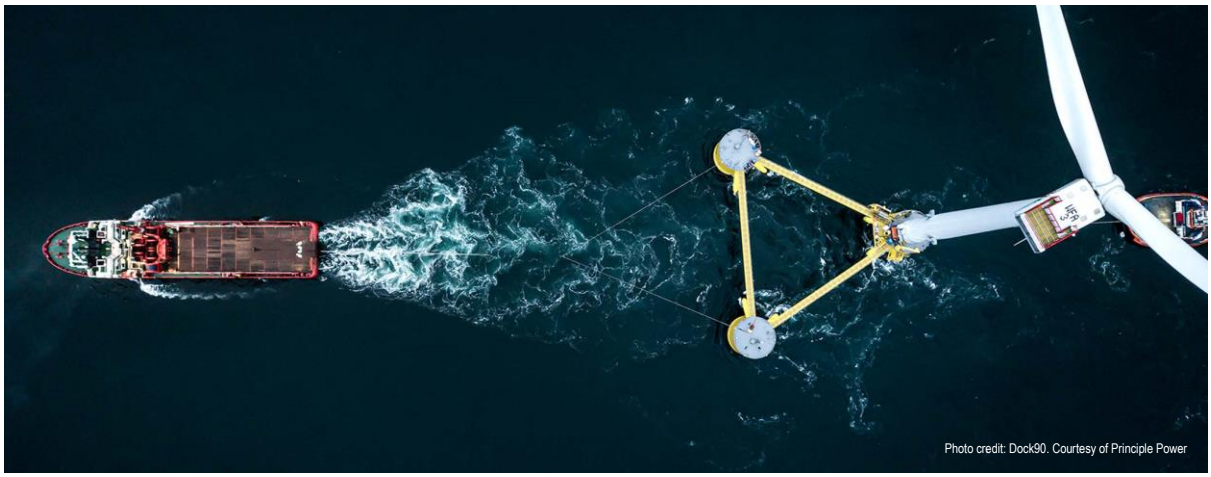

Project Erebus Environmental Statement
Chapter 18: Coastal and Marine Infrastructure and Other Users

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Acronyms

Term	Definition
AAA	Anti-Aircraft Ammunition
CEA	Cumulative Effects Assessment
CLV	Cable Lay Vessel
COLREGS	International Regulations for Preventing Collisions at Sea
DECC	Department of Energy and Climate Change
EIA	Environmental Impact Assessment
ES	Environmental Statement
ESCA	European Subsea Cables Association
FLOW	Floating Offshore Wind
GIL	Greenlink Interconnector Limited
HE	High Explosive
IALA	International Association of Lighthouse Authorities
ICPC	International Cable Protection Committee
IMO	International Maritime Organisation
LNG	Liquified Natural Gas
MCA	Maritime and Coastguard Agency
MCAA	Marine and Coastal Access Act
META	Marine Energy Test Area
MHPA	Milford Haven Port Authority
MMO	Marine Management Organisation
MoD	Ministry of Defence
MPS	Marine Policy Statement
MW	Megawatt
nm	Nautical Mile

Term	Definition
NPS	National Policy Statement
NRW	Natural Resources Wales
NtM	Notice to Mariners
O&M	Operation and Maintenance
OSEA3	Offshore Energy Strategic Environmental Assessment 3
PEDW	Planning and Environment Decisions Wales
PDE	Project Design Envelope
PDZ	Pembrokeshire Demonstration Zone
PEXA	Practice and Exercise Area
PINS	The Planning Inspectorate
PLG	Pre-Lay Grapnel
PLGR	Pre-Lay Grapnel Run
SAC	Special Area of Conservation
SBE	Simply Blue Energy
TCE	The Crown Estate
UKHO	United Kingdom Hydrographic Office
UXO	Unexploded Ordnance
WNMP	Welsh National Marine Plan
WTG	Wind Turbine Generator
WWI	World War One
WWII	World War Two

Chapter 18 Coastal and Marine Infrastructure and Other Users

18.1 Introduction

18.1.1.1 The proposed Project Erebus (the Project) is a demonstration scale Floating Offshore Wind (FLOW) development in the Celtic Sea region. The Applicant, Blue Gem Wind, is a joint venture between Simply Blue Energy (SBE) and TotalEnergies, set up to create a new low carbon offshore energy sector in the region; that contributes to climate change targets, supply chain diversification and energy security.

18.1.1.2 This assessment has been carried out by MarineSpace Limited, the lead offshore Environmental Impact Assessment (EIA) Consultants. The chapter has been authored by Rhianna Roberts, who has over five years' experience as a marine professional, specialising in marine consenting and compliance as well as human environment assessments for EIA, particularly for the offshore wind and cables sectors. Oversight and review has been undertaken by Lara Lawrie, MarineSpace who has over 12 years' experience in infrastructure planning, specialising in terrestrial and marine consenting and EIA.

18.1.1.3 The array area is located approximately 35 km southwest of the Pembrokeshire coastline, covering an area of 43.5 km^2 in water depths of between 65-85 m. The array area is located outside of the 12 nm limit, but all elements of the Project, array area, offshore export cable corridor and landfall, fall within Welsh territorial waters or the Welsh Zone.

18.1.1.4 The Project comprises six to ten Wind Turbine Generators (WTG) with a total generating capacity up to 100 MW. Each WTG is housed on a semi-submersible floating platform with a mooring system comprising a maximum of five catenary mooring lines, up to 870 m in length, and a range of foundation options including drag embedment anchors, driven piles, drilled piles and/or suction piles. Up to 10 dynamic array cables are proposed, with a lazy wave configuration from the semi-submersible floating platform to the seabed. The offshore export cable, up to 49 km in length, links the array area to landfall at West Angle Bay, Pembrokeshire.

18.1.1.5 This chapter of the Environmental Statement (ES) characterises coastal and marine infrastructure and other users in the Study Area and presents the assessment of the potential impacts of the Project which may arise during the construction, operation and maintenance, and decommissioning phases of the Project.

18.1.1.6 The Study Area for this assessment is defined in Section 18.4.2 (also see Volume 2, Figure 18.1).

18.1.1.7 This Chapter utilises and builds upon the information presented in the EIA Scoping Report (MarineSpace, 2019). No comments were made with respect to coastal and marine infrastructure and other users in Natural Resource Wales' (NRW) formal EIA Scoping Opinion (NRW, 2020). Copies of the Scoping Opinion Request (the Scoping Report) and NRW's Scoping Opinion are provided in Volume 3, Technical Appendix 2.1: EIA Scoping Report and Volume 3, Technical Appendix 2.2: EIA Scoping Opinion. It should also be noted that no specific surveys were undertaken in relation to coastal and marine infrastructure and other users for the Project.

18.1.1.8 Coastal and marine infrastructure and other users are defined in Section 18.5 and include other marine renewable energy projects, military practice areas, dredging and subsea cables. Other user groups in the marine environment include commercial fisheries, shipping, tourism and recreation and aviation/radar. These have not been considered within this chapter and are assessed separately within Chapter 15: Commercial Fisheries; Chapter 16: Shipping and Navigation; Chapter 17: Aviation and Radar; and Chapter 27: Socio Economics, Tourism and Recreation.

18.2 Legislation, Policy and Guidelines

18.2.1.1 A detailed overview of the relevant policy and legislation for the Project is provided in Chapter 5: Policy and Legislation. The Project is seeking a Section 36 consent, with deemed planning permission, under the Electricity Act 1989 from Welsh Ministers, administered by the Planning and Environment Decisions Wales (PEDW) and a Marine Licence under the Marine and Coastal Access Act (MCAA) 2009 from NRW.

18.2.2 Legislation

18.2.2.1 Relevant legislation and guidance documents specific to coastal and marine infrastructure and other users have been reviewed and taken into account as part of this assessment. Of particular relevance are:

- Overarching National Policy Statement (NPS) for Energy (EN-1) (DECC, 2011a);
- NPS for Renewable Energy Infrastructure (EN-3), July 2011 (DECC, 2011b);
- UK Marine Policy Statement (HM Government, 2011);
- Welsh National Marine Plan (Welsh Government, (2019); and
- The Well-Being of Future Generations (Wales) Act 2015 .

18.2.2.2 The Well-Being of Future Generations (Wales) Act 2015 is used to improve the social, economic, environmental and cultural well-being of Wales. The Well-being Act places a statutory duty on public bodies in relation to sustainable development, based on seven well-being goals (see Chapter 5: Policy and Legislation).

