



White Cross Offshore Windfarm Environmental Statement

Chapter 18: Infrastructure and Other Users



Document Code:		FLO-WHI-REP-0002-18	
Contractor Number:	Document	PC2978-RHD-ZZ-XX-RP-Z-0153	
Version Number:		0	
Date:	<i>Issue</i>	<i>Date</i>	
		13/03/2023	
Prepared by:		<i>KD</i>	<i>Electronic Signature</i>
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Version Number	Reason for Issue / Major Changes	Date of Change
0	For issue	13/03/2023

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Glossary of Acronyms

Acronym	Definition
AoS	Area of Search
BEIS	Department for Business, Energy and Industrial Strategy
BMAPA	British Marine Aggregate Producers Association
BT	British Telecommunications
CEA	Cumulative Effect Assessment
Cefas	Centre for the Environment and Fisheries and Aquaculture Science
DECC	Department for Energy and Climate Change
EIA	Environmental Impact Assessment
ES	Environmental Statement
ESCA	European Subsea Cable UK Association
ETG	Expert Topic Group
GW	Giga Watts
ICPC	International Cable Protection Committee
IPC	Infrastructure Planning Commission
KIS-ORCA	Offshore Renewables and Cable Awareness
km	Kilometre
Km²	Square kilometre
m	Metre
MHWS	Mean High Water Springs
MMO	Marine Management Organisation
MoD	Ministry of Defence
MOS	Multi-connection Offshore Substations
MW	Megawatt
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
OGA	Oil and Gas Authority
OSP	Offshore Substation Platform
OWL	Offshore Wind Ltd
PEXA	Practice and Exercise Area
RAF	Royal Air Force
SoS	Secretary of State
TCE	The Crown Estate
UK	United Kingdom
UXO	Unexploded Ordnance
WTG	Wind Turbine Generator

Glossary of Terminology

Defined Term	Description
Applicant	Offshore Wind Limited (OWL)
Cumulative effects	The effect of the Project taken together with similar effects from a number of different projects, on the same single receptor/resource. Cumulative effects are those that result from changes caused by other past, present or reasonably foreseeable actions together with the Project.
Department for Business, Energy and Industrial Strategy (BEIS)	Government department that is responsible for business, industrial strategy, science and innovation and energy and climate change policy and consent under Section 36 of the Electricity Act.
Environmental Impact Assessment (EIA)	Assessment of the potential impact of the proposed Project on the physical, biological and human environment during construction, operation, maintenance, and decommissioning.
Export Cable Corridor	The area in which the export cables will be laid, either from the Offshore Substation or the inter-array cable junction box (if no offshore substation), to the NG Onshore Substation comprising both the Offshore Export Cable Corridor and Onshore Export Cable Corridor.
In-combination effects	In-combination effects are those effects that may arise from the development proposed in combination with other plans and projects proposed/consented but not yet built and operational.
Inter-array cables	Cables which link the wind turbines to each other and the Offshore Substation Platform, or at the inter-array cables junction box (if no offshore substation). Array cables will connect the wind turbines to one and other and to the Offshore Substation (if utilised). The initial section for the inter-array cables will be freely suspended in the water column below the substructure (dynamic sections) while the on seabed sections of the cables will be buried where possible.
Landfall	Where the offshore export cables come ashore
Mean high water springs	The average tidal height throughout the year of two successive high waters during those periods of 24 hours when the range of the tide is at its greatest.
Mean low water springs	The average tidal height throughout a year of two successive low waters during those periods of 24 hours when the range of the tide is at its greatest.
Mitigation	<p>Mitigation measures have been proposed where the assessment identifies that an aspect of the development is likely to give rise to significant environmental impacts, and discussed with the relevant authorities and stakeholders in order to avoid, prevent or reduce impacts to acceptable levels.</p> <p>For the purposes of the EIA, two types of mitigation are defined:</p>

Defined Term	Description
	<ul style="list-style-type: none"> • Embedded mitigation: consisting of mitigation measures that are identified and adopted as part of the evolution of the project design, and form part of the project design that is assessed in the EIA • Additional mitigation: consisting of mitigation measures that are identified during the EIA process specifically to reduce or eliminate any predicted significant impacts. Additional mitigation is therefore subsequently adopted by OWL as the EIA process progresses.
Offshore Export Cables	The cables which bring electricity from the Offshore Substation Platform or the inter-array cables junction box to the Landfall
Offshore Export Cable Corridor	The proposed offshore area in which the export cables will be laid, from Offshore Substation Platform or the inter-array cable junction box to the Landfall
Offshore Infrastructure	All of the offshore infrastructure including wind turbine generators, substructures, mooring lines, seabed anchors, Offshore Substation Platform and all cable types (export and inter-array). This encompasses the infrastructure that is the focus of this application and Environmental Statement and the parts of the project consented under Section 36 of the Electricity Act and the Marine and Coastal Access Act 2009
the Offshore Project	The Offshore Project for the offshore Section 36 and Marine Licence application includes all elements offshore of MHWS. This includes the infrastructure within the windfarm site (e.g. wind turbine generators, substructures, mooring lines, seabed anchors, inter-array cables and Offshore Substation Platform (as applicable)) and all infrastructure associated with the export cable route and landfall (up to MHWS) including the cables and associated cable protection (if required).
Offshore Substation Platform	A fixed structure located within the Windfarm Site, containing electrical equipment to aggregate the power from the wind turbines and convert it into a more suitable form for export to shore
Offshore Transmission Assets	The aspects of the project related to the transmission of electricity from the generation assets including the Offshore Substation Platform (as applicable)) or offshore junction box, Offshore Cable Corridor to MHWS at the landfall
Project Design Envelope	A description of the range of possible elements that make up the Project design options under consideration. The Project Design Envelope, or 'Rochdale Envelope' is used to define the Project for Environmental Impact Assessment (EIA) purposes when the exact parameters are not yet known but a bounded range of parameters are known for each key project aspect.
Safety zones	A marine zone outlined for the purposes of safety around a possibly hazardous installation or works / construction area
White Cross Offshore Windfarm	Up to 100MW capacity offshore windfarm including associated onshore and offshore infrastructure
Windfarm Site	The area within which the wind turbines, Offshore Substation Platform and inter-array cables will be present

Defined Term	Description
Works completion date	Date at which construction works are deemed to be complete and the windfarm is handed to the operations team. In reality, this may take place over a period of time.

18. Infrastructure and Other Users

18.1 Introduction

1. This chapter of the Environmental Statement (ES) presents the potential impacts of the White Cross Offshore Windfarm Project (the Offshore Project) on infrastructure and other users. Specifically, this chapter considers the potential impact of the Offshore Project seaward of Mean High-Water Springs (MHWS) during its construction, operation and maintenance, and decommissioning phases.
2. The ES has been finalised with due consideration of pre-application consultation to date (see **Chapter 7: Consultation**) and the ES will accompany the application to the Marine Management Organisation (MMO) on behalf of the Secretary of State for Business for The Department for Business, Energy and Industrial Strategy (BEIS) for Section 36 Consent and relevant Marine Licences under the Marine and Coastal Access Act (2009).
3. This ES chapter:
 - Presents the existing environmental baseline for infrastructure and other users established from desk studies and consultation
 - Presents the potential environmental effects on infrastructure and other users arising from the Offshore Project, based on the information gathered and the analysis and assessments undertaken
 - Identifies any assumptions and limitations encountered in compiling the environmental information
 - Highlights any necessary monitoring and/or mitigation measures which could prevent, minimise, reduce or offset the possible environmental effects identified in the EIA process.

18.2 Policy, Legislation and Guidance

4. **Chapter 3: Policy and Legislative Context** describes the wider policy and legislative context for the Offshore Project. The principal policy and legislation used to inform the assessment of potential impacts on infrastructure and other users for the Offshore Project are outlined in this section.

18.2.1 National Policy Statement

The specific assessment requirements for infrastructure and other users are set out within the overarching National Policy Statement (NPS) for Renewable Energy Infrastructure (EN-3) and summarised in **Table 18.1**. It is noted that the Overarching

NPS for Energy (EN-1) and NPS for Renewable Energy Infrastructure (EN-3) are in the process of being revised. Draft versions were published for consultation in September 2021 (BEIS, 2021a & b). A review of the draft versions has been undertaken in the context of this ES chapter. NPSs are statutory documents which set out the government’s policy on specific types of Nationally Significant Infrastructure Projects (NSIPs) and are published in accordance with the Planning Act 2008. Although the Offshore Project is not an NSIP, it is recognised that due to its size of up to 100 megawatts (MW) and its location in English waters, certain NPS are considered relevant to the Offshore Project and decision-making and are referred to in this ES.

