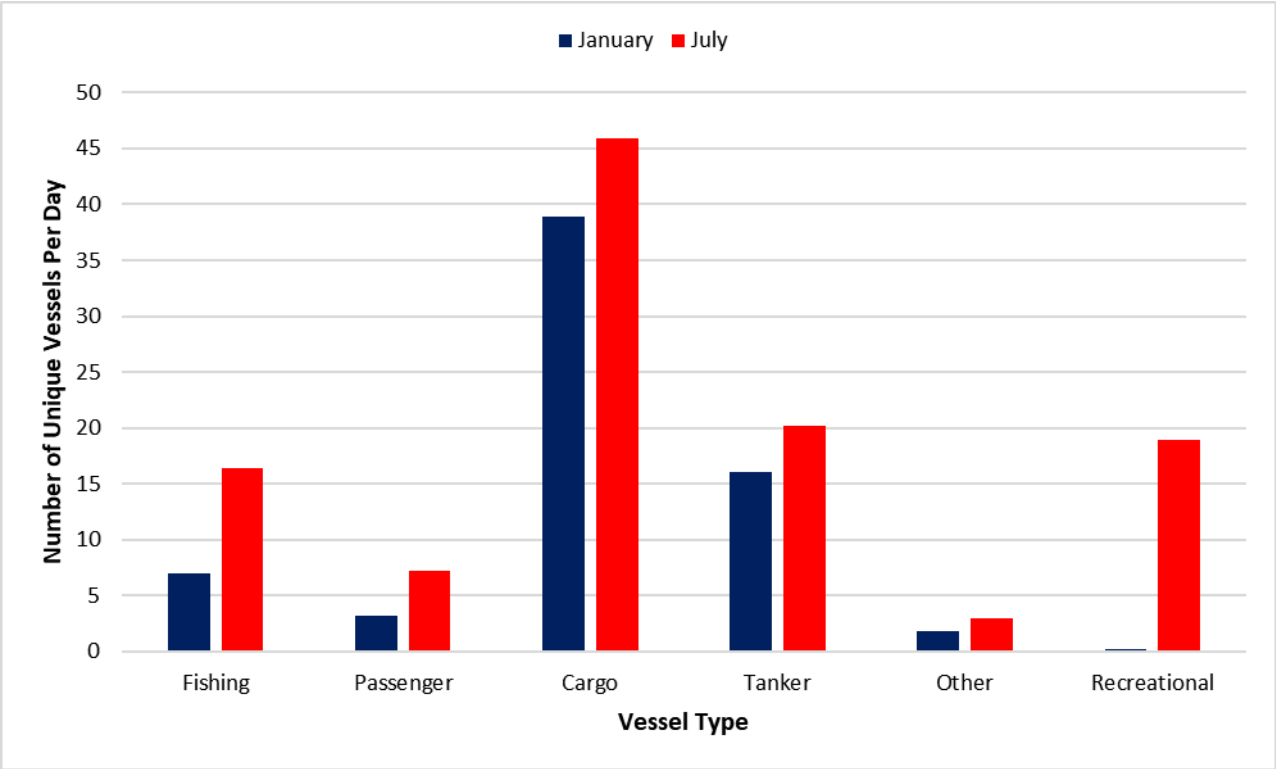

Figure 8.6.6: Distribution of Vessel Type

8.6.24 Commercial vessels such as cargo vessels and tankers were recorded throughout the study area, with notable higher-volume crossings recorded in the south of the study area, made up of traffic utilising the English Channel, in the centre, with a high volume of traffic passing between the Isles of Scilly and the UK mainland using the TSS, and close to the landfall where vessels entering the Bristol Channel cross the Offshore Cable Corridor.

8.6.25 There were also a significant number of passenger vessels recorded within the study area, with the majority of these recorded passing through the study area close to the centre of the Offshore Cable Corridor, using the TSS between the Isles of Scilly and Penzance. These vessels were typically passing between Irish ports such as Dublin and Rosslare and French destinations such as Dunkirk and Cherbourg. Passenger vessels were also recorded close to the landfall, with a ferry passing between Lundy, Ilfracombe and Bideford.

8.6.26 Recreational vessels were generally recorded in the northern and central areas of the study area, to the north of the Isles of Scilly. Very few recreational vessels were recorded south of Scilly, noting that AIS coverage of recreational vessels is not comprehensive. Recreational vessels in proximity to the landfall included vessels offering day trips, diving trips and angling tours to Lundy from Ilfracombe. The vast majority of recreational vessels were recorded in July, with 19 vessels per day, compared with less than one recreational vessel per day in January.

8.6.27 Fishing vessels were also recorded throughout the study area, with the highest level of activity recorded in the centre of the study area. An average of 12 fishing vessels per day were recorded within the study area, with a higher number (16 per day) in July and a lower number (7 per day) in January. The majority of fishing vessel activity appeared to be engaged in active fishing, particularly off the Cornish coast, based on speed and track behaviour. The main gear types in use within the study area were demersal and beam trawls. It is noted that these are demersal gears, which are dragged along the seabed and therefore have a higher potential for interaction with subsea cables. The average length of fishing vessels recorded within the study area was 24 m, with lengths ranging from 8 m to 145 m. Larger fishing vessels were generally recorded transiting through the southern extents of the study area.

8.6.28 Excluding those with unspecified lengths, the average length of vessels recorded within the study area was 132 m, with an average of 150 m in January and 120 m in July. This is reflective of the presence of increased recreational vessels during the summer, which are typically shorter in length. The distribution of vessel lengths is presented in **Figure 8.6.7**.

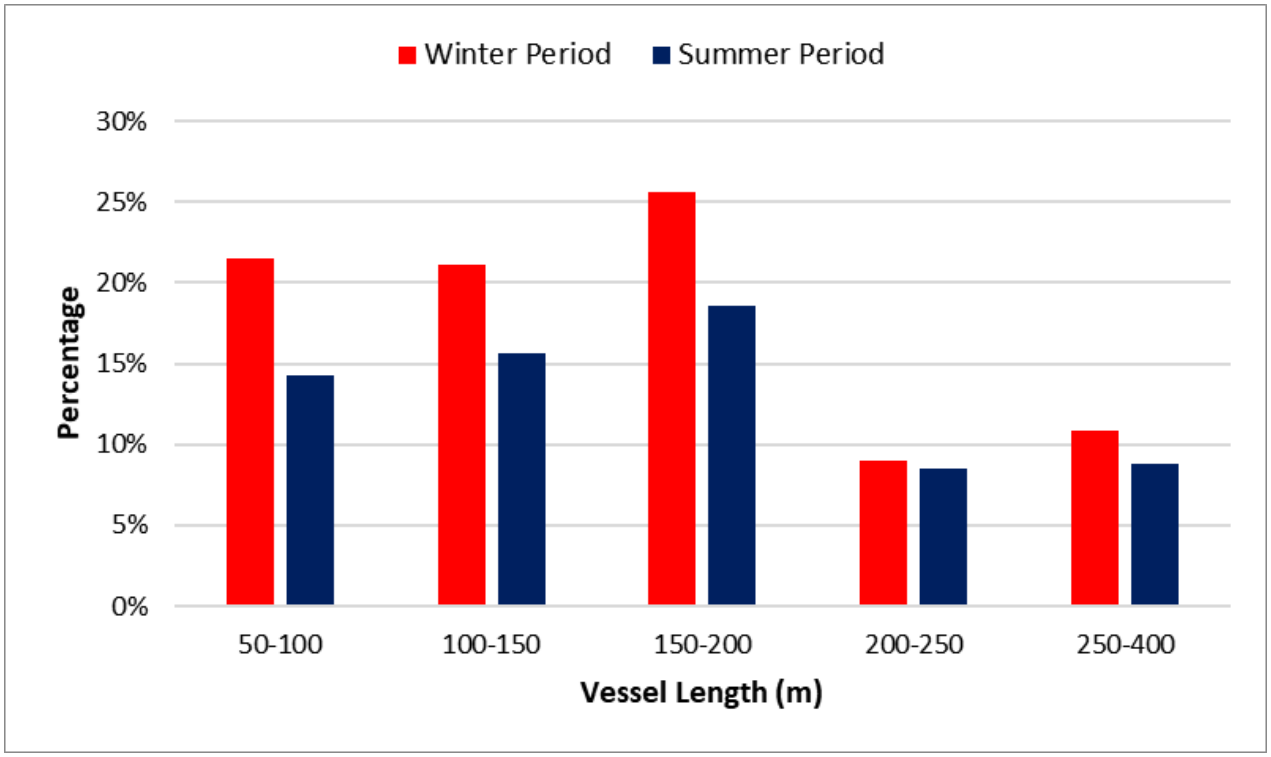

Figure 8.6.7: Distribution of Vessel Lengths

8.6.29 The largest vessel recorded within the study area was a 397 m container ship, recorded on transit to Morocco having passed through the English Channel. Large container ships between Southampton and New York were also recorded crossing the study area, typically south of the Isles of Scilly.

8.6.30 The distribution of vessel draughts is presented in **Figure 8.6.8**.The average draught of vessels recorded in the study area across the two months was 7.1 m, noting that draught information was available for 78% of vessels. The deepest draught vessel recorded was a crude oil tanker, recorded crossing the Offshore Cable Corridor to the south of the Isles of Scilly while entering the English Channel, with a draught of 21.1 m. The vessel was on passage to Rotterdam.

Similar in length, the deepest draught vessels were typically recorded utilising the English Channel, with Rotterdam a common destination for deep-draught vessels.

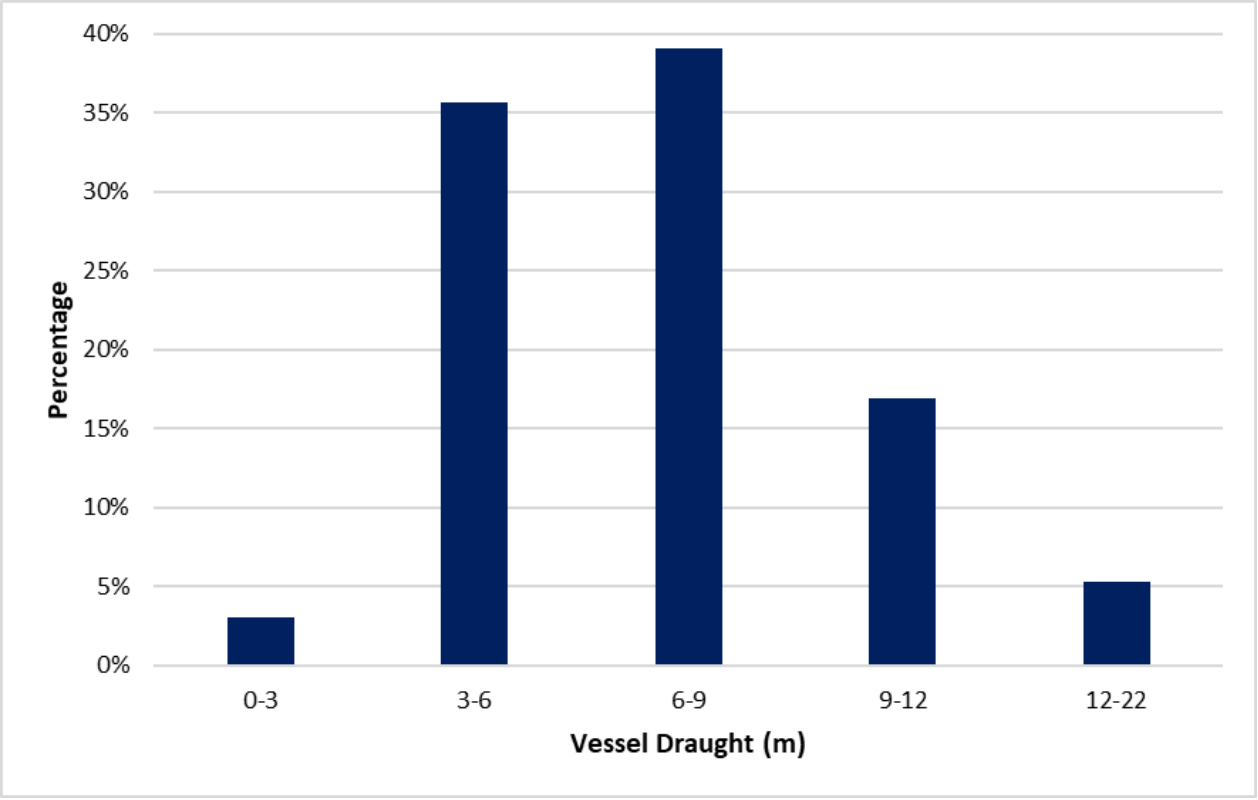

Figure 8.6.8: Distribution of Vessel Draught

8.6.31 The main destinations broadcast by vessels on AIS were varied, indicating the international nature of shipping utilising the English Channel. These destinations included UK ports such as Southampton and Liverpool, Irish ports such as Dublin and Rosslare, mainland European ports including Rotterdam, Antwerp and Roscoff, as well as transatlantic routes to New York and Canada.

8.6.32 Anchoring activity has been assessed based on navigational status broadcast on AIS, as well as analysis of vessel speeds and behaviour. Limited anchoring activity was recorded within the study area, mainly off the east coast of Lundy, with a single anchored vessel recorded 3.8 nm north of the landfall.

8.6.33 **Figure 8.6.9** presents a plot of AIS vessel density for both months, based on a 500 m x 500 m grid of cells. It can be seen that high density regions are located close to the landfall, as well as areas associated with traffic passing through the TSS lanes around the Isles of Scilly.

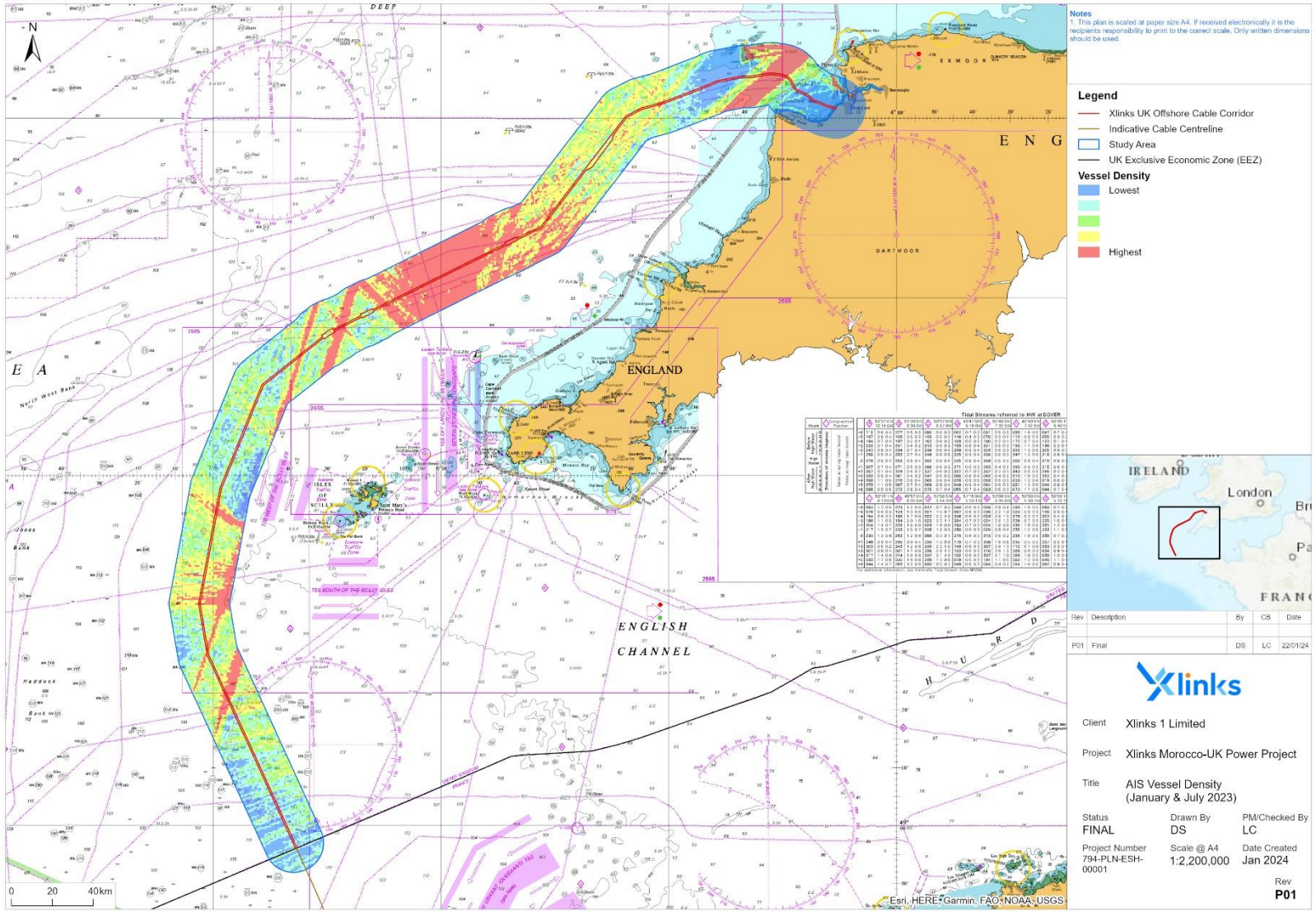

Figure 8.6.9: AIS vessel density (January and July 2023)

Marine Incident Review

8.6.34 Marine incident data from the RNLI and the MAIB has been reviewed within the study area.

8.6.35 The RNLI recorded an average of 38 callouts per year between 2013 and 2022, with the most common incident types being “Person in Danger” incidents and machinery failures. The majority of incidents were recorded in proximity to the landfall, with most incident responses coming from the RNLI station at Appledore.

8.6.36 All UK flagged vessels, as well as non-UK flagged vessels in UK territorial waters (12 nm), a UK port or carrying passengers to a UK port, are required to report incidents to the MAIB. Over a ten year period between 2012 and 2021, there were an average of three to four incidents recorded per year. Machinery failures were the most common incident type, and there was a higher concentration of incidents in proximity to the landfall.

Future Baseline Conditions

8.6.37 The EIA process will consider the existing baseline conditions within the study area, and future baseline conditions (as far as reasonably practicable), in accordance with the methodology set out in **Section 5**: EIA Methodology, of the Scoping Report.

8.6.38 Future developments which may impact shipping in the area include a number of wind farm sites in the Celtic Sea. This includes the White Cross offshore windfarm, which has submitted a consent application, as well as several projects in early planning phases including Petroc, Gwynt Glas, Llywelyn and Llŷr sites. Further south, off St Ives, the TwinHub has consent to install four floating turbines.

8.6.39 The likely evolution of the baseline will be reviewed in the EIA, considering potential changes to vessel numbers, patterns and types due to changing trends in shipping and future developments. This will include the wind farm projects mentioned above, as well as any proposed port developments at nearby ports and key vessel destinations.

Scope of the Assessment

8.6.40 A range of potential impacts on shipping and navigation have been identified, which may occur during the construction, operation and maintenance, and decommissioning phases of the Proposed Development.

8.6.41 The impacts that have been scoped into the assessment are outlined in **Table 8.6.2** together with a description of any additional data collection (e.g., site-specific surveys) and supporting analyses (e.g., modelling) that will be required to enable a full assessment of the impacts.

8.6.42 No potential impacts on shipping and navigation have been scoped out of the assessment.

Table 8.6.2: Impacts proposed to be scoped into the assessment for shipping and navigation

Impact	Phase[1]					Justification	Data collection and analysis proposed to characterise the baseline environment	Summary of the proposed approach to assessment
	C	Op	Op repair	$D_{in-situ}$	D remove			
Collision of a passing third-party vessel with a vessel associated with cable installation, maintenance or decommissioning	✓	×	✓	×	✓	An increased collision risk is created during all phases due to the presence of vessels associated with the cable installation or decommissioning. The nature of cable installation and other construction or decommissioning activities may require large, slow-moving vessels which will be restricted in their ability to manoeuvre. Collision risk is likely to be greater in higher density shipping areas such as shipping channels. A collision risk is also created during the operation and maintenance phase for vessels involved in maintenance works. However, this is expected to be a lesser risk than for construction/decommissioning vessels as maintenance works are likely to be infrequent and of shorter duration.	Shipping and navigation receptors will be identified by analysis of 12 months AIS data within the NRA (at PEIR stage) to identify high risk areas.	The impact will be assessed in terms of likelihood of occurrence and severity of consequence in accordance with the IMO FSA methodology (see Proposed Assessment Methodology), informed by baseline assessment, consultation with stakeholders and expert opinion.

Impact	Phase[1]					Justification	Data collection and analysis proposed to characterise the baseline environment	Summary of the proposed approach to assessment
	C	Op	Op repair	$D_{in-situ}$	D remove			
Cable installation/decommissioning causing disruption to passing vessel routeing/timetables.	✓	×	×	×	✓	During the construction and decommissioning phases, regular traffic may be required to alter their planned routes due to the presence of vessels associated with the Proposed Development. Project vessels may have restricted manoeuvrability and will request a minimum passing distance to reduce the likelihood of collisions.	Shipping and navigation receptors will be identified by analysis of 12 months AIS data within the NRA. Stakeholder consultation and desk-based research will also identify regularly timetabled vessels.	The impact will be assessed in terms of likelihood of occurrence and severity of consequence in accordance with the IMO FSA methodology (see Proposed Assessment Methodology), informed by baseline assessment, consultation with stakeholders and expert opinion.
Increase in the risk of a vessel-to-vessel collision due to construction/decommissioning vessel activity	✓	×	×	×	✓	The presence of project vessels may increase the risk of vessel-to-vessel collision, if vessels are required to deviate around the works during construction or decommissioning.	Shipping and navigation receptors will be identified by analysis of 12 months AIS data within the NRA.	The impact will be assessed in terms of likelihood of occurrence and severity of consequence in accordance with the IMO FSA methodology (see Proposed Assessment Methodology), informed by baseline assessment, consultation with stakeholders and expert opinion.

Impact	Phase[1]					Justification	Data collection and analysis proposed to characterise the baseline environment	Summary of the proposed approach to assessment
	C	Op	Op repair	$D_{in\text{-}situ}$	D remove			
Cable installation/decommissioning causing disruption to fishing and recreational activities.	✓	×	×	×	✓	Project vessels may cause disruption to local fishermen and recreational sailors along the Offshore Cable Corridor, particularly in coastal waters. The baseline description showed the presence of both fishing and recreational activity within the study area.	Further data assessment will be undertaken to identify the location and nature of fishing and recreational activities in the area.	The impact will be assessed in terms of likelihood of occurrence and severity of consequence in accordance with the IMO FSA methodology (see Proposed Assessment Methodology), informed by baseline assessment, consultation with stakeholders and expert opinion.
Cable installation/decommissioning causing disruption to third party marine activities (e.g., military, dredging)	✓	×	×	×	✓	Military exercise areas are located in proximity to the Offshore Cable Corridor. Project vessel activities may cause disruption to these users. Marine aggregate dredging areas are sufficiently far from the Offshore Cable Corridor that any disruption is expected to be negligible.	Navigational features and associated third-party activities will be identified using a number of desk-based sources including UKHO Admiralty Charts, Sailing Directions, as well as stakeholder consultation. AIS data will also be used to identify military and dredging activities in proximity to the Offshore Cable Corridor.	The impact will be assessed in terms of likelihood of occurrence and severity of consequence in accordance with the IMO FSA methodology (see Proposed Assessment Methodology), informed by baseline assessment, consultation with stakeholders and expert opinion.

Impact	Phase[1]					Justification	Data collection and analysis proposed to characterise the baseline environment	Summary of the proposed approach to assessment
	C	Op	Op repair	$D_{in-situ}$	D remove			
Vessel drags anchor over the cable	✓	✓	×	✓	×	There may be a risk of a vessel dragging anchor over the cable due to adverse weather or poor holding ground. This may occur during the operation and maintenance phase, or during the construction phase when the cable may be exposed between cable laying and burial (noting that time between lay and burial is anticipated to be a maximum of a few days). Limited anchoring activity was recorded within the study area.	A wider anchoring assessment will be undertaken within the NRA using 12 months AIS data to establish the volume of anchoring within the study area and the locations relative to the cable.	The impact will be assessed in terms of likelihood of occurrence and severity of consequence in accordance with the IMO FSA methodology (see Proposed Assessment Methodology), informed by baseline assessment, consultation with stakeholders and expert opinion.
Vessel anchors over the cable in an emergency	✓	✓	×	✓	×	There may be a risk of vessels dropping anchor over the cable, either in an emergency or negligently. This risk is expected to be higher during the construction phase if there is a period of time when the cables are exposed (noting that time between lay and burial is anticipated to be a maximum of a few days). During the operation and maintenance phase it is assumed that the risk is mitigated by cable protection. Should the cable remain in-situ following decommissioning, the risk of anchor interaction will remain.	Analysis of 12 months AIS will be undertaken within the NRA to establish the volume of vessels passing over the cable that might present a risk of emergency anchoring.	The impact will be assessed in terms of likelihood of occurrence and severity of consequence in accordance with the IMO FSA methodology (see Proposed Assessment Methodology), informed by baseline assessment, consultation with stakeholders and expert opinion.

Impact	Phase[1]					Justification	Data collection and analysis proposed to characterise the baseline environment	Summary of the proposed approach to assessment
	C	Op	Op repair	$D_{in\text{-}situ}$	D remove			
A vessel engaged in fishing snags its gear on the cable	✓	✓	×	✓	×	During the construction and operation and maintenance phases, there is a risk of fishing gear interaction with the subsea cable. This is higher during the construction phase if the cable is exposed between laying and burial (noting that time between lay and burial is anticipated to be a maximum of a few days). During the operation and maintenance phase it is assumed that the risk is mitigated by cable protection. The baseline assessment indicated the presence of fishing activity, including demersal activity, within the study area. Should the cable remain in-situ following decommissioning, the risk of fishing gear interaction will remain.	Further data assessment using 12 months AIS and additional fishing data sources will be undertaken within the NRA to identify fishing activity and gear types in operation near the cable.	The impact will be assessed in terms of likelihood of occurrence and severity of consequence in accordance with the IMO FSA methodology (see Proposed Assessment Methodology), informed by baseline assessment, consultation with stakeholders and expert opinion.
Reduction in under keel clearance resulting from laid cable and associated protection	×	✓	×	✓	×	The cable and associated protection may lead to a reduction in under-keel clearance, which could pose a risk of vessels grounding. Any requirements for external cable protection in shallow waters could reduce water depths by more than the MCA recommended 5% change. Should the cable remain in-situ following decommissioning, the reduction in under keel clearance will remain in place.	Shipping and navigation receptors will be identified by analysis of 12 months AIS data within the NRA. The NRA will include an assessment of the areas where external protection may be required to understand any impact on navigation.	The impact will be assessed in terms of likelihood of occurrence and severity of consequence in accordance with the IMO FSA methodology (see Proposed Assessment Methodology), informed by baseline assessment, consultation with stakeholders and expert opinion.

Impact	Phase[1]					Justification	Data collection and analysis proposed to characterise the baseline environment	Summary of the proposed approach to assessment
	C	Op	Op repair	$D_{in\text{-}situ}$	D remove			
Interference with Marine Navigational Equipment	×	✓	×	×	×	The electromagnetic field created by buried direct current cables has the potential to create interference on a vessel's magnetic compass, in particular on smaller recreational vessels, as such vessels may lack more sophisticated navigational equipment on-board.	EMF specific to the proposed cable type will be characterised. Based on this (anticipated negligible scale of EMF from DC cables) the potential effects on navigation will likely be determined qualitatively in the EIA.	The impact will be assessed in terms of likelihood of occurrence and severity of consequence in accordance with the IMO FSA methodology (see Proposed Assessment Methodology), informed by baseline assessment, consultation with stakeholders and expert opinion.
Reduced access to local ports	✓	×	×	×	✓	There is the potential for a reduction in access to local ports and harbours during construction/decommissioning works, particularly those in proximity to the landfall and those identified for use by project vessels during works.	Local ports and harbours will be identified using Admiralty Charts, Sailing Directions and other desk-based resources and 12 months AIS data used to identify numbers and types of vessels using these ports/harbours.	The impact will be assessed in terms of likelihood of occurrence and severity of consequence in accordance with the IMO FSA methodology (see Proposed Assessment Methodology), informed by baseline assessment, consultation with stakeholders and expert opinion.

Table notes: [1] C=Construction phase, Op=Operational phase, Op_{repair}=Operational phase repair activities, $D_{in\text{-}situ}$=Decommissioning phase assuming cable de-energised and left *in-situ,* D_{remove}=Decommissioning phase assuming cable removed

Measures Adopted as Part of the Proposed Development

8.6.43 The following measures adopted as part of the Proposed Development are relevant to shipping and navigation, considered in addition to the overarching design and embedded measures in **Section 4.8** and **Table 4.8.2.** These measures may evolve as the engineering design and the EIA progresses.

- Development of a VMP which would set out pre-agreed vessel routes, speeds, safety measures, communication expectations etc.
- Suitable implementation and monitoring of cable protection (burial is anticipated for almost the entire UK length outside of crossings) as informed by CBRA, taking into account anchoring and fishing practices.
- Compass deviation effects will be minimised through cable design and burial, and separation distance between the two trenches.
- Relevant policy guidance on water depth reduction to be followed during the design and construction of the project.
- Promulgation of information via Notices to Mariners, Kingfisher, KIS-ORCA, Radio Navigational Warnings on Very High Frequency (VHF) radio, NAVTEX, and/or broadcast warnings in advance of and during the offshore works. Details to be set out in the Vessel Management Plan.
- Compliance with international legislation, both for project vessels and third-party vessels. This includes the COLREGs and SOLAS.
- Cable installation vessels and support vessels will display appropriate lights and marks at all times, and where possible, broadcast their status on AIS. This will include indication of the nature of the work in progress and highlight their restricted manoeuvrability.
- Guard vessel(s) will be employed to work alongside the installation vessel(s) during the construction period. These will alert third-party vessels to the presence of the installation activity and provide support in the event of an emergency.
- Marine coordination and communication to manage project vessel movements.
- Passing vessels will be requested to maintain a ‘safe’ distance from installation vessels restricted in manoeuvrability. This will be monitored by guard vessels.
- The cable will be clearly marked on Admiralty Charts with associated note/warning about anchoring, trawling or seabed preparation.

Proposed Assessment Methodology

8.6.44 The shipping and navigation assessment for the offshore elements of the Proposed Development will be undertaken in accordance with the IMO’s FSA approach and terminology for impact assessment, in line with standard marine risk assessment. The FSA differs from the EIA methodology described in **Section 5**: EIA Methodology, of the Scoping Report, but is a requirement of the MCA for any NRA.

8.6.45 A NRA will be carried out, including a baseline study which will summarise the navigational features, historical incident data, vessel activity including anchoring and fishing activity, and any other navigational data available. Additional data and information sources beyond those used in this Scoping Report section include:

- 12 months of up-to-date AIS data, taking into account seasonal variations;
- MAIB and RNLI maritime incident data in the area (10 years);
- additional fishing vessel activity data (e.g., Vessel Monitoring System (VMS) satellite data); and
- port statistics.

8.6.46 Potential impacts will be identified for further consideration in the ES. Hazards will be identified and ranked and quantified where appropriate to inform the level of impact during construction, operation and maintenance and decommissioning phases. Appropriate mitigation measures will also be identified.

8.6.47 The FSA Methodology is centred on risk control and assesses each impact in terms of its frequency and consequence in order that its significance can be determined as 'broadly acceptable', tolerable or unacceptable via a risk matrix as shown in **Table 8.6.3**.

Table 8.6.3: Risk ranking matrix

		Severity				
		Negligible	**Minor**	**Moderate**	**Serious**	**Catastrophic**
Frequency	**Frequent**	Tolerable	Tolerable	Unacceptable	Unacceptable	Unacceptable
	Reasonably Probable	Broadly Acceptable	Tolerable	Tolerable	Unacceptable	Unacceptable
	Remote	Broadly Acceptable	Broadly Acceptable	Tolerable	Tolerable	Unacceptable
	Extremely Unlikely	Broadly Acceptable	Broadly Acceptable	Broadly Acceptable	Tolerable	Tolerable
	Negligible	Broadly Acceptable	Broadly Acceptable	Broadly Acceptable	Broadly Acceptable	Tolerable

8.6.48 The criteria for defining severity of consequence are outlined in **Table 8.6.4**.

Table 8.6.4: Definition of Severity of Consequences

Severity of Consequence	Definition
Negligible	No perceptible risk to people, property, the environment or business
Minor	Slight injury(s) to people
	Minor damage to property, i.e. superficial damage
	Tier 1 environmental damage with local assistance required
	Minor reputational risk to business limited to users
Moderate	Multiple minor or single serious injury to people
	Damage to property not critical to operations
	Tier 2 environmental damage with limited external assistance required
	Local reputational risk to business
Serious	Multiple serious injuries or single fatality to people
	Damage to property resulting in critical risk to operations
	Tier 2 environmental damage with regional assistance required

Severity of Consequence	Definition
	National reputational risk to business
Catastrophic	Multiple fatalities to people
	Total loss of property
	Tier 3 environmental damage with national assistance require
	International reputational risk to business

8.6.49 The criteria for defining frequency are presented in **Table 8.6.5**.

Table 8.6.5: Definitions for Frequency of Occurrence

Frequency of Occurrence	Description
Frequent	Yearly
Reasonably Probable	One per one to 10 years
Remote	One per 10 to 100 years
Extremely Unlikely	One per 100 to 10,000 years
Negligible	Less than one occurrence per 10,000 years
Frequency of Occurrence	Description

8.6.50 Impact assessment will be informed by baseline data, expert opinion, consideration of embedded mitigation and consultation feedback. Should an impact be assessed as 'unacceptable' then additional mitigation measures implemented beyond those considered embedded will be required to bring the impact to 'broadly acceptable' or 'tolerable' significance and to ensure the impact is within As Low as Reasonably Practicable (ALARP) parameters. Similarly, additional mitigation measures may require consideration for 'tolerable' impacts to ensure they are ALARP.

Potential Cumulative Impacts

8.6.51 There is potential for cumulative effects on sensitive receptors to occur when the Proposed Development is considered together with other developments. The potential cumulative effects between the offshore elements of the Proposed Development and other developments with respect to shipping and navigation will be considered within the PEIR and the ES.

8.6.52 The cumulative effects assessment will be undertaken in accordance with the IMO FSA methodology set out in the Proposed Assessment Methodology section above.

Potential Inter-related Effects

8.6.53 The assessment of potential inter-related effects will be considered within the shipping and navigation ES chapter. It will include consideration of the project lifetime effects and receptor-led effects in line with the approach outlined in **Section 5:** EIA Methodology, of the Scoping Report.

8.6.54 Of specific note are the potential inter-related effects with commercial fisheries impacts (**section 8.3**), which will be considered within the NRA (PEIR stage).

Potential Transboundary Impacts

8.6.55 Since international shipping will be included in the baseline assessment, there is no potential for additional transboundary impacts upon shipping and navigation receptors due to construction, operation and maintenance and decommissioning of the Proposed Development. Therefore, any additional consideration of transboundary effects for shipping and navigation receptors are proposed to be scoped out of the assessment.

8.7 Other Marine Users

Introduction

8.7.1 This section of the Scoping Report identifies the Other Marine Users (OMU) receptors relevant to the offshore elements of the Proposed Development. This section also considers the potential impacts arising from the construction, operation and maintenance, and decommissioning of the Proposed Development and identifies the proposed scope of, and methodology for, the EIA process for OMU.

8.7.2 This topic interfaces with other aspects and topics and therefore should be considered alongside the following:

- **Section 7.8:** Air Quality;
- **Section 8.4:** Commercial Fisheries;
- **Section 8.6:** Shipping and Navigation;
- **Section 8.9:** Physical Processes;
- **Section 8.10:** Underwater Noise; and
- **Section 9.4:** Socio-Economics.

8.7.3 The OMU assessment will consider all other infrastructure, users and utilities which have not been included in the other sections such as subsea cables and utilities, dredging and offshore disposal sites, planned and consented marine energy projects and oil and gas infrastructure.

Relevant Policy, Legislation and Guidance

8.7.4 The lists in this Section should be read in conjunction with **Section 2**: Policy and Legislation, of the Scoping Report.

Legislative and Policy Context

8.7.5 The following key legislation and policy documents relevant to OMU will be considered within the assessment process:

- United Nations Convention on the Law of the Sea (UNCLOS) – Article 79: Submarine cables and pipelines on the continental shelf;
- UNCLOS – Article 113: high sea area;
- The Submarine Telegraph Act (1885);

- Energy Act (2004);
- Overarching National Policy Statement (NPS) for energy (EN-1), the NPS for renewable energy infrastructure (EN-3) and the NPS for electricity networks infrastructure (EN-5) (DESNZ), 2023;
- UK Marine Policy Statement (2011); and
- South West Marine Plan (2021).

Guidance documents

8.7.6 The following guidance documents are relevant to the consideration of impacts on other marine users:

- European Subsea Cables Association (ESCA) (2023). ESCA Guideline No.6 The Proximity of Offshore Renewable Energy Installations & Subsea Cable Infrastructures; and
- Maritime and Coastguard Agency (MCA) Marine Guidance Note (MGN) 654 (M+F) Offshore Renewable Energy Installations (OREI) safety response.

Study Area

8.7.7 The study area for the OMU assessment is based on the Offshore Cable Corridor stretching from MHWS to the UK EEZ. A buffer of 5 nm has been proposed around the Offshore Cable Corridor to consider the wider area around the Proposed Development and consider other marine users. This is standard practice and the buffer is consistent with that used in the shipping and navigation assessment.

8.7.8 **Figure 8.7.1 i**dentifies the study area.

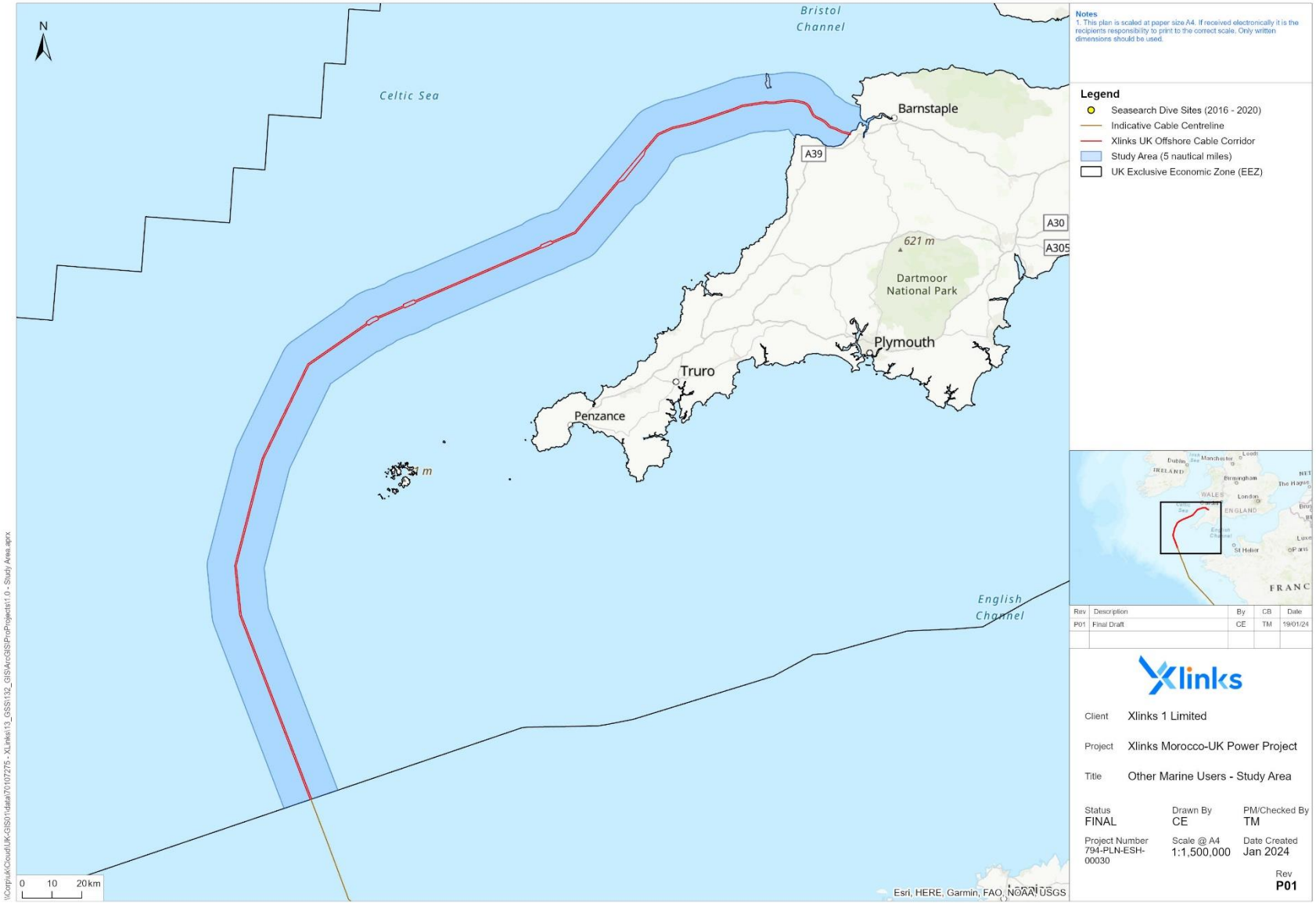

Figure 8.7.1: Other marine users Offshore Cable Corridor

Data Sources

8.7.9 The data sources used to inform the baseline assessment will primarily comprise published material which is publicly available online. An initial desk-based review has identified several data sources which provide baseline data coverage of the Proposed Development Scoping Boundary.

8.7.10 The baseline data sources identified in this Scoping Report will remain under review and may be updated in response to feedback from relevant statutory and non-statutory consultees during the EIA process, or in response to new sources of information becoming available.

Desk-based Data Sources

8.7.11 To inform this Scoping Report section, a high-level desk-based assessment has been conducted for OMU receptors using a range of existing data (**Table 8.7.1**).

Table 8.7.1: Desk based baseline data sources – other marine users

Source	Summary
Navigation Charts (UKHO)	Navigation resource for all marine users in the UK. Indication of offshore assets and marine infrastructure.
The Crown Estate (TCE) Wind Leasing Rounds 1-5	TCE have set out plans to explore viable options for a potential leasing opportunity for the first commercial-scale floating wind projects to be located in the Celtic Sea.
TCE, The Oil and Gas (O&G) Authority	Location of O&G assets across the UK marine environment including both exploratory, operational, and decommissioned sites.
EMODnet human Activities	Overview shapefiles of human activity in the marine environment at both UK and European scale.
DESNZ	UK policy and baseline information regarding the human and economic environment.
British Marine Aggregate Production Association (BMAPA) annual reports;	Location and description of marine aggregate activity in the UK marine environment.
Global Marine Cable Route Desk Top Study	A feasibility report detailing the potential risks to the cable along preliminary cable routes.
OceanIQ Subsea Cables	OceanIQ data layer for subsea cables.
TCE and UKs Storage Appraisal Project strategic study of the potential for UK CO2 storage.	Determination of UK approach to Carbon Capture and Storage, alongside key areas of focus for future policy and implementation of infrastructure.
TCE Proximity Report	A report provided by TCE to guide optioneering of the Offshore Cable Corridor.
CEFAS GIS Shapefile of Disposal Sites	Location and description of marine disposal sites activity in the UK marine environment.
SeaSearch Recreational Diving Records	Location of key diving sites within the UK, alongside the recorded findings of dive surveys.
Kingfisher Information Service (KIS) Offshore Renewable & Cable Awareness project (KIS-ORCA).	Location of major subsea infrastructure including power cables and pipelines across the UK and Europe.
Automatic Identification System (AIS) Data (January & July 2023).	Two months of AIS data offering complete coverage of the study area. January and July 2023 selected to offer coverage of seasonal variations in vessel traffic.

Baseline Environment

Existing Baseline

8.7.12 The assessment of baseline OMU conditions seeks to determine the marine setting, evidence of anthropogenic activity, and location in relation to identified zones of activity in the study area surrounding the Proposed Development.

Marine Aggregate Extraction

8.7.13 Marine aggregate extraction is licenced by TCE, however the activity of the site is regulated by the Marine and Coastal Access Act and the issuing of Marine Licences by the MMO. These licences usually permit the operator to less than 15 years of aggregate extraction and are frequently accompanied by conditions of operation, such as maximum depth of extraction and extraction volume limits. The conditions are also a means by which environmental measures and monitoring regimes are enforced.

8.7.14 There are no aggregate extraction areas within the OMU study area. The closest marine aggregate extraction site is located approximately 30 km north of the cable route in the Bristol Channel. This production area is the NOBEL Banks extraction site (Area Number: 476), which opened in 2016. The site is operated by Llanelli Sand Dredging Ltd and has a licence to operate until the end of June 2031.

Disposal Sites

8.7.15 Offshore disposal at sea has been largely prohibited since 1998. The exceptions to this prohibition include the disposal of dredged material originating from ports and harbours for the safe navigation of shipping channels, and the disposal of material originating from the installation of offshore infrastructure.

8.7.16 There is one licenced disposal site within the study area as presented in **Figure 8.7.2**.

8.7.17 This disposal site is the Hartland Point (LU020) disposal site, a closed site located approximately 850 m south of the Offshore Cable Corridor at its closest point.

8.7.18 There are no active disposal sites within the study area.

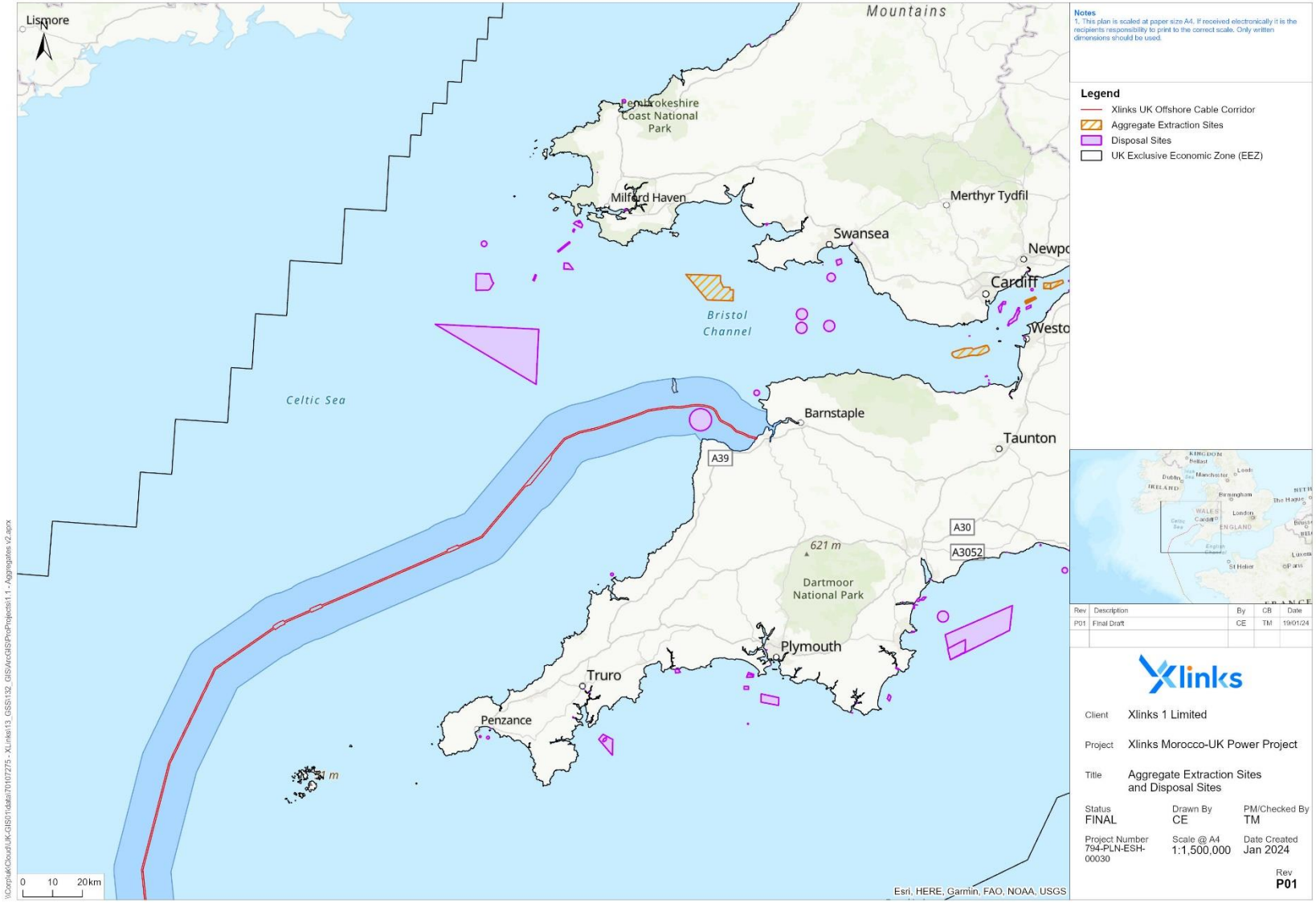

Figure 8.7.2: Aggregate extraction and disposal sites

Oil and Gas

8.7.19 Regulated by The Petroleum Act 1998, the Oil and Gas Authority grant licences that cover exclusive rights to ‘search and bore for and get’ petroleum. Prior to this, the oil and gas fields of the UK were a Crown owned resource.

8.7.20 The Celtic Sea, Cornwall, Devon, Penzance, and Scilly Isles inshore and offshore areas are not currently a focus for the exploration and production of hydrocarbons. There are no licenced developments within the study area.

8.7.21 The closest oil and gas well is located 17 km east from the Proposed Development Scoping Boundary. This well is a decommissioned dry well which halted operation in 1982.

Offshore Wind

8.7.22 Government policy is driving growth of offshore wind, with the UK ‘Net Zero Strategy: Build Back Greener’ committing the UK to ‘Net Zero’ by 2050, and an ambition for 40 GW of offshore wind by 2030. Part of this implementation of offshore wind has driven demand for floating arrays, targeted in the North and Celtic Seas, the latter being of particular relevance to the Proposed Development.

8.7.23 There are several offshore windfarms in various stages of development within the Celtic Sea region, including some undergoing the initial stages of consenting and development. These schemes will be included within the assessment depending on their stage of development at the PEIR and subsequent ES stage. Details will be derived using the data sources identified in this Section.

8.7.24 The Crown Estate issued three Floating Offshore Wind Leasing Round 5 Project Development Areas (PDAs) in 2023. These PDAs are located north of the Proposed Development in the Celtic Sea. PDA 3 is located within the Offshore Cable Corridor as shown in **Figure 8.7.3**, whilst PDA 2 is located approximately 20 km north. PDA 1 is located approximately 35 km north.

8.7.25 The White Cross offshore windfarm is located approximately 10 km north of the Proposed Development and is currently in early stages of development. As described further in Subsea Cables and Pipelines, the proposed White Cross offshore windfarm shares a section of similar cable route to the Proposed Development.

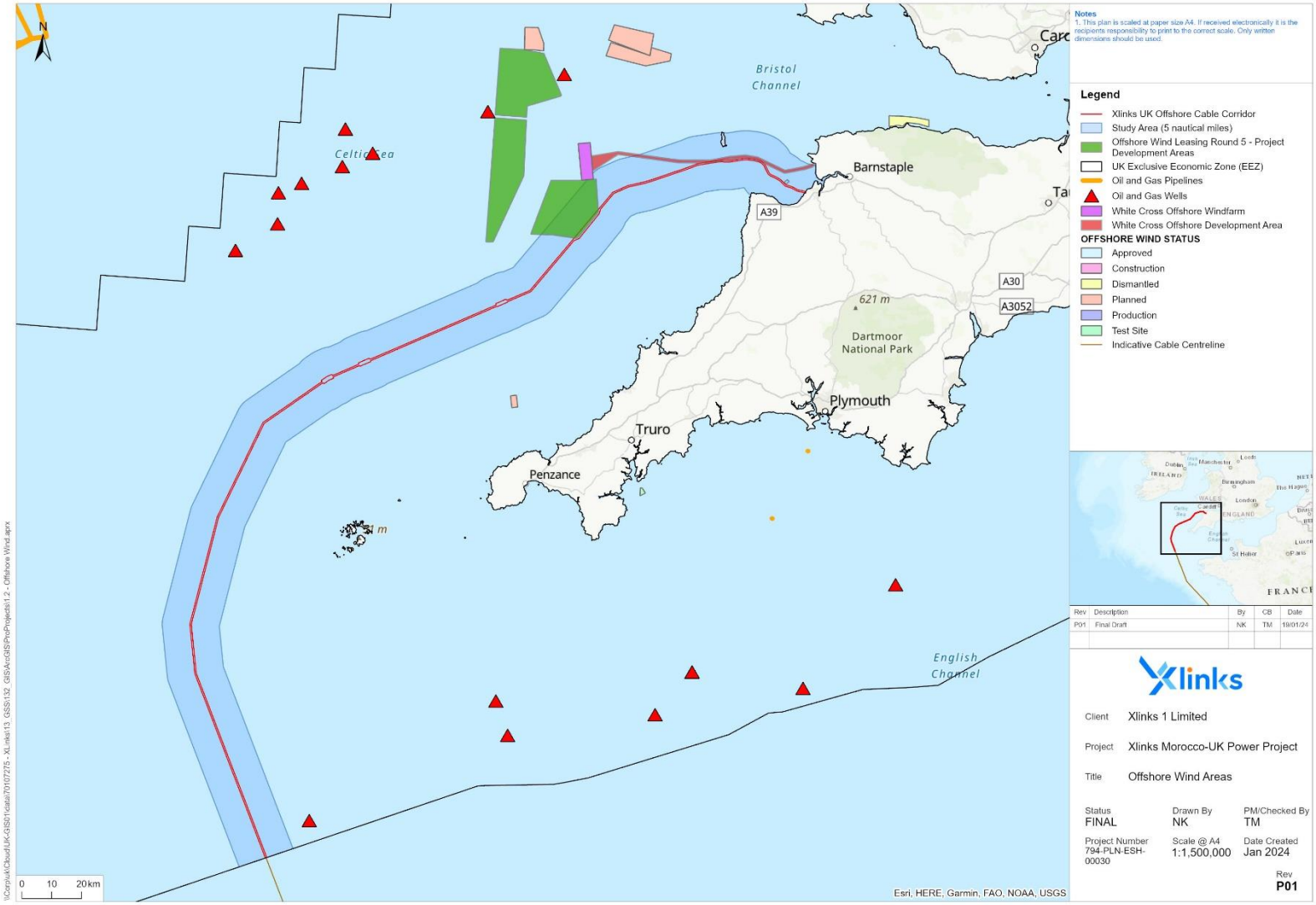

Figure 8.7.3: Offshore find farms and oil and gas infrastructure

Other Offshore energy

8.7.26 The UK Government estimates that wave and tidal stream energy has the potential to deliver around 20% of the UK's current electricity needs, this equates to around 30 to 50 GW of renewable generation (Renewable UK, 2023).

8.7.27 There are no other offshore energy projects within the study area.

8.7.28 The closest offshore renewable project identified as part of the Scoping exercise is the Wave Hub North Devon Development Zone. Containing an array of wave energy demonstration sites over 25 km south of the study area.

8.7.29 Utilisation of Carbon Capture and Storage (CCS) to achieve the UK 'Net Zero' ambition for 2050 is earmarked to include around 9 Mt of CO_2e originating from the South Wales industrial cluster. Although the area is a target for CCS, there are no known plans for CCS or associated pipelines in the study area (DESNZ, 2023).

Military Activity and Munitions

8.7.30 The section provides a summary of Ministry of Defence (MOD) activities, including Practice and Exercise Areas (PEXAs).

8.7.31 The Proposed Development is located within a broad Military Practice area that extends to cover the majority of the offshore south west extent of the UK EEZ, and passes through military exercise airspace off the northern coast of Cornwall, Devon and the Isles of Scilly (South West Marine Plan, 2021).

8.7.32 The Shipping and Navigation section (**section 8.6**: Shipping and Navigation, of the Scoping Report) identified two nearshore Firing Practice Areas within the study area (**Figure 8.6.3)**. The study area passes to the west of the offshore Trevose Head Army Danger Area (**Figure 8.6.2**).

8.7.33 There are no munitions disposal areas within the study area. The closest munitions record is a chemical munitions disposal over 18 km south east of the Proposed Development Scoping Boundary.

Subsea Cables and Pipelines

8.7.34 Linear infrastructure, subsea cables and pipelines are located beneath the sea surface and generally encompass (but not exclusively) subsea telecoms, power cables, interconnector cables, and subsea O&G pipelines.

8.7.35 Cable crossings are commonplace in European waters given over a century of cable laying in the oceans surrounding the continent. The crossings anticipated to be undertaken as part of the Proposed Development will adhere to international standards for cable crossings to limit impacts upon existing infrastructure.

8.7.36 The study area intersects 19 subsea cables (21 crossings in total). The majority of these cables are telecoms cables operated by a range of companies, and which connect the UK to Ireland as well as stretching across the Atlantic. The remaining cables connect the UK to Europe and Africa.

8.7.37 The White Cross offshore windfarm cable is also planned to be constructed in proximity to the Offshore Cable Corridor.

8.7.38 The current proposed route of the Celtic Interconnector will cross the proposed Offshore Cable Corridor and therefore will require a cable crossing agreement.

8.7.39 There are several disused and decommissioned cables located within the Proposed Development Scoping Boundary that the Offshore Cable Corridor will intersect. Many of these are operated by British Telecoms (BT) and will be investigated further as part of the PEIR and ES. (**Figure 8.7.4**).