18.2.2.3 Climate change is integral to the well-being goals, which recognise that the case for action on climate change is clear and fundamental to future prosperity and the future resilience of communities. The Well-being Act provides a mechanism for public bodies to set targets and report progress against indicators. Through its well-being objectives, the Well-being Act sets a clear agenda for sustainable development.

18.2.3 Policy

National Policy Statements

18.2.3.1 Although this Project is seeking Section 36 consent under the Electricity Act 1989 and a Marine Licence under the Marine and Coastal Access Act (MCAA) 2009, as opposed to a Development Consent Order (DCO), its size (up to 100 MW) is similar to the minimum threshold (100 MW) for Nationally Significant Infrastructure Projects (NSIPs). As such, guidance relevant to NSIPs is considered relevant to use for this Project. National Policy Statements (NPSs) were developed to provide guidance in the determination of NSIPs. Those relevant for the assessment of impacts on marine water and sediment quality include:

- Overarching NPS for Energy (EN-1) (DECC, 2011a); and
- NPS for Renewable Energy Infrastructure (EN-3), July 2011 (DECC, 2011b).

18.2.3.2 A review of EN-1 has been undertaken and there are no specific references to other users. Details of specific policies within EN-3, used to inform this assessment, are provided in Table 18.1 below[1].

Table 18.1 - National Policy Statement EN-3 assessment provisions relevant to coastal and marine infrastructure and other users

NPS Requirement	NPS Reference	ES Reference
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-3, Paragraph 2.6.179	The potential impacts of the Project are assessed in Section 18.6
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 IPC.	EN-3, Paragraph 2.6.180	Consultation undertaken is summarised Section 18.3 and Volume 3, Technical Appendix 2.3: Consultation Report
Such stakeholder engagement should continue throughout the life of the 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 uses of the sea to successfully co-exist.	EN-3, Paragraph 2.6.181	Proposed in Section 18.4.4
Where a proposed offshore wind farm potentially affects other offshore infrastructure or activity, a pragmatic approach should be employed by the IPC. Much of this infrastructure is important to other offshore industries as is its contribution to the UK economy. In such circumstances the IPC should expect the applicant to minimise negative impacts and reduce risks to as low as reasonably practicable.	EN-3 Paragraph 2.6.183	Mitigation measures are proposed in Section 18.4.4

[1] A period of consultation on a set of revised energy NPS's, managed by the Department of Business, Energy and Industrial Strategy (BEIS), ended on 29th November 2021.

NPS Requirement	NPS Reference	ES Reference
As such, the IPC should be satisfied that the site selection and site design of the proposed offshore wind farm has been made with a view to avoiding or minimising disruption or economic loss or any adverse effect on safety to other offshore industries. The IPC should not consent applications which pose unacceptable risks to safety after mitigation measures have been considered.	EN-3, Paragraph 2.6.184	The site selection process is detailed in Chapter 3: Site Selection and Alternatives.
Where a proposed development is likely to affect the future viability or safety of an existing or approved/licensed offshore infrastructure or activity, the IPC should give these adverse effects substantial weight in its decision-making.	EN-3, Paragraph 2.6.185	The potential impacts of the Project are assessed in Section 18.6
Providing proposed schemes have been carefully designed by the applicants, and that the necessary consultation with relevant bodies has been undertaken at an early stage, mitigation measures may be possible to negate or reduce effects on other offshore infrastructure or operations to a level sufficient to enable the IPC to grant consent.	EN-3, Paragraph 2.6.186	Mitigation measures are proposed in Section 18.4.4
Detailed discussions between the applicant for the offshore wind farm and the relevant consultees should have progressed as far as reasonably possible prior to the submission of an application to the IPC. As such, appropriate mitigation should be included in any application to the IPC, and ideally agreed between relevant parties.	EN-3, Paragraph 2.6.187	Consultation undertaken is summarised Section 18.3

Wales National Marine Plan (WNMP)

18.2.3.3 The Welsh Government published its first marine plan for Welsh inshore and offshore waters, the Welsh National Marine Plan (WNMP), in November 2019. The WNMP was developed in accordance with the MCAA 2009 and the UK MPS. The WNMP covers a 20-year period from its adoption in 2019. The publishing of the WNMP in November 2019 followed a period of consultation from 7 December 2017 to 29 March 2018 (the WNMP is discussed further in Chapter 5: Policy and Legislation).

18.2.3.4 A review of the WNMP has been undertaken, details of specific policies within the WNMP used to inform this assessment are provided in Table 18.2 below.

Table 18.2 – Welsh National Marine Plan (WNMP) provisions relevant to coastal and marine infrastructure and other users

WNMP Requirment	WNMP Reference	ES Reference
Proposals should demonstrate how they have considered opportunities for coexistence with other compatible sectors in order to optimise the value and use of the marine area and marine natural resources.	ECON_02: Coexistence	Consideration to coexistence with other compatible sectors was considered throughout site selection and is detailed in Chapter 3: Site Selection and Alternatives.
Proposals should demonstrate that they have assessed potential cumulative effects and, in order of preference: a) avoid adverse effects; and/or b) minimise effects where they cannot be avoided; and/or c) mitigate effects where they cannot be minimised. If significant adverse effects cannot be adequately addressed, proposals should present a clear and convincing justification for proceeding. Proposals that contribute to positive cumulative effects are encouraged.	GOV_01: Cumulative effects	Cumulative effects are assessed in 18.10 and in Chapter 30: Cumulative Effects.

18.2.4 Guidance

18.2.4.1 The following best practice guidelines / guidance has been considered throughout this chapter:

- International Cable Protection Committee (ICPC) recommendations, October 2017; and
- European Subsea Cables Association (ESCA) recommendations.

18.2.4.2 In addition to the above, the following relevant legislation has also been considered within this chapter:

- Convention on the International Regulations for Preventing Collisions at Sea 1972;
- The Marine and Coastal Access Act 2009; and
- The Merchant Shipping and Fishing Vessels (Control of Noise at Work) Regulations 2007.

18.3 Consultation and Scoping

18.3.1.1 Table 18.3 presents a summary of consultees and their responses with regards to coastal and marine infrastructure and other marine users.

Table 18.3 – Coastal and marine infrastructure and other marine users consultation responses.

Consultee	Response	Applicant Action
Natural Resources Wales EIA Scoping Opinion (January 2020)	No comments were received from consultees in relation to Coastal and Marine Infrastructure and Other Users and we have no comment to make on this section of the report (section 7.3). The ES should however include an assessment of impacts on Coastal and Marine Infrastructure and Other Users, as set out in the scoping report	The assessment of impacts on Coastal and Marine Infrastructure and Other Users has been carried out as set out in the scoping report. Any differences between the scoping report and assessment have been highlighted within the relevant section.
Celtic Sea Power Limited (Pembrokeshire Demonstration Zone) (May 2021)	No concerns or impacts were raised; however, it was agreed that each party would remain in contact to provide updates on their developments.	Continued engagement included as mitigation (Section 18.4.5)
Bombora Wave Power (mWave) (May 2021)	The only potential interaction identified is Bombora's requirement to tow the mWave from their site to Pembroke Dock during decommissioning, with the mWave tow route crossing the offshore export cable corridor. There is a small possibility that the mWave decommissioning could overlap with the Project construction.	Assessment undertaken in Section 18.6
Intertek (Greenlink Interconnector Limited) (April 2021)	It is proposed that the Greenlink interconnector will be installed in Welsh waters during 2023, with commissioning works continuing into 2024, as such, it will be installed ahead of the Project. The Project offshore export cable is expected to cross the Greenlink interconnector at a 90 degree angle. The crossing of the Greenlink interconnector will be subject to satisfactory completion of appropriate Crossing and Proximity Agreements prior to any construction activities; and that the crossing design and constructions are completed in accordance with ICPC and ESCA Guidelines and Recommendations. Once the Greenlink interconnector is installed, the Project will require Greenlink Interconnector Limited's (GIL) permission to conduct any geotechnical/seabed invasive activities within 250 m of the Greenlink asset. Sufficient advance notice of these types of activities will be required. It was highlighted by GIL that the crossing location is within the area defined as the	Assessment undertaken in Section 18.6

Consultee	Response	Applicant Action
	Turbot sandbank, a protected feature of the Pembrokeshire Marine Special Area of Conservation (SAC). Based on GILs previous discussions with NRW, GIL strongly advises that the Applicant consults with NRW to determine if rock protection at this location is acceptable.	
Marine Energy Test Area (META) (May 2021)	Potential interference with the installation of META Phase 2, specifically the tow route to East Pickard Bay and access to the site for operation and maintenance, leading to increased transfer times. Consideration should be given to the consented Phase 1 test sites at Pembroke Port. If integration of the semi-submersible floating platform and WTGs are planned at Pembroke Port, ongoing consultation will be required between META and the Project. Limitations to the supply chain affecting META.	Assessment undertaken in Section 18.6 and consideration given to supply chain in Chapter 27: Socio-Economics, Tourism and Recreation
Ministry of Defence Castlemartin Range (July, December 2019; March 2021)	All future surveys (including geophysical) to be co-ordinated with the MoD direct. Landfall/onshore cable routes through MoD Castlemartin Range will be problematic.	See Chapter 3: Site Selection and Alternatives
Milford Haven Port Authority (numerous 2019-2021)	Range of issues related to operational aspects of surveys to inform the EIA; navigational risk via cable installation within Milford Haven waterway; export cable routeing/conflict with Port Authority navigation lights	Navigation risk assessed in Volume 3, Technical Appendix 16.1: Navigation Risk Assessment and Chapter 16: Shipping and Navigation.