Table 18.1 Summary of NPS EN-1 and EN-3 provisions relevant to infrastructure and other users

Summary	How and where this is considered in the ES
NPS for Renewable Energy Infrastructure (EN-3)	
<p>“There may be constraints imposed on the siting or design of offshore wind farms because of restrictions resulting from the presence of other offshore infrastructure and activities.” - EN-3, Section 2.6, paragraph 2.6.35</p>	<p>Chapter 4: Site Selection and Assessment of Alternatives provides the rationale for the location of the array areas and offshore cable corridor, which includes consideration of constraints associated with other offshore infrastructure.</p>
<p>“Where a potential offshore wind farm is proposed close to existing operational offshore infrastructure or has the potential to affect activities for which a licence has been issued by Government, the applicant should undertake an assessment of the potential effect of the proposed development on such existing or permitted infrastructure or activities. The assessment should be undertaken for all stages of the lifespan of the proposed wind farm in accordance with the appropriate policy for offshore wind farm EIAs.” – EN-1, Section 2.6, paragraph 2.6.179</p>	<p>The impact assessment is provided in Sections 18.5, 18.6 and 18.7 of this chapter, further risks are described in Chapter 15: Shipping and Navigation and Chapter 17: Civil and Military Aviation.</p>
<p>“Applicants should engage with interested parties in the potentially affected offshore sectors early in the development phase of the proposed offshore wind farm, with an aim to resolve as many issues as possible prior to the submission of an application to the [Infrastructure Planning Commission] IPC (now the ‘Examining Authority’ and Secretary</p>	<p>Consultation with the operators of offshore infrastructure is being undertaken by the Applicant, an overview is provided in Table 18.11.</p>

Summary	How and where this is considered in the ES
<p>of State (SoS)).” – EN-1, Section 2.6, paragraph 2.6.180</p> <p>“Such stakeholder engagement should continue throughout the life of the proposed development including construction operation and decommissioning phases where necessary. As many of these offshore industries are regulated by Government, the relevant Secretary of State should also be a consultee where necessary. Such engagement should be taken to ensure that solutions are sought that allow offshore wind farms and other users of the sea to successfully co-exist.” – EN-1, Section 2.6, paragraph 2.6.181</p>	<p>Consultation with the Secretary of State has been undertaken as part of the scoping phase. The scoping opinion (case reference EIA/2022/00002) from the Secretary of State in relation to infrastructure and other users is shown in Table 18.11.</p>
<p>Draft NPS for Renewable Energy Infrastructure (EN-3)</p>	
<p>“Where a potential offshore wind farm is proposed close to existing operational offshore infrastructure or has the potential to affect activities for which a licence has been issued by Government, the applicant should undertake an assessment of the potential effects of the proposed development on such existing or permitted infrastructure or activities. The assessment should be undertaken for all stages of the lifespan of the proposed wind farm in accordance with the appropriate policy and guidance for offshore wind farm EIAs. Marine plans (paragraph 2.22.5 of this NPS and Section 4.4 of EN-1) will help applicants consider which activities may be most affected by their proposal and thus where to target their assessment.” – Draft EN-3, Section 2.34, paragraph 2.34.4</p>	<p>The impact assessment is provided in Sections 18.5, 18.6 and 18.7 of this chapter, further risks are described in Chapter 15: Shipping and Navigation and Chapter 17: Civil and Military Aviation.</p>
<p>“There may be constraints imposed on the siting or design of offshore wind farms because of the presence of other offshore infrastructure or activities.” – Draft EN-3, Section 2.22, paragraph 2.22.19</p>	<p>Chapter 4: Site Selection and Assessment of Alternatives provides the rationale for the location of the array areas and offshore cable corridor, which includes consideration of constraints associated with other offshore infrastructure.</p>
<p>“Applicants should engage with interested parties in the potentially affected offshore sectors early in the development planning phase of the proposed offshore wind farm, with an aim to resolve as many issues as</p>	<p>Consultation with the operators of offshore infrastructure is being undertaken by the Applicant, an overview is provided in Table 18.11.</p>

Summary	How and where this is considered in the ES
possible prior to the submission of an application.” – Draft EN-3, Section 2.34, paragraph 2.34.5	
Draft Overarching NPS for Energy (EN-1)	
“The current approach to connecting offshore wind has resulted in individual radial connections developed project-by-project. While this may continue to be the most appropriate approach for some areas with single offshore wind projects that are not located in the proximity of other offshore wind infrastructure, it is expected that for regions with multiple wind farms a more coordinated approach will be adopted wherever possible.” – Draft EN-1, Section 3.3, paragraph 3.3.51	This approach may be relevant for future large-scale projects, but the current programme for this project does not link with any other current projects commencing their consent stage.
“It is important that new energy infrastructure does not significantly impede or compromise the safe and effective use of any defence assets.” – Draft EN-1, Section 5.5, paragraph 5.5.9	The potential impacts of the Offshore Project on Ministry of Defence assets and activities are considered in Sections 18.5, 18.6 and 18.7 , further risks are discussed in Chapter 17: Civil and Military Aviation .

18.2.2 Additional relevant policy and guidance

5. In addition to the NPS, there a number of pieces of legislation, policy and guidance applicable to the assessment of infrastructure and other users. These include
- European Subsea Cable UK Association (ESCA) Guide No. 6 – The Proximity of Offshore Renewable Energy Installations and Submarine Cable Infrastructure in UK Waters (ESCA, 2016)
 - Safety Zones around Renewable Energy Installations (UK Government, 2004);
 - The Electricity (Offshore Generating Stations) (Safety Zones) (Application Procedures and Control of Access) Regulations 2007
 - The International Cable Protection Committee (ICPC) has issued a series of recommendations for marine cables, specifically:
 - Recommendations No.2 – Recommended Routing and Reporting Criteria for Cables in Proximity to Others (ICPC, 2021)
 - Recommendation No.3 – Criteria to be Applied to Proposed Crossings of Submarine Cables and/or Pipelines (ICPC, 2021)
 - Recommendations No.13 – The Proximity of Offshore Renewable Wind Energy Installations and Submarine Cable Infrastructure in National Waters (ICPC, 2021)

- Oil and Gas UK – Pipelines Crossing Agreement and Proximity Agreement Pack (Oil and Gas UK, 2015)
- Oil and Gas Licencing Rounds Information (Oil and Gas Authority, 2018)
- Resource and Constraints Assessment for Offshore Wind (The Crown Estate, 2018)

18.3 Assessment Methodology

18.3.1 Study Area

6. Details of the location of the Offshore Project and the offshore elements are set out within **Chapter 5: Project Description**.
7. The infrastructure and other users study area is defined by the distance over which impacts on infrastructure and other users from all the offshore project elements (i.e., Wind Turbine Generators (WTGs), Offshore Export Cable Corridor, Offshore Substation and Landfall to MHWS) may occur and by the location of any receptors that may be affected by those potential impacts.
8. Direct overlap of activities is limited to the Windfarm Site and a 10km buffer encompasses effects associated with increased suspended sediment and deposition as specified in **Chapter 8: Marine Geology, Oceanography and Physical Processes**. The study area is then extended to 50km zone of influence for other indirect effects and allows for interaction with a wide range of other users, both offshore and onshore. The study area is shown in **Figure 18.1**.

18.3.2 Approach to Assessment

9. The assessment methodology for infrastructure and other users differs with that presented in in **Chapter 6: EIA Methodology**. The methodology to be followed is set out in the following sub-sections.