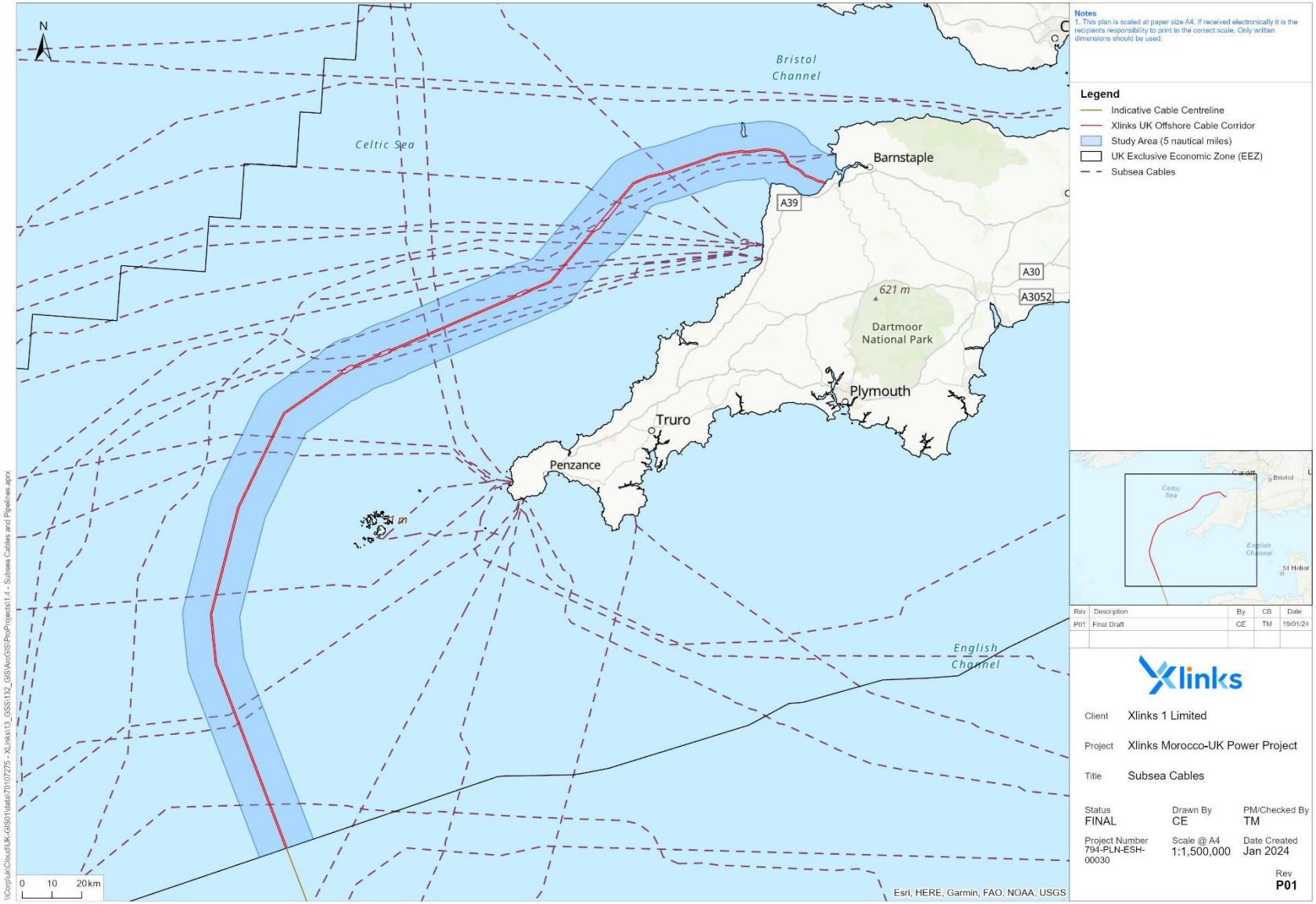

Figure 8.7.4: Subsea cables

Recreational Boating and Sailing

8.7.40 The south west UK coastline is a popular destination for recreational boating and sailing, supported by numerous marina facilities and a large number of Royal Yachting Association clubs and cruising routes. These include significant presence at Bideford, Newquay, Padstow and St. Ives, contributing to a host of local cruising routes and sailing areas.

8.7.41 The Lundy ferry operates approximately 5 km north of the Proposed Development. The majority of the Offshore Cable Corridor extends through the Celtic Sea and avoids the majority of recreational marine traffic in the inshore South West Marine Plan area.

8.7.42 Several key recreational boating and sailing routes have been identified within the study area, these include routes between the north Cornwall coastline and Celtic Sea destinations (such as Wales), and those extending north west, connecting Cornwall and Devon to the Irish coastline.

8.7.43 **Section 8.6**: Shipping and Navigation, of the Scoping Report analysed AIS data to understand the vessel traffic baseline by vessel type, including recreational vessels. Recreational vessels were generally recorded in the northern and central areas of the study area and to the north of the Isles of Scilly. Recreational vessels in proximity to the landfall included vessels offering day trips, diving trips and angling tours to Lundy from Ilfracombe. The vast majority of recreational vessels were recorded in July, with 19 vessels per day, compared with less than one recreational vessel per day in January.

Diving and Water sports

8.7.44 The south west coastline of the UK is a popular destination for recreational diving and a range of water sports.

8.7.45 There are numerous dive sites within the study area, particularly in the inshore Celtic Sea, and Devon and Cornwall coastline, including the wreck of SS Thistlemor off the Bideford coastline. There are numerous dive sites within the 5 nm study area as illustrated in **Figure 8.7.5.**

8.7.46 Water sports off the southern tip of the UK are highly popular due to the wave regime. Surfing and other wave related sports (e.g., paddleboarding, kayaking, and wind-surfing) generally seek out high value shallow inshore areas for activities related to their operation i.e., far inshore of the Offshore Cable Corridor. These activities are mainly focussed around the summer months, with peak surf conditions usually occurring around late summer and autumn.

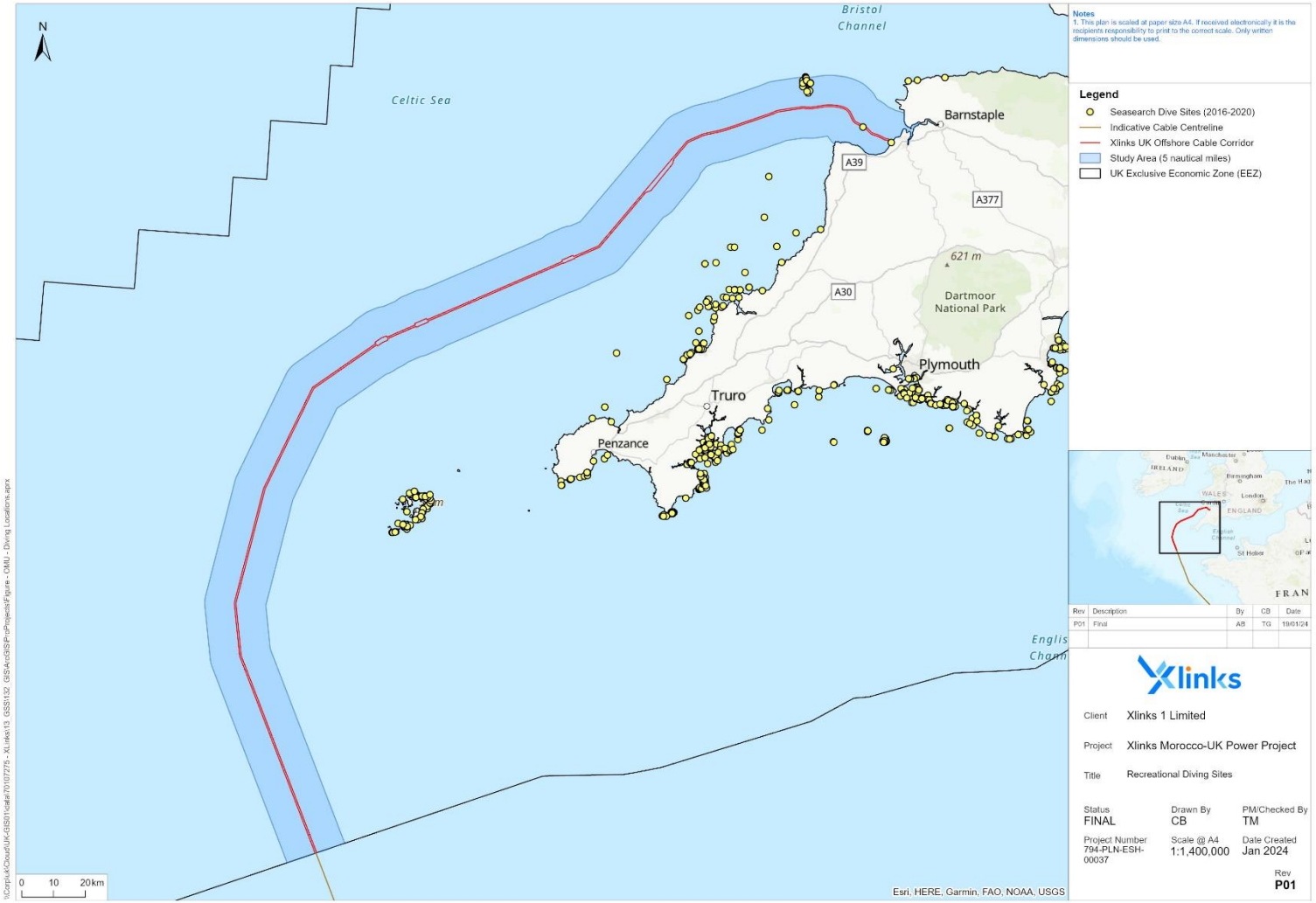

Figure 8.7.5: Diving and water sports

Recreational Fishing and Seaweed Farming

8.7.47 Alongside commercial fishing in the south west marine area, recreational fishing and seaweed farming are popular activities in the south west due to a range of species frequenting local waters (such as Bass and Seabream) and access to marine infrastructure which facilitates the practice in areas such as Newquay, Hayle, and Penzance.

8.7.48 Recreational fishing is likely to be undertaken within the study area and is offered by a range of local companies to tourists and local enthusiasts. These contribute to the shipping and navigation baseline environment discussed in **section 8.6**: Shipping and Navigation, of the Scoping Report.

8.7.49 Shore fishing for crab and lobster, alongside spearfishing are also practiced recreationally in significant numbers across the south west of the UK (Cornwall Inshore Fisheries and Conservation Authority, 2023).

8.7.50 As with many environmental initiatives, seaweed farming is gaining traction in the south west of the UK, with new seaweed farm developments across the marine inshore area.

8.7.51 One such seaweed farm is a 100 ha site located off the north Devon coast within Bideford Bay where the Proposed Development cables will make landfall. The Offshore Cable Corridor has been micro-routed to avoid interaction with this asset (**Figure 8.7.6**).

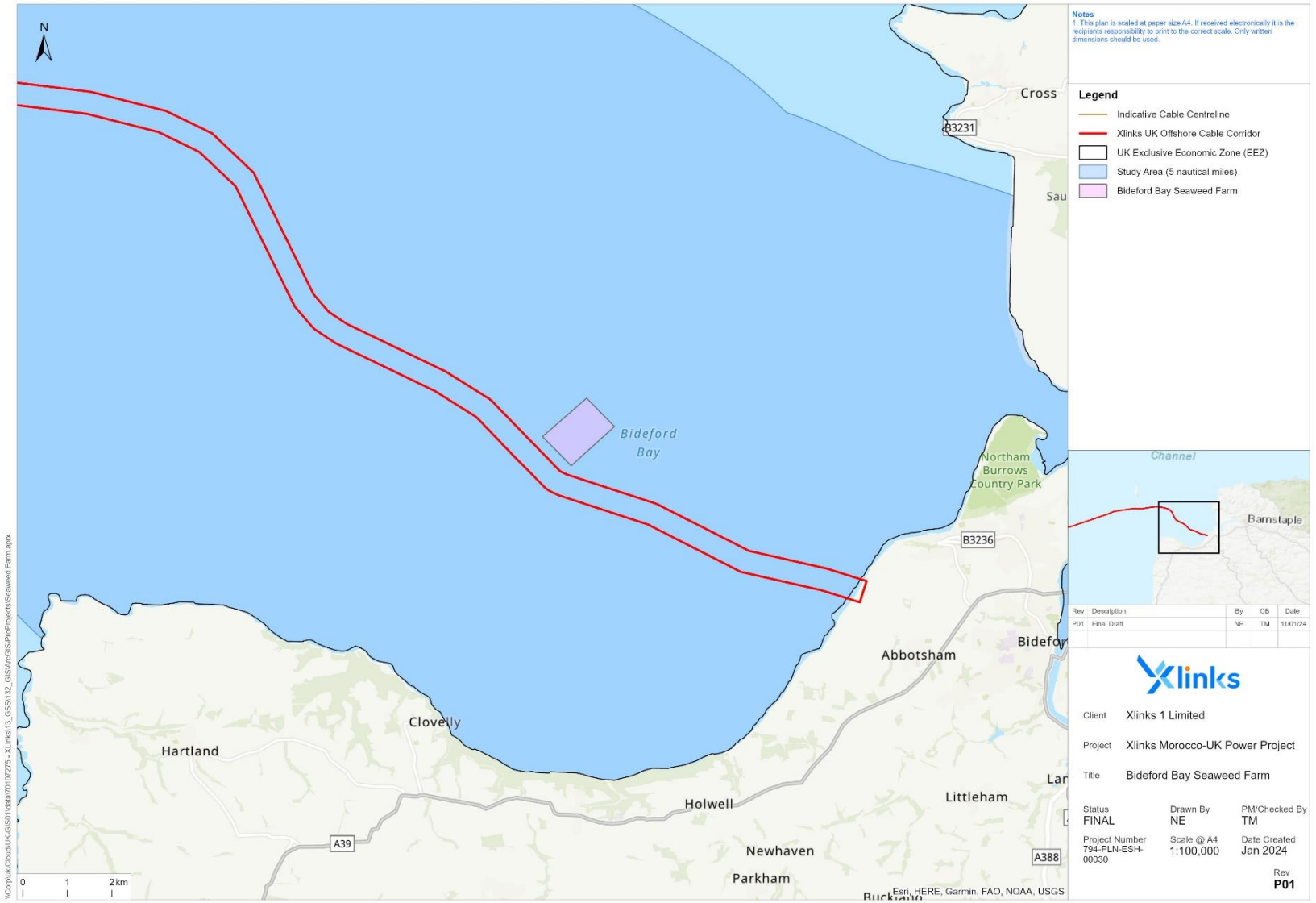

Figure 8.7.6: Bideford Bay Seaweed Farm

Future Baseline Conditions

8.7.52 The EIA process will consider the existing baseline conditions within the study area, and future baseline conditions (as far as reasonably practicable), in accordance with the methodology set out in **Section 5**: EIA Methodology, of the Scoping Report.

8.7.53 There is uncertainty associated with long-term predictions for OMU. Limited reliable information on future trends upon which any assumptions can be made contributes to the uncertainty of future baseline assessment. It is anticipated with UK Policy driving 'Net Zero' OMU activity in the Celtic Sea region will be subject to increased activity.

8.7.54 The future baseline for OMU will be subject to economic, social, and environmental pressures. It is therefore difficult to predict the fluctuations that may be experienced in OMU activity intensity surrounding the Proposed Development.

8.7.55 It is however assumed that the continued presence of fisheries, the upward trend in offshore renewables, and the continued operation of marine aggregate extraction are to be key OMU in the vicinity of the Proposed Development in the future.

Scope of the Assessment

8.7.56 A range of potential impacts on OMU have been identified, which may occur during the construction, operation and maintenance, and decommissioning phases of the Proposed Development.

8.7.57 The impacts that have been scoped into the assessment are outlined in **Table 8.7.2** together with a description of any additional data collection (e.g., site-specific surveys) and supporting analyses (e.g., modelling) that will be required to enable a full assessment of the impacts.

8.7.58 Potential impacts scoped out of the assessment are presented in **Table 8.7.3** with justification for why the impact may be scoped out.

Table 8.7.2: Impacts proposed to be scoped into the assessment for other marine users

Impact	Phase[1]					Justification	Data collection and analysis proposed to characterise the baseline environment	Summary of the proposed approach to assessment
	C	Op	Op repair	D in-Situ	D remove			
Increased vessel traffic causing disruption to OMU activities	✓	×	✓	×	✓	Increased vessel movement associated with the construction, operation repair activities, maintenance, and decommissioning (removal of infrastructure) of the Proposed Development may interfere with other activities. However, it is not expected that vessel number will be significantly increased compared to the baseline.	OMU receptors located within the respective study areas will be identified using desk-based analysis involving consultation with relevant stakeholders where applicable. Note, vessel traffic considerations will be principally reported in Shipping and Navigation ES chapter.	Scoped in (simple assessment): • Offshore wind • Military activity and munitions • Subsea cables and pipelines • Recreational boating and sailing • Diving and water sports • Recreational fishing and seaweed farming Scoped out (**Table 8.7.3**): • Marine aggregate extraction • Disposal sites • Oil and gas • Other offshore energy
Physical presence of infrastructure and temporary exclusion areas	✓	✓	✓	✓	✓	Physical presence of infrastructure and temporary exclusion areas associated with construction, operation and maintenance, and decommissioning may interfere with other activities. The installation of the cable will present a future constraint to activities in its vicinity.	OMU receptors located within the respective study areas will be identified using desk-based analysis involving consultation with relevant stakeholders where applicable	Scoped in (simple assessment): • Offshore wind • Military activity and munitions • Subsea cables and pipelines • Recreational boating and sailing • Diving and water sports

Impact	Phase[1]					Justification	Data collection and analysis proposed to characterise the baseline environment	Summary of the proposed approach to assessment
	C	Op	Op repair	D in-Situ	D remove			
								• Recreational fishing and seaweed farming Scoped out (**Table 8.7.3**): • Marine aggregate extraction • Disposal sites • Oil and gas • Other offshore energy
Temporary increase in suspended sediment concentrations and deposition of sediment	✓	×	✓	×	✓	An increase in suspended sediment concentrations and associated deposition will occur during activities that interact with the seabed. These marine activities may therefore reduce water clarity for recreational users.	OMU receptors located within the respective study areas will be identified using desk-based analysis involving consultation with relevant stakeholders where applicable. Consideration of SSC will be led by the physical processes assessments.	Scoped in (simple assessment): • Diving and water sports Scoped out (**Table 8.7.3**): • Offshore wind • Subsea cables and pipelines • Marine aggregate extraction • Disposal sites • Oil and gas • Other offshore energy; • Recreational boating and sailing; • Recreational fishing and seaweed farming; and • Military activity and munitions
Increased subsea noise	✓	×	✓	×	✓	A temporary increase in subsea noise is expected during installation, repair, and decommissioning (removal of infrastructure) works due to	OMU receptors located within the respective study areas will be identified using desk-based analysis involving consultation	Scoped in (simple assessment): • Diving and water sports; and

Impact	Phase[1]					Justification	Data collection and analysis proposed to characterise the baseline environment	Summary of the proposed approach to assessment
	C	Op	Op repair	D in-Situ	D remove			
						construction activities occurring on or just above the seabed which may affect recreational users and recreational anglers due to effects on fish.	with relevant stakeholders where applicable. Consideration of noise impacts on fish will be principally reported in the fish and shellfish ecology assessments.	• Recreational fishing and seaweed farming Scoped out (**Table 8.7.3**): • Marine aggregate extraction; • Disposal sites; • Oil and gas; • Other offshore energy; • Recreational boating and sailing; and • Military activity and munitions.

Table notes: [1] C=Construction phase, Op=Operational phase, Oprepair=Operational phase repair activities, Din-situ=Decommissioning phase assuming cable de-energised and left in-situ, Dremove=Decommissioning phase assuming cable removed

Table 8.7.3: Impacts proposed to be scoped out of the assessment for other marine users

Impact	Justification
Interaction with and/or disruption to oil and gas infrastructure.	Potential impacts to oil and gas infrastructure throughout the lifecycle of the Proposed Development have been scoped out of further assessment as there is no spatial overlap with active or planned oil and gas infrastructure.
Interaction with and/or disruption to Aggregate Extraction or Resource Areas	There is currently no spatial overlap with known areas of aggregate extraction and the Proposed Development. The nearest aggregate extraction area is approximately 30 km north of the study area. Construction, operation and maintenance, and decommissioning activities have therefore been scoped out of further assessment.
Interaction with and/or disruption to Marine Disposal Sites	There is no spatial overlap with any known marine disposal sites and the Hartland Point (LU020) disposal site is closed. Construction, operation and maintenance, and decommissioning activities have therefore been scoped out of further assessment.
Interaction with and/or disruption to other offshore energy	There is currently no spatial overlap, or planned overlap between other offshore energy infrastructure and the Proposed Development, therefore no impact pathways have been identified. Construction, operation and maintenance, and decommissioning activities have therefore been scoped out of further assessment. Offshore wind has been scoped-in separately.

Measures Adopted as Part of the Proposed Development

8.7.59 The following measures adopted as part of the Proposed Development are relevant to OMU, considered in addition to the overarching design and embedded measures in **section 4.8** and **Table 4.8.2.** These measures may evolve as the engineering design and the EIA progresses.

- Suitable implementation and monitoring of cable protection (via burial and within trench rock protection principally) as informed by CBRA, taking into account anchoring and fishing practices.
- Promulgation of information via Notices to Mariners, Kingfisher, KIS-ORCA, Radio Navigational Warnings on Very High Frequency (VHF) radio, NAVTEX, and/or broadcast warnings in advance of and during the offshore works. Details to be set out in a Vessel Management Plan.
- Compliance with international legislation, both for project vessels and third-party vessels. This includes the COLREGs and SOLAS.
- Guard vessels will be employed to work alongside the installation vessel(s) during the construction period. These will alert third-party vessels to the presence of the installation activity (to maintain a ‘safe zone’) and provide support in the event of an emergency.
- Marine coordination and communication to manage project vessel movements set out in the VMP.

- Passing vessels will be requested to maintain a “safe” distance from installation vessels restricted in manoeuvrability. This will be monitored by guard vessels.
- Cable burial is the preferred method of cable protection. The cable will be buried at a target depth of up to 1.5 m to reduce risks to the cable (e.g., anchor damage), subject to a detailed CBRA.
- Cable crossing and proximity agreements with recognised subsea cables and pipeline operators will be obtained. Crossing design will adhere to international best practice.
- Sequential installation of cable, aiming to have cable laying vessels rotating on-site campaigns, minimising down time and requirement for guard vessels and exclusion zones.

Proposed Assessment Methodology

8.7.60 The OMU assessment for the offshore elements of the Proposed Development will be undertaken in accordance with the methodology set out in **Section 5**: EIA Methodology, of the Scoping Report.

8.7.61 The proposed assessment methodology will aim to reduce overlap with other sections that already address OMU to deliver a proportionate EIA.

8.7.62 A summary of the baseline data related to OMU will be collated utilising further data from key stakeholders that will be engaged in consultation to better understand local baseline data.

8.7.63 An assessment of the impacts of the Proposed Development on OMU will be conducted, utilising a standard sensitivity of receptor and magnitude of effect matrix as outlined in **Section 5**: EIA Methodology, of the Scoping Report to determine significance of effect. Findings of this assessment will be presented in the PEIR and ES.

Potential Cumulative Effects

8.7.64 There is potential for cumulative effects on sensitive receptors to occur when the Proposed Development is considered together with other developments. The potential cumulative effects between the offshore elements of the Proposed Development and other developments with respect to OMU will be considered within the PEIR and the ES.

8.7.65 The cumulative effects assessment would be undertaken in accordance with the methodology set out in **Section 5**: EIA Methodology, of the Scoping Report.

Potential Inter-related Effects

8.7.66 The assessment of potential inter-related effects will be considered within the OMU ES chapter. It will include consideration of project lifetime effects and receptor-led effects in line with the approach outlined in **Section 5**: EIA Methodology, of the Scoping Report.

Potential Transboundary Impacts

8.7.67 Some transboundary impacts on OMU may be expected due to the offshore environment between nations being frequented by marine activities including shipping, recreational boating and subsea infrastructure (cables/pipelines). However, these impacts are not anticipated to be greater than the individual impacts assessed within the UK and France offshore areas alone and are anticipated to be largely captured as part of the UK assessment (international shipping is included in the Shipping & Navigation baseline for example). Potential transboundary impacts on OMU will be assessed at PEIR and ES.

8.7.68 Planning Inspectorates will satisfy its legal duties in relation to the notification and consultation requirements with EEA States in accordance with the Transboundary Process set out in Regulation 32 of the EIA Regulations, which will include consideration of potential impacts on OMU in French waters.

8.8 Marine Archaeology and Cultural Heritage

Introduction

8.8.1 The marine archaeology and cultural heritage assessment will consider the potential effects on offshore cultural heritage assets that may arise from the construction, operation and maintenance, and decommissioning of the offshore Project elements that are seaward of MHWS. This section of the Scoping Report describes the methodology to be used within the marine archaeology and cultural heritage EIA, an overview of the baseline conditions within the study area, the datasets to be used to inform the EIA, the potential effects to be considered within the EIA, and how these potential effects will be assessed.

8.8.2 Marine archaeology and cultural heritage interfaces with other aspects and as such, should be considered alongside these; namely:

- **Section 8.10**: Physical Processes;
- **Section 9.3**: Seascape, landscape and visual; and
- **Section 7.3**: Historic Environment.

Relevant Policy, Legislation and Guidance

Legislative and Policy Context

8.8.3 The following conventions, key legislation and policy documents relevant to marine archaeology and cultural heritage will be considered within the assessment process:

Conventions

- The United Nations Convention on the Law of the Sea (UNCLOS).
- International Council on Monuments and Sites (ICOMOS).
- The European Convention on the Protection of the Archaeological Heritage (revised), known as the Valletta Convention.
- Annex to the United Nations Educational, Scientific, and Cultural Organisation (UNESCO) Convention on the Protection of the Underwater Cultural Heritage 2001.

Legislation

- Protection of Wrecks Act 1973.
- Ancient Monuments and Archaeological Areas Act 1979.
- The Protection of Military Remains Act 1986.
- Merchant Shipping Act 1995.
- Marine and Coastal Access Act 2009.

Policy

- UK Marine Policy Statement (update 2020).
- National Policy Statements (EN-1 and EN-3).
- South West Inshore and Offshore Marine Plans.

Guidance

8.8.4 Guidance documents relevant to marine archaeology and cultural heritage that will be considered within the assessment process include the following:

- COWRIE Historic Environment Guidance for the Offshore Renewable Energy Sector (Wessex Archaeology, 2007).
- COWRIE Guidance for Assessment of Cumulative Impacts on the Historic Environment from Offshore renewable Energy (COWRIE, 2008).
- Code of Practice for Seabed Development (Joint Nautical Archaeology Policy Committee and The Crown Estate, 2008).
- COWRIE Guidance for Offshore Geotechnical Investigations and Historic Environment Analysis: guidance for the renewable energy sector (Gribble and Leather, 2011).
- Assessing Boats and Ships 1860-1913, 1914-1938 and 1939-1950. Archaeological Desk-Based Assessments in 3 volumes (Wessex Archaeology. 2011).
- Protocol for Archaeological Discoveries: Offshore Renewables Projects (The Crown Estate, 2014).
- The Chartered Institute for Archaeologists (CIfA) Codes, Standards and Guidance (various).
- Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects Offshore Renewables Projects, (The Crown Estate, 2021).

8.8.5 The methodology for the assessment will also take account of guidance and documentation including:

- People and the Sea: a maritime archaeological research agenda for England (Ransley et al., 2013).
- Joint Nautical Archaeology Policy Committee (JNAPC) Code of Practice for Seabed Development (JNAPC and The Crown Estate, 2006).
- Historic Environment Guidance for the Offshore Renewable Energy Sector (Wessex Archaeology, 2008).
- Guidance for Assessment of Cumulative Impacts on the Historic Environment from Offshore Renewable Energy (Oxford Archaeology, 2008).
- Chartered Institute for Archaeologists' Standard and Guidance for Historic Environment Desk-Based Assessments (2020) and Code of Conduct (2022).
- Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects (The Crown Estate, 2021).

Study Area

8.8.6 Initial data gathering to support the development of the Scoping Report has been undertaken utilising the study area shown in **Figure 8.8.1** to **Figure 8.8.5**. The figures also show the locations of marine historic environment assets within the Offshore Cable Corridor and the study area.

8.8.7 The study area encompasses the Offshore Cable Corridor from MHWS to the UK EEZ boundary, as well as a 5 km buffer. All receptors landwards of MHWS will be included within **Section 7.3**: Historic Environment, of the Scoping Report.

8.8.8 The study area will be reviewed and amended for the EIA in response to such matters as refinement of the offshore components, the identification of additional impact pathways and in response where appropriate to feedback from stakeholder engagement and statutory consultation. In addition, data gathered for the onshore assessment will be reviewed to identify whether there is relevant contextual data that could inform the marine archaeology assessment.

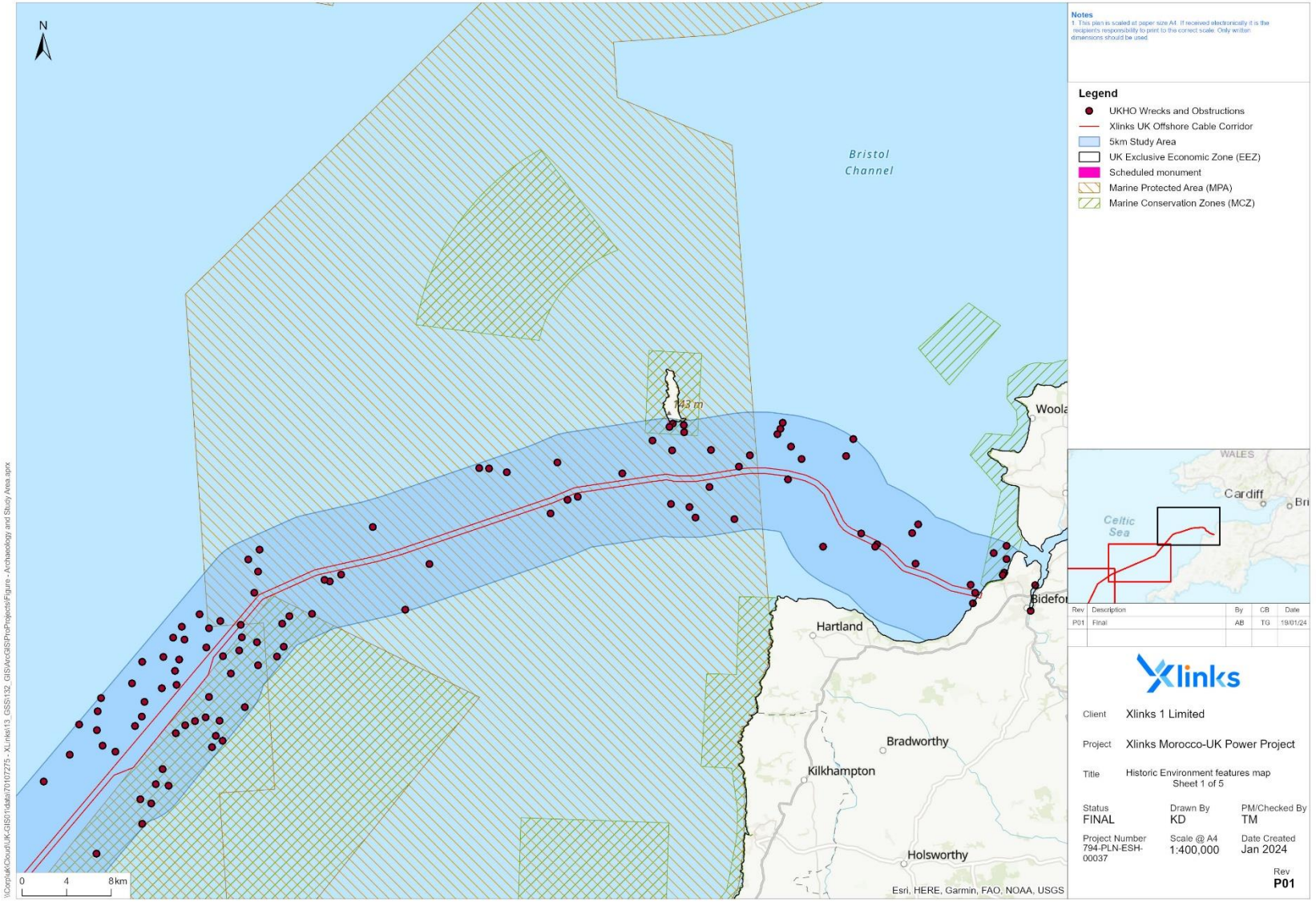

Figure 8.8.1: Marine archaeology and cultural heritage study area and historic environment assets (Sheet 1)

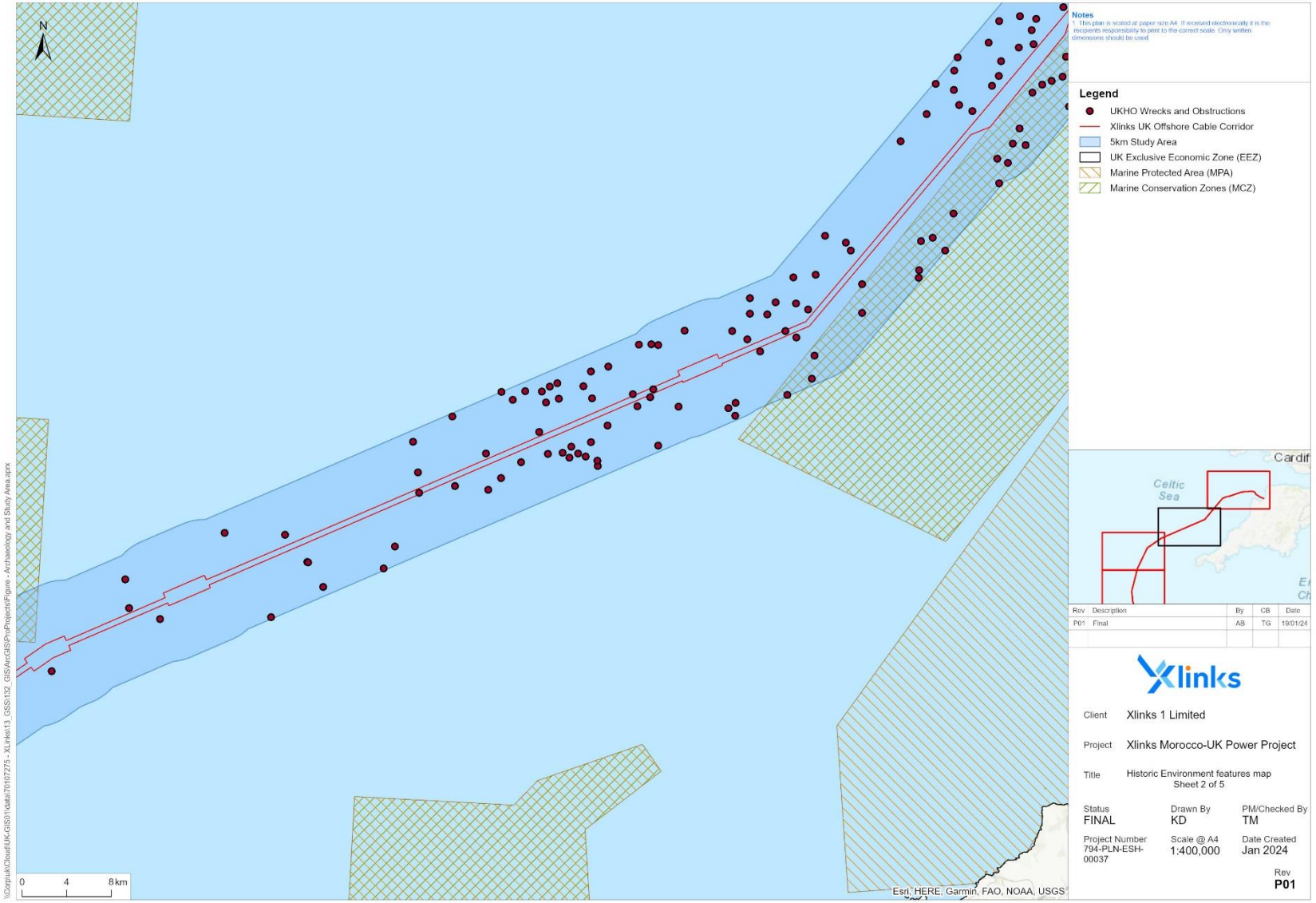

Figure 8.8.2: Marine archaeology and cultural heritage study area and historic environment assets (Sheet 2)

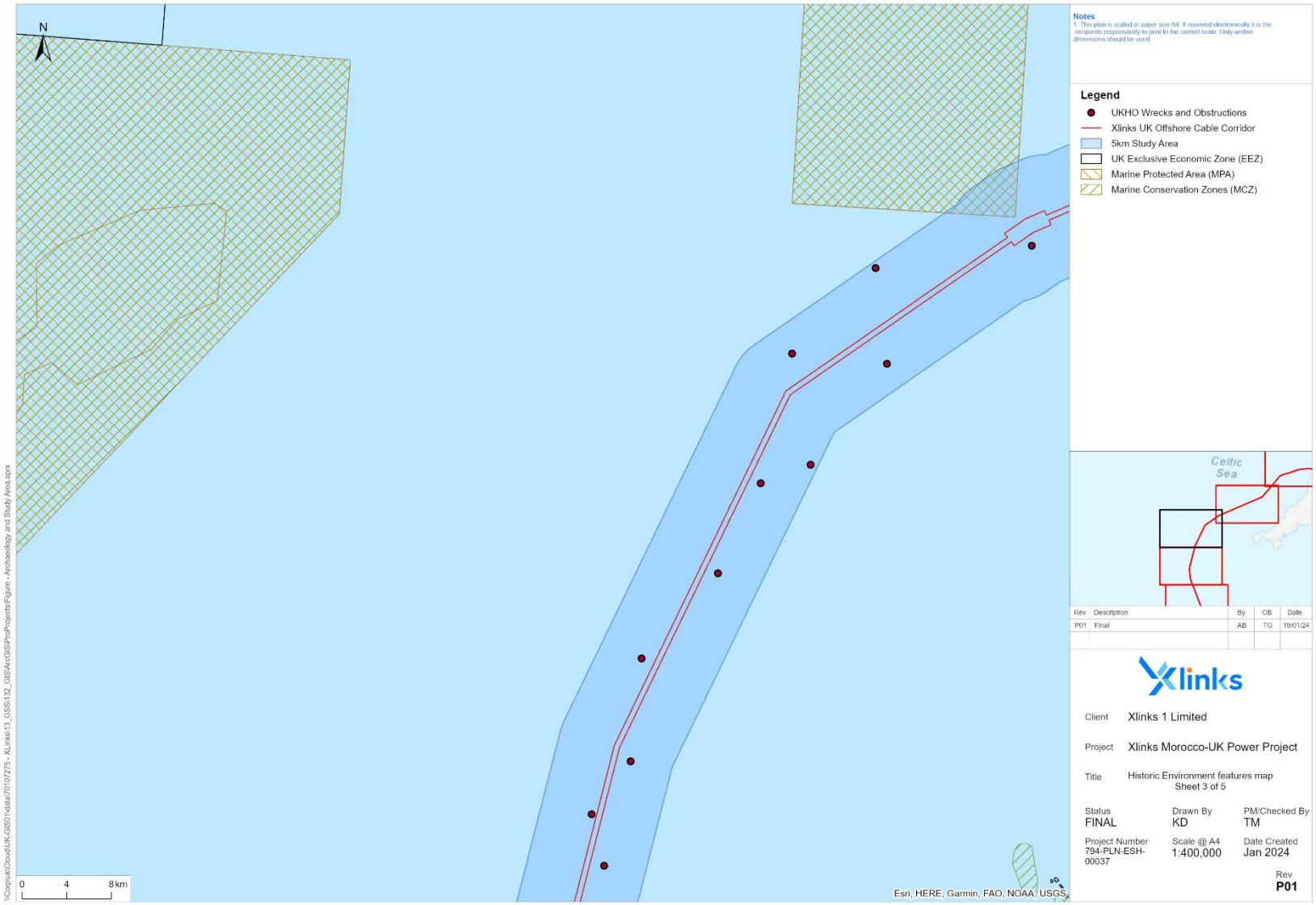

Figure 8.8.3: Marine archaeology and cultural heritage study area and historic environment assets (Sheet 3)

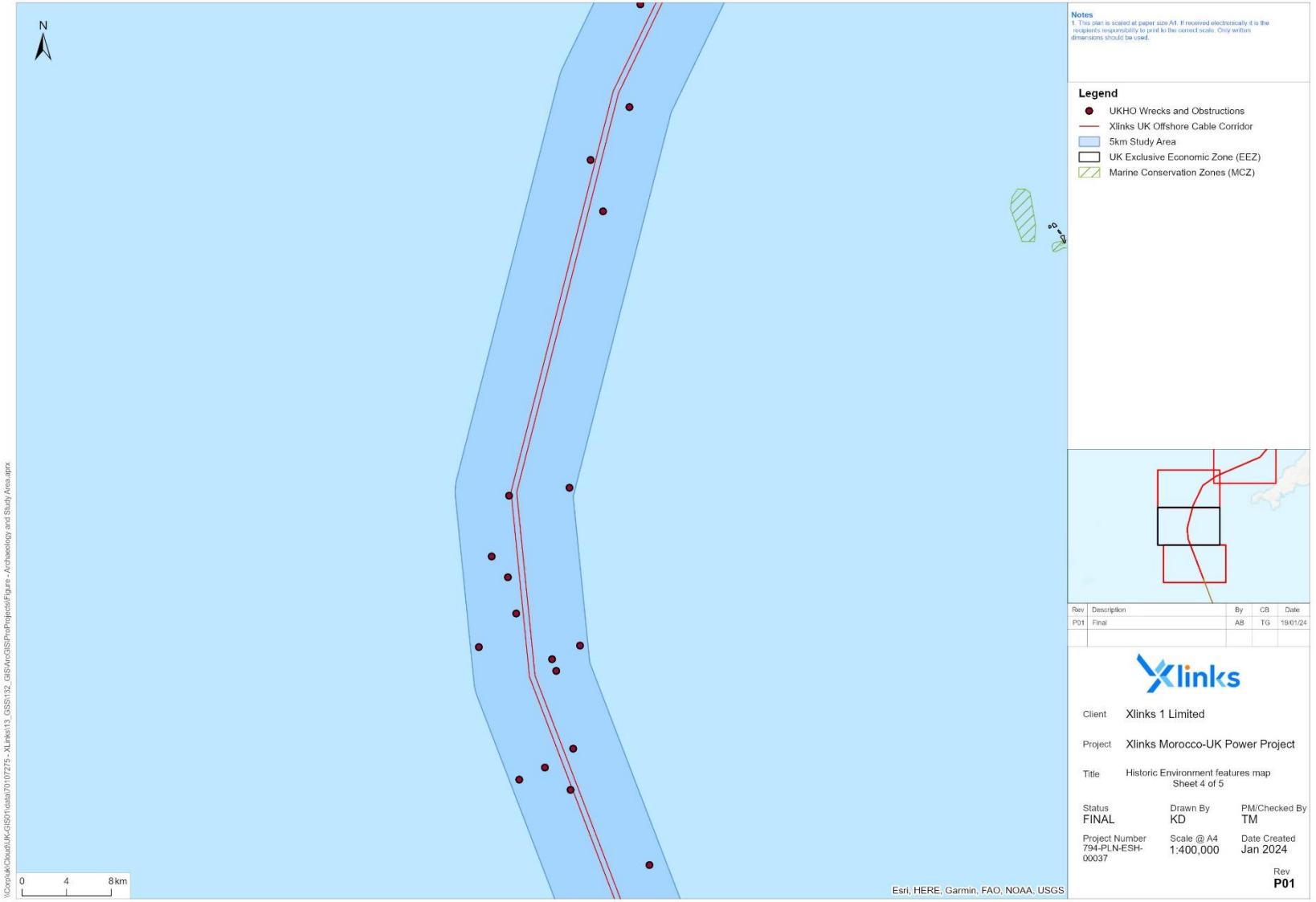

Figure 8.8.4: Marine archaeology and cultural heritage study area and historic environment assets (Sheet 4)

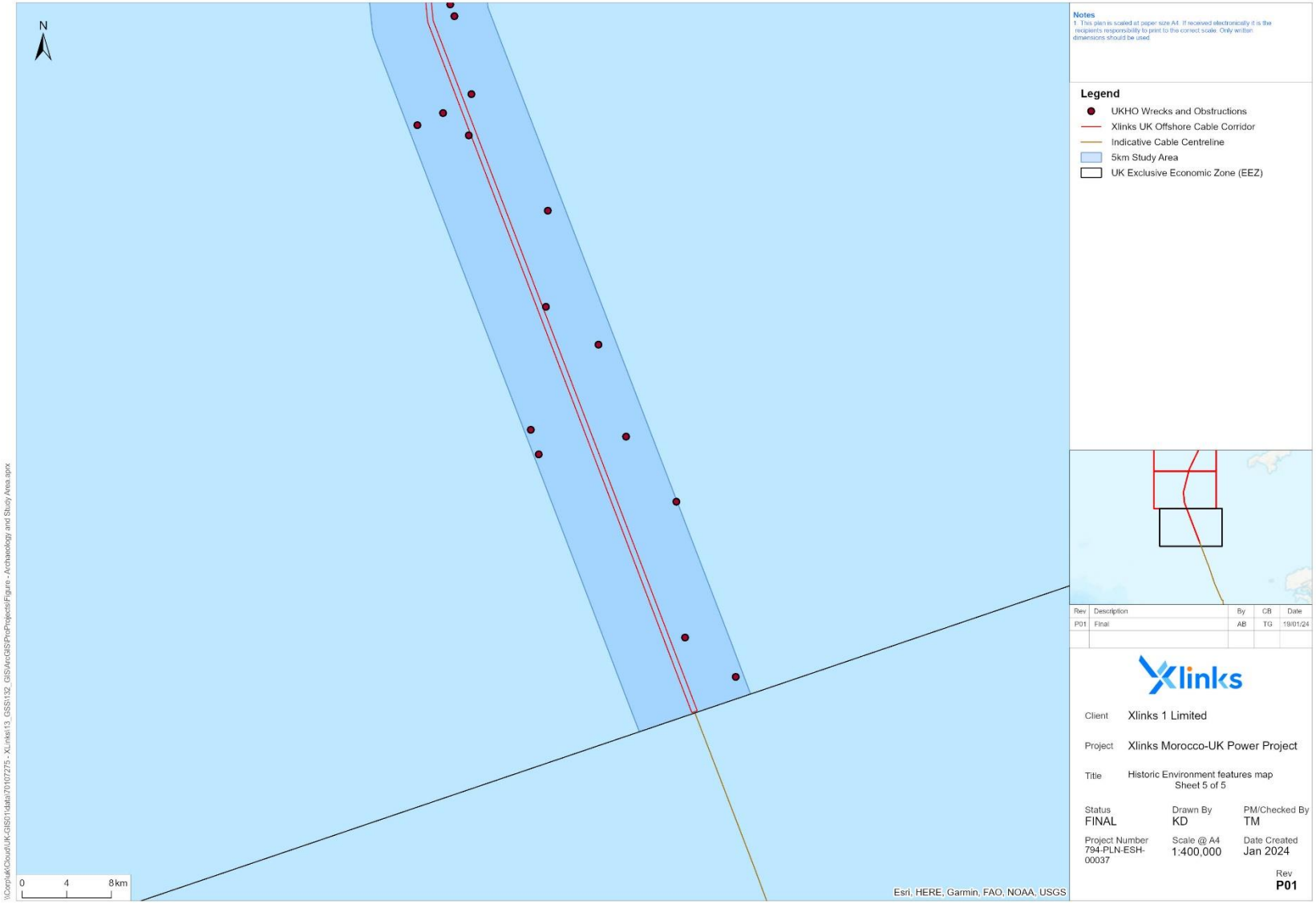

Figure 8.8.5: Marine archaeology and cultural heritage study area and historic environment assets (Sheet 5)

Data Sources

8.8.9 Data sources used to support development of the Scoping Report are set out in **Table 8.8.1**. Additional data sources, including the Devon Historic Environment Record (DHER), will be consulted during the development of the assessment baseline; however, the DHER data were not accessed or reviewed for this Scoping Report.

Table 8.8.1: Key Sources of marine archaeology and cultural heritage

Source	Summary
UKHO Wrecks and Obstructions data	Records of wrecks and obstructions data including 'dead' and salvaged wrecks that are no longer charted as navigational hazards.
NHLE	Records of designated heritage assets within England, maintained by Historic England. Geospatial Information Systems (GIS) data for all Protected Wrecks, Scheduled Monuments, Listed Buildings, Registered Parks and Gardens and Registered Battlefields.
Existing archaeological studies and published sources	Background information on the archaeology of the Celtic Sea and the Atlantic Ocean, including recent work undertaken in the wider Atlantic Ocean area. Background information relating to submerged landscapes within the Celtic Sea.
UKHO records	Records of wrecks and obstructions data including 'dead' and salvaged wrecks that are no longer charted as navigational hazards.
Maritime records maintained by Historic England	Maritime records, including documented losses of vessels, and records of terrestrial monuments and findspots, including the archaeological excavation index.
NHLE	Records of designated heritage assets within England, maintained by Historic England. Geospatial Information Systems (GIS) data for all Protected Wrecks, Scheduled Monuments, Listed Buildings, Registered Parks and Gardens and Registered Battlefields.
DHER	Primary repository of archaeological information. Includes information from past investigations, local knowledge, find spots, and documentary and cartographic sources.
British Geological Survey (BGS)	Historic borehole logs and the wider geological background for the region.
National Historic Seascape Characterisation (NHSC)	GIS data and character texts for the NHSC of coastal and marine areas around England, mapped through a series of projects funded by Historic England and consolidated into a single national database.
Coastal and Intertidal Zone Archaeological Network (CITiZAN)	Interactive mapping of intertidal heritage in England.
Existing archaeological studies and published sources	Background information on the archaeology of the Celtic Sea and the Atlantic Ocean, including recent work undertaken in the wider Atlantic Ocean area. Background information relating to submerged landscapes within the Celtic Sea.
Geophysical Survey	Results of geophysical survey of the Offshore Cable Corridor using bathymetry, magnetometry, SSS and SBP.
Geotechnical Survey	Results of geotechnical survey of the Offshore Cable Corridor using analysis of vibrocores.

8.8.10 Marine Archaeological and Cultural Heritage receptors can be attributed to four main categories of sites or features:

- Submerged prehistoric landscapes resulting from changes to sea-level and eventual stabilisation of sea-level at or near present levels. Such landscapes may contain highly significant evidence of prehistoric human occupation and/or environmental change.
- Archaeological remains of watercraft deposited when such vessels sank while at sea or became abandoned in an intertidal context which subsequently became inundated.
- Remains of aircraft crash sites, either coherent assemblages or scattered material usually the result of Second World War (WWII) military conflict, but also numerous passenger casualties, particularly during the peak of seaplane activity during the interwar period. Also includes aircraft, airships and other dirigibles dating to the First World War (WWI) though these rarely survive in the archaeological record.
- Structural remains other than watercraft, including such elements as fish traps, abandoned quays, hards, defensive structures or sites lost to coastal erosion may be found within the intertidal zone (between MHWS and MLWS) and marine zone. Marine Archaeological and Cultural Heritage receptors located seaward of MHWS have been considered in this section.

8.8.11 Intertidal heritage assets located up to MHWS have been assessed for this Scoping Report.

8.8.12 The potential for the presence of archaeological and palaeoenvironmental remains will be considered within a marine archaeology desk-based assessment and through the archaeological analysis of marine geophysical survey data and geotechnical survey data for the Offshore Cable Corridor (surveys undertaken in 2023).

8.8.13 There are no Protected Wrecks within the study area. There are three scheduled monuments within the study area:

- Wreck off Northam Burrows (SM 1432949);
- Wreck at Westward Ho! (SM 1432418); and
- HMS *Montagu* (ex-Montague) (SM 1440450).

8.8.14 The study area extends into the Bideford to Foreland Point MCZ (UKMCZ0029), East of Haig Fras MCZ (UKMCZ0023), South-West Approaches to Bristol Channel MCZ (UKMCZ0083), and Lundy MCZ (UKMCZ0010).

8.8.15 There are 226 recorded Wrecks and Obstructions recorded by the UKHO within the Study Area, including seven within the Offshore Cable Corridor boundary itself, all of which are unspecified obstructions or foul ground (Wreck ID 16050, 16874, 16967, 17275, 12202, 12198, and 62763). The rest of the UKHO records comprised 131 unspecified obstructions or foul ground, 54 unidentified wrecks, an aircraft wreck, and 33 named wrecks (**Figure 8.8.1** to **Figure 8.8.5**).

Submerged Prehistoric Landscapes

8.8.16 The Offshore Cable Corridor stretches from the north Devon coastline towards the south south west. The Offshore Cable Corridor is located within the Celtic Sea and the Atlantic Ocean in an area containing known submerged palaeolandscapes with high potential for the archaeological and palaeoenvironmental evidence of human occupation.

8.8.17 The western coastline of Devon and Cornwall was located further west than its current location prior to the Neolithic period. After the Last Glacial Maximum it is believed that sea level was at least 120 m lower than today in this region. The sea level rapidly increased during the Holocene period, which became more stable around 6,000 Before Present (BP). The West Coast Palaeolandscapes Survey mapped parts of the Celtic Sea and all of the Bristol Channel, identifying evidence for increased sea levels including submerged forests, seabed features, series of lakes, river channels, and floodplains along the North Devon and North Cornwall coastline (Fitch and Gaffney, 2011). Submerged forests and Mesolithic material have been found on the coastline of Westward Ho!, approximately 2 km north east of the proposed landfall location.

8.8.18 These ancient, submerged landscapes are now covered in thick layers of marine sediments which are known to preserve earlier land surfaces and archaeological finds. The buried sediments are likely to contain evidence relating to the palaeoenvironment and evidence of hominid occupation in the area prior to 6,000 BP.

Marine Archaeology

8.8.19 Marine archaeological sites can be considered to comprise two broad categories: the remains of vessels that have been lost as a result of stranding, foundering, collision, enemy action and other causes; and sites that consist of vessel-related material. Wreck-related debris includes (but is not limited to) equipment lost overboard or deliberately jettisoned such as fishing gear, ammunition and anchors or the only surviving remains of a vessel such as its cargo or a ballast mound. Shipwrecks on the seabed provide an insight into the types of vessels used in the past, the nature of shipping activity in the wider area and the changing usage of the marine environment through different periods. Such remains are considered more likely in sediments which promote the preservation of wreck sites (e.g., finer grained sediments that are not subject to high levels of energy), particularly where such sediments have seen limited, recent disturbance.

Aviation Archaeology

8.8.20 Marine aviation archaeology receptors comprise the remains or associated remains of military and civilian aircraft that have been lost at sea. Evidence is divided into three primary time periods based on major technological advances in aircraft design: Pre-1939; 1939 to1945; and post-1945.

8.8.21 There is a single UKHO Wrecks and Obstructions record noted as an aircraft wreck (Wreck ID 12224). It is possible that some of the 54 unidentified wrecks within the study area are related to aviation losses.

Key Receptors, Sensitivities and Potential Likely Significant Effects

8.8.22 The potential key receptors that may be present within the study area are summarised as:

- Palaeolandscape features and sub-seabed deposits of palaeoenvironmental interest;
- Prehistoric occupation sites;
- Wreck and aviation remains; and
- Occupation activity related to all periods of human activity within the intertidal area.

Scope of the Assessment

8.8.23 A range of potential impacts on marine archaeology receptors have been identified, which may occur during the construction, operation and maintenance, and decommissioning phases of the Proposed Development.

8.8.24 The impacts that have been scoped into the assessment are outlined in **Table 8.8.2** together with a description of any additional data collection (e.g., site-specific surveys) and supporting analyses (e.g., modelling) that will be required to enable a full assessment of the impacts.

8.8.25 Potential impacts scoped out of the assessment are presented in **Table 8.8.3** with justification for why the impact may be scoped out.

Table 8.8.2: Impacts proposed to be scoped into the assessment for marine archaeology and cultural heritage receptors

Impact	Phase [1]					Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	Op	Op repair	$D_{in-situ}$	D remove			
Direct impacts to cultural heritage assets within the footprint of the Proposed Development.	✓	×	✓	×	✓	The construction (seabed preparation, laying of cables and laying of rock berm over cable crossings), maintenance and decommissioning activities associated with the Proposed Development have the potential for direct and indirect physical impacts on cultural heritage assets.	Cultural heritage asset located within the study area will be identified using desk-based analysis and site-specific surveys.	The physical impacts of the Proposed Development on cultural heritage assets will be assessed by reviewing the receptors within the footprint of construction, operation and maintenance, and decommissioning activities.
Direct and indirect impacts as a result of geo-morphological changes.	✓	✓	✓	×	✓	The type and scale of geomorphological change will be assessed within the physical processes assessment. For example, should crossing berms result in changes to the local hydrodynamic and sedimentary processes this could result in a redistribution of erosional patterns around buried heritage assets.	Cultural heritage assets located within the study area will be identified using desk-based analyses and site-specific surveys.	The impact of geomorphological changes on cultural heritage assets will be assessed by reviewing the receptors within the (impact specific) ZOI and will be informed by physical processes modelling (quantitative or qualitative).

Table notes: [1] C=Construction phase, Op=Operational phase, Oprepair=Operational phase repair activities, Din-situ=Decommissioning phase assuming cable de-energised and left in-situ, Dremove=Decommissioning phase assuming cable removed.

Table 8.8.3: Impacts proposed to be scoped out of the assessment for marine archaeology and cultural heritage

Impact	Justification
Potential effects to the setting of onshore cultural heritage assets.	Potential effects to the setting of onshore cultural heritage assets arising from visibility of offshore infrastructure during construction and operation and maintenance of the Proposed Development have been scoped out of further assessment. There will be no visible operational phase infrastructure and construction activities will be highly transient.
Potential effects arising from the decommissioning of the Proposed Development have been scoped out from further assessment.	In effect, any disturbance arising during this phase of the Proposed Development will present only minor effects on archaeological remains and/or geoarchaeological deposits that have previously been disturbed and mitigated during the construction or operation and maintenance phases. It is possible that best practice mitigation measures, such as a Protocol for Archaeological Discovery or a WSI, will be required to ensure that any additional disturbance is mitigated, however any such considerations would be made at the time.

Measures Adopted as Part of the Proposed Development

8.8.26 As part of the design process a number of embedded mitigation measures are proposed to reduce the potential for impacts on Marine Archaeological and Cultural Heritage receptors, considered in addition to the overarching design and embedded measures in **section 4.8** and **Table 4.8.2.** These measures may evolve as the engineering design and the EIA progresses.

- Proactive management of marine archaeology and cultural heritage throughout the Proposed Development:
  - Offshore Cable Corridor has undergone multiple route optimisations, which have included avoidance of known marine archaeological features.
  - Micro-routing of the cable corridor will be undertaken where possible and archaeological exclusion zones applied to avoid direct impacts on cultural heritage assets and submerged land surfaces beneath marine sediments where possible.
- Avoidance of known sites of archaeological significance:
  - Mitigation leading to preservation *in situ* will be advocated and Archaeological Exclusion Zones of at least 100 m will be implemented around cultural heritage assets.
- Identification of unknown sites of archaeological significance:
  - The Offshore CEMP to include protocols should archaeological features be identified – linked to WSI.
- Reporting and recording of items of potential archaeological interest:
  - Production of an outline WSI, recording of cultural heritage assets and subsequently the production of a post-excavation report.