18.4 Assessment Methodology and Significance Criteria

18.4.1.1 Detailed discussion on the EIA methodology can be found in Chapter 2: Overview of EIA Methodology.

18.4.1.2 This assessment has been based on the existing baseline environment, as described in Section 18.5 and the Project Design Envelope (PDE) as detailed in Chapter 4: Proposed Development Description. Specific parameters that have been the basis of this assessment are provided in Table 18.10.

18.4.1.3 Impacts have been assessed for the following three distinct phases of the proposed Project:

- Construction;
- Operation (and maintenance); and
- Decommissioning.

18.4.2 Study Area

18.4.2.1 For the purpose of the chapter, the Study Area encompasses an area of 50 km radius from the array area (in all directions), and a distance of 5 km either side of the offshore export cable up to mean high water at landfall, West Angle Bay (also see Volume 2, Figure 18.1).

18.4.3 Desk Study

18.4.3.1 Coastal and marine infrastructure and other users in the Study Area was defined via a desktop review that drew upon a variety of sources, as outlined below. Issues and receptors have been identified following a desk-based assessment, GIS mapping of users and existing features, and detailed consultation with key stakeholders.

18.4.3.2 Project-specific marine traffic surveys were undertaken in August and November 2020 to inform the NRA. Data from these surveys are not discussed within this Chapter but are presented in Chapter 16: Shipping and Navigation and Volume 3, Technical Appendix 16.1: Navigational Risk Assessment.

18.4.3.3 Data sources are listed below:

- MMO Interactive Map (MMO, 2019);
- Lle – Wales Marine Planning Portal;
- Marine Energy Test Area (META) Environmental Statement (RPS, 2019);
- GIS data from The Crown Estate;
- Environmental Statement, Greenlink Interconnector (Intertek, 2019);
- KIS-ORCA; and
- EMODnet.

18.4.4 Assessment of Potential Effect Significance

18.4.4.1 Specific criteria relating to coastal and marine infrastructure and other users have been developed for the sensitivity of the receptor (Table 18.4) and the magnitude of impact (Table 18.5). A matrix tool has been used to inform the impact assessment to determine the significance of effect, based on the sensitivity of receptor and magnitude of impact.

Sensitivity

18.4.4.2 The criteria for defining sensitivity in this chapter are outlined in Table 18.4.

Table 18.4 – Sensitivity Levels for Coastal and Marine Infrastructure and Other User Receptors

Sensitivity	Description
High	Area in high use by other marine users. Receptor has very limited capacity to avoid, adapt to, accommodate, recover or tolerate change from the anticipated impact.
Medium	Area in frequent use by other marine users. Receptor has limited capacity to avoid, adapt to, accommodate, recover or tolerate change from the anticipated impact.

Sensitivity	Description
Low	Area in limited use by other marine users. Receptor has capacity to avoid, adapt to, accommodate, recover or tolerate change from the anticipated impact.
Negligible	Area is very unlikely, or not known, to be used by other marine users. Receptor can easily avoid, adapt to, accommodate, recover or tolerate change from the anticipated impact.

Magnitude

18.4.4.3 The criteria for defining magnitude in this chapter are outlined in Table 18.5.

Table 18.5 – Magnitude of Impacts on Receptors (Coastal and Marine Infrastructure and Other Users)

Sensitivity	Description
High	Permanent disruption to the activity of the other marine user during the lifetime of the Project.
Medium	Unusual temporary disruption to the activity of the other marine user during the lifetime of the Project or for an extended period of time.
Low	Usual temporary or low-level short-term disruption to the activity of the other marine user.
Negligible	Undetectable disruption to the activity of the other marine user.

Significance of Effect

18.4.4.4 The significance of the effect upon coastal and marine infrastructure and other users is determined by correlating the magnitude of the impact and the sensitivity of the receptor, as presented in Table 18.6. On this basis, potential impacts are assessed as of negligible, minor, moderate and major significance (definitions are provided in Chapter 2: Overview of EIA Methodology); and also, as either adverse or beneficial.

18.4.4.5 For the purposes of this assessment, any adverse effects with a significance level of major and/or moderate have been deemed significant in EIA terms, while those of minor or negligible are deemed non-significant.

Table 18.6 – Effect Significance Matrix

		Sensitivity			
		High	**Medium**	**Low**	**Negligible**
Magnitude	**High**	Major	Major	Moderate	Minor
	Medium	Major	Moderate	Minor	Minor
	Low	Moderate	Minor	Minor	Negligible
	Negligible	Minor	Minor	Negligible	Negligible

18.4.5 Standard Mitigation

18.4.5.1 A range of standard mitigation measures has already been applied to the Project as part of the over-arching site selection and iterative design process (see below and Chapter 3: Site Selection and Alternatives). These have been introduced in order to minimise potential effects of the Project on any affected receptors.

18.4.5.2 Standard mitigation measures which the Project has already implemented, or is committed to in the future, in order to minimise potential effects on coastal and marine infrastructure and other users, are listed below:

- Liaison with other marine renewable developers in the area, in order that they are kept informed of proposed activities during all phases of the Project (construction, O&M, decommissioning);
- Specific engagement with the MoD and MHPA prior to any construction, O&M or decommissioning works;
- Application of a temporary 500 m Safety Zone around vessels during construction, major operation and maintenance works, and decommissioning;
- Best practice industry techniques will be employed, and a Cable Burial Risk Assessment will set out installation methods to avoid impacts with other users. Where burial is not possible appropriate cable protection will be deployed and clearly marked on relevant charts;
- Crossing and Proximity Agreements will be put in place with existing cable owners and cable crossings will be designed in accordance with industry standard best practice;
- Clearly marking the Proposed Development and Project infrastructure, including submitting ‘as-laid' co-ordinates of the cable route to the UK Hydrographic Office (UKHO) via an H102 hydrographic note and KIS-ORCA Service. 'As-laid' cables shall be marked on Admiralty Charts and fisherman's awareness charts (paper and electronic format);
- Notices to Mariners will be issued for construction, operation and maintenance or decommissioning works. These will include the following information as a minimum; description of works, programme of works, charts and coordinates of the works, vessel details, and key Project personnel details;
- A pre-installation (post-consent) geophysical survey will be carried out and include a magnetometer survey, designed to identify any potential UXO targets in the vicinity of the planned cable route. If a UXO target is identified the intention would be to route around the UXO and avoid interacting with it. The cable corridor has sufficient width built in to allow this occur. However if it is not possible to route around the UXO a more detailed assessment of the specific target would be undertaken (potentially via ROV) to determine UXO risk and only if no alternative existed would the Project undertake UXO clearance via deflagration (low-order).
- Project vessels to comply with appropriate regulations, such as the International Regulations for Preventing Collisions at Sea, (IMO, 1972);
- Project vessels to exhibit appropriate lightings and markings at all times;
- Structures within the array area will be marked and lit in accordance with International Association of Lighthouse Authorities technical guidance (IALA, 2021); and
- Development of agreed transit routes for construction vessels.

18.4.6 Assessment for Residual Effect Significance

18.4.6.1 The assessments and conclusions on significance of effect presented in Section 18.6 assume that the standard mitigation measures, listed above, have been successfully implemented. Where significant environmental effects remain, even after these standard measures have been factored in, then project-specific mitigation measures are detailed and the residual significance of effect presented.