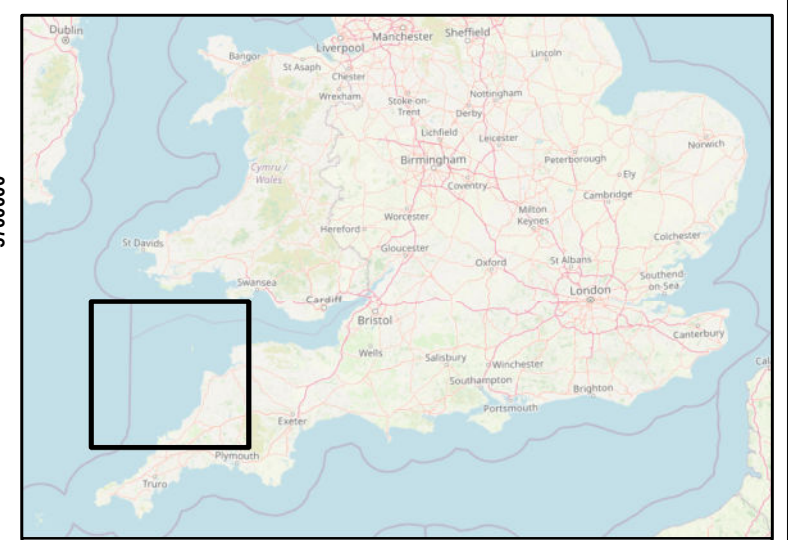
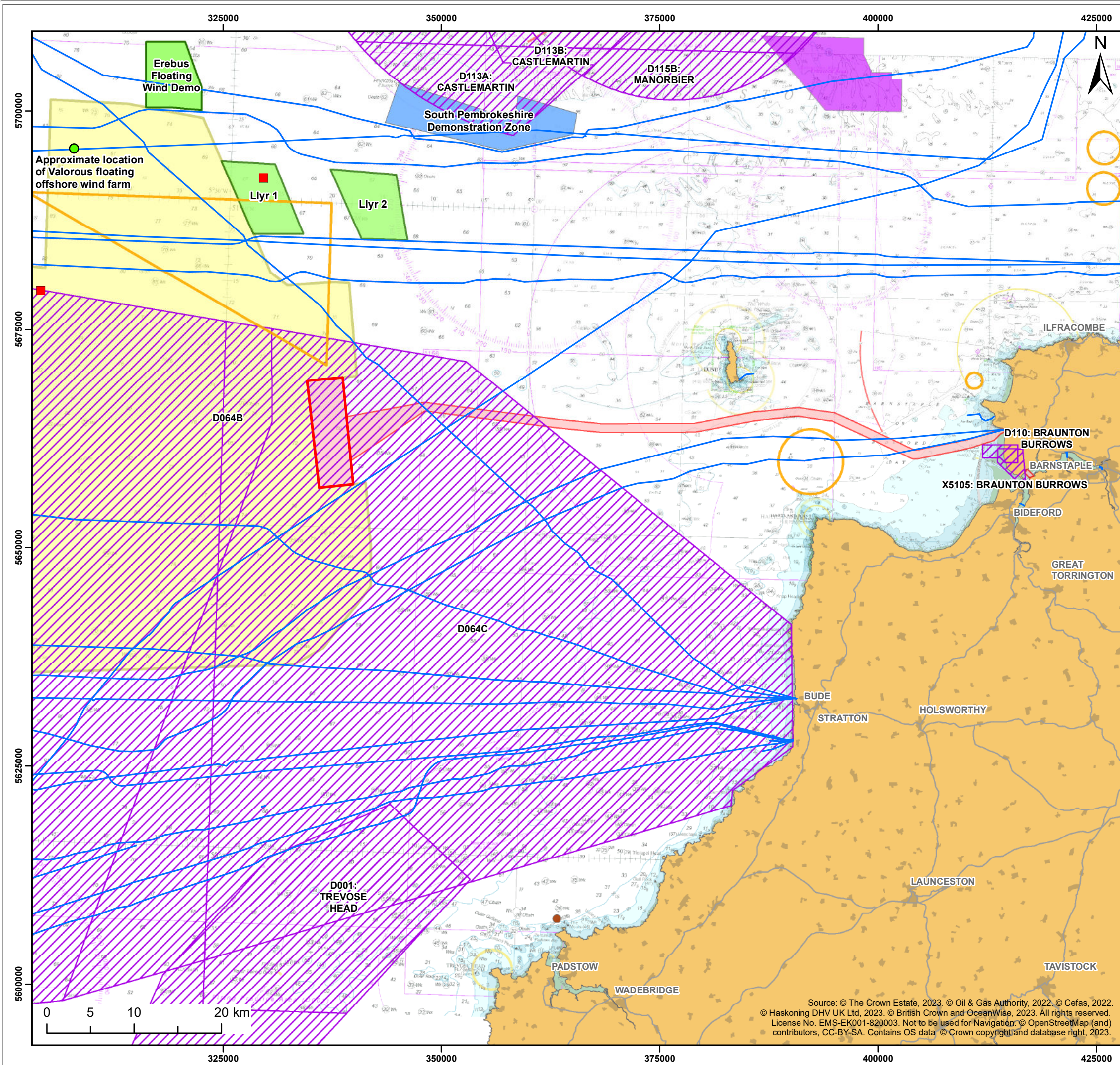
18.3.2.1 Approach to infrastructure and other users' assessment

10. The assessment on impacts on infrastructure and other users has focused on establishing potential for overlaps, interactions and the consequential potential for conflict between activities in both a geographical and temporal context. This information has additionally been obtained through statements made in publicly available literature (e.g., information in an EIA or Scoping Report).

18.3.2.2 Impact assessment criteria

18.3.2.2.1 Definitions

11. For each potential impact, the assessment identifies receptors within the study area which are sensitive to that impact and implements a systematic approach to understanding the impact pathways and the level of impacts (i.e., magnitude) on given receptors. The definitions of sensitivity and magnitude for the purpose of the infrastructure and other users' assessment are provided in **Table 18.2** and **Table 18.3**.



Legend:

- Windfarm Site
- Offshore Development Area
- PEXA
- Aggregate Site
- Wave Site
- Submarine Cable
- Wells

Wind farm status

- Agreement / Option for Lease
- Celtic Sea Floating Offshore Wind Area of Search

Disposal Sites

- Closed
- Open

Client: Offshore Wind Ltd.	Project: White Cross Offshore Windfarm
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Title: Infrastructure and Other Users Study Area
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Figure: 18.1	Drawing No: PC2978-RHD-ZZ-XX-DR-Z-0483				
Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P02	13/03/2023	AB	GSP	A3	1:430,000
P01	06/01/2023	AB	GSP	A3	1:430,000

Co-ordinate system: WGS 1984 UTM Zone 30N

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Table 18.2 Definition of terms relating to receptor sensitivity

Sensitivity	Summary
High	High value activity / activity fundamental to the operator or infrastructure that is of international or national economic importance. No redundancy available in the event of impact. Asset very sensitive to the impact. For example, gas pipelines, electrical infrastructure or telecommunication cable supporting UK or European activity or nationally important aggregates area where extraction company has no access to areas of equal quality aggregates.
Medium	Medium value activity. Impact to asset would significantly reduce operators' activities but not result in complete failure to continue operations. Limited redundancy available. Asset regionally important. Asset has limited tolerance of impact. For example, gas pipelines, electrical infrastructure or telecommunications cable, where asset owners have some potential for redundancy planning. Aggregate areas where extraction company has some, but limited access to equal quality aggregate.
Low	Low value activity. Impact to asset would have limited implications on operator / public either due to the availability of redundancy or limited pathway for impact. Asset has some tolerance of impact. For example, electrical or telecommunication cable with ability to undertake redundancy planning to limit impact. Aggregate areas where extraction company has access to large area of equal quality aggregate.
Negligible	Low value activity, operators' activities would not be significantly reduced by impact. Asset generally tolerant of impact. Limited impact to asset owners of local community in case of damage or failure.

Table 18.3 Definition of terms relating to magnitude of an impact

Magnitude	Summary
High	Loss of resource and / or quality and integrity of receptor, severe damage to key characteristics, features or elements. For example, accidental damage to asset resulting in permanent or long-term inoperability or complete loss of access to economically important asset.
Medium	Loss of resource, but not adversely affecting integrity of resource; potential loss of / damage to key characteristics, features or elements. For example, damage to an asset that results in either short term, complete inoperability or long term reduced functionality. Partial loss of access to economically important asset, or short-term complete loss of access.
Low	Some measurable change in attributes, quality or vulnerability, minor loss, or alteration to, one (maybe more) key characteristics, features or elements. For example, accidental damage to asset resulting in short term reduction of functionality but not complete loss of function. Short term disruption to access of asset.

Magnitude	Summary
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements, and / or slight alteration to activity.

18.3.2.2 Significance of effect

12. The significance of the effect upon infrastructure and other users is determined by correlating the magnitude of the impact and the sensitivity of the receptor. The method employed for this assessment is presented in **Table 18.4**. Definitions of each level of significance are provided in **Table 18.5**.

13. Likely significant effects identified within the assessment as major or moderate are regarded within the chapter as significant. Appropriate mitigation has been identified, where possible, in consultation with the regulatory authorities and relevant stakeholders. The aim of mitigation measures is to avoid or reduce the overall significance of effect to determine a residual effect upon a given receptor.

Table 18.4 Significance of an impact - resulting from each combination of receptor sensitivity and the magnitude of the effect upon it

		Negative Magnitude				Beneficial Magnitude			
		High	Medium	Low	Negligible	Negligible	Low	Medium	High
Sensitivity	High	Major	Major	Moderate	Minor	Minor	Moderate	Major	Major
	Medium	Major	Moderate	Minor	Minor	Minor	Minor	Moderate	Major
	Low	Moderate	Minor	Minor	Negligible	Negligible	Minor	Minor	Moderate
	Negligible	Minor	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Minor

Table 18.5 Definition of impact significance

Significance	Definition
Major	Very large or large change in receptor condition, both adverse or beneficial, which are likely to be important considerations at a regional or district level because they contribute to achieving national, regional or local objectives, or could result in exceedance of stator objectives and / or breaches of legislation.
Moderate	Intermediate change in receptor condition, which are likely to be important considerations at a local level.
Minor	Small change in receptor condition, which may be raised as local issues but are unlikely to be important in the decision-making process.
Negligible	No discernible change in receptor condition.
No change	No impact, therefore, no change in receptor condition.

18.3.3 Worst-Case Scenario

14. In accordance with the assessment approach to the Project Design Envelope, or 'Rochdale Envelope', set out in **Chapter 6: EIA Methodology**, the impact assessment for infrastructure and other users has been undertaken based on a realistic worst-case scenario of predicted impacts. The Project Design Envelope for the Offshore Project is detailed in **Chapter 5: Project Description**.

15. **Table 18.6** presents the realistic worst-case scenario elements considered for the assessment of infrastructure and other users.