Proposed Assessment Methodology

8.8.27 The marine archaeology and cultural heritage assessment will be informed by the interpretation of the geophysical survey data (namely MBES and SSS data to identify seabed features, such as wrecks, mag data to identify magnetic anomalies and SBP and MBES data to identify palaeolandscape features). The marine geophysical survey data, which was acquired to inform the EIA during 2023, will be subject to archaeological assessment by a qualified and experienced archaeological contractor in accordance with industry good practice as set out in available guidance such as the Historic England Marine Geophysics Data Acquisition, Processing and Interpretation. The geotechnical samples collected in 2023 will be made available for geoarchaeological assessment as well.

8.8.28 An offshore archaeological desk-based assessment will be undertaken to establish the baseline for both known and potential heritage assets within the defined areas based on the desk-based sources listed in **Table 8.8.1**.

8.8.29 The desk-based assessment and assessment of geophysical data will be used to identify a strategy for mitigation, including the requirement for additional Archaeological Exclusion Zones to avoid identified cultural heritage assets where required. This mitigation strategy will be set out in the Outline WSI which will be submitted alongside the DCO application.

Assessment Criteria

8.8.30 Definitions specific to marine archaeology and cultural heritage in relation to assessing the sensitivity of the receptor and potential magnitude of an impact are provided in **Table 8.8.4** and **Table 8.8.5** respectively.

Table 8.8.4: Definition of sensitivity levels for marine archaeology and cultural heritage

Value or sensitivity	Guidelines
Very High	This category contains heritage assets that will be considered to be of national or international importance either for historic associations or their informative potential. This category includes heritage assets designated as scheduled monuments, protected military remains or Protected Wrecks and those of equivalent value, or palaeoenvironment remains that are either very well-preserved or particularly important for understanding specific periods.
High	Heritage assets of regional importance for historic associations or their informative potential. This category includes well-preserved live wrecks that are not suitable for designation, or palaeoenvironmental remains that are typical of a region.
Medium	Non-designated heritage assets of local importance for historic associations or their informative potential may include marine debris or less well-preserved marine material, or generally representative archaeological material or feature types.

Value or sensitivity	Guidelines
Low	These include those features that are recorded but no longer extant, which are suggestive of further activity but not of intrinsic value (e.g., records of losses without identified wreck sites, some 'dead' wrecks, isolated finds of debris).
Negligible	Negligible or zero heritage value.

Table 8.8.5: Definition of magnitude of change levels for marine archaeology and cultural heritage

Magnitude of Change	Criteria (adverse)	Criteria (beneficial)
High	Total or substantial change to an asset. Loss or disturbance of defining features of the asset.	Large-scale increase in understanding and preservation of a heritage asset beyond the scale of any disturbance.
Medium	Partial alteration of an asset. Very limited disturbance to key features of the asset or loss of minor features	Benefits to understanding or preservation of a heritage asset not requiring disturbance.
Low	Slight alteration of an asset. Limited disturbance of minor features.	Slight benefits to understanding or preservation not requiring disturbance of a heritage asset.
Negligible	Very limited alteration of minor features of an asset.	Minor alteration of elements of an asset, which are sensitive but do not contribute discernibly to sustainable use and/or management.
No Change	The activity will have no interaction with the receptor.	

Significance of effect

8.8.31 Effect is the term used to express the consequence of an impact (expressed as the 'significance of effect'). Following the identification of a receptor's value and sensitivity, and the magnitude of the potential impact, it is possible to determine the significance of the impact using professional judgement. The classification of the effect is judged on the relationship of the magnitude of impact to the assessed heritage significance of the resource. A matrix approach will be adopted to guide the assessment of whether effects on the historic environment for the purposes of EIA are to be considered significant or not (**Section 5, Table 5.5.4**).

Potential Inter-related Effects

8.8.32 The assessment of potential inter-related effects will be considered within the marine archaeology and cultural heritage ES chapter. It will include consideration of project lifetime effects and receptor-led effects in line with the approach

outlined in **Section 5**: EIA Methodology, of the Scoping Report. The following inter-related effect has been identified for consideration:

- Geomorphological changes:
  - Impacts from the changes to the local hydrodynamic and sedimentary processes during the construction, operation and maintenance, and decommissioning phases of the offshore elements of the Proposed Development (Physical Processes - **section 8.9**) may impact cultural heritage receptors.

Potential Cumulative Effects

8.8.33 There is potential for cumulative effects on the cultural heritage assets to occur when the Proposed Development is considered together with other developments. The potential cumulative effects between the offshore elements of the Proposed Development and other developments with respect to marine archaeology and cultural heritage will be considered within the PEIR and the ES.

8.8.34 The cumulative effects assessment would be undertaken in accordance with the methodology set out in **Section 5**: EIA Methodology, of the Scoping Report and Historic England Good Practice Advice note (2015).

Potential Transboundary Impacts

8.8.35 Geomorphological change as a result of dredging during pre-lay activities, jetting during cable laying and cable repairs may change the local hydrodynamic and sedimentary processes. This change may cause some transboundary effects in certain areas.

8.8.36 No other effects on marine archaeology and cultural heritage receptors are likely to be transboundary other than those occurring within the immediate boundary of the UK EEZ.

8.9 Physical Processes

Introduction

8.9.1 This section of the Scoping Report identifies the Physical Process receptors relevant to the offshore elements of the Proposed Development. This section also considers the potential impacts arising from the construction, operation and maintenance, and decommissioning of the Proposed Development and identifies the proposed scope of, and methodology for, the EIA process for the physical process assessment.

Relevant Policy, Legislation and Guidance

Legislative and Policy Context

8.9.2 The following key legislation and policy documents relevant to physical processes will be considered within the assessment process:

- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 (Statutory Instrument 2003 No. 3242) for England and Wales. Transposition of Directive 2000/60/EC (which repeals EC Directive 2006/7/EC, known as the Bathing Water Directive and ES Directive 2006/113/EC, known as the Shellfish Waters Directive);
- EC Directive 76/464/EC Water pollution by discharges of certain dangerous substances (Dangerous Substances Directive) and Priority Substances Directive (2008/105/EC) – transposed into UK law under the Priority Substances Directive;
- EC Directive 91/271/EC concerning urban waste water treatment – transposed into UK law under the Urban Waste Water Directive;
- EC Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for community action in the field of water policy – transposed into UK law under the Water Framework Directive;
- The International Convention for the Prevention of Marine Pollution by Ships (MARPOL Convention) 73/78;
- The Marine Works (EIA) Regulations 2007 (amended 2017);
- Marine and Coastal Access Act (MCAA) 2009;
- UK Marine Policy Statement 2011;
- Marine Strategy Regulations 2010; and
- North Devon and Somerset Shoreline Management Plan (October 2010).

Guidance Documents

8.9.3 Guidance documents relevant to physical processes, that will be considered within the assessment process, include the following:

- South West Inshore and South Offshore Marine Plan (Defra, 2021);

- Clearing the Waters for All (Environment Agency, November 2017);
- Advice Note Eighteen: Water Framework Directive (The Planning Inspectorate, June 2017);
- PPG – Flood Risk and Coastal Change; and
- PPG – Water supply, wastewater and water quality.

Study Area

8.9.4 The coastal processes Scoping study area comprises the Offshore Cable Corridor (that extends from MHWS at the landfall to the EEZ boundary) with a 1 km buffer area (**Figure 8.9.1**). It is anticipated that this study area will allow for robust characterisation of the baseline physical processes, whilst also encompassing any likely effects as a result of the Proposed Development.

8.9.5 The study area accounts for the potential local and regional effects on hydrodynamics and sedimentary processes. Outside of this buffer distance, it is unlikely that any direct impacts upon physical processes will be attributable to the Proposed Development.

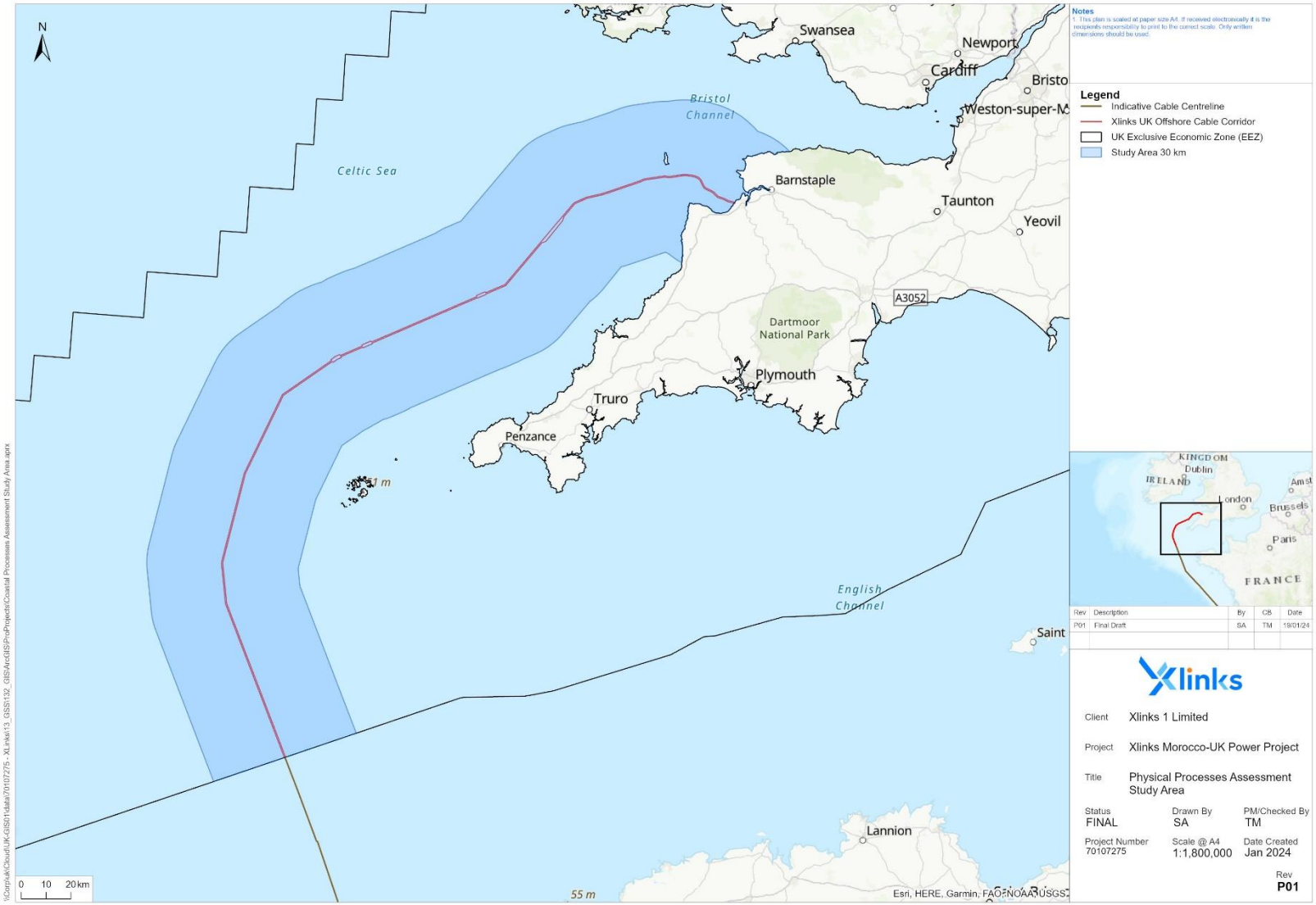

Figure 8.9.1: Physical processes assessment study area

Data Sources

8.9.6 The data sources used to inform the baseline assessment will primarily comprise published material which is publicly available online. An initial desk-based review has identified several data sources which provide baseline data coverage of the Proposed Development study area.

8.9.7 The baseline data sources identified in this section will remain under review and may be updated in response to feedback from relevant statutory and non-statutory consultees during the EIA process, or in response to new sources of information becoming available.

Desk-based Data Sources

8.9.8 To inform this Scoping Report section, a high-level desk-based assessment has been conducted for physical processes receptors using a range of existing metocean, sediments and water quality data (**Table 8.9.1**).

Table 8.9.1: Desk based baseline data sources – Physical processes

Source	Summary
European Marine Observation and Data Network (2023) EMODnet Map Viewer.	The European Marine Observation and Data Network. Used to view freely available DTM) for the European sea regions. DTM is based upon a collection of bathymetry surveys, Composite DTMs and Satellite Derived Bathymetry.
Navionics (2023) Navionics ChartViewer.	Freely available electronic navigation charts of marine areas around the world.
UK Hydrographic Office (n.d.) Admiralty Total Tide. Version 19.	Provides accurate tidal height and tidal stream predictions for more than 7000 ports and 3000 tidal streams worldwide.
WSP Severn Estuary Regional MIKE Model	Hydrodynamic model of the Severn Estuary (covering Bristol Channel and Celtic Sea to Lands End) created by WSP. Used to calculate size of wind-generated waves and swell.
Coastal Observatory (2024). South West Coastal Monitoring.	Provides long-term coastal monitoring data for the South West coast of England.
Halcrow (2010) North Devon Shoreline Management Plan 2.	The Shoreline Management Plan for North Devon was written by Halcrow for the North Devon and Somerset Coastal Advisory Group. It identifies the most sustainable approach to managing flood and coastal erosion risks in the short, medium and long term.
Uncles and Stephens (2007) SEA 8 Technical Report – Hydrography.	Provides a high-level overview of the hydrography in the SEA8 area which covers UK waters including the Bristol Channel, Celtic Sea and English Channel.
OSPAR Commission (2000) Quality Status Report 2000 – Region III Celtic Seas.	Report produced by the Convention for the Protection of the Marine Environment in the North Atlantic, who are required to undertake regular assessments of the quality status of the marine environment.
Environment Agency (2023) Catchment Data Explorer.	Database which includes information on the water quality status of water bodies within England.
Environment Agency (2023) Water Quality Archive.	Provides data on water quality measurements at samplings points around England, including within coastal and estuarine waters.

Source	Summary
Met Office (2024) UK Climate Projections.	Provides a set of tools and data that show how the UK climate may change in the future.
Environment Agency (2022) Flood Risk Assessment: Climate Change Allowances.	Details when and how local planning authorities, developers and their agents should use climate change allowances for the preparation of Flood Risk Assessment for Planning Applications and Development Consent Orders (DCO) for nationally significant infrastructure projects.

Site-specific Survey Data

8.9.9 In addition to the data sources identified above, the following site-specific surveys will inform the baseline assessment for physical processes (**Table 8.9.2**).

Table 8.9.2: Site specific surveys – Physical processes

Source	Summary
Geophysical surveys	Geophysical surveys included acquisition of seabed data using a MBES, SSS, magnetometer and SBP, Shallow and Deep SBP Dura Spark 400 for seismic data. The SSS and bathymetry from the MBES were interpreted to inform the survey plan for DDV and grab surveys.
Subtidal DDV surveys	Seabed video footage was acquired to ground truth all grab locations, features of interest and to facilitate a habitat assessment. A total of 61 camera transects were acquired across the survey area using a STR Seabug system mounted on a camera sled or a Freshwater Lens system.
Subtidal Grab surveys	51 grab stations were sampled along the UK section of the Offshore Cable Corridor. The majority of stations were sampled with a DVV grab (2 x 0.1 m^2) with stations with coarser sediments sampled with a 0.01 m^2 mini-Hamon grab. Samples were acquired to provide data on physico-chemistry and macrofauna at sampling stations.

Baseline Environment

Bathymetry

8.9.10 Within the study area, the proposed Offshore Cable Corridor runs from Cornborough (as the preferred UK landfall site), along the northern coast of Devon and Cornwall, before turning southwards, around the western extent of the Isles of Scilly, towards the EEZ boundary.

8.9.11 Bathymetry data covering the offshore region was obtained from the EMODnet online portal[5] at 100 m resolution. Typical depths of 100 to 120 m can be found along the Offshore Cable Corridor to the west of the Isles of Scilly to the EEZ boundary. Depths along the northern coast of Devon and Cornwall are typically in the region of 50 to 100 m.

8.9.12 The seabed rises towards the UK coast at Cornborough, through Barnstaple/Bideford Bay. Using freely available Navionics data, within shallow water (<20m water depth), the seabed has a shallow, uniform slope of

[5] European Marine Observation and Data Network (2023) EMODnet Map Viewer. Available at: https://emodnet.ec.europa.eu/geoviewer/ (Accessed December 2023)

approximately 1:900 between 10,000 m and 1250 m from landfall. The seabed gradient increases to approximately 1:200 between 1000 m to 250 m from landfall, and 1:100 from 250 m to landfall. There are no features of significant interest on the seabed within this area.

8.9.13 Additional bathymetry characterisation will be presented in the PEIR and ES following review of geophysical survey results.

Waves and Currents

Water Levels

8.9.14 For shallow water (assumed to be <20 m depth), measured water level data was obtained from the Admiralty Tide Tables for Clovelly (located within Bideford Bay).

Table 8.9.3: Standard Tidal Elevations (Clovelly)

Tidal State	Elevation (mCD)	Elevation (mAOD)
MHWS	8.3	3.9
Mean High Water Neaps (MHWN)	6.3	1.9
Mean Low Water Neaps (MLWN)	2.7	-1.7
MLWS	0.9	-3.5

Waves

8.9.15 Large waves, of up to 3 to 4 m, are generated along much of the Offshore Cable Corridor within the Celtic Sea due to long fetch lengths across the Atlantic Ocean and prevailing westerly winds (Uncles and Stephens, 2007). Along the North Cornwall/Devon Coast, within the Bristol Channel approaches, significant wave heights of between 1 to 3 m are typical. This area is sheltered from the larger offshore waves by Ireland.

8.9.16 For Bideford Bay, measured wave data was obtained from the Bideford Bay directional wave rider buoy, for the period between June 2009 and December 2022 (Coastal Observatory, 2024).

8.9.17 Bideford Bay is typically sheltered from offshore waves (wind-sea and swell) and exposed to locally generated wind-waves from within the harbour (Halcrow, 2010). Predominant winds in this region tend to originate from the west quadrant, approximately 280 degrees West. Typical significant wave heights are 0.82 m (summer) to 1.71 m (winter). Using observed data, estimates for extreme wave heights have been calculated. The predicted present day 1 in 100 return period wave height is 7.6 m.

8.9.18 The location of wave buoys are shown on Figure 8.9.2.

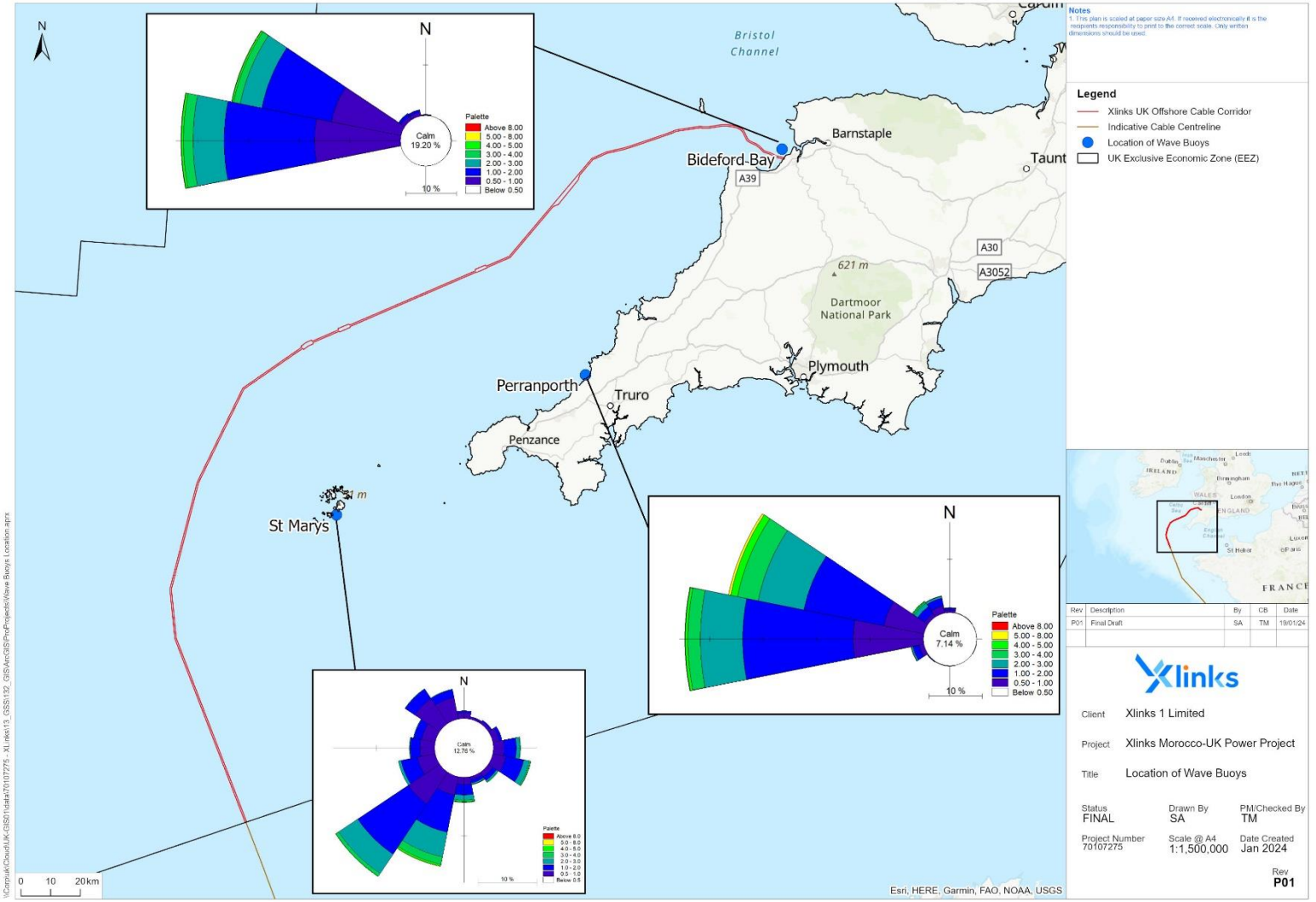

Figure 8.9.2: Location of Wave Buoys

Currents

8.9.19 Tidal currents within the Celtic Sea/Bristol Channel Approaches include the North Atlantic Drift, which brings warm water from the Gulf Stream into the area (Uncles and Stephens, 2007). Currents can vary in strength and direction throughout the year but are typically 0.6 m/s during a Spring Tide.

8.9.20 Currents within Bideford Bay are moderate, ranging between 0.5 and 1 m/s during peak tidal periods (Halcrow, 2010).

Seabed Geology and Sediment Transport

8.9.21 Within the study area, the bedrock typically consists of sedimentary rock, for example sandstones, mudstones, and siltstones, typical of the Carboniferous and Devonian geological periods (Uncles and Stephens, 2007).

8.9.22 The Culm Measures geological formation is found within Bideford Bay. They consist of a sequence of layers of shale and sandstone, and slate, limestone and chert, with the occasional presence of soft coal.

8.9.23 Much of the seabed is covered in thin, mobile sediments, typically sands or thin spreads of gravel, less than 1 m thick. The thickness of the sediments decreases eastwards, towards the Bristol Channel as tidal current speeds increase.

8.9.24 Within the Celtic Sea, the maximum bottom shear stresses predicted are between 0.25 and 0.5 Pa (Uncles and Stephens, 2007). Sediment transport is typically towards the Atlantic Ocean except for around the northern extents of the Isles of Scilly, where sediment transport is towards Land's End (**Figure 8.9.3**)**.**

8.9.25 Maximum bottom shear stresses of 0.5 and 2 Pa are predicted along the north Cornwall/Devon Coast, within the Bristol Channel approaches (Uncles and Stephens, 2007). Sediment transport is generally along the north coast, towards the Celtic Sea/Atlantic Ocean.

8.9.26 Sediment transport within Bideford Bay is largely self-contained within the bay. Mud and fine sand, eroded from the sandstone and shale cliffs, are transported in a clockwise direction, westwards towards Hartland Point, located at the western entrance to the bay (Halcrow, 2010). Hartland Point is a prominent headland which provides dominant control over the whole of Bideford Bay. Sediment is then transported beyond Hartland Point by tidal currents, and then they are returned and deposited back within Bideford Bay.

8.9.27 Within Bideford Bay, wave induced transport only occurs during storm events.

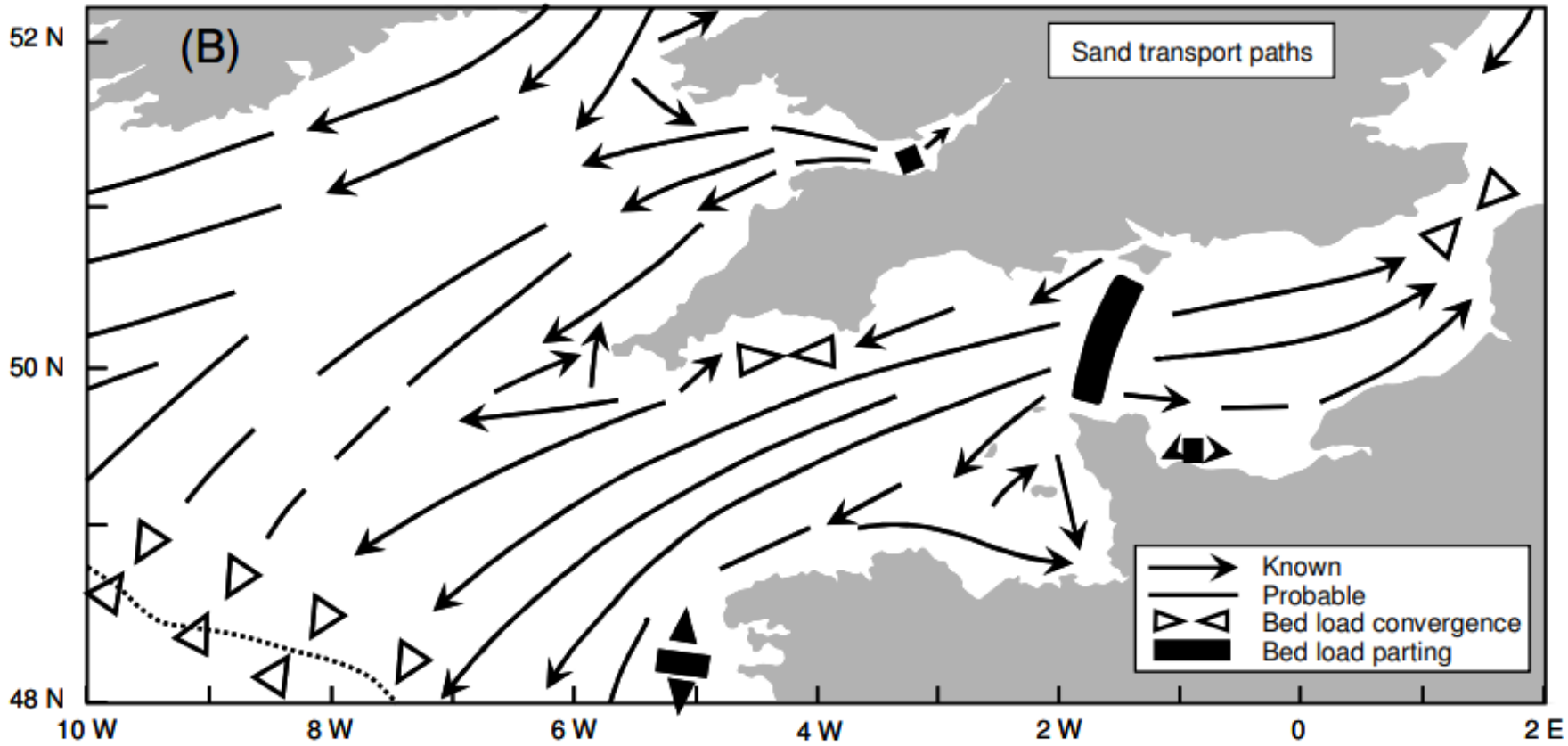

Figure 8.9.3: Sediment transport paths in the SEA 8 Region

Water Quality

8.9.28 Inputs affecting the water quality of the Celtic Sea include discharges to coastal waters from industrial and municipal outfalls, the dumping of waste at sea, mariculture and oil, typically from shipping and oil and gas installations.

8.9.29 Reports produced in the 1990s (OSPAR Commission, 2000) indicated that the presence of some heavy metals, including Cadmium, Mercury and Zinc, and Polychlorinated Biphenyls (PCBs), are decreasing within the Celtic Sea. However, inputs of Lead appeared to have risen slightly, whilst Copper inputs remain unchanged.

8.9.30 Estimates of concentrations of contaminants within the study area are detailed below:

- Cadmium: typically, in the region of 0.01 to 0.03 µg/l. The highest concentrations of 0.34 µg/l, within the Celtic Sea/Bristol Channel, can be found in the Severn Estuary, upstream of the Proposed Development. This is likely as result of historic smelting activities, near Bristol.
- Mercury: typically, between 0.2 and 0.5 ng/l, similar to background levels within the Atlantic Ocean.
- Lead concentrations are typically below the Environmental Audit Committee (EAC) range (between 0.5 and 5 µg/l).
- Levels of PCBs found in sandy sediments are typically below detection limits (between 0.2 and 0.5 µg/kg).
- Polycyclic Aromatic Hydrocarbons (PAHs) are low or undetectable (maximum concentration of 15 ng/l).
- Concentrations of Total Hydrocarbons are typically between 0.3 and 6.4µg/l.

8.9.31 Within Bideford Bay, the Environment Agency have a water quality monitoring site – ‘Barnstaple Bay Off Westward Ho!’ (Environment Agency, 2023). Most recent data available, from 2019, indicates that levels of Arsenic, Chromium, Copper, Iron and Zinc are indicative of ‘High’ status conditions. All other measured contaminants are indicative of WFD ‘Good’.

WFD Water body Status

Barnstaple Bay (Water body ID: GB610807680003)

8.9.32 Barnstaple Bay (coastal) water body is not designated as an artificial or heavily modified water body (Environment Agency, 2023). Its overall classification is Moderate from the most recent assessment in 2022; limited by the Moderate status associated with the Invertebrates biological quality element. The water body does not require assessment for its chemical status (which was Fail in 2019 due to the presence of Mercury and its compounds, and Polybrominated Diphenyl Ethers).

Designated Sites

8.9.33 **Table 8.9.4** details the designated sites within 1,000 m of the Proposed Development, as shown on **Figure 8.9.4** and **Figure 8.9.5**.

Table 8.9.4: Designated Sites within the vicinity of the Proposed Development

Designation	Proximity to Proposed Development (distance from study area)	Reasons for designation
Mermaid's Pool to Rowden Gut Site of SSSI	0 m	Located within Barnstaple/Bideford Bay, the cliffs expose the only complete sequence of the Culm Measures, a geological strata originating during the Carboniferous Period, consisting of layers of mudstone, siltstone and sandstone.
Bristol Channel Approaches/Dynesfeydd Mor Hafren SAC	0 m	The proposed Offshore Cable Corridor bisects the SAC. It is designated for the protection of harbour porpoise.
Bideford to Foreland Point MCZ	700 m	Located to the north east of the Proposed Development, within Barnstaple/Bideford Bay. It is designated for its broadscale marine habitats (high energy circalittoral rock), marine habitats (i.e., honeycomb worm reefs) and species of marine fauna (i.e., spiny lobster).
South-West Approaches to Bristol Channel MCZ	80 m	Located to the south of the Proposed Development, it is designated for its subtidal coarse sediment and subtidal sand, which provide a home to a variety of species that bury into the seabed including razor clams and sea urchins.
East of Haig Fras MCZ	550 m	Located to the north west of the Proposed Development, within the Celtic Sea, it is designated for its marine habitats (i.e., subtidal muds and sands) and species of marine fauna (i.e., fan mussel).

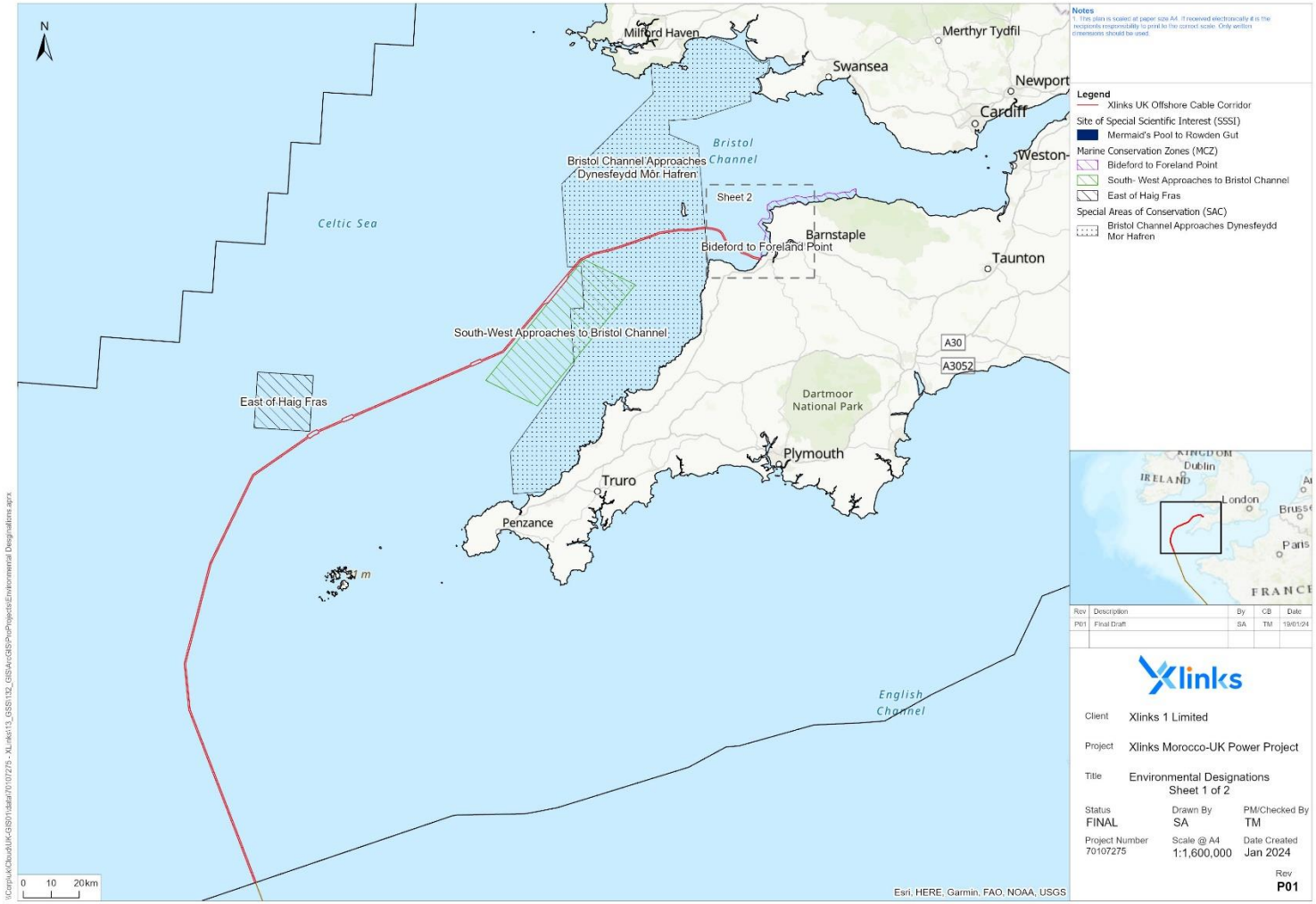

Figure 8.9.4: Environmental Designations – Sheet 1

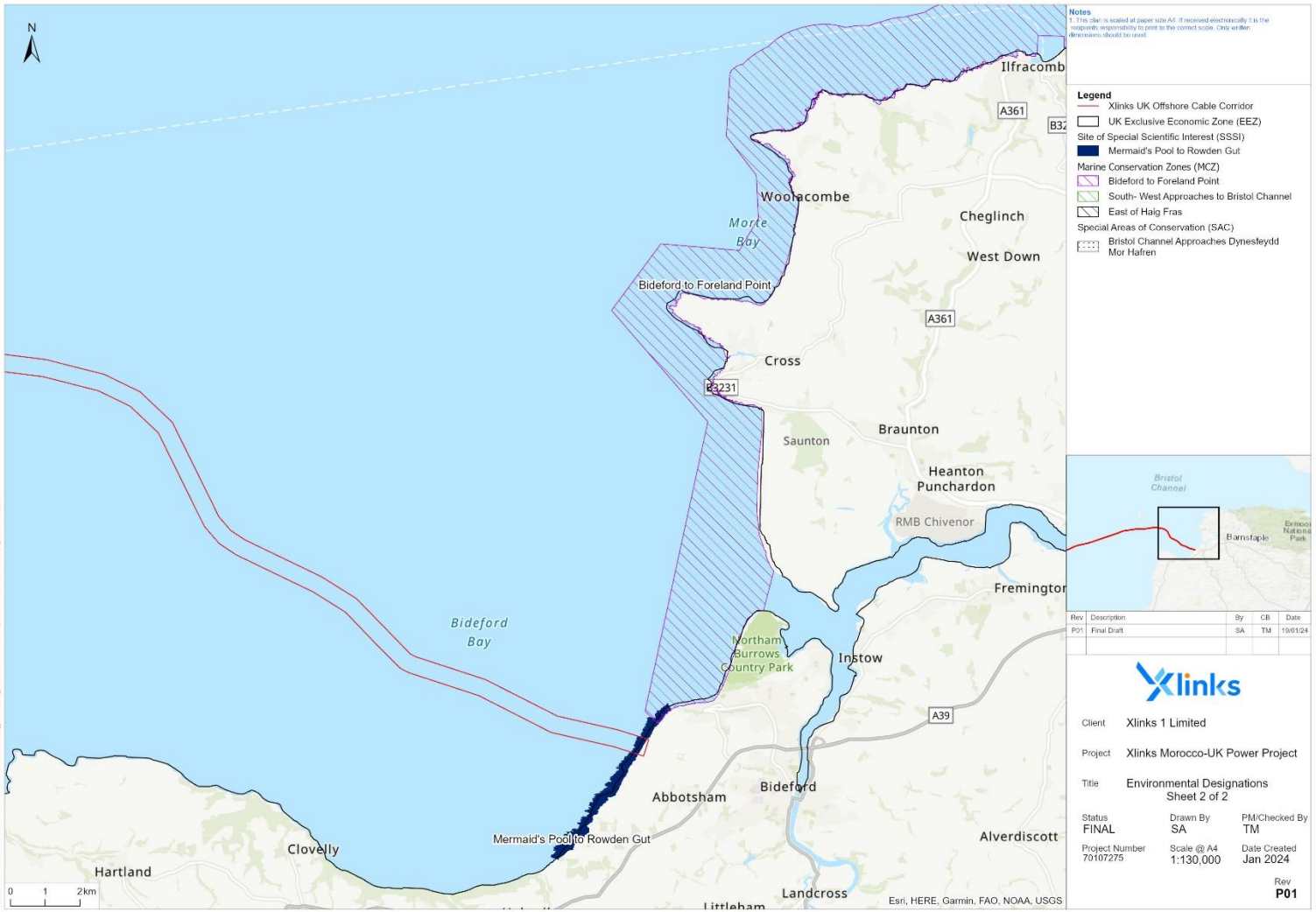

Figure 8.9.5: Environmental Designations – Sheet 2

Future Baseline Conditions

8.9.34 The EIA process will consider the existing baseline conditions within the study area, and future baseline conditions (as far as reasonably practicable), in accordance with the methodology set out in **Section 5**: EIA Methodology, of the Scoping Report.

8.9.35 Future baseline conditions for the physical processes assessment will be affected by climate change predictions, including predicted sea level rise, sea temperature and salinity changes.

8.9.36 Sea level rise projections have been obtained for the UKCP18 Representative Concentration Pathway (RCP)8.5 higher central (70th percentile), upper end (95th percentile) and H++ scenarios and applied to uplift tidal water levels to the desired epochs. The coastal process assessment applied a baseline year of 2032 (anticipated year of project completion) and future epoch of +50 years (2083) in line with the design life/ development life.

8.9.37 The predicted rise in mean sea-level over this period is shown in **Table 8.9.5**.

Table 8.9.5: Sea Level Rise Allowances (Environment Agency, 2022)

Year	Higher Central	Upper End	H++
2032	0.05m	0.06m	0.15m
2083	0.54m	0.71m	1.13m

Scope of the Assessment

8.9.38 A range of potential impacts on physical processes have been identified, which may occur during the construction, operation and maintenance, and decommissioning phases of the Proposed Development.

8.9.39 The impacts that have been scoped into the assessment are outlined in **Table 8.9.6**, together with a description of any additional data collection (e.g., site-specific surveys) and supporting analyses (e.g., modelling) that will be required to enable a full assessment of the impacts.

8.9.40 Potential impacts scoped out of the assessment are presented in **Table 8.9.7**, with justification for why the impact may be scoped out.

Table 8.9.6: Impacts proposed to be scoped into the assessment for physical processes

Impact	Phase[1]					Justification	Data collection and analysis proposed to characterise the baseline environment	Summary of the proposed approach to assessment
	C	Op	Op repair	$D_{in-situ}$	D remove			
Impacts on local metocean processes (nearshore only, <20 m depth)	✓	✓	✓	✓	✓	Potential direct effects on physical processes within shallow and transitional waters, within the vicinity of the Proposed Development.	Bathymetry survey, wave heights, current speeds, water levels, sea temperature and salinity. Collected through a combination of desktop study and marine surveys.	The potential impacts will be assessed by a thorough analysis of existing data and expert qualitative analysis of hydrodynamics.
Physical disturbance of seabed geology and morphology (nearshore only, <20 m depth)	✓	×	✓	×	✓	Potential direct effects on seabed geology and features, within the vicinity of the Proposed Development.	Bathymetry survey and sediment sampling. Collected through a combination of desktop study and marine surveys.	The potential impacts will be assessed by a thorough analysis of existing data and expert geomorphological assessment/ qualitative analysis of hydrodynamics and sediments.
Impacts on local sediment regimes (nearshore only, <20 m depth)	✓	✓	✓	✓	✓	Potential direct effects on sediment regimes within the vicinity of the Proposed Development.	Bathymetry survey and sediment sampling. Collected through a combination of desktop study and marine surveys.	The potential impacts will be assessed by a thorough analysis of existing data and expert geomorphological assessment/ qualitative analysis of hydrodynamics and sediments.
Generation of sediment disturbance (sediment plumes) associated with construction type activities	✓	×	✓	×	✓	Potential to affect ecological receptors within the vicinity of the Proposed Development e.g., indirect smothering of benthic habitats.	Bathymetry survey and sediment sampling. Collected through a combination of desktop study and marine surveys.	Qualitative assessment of the spatial extent of sediment disturbance (approximation of sediment disturbance distances, associated with worst case trenching methods, for different sediment types), including indicative suspended sediment concentration changes or other qualitative indication of sediment disturbance and subsequent settling.

Impact	Phase[1]					Justification	Data collection and analysis proposed to characterise the baseline environment	Summary of the proposed approach to assessment
	C	Op	Op repair	$D_{in-situ}$	D remove			
Increase in contaminants through the suspension of contaminated sediment.	✓	×	✓	×	✓	Potential direct effects on the water quality of waterbodies within the vicinity of the Proposed Development.	Sediment sampling and water quality sampling. Collected through a combination of desktop study and marine surveys.	The potential impacts will be assessed by a thorough analysis of existing data and a WFD Assessment.

*C=Construction phase, Op=Operational phase, Op_{repair}=Operational phase repair activities, $D_{in-situ}$=Decommissioning phase assuming cable de-energised and left *in-situ,* D_{remove}=Decommissioning phase assuming cable removed

Table 8.9.7: Impacts proposed to be scoped out of the assessment for physical processes

Impact	Justification
Impacts to metocean processes (deep water, >20 m depth)	At 20 m and deeper, the water depth is considered to be significant enough that the effects of the seabed, on waves and currents, are negligible. Therefore, there are unlikely to be direct effects on physical processes in deep water, as a result of the Proposed Development, e.g., due to localised changes in bathymetry due to trenching or shallow berms associated with crossing points.
Physical disturbance of seabed geology and morphology (deep water, >20 m depth)	Whilst the Proposed Development will result in a physical disturbance of the seabed geology, through trenching, it is unlikely that these works will have an effect on seabed morphology in deep-water due to the low-energy environment where metocean processes do not normally mobilise seabed sediments. Furthermore, the proposed Offshore Cable Corridor has been selected to avoid excessive preparatory works (reprofiling of the bed). Finally, due to the scale of the proposed works, in comparison to the Celtic Sea and English Channel, any potential effects would have negligible impacts on the wider water bodies.
Impacts on local sediment regimes (deep water, >20 m depth)	At 20 m and deeper, seabed currents are weak. Whilst this means that sediment particles, disturbed by the Proposed Development, may take longer to settle, sediment will not travel significant distances and will likely resettle within close proximity to the Cable Corridor. Therefore, there is unlikely to be any direct effects to local sediment regimes in deep water, as a result of the Proposed Development.

Measures Adopted as Part of the Proposed Development

8.9.41 The following measures adopted as part of the Proposed Development are relevant to physical processes, considered in addition to the overarching design and embedded measures in **section 4.8** and **Table 4.8.2.** These measures may evolve as the engineering design and the EIA progresses.

- Route optimisation studies have included consideration of substrate types, with e.g., outcropping bedrock avoided where possible.
- Micro-routing within the Offshore Cable Corridor will allow avoidance of sandwaves or large ripples that would otherwise require pre-lay seabed flattening.
- HDD methods will be employed to avoid any direct disturbance of the intertidal, the foreshore and the coastal cliffs.
- Cable lay and burial will be undertaken within a few days, avoiding any long-term exposed trenching.
- Installation will utilise specialist ROVs which will minimise trench width and sediment disturbance (compared to less precise trenching tools).

- In the vast majority of locations where additional rock protection is required, the preferred option will be to place this within the trench, with the finished level of rock cover below seabed level. There may be isolated areas where the route crosses very hard seabed and/or boulders and where burial (or full depth burial) is not possible.
- Where crossings of existing in-service cables are required, these will be constructed adhering to international best practice design (and may include concrete mattresses and/or shallow rock berms).
- All completed works, including rock protection areas and crossings will be overtrawlable.

Proposed Assessment Methodology

8.9.42 This Physical Process assessment will provide a high-level qualitative assessment of the Proposed Development's impacts on physical processes. The proposed assessment methodology follows that set out in **Section 5**: EIA Methodology, of the Scoping Report.

8.9.43 The likely magnitude or extent of an impact (or change) arising from the Proposed Development on physical processes is assessed using criteria set out in **Table 8.9.8**. Potential effects can be both adverse and beneficial. The derivation of magnitude is carried out independently of the importance/sensitivity of the attribute.

Table 8.9.8: Magnitude of an Impact on an Attribute

Magnitude	Definition
High	Large Far-field spatial extent with scale of change greater than the natural variability with a continuous signal extending long-term. Major deterioration/improvement of WFD status or deterioration/improvement of one or more of the WFD quality elements. Major pollution/remediation of waterbody. Calculated risk of pollution from a spillage >2% annually.
Medium	Near-field spatial extent with scale of impact with the same order as the natural variability, frequently occurring in the long-term; or immediate spatial extent (the Offshore Cable Corridor) with scale of change greater than the natural variability, occurring frequently over a short timescale. Some contribution or reduction of pollution entering feature, but insufficient to change WFD classification. Moderate pollution/remediation of waterbody. Calculated risk of pollution from spillages >1% annually and <2% annually.
Low	Near-field spatial extent with scale of impact smaller than the natural variability, frequently occurring over a short/temporary timescale. Minor risk of pollution, minor temporary changes in water quality such that ecology is temporarily affected. Equivalent to a temporary minor, but measurable, change within WFD status class. Minor pollution/remediation of waterbody. Calculated risk of pollution from spillages >0.5% annually and <1% annually.
Negligible	Immediate spatial extent, with scale of impact smaller than the natural variability, occurring infrequently over a short/ temporary timescale. Negligible risk of pollution. Risk of pollution from spillages <0.5% annually.
No change	No feasible change.

8.9.44 The sensitivity of the affected receptor is assessed based on the general definitions provided in **Table 5.5.1**.

8.9.45 Once the sensitivity of the receptor and the magnitude of the impact are both established, the potential effect can then be derived following the criteria set out in **Table 5.5.4**.

Potential Cumulative Effects

8.9.46 There is potential for cumulative effects on sensitive receptors to occur when the Proposed Development is considered together with other developments. The potential cumulative effects between the offshore elements of the Proposed Development and other developments with respect to physical processes will be considered within the PEIR and the ES.

8.9.47 The cumulative effects assessment would be undertaken in accordance with the methodology set out in **Section 5**: EIA Methodology, of the Scoping Report and CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland (2018).

Potential Inter-related Effects

8.9.48 The assessment of potential inter-related effects will be considered within the physical processes ES chapter. It will include consideration of project lifetime effects and receptor-led effects in line with the approach outlined in **Section 5**: EIA Methodology, of the Scoping Report. Inter-related effects will be considered with respect to multiple effects acting on benthic habitats, including disturbance of sediments via more than one activity.

Potential Transboundary Impacts

8.9.49 There is potential for transboundary physical processes impacts given that the cable route will extend beyond the UK EEZ into the French EEZ (noting that most impact pathways are scoped out for water >20 m depth). However, the scheme is linear in nature and the activities in the vicinity of the EEZ boundary are not expected to differ in character or approach compared to those within the UK jurisdiction. There are not expected to be additional transboundary impacts (further to those in **Table 8.9.6**, and no predicted increases in e.g., the magnitude of physical process impacts associated with transboundary impacts), however for completeness, the potential for transboundary physical processes impacts are screened into the EIA process.

8.9.50 PINS will satisfy its legal duties in relation to the notification and consultation requirements with EEA States in accordance with the Transboundary Process set out in Regulation 32 of the EIA Regulations, which will include consideration of physical process impacts on sensitive receptors in French waters.

8.10 Underwater Noise

Introduction

8.10.1 This section of the Scoping Report provides a summary of underwater noise considerations of relevance to the construction, operation and maintenance, and decommissioning of the Proposed Development that are seaward of MHWS. This section also identifies the proposed scope of, and methodology for, the EIA process for the underwater noise assessment.

8.10.2 It is important to note, that underwater noise is an impact pathway and may have potential impacts on several receptor types. Consequently, the underwater noise assessment will be presented as a technical appendix to the PEIR and ES to which other relevant marine disciplines will refer. This section of Scoping Report should be considered alongside the following sections:

- **Section 8.2**: Benthic Ecology.
- **Section 8.3**: Fish and Shellfish Ecology.
- **Section 8.4**: Commercial Fisheries.
- **Section 8.5**: Marine Mammals and Turtles.
- **Section 8.7**: Other Marine Users.

Relevant Policy, Legislation and Guidance

8.10.3 The lists in this section should be read in conjunction with **Section 2**: Policy and Legislation, of the Scoping Report.

Legislative and Policy Context

8.10.4 The following key legislation and policy documents relevant to underwater noise will be considered within the assessment process:

- European Union (EU) Marine Strategy Framework Directive (Directive 2008/56/EC), as transposed into UK law by the Marine Strategy Regulations 2010, which seeks to achieve Good Environmental Status (GES) in Europe's seas and includes specific consideration of underwater noise sources *'that do not adversely affect the marine environment'* in the determination process of GES.
- NPS EN-1 (section 5.11, noise and vibration), Department of Energy and Climate Change (DECC) 2011.

Guidance documents

8.10.5 Technical guidance documents relevant to underwater noise that will be considered within the assessment process include the following:

- Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects (Southall *et al*., 2019): Southall *et al*., 2019 provides sound exposure criteria to predict the onset of auditory effects in marine mammals. Estimate audiograms, weighting functions ('M-weighting') and underwater noise exposure criteria for temporary and

permanent auditory effects of noise are presented for six species groupings, including all marine mammal species, and will be considered within the underwater noise modelling; and

- Sound Exposure Guidelines for Fishes and Sea Turtles (Popper *et al*., 2014): Popper *et al*., 2014 provides sound exposure guidelines for fish. The guidelines were developed for a broad group of animals, defined by the way they detect different sound sources and their corresponding characteristics. The resultant sound exposure guidelines will be considered within the underwater noise modelling.

Study Area

8.10.6 There is no specific study area defined as part of this scoping section; rather the spatial consideration of underwater noise is defined by each of the relevant receptor assessments (underwater noise is treated as a potential impact pathway rather than a receptor in its own right; **paragraph 8.10.2**).

Data Sources

8.10.7 The data sources used to inform the baseline assessment will primarily comprise published material which is publicly available online. A desk-based review of existing publicly available literature and studies of the impact of underwater noise on marine mammal and fish species will be undertaken. This will include an assessment of the sensitivity of fish and marine mammals to underwater sound, and derivation of criteria for estimating the impact to be agreed with the Statutory Nature Conservation Bodies (SNCBs). Experience from existing and consented subsea electricity cable developments will be drawn on to inform the underwater noise assessment and modelling strategy for the Proposed Development.

Baseline Environment

8.10.8 The baseline conditions, including future baseline conditions, against which an assessment of underwater noise impacts will be made will be set out within the relevant receptor chapters. Those receptor studies that may be most relevant to a consideration of underwater noise emissions are:

- **Section 8.2:** Benthic Ecology;
- **Section 8.3:** Fish and Shellfish Ecology;
- **Section 8.4:** Commercial Fisheries;
- **Section 8.5:** Marine Mammals and Turtles; and
- **Section 8.7:** Other Marine Users

8.10.9 At PEIR stage baseline underwater noise levels associated with confirmed baseline activities, such as routine shipping and navigation, will be described to allow Proposed Development derived underwater noise levels to be contextualised.

Scope of the Assessment

8.10.10 Offshore construction activity associated with the Proposed Development will generate noise that may have a potential impact on sensitive marine receptors. Drawing on experience gained through other subsea cable projects in UK and international waters, an underwater noise assessment, including noise propagation modelling, is deemed to be required. As discussed in paragraph **8.10.2**, as underwater noise is an impact pathway and may have impacts on several receptors, the underwater noise assessment will be presented as a technical appendix to the PEIR and ES to which other relevant marine disciplines will refer.

8.10.11 This assessment will include the following:

- a review of the publicly available literature and studies of the impact of impulsive underwater noise on marine mammal and fish species, including an assessment of the sensitivity of fish and marine mammals to underwater sound, and derivation of criteria for estimating the impact to be agreed with the SNCBs;
- source noise level characterisation for activities associated with seabed obstacle clearance (excluding UXO), mass flow excavation (MFE), dredging, cable burial (water jetting and mechanical cutter), HDD, rock protection and associated vessel noise;
- noise propagation modelling to estimate potential impact ranges to marine mammals, fish and shellfish, and other marine users as a result of construction activity; and
- consideration and characterisation of any operation and maintenance and decommissioning underwater noise sources that may arise.

8.10.12 The impacts of underwater noise associated with the Proposed Development will ultimately be assessed within the relevant receptor chapters of the ES, following consultation with SNCBs. Discussion and agreement of the maximum design spatial and temporal project parameters will be included. The impact criteria will be based on relevant published injury and behavioural thresholds for marine mammals and fish. These thresholds will be derived from the most recent publication of relevance, which is Southall *et al*., (2019) for marine mammal receptors and from Popper *et al*., (2014) for fish (unless further evidence is published in the interim).

8.10.13 Consideration of potential impacts due to underwater noise that require assessment within the EIA has been made in the relevant receptor sections i.e. **section 8.2:** Benthic Ecology), **section 8.3:** Fish and Shellfish Ecology, **section 8.4:** Commercial Fisheries, **section 8.5:** Marine Mammals and Sea Turtles and **section 8.7:** Other Marine Users, of the Scoping Report.

8.10.14 It is important to note that UXO clearance is not within the scope of this assessment in terms of underwater noise and where this is deemed necessary, this will be considered within the separate license application process.

Measures Adopted as Part of the Proposed Development

8.10.15 The following measures adopted as part of the Proposed Development are relevant to the assessments of potential impacts deriving from underwater noise, considered in addition to the overarching design and embedded measures in **section 4.8** and **Table 4.8.2.** These measures may evolve as the engineering design and the EIA progresses and in response to consultation comments.

- Development of, and adherence to, an agreed MMMP. This will mitigate potential impacts from underwater noise on marine mammals (and fish) to ensure good practice is followed where relevant.

Proposed Assessment Methodology

8.10.16 Further detail on the proposed assessment methodologies for each receptor that may be sensitive to underwater noise are provided in the associated receptor sections:

- **Section 8.2**: Benthic Ecology;
- **Section 8.3**: Fish and Shellfish Ecology;
- **Section 8.4**: Commercial Fisheries;
- **Section 8.5**: Marine Mammals and Turtles; and
- **Section 8.7**: Other Marine Users

8.10.17 As discussed in **paragraph 8.10.2**, the underwater noise assessment will be provided as a technical appendix to the ES to which the above receptor sections will refer.

Potential Cumulative Effects

8.10.18 There is potential for cumulative effects to occur on sensitive receptors when the Proposed Development is considered together with other developments where underwater noise may be generated.

8.10.19 The potential cumulative effects between the offshore elements of the Proposed Development and other developments with respect to underwater noise will be considered within the PEIR and ES.

8.10.20 The cumulative effects assessment will be undertaken in accordance with the methodology set out in **Section 5**: EIA Methodology, of the Scoping Report.

Potential Inter-related Effects

8.10.21 The assessment of potential inter-related effects due to underwater noise will be considered within the relevant aspect ES chapters. They will include consideration of Proposed Development lifetime effects and receptor-led effects in line with the approach outlined in **Section 5**: EIA Methodology, of the Scoping Report.

Potential Transboundary Impacts

8.10.22 There is potential for transboundary noise impacts given that the Offshore Cable Corridor will extend beyond the UK EEZ into the French EEZ. The scheme is linear in nature and the activities in the vicinity of the EEZ boundary will not differ in character or approach compared to those locally within the UK jurisdiction (or those locally within the French jurisdiction). There are thus no additional transboundary noise impacts identified, and no predicted increases in e.g., the magnitude of noise generation associated with transboundary impacts.

8.10.23 Planning Inspectorate will satisfy its legal duties in relation to the notification and consultation requirements with EEA States in accordance with the Transboundary Process set out in Regulation 32 of the EIA Regulations.

8.10.24 Where other relevant developments are identified within 5 nm of the EEZ boundary the potential for transboundary cumulative impacts will be considered.