18.4.7 Limitations to Assessment

18.4.7.1 Collection of Project-specific data provides a valuable basis for the characterisation of the baseline of coastal and marine infrastructure and other users activity. However, it is acknowledged that throughout the lifetime of the Project, coastal and marine infrastructure and other users activity is likely to change. Only coastal and marine infrastructure and other users activity currently known or likely to occur in the future has been assessed in this chapter.

18.5 Baseline Conditions

18.5.1.1 Baseline conditions with respect to existing, known or consented coastal and marine infrastructure and other users within the Study Area were defined via a detailed desktop review, GIS mapping, and consultation with key stakeholders. An overview of identified coastal and marine infrastructure and other users is shown in Volume 2, Figure 18.1. The following receptors are considered in this section:

- Other marine renewable energy projects;
- Military activity / practice areas;
- Unexploded ordnance;
- Marine disposal sites;
- Aggregate extraction sites;
- Oil and gas (including LNG) infrastructure; and
- Ports and harbours.

18.5.2 Other marine renewable energy projects

18.5.2.1 Several renewable energy projects (consented or at EIA Scoping stage) are present within the Study Area, these are described below and summarised in Table 18.7. Recent announcements by The Crown Estate (TCE) have also provided evidence as to the future of floating offshore wind in the Celtic Sea and this is also discussed below.

18.5.2.2 The Pembrokeshire Demonstration Zone (PDZ) comprises a 90 km^2 area of seabed leased from TCE, located approximately 21 km east of the array area. The site was originally intended for the testing of multiple offshore renewable energy devices (wave and FLOW), with a total maximum deployed capacity of up to 100 MW. This purpose was supported by the submission of an EIA Scoping Report to NRW in 2018. However, following consultation with Celtic Sea Power Ltd (previously Wave Hub Ltd), the third-party managers of the PDZ site, it has been confirmed the site will be repurposed and consist of a proof of concept multi-purpose electrical connector offshore substation (Matt Hodson, pers. comm.). The layout of the offshore project area is not yet known, but it is anticipated to be significantly reduced in scale and include one export cable.

18.5.2.3 However, in the absence of an updated EIA Scoping Report and insufficient project information to allow the effects to be reasonably understood the PDZ has not been considered further in this assessment. This approach corresponds with that adopted for the Project cumulative effects assessment, see Section 18.10.1.4 for more detail.

18.5.2.4 In July 2021 TCE announced three new test and demonstration FLOW projects in the Celtic Sea, each with a generating capacity up to 100 MW. The sites, Llyr 1, Llyr 2 and Whitecross, have satisfied TCEs initial application criteria and will now progress to a plan-level Habitats Regulations Assessment to assess possible impact on protected marine habitats. Subject to the outcome of the HRA the applicants may then be granted seabed agreements for lease (The Crown Estate, 2021).

18.5.2.5 As per the approach for the PDZ in the absence of an EIA Scoping Report or sufficient project information to allow the effects to be reasonably understood Llyr 1, Llyr 2 and Whitecross have not been considered further in this assessment.

18.5.2.6 TCE made a further announcement in November 2021 confirming its ambition to unlock up to 4 GW of floating wind in the Celtic Sea with projects delivered from 2030. The leasing process would include two key project categories - early-commercial scale projects (300-350 MW) and full-commercial scale projects (of up to 1 GW). The leasing process may see rights awarded by the end of 2023, with projects delivered from 2030 into the early part of the next decade (TCE, 2021). There is insufficient information to consider further in this assessment but the likelihood of larger projects being developed in the region is high.

18.5.2.7 META is a series of eight pre-consented sites aimed at early-stage developers for the testing of marine renewable energy devices, sub-assemblies and components. The sites are not grid connected, although there is a possibility of some cables running ashore for monitoring purposes. Five sites, defined as Phase 1 are located within the Milford Haven waterway immediately adjacent to the quayside at Pembroke Port and Criterion Jetty. These sites are, at their closest, 10 km east of landfall at West Angle Bay. Phase 2 comprises three test sites at Warrior Way, Dale Roads and East Pickard Bay. The distance of these sites to the array area and offshore export cable corridor is presented in Table 18.7.

18.5.2.8 The mWave, a membrane-style wave energy converter is being developed by Bombora Wave Power Ltd. The 1.5 MW mWave prototype will be located within part of a META Phase 2 test site at East Pickard Bay, approximately 1 km west of Freshwater West beach. The device will include a communications cable placed on the seabed between the device and East Pickard Bay. Installation is proposed for summer 2022, with an operational period for the initial demonstration scale project of up to 18 months (including removal). It will be towed to site from Pembroke Port. The distance of this site to the array area and export cable is set out in Table 18.7.

18.5.2.9 Project Valorous is 300 MW FLOW project being developed by BGW. The array area is located 3.3 km to the southwest of the Project array area. An EIA Scoping Report was submitted to NRW in March 2021, and response received in May 2021. The EIA Scoping Report included details of a proposed consent application date for this Project of Autumn 2023.

Table 18.7 – Other marine renewable energy projects and proximity to the Project

Project	Distance from array (km)	Distance from export cable (km)	Footprint of project area (km^2)	Construction Timings
META – Phase 1, Pembroke Port	49.5	10.3	0.495	Peak testing/device deployment 2022-2026
META – Phase 2, East Pickard Bay (Bombora)	40	3.0	1.23	Summer 2022 for a maximum duration of 18 months including removal.
META – Phase 2, Warrior Way	51.7	12.6	0.093	As a test site deployment and recovery will be dictated by client bookings. There is no programme, and activity will be managed by NtM and stakeholder updates.
META – Phase 2, Dale Road	39.6	2.3	0.195	As a test site deployment and recovery will be dictated by client bookings. There is no programme, and activity will be managed by NtM and stakeholder updates.
Project Valorous	3.3	9.7	155 (array area)	Construction 2026-2028, generating 2029

18.5.3 Military Activity

18.5.3.1 The MoD Castlemartin military practice area covers a sea area of approximately 420 km^2, with an associated onshore range of approximately 16 km^2. The MoD range is active for 44 weeks of the year and, depending on type of use, either the smaller (nearer to shore) firing template or larger (further offshore) firing template is used. The templates include a coastal exclusion zone that ranges between 5.6 km to 22 km from the shore. When active, commercial fishing, recreational boating, and anchoring is restricted; and safety vessels are present. The larger template is only used for short exercises, which tend to occur in January and are planned a minimum of 12 months in advance. The array area is located approximately 15 km southwest of the Castlemartin military practice area/sea danger area. The offshore export cable corridor will pass through the Castlemartin military practice area/sea danger area, see Volume 2, Figure 18.1.

18.5.4 Subsea Cables

18.5.4.1 Table 18.8 summarises subsea cables present within the Study Area. The SOLAS (Vodafone) cable bisects the array area, east to west. Several indicative layouts are presented for the array area (see Chapter 4: Proposed Development Description), including a layout where the array is located north and south of the SOLAS cable necessitating two array cable crossings.

18.5.4.2 The Greenlink Interconnector Ltd (GIL) is a subsea and underground electricity interconnector cable (with associated onshore converter stations) linking the existing electricity grids in Ireland and Great Britain, with a nominal capacity of 500 MW (Greenlink, 2021). The project was awarded a Marine Licence from NRW in March 2021 and planning consent and a Foreshore Licence in Ireland in June 2021. Greenlink is planned for commissioning in 2024 and the Project offshore export cable will cross the GIL cable south of the entrance to Milford Haven Waterway.

18.5.4.3 With the exception of the SOLAS cable and GIL the Project will not interact with any other subsea cables.

Table 18.8 – Subsea cables and proximity to Project

Cable Name (Asset Owner)	Status	Distance from array area	Distance from export cable corridor
SOLAS (Vodafone)	Active	Within (0 km)	1.4 km
Tata Atlantic North (Tata Telecoms)	Active	0.17 km	3.8 km
UK-Ireland Crossing 2 (Level 3 Ltd)	Active	2.9 km	9.2 km
Hibernia (GTT)	Active	15.1 km	18.2 km
PTAT (Vodafone)	Unknown	15.0 km	18.3 km
Tata Western Europe UK-Portugal (Tata Telecoms)	Active	18.5 km	22.4 km
Greenlink Interconnector	Consented – commissioned by 2024	17.8 km	Crossing required (0 km)

18.5.5 Unexploded Ordnance

18.5.5.1 A UXO Threat and Risk Assessment (6 Alpha, 2020) was commissioned in support of Project specific geotechnical surveys undertaken in May 2021. The assessment was based on UXO defined geospatial threat source positions, and the anticipated level of contamination from background UXO threats situated upon and within 5 km of the array area and offshore export cable corridor. A summary of UXO likelihood is provided in Table 18.9 below.