Table 18.6 Definition of realistic worst-case scenario details relevant to the assessment of impacts in relation to infrastructure and other users

Impact	Realistic worst-case scenario	Rationale
Construction		
Impact 1: Physical impacts on subsea cables	Maximum spatial footprint WTGs & offshore substation platform (OSP):	The worst case is based on the Project Design Envelope options that would result in the installation of the greatest amount of project infrastructure interacting with other infrastructure and users.
Impact 2: Impacts on disposal and aggregates sites	<ul style="list-style-type: none"> WTGs footprint (8 WTGS x 2,424m² catenary mooring system footprint) = 19,392m² 	
Impact 3: Impacts on MoD activities	<ul style="list-style-type: none"> OSP footprint (including foundation structure) = 1,256.64m² Offshore Export Cable & crossing protections: <ul style="list-style-type: none"> Up to 187.4km for two Offshore Export Cables with up to 8 crossings Total area of Offshore Export Cable protection due to cable crossings: 5,250m² Cable crossing width = 7m Inter-array cable: <ul style="list-style-type: none"> Up to 29.76km of inter-array cables Maximum temporal footprint: <ul style="list-style-type: none"> Duration of offshore construction = 10 months Vessel movements:	

Impact	Realistic worst-case scenario	Rationale
	<ul style="list-style-type: none"> Maximum number of construction vessels on site at any one time = 5 Construction vessel trips to port = 101	
Operation		
Impact 1: Physical impacts on subsea cables	Maximum spatial footprint: as for construction, except that construction safety zones will not be required during routine operation and maintenance.	This scenario represents the greatest potential disruption to infrastructure and other users during operational and maintenance activities including: <ul style="list-style-type: none"> Footprint of actual project structures Maintenance and repair vessel activity and anchoring Use of port services Crossings and proximity of cables during operation and maintenance
Impact 2: Impacts on disposal and aggregates sites	Maximum temporal footprint: The operational lifetime is expected to be 25 years.	
Impact 3: Impacts on MoD activities	Vessel movements: <ul style="list-style-type: none"> Maximum number of vessels on site at any one time = 5 Operation and maintenance vessel trips to port per year = 40 	
Decommissioning		
Impact 1: Potential interference with other renewable projects	The decommissioning policy for the offshore project infrastructure is not yet defined.	Decommissioning arrangements will be detailed in a Decommissioning Plan, which would be drawn up and agreed with the BEIS prior to decommissioning.
Impact 2: Physical impacts on subsea cables	The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time and will be agreed with the appropriate regulators. For the purpose of the worst-case scenario, it is anticipated that the effects arising from the decommissioning of the Offshore Project would be comparable to those identified for the construction phase.	
Impact 3: Impacts on MoD activities		

18.3.4 Summary of Mitigation

18.3.4.1 Embedded Mitigation

16. This section outlines the embedded mitigation relevant to the infrastructure and other users' assessment, which has been incorporated into the design of the projects (**Table 18.7**). Where other mitigation measures are proposed, these are detailed in the impact assessment.

Table 18.7 Embedded mitigation measures relevant to the infrastructure and other users' assessment

Component/Activity	Mitigation embedded into the design of the Offshore Project
Consultation	Owners and operators of infrastructure (other renewable project developers, dredging companies and cable operators) have been and will continue to be consulted by the Applicant, and commercial and technical agreements will be put in place where required ahead of construction.
Crossing and proximity agreements	Crossing and proximity agreements will be agreed post-consent with the relevant asset owners.
Promulgation of information	Advance warning and accurate location details of construction, maintenance and decommissioning operations, associated safety zones and advisory passing distances will be given via Notices to Mariners and other appropriate media. This will be secured through the Marine Licence conditions. Relevant shipping and navigation mitigations are described in Chapter 15: Shipping and Navigation .
Cables	All cables will be installed and maintained in line with standard industry guidance and good practice (e.g., Subsea Cables UK Guidelines, International Cable Protection Committee Recommendations) that provide guidance on proximity of cables to existing assets and coordination with other operators.
Pre-construction surveys	Pre-construction surveys will be implemented by the Offshore Project in order to identify any potential hazards within the Windfarm Site. These will include geophysical surveys to identify seabed hazards, such as discarded fishing gear, wrecks or unidentified objects and magnetometer surveys to identify existing subsea cable locations and for the presence of Unexploded Ordnance (UXO) devices. Any identified UXO devices would be avoided through micro-siting or require a subsequent UXO clearance campaign.

17. The following Safety Zones will be applied for by the Offshore Project post-consent to mitigate any potential effects¹:

- 500m safety zones around any structure where construction work is underwater
- 50m safety zones around any partially completed structure during the construction phase where work is not underway
- 500m safety zones around any structures undergoing major maintenance during the operation and maintenance phase.

18.3.5 Baseline Data Sources

18.3.5.1 Desktop Study

18. A desk study was undertaken to obtain information on infrastructure and other users. Data were acquired within the study area through a detailed desktop review of existing studies and datasets. The sources of information presented in **Table 18.8** were consulted to inform the infrastructure and other users' assessment.

Table 18.8 Data sources used to inform the infrastructure and other users' assessment

Source	Summary
Offshore Wind	The Crown Estate: Offshore Wind Leasing Areas of Search (England, Wales and Northern Ireland). The Crown Estate (2022), Offshore Wind Electricity Map.
Marine Disposal Sites	UK Disposal Site Layer, Centre for Environment, Fisheries and Aquaculture Science (CEFAS), 2022
Dredger Transit Routes	Dredger Transit Route Charts for Renewable Energy & Cables, The British Marine Aggregate Producers Association (BMAPA)
Ministry of Defence (MoD) Practice and Exercise Areas (PEXA) areas	UK Hydrographic Office (2020). Ministry of Defence PEXA areas. Online Mapping Tool
Munition Dumping Grounds	EMODnet Dumped Munitions (Points) Human Activities project
Aggregate sites	The Crown Estate Interactive maps and tools

¹ Section 104 of the Energy Act 2004 enables developers to apply for a safety zone to be established for any phase in the life of an Offshore Renewable Energy Installation. These can be made to protect safety of people, protect the installation against damage and prevent loss of gear. In practice, it is common for applications to be made for OWF safety zones during construction, decommissioning and/or major maintenance activities (DECC, 2011c).

Source	Summary
Offshore cables	Offshore Renewables and Cable Awareness (KIS-ORCA), publicly available data Marine data from MarineFIND
Recreational boating	UK Coastal Atlas of Recreational Boating

18.3.6 Assumptions and Limitations

19. Characterisation of the existing environment and the resulting impact assessment is based on publicly available information, purchased data or information gained directly from the relevant companies or organisations during consultation. There may be elements of uncertainty associated with the locations of some existing infrastructure and where this is the case, this will be discussed with the owner/operators and/or established during pre-construction surveys as necessary.

18.3.7 Scope

20. Upon consideration of the baseline environment, the project description outlined in **Chapter 5: Project Description**, and Scoping Opinion, potential impacts upon infrastructure and other users have been scoped in or out. These impacts are outlined, together with a justification for why they are or are not considered further, in **Table 18.9** and **Table 18.10** respectively.

21. Recreational activities impacted by the construction, operation, maintenance, and decommissioning of the Offshore Project are assessed within **Chapter 23: Socio-Economics (including Tourism and Recreation)**. Impacts due to the presence of construction, operation maintenance, and decommissioning vessels on recreational vessels traversing the Offshore Project are addressed in **Chapter 15: Shipping and Navigation**.

Table 18.9 Summary of impacts scoped in relating to infrastructure and other users

Potential Impact	Justification
Potential impacts on other renewable projects	The presence of the wind farm has the potential to interfere with the construction and operation of other renewable projects.
Physical impact on subsea cables	The presence of the wind farm has the potential to damage existing assets.
Potential impacts on disposal and aggregates sites	The presence of the wind farm has the potential to interfere with existing disposal and aggregate sites.
Potential impacts on MoD activities	The presence of the wind farm has the potential in to interfere with MoD activities.

Table 18.10 Summary of impacts scoped out relating to infrastructure and other users

Potential Impact	Justification
Potential impacts on oil and gas infrastructure and future exploration	Potential impacts on oil and gas infrastructure and future exploration have been scoped out in line with the scoping opinion (MMO, 2022), therefore no further assessment has been undertaken.
Transboundary impacts	Transboundary effects on infrastructure and other users have been scoped out in line with the scoping opinion (MMO, 2022), therefore no further assessment has been undertaken.

18.3.8 Consultation

22. Consultation has been a key part of the development of the Offshore Project. Consultation regarding infrastructure and other users has been conducted throughout the EIA. An overview of the project consultation process is presented within **Chapter 7: Consultation**.

23. A summary of the key issues raised during consultation specific to infrastructure and other users is outlined below in **Table 18.11**, together with how these issues have been considered in the production of this ES.