9 PROPOSED TECHNICAL ASSESSMENTS – COMBINED OFFSHORE AND ONSHORE

9.1 Introduction

9.1.1 The following sections provide an overview of the combined onshore and offshore technical assessments for the Proposed Development, which should be read in conjunction with **Section 4:** Project Description and **Section 5:** EIA Methodology, of the Scoping Report. Each technical assessment provides further details on methodologies specific to the environmental topic chapter.

9.2 Climate Change

Introduction

9.2.1 This section of the Scoping Report identifies the climate change receptors relevant to the onshore and offshore elements of the Proposed Development. This section also considers the potential impacts arising from the construction, operation and maintenance, and decommissioning phases of the Proposed Development and identifies the proposed scope of, and methodology for, the EIA process for climate change effects.

9.2.2 Under the Infrastructure Planning (EIA) Regulations 2017, Environmental Impact Assessment Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (IEMA, 2022) and the Environmental Impact Assessment Guide to Climate Change Resilience & Adaptation (IEMA, 2020), the following aspects of climate change are relevant to the assessment:

- The emission of GHGs contributing to climate change, including GHG emissions from the Proposed Development arising from land use change and construction, operation and maintenance, and decommissioning phases of the Proposed Development.
- The potential risks to the Proposed Development arising from a changing climate and their vulnerability to climate change.

Relevant Policy, Legislation and Guidance

Legislative and Policy Context

9.2.3 The following key legislation and policy documents relevant to climate change will be considered within the assessment process:

- Climate Change Act 2008, as amended (2019);
- Overarching National Planning Statement (NPS) for Energy (NPS EN-1) (DECC, 2011a);
- NPS for Renewable Energy Infrastructure (NPS EN-3) (DECC, 2011b);
- NPS for Electricity Networks Infrastructure (NPS EN-5) (DECC, 2011c);

- The National Planning Policy Framework (NPPF) (Department for Levelling Up, Housing and Communities, 2023);
- The UK Marine Policy Statement (Defra, 2020);
- South West Inshore and South West Offshore Coast Marine Plans (HM Government, 2021);
- North Devon and Torridge Local Plan 2011-2031 (Torridge District Council, 2018);

Guidance Documents

9.2.4 The main guidance used for the assessment of GHG emissions in EIA is the Institute of Environmental Management and Assessment (IEMA) guide 'Assessing Greenhouse Gas Emissions and Evaluating their Significance' (IEMA, 2022).

9.2.5 Additional guidance used for the quantification of GHG emissions includes the Greenhouse Gas Protocol suite of documents (World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD), 2004).

9.2.6 The main guidance document with regard to climate risk and resilience assessment within the context of EIA is the Environmental Impact Assessment Guide to: Climate Change Resilience & Adaptation (IEMA, 2020).

Study Area

Greenhouse Gas Emissions Study Area

9.2.7 GHG emissions have a global effect rather than directly affecting any specific local receptor. The assessment will therefore focus on the impact of GHG emissions on the global climate. This will be expressed in the form of the atmospheric concentration of the relevant GHGs, expressed in carbon dioxide-equivalents (CO_2e).

9.2.8 The GHG emissions will be assessed on a life-cycle basis for activities required for the construction, operation and maintenance and decommissioning phases of the Proposed Development. This will consider GHG emissions caused directly and indirectly from sources at a variety of locations, including the onsite activities and the associated supply chain.

9.2.9 In addition, as the purpose of the Proposed Development is to connect the Moroccan onshore scheme to the national grid, the cumulative effects with the generation assets will be considered, including the avoided or 'saved' baseline GHG emissions. This will account for energy generated from the Moroccan onshore scheme, which includes solar generation, wind generation and battery storage, in comparison to alternative grid-connected electricity generators (see **paragraph 9.2.51**).

9.2.10 Therefore, the GHG study area is defined as both the onshore and offshore components of the Proposed Development (Proposed Development Scoping Boundary) alongside the global atmosphere, based on established IEMA guidance (IEMA, 2022). The Proposed Development Scoping Boundary is shown on **Figure 9.2.1** The assessment boundary and relevant sources of GHG emissions are set out in **paragraphs 9.2.40** to **9.2.48** of the Scoping Report.

Climate Risk Study Area

9.2.11 The climate risk study area covers the Proposed Development Scoping Boundary, as shown in **Figure 9.2.1**. The assessment of the onshore elements of the Proposed Development Scoping Boundary will cover two 25 km grid cells based on the UKCP18 probabilistic projections (Met Office Hadley Centre (MOHC), 2021).

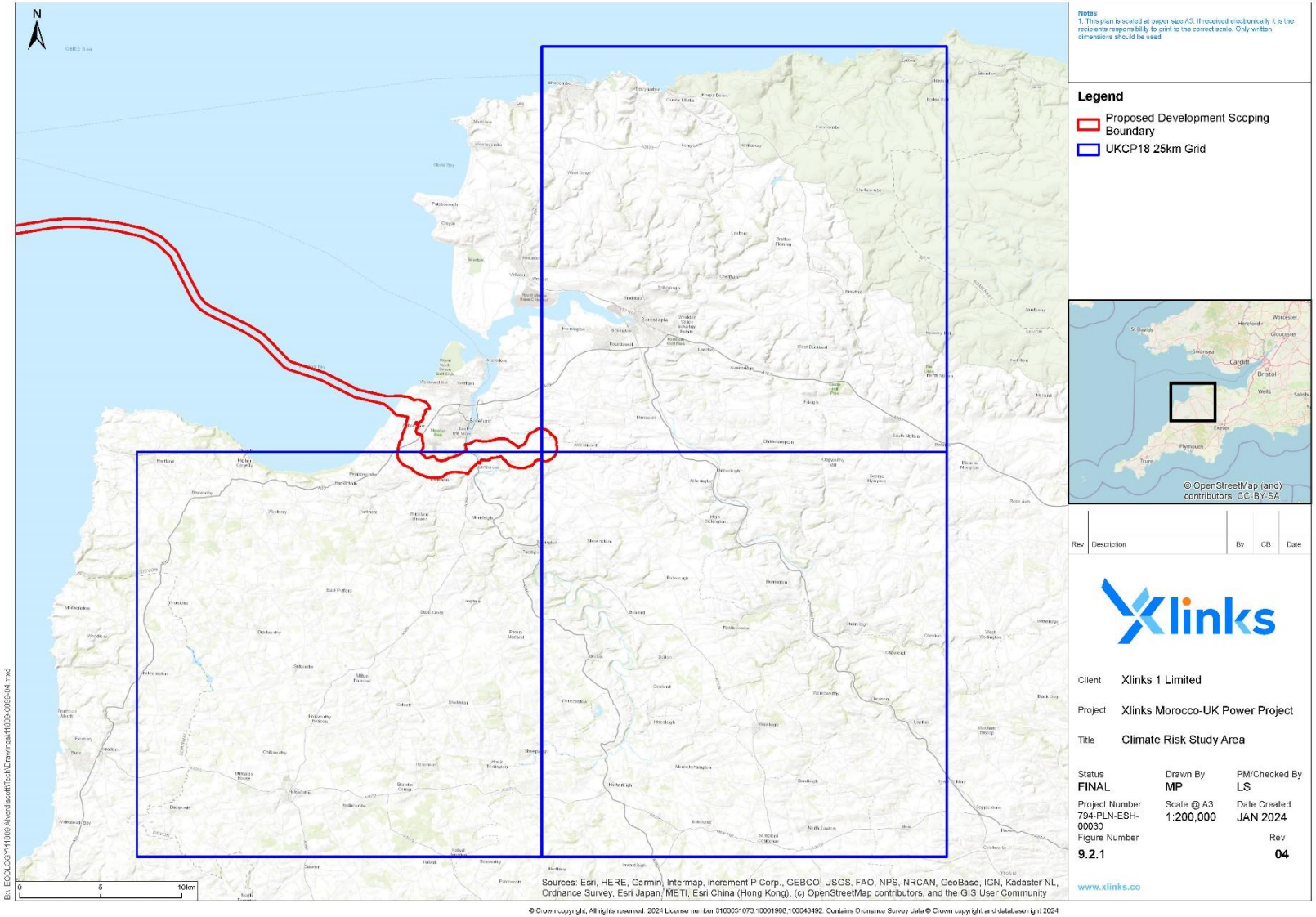

Figure 9.2.1: Climate risk study area

Data Sources

9.2.12 The data sources used to inform the baseline assessment will primarily comprise published material that is publicly available online. No climate change baseline surveys would be required to support the climate change assessment, however, the assessment would draw upon data and information from other relevant topic surveys (e.g., agriculture and land-use). Where a date or edition has been specified, this is the current edition but the latest version available at the time of the assessment would be used. These data sources are summarised in **Table 9.2.1**.

9.2.13 The baseline data sources identified in this Scoping Report will remain under review and may be updated in response to feedback from relevant statutory and non-statutory consultees during the EIA process, or in response to new sources of information becoming available.

Table 9.2.1: Baseline data sources – climate change

Source	Summary
Published Environmental Product Declarations (EPDs, the outputs of lifecycle analysis studies – LCAs)	Used to establish the embodied carbon emissions for a typical infrastructure including transformers and transmission cabling.
Valuation of Energy Use and Greenhouse Gas: Supplementary guidance to the HM Treasury Green Book, and supporting data tables	Used to establish baseline and future baseline grid scenarios from which to compare to the development.
UK Government GHG Conversion Factors for Company Reporting (Department for energy Security and Net Zero, 2023).	Current UK grid carbon intensity and other GHG emissions factors.
Royal Institution of Chartered Surveyors (RICS) or OneClick Building Carbon Database for 'industrial/utilities' building	Benchmark values per m^2 of gross internal area (GIA) for an 'industrial building'.
National Grid Future Energy Scenarios (2023)	Provides projected future energy scenarios to compare the development's renewable energy generation potential with alternative grid-connected electricity generators.
UK Climate Averages (Met Office Data, 2020)	Used to establish baseline climate data for the onshore environment.
UK Offshore Energy Strategic Environmental Assessment: Appendix 1F: Climate & Meteorology (BEIS, 2022)	Used to establish baseline climate data for the offshore environment.

Baseline Environment

Greenhouse Gas Emissions Assessment Baseline Environment

9.2.14 The current baseline for the onshore elements of the Proposed Development primarily comprises agricultural land. This land has been broadly categorised as Grade 3 (good to moderate) land with comparatively smaller areas of Grade 4

(poor quality) land in the vicinity of the A39 and near Winscott Barton and Littleham. There is a small area of Grade 2 land, situated to the east of the landfall, on the periphery of the Proposed Development Scoping Boundary.

9.2.15 With regards to the assessment of GHG emissions, land with high carbon stock such as woodland and peat is of most relevance. The potential for peat to be present within the site will be considered as part of the EIA process. The Proposed Development Scoping Boundary includes various areas of deciduous woodland (including Littleham Wood), which represent carbon stocks. Should any areas of land with high carbon stock, such as woodland, be subject to disturbance by construction or decommissioning, these will be accounted for within the assessment of GHG emissions.

9.2.16 The offshore baseline environment will include review of the existing subtidal habitats and sediments affected by construction activities, with particular reference to any areas of carbon-rich habitats, such as saltmarshes and kelp forests. Information relating to such environments will be drawn from relevant topics, such as benthic ecology.

Climate Change Risk Assessment Baseline Environment

9.2.17 A description of the onshore and offshore baseline will be detailed within a technical appendix to the ES, with a summary provided within the climate change chapter. Key relevant information concerning the onshore and offshore baseline is summarised below.

Onshore Baseline Environment

9.2.18 The south west of England experiences a temperate climate, with annual average maximum and minimum temperatures of 14.46°C and 7.68°C recorded at the Chivenor climate station respectively (Met Office, 2020). During the 1981 to 2010 baseline period, average maximum temperatures reach 20.6°C in July, and minimum temperatures fall to an average of 2.95°C in February. This is consistent with regional climate patterns for the south west of England and South Wales. In the summer months, regional temperatures often fall between 20.11°C and 9.88°C; in the winter months, regional temperatures range between 8.34°C and 2.13°C.

9.2.19 Precipitation recorded at the Chivenor climate station is lower than that reported for the regional annual total of 1,255.22 mm, at 910.09 mm a year. However, regional precipitation in the south west of England and south Wales exceeds the UK annual average, which totals 1,142.04 mm. Therefore, 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.

9.2.20 Annual average wind speeds recorded at Chivenor climate station are higher than the regional annual average, equalling 10.27 kn and 9.35 kn, respectively. Furthermore, it can be predicted that the Proposed Development will be susceptible to higher wind speeds throughout the year due to its coastal location.

Offshore Baseline Environment

9.2.21 Climate data, which covers the area of sea to the south west of the UK (Regional Sea 4, BEIS, 2022), has been used to provide an offshore baseline environment

for the Proposed Development, with regards to the climate change risk assessment.

9.2.22 Mean daily air temperatures range from lows of 7°C in January to 16°C in July, with surface air temperatures exceeding sea surface temperatures during the spring and summer months and falling below sea surface temperatures during the autumn and winter months (BEIS, 2022).

9.2.23 Precipitation generally falls 15 to 22 days per month during the winter, and 9 to 13 days per month during the summer (BEIS, 2022).

9.2.24 Higher wind speeds can be expected offshore in comparison with the onshore elements of the Proposed Development Scoping Boundary due to the lack of obstructions (both man-made and natural) in open water. Wind conditions are generally south-westerly and north-westerly throughout the year, although north-easterly winds become more frequent in late-winter and spring. During January, winds occasionally exceed 14 m/s (with 20-30% probability). In July, the chance of these higher wind speeds drops to 2% (BEIS, 2022).

9.2.25 Mean sea level is a crucial element of climate change-related risks for wind farms. Global mean sea level rose by 0.2 m between 1901 and 2018, and continues to rise (IPCC, 2021). Land adjacent to the coast and estuaries within the south west has been identified as vulnerable to storms and coastal flooding (Environment Agency, 2022).

Future Baseline Conditions

GHG emissions assessment future baseline

9.2.26 The future baseline GHG emissions for the onshore land use in the absence of the Proposed Development would be expected to remain similar to the existing land use, with a decrease in agriculture-related GHG emissions over time, in line with the UK's national climate change policies.

9.2.27 As above, the future baseline GHG emissions for the existing offshore land use (seabed) in the absence of the Proposed Development are expected to remain similar.

Climate change risk assessment future baseline

9.2.28 In the near future, roughly within the next few years to decade, variations in average temperature and precipitation will likely be the most visible year-to-year changes in climate. In subsequent decades, the anthropogenic climatic changes are expected to become more apparent, which will be relevant for the operation and maintenance and decommissioning phases of the Proposed Development.

9.2.29 The MOHC publishes both probabilistic climate change projections and downscaled global circulation model outputs for the UK at various spatial scales. This is called the UKCP18 dataset, first published in November 2018 and at v2.8.0 (MOHC, 2023) at the time of writing. The projections are based on RCP scenarios used by the Intergovernmental Panel on Climate Change (IPCC). The RCP scenarios (four scenarios presented in the IPCC fifth Assessment report which are included within the UKCP18 database) describe different climatic futures, all of which are considered possible depending on the volume of GHGs emitted. These provide the basis for future assessments of climate change and

possible response strategies, thereby giving a low-high range in potential global GHG reduction initiatives and resulting rate of climatic effects over a given period.

9.2.30 The probabilistic projections published at a 25 km grid cell scale are considered the most useful for the climate change risk assessment when considering the onshore elements of the Proposed Development, being designed to show a range of projection values that reflect uncertainty in modelled outcomes. The UKCP18 Overview Report (MOHC, 2018a) and supporting factsheets (MOHC, 2018b) for the wider regional and UK context will also be drawn upon.

9.2.31 The Proposed Development is expected to be fully operational by 2030, and the operational lifetime is currently considered to be 50 years. Following this, it is currently considered that the Proposed Development will be decommissioned. However, as a key piece of energy infrastructure, the Proposed Development could also operate in the longer term through ongoing maintenance of the converter stations and associated transmission infrastructure. Therefore, climate change projections for two periods in the mid- and late century will be considered for the onshore future baseline environment: average conditions during 2040-2069 and 2070-2099.

9.2.32 Probabilistic local climate projections consistent with those referenced above and used to illustrate future possible onshore climate trends are not available for offshore regions. Therefore, the results of marine climate projections as set out within the UKCP18 Marine Report (Palmer *et al.* 2018) and interrogated within the UK Climate Risk Independent Assessment (CCRA3), Chapter 4: Infrastructure (Jaroszweski *et al.* 2021) will be used to assess the impact of future trends for wind speed, wave height and sea levels. These projections are based on RCP8.5, with data largely available for the end of the 21st century.

Scope of the Assessment

9.2.33 A range of potential impacts on climate change have been identified which may occur during the construction, operation and maintenance and decommissioning phases of the Proposed Development.

9.2.34 The impacts that have been scoped into the assessment are outlined in **Table 9.2.2** together with a description of any additional data collection (e.g., site-specific surveys) and supporting analyses (e.g., modelling) that will be required to enable a full assessment of the impacts.

9.2.35 Potential impacts proposed to be scoped out of the assessment are presented in **Table 9.2.3**, with justification.

Table 9.2.2: Impacts proposed to be scoped into the assessment for climate change

Impact	Phase			Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
The impact of GHG emissions arising from the manufacturing and installation of the Proposed Development.	✓	×	×	GHG emissions arising from the manufacturing and installation of the Proposed Development including Converter Site buildings would contribute to the lifecycle total and net GHG balance of the Proposed Development.	Emissions will be put into context using sources such as those outlined below. Use of published carbon intensity benchmark values for buildings and/ or project-specific materials estimates together with published Environmental Product Declarations concerning Life Cycle Assessment research into embodied carbon associated with construction of the converter stations and associated infrastructure including switchgear, transformers and cabling.	The assessment will take into account the IEMA Environmental Impact Assessment Guide 'Assessing Greenhouse Gas Emissions and Evaluating Their Significance' (IEMA, 2022) or any updates to this guidance. It will be undertaken on a lifecycle basis, calculating the GHG emissions associated with the construction, operation and maintenance and decommissioning phases of the Proposed Development. The magnitude of impact will be expressed as tonnes of carbon dioxide equivalent (tCO_2e), using 100-year global warming potential values for non- CO_2 GHGs from the Intergovernmental Panel on Climate Change's Sixth Assessment Working Group 1 Report (IPCC, 2021) or as otherwise defined in literature sources.
The impact of GHG emissions arising from the consumption of materials and activities required to facilitate the operation and maintenance phase.	×	✓	×	GHG emissions arising from the consumption of materials and activities required to facilitate the operation and maintenance phase would contribute to the lifecycle total and net GHG balance of the Proposed Development.		
The impact of GHG emissions arising from land use change during the construction, operation and maintenance, and decommissioning phases.	✓	✓	✓	GHG emissions arising from land use change during the construction, operation and maintenance and decommissioning phases will be considered as part of the overall GHG impact of the Proposed Development. However, it is likely that most of the land affected would be agricultural land, which is not typically a significant carbon stock.	The baseline with regard to land use will be identified (whether agricultural land, woodland, or peaty soils). Consideration would be given to whether the Proposed Development would affect/ disturb areas of high soil or vegetation carbon stocks. Use of published data on agricultural land use classes, soil carbon stocks and GHG fluxes.	

Impact	Phase			Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
The impact of GHG emissions arising from decommissioning works (e.g., plant, fuel and vessel use) and the recovery (or disposal) of materials.	×	×	✓	GHG emissions arising from decommissioning works (e.g., plant, fuel and vessel use) and the recovery (or disposal) of materials would contribute to the lifecycle total and net GHG balance of the Proposed Development.	Use of published Environmental Product Declarations concerning Life Cycle Assessment research into embodied carbon associated with recycling and recovery at end of life for transmission developments.	
The impact of climate change on the Proposed Development	×	✓	×	The main climate risk to the onshore elements of the Proposed Development is flooding, which will be assessed including appropriate allowances for changes in rainfall intensity and coastal change due to climate change in the flood risk assessment. Onshore elements of the Proposed Development will include industrial type buildings (such as converter stations), containing equipment (largely self-operating) and buried cabling which are in a low-risk category with no vulnerable site users. The key risk for the onshore elements would be flooding, this would be addressed within a FRA submitted in support of the application. The main non-flooding risk would be increased cooling demand for the equipment because of climate change including global temperature increases and increased risk of heatwave (Met Office, 2018). To mitigate, cooling systems will be designed with	Use of Met Office (2018) UKCP18 regional data for the onshore Converter Site and the use of the UKCP18 Marine Report (Palmer et al. 2018) for the offshore elements.	The climate change chapter will include the assessment of climate risks and adaptation. This will consider the potential climatic conditions in the 2040-2069 and 2070-2099 time periods specific to the Proposed Development's 25 km grid squares, based on the MOHC 'UKCP18' probabilistic projections given the long lifetime of the buildings. A high-level assessment of potential risks will be presented, which will inform potential resilience measures to be considered in the detailed design. The climate projections data will also be provided to ES topic authors to ensure that climatic changes can be considered, where relevant, for the topic-specific future baseline and sensitivity of receptors.

Impact	Phase			Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
				sufficient capacity headroom and supplied by renewable electricity.		

=Construction, O=Operation and Maintenance, D=Decommissioning

Table 9.2.3: Impacts proposed to be scoped out of the assessment for climate change

Impact	Justification
Climate Risk Assessment for construction	The construction phase will not be lengthy enough for significant climate change risks compared to the present-day baseline to occur during these phases. The Applicant will employ good health & safety practices with respect to risks such as heatstroke or storm events offshore.
In-combination climate change effects	In-combination climate change effects are proposed to be scoped out of this chapter as they will be addressed individually within each applicable topic ES chapter. Each topic chapter will consider how potential climatic changes may affect the future baseline, including the sensitivity or resilience of receptors.

Measures Adopted as Part of the Proposed Development

9.2.36 The measures will evolve as the EIA progresses. As a development that facilitates renewable energy development, climate change mitigation is an inherent aim and consequence of the Proposed Development.

9.2.37 The Applicant will look for opportunities for the use of local workforce and suppliers where reasonably and commercially practical.

9.2.38 BNG planting proposals that will accompany the application for development consent, are expected to offset some GHG emissions associated with the Proposed Development.

9.2.39 The requirement for and feasibility of any mitigation measures will be consulted upon with relevant statutory consultees throughout the EIA process.

Proposed Assessment Methodology

9.2.40 The climate change assessment will consider the IEMA Environmental Impact Assessment Guide 'Assessing Greenhouse Gas Emissions and Evaluating Their Significance' (IEMA, 2022) and the Environmental Impact Assessment Guide to Climate Change Resilience & Adaptation (IEMA, 2020). It will be undertaken on a lifecycle basis, calculating the GHG emissions associated with the construction, operation and maintenance, and decommissioning phases of the Proposed Development.

9.2.41 The sensitive receptor will be defined as the global atmospheric concentration of GHGs and it will be characterised as having a 'high' sensitivity, given the severe consequences of climate change and cumulative contributions of other sources. GHG emissions have a global effect rather than directly affecting specific local receptors to which levels of sensitivity can be assigned. The global atmospheric concentration of the relevant GHGs, expressed in CO_2-equivalents (CO_2e), will therefore be treated as a single receptor of high sensitivity (given the severe consequences of global climate change).

9.2.42 GHG emissions would contribute to the effect of global climate change. Assessment guidance from (IEMA, 2022) describes five levels of significance for emissions resulting from a development, each based on how the project contributes towards achieving a net zero and 1.5°C-aligned reduction trajectory. To aid in considering whether effects are significant, the guidance recommends

that GHG emissions should be contextualised against pre-determined carbon budgets, or policy and performance standards where a budget is not available. It is a matter of professional judgement to integrate these sources of evidence and evaluate them in the context of significance.

9.2.43 The main sources of GHG emissions arising from the construction, operation and maintenance, and decommissioning phases of the Proposed Development would be:

- embodied carbon associated with materials used for construction and maintenance of the Proposed Development;
- fuel/energy use at the converter stations, in vehicles and vessels for the construction, operation and maintenance, and decommissioning phases of the Proposed Development; and
- GHG emissions arising from land use change.

9.2.44 Any GHG emissions generated by the Proposed Development will be expressed as tonnes of carbon dioxide equivalent (tCO_2e). This would use 100-year global warming potential values for non-CO_2 GHGs from the Intergovernmental Panel on Climate Change's Sixth Assessment Working Group 1 Report (IPCC, 2021) or as otherwise defined in literature sources.

9.2.45 The IEMA (2022) guidance states that a development's GHG impacts should be contextualised, for example on a sectoral basis, compared to the UK's national carbon budget or compared to policy requirements and performance standards, to determine whether a project's carbon footprint will support or undermine a 1.5°C compatible trajectory towards net zero.

9.2.46 It is considered that broadly speaking, the significance of the Proposed Development GHG emissions can be contextualised in the following ways:

- With reference to the absolute magnitude of net GHG emissions as a percentage of applicable carbon budgets at the UK, England and/or Local Planning Authority scale.
- Through considering any increase/reduction in absolute GHG emissions and GHG intensity compared with baseline scenarios, including projections for future changes in those baselines.
- With reference to whether the Proposed Development contributes to and is in line with the UK's national carbon budget goals and existing or emerging policy that supports for GHG emissions reduction consistent science-based commitments to limit global climate change to an internationally-agreed level.

9.2.47 The chapter will also include the assessment of climate risks and adaptation. This will consider the potential climatic conditions in the 2040-2069 and 2070-2099 time periods specific to the Proposed Developments 25 km grid square, based on the MOHC 'UKCP18' probabilistic projections given the long lifetime of the residential buildings (MOHC, 2018). A high-level assessment of potential risks will be presented, which will inform potential resilience measures to be considered in the detailed design.

9.2.48 The climate projections data will also be provided to ES topic authors to ensure that climatic changes can be considered, where relevant, for the topic-specific future baselines and sensitivity of receptors.

Potential Cumulative Effects

9.2.49 In general, all developments which emit GHGs have the potential to impact the atmospheric mass of GHGs as a receptor, and so may have a cumulative impact on climate change. Nevertheless, the fundamental link between the Proposed Development, the offshore scheme outside of UK waters and the Moroccan Onshore Scheme requires consideration to provide the overall effect. Accounting for the Proposed Development, offshore scheme and the Moroccan Onshore Scheme would ensure a whole life cycle assessment with regards to GHG emissions and subsequent effects has been carried out.

9.2.50 This will include consideration of:

- The emission of GHGs contributing to climate change, including:
  - GHG emissions from the Proposed Development, offshore scheme (outside of UK waters) and the Moroccan Onshore Scheme.
  - Overall GHG emission savings when the Proposed Development is considered together with the Moroccan Onshore Scheme- (i.e. wind and solar generation).

9.2.51 This assessment will consider the avoided or 'saved' baseline GHG emissions. This will account for energy generated from the Moroccan Onshore Scheme, and their effects, in comparison to alternative gird-connected electricity generators. This will allow for the identification of the net lifetime effects.

9.2.52 Notwithstanding the direct link between the Proposed Development and the associated offshore scheme and Moroccan Onshore Scheme, cumulative effects due to other specific local development projects are no more relevant to the assessment than those that are proposed further away. Therefore, other Proposed Developments, beyond the directly links schemes above, in the vicinity will not be individually identified.

Potential Inter-related Effects

9.2.53 As stated in **Table 9.2.3**, inter-related effects of climate change during the construction, operation and maintenance and decommissioning phases of the Proposed Development will be considered individually within the relevant topic chapters of the ES. Each topic chapter will assess how climate change may affect the future baseline scenario, including the sensitivity and/or resilience of identified receptors.

Potential Transboundary Impacts

9.2.54 All developments which emit GHGs have the potential to impact the atmospheric mass of GHGs as a receptor, and so may have a transboundary impact on climate change. Consequently, transboundary effects due to other specific international development projects are not individually identified but would be considered when evaluating the impact of the Proposed Development by defining the atmospheric mass of GHGs as a high sensitivity receptor. Each country has its own policy and targets concerning carbon and climate change.

9.3 Landscape, Seascape and Visual Resources

Introduction

9.3.1 This section of the Scoping Report identifies the landscape, seascape and visual receptors relevant to the Proposed Development. This section also considers the potential impacts arising from the construction, operation and maintenance and decommissioning phases of the Proposed Development and identifies the proposed scope of, and methodology for, the EIA process for the landscape, seascape and visual resources ES chapter.

Relevant Policy, Legislation and Guidance

Legislative and Policy Context

9.3.2 The following key legislation and policy documents relevant to the Landscape, Seascape and Visual Impact Assessment (LSVIA) will be considered within the assessment process:

- NPS for Electricity Networks Infrastructure (EN-5) (Department of Energy and Climate Change, 2011b; Department for Energy Security and Net Zero, 2023);
- Substations and the Environment: Guidelines on Siting and Design – the 'Horlock Rules' (National Grid Company plc.)
- North Devon and Torridge Local Plan 2011 – 2031 (Torridge District Council, 2018);
- National Planning Practice Guidance (UK Government, 2019);
- North Devon Coast Area of Outstanding Natural Beauty (AONB) Management Plan 2019-2024; and
- National Planning Policy Framework (Ministry of Housing, Communities and Local Government, 2023).

Guidance Documents

9.3.3 Guidance documents relevant to the LSVIA that will be considered within the assessment process include the following:

- European Landscape Convention (Council of Europe, 2000, ratified 2006);
- Landscape and Seascape Character Assessments (Natural England and Department for Environment, Food and Rural Affairs, 2014);
- Guidelines for Landscape and Visual Impact Assessment: Third Edition (Landscape Institute and the Institute of Environmental Management and Assessment, 2013);
- An Approach to Landscape Character Assessment (Natural England, 2014);
- Technical Guidance Note 06/19: Visual representation of development proposals (Landscape Institute, 2019); and
- Technical Guidance Note 02/21: Assessing landscape value outside national designations (Landscape Institute, 2021).

Study Area

9.3.4 The proposed study area to be used in the assessment of landscape and visual resources will be based on the ZTV for the Converter Site. The ZTV will be based upon the height of the converter stations and based roughly on the table at paragraph 48 of Visual Representation of Wind Farms – Guidance: Version 2.2 (Scottish Natural Heritage [now NatureScot] 2017).

9.3.5 Sensitive landscape and visual receptors within the landscape and visual resources study area as defined by the extent of the ZTV will be included for assessment in the Landscape and Visual Impact Assessment (LVIA).

9.3.6 Taking into account the known parameters of the Proposed Development and through professional judgement, the following are likely to form the basis of the landscape and visual resources study area:

- Land to be temporarily occupied during construction of the onshore elements of the Proposed Development, with an additional 1 km buffer around the Onshore HVDC Cable Corridor, construction compounds, and the landfall (which also constitutes the nearest publicly accessible land where the seascape could potentially be, temporarily, affected by offshore construction activities).
- Land to be permanently occupied during operation of the onshore elements of the Proposed Development, with an additional buffer of 10 km to be used around the converter stations. Theoretically, the converter stations may be visible beyond 10 km, however, there is no potential for the effects, on either the landscape or visual resources and receptors, to be significant, due to distance.

Data Sources

9.3.7 The data sources used to inform the baseline assessment will comprise a combination of published material publicly available online and site visits undertaken by competent experts.

9.3.8 The baseline data sources identified in this Scoping Report will remain under review and may be updated in response to feedback from relevant statutory and non-statutory consultees during the EIA process, or in response to new sources of information becoming available.

Desk-based Data Sources

9.3.9 An initial desk-based review has identified a number of data sources which provide baseline data coverage of the landscape and visual resources study area. These data sources are summarised in **Table 9.3.1**.

Table 9.3.1: Baseline data sources – landscape and visual resources

Source	Summary
AONB Management Boards/National Park Authority management plans	Provides information regarding the nature of the internationally and nationally designated landscapes, including publicly accessible Registered Parks and Gardens.
National Landscape Character Areas	A web-based resource which provides information all the National Landscape Character Areas in England.

Source	Summary
North Devon and Torridge Landscape character assessment	Provides descriptions of landscape character areas.
North Devon and Exmoor Seascape Character Assessment, 2015	Provides descriptions of seascape character areas.
North Devon Biosphere Strategy for Sustainable Development 2014-2024	Sets out the different zones and special features of the biosphere.
MAGIC (interactive mapping website), Natural England and Historic England websites.	Descriptions of internationally and nationally designated landscapes, including publicly accessible Registered Parks and Gardens.
Ordnance survey 1:25,000 maps and Definitive Public Rights of Way (PRoW) maps produced by the relevant local authorities.	Provides information regarding the location of visual receptors, including PRoW.
Aerial photography.	Provides information regarding the location of visual receptors

Site-specific Survey Data

9.3.10 In addition to the data sources identified above, the following site-specific surveys will inform the baseline assessment for landscape and visual resources in the ES:

- Viewpoint photography has been undertaken on 13 February and 14 February 2023. The representative viewpoints were agreed with Torridge District Council's landscape consultant and will be confirmed through further consultation.
- Photographs were taken from publicly accessible locations at the landfall and along the route of the Proposed Development on the 15 March 2022 to 18 March 2022.
- Photography to be taken from private land within the Proposed Development, during a 'route walk'. This will include both the Onshore HVDC Cable Corridor and the Converter Site, together with the construction compound locations.

Baseline Environment

Published Landscape and Seascape Character Assessments

9.3.11 At the national level, the Proposed Development Scoping Boundary is wholly located within National Character Area (NCA) 149: The Culm. The converter stations will directly impact NCA 149, during all three phases of the Proposed Development (construction, operation and maintenance and the decommissioning phase). Whereas the onshore elements of the Proposed Development will directly impact NCA 149, during the construction phase, to a much lesser extent the operations and maintenance phase as the cables are underground, and during decommissioning an insignificant extent assuming the cables will be cut and left in situ.

9.3.12 The Devon Landscape Character Areas (LCA) that are directly affected by the Proposed Development are listed below and shown in **Figure 9.3.1.**

- Bideford Bay Coast;

- Torridge Valley; and
- High Culm Ridges.

9.3.13 North Devon and Torridge Districts Landscape Character Assessment (a Joint Landscape Character Assessment) was undertaken by Land Use Consultants. It was adopted by North Devon Council on 8 January 2011 and by Torridge District Council on 14 February 2011. The Joint Landscape Character Assessment identifies 22 distinct landscape character types throughout North Devon and Torridge.

9.3.14 Those North Devon and Torridge District LCAs, which could be impacted by the Proposed Development are:

- 4H: Cliffs;
- 5B: Coastal undulating farmland;
- 3H: Secluded valleys;
- 4A: Estuaries;
- 3G: River valley slopes and combes;
- 5A: Inland elevated undulating land (in which the converter stations and connection to Alverdiscott Substation site are located);
- 1D: Estate wooded ridges and hilltops;
- 1F: Farmed lowland moorland and Culm grassland;
- 3A: Upper farmed and wooded valley slopes;
- 4E: Extensive inter-tidal sands;
- 4F: Dunes;
- 5D: Estate wooded farmland; and
- 7: Main cities and towns.

9.3.15 North Devon and Exmoor Seascape Character Assessment - the landfall will also directly affect the following Seascape Character Area (SCA) (North Devon and Exmoor Seascape Character Assessment, 2015, Land Use Consultants):

- Abbotsham Coast.

9.3.16 The Abbotsham Coast is the only SCA that will be directly affected by the Proposed Development (that would be visible). Other SCAs will be indirectly affected (i.e., it will be visible from them). However, as this would be during the construction phase only, there is no potential for these other SCAs to be significantly affected and they are not taken forward to the assessment stage.

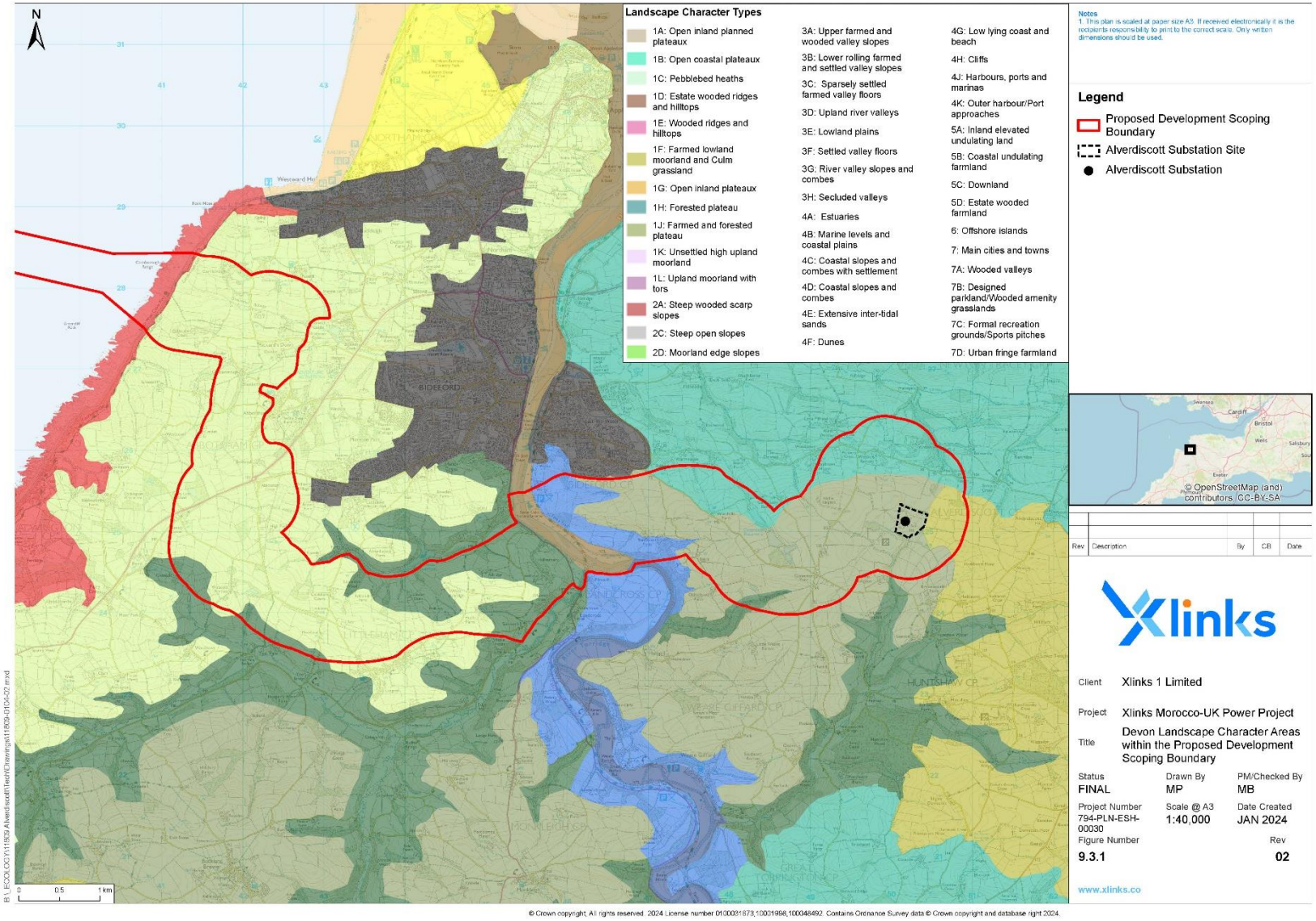

Figure 9.3.1: Devon Landscape Character Areas within the Proposed Development Scoping Boundary

Designated Landscapes

9.3.17 The Proposed Development does not lie within the Core Area of the North Devon UNESCO World Biosphere Reserve (North Devon Biosphere Strategy for Sustainable Development 2014-2024, page 2). The location of all parts of the Proposed Development and study area for the converter stations lie within the Biosphere Reserve Transition Zone, which covers "*the whole of the catchments of the Rivers Taw and Torridge and the offshore marine areas stretching out to Lundy and beyond*" (Biosphere Strategy, page 4).

9.3.18 It is not clear whether the Proposed Development lies within the Buffer Zone to the Core Area. However, it is presumed that as the Onshore HVDC Cable Corridor is routed through the National Landscape, that this element of the Proposed Development does, as the definition of a Buffer Zone includes adjoining areas with supporting designations. Biospheres have three primary functions: conservation; sustainable development; and knowledge generation and sharing. The designation does not prohibit development.

9.3.19 The special features of the North Devon Biosphere Reserve, which are relevant to the landscape, seascape and visual impacts study area include the Culm grasslands, Devon hedgerows and the estuary basin (Biosphere Strategy, page 5). The LVIA will assess whether the special features of the Biosphere Reserve are affected by the Proposed Development.

9.3.20 Exmoor National Park lies outside the 10 km study area/buffer around the Converter Site. The landfall, cable routes, construction compounds and Alverdiscott Substation Connection Development, similarly lie outside the National Park. Due to distance, there is no potential for the Exmoor National Park to experience significant landscape or visual effects.

9.3.21 The North Devon Landscape was designated under the 1949 National Parks and Access to the Countryside Act. The primary purpose of National Landscape designation is "*To conserve and enhance natural beauty*." The Countryside and Rights of Way (CRoW) Act 2000, expands on this. Section 85, of the CRoW Act, requires that public bodies "*have regard to the purpose of conserving and enhancing natural beauty*" of National Landscapes when coming to any decisions or carrying out activities relating to or affecting the designated area (North Devon Coast AONB Management Plan 2019-2024, page 13).

9.3.22 The study area includes the North Devon National Landscape. The landfall and part of the onshore HVDC cable corridor would fall within the North Devon Coast National Landscape. The Converter Site lies approximately 7 km to the east of the North Devon Coast National Landscape. The LVIA will assess whether the special qualities of the National Landscape are affected by the Proposed Development.

Future Baseline Conditions

9.3.23 The EIA process will consider the existing baseline conditions within the study area, and future baseline conditions (as far as reasonably practicable) in accordance with the methodology set out in **Section 5:** EIA Methodology**,** of the Scoping Report for the approach to consideration of future baseline conditions).

Scope of the Assessment

9.3.24 A range of potential impacts on landscape and visual resources have been identified which may occur during the construction, operation and maintenance and decommissioning phases of the Proposed Development.

9.3.25 The impacts that have been scoped into the assessment are outlined in **Table 9.3.2** together with a description of any additional data collection (e.g. site-specific surveys) and supporting analyses (e.g. modelling) that will be required to enable a full assessment of the impacts.

9.3.26 Potential impacts proposed to be scoped out of the assessment are presented in **Table 9.3.3** with justification for why the impact should be scoped out.

Table 9.3.2: Impacts proposed to be scoped into the assessment for landscape, seascape and visual resources

Impact	Phase			Justification	Data collection and analysis proposed to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
Potentially significant change in character (to seascape or landscape designations/types/areas) as a result of offshore and onshore activity (including lighting).	✓	×	×	The Proposed Development could cause direct impacts upon seascape and landscape character.	Desktop analysis of seascape and landscape character with notes and contextual photography, confirmed and refined during site visits.	ZTV production shows where the Proposed Development may influence seascape and landscape character, including any character areas that they are not located within.
Potentially significant effects on publicly accessible views as a result of offshore and onshore activity (including lighting) and use of construction compounds.	✓	×	×	The Proposed Development could be visible to receptors, including: • people using PRoW and Access Land; • marine and land-based dynamic receptors (e.g. users of roads); • marine and land-based receptors engaged in recreational pursuits other than using public rights of way (e.g., people playing golf or yachtsmen); • people at their place of work.	Desktop analysis of mapping with notes confirmed and refined during field work and photography.	ZTV production shows where the Proposed Development has the potential to be visible from. representative viewpoints from publicly accessible locations would be agreed with statutory consultees and views from those locations assessed, as well as assessing more general views available to receptor groups. Wirelines and where appropriate photomontages will be produced to illustrate the Proposed Development
Potentially significant cumulative effects on landscape character from the development of the converter stations, together with one or more other developments	✓	✓	✓	The Proposed Development, together with one or more other projects, could cause direct impacts upon seascape and landscape character.	Desktop analysis of seascape and landscape character with notes and contextual photography, confirmed and refined during site visits. List of potential cumulative projects that may have geographical or temporally overlap with the Proposed Development.	ZTV production for other projects (where relevant details are known) would show where the Proposed Development may influence seascape and landscape character, including any character areas that they are not located within.
Potentially significant effects on publicly accessible views as a result of offshore and onshore activity (including	✓	✓	✓	The Proposed Development, together with one or more other projects, could be visible to receptors, including:	Desktop analysis of seascape and landscape character with notes and contextual photography, confirmed and refined during site visits. List of	ZTV production for other projects (where relevant details are known) would show where the converter stations have the potential to be seen

Impact	Phase			Justification	Data collection and analysis proposed to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
lighting) and use of construction compounds.				• people using PRoW and Access Land; • marine and land-based dynamic receptors (e.g., users of roads); • marine and land-based receptors engaged in recreational pursuits other than using PWoW (e.g., people playing golf or yachtsmen); • people at their place of work.	potential cumulative projects that may have geographical or temporally overlap with the Proposed Development.	in combination with cumulative projects.

*C=Construction, O=Operation and Maintenance, D=Decommissioning

Table 9.3.3: Impacts proposed to be scoped out of the assessment for landscape, seascape and visual resources

Impact	Justification
Construction: All construction phase impacts on landscape, seascape and visual resources and receptors at far distance from the Offshore Cable Corridor and Onshore HVDC Cable Corridor study areas.	The assessment is designed to focus on the likely significant effects of the offshore and onshore cable corridors. Landscape, seascape and visual resources and receptors at distances greater than 1 km from the offshore and onshore cable corridors are not anticipated to experience significant effects.
Construction: All impacts on landscape and visual resources and receptors outside the converter stations study area.	The assessment is designed to focus on the likely significant effects of the converter stations. Landscape and visual resources and receptors at distances greater than 10 km from the Alverdiscott Substation site are not anticipated to experience significant effects.
Operation: All impacts of the offshore and onshore cable corridors on landscape, seascape and visual resources and receptors.	It is proposed that impacts are scoped out for the operation and maintenance phase on the grounds that there will be no significant changes to seascape, landscape or visual resources and receptors as the cables will be buried beneath the seabed/underground. As such, the operation and maintenance phase of the offshore and onshore cable corridors will not be likely to give rise to any adverse seascape, landscape or visual effects that could be considered significant.
Operation: All impacts on landscape and visual resources and receptors outside the Converter Site study area.	The assessment is designed to focus on the likely significant effects of the converter stations. Landscape and visual resources and receptors at distances greater than 10 km from the converter stations are not anticipated to experience significant effects.
Operation and decommissioning: Cumulative impacts of the offshore and onshore cable corridors on seascape, landscape and visual resources.	It is proposed that impacts are scoped out for the operation and maintenance phase on the grounds that there will be no significant changes to seascape, landscape or visual resources and receptors as the cables will be buried under water/underground. As such, the operation and maintenance phase of the offshore and onshore cable corridors will not be likely to give rise to any adverse seascape, landscape or visual cumulative effects that could be considered significant.

Measures Adopted as Part of the Proposed Development

9.3.27 The following measures proposed to be adopted as part of the project are relevant to landscape, seascape and visual resources, considered in addition to the overarching design and embedded measures in **Section 4.8, Table 4.8.1** and **Table 4.8.2.** These measures may evolve as the engineering design and the EIA progresses.

- As part of the design process for the Converter Site, multiple designed-in measures are proposed to avoid or reduce potential seascape, landscape and visual impacts on sensitive resources and receptors. Designed-in measures

relevant to seascape, landscape and visual resources and receptors would include:

  - Significant cut and fill, earth modelling to provide visual screening for the converter stations.
  - Development of an illustrative Converter Site Landscape and Ecology Masterplan as necessary, primarily in relation to the proposed landscape proposals and ecological planting at the converter stations site, but also to reinstate hedgerows through which the cable corridor passes
  - Development of a long-term Landscape and Ecology Management Plan, that's sets out the management and maintenance regimes necessary to achieve successful establishment of the landscape objectives. An outline Landscape and Ecology Management Plan will be developed and submitted as part of the ES.
  - Decommissioning Plan to include measures to avoid or reduce adverse seascape, landscape and visual effects, where practicable, such as by removing cables from jointing bays (without excavation between joint bays).

- A key designed-in mitigation would be the micro-siting of the Converter Site and the micro-routeing of the Onshore HVDC Cable Corridor. This will include seeking to avoid important landscape features where practicable.

9.3.28 The requirement for and feasibility of any mitigation measures has been and will be consulted upon with statutory consultees throughout the EIA process.

Proposed Assessment Methodology

9.3.29 The methodology and further approach to the LSVIA will be developed using current industry best practice - Guidelines for Landscape and Visual Impact Assessment: Third Edition (GLVIA3).

9.3.30 The principle aims of the LSVIA will be to:

- describe and evaluate the existing seascape and landscape character at the site and in the Landscape and Visual Resources study areas, including designated landscapes, in order to identify significant landscape features and special qualities that may be affected by the Proposed Development;
- assess value of non-designated landscapes using the methodology set out in Landscape Institute Technical Guidance Note 02/21: Assessing landscape value outside national designations;
- determine the assessment criteria and the significance thresholds, using established guidance and professional judgement;
- identify sensitive visual receptors with views of the Proposed Development and describe the existing visual relationships between the site and its surrounding area;
- identify the potential effects due to the Proposed Development on the landscape character and views of the site and surrounding area;
- assess the significance of the predicted effects together with criteria used for the assessment;
- Identify any significant cumulative effects; and

- identify the scope of mitigation, which would be in character with the existing landscape.

9.3.31 The temporary effects of the construction phases and the long-term effects relating to the operation and maintenance phase will be assessed. ZTVs have been generated to show the theoretical extent of visibility of the converter stations within the Landscape and Visual Resources study area.

9.3.32 Consideration will be given to the likely seasonal variations in the visibility of the onshore elements of the Proposed Development, including variations in weather conditions and deciduous vegetation. Consideration will also be given to changes in the level of effects likely to take place as mitigation planting proposals mature and existing vegetation continues to grow.

9.3.33 The assessment process will take into account the overall assessment methodology set out in **Section 5**: EIA Methodology, of the Scoping Report, in addition to established guidance, such as GLVIA3. The assessment will be based on maximum design parameters in line with the overarching methodology set out in **Section 5**: EIA Methodology, of the Scoping Report.

9.3.34 The assessment process will follow the approach set out in GLVIA3, regarding the identification of resource and receptor sensitivity (susceptibility and value), impact magnitude and evaluation of significance of effects.

9.3.35 The sensitivity of landscape, seascape and visual resources and receptors will be identified, together with the predicted magnitude of impact on that resource or receptor. Taking this into account, the significance of effect will be described for each resource (or receptor) during the construction, operation and maintenance and decommissioning of the Proposed Development. In addition, the significance of effect will be described at 15 years' establishment of the landscape proposals where relevant.

9.3.36 The evaluation of significance will be underpinned by a narrative approach, based on professional judgement.

Potential Cumulative Effects

9.3.37 The cumulative assessment will consider the effects of the Proposed Development with other planning applications. There is potential for cumulative effects on sensitive receptors to occur when the Proposed Development is considered together with other developments.

9.3.38 The scope of the cumulative assessment (in terms of other developments to be included) will be identified in consultation with stakeholders, including Natural England and relevant Local Authorities.

9.3.39 The cumulative effects assessment would be undertaken in accordance with the methodology set out in **Section 5**: EIA Methodology, of the Scoping Report and GLVIA3.

9.3.40 In accordance with GLVIA3, the types of cumulative effects that would be considered in the assessment of landscape and visual resources would include:

- effects of extension to an existing development;
- filling an area with the same development or different types of development over time;
- interactions between different types of development;

- incremental change as a result of successive individual development;
- temporal cumulative effects;
- indirect effects of development such as enabling other further development; and
- future actions that remove elements which may have consequences for other existing or Proposed Development.

9.3.41 It is not considered that operation and maintenance of the offshore and onshore cables will result in significant effects on landscape, seascape and visual resources either alone or cumulatively with other developments, as they will not be visible for potential receptors during operation with limited maintenance required. Therefore, it is proposed that the potential cumulative effects arising from operation and maintenance of the offshore and onshore HVDC cables are scoped out of the cumulative effect assessment for landscape and visual resources.

Potential Inter-related Effects

9.3.42 The assessment of potential inter-related effects will be considered within the landscape, seascape and visual resources ES chapter. It will include consideration of project lifetime effects and receptor-led effects in line with the approach outlined in **Section 5**: EIA Methodology, of the Scoping Report. For example:

- Historic Environment:
  - Landscape and visual impacts associated with construction and operation and maintenance of the onshore elements of the Proposed Development may impact the setting of above ground heritage assets and historic landscape patterns.
- Land Use and Recreation:
  - Landscape and visual impacts associated with construction and operation and maintenance of the onshore elements of the Proposed Development may impact the visual amenity of users of PRoWs and other recreational resources.

Potential Transboundary Impacts

9.3.43 A screening of transboundary impacts has been carried out and is presented in **Appendix A**: Transboundary Impacts Screening. This screening exercise identified that there is no potential for transboundary impacts upon landscape and visual resources due to construction, operational and maintenance and decommissioning impacts of the Proposed Development.

9.4 Socio-economics

Introduction

9.4.1 This section of the Scoping Report identifies the socio-economic and tourism receptors relevant to the Proposed Development. This section also considers the potential impacts arising from the construction, operation and maintenance and

decommissioning of the Proposed Development and identifies the proposed scope of, and methodology for, the EIA process for the socio-economics and tourism ES chapter.

Relevant Policy, Legislation and Guidance

Legislative and Policy Context

9.4.2 The following key legislation and policy documents relevant to socio-economics and tourism will be considered within the assessment process:

- Adopted NPSs (Department of Energy & Climate Change, 2011) and updated NPSs (Department for Energy Security and Net Zero, 2023);
- Ministry of Housing, Communities and Local Government (2021), National Planning Policy Framework;
- Devon County Council (2021), Devon County Council Strategic Plan 2021-2025;
- North Devon Council and Torridge District Council (2021), North Devon Economic Recovery Plan;
- Heart of The South West Local Enterprise Partnership (2020), The Local Industrial Strategy;
- The Great South West Tourism Partnership (2021), Towards 2030: Reimagining the Visitor Economy in the South West;
- Department of Business, Energy and Industrial Strategy (2022), British Energy Security Strategy; and
- Department of Business, Energy and Industrial Strategy (2021), Net Zero Strategy: Build Back Greener.

Guidance Documents

9.4.3 The assessment of socio-economics for each activity will comply with the EN-1 Overarching National Policy Statement for Energy (Department of Energy & Climate Change, 2011; Department for Energy Security and Net Zero, 2023).

9.4.4 In section 5.13, this guidance outlines the impacts which need to be considered as part of any socio-economic impact assessment of an energy project in England. These include:

- the creation of jobs and training opportunities;
- the contribution to the development of low-carbon industries at the local and regional level as well as nationally;
- the provision of additional local services and improvements to local infrastructure, including the provision of educational and visitor facilities;
- any indirect beneficial impacts for the region hosting the infrastructure, in particular in relation to use of local support services and supply chains;
- effects on tourism;
- the impact of a changing influx of workers during the different construction, operation and decommissioning phases of the energy infrastructure; and

- cumulative effects.

Study Area

9.4.5 For the assessment of economic impact assessment, the following data sources were considered:

- Devon, as represented by the County Council area; and
- the UK.

9.4.6 The onshore tourism and recreation receptors have been identified based on those likely to experience significant environmental effects, as identified in other chapters. The largest are considered in other chapters of the assessment is landscape, seascape and visual impact, which considers a 10 km zone around the Converter Site. All onshore tourism and recreation receptors considered in the assessment will be located in a study a study area of within 10 km of the converter station. The overall effect on Torridge tourism economy, as defined by the district council area, will also be considered.

9.4.7 When considering effects related to energy, the effect on the GB will be considered.

Data Sources

9.4.8 The data sources used to inform the baseline assessment will primarily comprise the most up-to-date available data. The sources outlined will be used to inform the socio-economic baseline, the tourism baseline and the energy baseline.

9.4.9 The baseline data sources identified in this Scoping Report will remain under review and may be updated in response to feedback from relevant statutory and non-statutory consultees during the EIA process, or in response to new sources of information becoming available.

Desk-based Data Sources

9.4.10 An initial desk-based review has identified a number of data sources which provide baseline data coverage of socio-economics and tourism. These data sources are summarised in **Table 9.4.1**.

Table 9.4.1: Baseline data sources – socio-economics and tourism

Source	Summary
Office for National Statistics (ONS) (2023), Annual Population Survey 2022	Statistics on the labour force, including the rates of economic activity and unemployment
ONS (2023), Business Register and Employment Survey 2022	Sectoral composition of employment
ONS (2023), Annual Survey of Hours and Earnings 2022	Local and national wage data
ONS (2023), Population estimates 2021 - local authority based by five year age band	Local and national population, broken down by age

Source	Summary
ONS (2020), Population Projections 2018-2043 - local authority based by single year of age	Local and national population projections, broken down by age
Kantar TNS (2020), The Great Britain Day Visitor Survey 2019	A data source that sets out the number of day visitor trips and the total spending in each local authority area
Kantar TNS (2020), The Great Britain Tourism Survey 2019	A data source that sets out the number of domestic overnight trips and the total spending in each local authority area
ONS (2020), International Passenger Survey	A data source that sets out the number of overseas overnight trips and the total spending in each local authority area
Department for Energy Security and Net Zero (2023), UK Energy in Brief 2023 (2023)	Statistics on the composition of energy in the UK, including the share of electricity and renewable energy.
Ofgem (2022-2023), Default tariff cap level	Documents which set the cap on how much energy firms can charge households.

Baseline Environment

Existing baseline conditions

Devon

9.4.11 The total population of Devon in 2021 is estimated to be 814,400 people (Office for National Statistics, 2023). Of the population, 58% is aged between 16 and 64 compared to the UK average of 63%. In 2022, 77.1% of people in Devon were employed and 2.2% were unemployed (compared to the UK average of 75.5% and 3.6%).

9.4.12 In 2022, the largest sector in Devon was wholesale and retail trade, where 16.4% of all those employed worked, higher than the share across GB at 14.4%. Similarly, accommodation and food services were a relatively important sector for employment, with 11.1% of all those employed working in this industry in Devon compared to 7.5% in GB. Employment in construction in Devon (5.8%) was also higher than GB (5.0%) (Office for National Statistics, 2023).

9.4.13 Tourism is a significant economic sector in Devon. Key tourist attractions within the Area of Search include the BIG Sheep Farm and Theme Park and the village of Westward Ho! Tourist accommodation is served by a large number of holiday parks, camping sites, hotels and bed and breakfasts, as well as privately rented accommodation.