Table 18.9 - Likelihood of Unexploded Ordnance (UXO) contamination summary (source: 6 Alpha, 2020)

Likelihood of Unexploded Ordnance Contamination Summary	
Potential Threat Source	**Likelihood of Contamination and Comment**
Aerial Bombing	Likely Numerous primary bombing targets, one air raid related shipwreck and previous High Explosive bomb encounters were all recorded within 5 km.

Likelihood of Unexploded Ordnance Contamination Summary	
Potential Threat Source	**Likelihood of Contamination and Comment**
Naval Engagements	Possible Four World War One-era (WWI-era) vessels were sunk by German U-Boats within 5km.
Naval Minefields	Likely A WWI-era minefield intersected the proposed export cable route. World War Two era (WWII-era) mines were deployed, and have been encountered previously, in close proximity.
Military PEXA	Likely Historic and modern military Practice and Exercise Areas (PEXA) intersect the Study Area.
Coastal Armaments	Likely Numerous Anti-Aircraft Ammunition (AAA) batteries and other defensive installations were recorded in close proximity of the proposed export cable landfall areas.
Munitions Related Shipwrecks	Likely A significant quantity of munitions related shipwrecks are documented within 5 km of the Study Area *(for the purposes of the UXO report the study area was the array boundary and its associated export cable corridor),* the closest being two mine-related shipwrecks located 310 m to the north.
Munitions Dumping	Unlikely Several munitions dumping areas were recorded in the wider area, the closest is located approximately 9 km to the west.

18.5.5.2 The report concluded that, generally, the likelihood of encountering UXO is higher nearer to shore along the offshore export cable, with the likelihood reducing further offshore, towards the array area.

18.5.5.3 The Project is seeking consent for one UXO detonation via deflagration (low-order). This is presented as the realistic worst case scenario throughout the Environmental Statement and has formed the basis of the impact assessment undertaken in Chapter 10: Fish and Shellfish Ecology and Chapter 13: Marine Mammals.

18.5.5.4 Deflagration (low-order) is the Projects preferred method for UXO clearance and based on current industry knowledge and precedent set by other offshore wind farms, eg. Sofia Offshore Wind Farm (Sofia Offshore Wind Farm UXO Clearance Marine License Application (GoBe, 2021) MLA/2020/00489), and the recently consented Greenlink Interconnector (NRW Marine Licence: CML1929, Activity 4 Unexploded Ordnance Clearance (NRW, 2021)) is considered the realistic worst case scenario. High order UXO detonation, as an absolute worst case, has been modelled and reported in Volume 3, Technical Appendix 12.2: Underwater Noise and Vibration Technical Report. However, this has been considered for completeness and is not deemed realistic as the Project intends to employ deflagration (low-order) as the clearance method.

18.5.5.5 As set out in Section 18.4.5 a pre-installation (post-consent) geophysical survey will be carried out and include a magnetometer survey, designed to identify any potential UXO targets in the vicinity of the offshore export cable corridor. If a UXO target is identified the intention would be to route around the UXO and avoid interacting with it. Interaction with a UXO could cause loss of life, and may impact ecological receptors, including marine mammals. Impact assessments associated with UXO detonation are presented in Chapter 10: Fish and Shellfish, Chapter 12: Marine Mammals and Chapter 28: Major Accidents and Disasters. On the basis that Standard Mitigation would be applied and impact assessments have been undertaken for key receptors this topic is not considered further within this chapter.

18.5.6 Marine Disposal Sites

18.5.6.1 There are two open marine disposal sites within the Study Area. Milford Haven Three (LU169) is located 9 km to the north of the array area and Milford Haven Two (LU168) is approximately 24 km to the east of the array area. Both are used by MHPA for maintenance dredging, which is undertaken every 2-3 years for a 6-week duration. MHPA has predicted that, between 2018 and 2026, 480,000m³ of material will be disposed at LU169; with 88,000 m³ of coarse sand deposited at LU168.

18.5.6.2 The Project does not interact with these sites and, therefore, the two open disposal sites are not considered further within this chapter.

18.5.6.3 The offshore export cable corridor intersects the footprint of the Milford Haven historic dredge disposal site (LU170), which was used until 1994, see Volume 2, Figure 18.1. An assessment of the potential effects on water quality and marine ecology of installing the offshore export cable through this historic disposal ground is made within Chapter 7: Marine Seabed and Water Quality and Chapter 9: Marine and Coastal Ecology respectively.

18.5.6.4 An assessment of potential impacts on operational dredging activities within Milford Haven (including potential risks to navigation) are presented within Chapter 16: Shipping and Navigation. Marine disposal sites are not considered further in this chapter.

18.5.7 Aggregate Extraction Sites

18.5.7.1 There are no existing licensed, application or aggregate option areas within the Study Area. The closest aggregate area is located in the Bristol Channel, approximately 64 km east of the array area.

18.5.7.2 Within the Study Area there are areas of potential future aggregate resource, previously identified by The Crown Estate (The Crown Estate, 2019) and identified in the WNMP. The offshore export cable corridor overlaps with a small area of identified Aggregate Resource Areas (Welsh Government, 2019) however, with no active sites or licenses pending, no further consideration is given to aggregate extraction sites in this chapter.

18.5.8 Oil and Gas Infrastructure

18.5.8.1 There is one historic exploratory wellhead, located approximately 10 km southeast of the array area; and one current licence block in the Study Area. Licence P2287 is operated by ENI UK Limited and is located approximately 38 km north of the array area. The licence commenced in September 2015, and its current status is extant.

18.5.8.2 No oil and gas blocks have been awarded within the Study Area, in recent licensing rounds. There is also no existing, or proposed, gas storage or carbon capture storage infrastructure within the Study Area.

18.5.8.3 Further upstream of the proposed landfall at West Angle Bay, within Milford Haven Waterway, there are a number of marine jetties and berthing facilities associated with the Valero refinery at Rhoscrowther, Puma Energy, and the Dragon and South Hook LNG facilities.

18.5.8.4 As there is no direct spatial interaction between these facilities and the Project, no further consideration is given to oil and gas infrastructure in this chapter. Potential navigation risks and impacts from installation of the offshore export cable and shipping traffic associated with O&G/LNG facilities are assessed in detail in Chapter 16: Shipping and Navigation.

18.5.9 Ports and Harbours

18.5.9.1 The Port of Milford Haven, comprising Milford Marina, Pembroke Port, Pembroke Dock Ferry Terminal and Milford Fish Docks is a key UK shipping gateway, and the largest port in Wales. The Port is capable of delivering 30% of the UK gas demand and serves the Valero Refinery and the Valero Pembrokeshire Oil Terminal, Puma Energy, South Hook LNG, and Dragon LNG. Milford Fish Docks is Wales' largest fishing dock, and the Ferry Terminal is south Wales' busiest freight and passenger route to Ireland. The Milford Haven Waterway is also home to Pembroke Power Station, Europe's largest gas-fired power station (MHPA, 2021).

18.5.9.2 The Port of Milford Haven is responsible for the movement of all vessels on the Milford Haven Waterway and provides pilotage, conservancy and Vessel Traffic Services.

18.5.9.3 The site is close to the approaches to Milford Haven Waterway and approximately 11 km of the offshore export cable corridor to the landfall at West Angle Bay is within the port limits of the Port of Milford Haven Statutory Harbour Authority (SHA) and Competent Harbour Authority (CHA) areas managed by MHPA.

18.5.9.4 Assessment of potential impacts on the Port of Milford Haven can be found in Chapter 15: Commercial Fisheries; Chapter 16: Shipping and Navigation; Chapter 27: Socio-Economics, Tourism and Recreation; and Chapter 28: Major Accidents and Disasters. Ports and harbours are not considered further in this chapter.

18.6 Potential Environmental Effects

18.6.1.1 The following assessment provides a summary of all effects identified from the desk-based study, consultation with key stakeholders and those which have emerged as the EIA has progressed. Each effect is not necessarily relevant to all stages of the Project, and thus have been assessed within the stage of the Project at which they will occur (construction, operation and maintenance, and decommissioning). Further information on the EIA process and methodology is outlined in Section 18.4 and Chapter 2: Overview of EIA methodology.