Table 18.11 Consultation responses

Consultee	Date, Document, Forum	Comment	Where addressed in the ES
MMO	Scoping Opinion	The Applicant states " <i>There is no oil and gas infrastructure within the Offshore Development Area. However, there is one historic exploratory wellhead located approximately 24km northwest of the Windfarm Site.</i> " The MMO notes that there are no oil and gas pipelines or platforms in proximity to the scoping boundary. The MMO considers that this matter can be scoped out of the ES on the basis that there is no oil or gas infrastructure within the scoping boundary and therefore no significant effects are likely to occur.	The presence of the historical wellhead is acknowledged within Section 18.4 . There is also another historic wellhead located 32km north-west. Potential impacts on oil and gas infrastructure and future exploration have been scoped out, therefore no assessment has been undertaken.
		The Applicant states " <i>Braunton Burrows is located within the Onshore Cable</i> "	The potential impacts on MoD

Consultee	Date, Document, Forum	Comment	Where addressed in the ES
		<p><i>Corridor Area of Search and is a military training area. Activities include amphibious vehicle landings. The Royal Marines Chivenor Base is located outside of the Onshore Cable Corridor AoS to the east of Braunton Burrows. There is also potential for wartime unexploded ordnance (UXO) within the Celtic Sea. Exact locations of any UXO would be determined post-consent and mitigation agreed in consultation with Natural England and Marine Management Organisation."</i></p> <p>The MMO considers that potential impacts to MOD activities should be scoped in to the assessment, because the text in paragraph 687 indicates that impacts to MOD activities could occur.</p>	<p>activities are discussed within Sections 18.5, 18.6 and 18.7, further risks are discussed in Chapter 17: Civil and Military Aviation.</p>
		<p>The Applicant states "<i>The only potential transboundary receptors are cables owned by international operators, these will be covered in the assessments outlined above, and therefore there will be no separate transboundary assessment.</i>" The MMO agrees that this can be scoped out of the assessment as relevant transboundary impacts are considered in the cumulative assessment.</p>	<p>Transboundary impacts are considered within Section 18.8 (Potential Cumulative Impacts) of this chapter.</p>
		<p>The MMO notes that impacts on disposal sites during construction, operation maintenance, and decommissioning are scoped into the ES, although limited information is presented about the scope of the assessment.</p> <p>The MMO considers that there is potential for contaminants to be present from previous disposal activities. The Proposed Development's construction and decommissioning activities could mobilise these contaminants resulting in effects and therefore this matter should form part of the assessment. The ES should also consider the Waste</p>	<p>These are considered in Chapter 9: Marine Water and Sediment Quality</p>

Consultee	Date, Document, Forum	Comment	Where addressed in the ES
		<p>Framework Directive considering alternative disposal mechanisms and alternative disposal sites.</p> <p>The MMO notes that there is potential for wartime UXO to be located in the Celtic Sea, but in this section of the Scoping Report it is stated that it is not proposed to ascertain the locations and develop any mitigation until after any consent is granted (paragraph 687). The MMO considers that there is potential for UXO to give rise to significant effects if they are present within the scoping boundary. The ES should be supported by survey information to identify the potential location of UXO within the site boundary and an outline mitigation plan, in order to support an assessment of the worst case scenario associated with UXO clearance.</p>	<p>This is discussed and considered in Chapter 12: Marine Mammal and Marine Turtle Ecology</p>

18.4 Existing Environment

24. This section describes the existing environment in relation to infrastructure and other users associated with the White Cross study area. It has been informed by a review of the sources listed in **Table 18.8**, plus other relevant literature.
25. This section considered other interactions with industries not already covered as EIA topics in their own right. Assessments on commercial fisheries, shipping and navigation, and civil and military aviation are provided in **Chapter 14: Commercial Fisheries**, **Chapter 15: Shipping and Navigation**, and **Chapter 17: Civil and Military Aviation** respectively.

18.4.1 Current baseline

18.4.1.1 Offshore wind and wave infrastructure

26. The Llyr projects and the White Cross Project have all come forward through The Crown Estate's Test & Demonstration leasing opportunity. Subsequently, The Crown Estate (July 2022) have identified additional Areas of Search for the development of floating offshore wind farms in the Celtic Sea. It is expected that this will be the starting point for expansion of the offshore wind industry within the Celtic Sea region.

27. **Table 18.12** and **Figure 18.1** show offshore wind farm and wave projects located within 50km of the Offshore Project.

Table 18.12 Offshore wind farm and wave projects within 50km of the Offshore Project

Project	Status	Description	Expected Construction Date	Minimum distance from the Offshore Project
Wave Site: South Pembrokeshire Demonstration Zone	Pre-planning application	One or two Multi-connection Offshore Substations (MOS) Enabling infrastructure capable of accommodating approximately 2GW of capacity from multiple wind farm developers in a coordinated and stepped approach.	N/A	15km
The Llŷr projects	Pre-consent	Floating offshore wind farm	2025/2026 for offshore installation	22km
Valorous Floating Wind	Pre-planning application	Floating offshore wind farm	N/A	34km
Erebus Floating Wind Demo	Pre-planning application	Floating offshore wind farm	N/A	38km

28. There are no operational offshore wind farms located within 50km of the Offshore Project. There is however, one operational onshore wind turbine located on Lundy Island.

29. Interaction of the projects highlighted in **Table 18.12** with the Offshore Project could arise from the following:

- Navigation safety issues
- Aviation (i.e., helicopter operations)
- Cumulative issues relating to other users (e.g., recreational boating)
- Overlap of infrastructure and potential interactions during construction, operation and maintenance, and decommissioning

- Increased pressure on port facilities

30. Issues arising from navigational safety and aviation are assessed in **Chapter 15: Shipping and Navigation** and **Chapter 17: Civil and Military Aviation** respectively.

31. Issues arising from the effect on commercial fisheries, including cumulative effects, are considered and assessed in **Chapter 14: Commercial Fisheries**.

32. There will not be a spatial overlap of the Offshore Project with the projects highlighted in **Table 18.12**, therefore there is no potential for interactions around the generation infrastructure during any phase of the Offshore Project.

18.4.1.2 Oil and gas infrastructure

33. There is no oil or gas infrastructure located within the Windfarm Site. However, there is two historical exploratory wellheads located approximately 23km north (Well Reg No. 103/18-1) and 32km north-west (Well Reg No. 103/21-1) of the Windfarm Site as shown in **Figure 18.1**.

18.4.1.3 Subsea cables

34. There are currently three operational telecommunications cables that cross the Windfarm Site or Offshore Cable Corridor (**Figure 18.1**), these include:

- TATA Western Europe – UK to Spain (Bilbao)
- TATA Atlantic South
- Global Crossing UK – Ireland 2 (Ballinsker to Crooklets Bay)

35. **Table 18.13** outlines the offshore cable which intersect the offshore study area.

Table 18.13 Summary of offshore cables which intersect the offshore study area

Asset name	Status	Asset type	Operator	General trajectory	Interaction
TATA W. Europe UK – Portugal	Active	Telecommunications	TATA Telecoms	East to west	Within Windfarm Site
TATA Atlantic South	Active	Telecommunications	TATA Telecoms	East to west	Within Windfarm Site and intersects Offshore Export Cable Corridor

Asset name	Status	Asset type	Operator	General trajectory	Interaction
Global Crossing UK – Ireland 2	Active	Telecommunications	Level 3 Ltd	North-west to South-east	Within Windfarm Site
TAT 11	Decommissioned	Telecommunications	AT&T Corporation	South-west to North-east	Intersects Offshore Export Cable Corridor
PTAT	Active	Telecommunications	C&W	East to west	Runs 9km north of the Windfarm Site
Hibernia Express	Not known	Telecommunications	Not known	East to west	Runs 10km north of the Windfarm Site
TATA Atlantic North	Active	Telecommunications	TATA Telecoms	East to west	Runs 19km north of the Windfarm Site
Solas	Active	Telecommunications	C&W	East to west	Runs 23km north of the Windfarm Site
Apollo North	Active	Telecommunications	Apollo	East to north west	Runs 6km south of the Windfarm Site
Yellow	Active	Telecommunications	Level 3 Global Submarine	East to west	Runs 25km south of the Windfarm Site
TAT14 (G)	Active	Telecommunications	British Telecommunications (BT)	East to west	Runs 31km south of the Windfarm Site
Amitie Project cable AEC-3	Not known	Telecommunications	Not known	East to west	Runs 36km south of the Windfarm Site
GLO-1	Active	Telecommunications	Globalcom Ltd	North east to south west	Runs 37km south of the Windfarm Site

Asset name	Status	Asset type	Operator	General trajectory	Interaction
EIG	Active	Telecommunications	C&W	North east to south west	Runs 40km south of the Windfarm Site

18.4.1.4 Disposal and aggregate sites

36. There are currently no operational disposal areas located within the Windfarm Site, a summary of the disposal areas located within the 50km study area buffer is provided in **Table 18.14**.

Table 18.14 Summary of offshore disposal sites within the offshore study area

Disposal site	Disposal site reference	Status	Interaction
Milford Haven Industrial	LU040	Closed	Located within the northern area of the Windfarm Site.
Hartland Point	LU020	Closed	Located 1.3km south of offshore export cable corridor.
Morte Bay	LU030	Closed	Located 5.5km north of offshore export cable corridor.
Bristol Channel-Old	LU047	Closed	Located 30km north of offshore export cable corridor.
Bristol Channel (Rough Weather)	LU050	Closed	Located 33.4km northeast of offshore export cable corridor.
Bristol Channel	LU160	Closed	Located 33.5km northeast of offshore export cable corridor.
Milford Haven Two	LU168	Open	Located 35.8km north of the Windfarm Site.
Milford Haven Three	LU169	Open	Located 44.5km northwest of the Windfarm Site.
Swansea Bay (Outer)	LU130	Open	Located 48.2km northeast of offshore export cable corridor.

37. There is one Aggregates Site Agreement located within the 50km study area buffer, details of which are provided in **Table 18.15**.