Energy

9.4.14 In 2021, gas was the single largest contributor to the UK's energy system, accounting for over 40% of the UK's energy consumption (DESNZ, 2023). Given this role, the price of energy in the UK is strongly correlated with the price of gas. The price of gas is determined on global markets, which the UK does not control. Throughout 2022, due to ongoing geo-political tensions between Russia and Ukraine the price of gas increased considerably, leading to substantially higher energy costs.

9.4.15 This was reflected in the increased cost of electricity, and the Government has identified increased diversification as an important way to increase the security of supply and reduce vulnerability to international markets.

Future Baseline Conditions

Devon

9.4.16 Population projections for the period to 2043 (which are the latest available projections and based on 2018 data), forecast an 18.0% increase in Devon's population, much higher than for the UK as a whole (9.0% increase).

9.4.17 It is expected that the working age population will increase by 27,000 in this time period. However, the proportion of residents aged 16-64 is projected to decrease by 4.8 percentage points to 53.5% over the period, compared to a 3.9 percentage point decrease to 59.0% in the UK.

9.4.18 It is projected that the proportion of the residents aged 65+ will also increase for both Devon and the UK. In Devon, this group is expected to account for 32.1% of the total population in 2043, an increase of 6.2 percentage points from 2021. This is equivalent to an additional 90,000 people. The UK's share of residents aged 65+ is expected to increase by 5.7 percentage points to 24.0% of the population in 2043 (Office for National Statistics, 2020).

9.4.19 Tourism will continue to be a significant economic sector in Devon in the years to come. The key reasons for visiting Devon, such as the beaches, natural landscape and climate, have supported an active tourism economy for hundreds of years and these drivers of tourism will not change in future years. It is expected that the tourism economy will continue to grow in the future and is the subject of development strategies such as Towards 2030, Reimagining the Visitor Economy in the South West (The Great South West Tourism Partnership, 2021). which expects the sector to grow by between 4% and 12% from 2019 to 2030.

Energy

9.4.20 The UK Government has identified increased electrification as the predominant path to reaching Net Zero and decarbonising all sectors of the economy, including areas such as heating and transport. This will require a significant increase the volume of electricity from renewable sources, as well as diversification of energy supply to complement intermittent sources of electricity such as solar and wind.

Scope of the Assessment

9.4.21 A range of potential impacts on socio-economics and tourism have been identified which may occur during the construction, operation and maintenance, and decommissioning phases of the Proposed Development.

9.4.22 The impacts that have been scoped into the assessment are outlined in **Table 9.4.2** together with a description of any additional data collection and supporting analyses that will be required to enable a full assessment of the impacts.

9.4.23 No identified impacts, relevant to socio-economics and tourism, have been proposed to be scoped out.

Table 9.4.2: Impacts proposed to be scoped into the assessment for socio-economics and tourism

Impact	Phase			Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
Economic impact and increased employment from onshore activity	✓	✓	✓	The Proposed Development will generate economic activity	Analyse the capacity of the local and national to undertake contracts	Assess the total spend/activity in each study area
Economic impact and increased employment from offshore activity	✓	✓	✓	The Proposed Development will generate economic activity, as it builds and maintains offshore infrastructure (e.g. the cable)	Analyse the capacity of the local and national to undertake contracts	Assess the total spend/activity in each study area
Impact on tourism economy	✓	✓	✓	The Proposed Development may result in disruption to the visitor economy and reduced visitor spending	Collect information about the location and characteristics of local visitor attractions and accommodation providers	Assess the impact on the characteristics of local tourism assets
Impact on British energy consumers	×	✓	×	The Proposed Development is expected to increase security of supply and lower energy prices	Collect data on the UK's energy system and increased demand in the future	Quantify the contribution to energy system
Impact on local housing market	✓	×	✓	The Proposed Development is expected to attract transient workers to the area and the local housing market has been identified as sensitive. Impacts are unlikely to be significant during the operations phase	Collect data on housing provision in the local area.	Use employment impacts to estimate additional housing demand. Assess impact of transient workforce on accommodation supply locally, including mitigation measures outlined in the Accommodation Plan.

*C=Construction, O=Operation and Maintenance, D= Decommissioning.

Measures Adopted as Part of the Proposed Development

9.4.24 The following measures proposed to be adopted as part of the project are relevant to socio-economics and tourism, considered in addition to the overarching design and embedded measures in **section 4.8, Table 4.8.1** and **Table 4.8.2.** These measures may evolve as the engineering design and the EIA progresses.

- Development and implementation of the Onshore CEMPs, which will ensure the construction phase is managed in accordance with standard industry good practice.
- Implementation of the CTMP.
- Engagement with community.
- Engagement with local companies and stakeholders.
- Screening of converter stations.

Proposed Assessment Methodology

Assessment of Socio-Economic Effects

9.4.25 The method to assess socio-economic effects is based on industry best practice. It will involve considering the share of contracts that can be secured in each study area, and the level of economic activity and employment that can be supported as a result.

9.4.26 The units of measurement used to quantify the economic impacts of the Proposed Development are:

- Gross Value Added (GVA): this is a measure of the economic value added by an organisation or industry;
- years of employment: this is a measure of employment which is equivalent one person being employed for an entire year and is typically used when considering the short-term employment impacts, such as those associated with construction; and
- jobs: this measure is used when considering impacts on employment over longer time periods, it focuses on the annual employment supported.

9.4.27 There are three sources of economic activity that will be associated with the Proposed Development:

- activity and jobs supported by expenditure on contract elements (direct effect);
- jobs and economic activity supported by the wider spending in the supply chain (indirect effect); and
- jobs and economic activity supported by people employed in delivering these contracts spending their income in the economy (induced effect).

9.4.28 There are four key stages in this process:

- estimation of the capital expenditure;
- estimation of the value of contract elements that make up total expenditure;

- assessment of the capacity of businesses in the study area to perform and complete contract elements; and
- estimation of economic impact from resultant figures.

9.4.29 The starting point for estimating the economic activity supported by the Proposed Development is the anticipated level of expenditure during the construction and development phase. As the Proposed Development is at an early stage of development, assumptions about the level of expenditure will be made based on industry reports and estimates from the Applicant, though these are likely to be subject to further refinement.

9.4.30 Assumptions will then be made on the proportion of expenditure associated with each component that could be secured in each of the study areas, based on author's understanding of the sector gained from previous experience working on similar projects as well as the socio-economic baseline.

9.4.31 The assessment will consider the additionality of these economic impacts, in line with the UK Government Green Book (2022). In particular, this will consider displacement, leakage, deadweight and substitution.

Assessment of Tourism Effects

9.4.32 Tourism effects on individual attractions and clusters of accommodation providers will be assessed based on identifying the key features of tourism assets in the area, and then considering whether the Proposed Development would impact those, e.g. whether access or views from accommodation would be affected. The overall effect on the tourism economy will then be considered on the basis of these effects.

Assessment of Energy Effects

9.4.33 The assessment of energy effects will be based on the contribution that the Proposed Development will make to British consumers due to lower prices and increased diversification of supply.

Potential Cumulative Effects

9.4.34 The Proposed Development is part of a wider programme of investments, which will include building circa 11.5 GW of solar and wind energy generating capacity in Morocco, supplying 3.6 GW of energy to Britain via approximately 16,000 km of HVDC cabling (four cables in total), which are proposed, where feasible, to be manufactured in the UK. Therefore, it is anticipated that the manufacturing of this cable will be considered as part of the cumulative assessment.

9.4.35 In addition, the assessment will consider the potential effects associated with additional infrastructure, such as the expansion of the grid, which are needed to bring the electricity generated to consumers.

Potential Inter-related Effects

9.4.36 While impacts related to socio-economics and energy are not expected to have any substantial inter-relationship with other topic areas, effects related to traffic, noise and visual impact may affect some tourism related businesses. This will be considered as necessary.

Potential Transboundary Impacts

9.4.37 A screening of transboundary impacts has been carried out and is presented in **Appendix A**: Transboundary Impacts Screening. This screening exercise identified that there is potential for transboundary impacts upon other economic study areas due to construction and operational and maintenance impacts of the Proposed Development. These include:

- the development, construction and operation of renewable energy generation assets in Morocco; and
- the installation of an offshore HVDC cable which passes the through international waters and near to other countries.

9.4.38 Given that these socio-economic impacts are likely to be positive, and will happen outside of the UK they have been scoped out.

9.5 Human Health

Introduction

9.5.1 This section of the Scoping Report identifies the human health receptors relevant to the offshore and onshore elements of the Proposed Development. This section also considers the potential impacts arising from the construction, operation and maintenance and decommissioning of the Proposed Development and identifies the proposed scope of, and methodology for, the EIA process for the human health ES chapter.

9.5.2 The human health chapter of the ES will meet EIA requirements in relation to assessing the likely significant (adverse and beneficial) effects of the Proposed Development on human health. The chapter will provide a public health perspective on impacts by:

- taking a population health approach to addressing physical and mental health outcomes;
- considering the wider determinants of health, that may be significantly affected (directly or indirectly);
- assessing the potential for health inequalities to vulnerable groups; and
- considering opportunities to improve the Proposed Development to further benefit population health.

9.5.3 The potential for the Proposed Development to change population health outcomes may arise from various health pathways, and the health assessment will draw inputs from the residual effect conclusions of other ES chapters, including: transport modes, access and connections; air quality; water quality; land quality; and noise and vibration.

Relevant Policy, Legislation and Guidance

Legislative and Policy Context

9.5.4 The following key legislation and policy documents relevant to human health chapter will be considered within the assessment process:

National

- National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government, 2023)
- National Planning Practice Guidance (NPPG) (Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government, 2021)
- Relevant National Policy Statements (NPS) (Department of Energy & Climate Change, 2011; Department for Energy Security and Net Zero, 2023)
- UK Marine Policy Statement (MPS) (Department for Environment, Food & Rural Affairs, 2011)

Regional

- South West Inshore and South West Offshore Marine Plan (HM Government, 2021)

Local

- North Devon and Torridge Local Plan 2011 – 2031 (Torridge District Council, 2018)

Guidance Documents

9.5.5 Guidance documents relevant to human health, that will be considered within the assessment process include the following:

- Institute of Environmental Management and Assessment (IEMA) guidance on health in EIA series: effective scoping and determining significance (Pyper *et al*., 2022; Pyper *et al*., 2022)
- Institute of Public Health (IPH) guidance: Standalone Health Impact Assessment and health in environmental assessment. (Institute of Public Health, 2021)
- International Association for Impact Assessment and European Public Health Association. A reference paper on addressing Human Health in EIA (International for Impact Assessment & European Public Health Association, 2020) and academic discussion of the same (Cave *et al*., 2020)
- Public Health England Health Impact Assessment in spatial planning (Public Health England, 2020)
- World Health Organisation (WHO) guidelines on air quality and noise (Berglund *et al*., 1999; World Health Organization, 2009; WHO, 2018; WHO, 2021).

Study Area

9.5.6 The human health assessment will be informed by the study areas, zones of influence and receptors impacted or potentially impacted by other ES topic chapters (see **Figure 9.5.1**). This will enable the effects on human health to be better understood. It is noted that the study areas for these topics do not necessarily define the boundaries of potential population health effects. As such,

the human health assessment also defines human health study areas in order to broadly characterise representative population groups. As the relevant population varies depending on the determinant of health discussed a range of areas is required:

National

- England and UK

Regional

- South West England

Local

- Torridge District Council

Site-specific health study area

- E05011926 Monkleigh & Putford (for landfall);
- E05011917 Bideford East (for the Onshore HVDC Cable Corridor, representative of higher deprivation);
- E5011919 Bideford South (for the Onshore HVDC Cable Corridor);
- E05011929 Two Rivers & Three Moors (for the converter stations); and
- E05011923 Hartland (to capture Lundy Island for the Offshore Cable Corridor).

9.5.7 The wider determinants of health and health inequalities are key considerations when undertaking an assessment of human health as part of EIA. The following population groups are present and would be considered:

- The ‘general population’ including residents, workers, service providers, and service users; and
- The ‘vulnerable group population’ including potential vulnerability due to: young age, older age, low income, poor health status, social disadvantage, restricted access or geographic proximity to the Proposed Development’s activities.

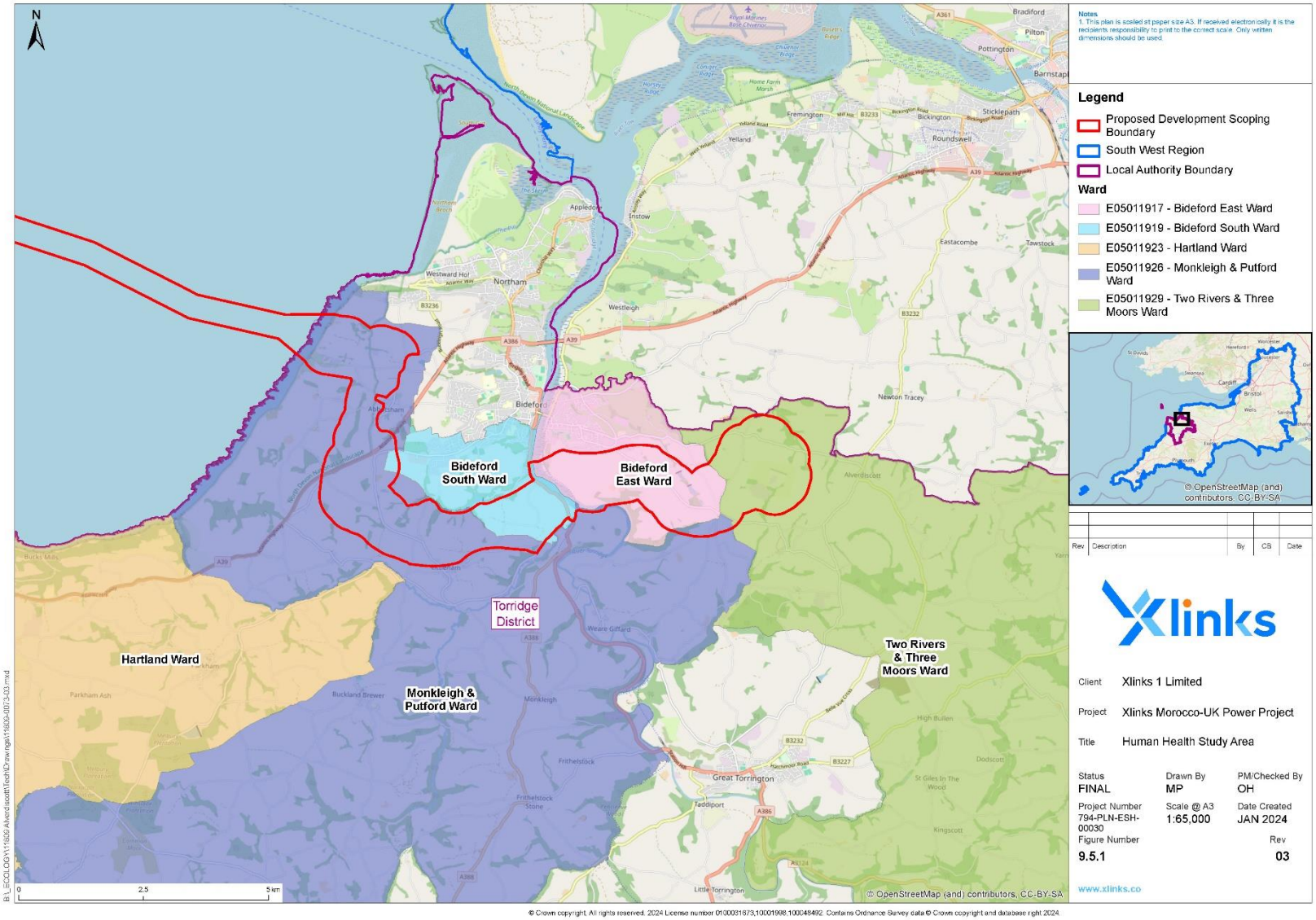

Figure 9.5.1: Human health study area

Data Sources

9.5.8 The following information has been considered during the scoping process and would be considered further within the ES where relevant matters are scoped into the EIA process.

9.5.9 Data on health-related statistics would be sought to highlight key sensitivities at the local authority level and for representative wards. The health baseline would be used to characterise the sensitivity of the relevant populations rather than to delineate the extent of particular effects. This is appropriate given that, for example, mental health effects may extend well beyond the actual area of environmental change or socio-economic benefit.

9.5.10 The data sources used to inform the baseline assessment will primarily comprise of existing studies and datasets (Ministry of Housing, Communities & Local Government, 2019; Office for National Statistics, 2021; Office for Health Improvement & Disparities, 2023).

9.5.11 The baseline data sources identified in this Scoping Report will remain under review and may be updated in response to feedback from relevant statutory and non-statutory consultees during the EIA process, or in response to new sources of information becoming available.

Desk-based Data Sources

9.5.12 An initial desk-based review has identified a number of data sources which provide baseline data coverage of the human health study area. These data sources are summarised in **Table 9.5.1**.

Table 9.5.1: Baseline data sources – human health

Source	Summary	Year	Author
Public health indicators, England	Fingertip's resource	2011 to 2023	(Office for Health Improvement & Disparities, 2023)
Census 2021	Census 2021 data	2021	(Office for National Statistics, 2021)
Site-specific health mapping	Local health	2011 to 2023	(Office for Health Improvement & Disparities, 2023)
Small area deprivation mapping	Index of Multiple Deprivation	2019	(Ministry of Housing, Communities & Local Government, 2019)

Baseline Environment

9.5.13 The following baseline data is from the Office for Health Improvement & Disparities (2023). At this stage baseline indicators have been selected to provide a general coverage of the wider determinants of health. Small area data will be provided in the PEIR and ES human health chapters.

9.5.14 Demographic indicators show that the percentage of the population under 15 is slightly lower Torridge (15.5%) compared to the national average of 18.5%. For older age, compared to the national average (18.3%), the percentage of the

population aged 65+ is higher in Torridge (28.4%). In contrast, the percentage of the working age group (16-64) is lower in Torridge (56.2%) compared to the national average (63%).

9.5.15 Using deprivation as a health resilience indicator, the Indices of Multiple Deprivation (Ministry of Housing, Communities & Local Government, 2019) shows Torridge as amongst the 40% most deprived neighbourhoods in the country. For the site-specific study area, Monkleigh & Putford is ranked amongst the 40% most deprived neighbourhoods in the country, followed Bideford East, Bideford South and Two Rivers & Three Moors (ranked amongst the 50% most deprived neighbourhoods in the country).

9.5.16 Overall health can be informed by life expectancy indicators. For men, the life expectancy at birth is generally higher (better) in Torridge (81.2) than the regional (80.1) and national (78.7) averages. Similarly for women, the life expectancy at birth is generally higher (better) in Torridge (84.9) than the regional (83.9) and national (82.8) averages.

9.5.17 In relation to health inequalities in Torridge, inequality in life expectancy at birth in males (5.9 years) is lower than the national average (9.7 years). Similarly, inequality in life expectancy at birth in females in Torridge (3.3 years) is lower than the national average (7.9 years). However, the proportion of children in absolute low-income families in Torridge (18%) is higher (worse) than the national average (15.3%), and the percentage of people in employment (16 to 64 years) in Torridge District (76.9%) is not significantly different to the national average (75.4%).

9.5.18 Changes to the physical, social, and economic environment can influence health behaviours as measured through health lifestyle indicators. The prevalence of overweight (including obesity) for children aged 4 to 5 years (22.9%) and 10 to 11 years (35.3%) in Torridge are not significantly different to the national averages (22.3% and 37.8%). The percentage of adults classified as overweight or obese (aged 18+) (65%) in Torridge is slightly higher (worse) but not significantly different to the national average (63.8%). The percentage of physcially active adults (19+ years) (68.8%) in Torridge is slightly better (higher) but not significantly different to the national average (67.3%).

Future Baseline Conditions

9.5.1 Population health data presents a snapshot at a particular time. It is well recognised that population health is subject to continuing influences, both at the individual and community level. Influences may be environmental, such as seasonal variation in wellbeing and communicable diseases, they may also respond to socio-economic factors, such as migration and the availability of jobs.

9.5.2 Longer term trends and interventions in population health may influence the future baseline. Health and social care, public health initiatives and government policies aim to reduce inequalities and improve quality of life. The historic success of such interventions is increasingly challenged by national trends such as an aging population, rising levels of obesity and the COVID-19 pandemic. The implications of COVID-19 for public health will take years to be reflected within statistical data releases, but it is expected that the pandemic will have exacerbated public health challenges. The pandemic disproportionately affected vulnerable groups, including due to age and ill-health.

9.5.3 Climate change may also exacerbate physical and mental health risk factors, particularly around flooding and extremes of temperature.

9.5.4 It would not be proportionate (or consistent with the qualitative assessment approach taken) to quantitatively model the population's future health and as such this modelling is not proposed to be undertaken. This reflects the complexities of interactions between the wider determinants of health, as well as the potential for macro-economic changes in the next decade that are hard to predict. Any predication would have such wide error margins that it would greatly limit the value of the exercise. Annual national population health trend forecasting is undertaken as a government public health activity (HM Government, 2021b) and would be taken into account by the health assessment.

Scope of the Assessment

9.5.5 A range of potential impacts on human health have been identified which may occur during the construction and operation and maintenance phases of the project.

9.5.6 The impacts that have been scoped into the assessment are outlined in **Table 9.5.2**: Impacts proposed to be scoped into the assessment for human health (onshore with justification.

9.5.7 Potential impacts proposed to be scoped out of the assessment are presented in **Table 9.5.3**: Impacts proposed to be scoped out of the assessment for human health, with justification.

9.5.8 Health and wellbeing are influenced by a range of factors, termed the 'wider determinants of health'. Determinants of health span environmental, social, behavioural, economic and institutional factors. Determinants therefore reflect a mix of influences from society and environment on population and individual health.

9.5.9 The Human Health chapter aims to be proportionate and would consider only those determinants of health with the potential for likely and significant population health effects.

9.5.10 As detailed within **paragraph 9.5.4**, it would not be proportionate (or consistent with the qualitative assessment approach taken) to quantitatively model the population's future health and as such this modelling is not proposed to be undertaken.

Table 9.5.2: Impacts proposed to be scoped into the assessment for human health (onshore)

Impact	Phase			Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
Social Environment						
Transport modes, access and connections	✓	×	×	Onshore: The impacts arising from construction of any new or amended highways junctions and from changes in traffic flow scoped in. There is the potential that construction works (construction site activities as well as vehicle traffic associated with construction activities) may disrupt local vehicle traffic (private and public transport) as well as active travel (pedestrians and cyclists). Effects to active travel from any temporary diversions and arising from the operation of any new or amended highways junctions are scoped in.	No new surveys. Use of existing public health data sources. Literature and policy review.	Qualitative assessment informed by the Traffic and Transport ES chapter.
Open space, leisure and play	✓	×	✓	Onshore: Works may lead to temporary disruption of access to PRoW and open spaces, potentially affecting recreational activities. Impacts arising from changes to access to PRoW or open space are scoped in. Consideration has also been given to the influences on nearshore recreation, e.g., bathing, sailing and other water sports. Temporary construction disruption of access to green and blue open space (natural land and water spaces) is scoped in. This includes considering the need for any temporary or permanent provision for alternative space or access.	No new surveys. Use of existing public health data sources. Literature and policy review.	Qualitative assessment informed by the Land Use and Recreation ES chapter.
Housing	✓	×	×	Onshore: The housing needs of the Proposed Development's workforce is scoped in to consider community implications, housing quality and any legacy opportunities. Consideration will also be given to the potential for temporary housing market changes may affect key worker recruitment and community cohesion, as well as indirect impacts on economic outcomes inducing seasonal tourism bedspaces.	No new surveys. Use of existing public health data sources. Literature and policy review.	Qualitative assessment informed by the Socio-economic ES chapter.
Economic Environment						
Employment and income	✓	×	×	Offshore: Health effects from wider indirect economic impacts, for example temporary changes to commercial fishing, are considered. Any potential unemployment or adverse economic implications are scoped in.	No new surveys. Use of existing public health data sources. Literature and policy review.	Qualitative assessment informed by the Commercial

Impact	Phase			Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
						Fisheries ES chapter.
Bio-physical Environment						
Air quality	✓	×	✓	Onshore: The potential effects resulting from emissions to air, including dust emissions and other pollutants, such as emissions from traffic have been considered.	No new surveys. Use of existing public health data sources. Literature and policy review.	Qualitative assessment informed by the Air Quality ES chapter.
Water Quality	✓	×	✓	Onshore: The impacts resulting from emissions to water, including runoff or spillages from construction areas to ground or surface water have been scoped in.	No new surveys. Use of existing public health data sources. Literature and policy review.	Qualitative assessment informed by the Hydrology and Flood Risk ES chapter.
Land quality	✓	×	✓	Onshore: The potential effects of the Proposed Development on land and soil, including runoff or spillages from construction areas are considered.	No new surveys. Use of existing public health data sources. Literature and policy review.	Qualitative assessment informed by the Land Use and Recreation ES chapter.
Noise and vibration	✓	✓	✓	Onshore: The noise effects resulting from noise emissions and vibration during construction, and from the operation of the Proposed Development (including operational noise effects related to the converter station), are scoped in. The human health chapter is informed by the noise and vibration assessment of changes to daytime and night-time noise.	No new surveys. Use of existing public health data sources. Literature and policy review.	Qualitative assessment informed by the Noise and Vibration ES chapter.
Public understanding of risk	×	✓	×	Onshore: Impacts arising from EMFs in terms of public understanding of risks affecting mental health and wellbeing are scoped in. The focus is on the Proposed Developments onshore electrical infrastructure, such as the converter stations.	No new surveys. Use of existing public health data sources. Literature and policy review.	Qualitative assessment in line with IEMA guidance and good practice.

Impact	Phase			Justification	Data collection and analysis required to characterise the baseline environment	Summary of the proposed approach to assessment
	C	O	D			
Institutional and built environment						
Wider societal infrastructure and resources	×	✓	×	The electrical infrastructure facilitates the benefits accrued from the renewable energy generating assets. The Proposed Development would provide energy infrastructure that supports many aspects of public health through energy security. A reliable supply of electricity is required in relation to factors including, population food safety, thermal comfort, healthcare, learning, income generation and social networking.	No new surveys. Use of existing public health data sources. Literature and policy review.	Qualitative assessment in line with IEMA guidance and good practice.
Health and social care services	✓	×	×	Onshore: The Proposed Development's workforce is assumed to include a high proportion of people who are residents in the regional area. The UK workforce would have NHS entitlement irrespective of place of residence. UK workers away from their usual place of residence for a prolonged period would be able to register with local primary healthcare on a temporary basis. This would facilitate NHS funding for their care. Any multinational workers are assumed to be covered by health insurance provisions that would allow the NHS to recoup costs to an extent that avoided any significant adverse effect on healthcare services. This is routine practice across industries and sectors. It is not expected that a high proportion of workers would move to the area with dependants requiring social care. Health protection measures such as screening and immunisations are expected to continue from the workers' usual place of residence. Similarly routine dental appointments are assumed to be with the worker's dental practice close to their usual place of residence. The expectation is that the great majority of healthcare needs of the Proposed Development's workforce will therefore be met. However, this issue is scoped in to confirm that any temporary peak pressures on very local primary care GP surgeries would be appropriately managed, e.g., with protocols that direct workers to use 111 and occupational health routes appropriately, including alignment with workforce accommodation planning.	No new surveys. Use of existing public health data sources. Literature and policy review.	Qualitative assessment informed by the Socio-economic ES chapter.

*C=Construction, O=Operation and Maintenance, D=Decommissioning

Table 9.5.3: Impacts proposed to be scoped out of the assessment for human health

Impact	Justification
Health related behaviours	
Physical activity	Offshore: Physical activities opportunities are not affected by offshore works and is scoped out. This applies to all phases.
	Onshore: Physical activity is an important determinant of health. However, to avoid duplication this issue is addressed under 'Open space, leisure and play'. This determinant is therefore scoped out. This applies to all phases.
Risk taking behaviour	Offshore: Community health behaviours are not affected by offshore workforces. When passing through ports in transit to their usual place of residence these skilled professionals are not considered likely to affect community behaviours or affect local markets, e.g., for alcohol, cigarettes or gambling, to an extent which could significantly affect community health. This applies to all phases.
	Onshore: Issues of community health behaviours being detrimentally affected by the presence of the workforce are scoped out. This reflects a workforce of professionals who are assumed to return to their usual place of residence during periods of leave. The workforce is unlikely to be sufficiently large in number to affect local markets, e.g., for alcohol, cigarettes or gambling, to an extent which could significantly affect community health. This applies to all phases. It is noted that, although present over a longer duration, minimal operational workforce numbers are anticipated to check and maintain the onshore infrastructure.
Diet and nutrition	Offshore: Activities are neither expected to require agricultural land take, nor disrupt food related production or transport. Effects on diet due to impacts to commercial fisheries have been considered, see **Table 9.5.2**: Impacts proposed to be scoped into the assessment for human health (onshore for economic implications, but are scoped out in relation to diet. There are no anticipated effects on the availability or price of food. This applies to all phases.
	Onshore: Construction may require some temporary reduction in availability or quality of agricultural land. This is however not considered to be on a scale that could change population diet or food prices and therefore significantly affect population health. This issue is therefore scoped out. No effects on diet and nutrition are expected from operation of the Proposed Development, as there would be no, or minimal, further disturbance of agricultural lands. This issue is therefore scoped out.
Social environment	
Housing	Offshore: Housing related issues are scoped out. The workforce will have housing requirements, but it is expected that a high proportion will be resident in the regional area or would be based aboard their vessels unless traveling to their usual place of residence. Any temporary accommodation requirements would be met through usual capacity for such activities around ports. There is not considered to be the potential for a likely significant population health effect associated with changes in the availability of housing for this workforce that would be predominantly based aboard vessels with only occasional temporary housing needs, e.g. a night in a Bed and Breakfast, whilst in transit to their usual place of residence.
	Onshore: Minimal operational workforce numbers are anticipated to check and maintain the Proposed Development. There is not considered to be the potential for a likely significant population health effect, this issue is therefore scoped out for the operational phase. The onshore infrastructure, is relatively low impact in terms of its built form, limiting the potential for any widespread adverse effect on housing value or affordability at a population level. This issue is therefore scoped out. Effects during decommissioning are expected to be less intensive than during construction with fewer workers and likely a shorter duration. Housing market effects to population health for the decommissioning phase are therefore scoped out.

Impact	Justification
Relocation	Offshore: Neither offshore works nor port activities would involve compulsory purchases of homes or community facilities. The issue is therefore scoped out. This applies to all phases.
	Onshore: Onshore works would not involve compulsory purchases of homes or community facilities. The issue is therefore scoped out. This applies to all phases.
Open space, leisure and play	Offshore: Offshore and port activities are not expected to affect access to areas of open space that could significantly affect population health. This reflects use of existing port areas and designated shipping routes near ports. Furthermore, offshore activities would be a considerable distance from land, so have limited potential to effect marine leisure on a scale that could be influential to public health. This issue is therefore scoped out.
	Onshore: During operations and maintenance, permanent land take for the Proposed Development is not within, or adjoining, land that is publicly accessible. Therefore, the Proposed Development change is unlikely to significantly affect physical, mental or social health aspects of community recreation. The issue is therefore scoped out.
Transport modes, access and connections	Offshore: During construction, the Proposed Development is not expected to disrupt shipping lanes affecting nearby island communities such as Lundy. Any access effect for ferry routing from the presence of vessels engaged in cable laying would be temporary and managed by normal navigational safety and minor re-routing processes. Such effects would not be expected to result in ferry cancellations or delays on a scale that could affect medical or other health related deliveries or trips. The potential impact of changes to shipping access is scoped out. The route passes to the west of the Isles of Scilly and is therefore not expected to affect shipping and access to the island from the English mainland. Best practice measures would be secured through suitable management plans, including the development of a VMP. This approach is in line with the IEMA scoping guidance (Pyper, Lamming, et al., 2022, p.13) (see paragraph 5.5.) which details scoping out issues covered under other permitting and risk management processes. During operations and maintenance, the frequency of offshore vessel movements is not considered likely to affect shipping access, including to islands on a scale that could affect public health, this issue is scoped out. Vessel movements during decommissioning are expected to be fewer than during construction and so are also not considered to have the potential to affect public health. In all phases it is assumed that appropriate navigation safety would be maintained. Any issues relating to shipping safety would be discussed within the Shipping and Navigation ES chapter.
	Onshore: During operations and maintenance, the Proposed Development is expected to have minimal implications for road transport, with activity limited to checks and maintenance. It is unlikely that there would be the potential for significant population health effects due to changes in: routine or emergency health related journey travel times; access to health promoting goods and services; community severance; or road safety. Fewer road vehicle movements and highway disruptions are expected during decommissioning compared to construction and so are not considered to have the potential to affect public health.
Community safety	Offshore: There are not anticipated to be community safety or security issues associated with worker behaviour in ports or communities. The Proposed Development will have appropriate safeguarding and modern slavery policies. The potential for widespread actual or perceived crime that could affect population health is unlikely. This issue is therefore scoped out. This applies to all phases.

Impact	Justification
	Onshore: During construction, where surface excavations are undertaken these would be within controlled work areas, including use of appropriate fencing and notifications as required. Best practice measures would be secured through suitable management plans. The risk to the public from accidental injury, e.g., falls or drowning is scoped out. There are not anticipated to be community safety or security issues associated with worker behaviour in communities. The Proposed Development would have appropriate safeguarding and modern slavery policies. The potential for widespread actual or perceived crime that could affect population health is unlikely. Electrical risks to the public would be avoided though the design, including fencing of above ground electrical infrastructure. These issues are therefore scoped out. This applies to all phases.
Community identity, culture, resilience and influence	Offshore: Demographic changes that could affect community identity are not anticipated, as there would not be a large in-migration or out-migration of workers to local communities. Visual impacts of offshore activities are expected to be limited due to their distance offshore. Temporary employment opportunities are not expected to have a strong influence on community identity. These issues are therefore scoped out. This applies to all phases.
	Onshore: During construction, transient effects along the Onshore HVDC Cable Corridor, including due to temporary lighting and temporary changes in views, are not expected to influence community identity or disrupt community gatherings to an extent that could affect population health. This issue is therefore scoped out. During the operational and maintenance phases, visual impacts of the Proposed Development are not expected to be of a scale that could affect population health outcomes. The issue is therefore scoped out. Decommissioning visual effects are expected to be less than during construction, so this issue is also scoped out.
Social participation, interaction and support	Offshore: The Proposed Development would not directly affect areas that promote community voluntary, social, cultural or spiritual participation. This issue is scoped out. This applies to all phases.
	Onshore: The Proposed Development would not directly affect land used for community interaction (e.g., meeting places, village greens, community centres, etc.). This issue is scoped out. This applies to all phases.
Economic environment	
Education and training	Offshore: Whilst the Proposed Development could support upskilling and career development in relation to its workforce, this is not on a scale with the potential for significant population level effects. This issue is scoped out. This applies to all phases.
	Onshore: In all phases education and training opportunities associated with the Proposed Development are not expected to be on a scale that could influence population health, even with benefits targeted to vulnerable groups. No effects on educational outcomes are expected due to noise. These issues are therefore scoped out. During construction, the potential to adversely affect access to schools is limited by the use of trenchless techniques for major road crossings. A large influx for workers, including those bringing families, is not expected, so changes to educational capacity or quality, on a scale to affect population health, are unlikely and are scoped out. Decommissioning activities are expected to be less intensive than construction, so educational and training implications are also scoped out.

Impact	Justification
Employment and income	Offshore: Whilst the Proposed Development provides opportunities for good quality employment, which are noted as beneficial for health, these are not on a scale with the potential for significant population level effects. This issue is scoped out. This applies to all phases. Any international supply chain would be expected to operate appropriate policies that safeguard against significant population challenges to equality, health and safety, for both workers and, as appropriate, the public. These issues are scoped out.
	Onshore: The Proposed Development would operate appropriate employment equality policies but is not expected to influence how employment affects family structures and relationships in local populations. Occupational working conditions include particular risks, which are appropriately managed through health and safety policies and practices. Proposed Development activities are not expected to differ from industry norms. Employment associated with the Proposed Development is not expected to be on a scale that could influence population health, even with benefits targeted to vulnerable groups. These issues are therefore scoped out. This applies to all phases.
Bio-physical environment	
Climate change and adaptation	Offshore: Embodied carbon and climate altering pollutant emissions are not of a scale to have the potential for population level effects associated with climate change. This issue therefore is scoped out. This applies to all phases.
	Onshore: For all phases, the embodied carbon and climate altering pollutant emissions associated with the Proposed Development onshore are not of a scale to have the potential for population level effects associated with climate change. This issue is scoped out. During the operations and maintenance phase, the electrical infrastructure facilitates the benefits accrued from the renewable energy generating assets. The public health benefits of electrical infrastructure are assessed in the 'wider societal infrastructure and resources' determinant. To avoid double counting this with the climate change is not separately assessed and is scoped out.
Air quality	Offshore: Offshore air quality effects on all phases to human health are scoped out. The distance between emissions from vessels and onshore community receptors means there are unlikely to be public health effects.
	Onshore: During the operational and maintenance phase air quality effects (e.g., maintenance vehicle emissions) are not anticipated to be of a scale, even accounting for non-threshold effects, that could affect population health. The construction and operation of the Proposed Development would not generate odour at a scale to affect public health outcomes. These issues are therefore scoped out.
Water quality and availability	Offshore: For all phases, the potential for offshore pollutant spills would be appropriately managed, including responding to accidental spills. Marine pollution on a scale to affect human health, e.g. of coastal bathers, has been scoped out considering the Proposed Development's commitments to standard industry good practice mitigation measures, including following the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR), the International Maritime Organization (IMO) and MARPOL guidelines for preventing pollution at sea. This issue is therefore scoped out on the basis of the anticipated effectiveness of such measures.
	Onshore: During the operations and maintenance phase, impacts resulting from emissions to water (i.e., surface runoff) from the operational built areas of the Proposed Development have been scoped out. Any effect to surface or ground water quality is unlikely to be on a scale that could significantly affect public health.

Impact	Justification
Land quality	Offshore: Offshore works would not affect land quality. Port activities are unlikely to result in public exposures to contaminated soils. Any new or historic contamination that may be mobilised by activities will be managed by existing port consents and standard best practice contamination avoidance and response measures. This issue is therefore scoped out. This applies to all phases.
	Onshore: During the operations and maintenance phase, activities are unlikely to require excavations or result in land quality related risks to public health. Any risks would be managed through standard best practice contamination avoidance and response measures that would be secured through management plans. This issue is therefore scoped out.
Noise and vibration	Offshore: The offshore airborne noise effects to human health are scoped out due to the separation distance to community receptors. Port activities would generate noise, but this is not expected to be of a scale, timing or character that differs from existing operational port levels. This issue is therefore scoped out. This applies to all phases.
	Onshore: Whilst operational infrastructure noise effects are scoped in, the following specific issue is scoped out. Checks and maintenance activities are not expected to result in noise and vibration levels that could affect population health. This issue is therefore scoped out.
Radiation	Offshore: Non-ionising EMF effects are scoped out. Offshore electrical infrastructure is not located in proximity to communities. Relevant occupational safeguards would be followed. No EMF risk is therefore likely for offshore aspects of the Proposed Development. No ionising radiation sources are proposed. These issues are scope out. This applies to all phases.
	Onshore: During the construction and decommissioning phases, works would not include using, or making changes to, active major electrical infrastructure producing EMF. Relevant public and occupational safeguards, secured through management plans, would be followed for the temporary electrical equipment used. Electric and magnetic fields strength reduce rapidly with distance, often requiring only a few metres separation between the source and receptor, to reach background levels. No ionising radiation sources are proposed. These issues are scope out. During the operational and maintenance phase, the ‘actual EMF’ risks are scoped out on the basis that the Proposed Development would adopt the International Commission on Non-ionizing Radiation Protection (ICNIRP) guidelines and Government voluntary Code of Practice on EMF public exposure. Such considerations are inherent to the detailed engineering considerations of cable specification and routing. Relevant public EMF exposure guideline limits are noted in NPS EN-5 and would be complied with by the Proposed Development. These guidelines are long standing and have a high safety margin. The levels of exposure that they require would not pose a risk to public health. These issues are scope out.
Institutional and built environment	

Impact	Justification
Health and social care services	Offshore: The Proposed Development's offshore workforce is assumed to include either a high proportion of UK nationals who have NHS entitlement irrespective of place of residence, or a multinational workforce who are covered by health insurance provisions that would allow the NHS to recoup costs to an extent that avoided any significant adverse effect on healthcare services. In any case, the expectation is that the great majority of healthcare needs of the offshore workforce will be met either by occupational provision aboard their vessel or by their usual healthcare provider when they return to their usual place of residence during rotation. This is routine practice across industries and sectors. It is not expected that a high proportion of offshore workers would move to the area with dependants requiring social care. Health protection measures such as screening and immunisations for the offshore workforce are expected to continue from the workers' usual place of residence. Similarly routine dental appointments for offshore workers are assumed to be with the worker's dental practice close to their usual place of residence. Other health services are not expected to be affected as no largescale in-migration is expected and the workforce of skilled technical roles would return to their usual places of residence when ashore. This issue is therefore scoped out. This applies to all phases.
	Onshore: During the operational and maintenance phase, a minimal number of operational workers are anticipated to operate and maintain the Proposed Development infrastructure. There is not considered to be the potential for a likely significant population health effect, this issue is therefore scoped out. During decommissioning, effects, including workforce size and duration of works are expected to be less than for construction. Any demand on local healthcare is not expected to be of a scale that would affect public health. This issue are scoped out.
Built environment	Offshore: During the construction and decommissioning phases, offshore utilities disruption is unlikely and any crossing of existing power or communications cables would be managed to avoid interruption. Appropriate waste management practices would be used, including regard to the MARPOL regulations on waste at sea. Significant population health implications are not anticipated and are scoped out. During the operational and maintenance phase, port or offshore operational activities are not considered to have waste management, land use or infrastructure use implications on a scale that could affect population health. These issues are therefore scoped out.
	Onshore: During the construction and decommissioning phases, the potential for the Proposed Development to affect existing features of the built environment that are supportive of population health has been considered and scoped out. The Proposed Development would have a relatively low impact, including due to the use of trenchless techniques to avoid surface disruption at road crossings. Similarly, the position of existing services, such as water and sewer systems would be taken into account in planning the offshore HVDC cables and techniques used. Appropriate diversions would occur to avoid disruption to such services. This issue is therefore scoped out. During the operational and maintenance phase, the Proposed Development would have a very limited long-term impact on land use patterns, with the main change relating to the converter stations. Appropriate buffer zones would be maintained between infrastructure and communities and the design is resilient to accidents and disasters. These issues are therefore scoped out.
Wider social infrastructure and resources	Offshore: During the construction and decommissioning phases, the Proposed Development's energy infrastructure would not generate public health benefits at this stage, as there would be no electrical transmission supporting energy security. This issue is scoped out. During the operational and maintenance phase, the Proposed Development would be transmitting electricity and supporting public health, but to avoid duplication, this effect is considered in relation to the onshore effect.

Impact	Justification
	Onshore: During the construction and decommissioning phases, the Proposed Development's energy infrastructure would not generate public health benefits, as the electrical transmission providing energy security would not have commenced. This issue is scoped out.

Measures Adopted as Part of the Proposed Development

9.5.11 The following measures proposed to be adopted as part of the project are relevant to human health, considered in addition to the overarching design and embedded measures in **section 4.8, Table 4.8.1** and **Table 4.8.2.** These measures may evolve as the engineering design and the EIA progresses.

- Compliance with exposure standards set out in Department for Energy and Climate Change (DECC) Voluntary Code of Practice (Department for Energy Security & Net Zero, 2012) including compliance with the ICNIRP public exposure guidelines (ICNIRP, 1998).

Proposed Assessment Methodology

9.5.12 The wider determinants of health and health inequalities are key considerations when undertaking an assessment of human health as part of EIA.

9.5.13 A population health approach will be taken, informed by discussion of receptors within other EIA chapters. For each determinant of health, the human health chapter will identify relevant inequalities through consideration of disproportionate or differential effects between the 'general population' of the study area and effects to the 'vulnerable population group' of that study area.

9.5.14 The methodology will use best practice as published by the Institute of Environmental Management and Assessment and relevant Health Impact Assessment and health in EIA guidance.

9.5.15 The methods use 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" (World Health Organization, 1948).

9.5.16 A range of data sources will be collated and analysed in line with good practice guidance. Scientific evidence, baseline data and local health priorities will be referenced. Policy analysis, regulatory standards and consultation themes will also inform the significance conclusions. Magnitude and sensitivity considerations will be reported for each determinant of health, including for the general population and vulnerable groups. A qualitative analysis setting out reasoned conclusions will provide an evidence-based narrative for each determinant of health.

9.5.17 Where significant adverse population health effects are identified, including for vulnerable groups, then mitigation will be proposed to avoid or reduce the effects. Mitigation will be secured as part of the Proposed Development's design or development consent. In line with good practice, a proportionate approach will be taken for identifying opportunities to enhance beneficial population health effects, including for vulnerable groups.

9.5.18 Where proportionate, monitoring will be proposed and governance described, for example, in relation to any residual significant adverse effects or instances where there is high uncertainty on the efficacy of secured mitigation.

Potential Cumulative Effects

9.5.19 There is potential for cumulative effects on sensitive receptors to occur when the Proposed Development is considered together with other developments. The potential cumulative effects between the onshore and offshore elements of the Proposed Development and other developments with respect to human health will be considered within the PEIR and the ES.

9.5.20 The cumulative effects assessment would be undertaken in accordance with the methodology set out in **Section 5:** EIA Methodology, of the Scoping Report.

Potential Inter-related Effects

9.5.21 The assessment of potential inter-related effects will be considered within the human health ES chapter. It will include consideration of project lifetime effects and receptor-led effects in line with the approach outlined in **Section 5:** EIA Methodology, of the Scoping Report.

9.5.22 There would also be a consideration of the intra-related effects of the Proposed Development. These would consider how the same population may be affected by change in more than one health determinant, for example the combined effects of changes in air quality and noise on a population's health outcomes.

9.5.23 Where proportionate, the need for further mitigation and/or monitoring would be considered, including relevant governance.

Potential Transboundary Impacts

9.5.24 A screening of transboundary impacts has been carried out and is presented in **Appendix A**: Transboundary Impacts Screening. This screening exercise identified that there is no potential for transboundary impacts upon human health due to construction, operation and maintenance and decommissioning impacts of the Proposed Development.

10 PROPOSED TECHNICAL ASSESSMENTS – SUPPORTING TECHNICAL INFORMATION

10.1 Introduction

10.1.1 This section sets out the approach for the other environmental topics that are required to be considered within the EIA process under Schedule 4 of The Infrastructure Planning (EIA) Regulations 2017 (the 2017 EIA Regulations) for which no ES chapter is proposed. The section identifies the following:

- Topics proposed to be covered by a technical appendix to the ES (rather than as an ES chapter).
- Environmental topics which are considered elsewhere in the ES.

10.2 Topics Covered as a Technical Appendix

Waste

10.2.1 The Applicant intends to submit an Outline SWMP in support of the application for development consent for the Proposed Development, which would be included as a technical appendix to the ES.

10.2.2 Contractors will be required to follow the measures for managing waste set out in the Outline SWMP and recording the movement of waste from the area of construction to the waste management facilities. On that basis, the potential impacts arising from the disposal and recovery of waste during construction of the offshore and onshore elements of the Proposed Development are unlikely to give rise to significant effects. Therefore, no standalone chapter within the ES is considered to be necessary.

10.2.3 The Outline SWMP will identify the likely waste arisings from the construction of the offshore and onshore elements of the Proposed Development and set out appropriate measures for managing the waste in accordance with the waste hierarchy. These measures will include measures to reduce waste; to use less harmful alternative materials; opportunities to use materials with recycled content; to provide appropriate waste storage; and the utilisation licensed/registered waste carriers.

10.2.4 The Outline SWMP will be prepared in accordance with the relevant legislation, policy, and guidance including:

- Environmental Protection Act 1990;
- Environment Act 1995;
- Hazardous Waste (England and Wales) Regulations 2005 (as amended);
- Waste Management (England and Wales) Regulations 2006;
- Waste (England and Wales) Regulations 2011 (as amended); and
- The Environmental Permitting (England and Wales Regulations) 2016.

10.2.5 The roles and responsibilities of the person(s) overseeing the implementation of waste management procedures during the construction phase will be identified in the Outline SWMP, including relevant mandatory training requirements (e.g., toolbox talks, method statements).

10.2.6 The SWMP will also set out requirements for ongoing monitoring (e.g., regular site inspections) to ensure that construction waste is being managed appropriately according to the waste management procedures prescribed in the outline SWMP.

Waste impacts proposed to be scoped out

Operational Waste

10.2.7 Operation and maintenance of the Proposed Development will generate limited amounts of operational waste (e.g., materials from maintenance activities). However, operational waste would be segregated, recycled (where possible) and disposed of in accordance with collection procedures as agreed by the relevant regulator and local authorities, including the EA. These waste collection procedures will be included in the operational procedures for the Proposed Development (which can be secured through an Operational Environmental Management Plan, if required).

10.2.8 On this basis the potential impact arising from operational waste is unlikely to be significant and is proposed to be scoped out of the ES.

Underwater Noise

10.2.9 The proposed approach to underwater noise is set out in **section 8.10** of the Scoping Report. The results of the underwater noise assessment will be presented in the form of a technical appendix, which will in turn inform the relevant chapters of the PEIR and ES.

10.3 Topics Covered Elsewhere in the ES

10.3.1 To avoid duplication and ensure a proportionate EIA process, the following topics are not proposed to be subject to stand alone chapters or appendices within the ES. These environmental topics are already covered within the scope of work proposed in this Scoping Report. Therefore, no further assessment is required.

Other Residues and Emissions

10.3.2 The potential impacts of residues and emissions (e.g., dust, pollutants, light, noise, vibration) arising from the construction and operation and maintenance phases of the offshore and onshore elements of the Proposed Development will be considered in the following topic chapters of the ES where relevant:

- Hydrogeology, Geology and Ground Conditions (impacts of emissions/residues to land on soil quality);
- Hydrology and Flood Risk (impacts of surface water runoff on water quality and flood risk);

- Onshore Ecology and Nature Conservation, including ornithology (intertidal and onshore) (impacts of emissions to water, land or air and noise emissions on ecological receptors);
- Benthic Ecology (subtidal and intertidal); Fish and Shellfish Ecology; Marine Mammals and sea turtles (impacts of emissions to water and noise emissions on ecological receptors);
- Noise and Vibration (impacts of noise emissions and vibration); and
- Air Quality (impacts of emissions to air, including dust and other pollutants).

10.3.3 On the basis that the potential impacts will be assessed in the relevant topic chapters of the ES, and in the interest of supporting proportionate EIA, it is proposed that a standalone ES chapter addressing the likely effects of emissions and residues is not required.

Material Assets

10.3.4 The potential impacts on material assets arising from the construction and operation and maintenance phases of the Proposed Development will be considered in the following topic chapters of the ES:

- Other Marine Users;
- Historic Environment;
- Land Use and Recreation; and
- Socio-economics.

10.3.5 On the basis that the potential impacts will be assessed in the relevant topic chapters of the ES, and in the interest of supporting proportionate EIA, it is proposed that a standalone chapter addressing the likely significant effects of the Proposed Development on material assets is not required and should be scoped out of the EIA process.

Major Accidents and Disasters

10.3.6 As detailed in **section 4.13** of the Scoping Report, the EIA Regulations require that significant effects be assessed on population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage and the landscape. These assessments will include, where relevant, significant effects arising from the vulnerability of the Proposed Development to major accidents and disasters.

10.3.7 A description of how major accidents and disasters have been considered in the design of the Proposed Development will be outlined in the project description chapter of the PEIR and ES.

11 TOPICS PROPOSED TO BE SCOPED OUT OF THE ES

11.1 Introduction

11.1.1 The following topics are proposed to be scoped out of the EIA process. Further details are provided below.

11.2 Offshore Ornithology

11.2.1 Offshore ornithology has been scoped out of the EIA process. This decision was undertaken following extensive review by technical experts and **Appendix C**: Offshore Ornithology was prepared as part of, and to justify, this scoping conclusion.

11.2.2 As detailed in **Appendix C**: Offshore Ornithology**,** a total of seven internationally important designated sites and 18 nationally important sites with qualifying features with potential connectivity to an initial study area were identified. All relevant sites are designated for seabird species which have the potential to forage within the study area (the study area falls within their mean-max foraging range).

11.2.3 The nearest designated site to the initial study area is Lundy SSSI which is an offshore island west of Devon situated 2 km north of the study area. The SSSI is designated for its breeding populations of guillemot, razorbill, Manx shearwater, kittiwake and puffin. All other relevant designated sites are more than 35 km from the study area. The routing of the Offshore Cable Corridor has been informed by route optimisation studies (**section 3.2**), which has included potential ornithological constraints via considerations to avoid all designated sites where possible.

11.2.4 Although large numbers of birds are known to be present in the Celtic Sea, particularly during the breeding season, none of the data sources consulted indicate that the study area is of particular importance for any species in comparison to the surrounding habitat outside the study area. It is considered unlikely that these species are likely to be present within the study area in notable densities.

11.2.5 A range of potential activities, associated with the construction, operation and maintenance, and decommissioning phases of the Proposed Development, with potential to cause impact on offshore ornithology were considered. The potential for the following impacts to occur was specifically considered to inform the scoping report decision, as further detailed in **Appendix C**: Offshore Ornithology:

- direct impacts due to disturbance, displacement and impacts on foraging birds;
- indirect impacts due to effects on prey species and habitats; and
- pollution incidents.

11.2.6 Although it is likely that several seabird species will forage within the study area, the potential for direct impacts during construction, operation and maintenance, and decommissioning are considered (with high confidence) to be of negligible significance, and this is scoped out of further consideration in the EIA. This is

consistent for example, with the approach that is used to assess the impact arising from export cables associated with offshore wind farms.

11.2.7 Any indirect impacts on prey species arising from noise and visual/physico-chemical/chemical disturbance would be short-term and reversible, and any habitats which are impacted are likely to be rapidly recolonised by prey species following cable burial. The area within which prey would be impacted is also very small in relation to the foraging range of qualifying features. It is therefore considered that the significance of any indirect impacts on offshore ornithology receptors due to effects on prey would therefore be negligible during all phases of the Proposed Development, and this can be scoped out of further consideration within the EIA.

11.2.8 Any impacts due to pollution incidents has been predicted to be of local spatial extent, short term duration, and not significant in EIA terms. Therefore, assuming that construction best practice is followed, it is intended to scope this impact out of further consideration within the EIA.

11.2.9 Based on the negligible potential for impacts on offshore ornithology receptors arising from the Proposed Development, all impacts on offshore ornithology have been scoped out of the EIA.

11.2.10 As the potential for impacts on foraging species is negligible and all impacts have been scoped out of the EIA assessment, all transboundary impacts are expected to be negligible. There are relevant designated sites in close proximity to the Offshore Cable Corridor in the French EEZ. For transparency and to ensure consistency with the HRA (which will assess the Proposed Development's potential to affect bird species associated with relevant European Sites irrespective of EEZ borders) transboundary impacts on offshore ornithology are screened in to the assessment that will be undertaken at PEIR and ES stages (**Appendix A**: Transboundary Impacts Screening).

11.3 Local Planning Policy Context

11.3.1 A description of the consenting process and the Planning Act will be provided within the introductory chapters of the ES.

11.3.2 For each environmental topic, the relevant legislative and planning policy context will be described within each topic chapter of the ES. The assessment of each topic included in the ES will consider the requirements and objectives set out in national, regional, and local planning policy where relevant and appropriate.

11.3.3 In addition, a Planning Statement will be submitted in support of the application for Development Consent, which will outline how the Proposed Development complies with relevant local plans and national planning policy.

11.3.4 Taking the information above into account, and in the interest of supporting proportionate EIA, it is proposed that a standalone chapter addressing local planning policy context is not required and should be scoped out of the EIA process. Instead, each environmental topic chapter will include a summary of relevant local policy, which will be considered in the assessment.

11.4 Daylight, Sunlight and Microclimate

11.4.1 The Proposed Development will comprise offshore HVDC cables, landfall, onshore HVDC cables, onshore HVAC cables, converter stations, associated works and associated supporting infrastructure.

11.4.2 In relation to daylight and sunlight, any built elements, such as the converter stations, would not be sufficiently tall or close to other buildings to result in likely significant effects. In addition, given the nature of the offshore and onshore elements of the Proposed Development such as buried cables and limited above ground buildings and infrastructure, these are not likely to result in microclimate changes.

11.4.3 The effects of the Proposed Development on climate change would be considered separately in a climate change chapter of the ES, as described in **section 9.1**: Climate Change, of the Scoping Report.

11.4.4 Therefore, the daylight, sunlight and microclimate is proposed to be scoped out of the EIA.

11.5 Heat and Radiation

Heat

11.5.1 Heat generated during the operation and maintenance of the Proposed Development (e.g., heat generated by offshore and onshore cables) will be considered within the relevant topic chapters, including:

- **Section 8.2**: Benthic Ecology;
- **Section 8.3**: Fish and Shellfish Ecology; and
- **Section 8.4**: Commercial Fisheries

11.5.2 However, activities during construction and decommissioning of the Proposed Development are unlikely to generate significant levels of heat.

11.5.3 The technical specification of the onshore converter stations will consider any heat generated within the design and this would, as is usual practice, prevent any overheating or heat effects. With these measures in place, it is not considered likely that significant effects in relation to heat will occur at the Converter Site.

Radiation

11.5.4 EMFs are part of the natural world, and are also produced wherever electricity is generated, transmitted, or used. Public exposure to power-frequency EMFs comes from a range of sources and exposure to static EMFs comes from the earth's natural magnetic field, atmospheric electrical field, and human sources. It is considered that activities required to facilitate construction and decommissioning of the offshore and onshore elements of the Proposed Development would generate negligible levels of EMFs.

11.5.5 Operation and maintenance of the offshore and onshore cables and converter stations would produce EMFs due to the voltage and flow of current through electrical infrastructure.

11.5.6 The UK Government (DECC, 2012) has adopted the 1988 Guidelines for Limiting Exposure to Electromagnetic Fields produced by the ICNIRP (ICNIRP, 1988). This guidance was subsequently updated in the form of the 2020 Guidelines (ICNIRP, 2020).