18.6.1.2 The effects have been assessed on the current baseline, which could change over the operational life of the Project, as discussed in Section 18.4.6.

18.6.1.3 The worst case parameters assumed for each individual potential impact on coastal and marine infrastructure and other users are detailed below in Table 18.10. Further information on the PDE is described in Chapter 4: Proposed Development Description.

Table 18.10 - Project design envelope parameters relevant to coastal and marine infrastructure and other users

Potential Pathway Change/Impact	Realistic Worst Case Scenario	Justification
Construction		
Disturbance and obstruction to other marine renewable project activities arising from the use of the Port of Milford Haven, presence of installation vessels and associated safety zones during construction, major maintenance and decommissioning.	• Maximum overall offshore construction duration = 8 months; • During construction phase, temporary 500 m safety zones will be imposed around all major construction vessels; Offshore export cable: • Length: 49 km; • Boulder clearance: 30 days; • Sandwave levelling: 15 days; • PLGR: 24 days; • Multipass/pre-trenching 8 days; • Installation: 49 days; • MFE post-lay (joint locations): 6 days • Protection installation: 20 days; • Duration of time between each installation phase: variable, 3-4 weeks Array area: • Array area: 43.5 km^2; • Array area plus 1 nm buffer: 103.5 km^2; • Sandwave levelling (array cables, moorings, and anchors): 20 days; • Cable array installation: 7.5 days; • Protection installation (full protection): 47 days; • Array cable hook up: 25 days; • Anchor/mooring installation and hook-up: 85 days; and • Duration of time between each installation phase: variable, 3-4 weeks TBC. Vessel movements: • Up to 6 vessels at any time; • Floater – 1 unit delivered every 2 weeks;	This represents the maximum duration of offshore installation during the construction phase and the maximum number of vessels and vessel movements.

Potential Pathway Change/Impact	Realistic Worst Case Scenario	Justification
	• Floater duration of tow out – up to 15 hr per Floater (if Milford Haven).	
Disruption to firing exercises and other military activities due to the presence of construction vessels	Offshore export cable: • Length: 49 km; • Length of cable within firing range ~20 km; • Installation duration for length in firing range : 75 days; ▪ Boulder clearance for this length: ~7 km @1 km/day + contingency = 14 days; ▪ Sandwave levelling: 2 km @ 500 m/day + contingency = ~10 days; ▪ Potential pre-sweeping for this length up to 20 km @ 6 km/day + contingency = ~10 days; ▪ Cable lay for 20 km @1000 m/day = ~20 days; ▪ Post-lay burial (joint): ~150 m, 8 days per joint plus MFE @ 3 days per joint = 11 days; Cable protection for this length ~6 km @ 50 m/hr + contingency = ~10 days.	This represents the maximum duration of installation within the extent of the Castlemartin military practice area/sea danger area during the construction phase
Damage or disturbance to existing cables during construction	• Maximum overall offshore construction duration = 8 months; Cable Installation Method: • Post-lay jetting run or surface lay and rock protection/mattress; • or direct plough burial; Rock protection worst case: • up to 3 x cable crossings: 1 over the export, up to 2 within the array area; • 2 m height (including mattress thickness (30 cm) and rock dump); • 11 m width; • 150 m length; Semi-submersible floating platform mooring Configuration: • Number of anchors: up to 63;	This represents the maximum amount of infrastructure over the greatest area potentially affected, recognising installation methods and maximum duration of installation during the construction phase.

Potential Pathway Change/Impact	Realistic Worst Case Scenario	Justification
	Array cables: • Length of cables: 23.9 km (22.5 km on seabed); • Protection (rock protection): 5m (width) over maximum length: 22,500m = 112,500 m^2; • Sandwave levelling (array cables, anchoring and mooring): up to 1 km; Installation vessel anchoring: • Number of vessels: ▪ At landfall/intertidal: spot locations within a 1.2 km^2 area; Export cable route: spot locations within 0.6 km^2	
Operation and Maintenance		
Disturbance and obstruction to other marine renewable project activities arising from the use of the Port of Milford Haven, O&M vessels and associated safety zones during O&M activities.	• Estimated cable repair during lifespan: 5 x export, 5 x array; • Export: ▪ Estimated cable repair length for export cable: 1 km length x 50 m wide; ▪ Estimated export cable repair area impacted (per repair): 50,000 m^2; ▪ Duration of each cable repair: 2 weeks; ▪ Cable remediation events – reburial: 12; ▪ Footprint of seabed disturbance during remediation event: 150,000 $m^{2;}$ • Array: ▪ Estimated cable repair length for array cable: max. 6 km length (50 m wide); ▪ Estimated array cable repair area impacted (per repair): 301,050 m^2; ▪ Total footprint of disturbance for 5 x array cable repairs: 1,505,250 m^2 ▪ Duration of each cable repair: 2.5 weeks;	This represents the maximum duration of offshore operation and maintenance activities and the maximum number of vessels and vessel movements.

Potential Pathway Change/Impact	Realistic Worst Case Scenario	Justification
	• Maintenance work: ▪ Mooring and sub-structure inspections: 10; ▪ Minor offshore maintenance: 7; ▪ Mooring line replacement: 2 in 25 yrs; ▪ Hull repairs: 2 small and 2 major in 25 yrs (3 events requiring towing back to port); • During maintenance works, temporary 500 m safety zones will be imposed around all vessels; • Operation duration: 25 years; and • Vessel movements per year for O&M ▪ 6 CTV vessels per turbine per year: maximum 60 trips per year; • Maintenance vessels: variable, up to 15 visits	
Disruption to firing exercises and other military activities due to the presence of cable repair / remediation and O&M vessels	As above	This represents the maximum duration and area of offshore operation and maintenance activities
Damage or disturbance to existing cables during O&M activities	As above	This represents the worst-case cable repair and reburial events during the lifetime of the project
Decommissioning		
Disturbance and obstruction to other marine renewable project activities arising from the use of the Port of Milford Haven, decommissioning vessels and associated safety zones during decommissioning activities.	As per worst case scenario for construction	This represents the maximum duration of offshore works during the decommissioning phase and the maximum number of vessels and vessel movements.

Potential Pathway Change/Impact	Realistic Worst Case Scenario	Justification
Disruption to firing exercises and other military activities due to the presence of decommissioning vessels	As per worst case scenario for construction	This represents the maximum duration of works within the extent of the Castlemartin military practice area/sea danger area during the decommissioning phase
Damage or disturbance to existing cables during decommissioning activities	As per worst case scenario for construction	This represents the maximum amount of infrastructure over the greatest area potentially affected and maximum duration of works during the decommissioning phase.

18.6.2 Construction

Disturbance and obstruction to other marine renewable project activities arising from the use of the Port of Milford Haven, installation vessels and associated safety zones during construction, major maintenance and decommissioning.

18.6.2.1 The Project does not directly overlap with the boundary of any other marine renewable project or their infrastructure, however installation activities during the Project construction phase may impact on the installation, O&M or decommissioning of other marine renewable energy projects.

18.6.2.2 Offshore construction of the Project is expected to take up to eight months with a total number of six vessels in operation at one time. This includes transport barges, cable laying vessels and Crew Transfer Vessels (CTVs). The larger vessels are likely to transit from larger construction ports, however some smaller vessels will operate out of Pembroke Port. During construction, a temporary 500 m safety zone will be applied around all installation vessels.

18.6.2.3 Once integrated at the relevant port (potentially Pembroke Dock), the semi-submersible floating platforms will be towed to site. This will take up to 15 hours each; a maximum of 7 days for up to 10 semi-submersible floating platforms. Chapter 16: Shipping and Navigation identifies standard mitigation including the application and use of safety zones of up to 500 m from platform edge (at sea level) during construction/major maintenance and decommissioning phases and the requirement for a tow out passage plan risk assessment method statement (RAMS). The semi-submersible floating platform tow-out passage plan RAMS would be undertaken by the Contractor, covering the period between quayside departure and completion of the mooring connection being made. The RAMS would consider risks to Project vessels, risks to 3rd party vessels (and consequential collision, contact or grounding risks) through reduced manoeuvrability and breakout of the device under tow.