Table 18.15 Summary of Aggregates Site Arrangements within the offshore Study Area

Site name	Operator	Commodity	Start date	End date	Area	Interaction
Nobel Banks	Llanelli Sand	Sand	7 th December 2012	30 th June 2031	86.7km ²	Located 34.2km north of

Site name	Operator	Commodity	Start date	End date	Area	Interaction
	Dredging Ltd					offshore export cable corridor.

18.4.1.5 Ministry of Defence activities

38. Information on the existing military bases with the potential to experience aviation and radar impacts is available in **Chapter 17: Civil and Military Aviation**. This chapter considers maritime (seabed) impacts to defence activities.

39. PEXAs are designated areas which are used for training and defence purposes by the Royal Navy, the Army, the Royal Air Force (RAF) and the MoD. The Project area overlaps with the D064C PEXA site and is in close proximity to the Braunton Burrows danger PEXA which is used for amphibious landing practice. Onshore, the MoD also use Braunton Burrows for firing and demolition firing practice. Within the 50km study area, the following PEXAs have been identified and are detailed in Summary of PEXA sites within the study area. The PEXAs are shown in **Figure 18.1**.

Table 18.16 Summary of PEXA sites within the study area

Site name	Type	Distance from the Offshore Project
D064C	Aera of intense aerial activity	0km
Braunton Burrows danger PEXA	Amphibious activities	0.09km
Manorbier danger PEXA	Firing danger area	36.45km
Castlemartin danger PEXA	Firing danger area	31.57km
D064B	Aera of intense aerial activity	4.06km
Trevoze Head danger PEXA	Helicopter exercises	36.84km

40. There is also the potential for wartime UXO within the Celtic Sea and particularly at the Landfall to MHWS due to prior use as a D-Day training location. Locations of any UXO would be determined post-consent and mitigation agreed in consultation with Natural England the MMO. UXO locations will be determined through a targeted survey and that separate Marine Licence application will be made for UXO disposal.

18.4.2 Do Nothing Scenario

41. The Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended) require that "an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline

scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge” is included within the ES (EIA Regulations, Schedule 4, Paragraph 3). From the point of assessment, over the course of the development and operational lifetime of the Offshore Project (operational lifetime anticipated to be a minimum of 25 years), long-term trends mean that the condition of the baseline environment is expected to evolve. This section provides a qualitative description of the evolution of the baseline environment, on the assumption that the Offshore Project is not constructed, using available information and scientific knowledge of infrastructure and other users.

42. The Government has set an ambition to deliver up to 5 Giga Watts (GW) of floating wind by 2030, with rapid expansion anticipated thereafter. To support this, The Crown Estate (TCE) is offering new leasing opportunities in the Celtic Sea for the first generation of commercial-scale floating offshore windfarms – unlocking up to 4 GW of new clean energy capacity between 2030 and 2035. TCE is developing a phased approach to provide opportunities for growth and investment and to facilitate the co-ordination of the necessary infrastructure, such as ports and grid connections into the long term. The Celtic Sea leasing phases are seen as the foundation for greater capacity in the future and help establish an industrial sector for the UK in the southwest.
43. It is difficult to define what the likely evolution of the infrastructure and other users interests in the Celtic Sea will be either with, or in the absence of the White Cross Offshore Windfarm Project. However, the Oil and Gas Authority (OGA) Annual Report and Accounts (OGA, 2019) reported a predicted decline in gas production and historically have disregarded the Celtic Sea. Furthermore, operators continue to find it difficult to predict production accurately as older fields mature and their reliability reduces.

18.5 Potential impacts during construction

44. The potential impacts during construction of the Offshore Project have been assessed for infrastructure and other users. A description of the potential effect on infrastructure and other users caused by each identified impact is given in this section.

18.5.1 Impact 1: Physical impacts on subsea cables

45. The Offshore Project has been designed to minimise the number of cable crossings through the site selection process. Further information on this site selection process

has been provided in **Chapter 4: Site Selection and Selection of Alternatives** of this report.

46. Construction activities for the Offshore Project, such as Offshore Export Cable and inter-array cable installation, vessel anchoring and debris clearing operations, in proximity to existing cables and at crossings has the potential to damage existing assets. Within the Offshore Project footprint there are three active and one decommissioned telecommunications cables present. Communication with the disused cable owner will be required prior to any crossing of the existing cables present in the study area.
47. Damage to offshore cables caused during the installation of the Project's inter-array cables and platform link cables has the potential to cause disruption to telecommunications. As embedded mitigation, where the Offshore Project's inter-array cross an existing cable, a cable crossing methodology will be developed and agreed with the asset owner.
48. If it becomes necessary to replace or repair some part of the existing subsea cables (either that owned by the Applicant or another operator), maintenance activities would be carried out in line with standard industry methods and good practice, and in line with any relevant commercial agreement such that no effect on existing subsea cables and pipelines would occur.

18.5.1.1 Magnitude of impact

49. With embedded mitigation, such as adherence to exclusion zones and avoiding crossings of existing cables as far as possible, the magnitude of impact is considered to be **Negligible**.

18.5.1.2 Sensitivity of the receptor

50. The sensitivity of existing subsea cables to disturbance from construction related hazards, such as damage to cables from dropped objects and anchors, is judged to be **high** due to the difficulty and costs associated with cable repair.
51. The sensitivity of existing subsea cables to effects relating to planned cable crossings would be the same as for general construction, with a sensitivity of **High**.

18.5.1.3 Significance of effect

52. With the application of the embedded mitigation measures, the resultant significance of effect is considered **Minor Adverse**.

18.5.1.4 Further Mitigation

53. The significance of effect is **Minor Adverse** which is considered to be **not significant** under EIA regulations. Therefore, no further mitigation is required.

18.5.2 Impact 2: Impacts on disposal and aggregates sites

54. There is no overlap with disposal or aggregate areas. However, the development of the Offshore Project has the potential to interfere with the vessel operations of existing marine disposal sites. Active dredger routes are present within the Study Area, bisecting both the Offshore Export Cable Corridor and Windfarm Site.

18.5.2.1 Magnitude of impact

55. To mitigate the potential interference with the vessel operations of existing marine disposal sites, the Offshore Project will implement mitigation methods to reduce the likelihood of the Project's contracted vessels impeding existing vessel routes. This will include distributing Notice to Mariners to inform other users of the Project's vessel movements and separate consultation with the operators of the existing marine disposal sites. These measures will reduce the potential for the Project's construction vessels to disturb vessels transiting to and from the marine disposal sites. Further details are presented in **Chapter 15: Shipping and Navigation**.

56. With the implementation of the embedded mitigation measures described above, the magnitude of impact is considered **Negligible**, with construction activities been short-term and temporary.

18.5.2.2 Sensitivity of the receptor

57. The sensitivity of marine disposal and aggregate site activities to disturbance from construction of the Offshore Project is judged to be **Low**.

18.5.2.3 Significance of effect

58. The significance of effect for marine disposal and aggregate sites from the construction phase is considered **Negligible**.

18.5.2.4 Further Mitigation

59. The significance of effect is **Negligible** which is considered to be **not significant** under EIA regulations. Therefore, no further mitigation is required.

18.5.3 Impact 3: Impacts on MoD activities

60. The construction of the Offshore Project has the potential to interfere with MoD activities at Braunton Burrows PEXA within the study area. Vessel movements

undertaking construction activities associated with the Offshore Project have the potential to interfere with MoD vessel movements and training activities at Braunton Burrows.

18.5.3.1 Magnitude of impact

61. With embedded mitigation, such as consultation with the MoD and adherence to exclusion zones, the magnitude of impact is considered to be **Low** due to the localised and temporary nature of the exclusion zone.

18.5.3.2 Sensitivity of the receptor

62. The sensitivity of military activities is considered to be **Medium**.

18.5.3.3 Significance of effect

63. With the application of the embedded mitigation measures, the resultant significance of effect is considered **Minor Adverse**.

18.5.3.4 Further Mitigation

64. The significance of effect is **Minor Adverse** which is considered to be **not significant** under EIA regulations. Therefore, no further mitigation is required.

18.6 Potential impacts during operation and maintenance

65. The potential impacts of the operation and maintenance of the Offshore Project have been assessed on infrastructure and other users. A description of the potential effect on infrastructure and other users caused by each identified impact is given in this section.

18.6.1 Impact 1: Physical impacts on subsea cables

66. During the operation and maintenance phase, impacts are only predicted for the Offshore Export Cable and inter-array cables located within the Windfarm Site. There are three active telecommunications cables within the Windfarm Site. Access to the existing telecommunications cables for repair or reburial will remain uncompromised during operation and maintenance. Should operators wish to install subsea cables or pipelines in the future that cross or are in close proximity to the operational Project it is expected that the Applicant and any such developer would enter into discussions and be steered by advice from relevant authorities.

67. If it becomes necessary to replace or repair some part of the existing subsea cables (either that owned by the Applicant or another operator) maintenance activities would be carried out in line with standard industry methods and good practice, and in line

with any relevant commercial agreement such that no effect on existing subsea cables would occur.

18.6.1.1 Magnitude of impact

68. With the application of embedded mitigation measures, such as adherence to exclusion zones and avoiding crossings of existing cables as far as possible, the magnitude of impact is considered to be **Negligible**.