11.5.7 EMF strengths drop rapidly with distance from the source. The distances will depend on voltage but, in general, the strength of a magnetic field is well within international guidelines within a few metres. Underground cables do not produce an external electric field at ground level due to the shielding of the cable sheath and burial material.

11.5.8 Due to the distance between the converter station components and the closest publicly-accessible point (the perimeter fence), the greatest EMFs exposure in the vicinity of converter stations is typically the underground cables entering and exiting them. All of the electrical infrastructure associated with the offshore and onshore elements of the Proposed Development would be designed to comply with current guidelines, as detailed within **paragraph 11.5.6**, on levels of public exposure and design of electrical infrastructure.

11.5.9 Notwithstanding the above, EMF is considered within the relevant chapters, including:

- **Section 8.2**: Benthic Ecology;
- **Section 8.3**: Fish and Shellfish Ecology;
- **Section 8.4**: Commercial Fisheries;
- **Section 8.5**: Marine Mammals and Sea Turtles; and
- **Section 8.6**: Shipping and Navigation.

11.5.10 However, based on the information above it is proposed that a standalone chapter addressing heat and radiation is not required and should be scoped out of the EIA process.

12 SUMMARY

12.1 Overview

12.1.1 The information set out in this Scoping Report is provided to support the Applicant's request for a Scoping Opinion from the Secretary of State in relation to the development of the Proposed Development.

12.1.2 The application for development consent will comprise full details of the Proposed Development and will be accompanied by an ES, which will present the findings of the EIA process.

12.1.3 The Scoping Report has identified the main aspects of the onshore and offshore environment likely to be significantly affected by the construction, operation and maintenance and decommissioning of the Proposed Development. Topics that have been scoped into the assessment are detailed in **Section 7** to **Section 9** of the Scoping Report.

12.1.4 **Table 12.1.1** (onshore environment), **Table 12.1.2** (offshore environment) and **Table 12.1.3** (combined onshore and offshore environment) provides an overview of the potential impacts that are proposed to be scoped into (considered further) the EIA process for the Proposed Development.

12.1.5 **Table 12.1.4** provides an overview of the potential impacts that are proposed to be scoped out of (not considered further) the EIA process for the Proposed Development.

Table 12.1.1: Summary of potential impacts of the Proposed Development proposed to be scoped in for onshore environment (phase refers to construction (C), operation and maintenance (O) and decommissioning (D))

Impact	Phase		
	C	O	D
Onshore Environment			
Onshore Ecology and Nature Conservation			
The impact of the Proposed Development on statutory designated sites (e.g., Taw Torridge Estuary SSSI, Mermaid's Pool to Rowden Gut SSSI, Kynoch's Foreshore LNR).	✓	✓	✓
The impact of the Proposed Development on non-statutory designated sites (e.g., CWS).	✓	✓	✓
The impact of temporary and permanent habitat loss during construction and decommissioning of the onshore elements of the Proposed Development.	✓	×	✓
The impact of the Proposed Development on Protected species: dormouse habitat loss and disturbance	✓	✓	✓
The impact of the Proposed Development on Protected species: bats	✓	✓	✓
The impact of the Proposed Development on Protected species: otters	✓	✓	✓
The impact of the Proposed Development on Protected species: badgers	✓	✓	✓
The impact of the Proposed Development on Protected species: breeding birds	✓	✓	✓
The impact of the Proposed Development on Protected species: Migratory and overwintering birds	✓	✓	✓

Impact	Phase		
	C	O	D
The impact of the Proposed Development on Protected species: Reptiles	✓	✓	✓
The impact of the Proposed Development on Protected species: Invertebrates	✓	✓	✓
Historic Environment			
Loss of, or harm to, buried archaeological remains and deposits of geoarchaeological interest.	✓	×	×
Impact of the Proposed Development (other than the converter stations) on the significance of heritage assets as a result of change with their settings.	✓	×	✓
Impact of the proposed converter stations on the significance of heritage assets as a result of change with their settings.	✓	✓	✓
Impact of the Proposed Development on the character of the historic landscape.	✓	✓	✓
Hydrology and Flood Risk			
The impact of contaminated runoff on the quality of ordinary watercourses, Main Rivers and ground receptors arising from the construction and decommissioning of the Proposed Development.	✓	×	✓
The impact of increased flood risk arising from additional surface water runoff during construction and decommissioning of the Proposed Development.	✓	×	✓
The impact of increased flood risk arising from additional surface water runoff during operation of the Converter Site.	×	✓	×
The impact of increased flood risk arising from damage to existing flood defences during the construction and decommissioning of the Proposed Development.	✓	×	✓
The impact of damage to existing field drainage during the construction and decommissioning of the Proposed Development.	✓	×	✓
The impact of damage to existing water pipelines during the construction and decommissioning of the Proposed Development.	✓	×	✓
Hydrogeology, Geology and Ground Conditions			
The impact of ground contamination on human health receptors (including future on and off-site users)	✓	×	✓
The impact of ground contamination to controlled water receptors	✓	×	✓
The impacts resulting from contact with Unexploded Ordnance (UXO)	✓	×	×
The impact of the Proposed Development on Geological Conservation Sites	✓	×	×
Traffic and Transport			
The impact of increases in traffic flows as a result of construction traffic or works due to, for example, cable trenching, upon driver (including public transport) and pedestrian delay and fear and intimidation (non-motorised user amenity) for users of the highway network.	✓	×	×
The impact of increases in traffic flows as a result of construction traffic or works due to, for example, cable trenching upon severance for users of the highway network.	✓	×	×
The impact of increases in traffic flows as a result of construction traffic or works due to, for example, cable trenching upon road safety for users of the highway network and other transport receptors.	✓	×	×
The impact of Abnormal Indivisible Loads (AILs) on the safety of users of the highway network and other transport receptors.	✓	×	×
Noise and Vibration			

Impact	Phase		
	C	O	D
The impact of noise and vibration generated by construction and decommissioning activities for the Proposed Development on human receptors.	✓	×	✓
The impact of noise generated by additional vehicle movements on the local highway network during the construction and decommissioning phases for the Proposed Development on human receptors.	✓	×	✓
The impact of noise generated during the operation and maintenance of the converter stations on human receptors.	×	✓	×
Air Quality			
The impact of dust soiling (nuisance) on property arising from dust emissions generated by onsite construction and decommissioning activities.	✓	×	✓
The impact of increases in suspended particulate matter on human receptors arising from dust emissions generated by onsite construction and decommissioning activities.	✓	×	✓
Land-use and Recreation			
The permanent loss of agricultural land, including the best and most versatile (BMV) land, arising from the Proposed Development.	✓	×	×
The temporary impact of disruption and reduced access to agricultural land during construction and decommissioning phases of the Proposed Development.	✓	×	✓
The impact of disruption and reduced access to recreational resources (e.g., access land, common land and village greens, PRoW, cycle routes, other recreational resources) during the construction and decommissioning phases.	✓	×	✓

Table 12.1.2: Summary of potential impacts of the Proposed Development proposed to be scoped in for offshore environment (phase refers to construction (C), operation (Op), operational repair activities (Op_{repair}), decommissioning assuming cable de-energised and left in-situ ($D_{in\text{-}situ}$) and decommissioning assuming cable removed (D_{remove}))

Impact	Phase				
	C	Op	Op_{repair}	$D_{in\text{-}situ}$	D_{remove}
Offshore Environment					
Benthic Ecology					
Direct habitat loss	✓	×	✓	×	✓
Physical habitat change	✓	✓	✓	✓	×
Physical disturbance and displacement (disturbance of bottom sediments)	✓	×	✓	×	✓
Changes to water quality (resuspension of sediments and increased sediment loading)	✓	×	✓	×	✓
Changes to water quality (release of hazardous substances)	✓	×	✓	×	✓
Introduction and spread of INNS	✓	×	✓	×	✓
Change in hydrodynamic regime (scour & accretion)	×	✓	×	✓	×
Underwater noise and vibration	✓	×	×	×	×
Sediment heating	×	✓	✓	×	×

Impact	Phase				
	C	Op	Op_{repair}	$D_{in\text{-}situ}$	D_{remove}
EMFs from the cable	×	✓	✓	×	×
Fish and Shellfish Ecology					
Direct habitat loss	✓	×	✓	×	✓
Temporary increase in suspended sediments and sediment deposition	✓	×	✓	×	✓
Injury and disturbance from noise and vibration	✓	×	✓	×	✓
EMF effects	×	✓	✓	×	×
Habitat alteration	×	✓	✓	×	×
Collision risk to basking shark from vessel activities	✓	×	✓	×	✓
Changes to water quality from resuspension of sediments	✓	×	✓	×	✓
Changes to water quality as a result of accidental pollution	✓	×	✓	×	✓
Change in hydrodynamic regime	×	✓	✓	×	×
Sediment heating	×	✓	✓	×	×
Introduction of INNS	✓	×	✓	×	✓
Commercial Fisheries					
Reduction in access to, or exclusion from established fishing grounds	✓	✓	✓	✓	✓
Displacement leading to gear conflict and increased fishing pressure on adjacent grounds	✓	✓	✓	✓	✓
Displacement or disruption of commercially important fish and shellfish resources	✓	✓	✓	✓	✓
Increased vessel traffic associated with the Proposed Development within fishing grounds leading to interference with fishing activity	✓	×	✓	×	✓
Physical presence of infrastructure leading to gear snagging	×	✓	n/a	✓	n/a
Marine Mammals and Sea Turtles					
Increased disturbance by anthropogenic noise from ground condition surveys, seabed preparation, route clearance, cable lay, and burial activities. Includes similar construction type activities where required during Op_{repair} and D_{remove} phases.	✓	×	✓	×	✓
Increased vessel disturbance	✓	×	✓	×	✓
Offshore Ornithology					
All offshore ornithology impacts have been scoped out of the EIA.					
Shipping and Navigation					
Collision of a passing third-party vessel with a vessel associated with cable installation, maintenance or decommissioning	✓	×	✓	×	✓
Cable installation/decommissioning causing disruption to passing vessel routeing/timetables.	✓	×	×	×	✓
Increase in the risk of a vessel-to-vessel collision due to construction/decommissioning vessel activity	✓	×	×	×	✓
Cable installation/decommissioning causing disruption to fishing and recreational activities.	✓	×	×	×	✓

Impact	Phase				
	C	Op	Op_{repair}	$D_{in-situ}$	D_{remove}
Cable installation/decommissioning causing disruption to third party marine activities (e.g., military, dredging)	✓	×	×	×	✓
Vessel drags anchor over the cable	✓	✓	×	✓	×
Vessel anchors over the cable in an emergency	✓	✓	×	✓	×
A vessel engaged in fishing snags its gear on the cable	✓	✓	×	✓	×
Reduction in under keel clearance resulting from laid cable and associated protection	×	✓	×	✓	×
Interference with Marine Navigational Equipment	×	✓	×	×	×
Reduced access to local ports	✓	×	×	×	✓
Other Marine Users					
Increased vessel traffic causing disruption to OMU activities	✓	×	✓	×	✓
Physical presence of infrastructure and temporary exclusion areas	✓	✓	✓	✓	✓
Temporary increase in suspended sediment concentrations and deposition of sediment	✓	×	✓	×	✓
Increased subsea noise	✓	×	✓	×	✓
Marine Archaeology and Cultural Heritage					
Direct impacts to cultural heritage assets within the footprint of the Proposed Development	✓	×	✓	×	✓
Direct and indirect impacts as a result of geo-morphological changes	✓	✓	✓	×	✓
Physical Processes					
Impacts on local metocean processes (nearshore only, <20 m depth)	✓	✓	✓	✓	✓
Physical disturbance of seabed geology and morphology (nearshore only, <20 m depth)	✓	×	✓	×	✓
Impacts on local sediment regimes (nearshore only, <20 m depth)	✓	✓	✓	✓	✓
Generation of sediment disturbance (sediment plumes) associated with construction type activities	✓	×	✓	×	✓
Increase in contaminants through the suspension of contaminated sediment.	✓	×	✓	×	✓
Underwater Noise					
N/A					

Table 12.1.3: Summary of potential impacts of the Proposed Development proposed to be scoped in for combined onshore and offshore environment (phase refers to construction (C), operation and maintenance (O) and decommissioning (D))

Impact	Phase		
	C	O	D
Combined Onshore and Offshore Environment			
Climate Change			
The impact of GHG emissions arising from the manufacturing and installation of the Proposed Development.	✓	×	×
The impact of GHG emissions arising from the consumption of materials and activities required to facilitate the operation and maintenance phase.	×	✓	×
The impact of GHG emissions arising from land use change during the construction, operation and maintenance, and decommissioning phases.	✓	✓	✓
The impact of GHG emissions arising from decommissioning works (e.g., plant, fuel and vessel use) and the recovery (or disposal) of materials.	×	×	✓
The impact of climate change on the Proposed Development	×	✓	×
Landscape, Seascape and Visual Resources			
Potentially significant change in character (to seascape or landscape designations/ types/areas) as a result of offshore and onshore activity (including lighting).	✓	✓	✓
Potentially significant effects on publicly accessible views as a result of offshore and onshore activity (including lighting) and use of construction compounds.	✓	✓	✓
Potentially significant cumulative effects on landscape character from the development of the converter stations, together with one or more other developments	✓	✓	✓
Potentially significant effects on publicly accessible views as a result of offshore and onshore activity (including lighting) and use of construction compounds.	✓	✓	✓
Socio-economics			
Economic impact and increased employment from onshore activity	✓	✓	✓
Economic impact and increased employment from offshore activity	✓	✓	✓
Impact on tourism economy	✓	✓	✓
Impact on British energy consumers	×	✓	×
Impact on local housing market	✓	×	✓
Human Health			
Transport modes, access and connections	✓	×	×
Open space, leisure and play	✓	×	✓
Housing	✓	×	×
Employment and income	✓	×	×
Air quality	✓	×	✓
Water quality	✓	×	✓
Land quality	✓	×	✓
Noise and vibration	✓	✓	✓
Public understanding of risk	×	✓	×
Wider societal infrastructure and resources	×	✓	×

Impact	Phase		
	C	O	D
Health and social care services	✓	×	×

Table 12.1.4: Summary of potential impacts proposed to be scoped out (project phase refers to construction (C), operation and maintenance (O) and decommissioning (D))

Impacts proposed to be scoped out
Onshore Environment
Onshore Ecology and Nature Conservation • Effects on the terrestrial European sites (SAC, SPA, etc)
Historic Environment • Loss of, or harm to, buried archaeological remains and deposits of geoarchaeological interest during operation and maintenance. • Impact of the Proposed Development (other than the converter stations) on the significance of heritage assets as a result of change with their settings during operation and maintenance.
Hydrology and Flood Risk • The impact of contaminated runoff on the chemical and biological status of surface water receptors arising from the operation and maintenance of the Onshore HVDC Cable Corridor. • The impact of increased flood risk arising from additional surface water runoff during the operation and maintenance of the Onshore HVDC Cable Corridor.
Hydrogeology, Geology and Ground Conditions • The impact of the Proposed Development on Mineral Resources. • The impact of ground contamination on construction workers.
Traffic and Transport • The impact of additional vehicle movements on the highway network on driver (including public transport) and pedestrian delay, fear and intimidation (non-motorised user amenity), severance and road safety during operation and maintenance of the Proposed Development. • The impact of additional vehicle movements on the highway network on driver (including public transport) and pedestrian delay, fear and intimidation (non-motorised user amenity), severance and road safety during decommissioning of the Proposed Development.
Noise and Vibration • The impact on human receptors and heritage assets arising from vibration generated by additional vehicle movements on the local highway network during construction and decommissioning of the Proposed Development. • The impact on human receptors and heritage assets arising from vibration generated during the operation and maintenance of the Proposed Development. • The impact of noise and vibration generated during the operation and maintenance of the onshore cable and associated infrastructure.
Air Quality • The impact on human receptors arising from air emissions generated by vehicles during the construction phase. • The impact on ecological receptors arising from dust emissions generated by onsite construction activities. • The impact on ecological receptors arising from air emissions generated by vehicles during the construction phase.

Impacts proposed to be scoped out
• The impact on human and ecological receptors (dust soling and human health) arising from fugitive dust emissions generated during operation and maintenance of the onshore elements of the Proposed Development. • The impact on human and ecological receptors arising from air emissions generated by plants or stacks during operation and maintenance of the onshore elements of the Proposed Development.
Land Use and Recreation • The impact of disruption and reduced access to agricultural land during operation and maintenance phase. • The impact of disruption and reduced access to recreation resources (e.g., access land, common land, village greens, PRoW, cycle routes and other recreational resources) during operation and maintenance phase.
Offshore Environment
Benthic Ecology N/A
Fish and Shellfish Ecology • Injury and/or disturbance to fish and shellfish from vessel activities.
Commercial Fisheries N/A
Marine Mammals • Collision with vessels. • Hearing damage and auditory injury (e.g., PTS), and temporary changes in hearing (e.g., TTS) caused by increased anthropogenic noise from ground condition surveys, seabed preparation, route clearance, cable lay and burial activities. • Accidental pollution • Presence of EMF • Indirect impacts resulting from impacts on marine mammal prey species • Disturbance at seal haul-outs • Water quality changes
Offshore Ornithology • Direct impacts - disturbance, displacement and impacts on foraging birds (construction, operation and maintenance and decommissioning)Indirect impacts due to effects on prey species and habitats (construction, operation and maintenance and decommissioning). • Accidental pollution during construction, operation and maintenance and decommissioning (including indirect effects).
Shipping and Navigation • N/A
Other Marine Users • Interaction with and/or disruption to oil and gas infrastructure. • Interaction with and/or disruption to Aggregate Extraction or Resource Areas. • Interaction with and/or disruption to Marine Disposal Sites. • Interaction with and/or disruption to other offshore energy.
Marine Archaeology and Cultural Heritage • Potential effects to the setting of onshore cultural heritage assets • Potential effects arising from the decommissioning of the Proposed Development have been scoped out from further assessment
Physical Processes • Impacts to metocean processes (deep water, >20 m depth) • Physical disturbance of seabed geology and morphology (deep water, >20 m depth).

Impacts proposed to be scoped out

- Impacts on local sediment regimes (deep water, >20 m depth)

Under Water Noise

N/A

Combined Offshore and Onshore

Climate Change

- Climate Risk Assessment for construction
- In-combination climate change effects

Landscape, Seascape and Visual Resources

- Construction: All construction phase impacts on landscape, seascape and visual resources and receptors at far distance from the Offshore Cable Corridor and Onshore HVDC Cable Corridor study areas. Construction: All impacts on landscape and visual resources and receptors outside the converter stations study area. Operation: All impacts of the offshore and onshore cable corridors on landscape, seascape and visual resources and receptors. Operation: All impacts on landscape and visual resources and receptors outside the Converter Site study area. Operation and decommissioning: Cumulative impacts of the offshore and onshore cable corridors on seascape, landscape and visual resources.

Socio-economics

- N/A

Human Health

- Health related behaviours
  - Physical activity (construction, operation and maintenance)
  - Risk taking behaviour (construction, operation and maintenance)
  - Diet and nutrition (construction, operation and maintenance)
- Social Environment
  - Housing (construction, operation and maintenance)
  - Relocation (all phases)
  - Open space, leisure and play (operation and maintenance)
  - Transport modes, access and connections (operation and maintenance)
  - Community safety (all phases)
  - Community identity, culture, resilience and influence (construction, operation and maintenance)
  - Social participation, interaction and support (all phases)
- Economic Environment
  - Education and training (construction, operation and maintenance)
  - Employment and income (construction, operation and maintenance)
- Bio-physical Environment
  - Climate change and adaptation (construction, operation and maintenance)
  - Air quality (operation and maintenance)
  - Water quality and availability (operation and maintenance)
  - Land quality (operation and maintenance)
  - Noise and vibration (operation and maintenance)
  - Radiation (construction, operation and maintenance)
- Institutional and Built Environment
  - Health and social care services (construction, operation and maintenance)
  - Built environment (construction, operation and maintenance)
  - Wider societal infrastructure and resources (construction and decommissioning)

12.2 Cumulative Effects

12.2.1 This Scoping Report has proposed an approach to CEA that is consistent with the Planning Inspectorate's Advice Note Seventeen: Cumulative Effects Assessment (The Planning Inspectorate, 2019) and the RenewableUK Cumulative Impact Assessment Guidelines, specifically Guiding Principle 4 and Guiding Principle 7 (RenewableUK, 2013).

12.2.2 A detailed CEA will be undertaken to support the ES, in line with the methodology outlined in **Section 5:** EIA Methodology, of the Scoping Report.

12.3 Transboundary Impacts

12.3.1 A transboundary screening assessment for the Proposed Development has been undertaken and is presented in **Appendix A**: Transboundary Impacts Screening. This screening has been carried out in accordance with the Planning Inspectorate's Advice Note Twelve: Transboundary Impacts and Process (The Planning Inspectorate, 2020).

12.3.2 Based on what is currently known of the likely spatial scale effects arising from the Proposed Development and the economic interests of other states in the vicinity, transboundary impacts have been screened into the EIA process for the following topics:

- Benthic Ecology;
- Fish and Shellfish Ecology;
- Commercial Fisheries;
- Marine Mammals and Sea Turtles;
- Offshore Ornithology;
- Other Marine Users;
- Marine Archaeology and Cultural Heritage;
- Physical Processes;
- Underwater Noise; and
- Climate Change.

12.4 Consultation

12.4.1 Before an application for Development Consent is submitted to the Secretary of State, extensive consultation with key stakeholders (including - local authorities, statutory bodies, local communities and interest groups) is required. The proposed approach to stakeholder consultation during the pre-application phase is outlined in **Section 6**: Consultation Process, of the Scoping Report.

12.4.2 Feedback provided within the Scoping Opinion will be taken into account as part of the ongoing EIA process for the Proposed Development. In addition to seeking a Scoping Opinion, the Applicant will carry out non-statutory and statutory consultation.

12.5 Next Steps

12.5.1 Consultees are invited to consider the information presented in this Scoping Report and advise on whether or not they agree with the conclusions. Several broad questions are presented below to encourage reflection of the key elements discussed in this Scoping Report:

- Are there any additional baseline data sources available that could be used to inform the EIA?
- Does the reader agree that the proposed study areas are appropriate for each of the EIA topics?
- Have all potential impacts resulting from the Proposed Development been identified for each of the EIA topics within this Scoping Report?
- Does the reader agree with the impacts to be scoped in, and out, of the assessment?
- For those impacts scoped in, does the reader agree that the methods described are sufficient to inform a robust impact assessment?
- Are there any specific developments or infrastructure schemes which should be taken into account when considering potential cumulative impacts?

12.5.2 Following receipt of the Scoping Opinion from the Secretary of State, a PEIR is planned to be produced and consulted upon. The PEIR will provide an initial statement of the environmental information available for the Proposed Development, including descriptions of the likely environmental effects and measures adopted as part of the Proposed Development. The PEIR is intended to allow statutory consultees, local communities and interested parties to understand the nature, scale, location, and likely significant environmental effects of the Proposed Development, such that they can make an informed contribution to the process of preapplication consultation under the Planning Act 2008 and to the EIA process.

12.5.3 The Applicant expects that the design of the Proposed Development will be further refined based upon the consultation responses received from the pre-application consultation in addition to environmental constraints identified during the EIA process. The final results of the EIA will be presented in an ES and a summary of all consultation responses received will be presented in a Consultation Report, both of which will accompany the application for development consent which is planned to be submitted to the Secretary of State in Autumn 2024.

13 REFERENCES

13.1 Introduction

Banfi, P., Lantieri, A., McGuinn, J. and McNeill, A. (2017) Environmental Impact Assessment of Projects Guidance on Scoping. Directive 2011/92/EU as amended by 2014/52/EU. Implemented for the European Commission by COWI A/S and Milieu Ltd.

13.2 Policy and Legislation

Climate Change Committee (2020) The Sixth Carbon Budget – The UK's Path to Net Zero, December 2020. Available at: The-Sixth-Carbon-Budget-The-UKs-path-to-Net- Zero.pdf (theccc.org.uk). (Accessed: November 2023).

Department for Business, Energy and Industrial Strategy (BEIS) and Prime Minister's Office (2022). British Energy Security Strategy Available at: British energy security strategy - GOV.UK (www.gov.uk). (Accessed: November 2023).

Department for Energy Security and Net Zero (DESNZ) (2023a). Draft Overarching National Policy Statement for Energy (NPS EN-1). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1147380/NPS_EN-1.pdf (Accessed: November 2023).

Department for Energy Security and Net Zero (DESNZ) (2023b). Draft National Policy Statement for Renewable Energy Infrastructure (NPS EN-3). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1147382/NPS_EN-3.pdf (Accessed: November 2023).

Department for Energy Security and Net Zero (DESNZ) (2023c). Draft National Policy Statements for Electricity Networks Infrastructure (NPS EN-5). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1147384/NPS_EN-5.pdf (Accessed: November 2023).

Department for Environment, Food and Rural Affairs (2022) Consultation on Biodiversity Net Gain Regulations and Implementation, January 2022. Available at: Consultation on Biodiversity Net Gain Regulations and Implementation_January2022.pdf (defra.gov.uk). (Accessed: November 2023).

Department for Environment, Food and Rural Affairs (2020) UK Marine Policy Statement. Available at: https://assets.publishing.service.gov.uk/media/5a795700ed915d042206795b/pb3654-marine-policy-statement-110316.pdf (Accessed November 2023).

Department for Levelling Up, Housing & Communities (2023). National Planning Policy Framework. Available at: https://www.gov.uk/guidance/national-planning-policy-framework (Accessed: November 2023).

Department of Energy and Climate Change (DECC) (2011a) Overarching National Policy Statements for Energy (NPS EN-1). Available: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf]. (Accessed: November 2023).

Department of Energy and Climate Change (DECC) (2011b) National Policy Statement for Renewable Energy Infrastructure. Available: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47856/1940-nps-renewable-energy-en3.pdf]. (Accessed: November 2023).

Department of Energy and Climate Change (DECC) (2011c) National Policy Statements for Electricity Networks Infrastructure (NPS EN-5). Available: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47858/1942-national-policy-statement-electricity-networks.pdf]. (Accessed: November 2023).

HM Government (2017) The Clean Growth Strategy – Leading the way to a low carbon future. Available at: https://www.gov.uk/government/publications/clean-growth-strategy (Accessed: November 2023).

HM Government (2020a) Offshore Wind Sector Deal. Available at: https://www.gov.uk/government/publications/offshore-wind-sector-deal/offshorewind-sector-deal. (Accessed: November 2023).

HM Government (2020b) Offshore wind Sector Deal – one year on. Available at: https://www.gov.uk/government/publications/offshore-wind-sector-deal/offshorewind-sector-deal-one-year-on. (Accessed: November 2023).

HM Government (2020c) The Ten Point Plan for a Green Industrial Revolution. Building back better, supporting green jobs, and accelerating our path to net zero. Available at: The Ten Point Plan for a Green Industrial Revolution(publishing.service.gov.uk). (Accessed: November 2023).

HM Government (2020d) Energy White Paper: Powering out net zero future. Available at: Energy White Paper (publishing.service.gov.uk). (Accessed: November 2023).

HM Government (2021a) Net Zero Strategy: Build Back Greener. Available at: netzero-strategy-beis.pdf (publishing.service.gov.uk). (Accessed: November 2023).

HM Government (2021b) South West Inshore and South West Offshore Marine Plan. Available at: South West Inshore and South West Offshore Marine Plan (publishing.service.gov.uk). (Accessed: November 2023).

United Nations (2015) Paris Agreement. Available at: https://unfccc.int/sites/default/files/english_paris_agreement.pdf. (Accessed: November 2023).

United Nations Framework Convention on Climate Change (2022) Report of the Conference of the Parties on its Twenty-Sixth Session, held in Glasgow from 31 October to 14 November 2021. Available at: https://unfccc.int/sites/default/files/resource/cp2021_12_add1E.pdf. (Accessed: November 2023).

13.3 Needs and Alternatives

Committee on Climate Change (2011). The Renewable Energy Review. Available at: https://www.theccc.org.uk/wp-content/uploads/2011/05/The-renewable-energy-review_Printout.pdf. (Accessed: November 2023).

Committee on Climate Change (2020). The Sixth Carbon Budget – The UK's path to Net Zero. Available at: https://www.theccc.org.uk/wp-content/uploads/2020/12/The-Sixth-Carbon-Budget-The-UKs-path-to-Net-Zero.pdf. (Accessed: November 2023).

Planning Inspectorate (2020). Advice Note Seven – Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements. Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-seven-environmental-impact-assessment-process-preliminary-environmental-information-and-environmental-statements/. (Accessed: November 2023).

UK Government (2022) British Energy Security Strategy (2022). Available at: https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy. (Accessed: November 2023).

UK Government (2008) Climate Change Act (2008). Available at: https://www.legislation.gov.uk/ukpga/2008/27/contents (Accessed: November 2023).

UK Government (2017). The Town and Country Planning (Environmental Impact Assessment) Regulations 2017. Available at: https://www.legislation.gov.uk/uksi/2017/571/contents/made. (Accessed: November 2023).

UK Government (2021) Net Zero Strategy – Build Back Greener. Available at: https://assets.publishing.service.gov.uk/media/6194dfa4d3bf7f0555071b1b/net-zero-strategy-beis.pdf. (Accessed: November 2023).

UK Government (2017). The Clean Growth Strategy – Leading the way to a low carbon future. Available at: https://assets.publishing.service.gov.uk/media/5ad5f11ded915d32a3a70c03/clean-growth-strategy-correction-april-2018.pdf. (Accessed: November 2023).

UK Government (2020). Powering our Net Zero Future. Available at: https://assets.publishing.service.gov.uk/media/5fdc61e2d3bf7f3a3bdc8cbf/201216_BEIS_EWP_Command_Paper_Accessible.pdf. (Accessed: November 2023).

UK Government (2023). Powering Up Britain – Energy Security Plan. Available at: https://www.gov.uk/government/publications/powering-up-britain/powering-up-britain-energy-security-plan. (Accessed: November 2023).

United Nations Framework Convention on Climate Change (UNFCCC) (1998) Kyoto Protocol. Available at: https://unfccc.int/resource/docs/convkp/kpeng.pdf (Accessed: November 2023)

United Nations Framework Convention on Climate Change (UNFCCC) (2015) The Paris Agreement. Available at: https://unfccc.int/sites/default/files/resource/parisagreement_publication.pdf (Accessed: November 2023)

United Nations Framework Convention on Climate Change (UNFCCC) (2021) The Draft Agreement – Glasgow 2026. Available at: https://assets.publishing.service.gov.uk/media/60e57d43d3bf7f56824cc4ca/TS_16.2021_UK_Secretariat_UNFCCC_Draft_Agreement_COP_26.pdf (Accessed: November 2023)

13.4 Project Description

Department for Energy Security and Net Zero (DESNZ) (2023a). Draft Overarching National Policy Statement for Energy (NPS EN-1). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1147380/NPS_EN-1.pdf (Accessed: November 2023).

Department for Energy Security and Net Zero (DESNZ) (2023b). Draft National Policy Statement for Renewable Energy Infrastructure (NPS EN-3). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1147382/NPS_EN-3.pdf (Accessed: November 2023).

Department for Energy Security and Net Zero (DESNZ) (2023c). Draft National Policy Statements for Electricity Networks Infrastructure (NPS EN-5). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1147384/NPS_EN-5.pdf (Accessed: November 2023).

Department of Energy and Climate Change (DECC) (2011a) Overarching National Policy Statements for Energy (NPS EN-1). Available: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf]. (Accessed: November 2023).

Department of Energy and Climate Change (DECC) (2011b) National Policy Statement for Renewable Energy Infrastructure. Available: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47856/1940-nps-renewable-energy-en3.pdf]. (Accessed: November 2023).

Department of Energy and Climate Change (DECC) (2011c) National Policy Statements for Electricity Networks Infrastructure (NPS EN-5). Available: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47858/1942-national-policy-statement-electricity-networks.pdf]. (Accessed: November 2023).

Highways England (2019). Water preferred policy – Guidelines for the movement of abnormal indivisible loads. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/799833/WPP_guidelines_2019_DfT_consultation_revision.pdf (Accessed: January 2024).

The Planning Inspectorate (2018). Advice Note Nine: Rochdale Envelope. Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-nine-rochdale-envelope/ (Accessed: November 2023).

13.5 EIA Methodology

Centre for Environment, Fisheries and Aquaculture Science (Cefas) (2012) Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy projects. Report reference: ME5403 – Module 15.

Chartered Institute of Ecology and Environmental Management (CIEEM) (2019) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.

Climate Change Committee (2017) UK Climate Change Risk Assessment 2017 Evidence Report, Available at: https://www.theccc.org.uk/uk-climate-change-riskassessment-2017/.

Department for Energy Security and Net Zero (DESNZ) (2023a). Draft Overarching National Policy Statement for Energy (NPS EN-1). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1147380/NPS_EN-1.pdf (Accessed: November 2023).

Department for Energy Security and Net Zero (DESNZ) (2023b). Draft National Policy Statement for Renewable Energy Infrastructure (NPS EN-3). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1147382/NPS_EN-3.pdf (Accessed: November 2023).

Department for Energy Security and Net Zero (DESNZ) (2023c). Draft National Policy Statements for Electricity Networks Infrastructure (NPS EN-5). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1147384/NPS_EN-5.pdf (Accessed: November 2023).

Department of Energy and Climate Change (DECC) (2011a) Overarching National Policy Statements for Energy (NPS EN-1). Available:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf]. (Accessed: November 2023).

Department of Energy and Climate Change (DECC) (2011b) National Policy Statement for Renewable Energy Infrastructure. Available: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47856/1940-nps-renewable-energy-en3.pdf]. (Accessed: November 2023).

Department of Energy and Climate Change (DECC) (2011c) National Policy Statements for Electricity Networks Infrastructure (NPS EN-5). Available: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47858/1942-national-policy-statement-electricity-networks.pdf]. (Accessed: November 2023).

Environment Agency and Met Office (2018). UK Climate Projections UKCP18 [Online]. Available at: https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/index (Accessed: November 2023).

Institute of Environmental Management and Assessment (IEMA) (2016) Environmental Impact Assessment Guide to: Delivering Quality Development. IEMA, St Nicholas House, 70 Newport, Lincoln.

Institute of Environmental Management and Assessment (IEMA) (2017) Delivering Proportionate EIA - A Collaborative Strategy for Enhancing UK Environmental Impact Assessment Practice. IEMA, Lincoln.

RenewableUK (2013) Cumulative Impact Assessment Guidelines – Guiding Principles for Cumulative Impact Assessment in Offshore Wind Farms.

The Crown Estate (2018) Industry Evidence Programme.

The Planning Inspectorate (2018) Advice Note Nine: Rochdale Envelope.

The Planning Inspectorate (2019) Advice Note Seventeen: Cumulative effects assessment.

The Planning Inspectorate (2020a) Advice Note Seven: Environmental Impact Assessment: Preliminary Environmental Information, Screening and Scoping.

The Planning Inspectorate (2020b) Advice Note Twelve: Transboundary Impacts and Process.

13.6 Consultation Process

Department for Communities and Local Government (2015). Planning Act 2008: guidance on changes to Development Consent Orders [Online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/485064/Making_changes_guidance_to_Development_Consent_Orders.pdf (Accessed: November 2023).

Planning Inspectorate (2017a) 'Advice Note Three: EIA Notification and Consultation'. Available: [https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advicenotes/advice-note-three-eia-notification-and-consultation-2/]. (Accessed: November 2023).

Planning Inspectorate (2017b) ‘Advice Note Eleven, Annex H – Evidence Plans for Habitats Regulations Assessments of Nationally Significant Infrastructure Projects’. Available : [https://infrastructure.planninginspectorate.gov.uk/legislation-andadvice/advice-notes/an-eleven-annex-h/]. (Accessed: November 2023).

13.7 Proposed Technical Assessments – Onshore

Onshore Ecology and Nature Conservation

Animal and Plant Health Agency (2021) Supporting Skills for Badger Vaccination Module 1 Section 3 . Badger Ecology and Field Signs (DEFRA/APHA).

Bat Conservation Trust (2016). Bat Surveys for Professional Ecologists Good Practice Guidelines (3rd edn) Bat Conservation Trust, London. Available: https://www.bats.org.uk/resources/guidance-for-professionals/bat-surveys-forprofessional-ecologists-good-practice-guidelines-3rd-edition (Accessed: November 2023).

Bright, P.W., Morris, P.A and Mitchell-Jones, T. (2006) The Dormouse Conservation Handbook- Second Edition. English Nature, Peterborough.

Chadd R & Extence C (2004) The conservation of freshwater macroinvertebrate populations: a community-based classification scheme. Aquatic Conservation: Marine and Freshwater Ecosystems. Volume 14, Issue 6 p597-624.

Channel Energy Limited (2013). Atlantic Array Offshore Wind Farm – Environmental Statement.

CIEEM (2017) Guidelines for Preliminary Ecological Appraisal. Second Edition. December 2017. Available: https://cieem.net/wpcontent/uploads/2019/02/Guidelines-for-Preliminary-Ecological-Appraisal-Jan2018-1.pdf (Accessed: November 2023).

CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland.- Available: https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.1Update.pdf (Accessed: November 2023).

Department for Environment, Food & Rural Affairs (2007). The Hedgerow Survey Handbook. 2nd Edition. Defra.

Department for Levelling Up, Housing and Communities (2023) National Planning Policy Framework.

Department for Transport (2014). National policy statement for national networks. Available at: https://assets.publishing.service.gov.uk/media/5a7e3ce4e5274a2e8ab46b99/npsnn-print.pdf (Accessed: November 2023).

Devon County Council and the Devon Hedge Group (1998) Devon Hedges: Conservation and Management.

Directive on the Conservation of Wild Birds (1979) (as amended). HMSO, London.

Environment Agency (2008) Operational instruction: freshwater macro-invertebrate analysis of riverine samples. Internal Environment Agency document No. 024_08, Version 1.

Environment Agency (2008) Technical reference material: freshwater macroinvertebrate sampling in rivers. Internal Environment Agency document No. 018_08, Version 1.

Froglife (1999) Reptile Survey: and introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10. Halesworth.

Gent,T. & Gibson, S. (eds) (2003) Herpetofauna Workers' Manual (revised reprint). JNCC, Peterborough. Available: https://hub.jncc.gov.uk/assets/9d7da8c4-9d76-4b65-8263-6b925b3433a4 (Accessed: November 2023).

IECS (Cutts N, Phelps A., & Burdon D. 2009) Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance. Report to Humber INCA. Institute of Estuarine and Coastal Studies (IECS), University of Hull Report ZBB710-F-2008.

Institute of Ecology and Environmental Management (2006) Guidelines for Ecological Impact Assessment in the United Kingdom.

Institute of Environmental Assessment (1995) Guidelines for Baseline Ecological Assessment.

Institute of Estuarine and Coastal Studies (4 February 2009) Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance JNCC (2011) http://jncc.defra.gov.uk/

JNCC (2003) Herpetofauna Workers' Manual. Joint Nature Conservation Committee.

JNCC (2010) Handbook for Phase 1 Habitat Survey.

JNCC (2010) Spreadsheet of Conservation Designations for UK Taxa.

Murray-Bligh, J. (1999) Procedures for collecting and analysing macro-invertebrate samples. Internal Environment Agency document BT 001.

Natural England (2008) Technical Information Note TIN 039 – Devon field boundaries: Restoration standards for agri-environment schemes

Natural England (2009) Guidance Note WML - G16: Interpretation of 'Disturbance' in relation to badgers occupying a sett June 2009.

Natural England (2023) The Biodiversity Metric s4.0 (JP039).

North Devon Council and Torridge District Council (2018). The North Devon and Torridge Local Plan 2011 – 2031.

Strachan R & Moorhouse T (2006) Water Vole Conservation Handbook. Wildlife Conservation Research Unit.

The Conservation of Habitats and Species Regulations (as amended) (2017) HMSO

The Hedgerow Regulations (1997) HMSO.

UK BAP (2010) UK Biodiversity Action Plan. List of priority species.

Historic Environment

CIfA (2014) Standard and Guidance for Historic Environment Desk-Based Assessment. Available at: https://www.archaeologists.net/sites/default/files/CIfAS%26GDBA_4.pdf (Accessed: November 2023).

CIfA (2019) Code of conduct: professional ethics in archaeology. Available at: https://www.archaeologists.net/sites/default/files/Code%20of%20conduct%20revOct 2022.pdf (Accessed: November 2023).

Department for Culture Media & Sport (2013) Scheduled Monuments & nationally important but non-scheduled monuments. Available at: https://www.gov.uk/government/publications/scheduled-monuments-policy-statement (Accessed: November 2023).

Department for Energy Security and Net Zero (DESNZ) (2023) Draft National Policy Statement for Electricity Networks Infrastructure (EN-5). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1147384/NPS_EN-5.pdf (Accessed: November 2023).

Department for Levelling Up, Housing and Communities (2023) National Planning Policy Framework. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1182995/NPPF_Sept_23.pdf (Accessed: November 2023).

Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government (2021) Planning Practice Guidance. https://www.gov.uk/government/collections/planning-practice-guidance (Accessed: November 2023).

Department of Energy and Climate Change (DECC) (2011) National Policy Statements for Electricity Networks Infrastructure (NPS EN-5). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47858/1942-national-policy-statement-electricity-networks.pdf (Accessed: November 2023).

Highways England et al. (2019) DMRB LA 106 - Cultural heritage assessment. Available at: https://www.standardsforhighways.co.uk/dmrb/search/a0c03b39-4b3c-4204-a5ae-c54901c0190a (Accessed: November 2023).

Historic England (2015) Historic Environment Good Practice Advice in Planning: 2 Managing Significance in Decision-Taking in the Historic Environment. Available at: https://historicengland.org.uk/images-books/publications/gpa2-managing-significance-in-decision-taking/ (Accessed: November 2023).

Historic England (2017) The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 (Second Edition).

IEMA, IHBC, CIfA (2021) Principles of Cultural Heritage Impact Assessment in the UK. Available at: https://ihbconline.co.uk/toolbox/docs/Principles%20of%20Cultural%20Heritage%20Impact%20Assessment.pdf (Accessed: November 2023).

Department for Levelling Up, Housing and Communities (2023) National Planning Policy Framework, section 16. Conserving and enhancing the historic environment. Available at: https://www.gov.uk/government/publications/national-planning-policyframework--2 (Accessed: November 2023).

North Devon Council and Torridge District Council (2018). The North Devon and Torridge Local Plan 2011 – 2031.

Landscape and Visual Resources

Landscape Institute and the Institute of Environmental Management and Assessment (2013) Guidelines for Landscape and Visual Impact Assessment: Third Edition. April 2013. Available: https://www.landscapeinstitute.org/technical/glvia3-panel/ (Accessed: November 2023).

Department for Energy Security and Net Zero (DESNZ) (2023) Draft National Policy Statement for Electricity Networks Infrastructure (EN-5). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1147384/NPS_EN-5.pdf (Accessed: November 2023).

Department of Energy and Climate Change (DECC) (2011) National Policy Statements for Electricity Networks Infrastructure (NPS EN-5). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47858/1942-national-policy-statement-electricity-networks.pdf (Accessed: November 2023).

Department for Levelling Up, Housing and Communities (2023) National Planning Policy Framework. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1182995/NPPF_Sept_23.pdf (Accessed: November 2023).

North Devon Council and Torridge District Council (2018). The North Devon and Torridge Local Plan 2011 – 2031.

Scottish Natural Heritage (now NatureScot) (2017) Visual Representation of Wind Farms: Version 2.2.

Natural England (2014) An Approach to Landscape Character Assessment.

Landscape Institute (2021) Technical Guidance Note 02-21: Assessing landscape value outside national designations. Available at: https://www.landscapeinstitute.org/publication/tgn-02-21-assessing-landscape-value-outside-national-designations/ Accessed June 2023.

Landscape Institute (2019) Technical Guidance Note 06/19: Visual Representation of Development Proposals. Available at: https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2019/09/LI_TGN-06-19_Visual_Representation.pdf Accessed June 2023.

North Devon Coast (2019). North Devon Coast AONB Management Plan 2019-2024.

North Devon Coast (2015). North Devon and Exmoor Seascape Character Assessment.

North Devon Biosphere (2014). North Devon Biosphere Strategy for Sustainable Development 2014-2024.

Natural England and Department for Environment, Food and Rural Affairs (2014). Landscape and seascape character assessments. Available at: https://www.gov.uk/guidance/landscape-and-seascape-character-assessments (Accessed: November 2023).

Council of Europe (2006). European Landscape Convention.

Hydrology and Flood Risk

Department for Environment Food and Rural Affairs (2013) Magic Map Application. Available at: https://magic.defra.gov.uk/magicmap.aspx (Accessed October 2023).

Environment Agency (2012) Catchment Data Explorer. Available at: https://environment.data.gov.uk/catchment-planning/ (Accessed October 2023).

Environment Agency (2021) Climate change allowances for peak river flow in England. Available online: https://environment.maps.arcgis.com/apps/webappviewer/index.html?id=363522b846b842a4a905829a8d8b3d0c (Accessed October 2023).

Environment Agency (2022) Climate change allowances for peak rainfall in England. Available online: https://environment.data.gov.uk/hydrology/climate-change-allowances/rainfall (Accessed October 2023).

Environment Agency (2023) Flood Map for Planning. Available online: https://flood-map-for-planning.service.gov.uk/ (Accessed October 2023).

Environment Agency (2023) Long Term Flood Risk Map. Available online: https://check-long-term-flood-risk.service.gov.uk/map (Accessed October 2023).

Environment agency (2023) South West river basin district river basin management plan: updated 2022. Available online: https://www.gov.uk/guidance/south-west-river-basin-district-river-basin-management-plan-updated-2022 (Accessed October 2023).

Ordnance Survey (2023) 1:25 000 mapping. Available at: http://bing.com/maps. (Accessed October 2023).

Torridge District Council (2010) Strategic Flood Risk Assessment (SFRA) Level 1 and 2. Available online: https://www.torridge.gov.uk/article/11269/Strategic-Flood-Risk-Assessment-SFRA-Level-1-and-2 (Accessed October 2023).

Plymouth Coastal Observatory (2010) North Devon and Somerset Shoreline Management Plan (SMP2). Available online: https://southwest.coastalmonitoring.org/resources-2/ndascagsmp2/ (Accessed October 2023).

Geology, Hydrogeology and Ground Conditions

British Standard Initiative (2015). British Standard requirements for the 'Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings'.

British Standard Initiative (2017). British Standard BS 10175 Investigation of Potentially Contaminated Sites.

CIRIA (2001) Contaminated Land Risk Assessment: A Guide to Good Practice. CIRIA (552). Available: https://www.ciria.org/CIRIA/Home/CIRIA/default.aspx?hkey=b9b32704-f151-4cb8-83fc-c9da82a10893 (Accessed: November 2023).

CIRIA (2006) Control of water pollution from linear construction projects: Site guide CIRIA (C649). Available: https://www.ciria.org/CIRIA/Home/CIRIA/default.aspx?hkey=b9b32704-f151-4cb8-83fc-c9da82a10893 (Accessed: November 2023).

CIRIA (2006) Control of water pollution from linear construction projects: Technical guidance. CIRIA (C648). Available: https://www.ciria.org/CIRIA/Home/CIRIA/default.aspx?hkey=b9b32704-f151-4cb8-83fc-c9da82a10893 (Accessed: November 2023).

CIRIA (2007) Assessing Risks Posed by Hazardous Ground Gases to Buildings CIRIA (C665). December 2007. Available: https://www.ciria.org/CIRIA/Home/CIRIA/default.aspx?hkey=b9b32704-f151-4cb8-83fc-c9da82a10893 (Accessed: November 2023).

Department for Environment, Food and Rural Affairs (DEFRA) (2012). Environmental Protection Act 1990: Part 2A. Contaminated Land Statutory Guidance. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/223705/pb13735cont-land-guidance.pdf (Accessed: November 2023).

Department for Levelling Up, Housing and Communities (2023) National Planning Policy Framework. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1182995/NPPF_Sept_23.pdf (Accessed: November 2023).

EA (2017) Groundwater protection technical guidance. March 2017. Available: https://www.gov.uk/government/publications/groundwater-protection-technicalguidance/groundwater-protection-technical-guidance (Accessed: November 2023).

EA (2018) The EA's approach to groundwater protection. February 2018. Available: https://www.gov.uk/government/publications/groundwater-protection-positionstatements (Accessed: November 2023).

Environment Agency (2023). Land contamination risk management (LCRM).

European Parliament (2000) Water Framework Directive (WFD) 2000/60/EC. October 2000. Available: https://eur-lex.europa.eu/legalcontent/EN/TXT/?uri=CELEX:32000L00 (Accessed: November 2023).

European Parliament (2006) Groundwater Directive (GWD) 2006/118/EC. Available: https://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:372:0019:0031:EN:PDF (Accessed: November 2023).

Highways England, Transport Scotland, Welsh Government and Department for Infrastructure Northern Ireland (2020) DMRB LA113 Road drainage and the water environment Available. https://www.standardsforhighways.co.uk/dmrb/search/d6388f5f-2694-4986-ac46-b17b62c21727. (Accessed: November 2023).

Highways England, Transport Scotland, Welsh Government and Department for Infrastructure Northern Ireland (2020) DMRB LA104 Environmental assessment and monitoring. Available. : https://standardsforhighways.co.uk/dmrb/search/0f6e0b6ad08e-4673-8691-cab564d4a60a (Accessed: November 2023).

North Devon Council and Torridge District Council (2018). The North Devon and Torridge Local Plan 2011 – 2031.

Open University Geological Society (2015). Coal Mining in Devon.

UK Government (1990) The Environmental Protection Act 1990. Available: https://www.legislation.gov.uk/ukpga/1990/43/contents (Accessed: November 2023).

UK Government (2016) The Environmental Permitting (England and Wales Regulations) Regulations 2016. Available: https://www.legislation.gov.uk/uksi/2016/1154/contents/made (Accessed: November 2023).

Traffic and Transport

CrashMap (2020) UK Road Safety Map. Available: https://www.crashmap.co.uk/ (Accessed: November 2023).

Department for Energy Security and Net Zero (DESNZ) (2023). Draft Overarching National Policy Statements for Energy (NPS EN-1).

Department for Levelling Up, Housing and Communities (2023) National Planning Policy Framework. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1182995/NPPF_Sept_23.pdf (Accessed: November 2023).

Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government (2014) Planning Practice Guidance: Travel Plans, Transport Assessments and Statements. Available: https://www.gov.uk/guidance/travel-plans-transport-assessments-and-statements (Accessed: November 2023).

Department of Energy and Climate Change (DECC) (2011). Overarching National Policy Statements for Energy (NPS EN-1).

Devon County Council (2011). The Devon and Torbay Local Transport Plan 3, 2011-2026.

Highways England, Transport Scotland, Welsh Government and Department for Infrastructure Northern Ireland (2020) Design Manual for Roads and Bridges LA104:

Environmental Assessment and Monitoring. Available: https://standardsforhighways.co.uk/dmrb/search/0f6e0b6a-d08e-4673-8691-cab564d4a60a (Accessed: November 2023).

IEMA (2023). Environmental Assessment of Traffic and Movement.

North Devon Council and Torridge District Council (2018). The North Devon and Torridge Local Plan 2011 – 2031.

Noise and Vibration

BS (2003) 7445-1:2003. Part 1 - Description and measurement of environmental noise. Guide to quantities and procedures. Available: https://landingpage.bsigroup.com/LandingPage/Series?UPI=BS%207445 (Accessed: November 2023).

BS (2003) 7445-2:1991. Part 2 - Description and measurement of environmental noise. Guide to the acquisition of data pertinent to land use. Available: https://landingpage.bsigroup.com/LandingPage/Series?UPI=BS%207445 (Accessed: November 2023).

BS (2003) 7445-3:1991. Part 3 - Description and measurement of environmental noise. Guide to application of noise limits. Available: https://landingpage.bsigroup.com/LandingPage/Series?UPI=BS%207445 (Accessed: November 2023).

BS (2014) 5228-1:2009+A1:2014. Code of practice for noise and vibration control on construction and open sites – Noise. Available: https://shop.bsigroup.com/products/code-of-practice-for-noise-and-vibration-controlon-construction-and-open-sites-noise (Accessed: November 2023).

BS (2014) 5228-2:2009+A1:2014. Code of practice for noise and vibration control on construction and open sites – Vibration. Available: https://shop.bsigroup.com/products/code-of-practice-for-noise-and-vibration-controlon-construction-and-open-sites-noise (Accessed: November 2023).

BS (2019) 4142:2014+A1:2019. Methods for rating and assessing industrial and commercial sound. Available: https://www.bsigroup.com/en-GB/standards/bs-4142/ (Accessed: November 2023).

- (2010). Noise policy statement for England. Available at: https://www.gov.uk/government/publications/noise-policy-statement-for-england (Accessed: November 2023).

Department for Levelling Up, Housing and Communities (2019) Planning Practice Guidance – Noise. Available at: https://www.gov.uk/guidance/noise--2 (Accessed: November 2023).

Department for Levelling Up, Housing and Communities (2023) National Planning Policy Framework. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1182995/NPPF_Sept_23.pdf (Accessed: November 2023).

Department of Transport (1988). Calculation of Road Traffic Noise. HMSO.

Highways England, Transport Scotland, Welsh Government and Department for Infrastructure Northern Ireland (2020) LA 111 – Noise and Vibration. Available: https://www.standardsforhighways.co.uk/dmrb/search/cc8cfcf7-c235-4052-8d32-d5398796b364 (Accessed: November 2023).

IEMA (2014) Guidelines for Environmental Noise Impact Assessment 2014. Available: https://s3.eu-west-2.amazonaws.com/iema.net/documents/knowledge/policy/impact-assessment/2014-Noise-and-EIA-IEMA.pdf (Accessed: November 2023).

International Standard Organisation (ISO) (1996) 9613-2:1996. Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation.

North Devon Council and Torridge District Council (2018). The North Devon and Torridge Local Plan 2011 – 2031.

World Health Organisation (2000). Guidelines for Community Noise.

World Health Organization Europe (2018) Environmental Noise Guidelines for the European Region.

Air Quality

Department for Environment, Food and Rural Affairs (2022). Local Air Quality Management Technical Guidance, 2022 (LAQM.TG22).

Department for Environment, Food and Rural Affairs (2023). Defra Interactive Air Quality Map. Available at: https://uk-air.defra.gov.uk/aqma/maps/ (Accessed: October 2023).

Department for Levelling Up, Housing and Communities (2023) National Planning Policy Framework. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1182995/NPPF_Sept_23.pdf (Accessed: November 2023).

EPUK & IAQM (2017). Land-Use Planning & Development Control: Planning For Air Quality.

Institute of Air Quality Management (2023). Guidance on the assessment of dust from demolition and construction.

North Devon Council and Torridge District Council (2018). The North Devon and Torridge Local Plan 2011 – 2031.

Torridge District Council (2020). Torridge Council ASR 2020.

Land-use and Recreation

British Geological Survey (BGS) (2023) Geology of Britain Viewer (classic). Available: https://mapapps.bgs.ac.uk/geologyofbritain/home.html (Accessed: November 2023).

Defra (2011) Construction code of practice for the sustainable use of soils on construction sites. Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/716510/pb13298-code-of-practice-090910.pdf (Accessed: November 2023).

Defra (2023) MAGIC Interactive Mapping System. Available: https://magic.defra.gov.uk/ (Accessed: November 2023).

Department for Energy Security and Net Zero (2023). Planning for new energy infrastructure: revisions to National Policy Statements. Available at: https://www.gov.uk/government/consultations/planning-for-new-energy-infrastructure-revisions-to-national-policy-statements (Accessed: November 2023).

Department for Levelling Up, Housing and Communities (2023) National Planning Policy Framework. Available at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1182995/NPPF_Sept_23.pdf (Accessed: November 2023).

Department of Energy & Climate Change (2011) National Policy Statements for energy infrastructure. Available at: https://www.gov.uk/government/publications/national-policy-statements-for-energy-infrastructure (Accessed: November 2023).

Highways England, Transport Scotland, Welsh Government and Department for Infrastructure Northern Ireland (2019) DMRB Sustainability and Environment Appraisal LA 109 Geology and Soils. Available: https://www.standardsforhighways.co.uk/prod/attachments/adca4c7d-4037-4907-b633-76eaed30b9c0?inline=true (Accessed: November 2023).

Highways England, Transport Scotland, Welsh Government and Department for Infrastructure Northern Ireland (2020) DMRB Sustainability and Environment Appraisal LA 112 Population and Human Health. Available: https://www.standardsforhighways.co.uk/dmrb/search/1e13d6ac-755e-4d60-9735-f976bf64580a (Accessed: November 2023).

IEMA (2022) A New Perspective on Land and Soil in Environmental Impact Assessment.

Institute of Quarrying (2021) Good Practice Guide for Handling Soils on Mineral Sites. Available: https://www.quarrying.org/soils-guidance (Accessed: November 2023).

MAFF (1988) Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land. Available: http://publications.naturalengland.org.uk/publication/6257050620264448 (Accessed: November 2023).

Ministry of Housing, Communities & Local Government (2019a) Planning Practice Guidance: Environmental Impact Assessment.

Ministry of Housing, Communities & Local Government (2019b) Planning Practice Guidance: Natural Environment.

Natural England (2010). Agricultural Land Classification Map South West Region (ALC006).

North Devon Council and Torridge District Council (2018). The North Devon and Torridge Local Plan 2011 – 2031.

13.8 Proposed Technical Assessments – Offshore

Benthic Ecology

CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.2. Updated April 2022. Chartered Institute of Ecology and Environmental Management, Winchester.

Davies, J., Baxter, J., Connor, D., Khan, J., Murray, E. Sanderson, W., Turnbull, C. & Vincent, M. (eds). (2001). Marine Monitoring Handbook. Joint Nature Conservation Committee, Peterborough, ISBN 1 86107 5243.

Defra (2019) UKCP18 Derived Projections of Future Climate over the UK. Available: https://www.metoffice.gov.uk/pub/data/weather/uk/ukcp18/science-reports/UKCP18-Derived-Projections-of-Future-Climate-over-the-UK.pdf. Accessed: December 2023.

EUSeaMap (2023) Seabed Habitats. Available at: https://emodnet.ec.europa.eu/en/seabed-habitats. Accessed: December 2023.

JNCC (2004). Common Standards Monitoring Guidance for Marine, Version: August 2004. ISSN 1743-8160. Section: Inlets and Bays.

Natural England (2014) Verification survey of intertidal rocky and sedimentary shore features in the Bideford to Foreland Point rMCZ. Report No: NEBFMCZ1113.