18.6.2.4 With the exception of Project Valorous the other marine renewable projects are small scale, test sites for the temporary deployment of devices, sub-assemblies and components. Bombora (mWave) is due to be commissioned summer 2022 and decommissioned within 18 months of deployment, which may result in a short temporal overlap with the construction phase of the Project and decommissioning of the mWave. However this would only involve towing the mWave back to Pembroke Port and any disruption to transit can be avoided by engaging with Bombora and avoiding construction activities during mWave's transit. Due to the short period of potential disruption and ability of the receptor to adapt to the potential conflict the magnitude of impact and sensitivity of receptor are both considered to be low.

18.6.2.5 The deployment and decommissioning of infrastructure at the META sites will be dictated by client bookings. In the absence of a construction programme, it is not possible to identify periods of conflict resulting from an overlap with the construction phase however due to the small scale of the test sites and distance from the Proposed Development it will be possible to avoid any conflict or disruption through continued engagement with META. Both the magnitude of impact and sensitivity of receptor are considered to be low.

18.6.2.6 The construction phase for Project Valorous and the Project may coincide for a short period at the end of 2024. This would result in an increase in the number of construction vessels active offshore and transiting to the Port of Milford Haven however as both projects are being developed by the same Applicant, construction schedules can be coordinated so as not to conflict. Both the magnitude of impact and sensitivity of receptor are considered to be low.

18.6.2.7 The significance of disruption and obstruction to other marine renewable energy project activities during construction is considered as having a **minor adverse** effect, and therefore not significant in EIA terms.

18.6.2.8 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remains as detailed above.

Disruption to firing exercises and other military activities due to the presence of construction vessels.

18.6.2.9 The presence of construction vessels, including cable laying barges, within the MoD Castlemartin military practice area/sea danger area may disrupt firing exercises or other military activities. Although the construction programme would aim to avoid installation within periods of known firing exercises, for reasons beyond the Project's control, for example weather down time, there may be some conflict between installation and military activities.

18.6.2.10 A total length of approximately 20 km of the offshore export cable corridor is routed through the Castlemartin military practice area/sea danger area. It is anticipated that all the activities associated with installation of this section of the offshore export cable (boulder clearance; sandwave levelling; PLGR; pre-trenching; cable lay; post-lay burial; installation of cable protection) will take up to 75 days.

18.6.2.11 The duration of offshore export cable installation works within the Castlemartin military practice area/sea danger area is relatively short, in the context of the installation period for the wider Project. Much of the offshore export cable corridor also falls within the larger firing template, which is only used for short exercises, normally scheduled for January, and planned a minimum of 12 months in advance. On this basis, construction can be programmed to avoid military activities and, with ongoing consultation with the MoD, reduce the likelihood of any disruption.

18.6.2.12 The receptor is judged to have medium sensitivity, as the area is in use by the military, with limited capacity to accommodate the anticipated impact. However, the magnitude of impact is deemed to be low, due to the short-term disruption. The disturbance to military activities due to the presence of construction vessels is considered to be of **minor adverse** effect, and, therefore, not significant in EIA terms.

18.6.2.13 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remains as detailed above.

Damage or disturbance to existing subsea cables during construction

18.6.2.14 Offshore construction for the Project is proposed to start by late 2026, by which point the Project will directly interact with two cables; SOLAS (Vodafone) cable within the array area (dependent on the final array layout), and the Greenlink Interconnector which the Project offshore export cable will need to cross to the west of Turbot Bank. The construction phase may result in damage to the SOLAS and Greenlink cables via deployment of anchors and mooring lines; array cable installation within the array area; and pre-lay and installation works for the offshore export cable.

18.6.2.15 Crossing and Proximity Agreements will need to be established and in place with cable owners, prior to the commencement of construction activities, thus reducing the risk of damage or disturbance to acceptably low levels and reducing the magnitude of impact to negligible. The receptor is deemed to be of high sensitivity, however the overall impact is **minor adverse** effect, and therefore not significant in EIA terms.

18.6.2.16 None of effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remains as detailed above.

18.6.3 Operational Phase

Disturbance and obstruction to other marine renewable project activities arising from the use of the Port of Milford Haven, O&M vessels and associated safety zones during O&M activities.

18.6.3.1 O&M activities during the operational phase of the Project will involve vessel movements to undertake the inspection and servicing of the offshore Project infrastructure including WTGs, semi-submersible floating platform and mooring infrastructure, array cables, and the offshore export cable. O&M vessels (and associated safety zones when necessary) may impact other marine renewable energy projects by obstructing access to site or increasing transit time.

18.6.3.2 A total of 60 O&M vessel movements will be required per year. These are likely to be smaller CTVs operating out of the Port of Milford Haven; however major maintenance may be required which would necessitate the towing of the Floater back to a major construction port. As a worst case scenario, three major maintenance events are estimated for the semi-submersible floating platforms/WTGs over the lifetime of the Project.

18.6.3.3 A total of five export cable repairs at a length of 1 km and five array cable repairs at up to 6 km is estimated during the lifespan of the Project, with an anticipated duration of up to 2.5 weeks for each repair. A total of 12 export cable remediation events is anticipated during the lifespan of the Project, each estimated to take 4-5 days.

18.6.3.4 O&M vessels will operate within the array area, and along the offshore export cable corridor, throughout the operational phase of the Project; however the number of vessel movements is considered to be low. Temporary safety zones will only be applied when undertaking major maintenance works, and/or when towing major components (semi-submersible floating platform/WTG) back to Port (predicted to be required a total of 10 times over the 25 year Project lifetime). Therefore, the likely disturbance or obstruction to other marine renewable project activities arising during the Projects O&M phase is low.

18.6.3.5 The potential impact will be long term, over the 25-year lifespan of the Project. However, the total number of vessel movements is low and the duration of maintenance events is short, therefore, the magnitude of impact is deemed to be low. The receptors are judged to have low sensitivity, due to the limited level of use by other marine renewable energy projects in this area and the ability of the receptor to adapt, i.e. vessel movements from multiple projects can be planned safely and efficiently via routine marine operational systems.

18.6.3.6 Therefore, the disturbance and obstruction to other marine renewable project activities during the O&M phase of the Project is considered to be of **minor adverse** effect, and therefore not significant in EIA terms.

18.6.3.7 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remains as detailed above.

Disruption to firing exercises and other military activities due to the presence of O&M vessels

18.6.3.8 Approximately 20 km of the offshore export cable corridor falls within the Castlemartin military practice area/sea danger area, and during the O&M phase of the Project it is anticipated that maintenance and remedial works will be required on some sections of the offshore export cable, including areas that lie within the Firing Range.

18.6.3.9 It is predicted a total of 5 export cable repairs, at a length of 1 km will be required on the offshore export cable and 5 array cable repairs, up to 6 km in length will be required during the lifespan of the Project, with an anticipated duration of up to 2.5 weeks for each repair. A total of 12 cable remediation events is anticipated during the lifetime of the Project, each of around 4-5 days. This amounts to a total of 130 days of cable repair/remediation over the 25-year lifetime of the Project, or 5.2 days/year. As 41% of the overall offshore export cable lies within the Castlemartin military practice area/sea danger area, a sensible assumption is that a similar percentage of the overall time for cable repairs and/or remediation events may arise in this area. This equates to potential cable O&M activities within Castlemartin military practice area/sea danger area totalling 53 days over the 25-year lifetime, or approximately 2 days/year.

18.6.3.10 The offshore export cable corridor within Castlemartin military practice area/sea danger area falls within the larger template, which is primarily used in January. Where possible, maintenance would be scheduled to avoid this period and reduce any chance of disrupting military activities. Furthermore, engagement with the MoD will minimise the chance of disruption.

18.6.3.11 The receptor is judged to have medium sensitivity, as the area is in use by the military, with limited capacity to accommodate the anticipated impact. However, the magnitude of impact is deemed low, due to the short-term disruption. The impact of disturbance to military activities due to the presence of construction vessels is considered to be of **minor adverse** effect, and therefore, not significant in EIA terms.

18.6.3.12 None of effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remains as detailed above.

Damage or disturbance to existing cables during O&M activities

18.6.3.13 The O&M phase of the Project represents a risk to the SOLAS and Greenlink Interconnector cables as a result of potential anchor placement of O&M vessels and nearby cable maintenance or remediation works. Crossing and Proximity Agreements will be in place with cable owners prior to construction and will include specific reference to remedial measures, in case of an asset requiring maintenance intervention, during the O&M phase of the Project.

18.6.3.14 The risk of damage or disturbance would be reduced to acceptably low levels thus reducing the magnitude of impact to negligible. The receptor is deemed to be of high sensitivity due to the infrastructure's inability to avoid identified impacts however the overall impact is **minor adverse** effect, and, therefore, not significant in EIA terms.