18.6.1.2 Sensitivity of the receptor

69. The sensitivity of existing subsea cables to disturbance from the operation and maintenance of the Offshore Project is judged to be **High** given the difficulty and costs associated with cable repairs.

18.6.1.3 Significance of effect

70. The significance of effect associated with the operation and maintenance phase of the Offshore Project is considered **Minor Adverse**.

18.6.1.4 Further Mitigation

71. The significance of effect is **Minor Adverse** which is considered to be **not significant** under EIA regulations. Therefore, no further mitigation is required.

18.6.2 Impact 2: Impacts on disposal and aggregates sites

72. Impacts on disposal and aggregate sites relate solely to contracted vessel movements as there is not direct overlap with the Project.

73. Any conflicts with vessel and/or aviation activities, including increased vessel activity are addressed in **Chapter 15: Shipping and Navigation** and **Chapter 17: Civil and Military Aviation**.

18.6.2.1 Magnitude of impact

74. The Offshore Project will implement embedded mitigation measures of Notice to Mariners, a marine coordination centre, use of predetermined vessel transit routes and safety zones to reduce the potential for disturbance by the Project's operation and maintenance activities at disposal and aggregate sites.

75. With application of embedded mitigation measures, the magnitude of impact is considered to be **Negligible**.

18.6.2.2 Sensitivity of the receptor

76. The sensitivity of disposal and aggregate sites to disturbance from the operation and maintenance of the Offshore Project is considered to be **Low**.

18.6.2.3 Significance of effect

77. The significance of effect for marine disposal and aggregate sites from the operation and maintenance of the Offshore Project is considered **Negligible**.

18.6.2.4 Further Mitigation

78. The significance of effect is **Negligible** which is considered to be **not significant** under EIA regulations. Therefore, no further mitigation is required.

18.6.3 Impact 3: Impacts on MoD activities

79. During the operational phase MoD activities at Braunton Burrows PEXA may be affected by the presence of exclusion zones around surface infrastructure, or temporary safety zones in operation around active maintenance vessels when maintenance or repairs are required.

18.6.3.1 Magnitude of impact

80. The area from which MoD activities may be displaced during maintenance activities is likely to be smaller than that during construction. The frequency of maintenance activities is likely to be low and of intermittent occurrence. Due to the presence of exclusion zones around surface infrastructure during the operation of the Project, the magnitude of impact is considered **Low**.

18.6.3.2 Sensitivity of the receptor

81. As for construction, the sensitivity of the receptor is **Medium**.

18.6.3.3 Significance of effect

82. The significance of effect associated with the operation and maintenance phase of the Offshore Project is considered **Minor Adverse**.

18.6.3.4 Further Mitigation

83. The significance of effect is **Minor Adverse** which is considered to be **not significant** under EIA regulations. Therefore, no further mitigation is required.

18.7 Potential impacts during decommissioning

84. No decision has been made regarding the final decommissioning policy for the Offshore Project as it is recognised that industry best practice, rules and legislation

change over time. The decommissioning methodology would be finalised nearer to the end of the lifetime of the Offshore Project to be in line with current guidance, policy and legalisation at that point. Any such methodology would be agreed with the relevant authorities and statutory consultees. The decommissioning works are likely to be subject to a separate licencing and consenting approach.

85. The anticipated decommissioning activities are outlined in **Section 5.10** of **Chapter 5: Project Description**. The potential impacts of the decommissioning of the Offshore Project have been assessed for infrastructure and other users on the assumption that decommissioning methods will be similar or of a lesser scale than those deployed for construction. A description of the potential effect on infrastructure and other users caused by each identified impact is given in this section.

18.7.1 Impact 1: Physical impacts on subsea cables

86. To minimise environmental impacts associated with the removal of Offshore Export Cable and inter-array cables, the Offshore Export Cable and inter-array cables may be disconnected and left in situ along with associated cable protection measures and subsea structures.

18.7.1.1 Magnitude of impact

87. The magnitude of impact during decommissioning works is considered to be comparable with those identified for the construction phase or less if cables are left in situ. Therefore, the magnitude of impact is considered to be **Low**.

18.7.1.2 Sensitivity of the receptor

88. The sensitivity of existing subsea cables to disturbance from decommissioning related hazards is judged to be **High** due to the difficulty and costs associated with cable repairs.

18.7.1.3 Significance of effect

89. With the application of mitigation measures during the decommissioning phase, the significance of effect is considered **Minor Adverse**. It is also worth noting that existing cables at crossings may be decommissioned before the Project, and therefore there may be no impact.

18.7.1.4 Further Mitigation

90. The significance of effect is **Minor Adverse** which is considered to be **not significant** under EIA regulations. Therefore, no further mitigation is required.

18.7.2 Impact 2: Impacts on disposal and aggregate sites

91. To minimise environmental impacts, some of the Project's infrastructure may be disconnected and left in situ on the seabed. It is proposed that the surface infrastructure, the wind turbines and floating platforms, would be disconnected and removed from the Offshore Project site for decommissioning onshore. Any subsea infrastructure, such as the scour protection and cables, may be left in situ. This will be agreed upon with any marine disposal and aggregate operators in the Study Area.

92. Impacts to vessels are discussed in **Chapter 15: Shipping and Navigation**.

18.7.2.1 Magnitude of impact

93. The Offshore Project would implement the same embedded mitigation measures as proposed for the construction phase for reducing the disturbance to marine disposal and aggregate sites. Therefore, the magnitude of impact is considered to be **Negligible**.

18.7.2.2 Sensitivity of the receptor

94. The sensitivity of marine disposal and aggregate site activities to disturbance from the decommissioning phase is considered to be **Low**.

18.7.2.3 Significance of effect

95. The significance of effect for marine disposal and aggregate sites from the decommissioning phase is considered **Negligible**.

18.7.2.4 Further Mitigation

96. The significance of effect is **Negligible** which is considered to be **not significant** under EIA regulations. Therefore, no further mitigation is required.

18.7.3 Impact 3: Impacts on MoD activities

97. The impacts on MoD activities at Braunton Burrows PEXA during the decommissioning phase would likely be less than those anticipated during construction. Ahead of decommissioning, consultation with the MoD and the approach to removal of infrastructure will be agreed. Full assessment of the impacts would be conducted prior to decommissioning.

18.7.3.1 Magnitude of impact

98. The magnitude of impact is considered to be **Negligible** as the impacts would be short term and temporary.

18.7.3.2 Sensitivity of the receptor

99. The sensitivity of MoD activities is considered to be **Medium**.

18.7.3.3 Significance of effect

100. With the application of mitigation measures during the decommissioning phase, the significance of effect is considered **Minor Adverse**.

18.7.3.4 Further Mitigation

101. The significance of effect is **Minor Adverse** which is considered to be **not significant** under EIA regulations. Therefore, no further mitigation is required.

18.8 Potential cumulative effects

102. The approach to cumulative effect assessment (CEA) is set out in **Chapter 6: EIA Methodology**. Only projects which are reasonably well described and sufficiently advanced to provide information on which to base a meaningful and robust assessment have been included in the CEA. Projects which are sufficiently implemented during the site characterisation for the Offshore Project have been considered as part of the baseline for the EIA. Where possible OWL has sought to agree with stakeholders the use of as-built project parameter information (if available) as opposed to consented parameters to reduce over-precaution in the cumulative assessment. The scope of the CEA was therefore be established on a topic-by-topic basis with the relevant consultees.

103. The cumulative effect assessment for infrastructure and other users was undertaken in two stages. The first stage was to consider the potential for the impacts assessed as part of the project to lead to cumulative effects in conjunction with other projects. The first stage of the assessment is detailed in **Table 18.17**.

Table 18.17 Potential cumulative effects considered for infrastructure and other users

Impact	Potential for cumulative effect	Rationale
Potential interference with other offshore wind farms	Yes	Plans and projects currently in planning have the potential to have cumulative effects on existing offshore wind farms.
Physical impacts on subsea cables	Yes	Plans and projects currently in planning have the potential to have cumulative effects on existing subsea cables.
Impacts on disposal and aggregate sites	No	No overlap of active disposal and aggregate sites.
Impacts on MoD activities	Yes	Plans and projects currently in planning have the potential to have cumulative effects on MoD activities.

104. The second stage of the CEA is to evaluate the projects considered for the CEA to determine whether a cumulative effect is likely to arise. The list of considered projects (identified in **Chapter 6: EIA Methodology Section 6.6.11**) and their anticipated potential for cumulative effects are summarised in **Table 18.18**.

Table 18.18 Projects considered in the cumulative effect assessment on infrastructure and other users

Project	Status	Distance from Windfarm Site (km)	Included in the CEA?	Rationale
White Cross Offshore Wind Farm	Pre-consent	0	Y	Potential for cumulative effect during construction and operational and maintenance phases due to the proximity of the projects.
Wave Site: South Pembrokeshire Demonstration Zone	Pre-planning application	15	Y	
The Llŷr projects	Pre-consent	22	Y	
Llwelyn / Petroc offshore wind	Pre-scoping	<30	Y	
Valorous Floating Wind	Pre-planning application	34	Y	
Erebus Floating Wind Demo	Pre-planning application	38	Y	

105. It is noted that the first project listed is the Town and Country Planning Application for the onshore components of the White Cross OWF which are a separate element to the offshore Section 36 consent application for which this ES is prepared.