Wyn, G., Brazier, P., Birch, K., Bunker, A., Cooke, A., Jones, M., Lough, N., McMath, A. & Roberts, S. 2006. Handbook for Marine Intertidal Phase 1 Biotope Mapping Survey. Report from Countryside Council for Wales…

Fish and Shellfish Ecology

Bendall, V. A., Hetherington, S. J., Ellis, J. R., Smith, S. F., Ives, M. J., Gregson, J. and Riley, A. A. 2012. Spurdog, porbeagle and common skate bycatch and discard reduction. Fisheries Science Partnership 2011–2012, Final Report. 88 pp. http://www.cefas.defra.gov.uk/media/577769/mf047_fsp_report_2012_final_vb.pdf

Bendall, V.J., Ellis, J.R., Hetherington, S.J., McCully, S.R., Righton, D. and Silva, J.F., 2013. Preliminary observations on the biology and movements of porbeagle Lamna nasus around the British Isles. Collect. Vol. Sci. Pap. ICCAT, 69(4), pp.1702-1722.

Bloomfield, A. and Solandt, J.L. (2006). The Marine Conservation Society Basking Shark Watch 20-year report (1987-2006). Ross on Wye, UK: Marine Conservation Society.

Coull, K.A., Johnstone, R., and Rogers S.I. (1998). Fisheries Sensitivity Maps in British Waters. Published and distributed by UKOOA Ltd.

Department for Environnent, Food and Rural Affairs (MMO) (2022). UK sea fisheries annual statistics. [Online]. Last Updated: 9 May 2022. Available at: https://www.gov.uk/government/publications/water-framework-directive-shellfish-protected-areas/list-of-shellfish-water-protected-areas-in-england [Accessed 15 January 2024].

de Boer, M.N., Jones, D., Jones, H. and Knee, R., 2018. Spatial and temporal baseline information on marine megafauna-data facilitated by a wildlife tour operator. Open Journal of Marine Science, 8(01), p.76.

Doherty, P.D., Baxter, J.M., Gell, F.R., Godley, B.J., Graham, R.T., Hall, G., Hall, J., Hawkes, L.A., Henderson, S.M., Johnson, L. and Speedie, C. (2017). Long-term satellite tracking reveals variable seasonal migration strategies of basking sharks in the north-east Atlantic. Scientific reports, 7(1), p.42837.

Doyle, J., Lordan, C., Fitzgerald, R., O'Connor, S., Fee, D., Nolan, C. & Hayes, J., "Celtic Sea Nephrops Grounds 2011 UWTV Survey Report", Marine Institute 2011

Davies, P., Britton, R.J., Nunn, A.D., Dodd, J.R., Crundwell, C., Velterop, R., Ó'Maoiléidigh, N., O'Neill, R., Sheehan, E.V., Stamp, T. and Bolland, J.D., 2020. Novel insights into the marine phase and river fidelity of anadromous twaite shad Alosa fallax in the UK and Ireland. Aquatic Conservation: Marine and Freshwater Ecosystems, 30(7), pp.1291-1298.

Ellis, J.R., Milligan, S.P., Readdy, L., Taylor, N. and Brown, M.J. 2012. Spawning and nursery grounds of selected fish species in UK waters. Sci. Ser. Tech. Rep., Cefas Lowestoft, 147: 56 pp.

Environment Agency (2023a). The National Fish Populations Database – Transitional & coastal water fish surveys [Online]. Last updated 11 December 2023. Available at: https://www.data.gov.uk/dataset/b8aa438b-338a-4bb1-8ff1-9e904e1687fb/transitional-coastal-water-fish-surveys-nfpd [accessed 13 December 2023].

Environment Agency (2023b). The National Fish Populations Database – Freshwater fish surveys [Online]. Last updated 11 December 2023. Available at: https://www.data.gov.uk/dataset/823e7de7-33a2-4fc6-9a79-4c7672130094/freshwater-fish-surveys-nfpd [accessed 13 December 2023].

European Marine Observation and Network (EMODnet) (2023). EUSeaMap updated 2023; Seabed Habitats. EUNIS 2019 habitat types. Available online at: https://www.emodnet-seabedhabitats.eu/ Accessed October 2023.

Lynam C. and Ribeiro J. (2022). A data product derived from Northeast Atlantic groundfish data from scientific trawl surveys 1983-2020. Cefas, UK. V1. doi: https://doi.org/10.14466/CefasDataHub.126

Marine Management Organisation (MMO) (2023). UK sea fisheries annual statistics. [Online]. Last Updated: 28 September 2023. Available at: https://www.gov.uk/government/collections/uk-sea-fisheries-annual-statistics [Accessed 13 December 2023].

Sims, D.W., Southall, E.J., Richardson, A.J., Reid, P.C. and Metcalfe, J.D., 2003. Seasonal movements and behaviour of basking sharks from archival tagging: no evidence of winter hibernation. Marine Ecology Progress Series, 248, pp.187-196.

Southall, E.J., Sims, D.W., Metcalfe, J.D., Doyle, J.I., Fanshawe, S., Lacey, C., Shrimpton, J., Solandt, J.L. and Speedie, C.D. (2005). Spatial distribution patterns of basking sharks on the European shelf: preliminary comparison of satellite-tag geolocation, survey and public sightings data. JMBA-Journal of the Marine Biological Association of the United Kingdom, 85(5), pp.1083-1088.

Queiroz, N., Humphries, N.E., Noble, L.R., Santos, A.M. and Sims, D.W., 2010. Short-term movements and diving behaviour of satellite-tracked blue sharks Prionace glauca in the northeastern Atlantic Ocean. Marine Ecology Progress Series, 406, pp.265-279.

Commercial Fisheries

Department for Environment, Food and Rural Affairs, (2021). South West Inshore and South West Offshore Marine Plan. Available at: South West Inshore and South West Offshore Marine Plan (publishing.service.gov.uk) [Accessed December 2023].

Department for Energy Security and Net Zero, (2023). National Policy Statement for Renewable Energy Infrastructure (EN-3). Available at: https://assets.publishing.service.gov.uk/media/655dc352d03a8d001207fe37/nps-renewable-energy-infrastructure-en3.pdf [Accessed November 2023].

Department for Energy Security and Net Zero, (2023). Overarching National Policy Statement for Energy (EN-1). Available at: https://assets.publishing.service.gov.uk/media/655dc190d03a8d001207fe33/overarching-nps-for-energy-en1.pdf [Accessed November 2023].

European Subsea Cable Association (ESCA), (2018). Guideline 01. Available at: Guidelines (escaeu.org) [Accessed November 2023].

European Subsea Cable Association (ESCA), (2018). European Subsea Cable Association Statement on vessels operating in the vicinity of subsea cables.

European Union Data Collection Framework (EU DCF) database. Data by quarter-rectangle: Tables and maps of effort and landings by ICES statistical rectangles for 2012 to 2016. [online] Available at: https://stecf.jrc.ec.europa.eu/web/stecf/dd/effort/graphs-quarter [Accessed October 2023].

Fisheries Liaison with Offshore Wind and Wet Renewables group FLOWW, (2015). FLOWW Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Disruption Settlements and Community Funds.

Fisheries Liaison with Offshore Wind and Wet Renewables group FLOWW, (2014). FLOWW Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Liaison. January 2014.

International Cable Protection Committee, (2009). Fishing and Submarine Cables - Working Together.

KIS-ORCA. Reducing Risks Whilst Fishing. [Online]. Available at: https://kis-orca.org/safety/reducing-risks-whilst-fishing/ [Accessed October 2023].

Marine Management Organisation (MMO), (2023). IFISH database with landing statistics data for UK registered vessels for 2018 to 2022 with attributes for: landing year; landing month; vessel length category; country code; ICES rectangle; vessel/gear type; species; live weight (tonnes); and value; and landing year; landing month; vessel length category; country code; vessel/gear type; port of landing; species; live weight (tonnes); and value.

Marine Management Organisation (MMO), (2009). Land's End and Cape Bank European Marine Site (Specified Areas) Bottom Towed Gear Byelaw.

Offshore Energies UK, (2023). Guidelines for liaison with the fishing industry on the UKCS – Issue 8. Available at: OEUK Guidelines for liaison with the fishing industry on the UCKS - Issue 8 [Accessed November 2023].

Marine Mammals and Sea Turtles

Baines, M.E., and Evans, P.G.H. (2012), 'Atlas of the marine mammals of Wales', (Countryside Council for Wales).

Baird, R. W. (2009), 'Risso's dolphin: Grampus griseus', in W. F. Perrin, B. Würsig and J. G. M. Thewissen (eds.), Encyclopedia of marine mammals (Academic Press).

Booth, C.G. (2019), 'Food for thought: Harbor porpoise foraging behaviour and diet inform vulnerability to disturbance'. Marine Mammal Science.12632-. doi:10.1111/mms.12632

Botterell, Z. L. R., Penrose, R., Witt, M. J., and Godley, B. J. (2020), ‘Long-term insights into marine turtle sightings, strandings and captures around the UK and Ireland (1910-2018)’, Journal of the Marine Biological Association of the United Kingdom, 100/6: 869–877.

Blanchet, M., Nance, T., Ast, C., Wahlberg, M., and Acquarone, M. (2008), 'First case of a monitored pregnancy of a harbour porpoise (Phocoena phocoena) under human care'. Aquatic Mammals, 34(1), 9.

Carter, M. I., Boehme, L., Duck, C. D., Grecian, J., Hastie, G. D., McConnell, B. J., Miller, D.L., Morris, C., Moss, S., Thompson, D., Thompson, P. and Russell, D. J. (2020), 'Habitat-based predictions of at-sea distribution for grey and harbour seals in the British Isles: Report to BEIS', OESEA-16-76, OESEA-17-78 (Sea Mammal Research Unit: University of St. Andrews).

Carter, M. I., Boehme, L., Cronin, M. A., Duck, C. D., Grecian, W. J., Hastie, G. D., Jessopp, M., Matthiopoulos, J., McConnell, B. J., Miller, D. L. and Morris, C. D. (2022), 'Sympatric seals, satellite tracking and protected areas: habitat-based distribution estimates for conservation and management', Frontiers in Marine Science.

Channel Energy Ltd. (2013a), 'Atlantic Array Offshore Wind Farm: Report to Inform Appropriate Assessment', Document Reference: 5.3.

Channel Energy Ltd. (2013b), 'Atlantic Array Offshore Wind Farm: Environmental Statement Volume 1: Offshore Chapter 9: Marine Mammals', Document Reference 6.1.9.

Christiansen, F., Víkingsson, G. A., Rasmussen, M. H., & Lusseau, D. (2014). Female body condition affects foetal growth in a capital breeding mysticete. Functional Ecology, 28(3), 579-588.

Corr, S., Dudley, R., Brereton, T., Clear, N., Crosby, A., Duncan, S., Evans, P.G.H., Jones, D., Sayer, S., Taylor, T., Tregenza, N., Williams, R., Witt, M.J. and Ingram, S.N. (2023), 'Using citizen science data to assess the vulnerability of bottlenose dolphins to human impacts along England's South Coast'. Animal Conservation

De Boer, M.N. and Simmonds, M.P. (2003), 'WDCS/Greenpeace Survey Report Small cetaceans along the coasts of Wales and Southwest England'.

Evans, P. G. H. and Waggitt, J. J. (2023), 'Modelled Distributions and Abundance of Cetaceans and Seabirds of Wales and Surrounding Waters'. NRW Evidence Report, Report No: 646, 354 pp. Natural Resources Wales, Bangor.

Gilles, A., Authier, M., Ramirez-Martinez, N. C., Araújo, H., Blanchard, A., Carlström, J., Eira, C., Dorémus, G., Fernández-Maldonado, C., Geelhoed, S. C. V., Kyhn, L., Laran, S., Nachtsheim, D., Panigada, S., Pigeault, R., Sequeira, M., Sveegaard, S., Taylor, N. L., Owen, K., Saavedra, C., Vázquez-Bonales, J.A., Unger, B., and Hammond, P. S. (2023). Estimates of cetacean abundance in European Atlantic waters in summer 2022 from the SCANS-IV aerial and shipboard surveys. Final report published 29 September 2023. 64 pp

Greenlink (2019), 'Marine Environmental Impact Assessment Report - Ireland, Appendix C, Underwater Sound Modelling.

Harrison, R. J., and Ridgway, S. H. (1971), 'Gonadal activity in some bottlenose dolphins (Tursiops truncatus)', Journal of Zoology, 165/3: 355-366.

Hague, E. L., Sinclair, R. R., and Sparling, C. E. (2020), 'Regional baselines for marine mammal knowledge across the North Sea and Atlantic areas of Scottish waters'. Scottish Marine and Freshwater Science Vol 11 No 12.

Houghton, J. D. R., Doyle, T. K., Wilson, M. W., Davenport, J., & Hays, G. C (2006), ‘Jellyfish aggregations and leatherback turtle foraging patterns in a temperate coastal environment’. Ecology, 87/8: 1967–1972.

IAMMWG. 2023. Review of Management Unit boundaries for cetaceans in UK waters (2023). JNCC Report 734, JNCC, Peterborough, ISSN 0963-8091. https://hub.jncc.gov.uk/assets/b48b8332-349f-4358-b080-b4506384f4f7

JNCC. (2017). JNCC guidelines for minimising the risk of injury to marine mammals from geophysical surveys. August 2017. Downloadable from https://data.jncc.gov.uk/data/e2a46de5-43d4-43f0-b296-c62134397ce4/jncc-guidelines-seismicsurvey-aug2017-web.pdf

JNCC. (2019a), 'Conservation status assessment for the species: S1351 Harbour porpoise (Phocoena phocoena)', (European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) Fourth Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2013 to December 2018: United Kingdom).

JNCC. (2019b), 'Conservation status assessment for the species: S1350 Common dolphin (Delphinus delphis)', (European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) Fourth Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2013 to December 2018: United Kingdom).

JNCC. (2019c), 'Conservation status assessment for the species: S1349 Bottlenose dolphin (Tursiops truncatus)', (European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) Fourth Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2013 to December 2018: United Kingdom).

JNCC. (2019d), 'Conservation status assessment for the species: S2030 Risso's dolphin (Grampus griseus)', (European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) Fourth Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2013 to December 2018: United Kingdom).

JNCC. (2019e), 'Conservation status assessment for the species: S2618 Minke whale (Balaenoptera acutorostrata)', (European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) Fourth Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2013 to December 2018: United Kingdom).

JNCC. (2019f), 'Conservation status assessment for the species: S1364 Grey seal (Halichoerus grypus)', (European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) Fourth Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2013 to December 2018: United Kingdom).

JNCC. (2019g), 'Conservation status assessment for the species: S1223 Leatherback turtle (Dermochelys coriacea)', (European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) Fourth Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2013 to December 2018: United Kingdom).

JNCC MPA mapper. (2020), 'MPA Mapper'. Available at: https://jncc.gov.uk/mpa-mapper/. [Accessed December 2023].

Lacey, C., Gilles, A., Börjesson, P., Herr, H., Macleod, K., Ridoux, V., Santos, M., Scheidat, M., Teilmann, J., Sveegaard, S., Vingada, J., Viquerat, S., Øien, N. and Hammond, P. (2022), 'Modelled density surfaces of cetaceans in European Atlantic waters in summer 2016 from the SCANS-III aerial and shipboard surveys'.

Laist, D. W., Knowlton, A. R., Mead, J. G., Collet, A. S. and Podesta, M. (2001), 'Collisions between ships and whales', Marine Mammal Science, 17/1: 35-75.

Leeney, R. H., Broderick, A. C., Mills, C., Sayer, S., Witt, M. J., Godley, B. J. (2010), 'Abundance, distribution and haul-out behaviour of grey seals (Halichoerus grypus) in Cornwall and the Isles of Scilly, UK'. Journal of the Marine Biological Association of the United Kingdom. 90(5):1033-1040.

Lusseau, D. (2003), 'Effects of tour boats on the behavior of bottlenose dolphins: using Markov chains to model anthropogenic impacts', Conservation Biology, 17: 1785–1793.

Lusseau, D. (2006), 'The short-term behavioral reactions of bottlenose dolphins to interactions with boats in Doubtful Sound, New Zealand', Marine Mammal Science, 22: 802-818.

Lysaght, L. and Marnell, F. (Eds) (2016), 'Atlas of Mammals in Ireland 2010-2015'. National Biodiversity Data Centre, Waterford.

MacLeod, C. D., Santos, M. B., Burns, F., Brownlow, A., and Pierce, G. J. (2014), 'Can habitat modelling for the octopus Eledone cirrhosa help identify key areas for Risso's dolphin in Scottish waters?', 725/1: 125-136.

Martin, E., Banga, R. and Taylor, N.L. (2023), 'Climate change impacts on marine mammals around the UK and Ireland'. MCCIP Science Review 2023, 22pp.

McConnell, B.J., Fedak, M.A., Lovell, P. & Hammond, P.S. (1999), 'Movements and foraging areas of grey seals in the North Sea'. Journal of Applied Ecology, 36, 573-590.

Morel, C., Gimard, A., Alloncle, N., Quintela, A., Lloret, A., Alves, F. L., Gomez, B. M., Buceta, J. L., Giret, O., Maarques, M., Plaza, M., Silva, A., and Sousa, L. (2020). Annex 1 to Initial Assessment: Marine Environment. EU Project Grant No.: EASME/EMFF/2015/1.2.1.3/03/SI2.742089. Supporting Implementation of Maritime Spatial Planning in the European Northern Atlantic (SIMNORAT). 171 pp. DOI: 10.5281/zenodo.2609092

Murphy, S., Evans, P. G. H., Pinn, E., and Pierce, G. J. (2021), 'Conservation management of common dolphins: Lessons learned from the North-East Atlantic'. Aquatic Conservation 31, 137-166

Murphy, S., Natoli, A., Amaral, A. R., Mirimin, L., Viricel, A., Hoelzel, R., and Evans, P. G. H. (2009), 'Short beaked common dolphin Delphinus delphis'. Report of ASCOBANS/HELCOM small cetacean population structure workshop, 8-10 October 2007, UN Campus, Bonn, Germany, pp. 111-130.

Nedwell J, Brooker A, & Barham R (2012), 'Assessment of underwater noise during the installation of export power cables at the Beatrice Offshore Wind Farm'. Subacoustech Environmental Report No.E318R0106.

Nowacek, S. M., Wells, R. S. and Solow, A. R. (2001), ‘Short-term effects of boat traffic on bottlenose dolphins, Tursiops truncatus, in Sarasota Bay, Florida’, Marine Mammal Science, 17: 673-688.

Oakley, J. A., Jenkins, R. E., Thomas, T., Williams, A. T., and Phillips, M. R. (2016), 'Assessing harbour porpoise populations in south-west Wales, data issues and implications for conservation and management', Ocean & Coastal Management, 119: 45-57.

Olsen, E., and Sunde, J. (2002), 'Age determination of minke whales (Balaenoptera acutorostrata) using the aspartic acid racemization technique'. Sarsia, 87(1), 1-8

ORCA. (2023), 'The State of Cetaceans 2023'.

Paxton, C., L. Scott-Hayward, M. Mackenzie, E. Rexstad, and L. Thomas. (2016), 'Revised Phase III Data Analysis of Joint Cetacean Protocol Data Resources'.

Penrose, R. S. and Westfield, M. J. B. (2023), 'British & Irish Marine Turtle Strandings & Sightings Annual Report 2020'. Ceredigion.

Popper, A. N., Hawkins, A. D., Fay, R. R., Mann, D. A., Bartol, S., Carlson, T. J., Coombs, S., Ellison, W. T., Gentry, R. L., Halvorsen, M. B., Løkkeborg, S., Rogers, P. H., Southall, B. L., Zeddies, D. G., and Tavolga, W. N. (2014), 'Sound Exposure Guidelines for Fishes and Sea Turtles: A Technical Report prepared by ANSI-Accredited Standards Committee S3/SC1 and registered with ANSI' (Heidelberg: Springer).

Pusineri, C., Magnin, V., Meynier, L., Spitz, J., Hassani, S., and Ridoux, V. (2006), 'Food and feeding ecology of the common dolphin (Delphinus delphis) in the oceanic Northeast Atlantic and comparison with its diet in neritic areas'. Marine Mammal Science 23(1): 30-47.

Reid, J.B., Evans, P.G.H. & Northridge, S.P. (2003), 'Atlas of Cetacean distribution in north-west European waters'. JNCC, Peterborough, ISBN 1 86107 550 2.

Robinson, K. P., Sim, T. M. C., Culloch, R. M., Bean, T. S., Cordoba Aguilar, I., Eisfeld, S. M., Filan, M., Haskins, G. N., Williams, G. and Pierce, G. J. (2017), 'Female reproductive success and calf survival in a North Sea coastal bottlenose dolphin (Tursiops truncatus) population', PLoS ONE, 12/9.

Santos, M. B., Pierce, G. J., Reid, R. J., Patterson, I. A. P., Ross, H. M. and Mente, E. (2001), 'Stomach contents of bottlenose dolphins (Tursiops truncatus) in Scottish waters'. Journal of the Marine Biological Association of the UK, 81(5), 873-. doi:10.1017/S0025315401004714

Sayer, S; Millward, S. and Witt, M. (2020), 'Monitoring grey seal (Halichoerus grypus) pupping sites in Cornwall 2019/2020'. Report Commissioned for Natural England (NECR322). ISBN: 978-1-78354-651-0.

Schoeman, R. P., Patterson-Abrolat, C. and Plön, S. (2020), 'A global review of vessel collisions with marine animals', Frontiers in Marine Science, 7.

SCOS. (2021), 'Scientific Advice on Matters Related to the Management of Seal Populations: 2020'.

SCOS (2022), 'Scientific Advice on Matters Related to the Management of Seal Populations: 2021'.

SCOS (2023), 'Scientific Advice on Matters Related to the Management of Seal Populations: 2022'.

Sea Watch Foundation. (2023), 'Recent sightings: South-west England and South Wales'. Available at: https://www.seawatchfoundation.org.uk/recentsightings. [Accessed December 2023].

SubAcoustec. (2012), 'Assessment of underwater noise during the installation of export power cables at the Beatrice Offshore Wind Farm'.

Tricas, T. and Gill, A. (2011), 'Effects of EMFs from Undersea Power Cables on Elasmobranchs and other Marine Species'. (Report No. BOEMRE 2011-09). Report by Normandeau Associates Inc. Report for Bureau of Ocean Energy Management (BOEM) and the US Department of the Interior (DOI).

Vincent, C., Huon, M., Caurant, F., Dabin, W., Deniau, A., Dixneuf, S., Dupuis, L., Elder, J-F., Fremau, M-H., Hassani, S., Hemon, A., Karpouzopoulos, J., Lefeuvre, C., McConnell, B.J., Moss, S.E.W., Provost, P., Spitz, J., Turpin, Y. and Ridoux, V. (2017), 'Grey and harbour seals in France: Distribution at sea, connectivity and trends in abundance at haulout sites'. Deep Sea Research Part II: Topical Studies in Oceanography 141: 294-305

Waggitt, J. J., P. G. H. Evans, J. Andrade, A. N. Banks, O. Boisseau, M. Bolton, G. Bradbury, T. Brereton, C. J. Camphuysen, J. Durinck, T. Felce, R. C. Fijn, I. Garcia-Baron, S. Garthe, S. C. V. Geelhoed, A. Gilles, M. Goodall, J. Haelters, S. Hamilton, L. Hartny-Mills, N. Hodgins, K. James, M. Jessopp, A. S. Kavanagh, M. Leopold, K. Lohrengel, M. Louzao, N. Markones, J. Martinez-Cediera, O. O'Cadhla, S. L. Perry, G. J. Pierce, V. Ridoux, K. P. Robinson, M. B. Santos, C. Saavedra, H. Skov, E. W. M. Stienen, S. Sveegaard, P. Thompson, N. Vanermen, D. Wall, A. Webb, J. Wilson, S. Wanless, and J. G. Hiddink. (2020), 'Distribution maps of cetacean and seabird populations in the North-East Atlantic'. Journal of Applied Ecology 57:253-269.

Wall, D., Murray, C., O'Brien, J. M., Kavanagh, L. (2013), 'Atlas of the Distribution and Relative Abundance of Marine Mammals in Irish Waters: 2005-2011' (Kilrush, Co Clare: IWDG).

WiSe. (2023), 'The Wise Scheme'. Available at: https://www.wisescheme.org. [Accessed December 2023].

Other Marine Users

Renewable UK (2023) https://www.renewableuk.com/page/WaveTidalEnergy

Department for Energy Security & Net Zero (2023) CCUS Net Zero investment roadmap: Capturing carbon and a global opportunity. Policy Paper. https://www.gov.uk/government/publications/carbon-capture-usage-and-storage-net-zero-investment-roadmap/ccus-net-zero-investment-roadmap-capturing-carbon-and-a-global-opportunity

South West Marine Plan (2021) https://www.gov.uk/government/collections/south-west-marine-plan

Cornwall Inshore Fisheries and Conservation Authority (2023) https://www.cornwall-ifca.gov.uk/

Marine Historic Environment

Chartered Institute for Archaeologists (CIfA), 2014, Standard and guidance for commissioning work on, or providing consultancy advice on, archaeology and the historic environment.

Chartered Institute for Archaeologists, 2020, Standards and Guidance for Historic Environment Desk Based Assessment.

COWRIE, 2008, Guidance for Assessment of Cumulative Impacts on the Historic Environment from Offshore Renewable Energy.

English Heritage, 2003, Management Guidelines for military aviation sites.

Fitch, S. and Gaffney, V., 2011, West Coast Palaeolandscapes Survey. Birmingham, University of Birmingham, Visual and Spatial Technology Centre.

Historic England, 2013, Marine Geophysics Data Acquisition, Processing and Interpretation (Guidelines).

Historic England, 2015, Making Significance in Decision-Taking in the Historic Environment. Historic Environment Good Practice Advice in Planning: 2.

Joint Nautical Archaeology Policy Committee and The Crown Estate, 2006, JNAPC Code of Practice for Seabed Development.

National Heritage List for England (NHLE), 2023, Historic England Open Data Portal Download Listing Data - GIS Shapefiles | Historic England [Accessed: December 2023].

Oxford Archaeology, 2008, Guidance for Assessment of Cumulative Impacts on the Historic Environment from Offshore Renewable Energy. Available on https://www.biofund.org.mz/wp-content/uploads/2018/11/F1349.Cowrie-Ciarch-Web.pdf

Ransley J, F Sturt, J Dix, J Adams, and L Blue, 2013, People and the Sea: a maritime archaeological research agenda for England. Available on https://archaeologydataservice.ac.uk/archiveDS/archiveDownload?t=arch-281-1/dissemination/pdf/RR171_People_and_the_Sea.pdf

The Crown Estate, 2014, Protocol for Archaeological Discoveries: Offshore Renewables Projects. Published by Wessex Archaeology.

The Crown Estate, 2021, Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects. https://www.thecrownestate.co.uk/media/3917/guide-to-archaeological-requirements-for-offshore-wind.pdf

Wessex Archaeology Ltd, 2007, Historic Environment Guidance for the Offshore Renewable Energy Sector.

Wessex Archaeology Ltd, 2013, Early Ships and Boats (Prehistory to 1840): Strategic Desk-based Assessment.

Wessex Archaeology Ltd, 2008, Aircraft Crash Sites at Sea: A Scoping Study.

UK Government, (1979), The Ancient Monuments and Archaeological Areas Act 1979.

United Kingdom Hydrographic Office, 2023, Admiralty Marine Data Portal. https://seabed.admiralty.co.uk [Accessed: November 2023].

Physical Processes

Coastal Observatory (2024). South West Coastal Monitoring. Available at: https://southwest.coastalmonitoring.org/ (Accessed December 2023).

Environment Agency (2022) Flood Risk Assessment: Climate Change Allowances. Available at: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances (Accessed January 2024).

Environment Agency (2023) Catchment Data Explorer. Available at: https://environment.data.gov.uk/catchment-planning/ (Accessed December 2023).

Environment Agency (2023) Water Quality Archive. Available at: https://environment.data.gov.uk/water-quality/view/sampling-point/SW-72910055 (Accessed December 2023).

Halcrow (2010) North Devon Shoreline Management Plan 2. Exeter: North Devon and Somerset Coastal Advisory Group.

OSPAR Commission (2000) Quality Status Report 2000 – Region III Celtic Seas. London: OSPAR Commission.

Uncles and Stephens (2007) SEA 8 Technical Report – Hydrography. Plymouth: UK Department of Trade and Industry.

Underwater Noise

Popper et al., (2014). Popper, A & Hawkins, Anthony & Fay, Richard & Mann, David & Bartol, Soraya & Carlson, Thomas & Coombs, Sheryl & Ellison, William & Gentry, Roger & Halvorsen, Michele & Løkkeborg, Svein & Rogers, Peter & Southall, Brandon & Zeddies, David & Tavolga, William. (2014). Sound Exposure Guidelines.

Southall et al., (2019). Southall, Brandon L., James J. Finneran, Colleen Reichmuth, Paul E. Nachtigall, Darlene R. Ketten, Ann E. Bowles, William T. Ellison, Douglas P. Nowacek, and Peter L. Tyack. "Marine mammal noise exposure criteria: Updated scientific recommendations for residual hearing effects." Aquatic Mammals 45, no. 2 (2019): 125-232.

13.9 Proposed Technical Assessments – Combined Onshore and Offshore

Climate Change

Department for Business, Energy & Industrial Strategy (BEIS). (2022). UK Offshore Energy Strategic Environmental Assessment: Appendix 1F: Climate & Meteorology. Available at: *A1f - Climate and meteorology (publishing.service.gov.uk). (Accessed: October 2023).

Department for Energy Security and Net Zero (2023). Greenhouse gas reporting: conversion factors 2023. Available at: https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023 (Accessed: October 2023).

Department for Environment, Food and Rural Affairs (2020). UK Marine Policy Statement. Available at: https://assets.publishing.service.gov.uk/media/5a795700ed915d042206795b/pb3654-marine-policy-statement-110316.pdf (Accessed: October 2023).

Department for Levelling Up, Housing and Communities (2023) National Planning Policy Framework. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1182995/NPPF_Sept_23.pdf (Accessed October 2023)

Department of Energy and Climate Change (DECC) (2011a) Overarching National Policy Statements for Energy (NPS EN-1). Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf (Accessed October 2023).

Department of Energy and Climate Change (DECC) (2011b) National Policy Statement for Renewable Energy Infrastructure. Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47856/1940-nps-renewable-energy-en3.pdf (Accessed October 2023).

Department of Energy and Climate Change (DECC) (2011c) National Policy Statements for Electricity Networks Infrastructure (NPS EN-5). Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47858/1942-national-policy-statement-electricity-networks.pdf (Accessed October 2023).

Environment Agency (2022). South West Flood Risk Management Plan. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1122760/South-West-FRMP-2021-2027.pdf (Accessed: October 2023).

IEMA (2020) Guidance on climate change adaptation and resilience. Available: https://www.iema.net/articles/guidance-on-climate-change-adaptation-and-resilience (Accessed: October 2023).

IEMA (2022) Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance. 2nd Edition. [Online] Available: https://www.iema.net/resources/blog/2022/02/28/launch-of-the-updated-eia-guidance-on-assessing-ghg-emissions (Accessed: October 2023).

IPCC. (2021). Climate Change 2021: The Physical Science Basis. Available: https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_FullReport.pdf (Accessed: October 2023).

Jaroszweski, D., Wood, R., and Chapman, L. (2021) Infrastructure. In: The Third UK Climate Change Risk Assessment Technical Report. [Betts, R.A., Haward, A.B., Pearson, K.V. (eds)] Prepared for the Climate Change Committee, London

Marine Management Organisation (2021). North West Inshore and North West Offshore Coast Marine Plans. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1004490/FINAL_North_West_Marine_Plan__1_.pdf (Accessed: October 2023).

Met Office Hadley Centre (2018a). UKCP18 Science Overview Report. Available: https://www.metoffice.gov.uk/pub/data/weather/uk/ukcp18/science-reports/UKCP18-Overview-report.pdf (Accessed: October 2023).

Met Office Hadley Centre (2018b). UKCP18 Factsheets. Available: https://www.metoffice.gov.uk/research/collaboration/ukcp/factsheets (Accessed: October 2023).

Met Office Hadley Centre (2023). UK Climate Projections User Interface v2.8.0. Available: https://ukclimateprojections-ui.metoffice.gov.uk/ui/home (Accessed: October 2023).

Met Office. (2020). UK Climate Averages. Available: https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages (Accessed: October 2023).

National Grid ESO (2023) Future Energy Scenarios 2023. Available at: https://www.nationalgrideso.com/document/283101/download (Accessed: October 2023).

Palmer et al. (2018) UKCP18 Marine Report. Available: https://www.metoffice.gov.uk/pub/data/weather/uk/ukcp18/science-reports/UKCP18-Marine-report.pdf (Accessed: October 2023).

Torridge District Council and North Devon Council (2018) North Devon and Torridge Local Plan 2011-2031. Available at: https://consult.torridge.gov.uk/kse/event/33615/section/ (Accessed: October 2023).

UKCP UI (2022). PDF/CDF for probabilistic projections (25km) over UK, 1961-2100.Available: https://ukclimateprojections-ui.metoffice.gov.uk/jobs/8993587c6cd9d8fe5b846c70ba1bf82e (Accessed: October 2023).

World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD) (2004). Available at: https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf (Accessed: October 2023).

Socio-economics and Tourism

Department for Energy Security and Net Zero (DESNZ) (2023), UK Energy in Brief 2023.

Department of Business, Energy and Industrial Strategy (2021), Net Zero Strategy: Build Back Greener.

Department of Business, Energy and Industrial Strategy (2022), British Energy Security Strategy.

Devon County Council (2021), Devon County Council Strategic Plan 2021-2025.

Heart of The South West Local Enterprise Partnership (2020), The Local Industrial Strategy.

Kantar TNS (2020), The Great Britain Day Visitor Survey 2019.

Kantar TNS (2020), The Great Britain Tourism Survey 2019.

Ministry of Housing, Communities and Local Government (2021), National Planning Policy Framework.

North Devon Council and Torridge District Council (2021), North Devon Economic Recovery Plan;

Office for National Statistics ONS (2023), Annual Population Survey 2022.

Office for National Statistics ONS (2020), International Passenger Survey.

Office for National Statistics ONS (2020), Population Projections 2018-2043 - local authority based by single year of age.

Office for National Statistics ONS (2023), Annual Survey of Hours and Earnings 2022.

Office for National Statistics ONS (2023), Business Register and Employment Survey 2022.

Office for National Statistics ONS (2023), Population Estimates 2021 - local authority based by five year age band.

Office for National Statistics. (2022). Consumer Price Inflation Tables.

Office for National Statistics. (2022). Input Output Tables 2018.

Ofgem (2022-2023), Default tariff cap level.

The Great South West Tourism Partnership (2021), Towards 2030: Reimagining the Visitor Economy in the South West.

Human Health

Cave, B., Claßen, T., Fischer-Bonde, B., Humboldt-Dachroeden, S., Martin-Olmedo, P., Mekel, O., Pyper, R., Silva, F., Viliani, F., & Xiao, Y. (2020). Human health: Ensuring a high level of protection A reference paper on addressing Human Health in Environmental Impact Assessment As per EU Directive 2011/92/EU amended by 2014/52/EU.

Department for Energy Security and Net Zero. (2023). Planning for New Energy Infrastructure: Revisions to national policy statements. Available at: https://www.gov.uk/government/consultations/planning-for-new-energy-infrastructure-revisions-to-national-policy-statements (Accessed: November 2023).

Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government. (2021). Planning practice guidance. Available at: https://www.gov.uk/government/collections/planning-practice-guidance (Accessed: November 2023).

Department of Energy & Climate Change. (2011). National Policy Statements for energy infrastructure. Available at: https://www.gov.uk/government/publications/national-policy-statements-for-energy-infrastructure (Accessed: November 2023).

Department for Environment, Food & Rural Affairs. (2011). UK Marine Policy Statement. https://www.gov.uk/government/publications/uk-marine-policy-statement (Accessed January 2024).

HM Government. (2021). South West Inshore and South West Offshore Marine Plan. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1004494/FINAL_South_West_Marine_Plan__1_.pdf (Accessed: November 2023).

Institute of Public Health. (2021). Health Impact Assessment Guidance: A Manual and Technical Guidance. Standalone Health Impact Assessment and health in environmental assessment.

International for Impact Assessment & European Public Health Association. (2020). Human health: Ensuring a high level of protection.

Ministry of Housing, Communities & Local Government. (2019). English indices of deprivation 2019. Available at: https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019 (Accessed: November 2023).

Ministry of Housing, Communities and Local Government. (2023). National Planning Policy Framework. Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2 (Accessed: November 2023).

Office for Health Improvement & Disparities. (2023). Public health profiles.

Office for National Statistics. (2021). Torridge. Available at: https://www.ons.gov.uk/visualisations/areas/E07000046/ (Accessed: November 2023).

Public Health England. (2020). Health Impact Assessment in spatial planning.

Pyper, R., Lamming, M., Beard, C., Buroni, A., Douglas, M., Turton, P., Hardy, K., Netherton, A., McClenaghan, R., Barratt, T., Bhatt, A., Cave, B., & Gibson, G. (2022). IEMA Guide: Effective Scoping of Human Health in Environmental Impact Assessment. England: Institute of Environmental Management and Assessment.

Pyper, R., Waples, H., Barratt, T., Hardy, K., Turton, P., Netherton, A., McDonald, J., Buroni, A., & Bhatt, A. (2022). IEMA Guide: Determining Significance for Human Health in Environmental Impact Assessment. Institute of Environmental Management and Assessment.

Torridge District Council. (2018). North Devon and Torridge Local Plan 2011—2031.

World Health Organization. (1948). Constitution of the World Health Organization. World Health Organization.

XLINKS MOROCCO-UK POWER PROJECT

Scoping Report

Appendix A – Transboundary Impacts Screening

00030
Rev01
January 2024

xlinks.co

1 APPENDIX A – TRANSBOUNDARY IMPACTS SCREENING

1.1 Introduction

1.1.1 This document forms Appendix A: Transboundary Impacts Screening, of the Environmental Impact Assessment (EIA) Scoping Report prepared for the United Kingdom (UK) elements of the Xlinks Morocco-UK Power Project (the 'Project'). For ease of reference, the UK elements of the Project are referred to as the 'Proposed Development', which is the focus of this Appendix.

1.1.2 The Proposed Development would be located within the Proposed Development Scoping Boundary shown on **Figure 1.1**. The locations of the onshore and offshore elements are detailed below:

- The onshore elements of the Proposed Development Scoping Boundary are proposed to be located within the local authority area of Torridge District Council, in north Devon.
- The offshore elements of the Proposed Development Scoping Boundary are proposed to be located within the Bristol Channel and Celtic Sea, extending from the landfall to the limit of UK EEZ, south west of the UK.

1.1.3 Transboundary impacts are those that may arise from an activity within one state and affect the environment or other interests of another state. This transboundary screening appendix of the Scoping Report sets out the potential for such impacts to occur on the environment or interests of other states, and the potential for such impacts to result in significant effects. This screening assessment is based on what is currently known of the likely spatial scale of impacts (drawing on information presented in Chapters 7, 8 and 9 of the Scoping Report) and the interests of other states in the vicinity.

1.1.4 This appendix is intended to provide information to the Planning Inspectorate such that the Secretary of State can evaluate the likelihood of such impacts and effects occurring and the need, if any, for transboundary consultation with other states during the pre-application period. The screening of transboundary impacts will be revisited during the EIA process for the Proposed Development once the preliminary assessments are completed. This will ensure that any significant transboundary effects are fully considered within the Environmental Statement submitted alongside the application for development consent.

Phasing considerations

1.1.5 The offshore elements of the Proposed Development (the Offshore Cable Corridor) extends to the edge of the UK EEZ, however the UK project forms just one section of the overall Morocco-UK cable route. The Applicant will seek separate consents for the works within the French EEZ, with the intention that construction activities (e.g. cable lay and trenching) are carried out in a continuous, linear manner - continuous from one jurisdiction into the adjacent jurisdiction. The development characteristics and construction activities will be consistent across the two jurisdictions (in the vicinity of the EEZ boundary) and thus transboundary impacts on mobile and/or static receptors are expected to be

less than those deriving from the immediate jurisdiction - because the magnitude of potential effect tends to decrease with distance from the impact source.

1.1.6 Since the associated significance of transboundary impacts will be less than the equivalent impact significance of works undertaken in either EEZ, the transboundary impacts would, by definition be acceptable (if the in-country i.e. non-transboundary impacts are deemed acceptable). However, this is predicated on the assumption that permits/authorisations are granted in both jurisdictions, and the acceptable levels of impact significance are equivalent across jurisdictions.

1.1.7 Notwithstanding the considerations above, there is a specific requirement to set out transboundary impacts, as described in Section 1.2.

1.2 Legislative context

1.2.1 The need to consider transboundary impacts (and the resulting effects) has been embodied by The United Nations Economic Commission for Europe (UNECE) Convention on Environmental Impact Assessment in a Transboundary Context, adopted in 1991 in the Finnish city of Espoo and commonly referred to as the 'Espoo Convention'. The Convention requires that assessments are extended across borders between Parties to the Convention when a planned activity may cause significant adverse transboundary effects.

1.2.2 The Espoo Convention has been ratified by the United Kingdom (on behalf of the United Kingdom of Great Britain and Northern Ireland, the Bailiwick of Jersey, the Bailiwick of Guernsey, the Isle of Man and Gibraltar) and the European Union (EU). It is aimed at preventing, mitigating and monitoring environmental damage by ensuring that explicit consideration is given to transboundary environmental factors before a final decision is made as to whether to approve a project. The Espoo Convention requires that the Party of origin notifies affected Parties about activities listed in Appendix I of the Convention and likely to cause a significant adverse transboundary effect.

1.2.3 The Espoo Convention was implemented by EU Directive 2011/92/EU, as amended by Directive 2014/52/EU, on the assessment of the effects of certain public and private projects on the environment (the EIA Directive). Following the UK's departure from the EU, the United Kingdom (UK) has no direct obligations under the EIA Directive, however, the requirements established under the EIA Directive (as transposed into UK law) continue to apply.

1.2.4 The EIA Directive is transposed into UK law by the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) for Nationally Significant Infrastructure Projects (NSIPs) (the 2017 EIA Regulations). Regulation 32 of the 2017 EIA Regulations sets out a prescribed process of consultation and notification in relation to transboundary effects. In addition, The Planning Inspectorate's Advice Note Twelve: Transboundary Impacts (The Planning Inspectorate, 2020) sets out the procedures for consultation in association with an application for development consent where a project may have significant transboundary effects.

1.2.5 The Advice Note Twelve sets out the roles of the Planning Inspectorate, other states and developers. Applicants have no formal role under the Regulation 32 process, as the duties prescribed by Regulation 32 in notifying and consulting with other states on potential transboundary impacts are the responsibility of the Secretary of State. However, developers are advised to:

- Consider, when preparing documents for consultation and application, that The Planning Inspectorate may notify the relevant state of their particular project.
- Carry out preparatory work to complete a transboundary screening matrix to assist the Secretary of State in determining the potential for likely significant effects on the environment in other states.
- Submit the transboundary screening matrix along with the scoping request, if a scoping opinion is sought by the developer.

1.2.6 This transboundary screening appendix is provided in response to this advice. It provides information about the Proposed Development, which will be the subject of the application for development consent. It also sets out information relating to the potential effects of the Proposed Development and the interests of the other states in the vicinity, to assist the Planning Inspectorate in forming a view on the likelihood of significant transboundary effects arising from the Proposed Development. The information contained within the Annex to Advice Note Twelve, which sets out the criteria and relevant considerations that will be taken into account by the Planning Inspectorate during screening, have also been used in the preparation of this transboundary screening appendix.

1.3 Consultation

1.3.1 The Applicants will conduct pre-application consultation for the Proposed Development in accordance with the Planning Act 2008 plus associated guidance and regulations, including the 2017 EIA Regulations. If there are potential transboundary impacts, the Applicant will consider how best to consult with the relevant states.

1.4 Screening of Transboundary Impacts and Effects

Introduction

1.4.1 A series of screening matrices for potential transboundary impacts associated with the Proposed Development are presented for the onshore (see **Table 1.2**), offshore (see **Table 1.3**) and combined onshore and offshore topics (see **Table 1.4**). These screening matrices have been based upon an initial understanding of the potential impacts arising from the Proposed Development (on the basis of the project description presented in Section 4: Project description, of the EIA Scoping Report) gathered during the EIA Scoping process and follow the suggested format set out by The Planning Inspectorate (2020).

1.4.2 The screening matrices consider all potential transboundary impacts that may occur from all phases of the Proposed Development (i.e., construction, operation and maintenance, and decommissioning phases). The matrices also address the predicted spatial and temporal scale of potential transboundary impacts for those interests that are proposed to be screened into the assessment within the ES.

1.4.3 Potential impacts upon European designated sites within other states are considered separately within the screening process for the Habitats Regulations Assessment (HRA).

1.4.4 The distance of the Proposed Development from the jurisdictional boundary of the nearest other states are presented in **Table 1.1**.

Table 1.1: Summary of approximate distance to the nearest applicable states

State	Distance from the Proposed Development Scoping Boundary to nearest jurisdictional boundary (km)
France	0
Ireland	54
Guernsey	269
Jersey	299
Spain	320

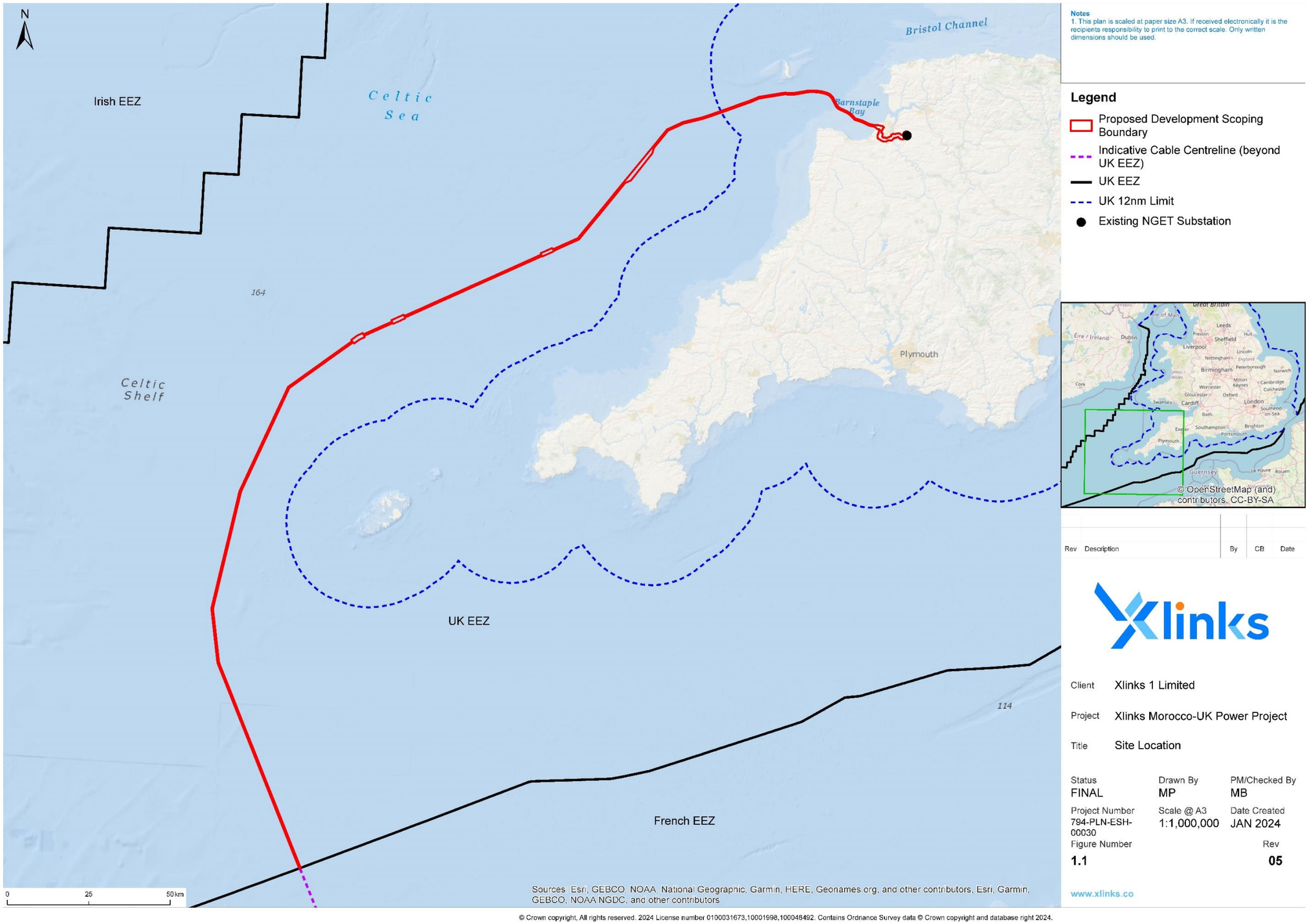

Figure 1.1: Site Location

Onshore Transboundary Impacts and Effects

1.4.5 A transboundary screening matrix has been completed for onshore transboundary impacts and is presented in **Table 1.2**. The conclusions of the transboundary screening for each onshore topic are presented, together with additional justification, in the following sections.

Onshore Ecology and Nature Conservation

1.4.6 Any impacts on onshore ecology and nature conservation arising from the construction, operation and maintenance and decommissioning of the Proposed Development will be confined to a localised area around the footprint of the onshore elements of the Proposed Development and/or its immediate surrounding area. These impacts would occur within the Proposed Development Scoping Boundary.

1.4.7 Furthermore, due to the large distance between the onshore elements of the Proposed Development Scoping Boundary and Natura 2000 sites located outside of the UK, it is not considered feasible that migratory birds directly associated with Natura 2000 sites in other states would be disturbed or suffer from loss of foraging or resting opportunities in any way that would be likely to result in significant effects on those Natura 2000 sites. It is therefore proposed that transboundary impacts and effects on terrestrial ecology and intertidal birds are screened out of the EIA process.

Historic Environment

1.4.8 Any impacts on the onshore historic environment arising from the construction, operation and maintenance and decommissioning of the Proposed Development will be confined to a localised area within the footprint of the onshore elements of the Proposed Development. These impacts would occur within the Proposed Development Scoping Boundary and/or its immediate surrounding area. There is no pathway by which direct or indirect impacts arising from the Proposed Development could result in significant effects on the onshore historic environment of another state. It is therefore proposed that transboundary impacts and effects on the onshore historic environment are screened out of the EIA process.

Hydrology and Flood Risk

1.4.9 Any impacts on hydrology and flood risk arising from the construction, operation and maintenance and decommissioning of the Proposed Development will be confined to a localised area affected by the footprint of the onshore elements of the Proposed Development. These impacts would occur within the Proposed Development Scoping Boundary and/or its immediate surrounding area. There is no pathway by which direct or indirect impacts arising from the Proposed Development could result in significant effects on the hydrology and flood risk of another state. It is therefore proposed that transboundary impacts and effects on hydrology and flood risk are screened out of the EIA process.

Geology, Hydrogeology and Ground Conditions

1.4.10 Any impacts on geology, hydrogeology and ground conditions arising from the construction, operation and maintenance and decommissioning of the Proposed Development will be confined to a localised area affected by the footprint of the onshore elements of the Proposed Development. These impacts would occur within the Proposed Development Scoping Boundary. There is no pathway by which direct or indirect impacts arising from the Proposed Development could result in significant effects on the geology, hydrogeology or ground conditions of another state. It is therefore proposed that transboundary impacts and effects on geology, hydrogeology and ground conditions are screened out of the EIA process.

Traffic and Transport

1.4.11 Any impacts on traffic and transport arising from the construction, operation and maintenance and decommissioning of the Proposed Development will be confined to a localised area of the UK highway infrastructure. There is no pathway by which direct or indirect impacts arising from the Proposed Development could result in significant effects on traffic and transport in another state. It is therefore proposed that transboundary impacts and effects on traffic and transport are screened out of the EIA process.

Noise and Vibration

1.4.12 Any noise and vibration impacts arising from the construction, operation and maintenance and decommissioning of the Proposed Development will be confined to a localised area in the vicinity of the Proposed Development Scoping Boundary. There is no pathway by which direct or indirect impacts arising from the Proposed Development could result in significant effects in another state. It is therefore proposed that transboundary impacts and effects on noise and vibration are screened out of the EIA process.

Air Quality

1.4.13 Potential transboundary impacts to air quality arising from the construction, operation and maintenance and decommissioning of the Proposed Development are anticipated to be minor and localised in extent and will be confined to the duration of the construction and decommissioning phases only. There is no pathway by which direct or indirect impacts arising from the Proposed Development could result in significant effects in another state. It is therefore proposed that transboundary impacts and effects on air quality are screened out of the EIA process.

Land Use and Recreation

1.4.14 Any impacts on land use and recreation arising from the construction, operation and maintenance and decommissioning of the Proposed Development will be confined to a localised area within the footprint of the onshore elements of the Proposed Development. These impacts would occur within the Proposed Development Scoping Boundary. There is no pathway by which direct or indirect impacts arising from the Proposed Development could result in significant effects

on the land use and recreation of another state. It is therefore proposed that transboundary impacts and effects on land use and recreation are screened out of the EIA process.

Table 1.2: Onshore environment transboundary screening matrix for the Proposed Development

Screening Criteria	Onshore Ecology and Nature Conservation	Onshore Historic Environment	Hydrology and Flood Risk	Geology, Hydrogeology and Ground Conditions	Traffic and Transport	Noise and Vibration	Air Quality	Land Use and Recreation
Characteristics of the development	For a detailed description, see section 4 of the EIA Scoping Report. Key onshore components of the Proposed Development include: the landfall site, onshore HVDC cables, converter stations, HVAC cables, the Alverdiscott Substation Connection Development, utility diversions and highways improvements.							
Location	The Proposed Development Scoping Boundary is 230.5 km^2 in area (onshore and offshore). The onshore Proposed Development Scoping Boundary includes land between the landfall at Cornborough Range (along the coast) and the existing Alverdiscott Substation site in north Devon.							
Environmental Importance	No transboundary impacts are predicted. See section 7.2 of the EIA Scoping Report.	No transboundary impacts are predicted. See section 7.3 of the EIA Scoping Report.	No transboundary impacts are predicted. See section 7.4 of the EIA Scoping Report.	No transboundary impacts are predicted. See section 7.5 of the EIA Scoping Report.	No transboundary impacts are predicted. See section 7.6 of the EIA Scoping Report.	No transboundary impacts are predicted. See section 7.7 of the EIA Scoping Report.	No transboundary impacts are predicted. See section 7.8 of the EIA Scoping Report.	No transboundary impacts are predicted. See section 7.9 of the EIA Scoping Report.
Potential impacts and carrier								
Extent								
Magnitude								
Probability								
Duration								
Frequency								
Reversibility								
Cumulative Impacts	See section 7.2 of the EIA Scoping Report.	See section 7.3 of the EIA Scoping Report.	See section 7.4 of the EIA Scoping Report.	See section 7.5 of the EIA Scoping Report.	See section 7.6 of the EIA Scoping Report.	See section 7.7 of the EIA Scoping Report.	See section 7.8 of the EIA Scoping Report.	See section 7.9 of the EIA Scoping Report.
Conclusion – potential for significant effects	No significant transboundary effects.	No significant transboundary effects.	No significant transboundary effects.	No significant transboundary effects.	No significant transboundary effects.	No significant transboundary effects.	No significant transboundary effects.	No significant transboundary effects.

Offshore Transboundary Impacts and Effects

1.4.15 A transboundary screening matrix has been completed for offshore transboundary impacts and is presented in **Table 1.3**. The conclusions of the transboundary screening for each offshore topic are presented, together with additional justification, in the following sections.

Benthic Ecology

1.4.16 There is potential for transboundary impacts upon benthic ecology due to construction, operation and maintenance and decommissioning impacts of the Proposed Development. The suspension of sediment as a result of dredging during pre-lay activities and burial activities during cable laying will result in a sediment plume that could potentially cause some transboundary effects, particularly close to the French Exclusive Economic Zone (EEZ). It is therefore proposed that transboundary impacts and effects on benthic ecology are screened into the EIA process.

Fish and Shellfish Ecology

1.4.17 There is potential for transboundary impacts upon fish and shellfish ecology due to construction, operation and maintenance and decommissioning impacts of the Proposed Development. The suspension of sediment as a result of dredging during pre-lay activities, jetting and excavation during cable laying and cable repairs will result in a sediment plume that may cause some transboundary effects, particularly close to the French EEZ boundary. It is therefore proposed that transboundary impacts and effects on fish and shellfish ecology are screened into the EIA process.

Commercial Fisheries

1.4.18 Baseline data indicates the presence of foreign fishing fleet activity. Consultation with stakeholders in other relevant Member States, and data gathered from other relevant Member States, will inform the scope of any future transboundary impact assessment within the EIA. It is therefore proposed that transboundary impacts and effects on commercial fisheries are screened into the EIA process.

Marine Mammals and Turtles

1.4.19 There is a potential for transboundary impacts on marine mammals due to the mobile nature of marine mammal species and the geographical scale of management units (MUs), particularly where these extend beyond the limits of UK waters. For example, grey seals can travel large distances of up to 1,200 km and have been recorded crossing the English Channel moving from France to haul-out sites in the south-west of the British Isles. There is also potential for transboundary impacts on sea turtles due to their highly mobile nature. Leatherback turtles travel large distances during seasonal migrations and have been recorded throughout the English Channel and wider European waters.

1.4.20 Direct impacts may occur during the construction and decommissioning phases of the Proposed Development, the extent cannot be determined at this stage and will be subject to assessment in the EIA. However, based on the activities outlined in

the scope of works, the majority of impacts during construction (and similar activities during other project phases) are likely to be localised, short-term and temporary.

1.4.21 Likely significant effects upon European Sites with marine mammals as qualifying features will be assessed within the HRA. There are no European Sites with leatherback turtles as qualifying features to be assessed within the HRA.

1.4.22 It is proposed that transboundary impacts and effects on marine mammals and turtles are screened into the EIA process.

Offshore Ornithology

1.4.23 There is the potential for transboundary impacts on offshore ornithology receptors due to the large foraging ranges of breeding seabird species. For example, species which breed in one jurisdiction could forage in waters in another jurisdiction. As the offshore ornithology study area encompasses breeding seabird colonies (including Natura 2000 sites) beyond the UK EEZ, there is the potential for associated seabirds to forage within the Offshore Cable Corridor. There is potential for connectivity to colonies within Irish and French EEZs. However, sites designated for breeding seabirds within the Irish and French EEZs are a considerable distance from the Offshore Cable Corridor, therefore there would be no direct impacts at colonies. It is also noted that sites within the French EEZ will be assessed within the separate application which covers the section of the Offshore Cable Corridor within the French EEZ. The scale of any potential interaction between the UK activities and sites in the French jurisdiction will by definition be less than the same linear activities when conducted within the French EEZ.