18.8.1 Cumulative Impact 1: Potential interference with other renewable energy projects

106. The cumulative effect of the Offshore Project with other renewables projects and plans screened into the CEA (**Table 18.18**) could arise during construction, operation and maintenance and decommissioning phases from the following:

- Navigational safety issues vessel movements associated with the Offshore Project
- Aviation (i.e., Search and Rescue helicopter operations)

- Overlap of infrastructure and potential interactions
- Increased pressure on port facilities

107. There are no existing offshore wind farms located within the study area, however there are two proposed floating offshore wind farms located within the study area (**Table 18.12**) known as the Llŷr projects. The closest of which is located 22km from the Offshore Project. The Llŷr projects Scoping Report states that offshore installation activities are expected to start Q3 2025 and array commissioning Q4 2026. It is proposed that the commissioning of the White Cross WTGs would commence in 2027, and so should the construction of the Llŷr projects commence when expected it would need to be considered as part of the cumulative assessment for all project phases.

108. The construction of the Offshore Project has the potential to interfere with activities of other renewable energy projects within the study area. Vessel movements undertaking construction activities associated with the Offshore Project have the potential to interfere with construction activities of other renewable energy projects within through increased traffic. With consultation through the Offshore Project design and collaboration with other renewable energy projects operating in the Study Area during the construction phase, the magnitude of impact will likely be **Negligible**.

109. During the operation and maintenance phase, the Offshore Project will implement embedded mitigation measures through Notices to Mariners, a marine coordination centre, use of predetermined vessel transit routes and for larger operation and maintenance tasks, the use of safety zones to reduce the potential interference. It is therefore considered that the potential for cumulative effects during the Offshore Project's operation and maintenance activities at other renewable energy sites is **Negligible**.

110. The effects on other renewable energy projects, which may be present within the area at this time, during decommissioning would likely be less than those anticipated for construction. Ahead of decommissioning, consultation with wind farm operators in the area and the approach to removal of infrastructure will be agreed. Full assessment of the effects would be conducted prior to decommissioning if the existing environment relating to offshore wind farms has significantly altered. The cumulative effect during decommissioning is considered to be **Negligible** as the impacts would be short term and temporary.

111. Issues arising from shipping/navigation and aviation are assessed in **Chapter 15: Shipping and Navigation** and **Chapter 17: Civil and Military Aviation**, respectively.

18.8.1.1 Significance of effect

112. Embedded mitigation measures are detailed in **Table 18.7**. They include:

- site selection criteria
- the use of Notice to Mariners and other notification of planned activity
- appropriate lighting
- marking and charting of each wind farm and marine coordination of all other renewable energy project activities)
- ongoing consultation between the other renewable energy companies and any nominated contractors will act to reduce or avoid potential risk of adverse effects during all phases of the Offshore Project.

113. Further, ongoing consultation between the projects will take place and as such the cumulative effects are not considered to be greater than the Offshore Project alone.

18.8.1.2 Further Mitigation

114. The cumulative effects are not considered to be greater than the **Minor Adverse** significance of effect for the Offshore Project alone. Therefore, this is considered **not significant** in EIA terms and so no further mitigation measures will be required.

18.8.2 Cumulative Impact 2: Physical impacts on subsea cables

115. The requirement for proximity and crossings agreements would apply to all projects screened into the CEA, where relevant, therefore, this embedded mitigation would ensure the cumulative magnitude of impact would be **Negligible**. The receptor sensitivity would remain **High** (as described in **Section 18.5.1**).

18.8.2.1 Significance of effect

116. The significance of effect in relation to potential cumulative effects is considered **Minor Adverse**.

18.8.2.2 Further Mitigation

117. The significance of effect is **Minor Adverse** which is considered to be **not significant** under EIA regulations. Therefore, no further mitigation is required.

18.8.3 Cumulative Impact 3: Impacts on MoD activities

118. The separation of the Offshore Project and other proposed offshore wind farms within the Celtic Sea would limit any cumulative effects on MoD activities.

18.8.3.1 Significance of effect

119. The potential cumulative significance of effect is considered to remain as per the Offshore Project alone (**Minor Adverse** significance).

18.8.3.2 Further Mitigation

120. The significance of effect is **Minor Adverse** which is considered **not significant** effect under EIA regulations. Therefore, no further mitigation is required.

18.9 Inter-relationships

121. Inter-relationship impacts are covered as part of the assessment and consider impacts from the construction, operation, maintenance, or decommissioning of the Offshore Project on the same receptor (or group). A description of the process to identify and assess these effects is presented in **Chapter 6: EIA Methodology**. The potential inter-relationship effects that could arise in relation to infrastructure and other users include both:

- **Project lifetime effects:** Effects arising throughout more than one phase of the Offshore Project (construction, operation, maintenance, and decommissioning) to interact to potentially create a more significant effect on a receptor than if just one phase were assessed in isolation
- **Receptor led effects:** Assessment of the scope for all relevant effects to interact, spatially and temporally, to create inter-related effects on a receptor (or group). Receptor-led effects might be short term, temporary or transient effects, or incorporate longer term effects.

122. **Table 18.19** serves as a signposting for inter-relationships.

Table 18.19 Infrastructure and other users' inter-relationships

Topic description	and Related chapter	Where addressed in this Chapter	Rationale
Impact 1: Physical impacts on subsea cables	N/A	N/A	N/A
Impact 2: Impacts on disposal and aggregate sites	Chapter 15: Shipping and Navigation	Sections 18.5.2, 18.6.2 and 18.7.2 considered effects on overall operations and maintenance.	Vessels in transit are considered to feed into the overall assessment of the asset.
Impact 3: Impacts on MoD activities	Chapter 17: Civil and Military Aviation	Sections 18.5.3, 18.6.3 and 96 considered effects on MoD activities.	Vessels in transit are considered to feed into the overall

Topic description	and Related chapter	Where addressed in this Chapter	Rationale
			assessment of the asset.

18.10 Interactions

123. There is no potential for interactions between impacts on the difference infrastructure and other users described in this chapter as these are all separate, non-related receptors.

18.11 Summary

124. This chapter has investigated the potential effects on infrastructure and other users' receptors arising from the Project. The range of potential impacts and associated effects considered has been informed by the Scoping Opinion, consultation, and agreed through Expert Topic Group (ETG) Meetings, as well as reference to existing policy and guidance. The impacts considered include those brought about directly as well as indirectly.

125. This chapter has provided a characterisation of the existing environment for infrastructure and other users which alongside detailed assessment of effects on shipping and navigation and aviation has established that the residual effects on infrastructure and other users during the construction, operation and decommissioning phases of the Offshore Project are considered 'minor adverse' or 'negligible'.

126. **Table 18.20** presents a summary of the impacts assessed within this ES chapter, and mitigation required and the residual effects.

127. The assessment of cumulative effects from the Offshore Project and other developments and activities concluded that the cumulative effects of other projects would be no greater than the Offshore Project alone.

Table 18.20 Summary of potential impacts for infrastructure and other users during construction, operation, maintenance and decommissioning of the Project

Potential impact	Receptor	Sensitivity	Magnitude	Significance	Mitigation measures	Residual effects
Construction						
Impact 1: Physical impacts on subsea cables	Subsea cables	High	Low	Minor adverse	None above those embedded	Minor adverse

Potential impact	Receptor	Sensitivity	Magnitude	Significance	Mitigation measures	Residual effects
Impact 2: Impacts on disposal and aggregate sites	Disposal and aggregate sites	Low	Negligible	Negligible	None above those embedded	Negligible
Impact 3: Impacts on MoD activities	MoD	Medium	Low	Minor adverse	None above those embedded	Minor adverse
Operation and Maintenance						
Impact 1: Physical impacts on subsea cables	Subsea cables	High	Negligible	Minor adverse	None above those embedded	Minor adverse
Impact 2: Impacts on disposal and aggregate sites	Disposal and aggregate sites	Low	Negligible	Negligible	None above those embedded	Negligible
Impact 3: Impacts on MoD activities	MoD	Medium	Low	Minor adverse	None above those embedded	Minor adverse
Decommissioning						
Impact 1: Physical impacts on subsea cables	Subsea cables	High	Negligible	Minor adverse	None above those embedded	Minor adverse
Impact 2: Impacts on disposal and aggregate sites	Disposal and aggregate sites	Low	Negligible	Negligible	None above those embedded	Negligible
Impact 3: Impacts on MoD activities	MoD	Medium	Negligible	Minor adverse	None above those embedded	Minor adverse
Cumulative						

Potential impact	Receptor	Sensitivity	Magnitude	Significance	Mitigation measures	Residual effects
Impact 1: Potential interference with other offshore wind farms	Offshore wind farms	Medium to high	Negligible	Negligible to minor adverse	None above those embedded	Negligible to minor adverse
Impact 2: Physical impacts on subsea cables	Subsea cables	High	Negligible to low	Minor adverse	None above those embedded	Minor adverse
Impact 3: Impacts on MoD activities	MoD	Medium	Negligible to low	Minor adverse	None above those embedded	Minor adverse

18.12 References

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