1.4.24 There is a single designated site, Mers Celtiques - Talus du golfe de Gascogne SPA, which is present adjacent to the Offshore Cable Corridor (in French waters but adjacent to the Offshore Cable Corridor). Due to the proximity of the SPA to the Offshore Cable Corridor, there is the potential for impacts on foraging species, where the SPA is within 2 km of the Offshore Cable Corridor. The area impacted would be very small as a proportion of the SPA, and impacts would be of a very short duration, of low magnitude and therefore negligible. Direct impacts on the SPA would be assessed within a separate application which covers the section of the Offshore Cable Corridor within the French EEZ. (Potential impacts deriving from the French EEZ would, by definition, be of a greater magnitude.) For transparency and to ensure consistency with the HRA (which will assess the Proposed Development's potential to affect bird species associated with relevant European Sites irrespective of EEZ borders) transboundary impacts on offshore ornithology are screened in to the assessment that will be undertaken at PEIR and ES stages.

Shipping and Navigation

1.4.25 Since international shipping will be included in the baseline assessment, there is no potential for additional transboundary impacts upon shipping and navigation receptors due to construction, operation and maintenance and decommissioning of the Proposed Development. It is therefore proposed that transboundary impacts and effects on shipping and navigation are screened out of the EIA process.

Other Marine Users

1.4.26 Some transboundary impacts on other marine users may be expected due to the offshore environment between nations being frequented by marine activities including shipping, recreational boating and subsea infrastructure (cables/pipelines). However, these impacts are not anticipated to be greater than the individual impacts assessed within the UK and France offshore areas alone and are anticipated to be largely captured as part of the UK assessment (international shipping is included in the Shipping & Navigation baseline for example). Potential transboundary impacts on other marine users will be assessed at PEIR and ES.

1.4.27 PINS will satisfy its legal duties in relation to the notification and consultation requirements with EEA States in accordance with the Transboundary Process set out in Regulation 32 of the EIA Regulations, which will include consideration of potential impacts on other marine users in French waters.

Marine Archaeology and Cultural Heritage

1.4.28 Geomorphological change as a result of dredging during pre-lay activities, jetting during cable laying and cable repairs may change the local hydrodynamic and sedimentary processes. This change may cause some transboundary effects in certain areas. It is therefore proposed that transboundary impacts and effects on marine archaeology and cultural heritage are screened into the EIA process.

Physical Processes

1.4.29 There is potential for transboundary physical processes impacts given that the cable route will extend beyond the UK EEZ into the French EEZ (noting that most impact pathways are scoped out for water >20 m depth). However, the scheme is linear in nature and the activities in the vicinity of the EEZ boundary are not expected to differ in character or approach compared to those within the UK jurisdiction. For completeness potential for transboundary physical processes impacts are screened into the EIA process.

1.4.30 PINS will satisfy its legal duties in relation to the notification and consultation requirements with EEA States in accordance with the Transboundary Process set out in Regulation 32 of the EIA Regulations, which will include consideration of physical process impacts on sensitive receptors in French waters.

Underwater Noise

1.4.31 There is potential for transboundary noise impacts given that the Offshore Cable Corridor will extend beyond the UK EEZ into the French EEZ. The scheme is linear in nature and the activities in the vicinity of the EEZ boundary will not differ in character or approach compared to those locally within the UK jurisdiction (or those locally within the French jurisdiction). There are thus no additional transboundary noise impacts identified, and no predicted increases in e.g., the magnitude of noise generation associated with transboundary impacts.

1.4.32 PINS will satisfy its legal duties in relation to the notification and consultation requirements with EEA States in accordance with the Transboundary Process set out in Regulation 32 of the EIA Regulations.

1.4.33 Where other relevant developments are identified within 5 nm of the EEZ boundary, the potential for transboundary cumulative impacts will be considered.

Table 1.3: Offshore transboundary screening matrix for the Proposed Development

Screening Criteria	Benthic Ecology	Fish and Shellfish Ecology	Commercial Fisheries	Marine Mammals and Turtles	Offshore Ornithology	Shipping and Navigation	Other Marine Users	Marine Archaeology and Cultural Heritage	Physical Processes	Underwater Noise
Characteristics of the development	For a detailed description, see section 4 of the EIA Scoping Report. Key offshore components of the Proposed Development include the Offshore Cable Corridor, comprising HVDC Cables and fibre optic cables.									
Location	The Proposed Development Scoping Boundary is 230.5 km^2 in area (onshore and offshore). The offshore Proposed Development Scoping Boundary extends from Cornborough Range, on the coast of Devon, through the Bristol Channel and Celtic Sea to the limit of the UK EEZ, south west of the UK.									
Environmental Importance	Potential transboundary impact. See section 8.2 of the EIA Scoping Report.	Potential transboundary impact. See section 8.3 of the EIA Scoping Report.	Potential transboundary impact. See section 8.4 of the EIA Scoping Report.	Potential transboundary impact. See section 8.5 of the EIA Scoping Report.	Potential transboundary impact. See section 8.6 of the EIA Scoping Report.	No transboundary impacts are predicted. See section 8.7 of the EIA Scoping Report.	Potential transboundary impact. See section 8.8 of the EIA Scoping Report.	Potential transboundary impact. See section 8.9 of the EIA Scoping Report.	Potential transboundary impact. See section 8.10 of the EIA Scoping Report.	Potential transboundary impact. See section 8.11 of the EIA Scoping Report.
Potential impacts and carrier										
Extent										
Magnitude										
Probability										
Duration										
Frequency										
Reversibility										
Cumulative Impacts	See section 8.2 of the EIA Scoping Report.	See section 8.3 of the EIA Scoping Report.	See section 8.4 of the EIA Scoping Report.	See section 8.5 of the EIA Scoping Report.	See section 8.6 of the EIA Scoping Report.	See section 8.7 of the EIA Scoping Report.	See section 8.8 of the EIA Scoping Report.	See section 8.9 of the EIA Scoping Report.	See section 8.10 of the EIA Scoping Report.	See section 8.11 of the EIA Scoping Report.
Conclusion – potential	Transboundary effects	Transboundary effects	Transboundary effects	Transboundary effects	Transboundary effects	No significant	Transboundary effects	Transboundary effects will	Transboundary effects	Transboundary effects

Screening Criteria	Benthic Ecology	Fish and Shellfish Ecology	Commercial Fisheries	Marine Mammals and Turtles	Offshore Ornithology	Shipping and Navigation	Other Marine Users	Marine Archaeology and Cultural Heritage	Physical Processes	Underwater Noise
for significant effects	will be considered within the EIA process.	will be considered within the EIA process.	will be considered within the EIA process.	will be considered within the EIA process.	will be considered within the EIA process.	transboundary effects.	will be considered within the EIA process.	be considered within the EIA process.	will be considered within the EIA process.	will be considered within the EIA process.

Combined Onshore and Offshore Topics Transboundary Impacts

Introduction

1.4.34 A transboundary screening matrix has been completed for those topics falling under the onshore and offshore combined topics and this is presented in Table 1.4. The conclusions of the transboundary screening for each combined topic are presented in the following sections, together with additional justification.

Climate Change

1.4.35 The climate change baseline for the Proposed Development is outlined in section 9.2 of the EIA Scoping Report.

1.4.36 Potential transboundary impacts associated with the Proposed Development have been identified in section 9.2: Climate Change, of the EIA Scoping Report. It is noted that over the lifetime of the Proposed Development, when considered cumulatively with the overall Xlinks Morocco-UK Power Project (the 'Project'), potential transboundary impacts and resulting effects will be beneficial. All development processes which emit greenhouse gases (GHGs) have the potential to impact the atmospheric mass of GHGs as a receptor, and so may have a transboundary impact on climate change. Transboundary impacts due to other specific international development projects will be taken into account when evaluating the impact of the Proposed Development by defining the atmospheric mass of GHGs as a high sensitivity receptor.

1.4.37 It is therefore proposed that transboundary impacts and effects on climate change are screened into the EIA process.

Landscape, Seascape and Visual Resources

1.4.38 The landscape, seascape and visual resources baseline for the Proposed Development study area is outlined in section 9.3 of the EIA Scoping Report.

1.4.39 Any impacts on landscape and visual resources arising from the construction, operation and maintenance and decommissioning of the Proposed Development will be confined to a localised area in the vicinity of the Proposed Development Scoping Boundary. There is no pathway by which direct or indirect impacts arising from the Proposed Development could result in significant effects on the landscape and visual resources of another state.

1.4.40 Therefore, significant transboundary effects upon seascape, landscape and visual resources are not anticipated and it is proposed that transboundary impacts and effects on seascape, landscape and visual resources are screened out of the EIA process.

Socio-economics and Tourism

1.4.41 The socio-economics and tourism baseline for the Proposed Development is outlined in section 9.4 of the EIA Scoping Report.

1.4.42 Potential transboundary impacts associated with the Proposed Development have been identified in section 9.4: Socio-economics and tourism, of the EIA Scoping Report. It is noted that, when considered cumulatively with the overall Project, there would be potential transboundary impacts upon other economic study areas, including:

- the development, construction and operation of renewable energy generation assets in Morocco; and
- the installation of an HVDC cable which passes the through international waters and near to other countries.

1.4.43 Given that these socio-economic impacts are likely to be positive, and will happen outside of the UK they have been screened out.

Human Health

1.4.44 Any impacts on human health arising from the construction, operation and maintenance and decommissioning of the Proposed Development will be confined to a localised area affected by the footprint of the Proposed Development. These impacts would occur within the Proposed Development Scoping Boundary. There is no pathway by which direct or indirect impacts arising from the Proposed Development could result in significant effects on the human health of another state. It is therefore proposed that transboundary impacts and effects on human health are screened out of the EIA process.

Table 1.4: Offshore and onshore combined topics transboundary screening matrix for the Proposed Development

Screening Criteria	Climate Change	Landscape, Seascape and Visual Resources	Socio-economics and Tourism	Human Health
Characteristics of the development	For a detailed description, see section 4 of the EIA Scoping Report. Key components of the Proposed Development include: the landfall site, onshore HVDC cables, converter stations, HVAC cables, the Alverdiscott Substation Connection Development, utility diversions, highways improvements and offshore HVDC cables.			
Location	The Proposed Development Scoping Boundary is 230.5 km^2 in area (onshore and offshore). The onshore Proposed Development Scoping Boundary includes land between the landfall at Cornborough Range (along the coast) and the existing Alverdiscott Substation site in north Devon.			
Environmental Importance	Potential transboundary impact	No transboundary impacts are predicted.	No transboundary impacts are predicted.	No transboundary impacts are predicted.
Potential impacts and carrier				
Extent				
Magnitude				
Probability				
Duration				
Frequency				
Reversibility				
Cumulative Impacts	See section 9.2 of the EIA Scoping Report.	See section 9.3 of the EIA Scoping Report.	See section 9.4 of the EIA Scoping Report.	See section 9.5 of the EIA Scoping Report.
Conclusion – potential for significant effects	Transboundary effects will be considered within the EIA process.	No significant transboundary effects.	No significant transboundary effects.	No significant transboundary effects.

1.5 Conclusions

1.5.1 This appendix has been prepared in accordance with The Planning Inspectorate's Advice Note twelve and associated Annex. The primary purpose of this appendix is to provide a screening assessment of potential transboundary impacts which have the potential to affect other states.

1.5.2 On the basis of the current information available, as detailed within chapters 7, 8 and 9 of the EIA Scoping Report, the Proposed Development is considered likely to have the potential for impacts (and resulting effects) on the environment in other states for the following topics, which have been screened into the EIA process:

- Benthic ecology;
- Fish and shellfish ecology;
- Commercial fisheries;
- Marine mammals and turtles;
- Offshore ornithology;
- Other marine users;
- Marine archaeology and cultural heritage;
- Physical processes;
- Underwater noise; and
- Climate Change.

1.5.3 The screening of transboundary impacts will be revisited during the EIA process for the Proposed Development once the preliminary assessments are completed. This will ensure that any significant transboundary effects are fully considered within the Environmental Statement submitted alongside the application for development consent.

1.6 References

Department of Energy and Climate Change (DECC) (2015) Guidelines on the assessment of transboundary impacts of energy developments on Natura 2000 sites outside the UK. Department of Energy and Climate Change, London.

The Planning Inspectorate (2020), Advice Note Twelve: Transboundary Impacts and Process: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-twelve-transboundary-impacts-and-process/. [Accessed 03 January 2024].

XLINKS MOROCCO-UK POWER PROJECT

Scoping Report

Appendix B - Discretionary Advice Service Notes for Onshore Ecology

00030
Rev01
January 2024

xlinks.co

Date: 03 August 2021
Our ref: DAS 17671 - 358612
Your ref: Abbotsham to Alverdiscott HV cable route

Brian Chilcott
Principal Ecologist
RPS

BY EMAIL ONLY
c.c. David Kelly X-Links; Mark Barrett RPS.

Customer Services
Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire
CW1 6GJ

0300 060 3900

Dear Brian,

Discretionary Advice Service (Charged Advice) DAS 17671 - 358612
Development proposal and location: Abbotsham to Alverdiscott HV cable route

Thank you for your consultation on the above project dated 29 June 2021.

This advice is being provided as part of Natural England's Discretionary Advice Service. Natural England has been asked to provide advice on:

- potential impacts on designated sites,
- the scope for biological surveys,
- the ecological mitigation plan,
- whether a Habitat Regulations Assessment is required.

This advice is provided in accordance with the Quotation and Agreement dated 14th July 2021 and is based upon:

- the discussion at the MS Teams meeting of 29th July,
- the X-Links survey scope 12th July 2021,
- the AL1-PA-001 General Arrangement pdf.

SUMMARY OF NATURAL ENGLAND'S ADVICE

- The proposal to HDD the cables under the **Mermaid's Pool to Rowden Gut Site of Special Scientific Interest (SSSI)** and the **Taw Torridge Estuary SSSI** will avoid / reduce the impact of the scheme on the SSSI interest.
- A full assessment of the impacts on the special interest features and mitigation proposed should be included in the EIA.
- The scope of biological survey is acceptable.

Details are provided below.

Potential Impacts on designated sites

Mermaid's pool to Rowden Gut Site of Special Scientific Interest (SSSI) is notified for its geological interest. Further detail about SSSI interest features can be found at www.magic.gov.uk

The approach for the cable route landfall at the coast which has been previously found acceptable by Natural England at this site is to use Horizontal Directional Drilling (HDD) to take the cables from the cliff top to the seabed. As HDD doesn't involve surface excavation across the foreshore or surface laying of cables Natural England consider the impact on the SSSI from HDD to be negligible.

If there is a need to drill exploratory cores into the rock on the foreshore as part of geological investigations prior to HDD, consideration will need to be given to how the bore holes themselves / work on the foreshore would avoid damage to the SSSI interest. Faults and fractures in the geology should be expected.

It is important to note that whilst the rate of coastal erosion and cliff recession is low at the landfall, any proposal in the longer term to introduce coastal protection for the landfall site is unlikely to be acceptable.

I have attached the advice Natural England gave in 2011 and 2013 regarding the Atlantic Array onshore cable as promised which considers geological investigations and erosion rates.

A method statement should form part of the Environmental Statement and we would recommend employing a geological watching brief.

The route of the cable corridor will result in temporary trenching along its entire length. This provides an opportunity for recording and sampling temporary sections as the trench cuts through shallow superficial deposits and potentially into the underlying Bideford, Bude and Crackington Formations. Should the project go ahead we would recommend that provision should be made to provide access to appropriately qualified geologists during the construction phase of the cable corridor.

Our recommendation is that the results of any ground investigation you undertake and Natural England's advice should be included as part of the Environmental Statement.

The Taw Torridge Estuary SSSI is notified for its overwintering bird interest and intertidal habitats. The composition of the SSSI bird assemblage alters through time as species populations fluctuate. Therefore, any native wetland bird species (in practice waders and wildfowl) present from September to March inclusive will be a legitimate part of the bird assemblage.

The river crossing is outside the SSSI but is designated as the Torridge Estuary County Wildlife Site and the Kynoch's Foreshore Local Nature Reserve and includes coastal saltmarsh and mudflat priority habitats. We would recommend contacting Devon County Council and the North Devon Biosphere Reserve for the detail of these sites.

The approach for the cable route upstream of the SSSI is to use Horizontal Directional Drilling (HDD) to take the cables below the River Torridge.

Overwintering bird surveys are proposed and mitigation will be required for any potential disturbance identified.

Measures will be required to ensure that no contamination or pollutants enter the estuary habitats as a result of the works.

Ecological mitigation plan

The cable route has been designed to minimise ecological impacts by, for example, utilising existing gaps in hedgerows, avoiding key trees and avoiding natural springs.

The sub-station at Alverdiscott will involve habitat loss given the large footprint proposed and consideration will be given to mitigation and biodiversity net gain through the creation of new hedgerows / hedgerow strengthening and tree planting at scale.

I am not aware of a local landscape scale ecological mitigation plan for the area at Alverdiscott. However, the North Devon Biosphere Reserve is currently consulting on a Nature Recovery Plan which may identify opportunities that this proposal could support.

In addition to the NPPF and the Defra 25-year Environment Plan, Policy ST14 of the Joint Torridge and North Devon Local Plan also expects all development to provide a net gain in biodiversity.

As you have done for the cable route, we advise you first to follow the mitigation hierarchy and consider what existing environmental features on and around a site can be retained or enhanced before considering what new features could be incorporated into a development proposal.

Biodiversity metrics are available to assist developers and local authorities in quantifying and securing net gain. Local Authorities can set their own net gain thresholds, but the Environment Bill currently proposes a 10% threshold.

Requirement for a Habitat Regulations Assessment

Based on the information provided, Natural England's advice is that the proposed cable route is unlikely to have a significant effect on terrestrial European sites and can therefore be screened out from requiring further assessment.

However, there is likely to be a requirement for HRA in terms of marine sites and I understand you will be consulting Natural England again regarding impacts on intertidal and marine habitats.

For clarification of any points in this letter, please contact me on [redacted] or [redacted].

This letter concludes Natural England's Advice within the Quotation and Agreement dated 14th July 2021.

☒ The advice provided in this letter has been through Natural England's Quality Assurance process

The advice provided within the Discretionary Advice Service is the professional advice of the Natural England adviser named below. It is the best advice that can be given based on the information provided so far. Its quality and detail is dependent upon the quality and depth of the information which has been provided. It does not constitute a statutory response or decision, which will be made by Natural England acting corporately in its role as statutory consultee to the competent authority after an application has been submitted. The advice given is therefore not binding in any way and is provided without prejudice to the consideration of any statutory consultation response or decision which may be made by Natural England in due course. The final judgement on any proposals by Natural England is reserved until an application is made and will be made on the information then available, including any modifications to the proposal made after receipt of discretionary advice. All pre-application advice is subject to review and revision in the light of changes in relevant considerations, including changes in relation to the facts, scientific knowledge/evidence, policy, guidance or law. Natural England will not accept any liability for the accuracy, adequacy or completeness of, nor will any express or implied warranty be given for, the advice. This exclusion does not extend to any fraudulent misrepresentation made by or on behalf of Natural England.

Yours sincerely

Clare Guthrie
Lead Adviser Devon Cornwall & Isles of Scilly Team
[redacted]
c.c. commercialservices@naturalengland.org.uk

XLINKS MOROCCO-UK POWER PROJECT

Scoping Report

Appendix C – Offshore Ornithology

00030
Rev01
January 2024

xlinks.co

Contents

Tables

Figures

1 OFFSHORE ORNITHOLOGY

1.1 Introduction

1.1.1 Offshore ornithology has been scoped out of the EIA process. This decision was undertaken following extensive review by technical experts and this detailed scoping section was prepared as part of, and to justify, this scoping conclusion.

1.1.2 This section of the Scoping Report identifies the offshore ornithology receptors relevant to the offshore elements of the Proposed Development. This section also considers the potential impacts arising from the construction, operation and maintenance, and decommissioning of the Proposed Development.

1.2 Relevant Policy, Legislation and Guidance

1.2.1 The lists in this section should be read in conjunction with Section 2: Policy and Legislation of the Scoping Report.

Legislative and Policy Context

1.2.2 The following key legislation and policy documents are relevant to offshore ornithology:

- Convention on the Conservation of European Wildlife and Natural Habitats (1979);
- Energy Act 2023 (2023);
- European Commission Directive 2009/147/EC (codified version of 79/409/EC) on the Conservation of Wild Birds (the 'Birds Directive') (2009);
- EC Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (known as the 'Habitats Directive') (1992);
- Offshore Marine Conservation (Natural Habitats, &c.) Regulations (the 'Offshore Regulations') (2017);
- Ramsar Convention on Wetlands of International Importance (1971);
- South West Inshore and South West Offshore Marine Plans (2021);
- The Convention on the Conservation of Migratory Species of Wild Animals (the 'Bonn Convention') (1979);
- The Marine Strategy Regulations (2010);
- The Natural Environment and Rural Communities Act (2006);
- The Wildlife and Countryside Act (as amended) (1981);
- UK Marine Policy Statement (2011); and
- UK Post-2010 Biodiversity Framework (2012).

Guidance documents

1.2.3 Guidance documents relevant to offshore ornithology include the following:

- Natural England and JNCC (2022) Nature conservation considerations and environmental best practice for subsea cables for English Inshore and UK offshore waters
- The Chartered Institute of Ecology and Environmental Management (CIEEM) (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (as amended);
- Institute of Environmental Management and Assessment (IEMA) (2017) Delivering Proportionate Environmental Impact Assessment (EIA): A Collaborative Strategy for Enhancing UK Environmental Impact Assessment Practice; and
- Planning Inspectorate (PINS) (2019) - Advice Note Seventeen: Cumulative Effects Assessment.

1.3 Study Area

1.3.1 The study area for the offshore ornithology assessment is defined as the Offshore Cable Corridor which runs from the MHWS to the UK EEZ boundary, and a surrounding 2 km buffer.

1.3.2 The study area is based on a likely ZOI of works, as there is the potential to disturb and/or displace birds present within 2 km of the Offshore Cable Corridor due to noise and visual disturbance during the construction, operation and maintenance (where infrequent maintenance or repairs are required) and decommissioning phases of the Proposed Development. This is highly precautionary and is based on professional judgment.

1.3.3 Using this precautionary approach, although any disturbance would only potentially occur within 2 km of the Offshore Cable Corridor, it should be noted that bird species are highly mobile. For example, breeding seabird species can forage a considerable distance from their breeding colonies. For this reason, disturbance could impact the foraging activities of species breeding outside the study area .

1.3.4 For breeding seabird species, published mean-maximum foraging ranges have been used to establish potential connectivity between the study area and designated sites (Woodward *et al*. 2019).

1.3.5 There is no guidance or literature to support a specific distance for the consideration of breeding seabirds, however, using professional judgement it is considered that breeding colonies up to 236 km (the mean-max foraging range plus one standard deviation for lesser black-backed gull *Larus fuscus*) from the study area may have connectivity, where the study area has the potential to support foraging birds breeding at these colonies.

1.3.6 In addition, more distant colonies have the potential to be functionally linked to the study area should they host seabirds with extremely large foraging ranges, such as Manx shearwater *Puffinus puffinus*, Leach's petrel *Hydrobates leucorhous*, storm petrel *H. pelagicus*, fulmar *Fulmarus glacialis* and gannet *Morus bassanus* which have mean-max foraging ranges between 315 and 1,347 km.

1.3.7 No sites over 236 km from the study area have been considered in this report as the study area would constitute a negligible proportion of their overall foraging range. Additionally, it is not anticipated that birds from these colonies will reach the study area in sufficient numbers to warrant inclusion within the assessment.

1.3.8 Some of these locations over 236 km from the study area, also have no straight-line route to the site without crossing over land and as seabirds generally avoid overland flights this means that foraging distances that would need to be travelled to fly to the study area are in effect, much greater than they would be if measured in a straight line.

1.3.9 The Offshore Cable Corridor, study area and 236 km buffer of the study area are shown on **Figure 1.**

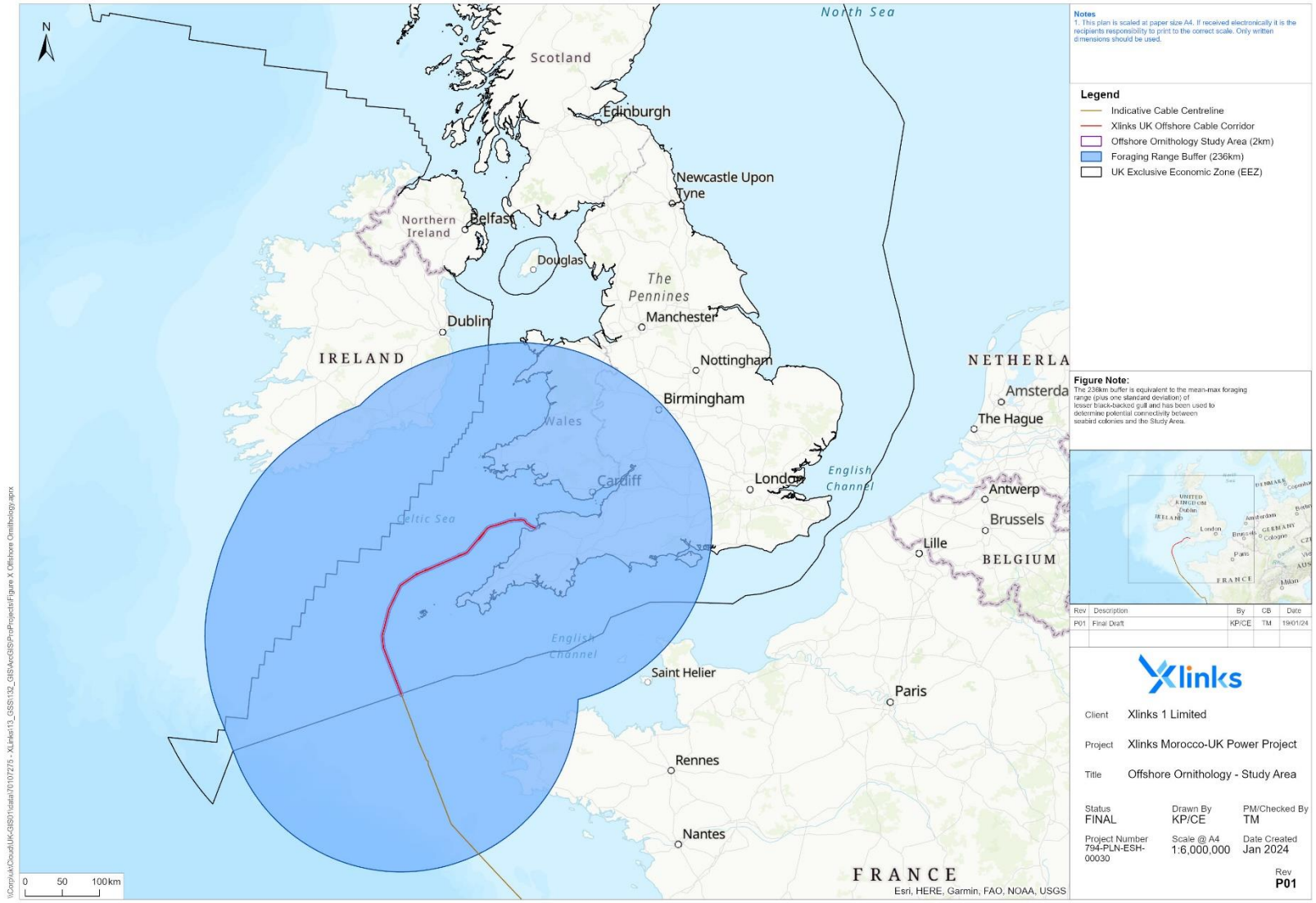

Figure 1: Offshore Ornithology Study Area

1.4 Data Sources

1.4.1 The data sources used to inform the baseline assessment primarily comprise published materials which are publicly available online. An initial desk-based review has identified several data sources which provide baseline data coverage of the Proposed Development study area.

1.4.2 To inform this Scoping Report section, a high-level desk-based assessment has been conducted for offshore ornithology receptors using a range of existing ecological data (**Table 1**). Following initial review of the Proposed Development, it is considered that a desk-based assessment will be sufficient to inform an impact assessment, and it is proposed that site-specific offshore ornithology are scoped-out. Based on the limited potential for impacts, it is considered that site-specific surveys would be disproportionate.

Table 1: Desk based baseline data sources – Offshore ornithology

Source	Summary
MAGIC Map, Natural England and Natural Resources Wales websites	These sources have been used to determine designated sites with potential connectivity to the study area, and data on designated sites, including location, size and qualifying features.
British Trust for Ornithology Non-Estuarine Waterbird Survey (NEWS) Report and online data	This source contains data collected from volunteer surveys (most recently during 2015 to 2016) displaying species distribution within non-estuarine environments. This includes data to determine species likely to be present within nearshore environments at the proposed landfall location.
Non-breeding season populations of seabirds in UK waters: Population sizes for Biologically Defined Minimum Population Scales	This report provides information on the non-breeding season populations of seabirds in UK waters, including within the Offshore Cable Corridor. This report also provides data on species demography and biometrics. This report has been used to determine species (and number of individuals) which may be present in the study area.
Seabird Monitoring Programme (SMP) data	The SMP is an annual monitoring programme which was established in 1986 to monitor the breeding populations and breeding success of 25 species of seabird which breed in Britain and Ireland. These data have been used to determine seabird colonies which have connectivity to the study area based on the mean-max foraging range of the breeding species present.
Waggitt *et al.* (2020)	Provides large-scale data on seabird density across the UK during the breeding and non-breeding seasons, which have been used to determine species distribution within the study area.
Joint SNCB Interim Displacement Guidance Note (JNCC)	Published, peer reviewed scientific literature on bird behaviour and potential impacts from OWFs (transferable offshore literature).
Parsons *et al.* (2019)	A summary of evidence from several sources to help identify important marine areas in the UK that are used by Balearic shearwater *Puffinus mauretanicus.*
Kober *et al*. (2010)	Analysis of European Seabirds At Sea (ESAS) data, conducted to identify and delineate seabird aggregations within the British Fishery Limit that might qualify as Special Protection Areas (SPAs).
Furness *et al*. (2015)	Non-breeding season data on seabird populations in UK waters which categorises species into distinct geographical populations.
Bradbury *et al.* (2014)	Published, peer reviewed scientific literature on seabird sensitivity to OWFs (relevant to other infrastructure types).

Source	Summary
Burnell *et al.* (2023)	Census of Britain and Ireland's breeding seabirds, providing up to date population data.
Woodward *et al*. (2019)	Updated seabird foraging ranges to inform Habitat Regulations Assessment (HRA), which can be used to determine potential connectivity of breeding colonies to the study area.
Stone *et al*. (1995)	Atlas of seabird distribution in north-west European waters.
Trektellen	Website which collates records of migratory birds globally, which has been used to determine presence of migratory species.

1.5 Baseline Environment

1.5.1 This section presents an overview of the existing environment, key bird species likely to be present within the study area and designated sites with potential connectivity to the study area based on an initial desk-based assessment.

1.5.2 The Offshore Cable Corridor enters the UK EEZ south of the Isles of Scilly, following a route northward to the west of the Isles of Scilly, finally moving north west to the proposed landfall at Cornborough on the north Devon coast. The total length of the Offshore Cable Corridor is c.370 km, which is located entirely within the Celtic Sea.

1.5.3 The routing of the Offshore Cable Corridor has been informed by route optimisation studies (see Section 3: Needs and Alternatives of the EIA Scoping Report), which has included potential ornithological constraints via considerations to avoid all designated sites where possible. Further detail on route development will be provided in the PEIR and ES.

Current Offshore Ornithology Baseline

Designated Sites

1.5.4 A search was made for designated sites with potential connectivity to the study area. This included any SPAs, Ramsar sites and SSSIs designated for ornithological features within 236 km of the study area.

1.5.5 Sites were assessed as having potential connectivity to the study area if designated for an ornithological feature which could potentially forage within the study area, based on mean-max foraging ranges detailed by Woodward *et al.,* (2019).

1.5.6 The following sites of international importance (SPA and Ramsar sites) designated for their ornithological features with potential connectivity to the study area have been identified (**Table 2**). Qualifying features of designated sites which have no potential connectivity to the study area have been omitted.

Table 2: Designated sites of international importance with potential connectivity to the study area

Site Name	Designation	Distance from study area *	Qualifying features with potential connectivity to the study area
Isles of Scilly	SPA and Ramsar	36 km	• Storm petrel • Lesser black-backed gull • Great black-backed gull *Larus marinus* • Seabird assemblage
Skomer, Skokholm and the seas off Pembrokeshire	SPA	47 km	• Manx shearwater • Puffin *Fratercula arctica* • Lesser black-backed gull • Storm petrel • Seabird assemblage
Severn Estuary	Ramsar	77 km	• Lesser black-backed gull
Grassholm	SPA	78 km	• Gannet
Aberdaron Coast and Bardsey Island	SPA	169 km	• Manx shearwater
*It should be noted that some site boundaries include marine habitats, and therefore the distance between the study area and breeding colonies may be greater than the distance stated.			

1.5.7 The following SSSIs of national importance designated for their ornithological features with potential connectivity to the study area have been identified (**Table 3**). Qualifying features of designated sites which have no potential connectivity to the study area have been omitted.

Table 3: Designated sites of national importance with potential connectivity to the study area

Site Name	Designation	*Distance from study area	Qualifying features with potential connectivity to the study area
Lundy	SSSI	2 km	• Guillemot • Kittiwake • Manx shearwater • Puffin • Razorbill
St Helen's (with Northwethel and Men-A-Vaur)	SSSI	39 km	• Razorbill • Guillemot • Fulmar
Annet	SSSI	40 km	• Manx shearwater • Storm petrel • Lesser black-backed gull • Great black-backed gull • Puffin
Pentle Bay, Merrick and Round Islands	SSSI	40 km	• Storm petrel
Pentire Peninsula	SSSI	40 km	• Fulmar

Site Name	Designation	*Distance from study area	Qualifying features with potential connectivity to the study area
			• Guillemot • Puffin • Razorbill
Tintagel Cliffs	SSSI	42 km	• Breeding assemblage, including: – Razorbill – Kittiwake – Great black-backed gull – Lesser black-backed gull – Herring gull *Larus argentatus* – Fulmar – Puffin
Chapel Down (St. Martins)	SSSI	44 km	• Kittiwake
Godrevy Head to St Agnes SSSI	SSSI	46 km	• Kittiwake • Breeding assemblage, including: – Razorbill – Guillemot
Castlemartin Range	SSSI	54 km	• Seabird assemblage, including: – Guillemot – Razorbill – Kittiwake – Puffin
Gerrans Bay to Camels Cove	SSSI	68 km	• Guillemot • Kittiwake • Breeding assemblage • Razorbill
Skokholm	SSSI	72 km	• Storm petrel • Manx shearwater • Puffin • Razorbill • Guillemot • Lesser black-backed gull • Seabird assemblage, including: – Fulmar – Herring gull – Great black-backed gull
Skomer Island and Middleholm	SSSI	75 km	• Storm petrel • Manx shearwater • Puffin • Razorbill • Guillemot • Lesser black-backed gull • Kittiwake • Breeding assemblage – Fulmar – Herring gull

Site Name	Designation	*Distance from study area	Qualifying features with potential connectivity to the study area
Grassholm	SSSI	80 km	• Gannet
Flat Holm	SSSI	86 km	• Lesser black-backed gull
Berry Head to Sharkham Point	SSSI	86 km	• Guillemot
Prawle Point and Start Point	SSSI	94 km	• Breeding assemblage, including: – Kittiwake
Ynys Enlli	SSSI	179 km	• Manx shearwater
Gwylan Islands	SSSI	183 km	• Puffin
*It should be noted that some site boundaries include marine habitats, and therefore the distance between the study area and breeding colonies may be greater than the distance stated.			

1.5.8 The initial desk-based assessment has identified a total of seven internationally important designated sites and 18 nationally important sites with qualifying features with potential connectivity to the study area. All of the designated sites are designated for seabird species which have the potential to forage within the study area, as it falls within their mean-max foraging range (plus one standard deviation, as outlined in Woodward *et al.* (2019)).

1.5.9 The nearest designated site to the study area is Lundy SSSI which is an offshore island west of Devon situated 2 km north of the study area. The SSSI is designated for its breeding populations of guillemot, razorbill, Manx shearwater, kittiwake and puffin. All other relevant designated sites are more than 35 km from the study area.

Offshore Ornithology Species

1.5.10 The Celtic Sea is important for seabirds throughout the year, providing foraging grounds for seabirds breeding in adjoining coastal areas during the breeding season, from colonies further afield in the non-breeding season, and for sub-adult birds (pre-breeding age) throughout the year.

1.5.11 Overall, at least 23 seabird species breed on coastal areas around the Celtic Sea, including important populations of Manx shearwater, storm petrel and gannet (ICES 2022). This includes colonies which are designated sites as outlined in **Table 2** and **Table 3**.

1.5.12 Species which have the potential to forage within the study area are those which breed at colonies which are within their mean-max foraging range (plus one standard deviation, as outlined in Woodward *et al.* (2019)). SMP data shows a number of breeding colonies present with potential connectivity to the study area, including colonies which are designated as SPAs, Ramsar sites and SSSIs.

1.5.13 The desk-based assessment finds that the following species (listed within **Table 4**) may have potential connectivity with the offshore ornithology study area.

Table 4: Species with potential connectivity to the study area

Species	Conservation status and legal protection*	Potential for connectivity to the study area
Kittiwake	Red	Kittiwake is a Red listed BoCC which is a qualifying feature of a number of designated sites which have potential connectivity to the study area. SMP data shows that kittiwake also breeds at a number of non-designated colonies with potential connectivity to the study area. Data from Waggitt et al. (2019) and Furness et al. (2015) shows that kittiwake is likely to be present within the study area, with greater numbers overwintering than present during the breeding season.
Great black-backed gull	n/a	Great black-backed gull is not listed as a BoCC, however is a qualifying feature of a number of designated sites which have potential connectivity to the study area. SMP data shows that great black-backed gull also breeds at a number of non-designated colonies with potential connectivity to the study area. Data from Furness et al. (2015) shows that great black-backed gull is likely to be present within the study area in the non-breeding season.
Herring gull	Amber	Herring gull is an Amber listed BoCC which is a qualifying feature of a number of designated sites which have potential connectivity to the study area. SMP data shows that herring gull also breeds at a number of non-designated colonies with potential connectivity to the study area. Data from Waggitt et al. (2019) and Furness et al. (2015) shows that herring gull is likely to be present within the study area, however the OCC appears to support a relatively low density of birds in the context of the UK distribution.
Lesser black-backed gull	Amber	Lesser black-backed gull is an Amber listed BoCC which is a qualifying feature of a number of designated sites which have potential connectivity to the study area. SMP data shows that lesser black-backed gull also breeds at a number of non-designated colonies with potential connectivity to the study area. Data from Waggitt et al. (2019) and Furness et al. (2015) show that lesser black-backed gull is likely to be present within the study area, with greater numbers present during the breeding season. The Offshore Cable Corridor is does not appear to support a particularly high density of birds in the context of the UK distribution.
Guillemot	Amber	Guillemot is an Amber listed BoCC which is a qualifying feature of a number of designated sites which have potential connectivity to the study area. SMP data shows that guillemot also breeds at a number of non-designated colonies with potential connectivity to the study area.

Species	Conservation status and legal protection*	Potential for connectivity to the study area
		Data from Waggitt et al. (2019) and Furness et al. (2015) shows that guillemot is likely to be present within the study area, with greater numbers present during the non-breeding season. The Offshore Cable Corridor does not appear to support a particularly high density of birds in the context of the UK distribution and supports a low density of birds during the breeding season.
Razorbill	Red	Razorbill is a Red listed BoCC which is a qualifying feature of a number of designated sites which have potential connectivity to the study area. SMP data shows that razorbill also breeds at a number of non-designated colonies with potential connectivity to the study area. Data from Waggitt et al. (2019) and Furness et al. (2015) shows that razorbill is likely to be present within the study area, with greater numbers present during the non-breeding season. The Offshore Cable Corridor does not appear to support a particularly high density of birds in the context of the UK distribution during either the breeding or non-breeding seasons.
Puffin	Red	Puffin is a Red listed BoCC which is a qualifying feature of a number of designated sites which have potential connectivity to the study area. SMP data shows that puffin also breeds at a number of non-designated colonies with potential connectivity to the study area. Data from Waggitt et al. (2019) and Furness et al. (2015) shows that puffin is unlikely to be present within the study area unless in very low densities.
Storm petrel	Amber, Annex I	Storm petrel is an Amber listed BoCC and is also listed on Annex I of the Birds' Directive. It breeds at a number of designated sites with potential connectivity to the study area in the Isles of Scilly and at Grassholm island. Data from Waggitt et al. (2019) and Furness et al. (2015) shows that storm petrel is generally absent from the study area during the non-breeding season, although could be present at higher densities in offshore waters during the breeding season. This species has a very large foraging range.
Fulmar	Amber	Fulmar is an Amber listed BoCC which is a qualifying feature of a number of designated sites which have potential connectivity to the study area. SMP data shows that fulmar also breeds at a number of non-designated colonies with potential connectivity to the study area. Data from Waggitt et al. (2019) and Furness et al. (2015) shows that fulmar is likely to be present within the study area at similar densities year-round. The Offshore Cable Corridor does not appear to support a particularly high density of birds in the context of the UK distribution.

Species	Conservation status and legal protection*	Potential for connectivity to the study area
Great shearwater (Puffinus gravis)		Great shearwater is not listed as a BoCC, and does not breed within the UK. There is the potential for birds to be present within the study area during the autumn post-breeding, and data from Trektellen shows that numbers were particularly high within the Celtic Sea during 2023.
Manx shearwater	Annex I	Manx shearwater is listed on Annex I of the Birds' Directive and only breeds at a small number of locations in the UK, with colonies which are designated sites having potential connectivity to the study area. Data from Waggitt et al. (2019) and Furness et al. (2015) shows that Manx shearwater is unlikely to be present within the study area during the non-breeding season, however the Celtic Seas are important for foraging birds during the breeding season, particularly close to breeding colonies. This species has a very large foraging range.
Balearic shearwater	Red, Annex I	Balearic shearwater is a Red listed BoCC and is listed on Annex I of the Birds' Directive. The species does not breed within the UK. There is the potential for birds to be present within the study area during the autumn post-breeding, and data from Trektellen shows that numbers were increased within the Celtic Sea during 2023.
Gannet	Amber	Gannet is an Amber listed BoCC and only breeds at a small number of locations in the UK, however it has a large foraging range. Grassholm SPA/SSSI is designated for its breeding gannet population, while the nearby St Margaret's Island also holds breeding pairs which could forage within the study area. Data from Waggitt et al. (2019) and Furness et al. (2015) shows that gannet is likely to be present within the study area during the non-breeding and breeding seasons, particularly close to breeding colonies.
Cormorant (Phalacrocorax carbo)	Amber	Cormorant is an Amber listed BoCC, although it is not a qualifying feature of any designated sites which have potential connectivity to the study area. SMP data shows that cormorant breeds at a number of colonies with potential connectivity to the study area. As this species has a relatively small foraging range it is only likely to be present in the nearshore.
*Amber or Red = conservation status of a species as outlined within Birds of Conservation Concern 5 (Stanbury et al., 2021). Annex I = A species listed on Annex I of the Birds Directive.		

1.5.14 Although large numbers of birds are known to be present in the Celtic Sea, particularly during the breeding season, none of the data sources consulted indicate that the study area is of particular importance for any species listed in comparison to the surrounding habitat outside the study area. Therefore, it is considered unlikely that these species are likely to be present within the study area in notable densities.

Future Baseline Conditions

1.5.15 The current baseline description above provides an accurate reflection of the current state of the existing environment and of the construction phase baseline (construction anticipated to take place within approximate nine month windows in 2028 and 2030). Outside of short-term or seasonal fluctuations, changes to the baseline in relation to offshore ornithology usually occur over an extended period. Based on current information regarding reasonably foreseeable events over the next five years (based on UK construction activities starting in 2028), the baseline is not anticipated to fundamentally change from its current state at the point in time when impacts could occur.

1.5.16 It should be noted that during 2023, there were exceptional numbers of Cory's shearwater and increased numbers of Great shearwater present in the Celtic Seas during the summer and early autumn post-breeding based on Trektellen data and anecdotal records (pers comms. Simon Warford).

1.5.17 This northward displacement of birds can likely be attributed to warmer sea temperatures due to a strong La Niña event and is considered an irregular event, however, could be indicative of a possible future baseline in the event of warming sea surface temperatures.

1.5.18 Over a longer timescale, in the absence of significant local impacts, it is likely that the populations of bird species present will evolve in accordance with regional and national trends. The assumed operational life of the Proposed Development is 50 years, and therefore there exists the potential for the baseline to evolve between the time of assessment and point of operation and maintenance phase or decommissioning phase impact.

1.5.19 Should the Proposed Development be constructed or not, changes in species populations are likely to result from climatic factors (such as temperature change and subsequent impacts on species' ranges) and other natural phenomena (such as the recent avian influenza epidemic), or anthropogenic activities such as changes in fishing activities indirectly affecting marine bird communities. Baseline conditions are therefore not static and are likely to exhibit some degree of change over time independent of the Proposed Development.

1.6 Scope of the Assessment

1.6.1 A range of potential activities with potential to cause impact on offshore ornithology have been identified, associated with the construction, operation and maintenance, and decommissioning phases of the Proposed Development. The potential for the following impacts to occur is considered in this section:

- Visual and noise disturbance;
- Indirect impacts via loss/disturbance to habitats; and
- Pollution incidents.

1.6.2 Potential impacts scoped out of the assessment are presented in **Table 5** with justification for why the impact may be scoped out.

1.6.3 The sensitivity of offshore ornithology receptors to potential impacts is determined by the species' ecology and behaviour. A species sensitivity to potential impacts can be predicted by information available on species responses to various stimuli (e.g., predators, noise and visual disturbance) and whether a species ecology makes it vulnerable to potential impacts. The sensitivity of species has been considered when determining the scope of the assessment.

1.6.4 The potential for impacts on offshore ornithology receptors is also determined by their potential extent, magnitude, duration, frequency, timing and reversibility of impacts (CIEEM, 2018). These factors have also been considered when determining the scope of the assessment.

1.6.5 Based on the negligible potential for impacts on offshore ornithology receptors arising from the Proposed Development, all impacts on offshore ornithology have been scoped out as outlined in **Table 5.**

Table 5: Impacts proposed to be scoped out of the assessment for offshore ornithology

Impact	Justification
Direct impacts - disturbance, displacement and impacts on foraging birds (construction, operation and maintenance, and decommissioning)	There is the potential for disturbance and/or displacement of birds within the study area due to the presence of vessels during the construction, operation and maintenance, and decommissioning phases. As stated in the Maximum Design Scenario, there is the potential for up to twenty guard vessels, plus installation vessels to be present during the construction phase (noting that guard vessels would be stationed 10 nm apart. Due to the distance from the Offshore Cable Corridor to breeding seabird colonies, there is no pathway for direct impacts at breeding colonies (including designated sites). However, there is the potential for impacts to qualifying features of designated sites foraging within the study area (functionally linked habitat). The construction phase is provisionally scheduled to be carried out between February and October 2028 for Bipole 1 and February and October 2030 for Bipole 2. However, in each phase works would be sequential and transient (linear installation), and there is only the potential for impacts within small sections of the study area at any one time. Potential impacts would be highly localised and for a limited, short-term duration and only last as long as vessels are present within c.2 km of any area. During the operation and maintenance phase, the potential for disturbance and displacement is greatly reduced, with only a single vessel present during infrequent monitoring surveys. Where any maintenance is required, impacts would likely be equivalent to those during the construction phase, over a very limited area. Impacts during the decommissioning phase are likely equivalent to those during the construction phase across the entirety of the Offshore Cable Corridor (assuming worst case decommissioning methods). There is the potential for foraging seabirds to be present within the study area during the breeding and non-breeding seasons. This includes qualifying species of designated sites with potential connectivity to the study area, as the distance to the study area from breeding colonies is within the mean-max foraging range (plus one standard deviation) of a number of seabird species.

Impact	Justification
	There is the potential for disturbance and displacement of foraging seabirds within a 2 km radius of vessels. As stated in the Baseline Environment section of this section, it is considered unlikely that the study area supports significant numbers of foraging birds in the context of their UK distribution, or in comparison to the surrounding area. As vessels would only be present within a discrete area for a short period of time, any impacts arising from noise and visual disturbance would be short-term and reversible. In addition, disturbance from vessels is common within the Celtic Sea, and therefore species will be habituated to this source of disturbance, which will be similar to the baseline conditions within the wider area. It should also be noted that the foraging ranges for seabird species which may be disturbed or displaced is very large (Woodward *et al*., 2019). Therefore, although there is the potential to impact foraging species, the proportion of their overall foraging range within which birds would be displaced from or disturbed is very small. Beyond a 2 km radius from vessels, there would be suitable alternative foraging habitat available for any displaced individuals and therefore foraging could continue throughout works. There is also the potential for foraging to be directly impacted due to increased turbidity which could impact foraging success for species. Again, this would be highly localised and for a limited, short-term duration. Therefore, although it is likely that several seabird species will forage within the study area, the potential impacts during construction, operation and maintenance, and decommissioning are considered (with high confidence) to be of negligible significance. As there is negligible potential for direct impacts on offshore ornithology receptors, it is proposed that this is scoped out of the EIA. This is consistent for example, with the approach that is used to assess the impact arising from export cables associated with offshore wind farms.
Indirect impacts due to effects on prey species and habitats (construction, operation and maintenance, and decommissioning)	Impacts may result from underwater noise or the generation of suspended sediments that may alter the distribution, physiology or behaviour of prey species and thereby have an indirect effect on offshore ornithology receptors. These mechanisms could potentially result in less prey, in the area adjacent to active construction works, being available to foraging seabirds. For example, if there are impacts on fish, which reduces foraging success, then breeding success of seabird colonies could be negatively impacted. However, any impacts on prey species arising from noise and visual/physico-chemical/chemical disturbance would be short-term and reversible, and any habitats which are impacted are likely to be rapidly recolonised by prey species following cable burial. The area within which prey would be impacted is also very small in relation to the foraging range of qualifying features (Woodward *et al*., 2019). It is considered that the significance of any indirect impacts on offshore ornithology receptors due to effects on prey would therefore be negligible during all phases of the Proposed Development, and this can be scoped out of the EIA.
Accidental pollution during construction, operation and maintenance, and decommissioning	The impact of pollution, including accidental spills and contaminant releases associated with the construction activities and use of supply/service vessels, may lead to direct mortality of birds or indirect impacts via causing a deterioration in habitat quality or a reduction in prey availability, either of which may affect species' survival rates.

Impact	Justification
(including indirect effects)	It has been predicted that any impact would be of local spatial extent, short term duration, and not significant in EIA terms. This is considered to be equally applicable to the Proposed Development, for which activities are likely of a reduced scale. Therefore, assuming that construction best practice is followed, it is intended to scope this impact out of further consideration within the EIA Report.

1.6.6 Having scoped out the impacts listed within **Table 5** there are no remaining potential impacts associated with offshore ornithology which would require assessment within the EIA.

1.7 Measures Adopted as Part of the Proposed Development

1.7.1 The following measures adopted as part of the Proposed Development are relevant to offshore ornithology, considered in addition to the overarching design and embedded measures in Section 4: Project Description of the Scoping Report. These measures may evolve as the engineering design and the EIA progresses.

- Adherence to standard pollution prevention measures (which will be ensured via an Offshore CEMP).
- Development of and adherence to a VMP. The VMP will confirm the types and numbers of vessels that will be engaged on the Proposed Development and consider vessel coordination including indicative transit route planning.

1.7.2 As there is a commitment to implementing these environmental measures, and also to various standard sectoral practices and procedures, they are considered inherently part of the design of the Proposed Development and have, therefore, been considered in the scoping assessment.

1.8 Proposed Assessment Methodology

1.8.1 As all potential impacts on offshore ornithology receptors have been scoped out of the EIA assessment (as set out in **Table 5**), it is considered that no assessment is required, and therefore there is no need to set out the proposed assessment methodology.

1.9 Potential Cumulative Effects

1.9.1 There is potential for cumulative effects on sensitive receptors to occur when the Proposed Development is considered together with other developments. However, as all potential impacts on offshore ornithology receptors have been scoped out of the EIA assessment, no further cumulative impact assessment will be undertaken.

1.9.2 It is considered that impacts associated with the Proposed Development in isolation are negligible, and that there is no potential for these to contribute to a significant cumulative impact.

1.10 Potential Inter-related Effects

1.10.1 The potential for inter-related effects has been considered within this section. As all impacts on offshore ornithology receptors have been scoped out of the EIA, no further assessment of inter-related effects is required.

1.11 Potential Transboundary Impacts

1.11.1 There is the potential for transboundary impacts on offshore ornithology receptors due to the large foraging ranges of breeding seabird species. For example, species which breed in one jurisdiction could forage in waters located in another jurisdiction.

1.11.2 As the offshore ornithology study area encompasses breeding seabird colonies (including Natura 2000 sites) beyond the UK EEZ, there is the potential for associated seabirds to forage within the Offshore Cable Corridor. There is potential for connectivity to colonies within Irish and French EEZs. Sites designated for breeding seabirds within the Irish and French EEZs are a considerable distance from the Offshore Cable Corridor, therefore there would be no direct impacts at colonies. Impacts on foraging birds with connectivity to Irish breeding colonies would be equivalent to those outlined in **Table 4**. It is also noted that sites within the French EEZ will be assessed within the separate application which covers the section of the Offshore Cable Corridor within the French EEZ. The scale of any potential interaction between the UK activities and sites in the French jurisdiction will by definition be less than the same linear activities when conducted within the French EEZ.

1.11.3 There is a single designated site, Mers Celtiques - Talus du golfe de Gascogne SPA[1], which is present adjacent to the Offshore Cable Corridor. This is a very large offshore SPA which supports a range of qualifying bird species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC. Due to the proximity of the SPA to the Offshore Cable Corridor, there is the potential for impacts on foraging species, where the SPA is within 2 km of the Offshore Cable Corridor.

1.11.4 Potential impacts would be equivalent to those outlined in **Table 5**. The area impacted would be very small as a proportion of the SPA, and impacts would be of a very short duration, of low magnitude and therefore negligible. For information direct impacts on the SPA would be assessed within a separate application which covers the section of the Offshore Cable Corridor within the French EEZ. Potential impacts deriving from the French EEZ would be of a greater magnitude.

1.11.5 As the potential for impacts on foraging species is negligible and all impacts have been scoped out of the EIA assessment, all transboundary impacts are expected to be negligible. For transparency and to ensure consistency with the HRA (which will assess the Proposed Development's potential to affect bird species associated with relevant European Sites irrespective of EEZ borders) transboundary impacts on offshore ornithology are screened in to the assessment that will be undertaken at PEIR and ES stages.

[1] Mers Celtiques - Talus du golfe de Gascogne Natura 2000 Data Form. Accessed online at https://natura2000.eea.europa.eu/Natura2000/SDF.aspx?site=FR5212016 (Accessed on 15/01/24)

1.12 References

Bradbury, G., Trinder, M., Furness, B., Banks, A.N., Caldow, R.W.G. and Hume, D. (2014). Mapping seabird sensitivity to offshore wind farms. PLoS ONE 9:e106366.

Burnell, D., Perkins, J. A., Newton, S. F., Bolton, M., Tierney, D., and Dunn, T. E. (2023) A census of breeding seabirds in Britain and Ireland (2015–2021)

Cleasby, I.R., Owen, E., Wilson, L.J. and Bolton, M. (2018). Combining habitat modelling and hotspot analysis to reveal the location of high density seabird areas across the UK: Technical Report. RSPB Research Report no. 63. RSPB Centre for Conservation Science, RSPB, The Lodge, Sandy, Bedfordshire, SG19 2DL.

Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-747

Furness, R. W., Wade, H. M., & Masden, E. A. (2013). Assessing vulnerability of marine bird populations to offshore wind farms. Journal of environmental management, 119, 56-66.

Furness, R.W. (2015). Non-breeding season populations of seabirds in UK waters: Population sizes for Biologically Defined Minimum Population Scales (BDMPS). Natural England Commissioned Reports, Number 164.

Humphreys, E. M., Austin, G. E., Frost, T. M., Mellan, H. J., Boersch-Supan, P., Burton, N. H. K., & Balmer, D. E. (2020). Wader populations on the United Kingdom's open coast: results of the 2015/16 Non-Estuarine Waterbird Survey (NEWS-III) and a review of population trends. Bird Study, 67(3), 371-384.

ICES. (2022). Celtic Seas Ecoregion – Ecosystem overview. In Report of the ICES Advisory Committee, 2022. ICES Advice 2022, Section 7.1, https://doi.org/10.17895/ices.advice.21731615

Kober, K., Webb, A., Win, I., Lewis, M., O'Brien, S., Wilson, L.J. & Reid, J.B. (2010). An analysis of the numbers and distribution of seabirds within the British Fishery Limit aimed at identifying areas that qualify as possible marine SPAs, JNCC Report No. 431. JNCC, Peterborough, ISSN 0963-8091.

Parsons, M., Bingham, C., Allcock, Z. & Kuepfer, A. (2019). Summary of evidence of aggregations of Balearic shearwaters in the UK up to 2013. JNCC Report No. 642, JNCC, Peterborough, ISSN 0963-8091.

Statutory Nature Conservation Bodies (2022) Joint SNCB Interim Displacement Advice Note

Stone, C.J., Webb, A., Barton, C., Ratcliffe, N., Reed, T.C., Tasker, M.L., Camphuysen, C.J. & Pienkowski, M.W. (1995). An atlas of seabird distribution in north-west European waters. Joint Nature Conservation Committee, Peterborough

Trektellen data accessed at https://www.trektellen.org/ (Accessed on 20/12/23)

Waggitt, J. J., Evans, P. G., Andrade, J., Banks, A. N., Boisseau, O., /Bolton, M., & Hiddink, J. G. (2020). Distribution maps of cetacean and seabird populations in the North-East Atlantic. Journal of Applied Ecology, 57(2), 253-269.

Woodward, I., Thaxter, C. B., Owen, E., & Cook, A. S. C. P. (2019) Desk-based revision of seabird foraging ranges used for HRA screening. BTO research report number 724. Thetford.