18.6.3.15 None of effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remains as detailed above.

18.6.4 Decommissioning

Disturbance and obstruction to other marine renewable project activities arising from the use of the Port of Milford Haven, decommissioning vessels and associated safety zones during decommissioning activities.

18.6.4.1 During the decommissioning phase of the Project, it is expected that impacts, similar to those assessed for the construction phase (see Section 18.6.2) will arise.

18.6.4.2 As the Project does not overlap with other marine renewable energy projects or their infrastructure, the impact would only arise from the presence of decommissioning vessels, and associated safety zones disturbing or obstructing other marine renewable energy project activities.

18.6.4.3 The receptor is judged to have low sensitivity, due to the limited level of use by other marine renewable energy projects and the receptor's ability to adapt; and the magnitude of impact is deemed low, due to the limited, short-term disruption. The impact of disruption and obstruction to other marine renewable energy project activities during decommissioning is considered to be of **minor adverse** effect, and, therefore, not significant in EIA terms.

18.6.4.4 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remains as detailed above.

Disruption to firing exercises and other military activities due to the presence of decommissioning vessels

18.6.4.5 During the decommissioning phase of the Project, it is expected that impacts similar to those assessed for the construction phase (see Section 18.6.2.9) will arise. The presence of decommissioning vessels within the Castlemartin military practice area/sea danger area may disrupt firing exercises or other military activities, however engagement with the MoD prior to any decommissioning works will be undertaken to mitigate the impact.

18.6.4.6 The receptor is judged to have medium sensitivity, as the area is in frequent use by the military, with limited capacity to accommodate the anticipated impact. However, the magnitude of impact is deemed low, due to the short-term disruption. The impact of disturbance to military activities due to the presence of decommissioning vessels is considered to be of **minor adverse** effect, and, therefore, not significant in EIA terms.

18.6.4.7 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remains as detailed above.

Damage or disturbance to existing cables during decommissioning activities

18.6.4.8 During the decommissioning phase of the Project, it is expected that impacts similar to those assessed for the construction phase (see Section 18.6.2.14) will arise. Crossing and Proximity Agreements will be in place with cable owners prior to construction and will include specific reference to decommissioning activities.

18.6.4.9 The risk of damage or disturbance would be reduced to acceptably low levels, thus reducing the magnitude of impact to negligible. The receptor is deemed to be of high sensitivity due to the infrastructure's inability to avoid identified impacts, however the overall impact is **minor adverse** effect, and therefore not significant in EIA terms.

18.6.4.10 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remains as detailed above.

18.6.5 Effects on Human Health and Population

18.6.5.1 As set out in Section 18.5.5 pre-installation (post-consent) geophysical survey will be carried out and include a magnetometer survey, designed to identify any potential UXO targets in the vicinity of the offshore export cable corridor. If a UXO target is identified the intention would be to route around the UXO and avoid interacting with it. Interaction with a UXO could cause loss of life however this is considered further in Chapter 28: Major Accidents and Disasters.

18.7 Additional Mitigation

18.7.1.1 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remains as detailed above.

18.8 Monitoring

18.8.1.1 No monitoring is proposed for coastal and marine infrastructure and other users.

18.9 Inter-Related Effects

18.9.1.1 The assessment of effects on coastal and marine infrastructure and other users within this chapter has taken into account potential for inter-relationships between multiple impacts acting on common receptors. These may include effects that occur throughout more than one phase of the project (construction, O&M, and decommissioning) to interact to potentially create a more significant effect on a receptor than if just assessed in isolation, or instances where effects of multiple activities affect a common receptor.

18.9.1.2 Various impacts assessed within this chapter, e.g. disruption to firing exercises or conflict with other project activities and vessel movements, may affect other receptors such as MOD or the Port of Milford Haven. However, these inter-relationships will be considered within the topic specific chapter. Disruption to vessel activity and associated risks such as collision/allision are of particular importance to other topic areas and is considered in detail within Chapter 16: Shipping and Navigation. In turn this information has been used to inform other EIA topics such as:

- Chapter 15: Commercial Fisheries;
- Chapter 16: Shipping and Navigation;
- Chapter 27: Socio-Economics, Tourism and Recreation; and
- Chapter 28: Major Accidents and Disasters.

18.10 Cumulative Effects Assessment

18.10.1.1 A Cumulative Effects Assessment (CEA) has been undertaken, based on existing and proposed developments in the Study Area (Chapter 30: Cumulative Effects). The approach to the CEA is described in Chapter 30: Cumulative Effects. Cumulative effects are defined as those effects on a receptor that may arise when the development is considered together with other reasonably foreseeable projects.

18.10.1.2 Even though the majority of effects on coastal and marine infrastructure and other user receptors associated with this Project, and other projects in the region, have a spatial extent that is limited to the site(s) and the immediate local surroundings, they have all be assessed within the cumulative assessment as, collectively, they may combine to create additional effects on certain receptors.

18.10.1.3 On this basis, the projects considered within this cumulative assessment are shown in Table 18.11.

Table 18.11 – Summary of projects relevant for Cumulative Assessment in relation to coastal and marine infrastructure and other users

Project	Tier	Distance from array (km)	Distance from offshore export cable	Footprint of project area (km)	Construction Timings
Greenlink Interconnector	2	17.8	0	0.16	2024
META – East Pickard Bay (Bombora)	1	40	3.0	1.23	Summer 2022 for a maximum duration of 18 months including removal.
META – Warrior Way	2	51.7	12.6	0.093	As a test site deployment and recovery will be dictated by client bookings. There is no programme, and activity will be managed by NtM and stakeholder updates.

Project	Tier	Distance from array (km)	Distance from offshore export cable	Footprint of project area (km)	Construction Timings
META – Dale Road	2	39.6	2.3	0.195	As a test site deployment and recovery will be dictated by client bookings. There is no programme, and activity will be managed by NtM and stakeholder updates.
Project Valorous	2	3.3	9.7	150* (1 nm buffer would result in 258 km^2 total area)	Construction 2026-2028, generating 2029

18.10.1.4 The potential cumulative effects of the PDZ have not been considered at the time of writing due to the lack of detail with which to assess the effects of the proposed project. An EIA Scoping Report was produced and issued to NRW in 2018 for a proposed wave/floating wind project however based on discussions with Celtic Sea Power (the 3rd party agents for the PDZ) and recent public presentations by members of Celtic Sea Power, it is understood the PDZ will be repurposed as an offshore electrical hub. In the absence of an updated EIA Scoping Report and insufficient project information to allow the effects to be reasonably understood and a cumulative assessment undertaken, it has been omitted from this assessment.

18.10.1.5 For those reasons identified above, including the absence of EIA Scoping Reports, the potential cumulative effects of the recently announced Llyr 1, Llyr 2 and Whitecross FLOW projects are also omitted from this cumulative assessment.

18.10.1.6 As set out in PINS Guidance Note 17: Cumulative Effects Assessment, the Project proposed an assessment cut-off date of 1 October 2021 to allow the finalisation of the EIA and HRA assessments, even if project information came forward between the cut-off date and submission. This was agreed with NRW Marine Licensing, noting that in the absence of S.36/Marine Licence guidance the Project was drawing upon the best available advice. It is understood that should sufficient detail of these projects come forward following submission the Project may be requested to provide additional information during the determination period.

18.10.2 Construction

Disturbance and obstruction to other marine renewable project activities arising from the use of the Port of Milford Haven, O&M vessels and associated safety zones during O&M activities.

18.10.2.1 This effect is considered in Section 18.6.2.1 and the cumulative effects are not considered to be significantly worse than the Project in isolation.

18.10.2.2 Therefore, the magnitude of impact would not increase, and the effect is considered **minor adverse**, which is not significant in EIA terms.

Additional Mitigation and Residual Effect

18.10.2.3 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remains as detailed above.

Disruption to firing exercises and other military activities due to the presence of construction vessels.

18.10.2.4 There would no cumulative effect from the Project and META sites as they are located north of the Castlemartin military practice area/sea danger area; or Greenlink Interconnector as construction will be completed, therefore neither would contribute to the disruption of military exercises.

18.10.2.5 The construction phase for Project Valorous and the Project may overlap, resulting in increased number of construction vessels transiting through or involved in construction activities within Castlemartin military practice area/sea danger area. However, as both projects are being developed by the same Applicant, it will be possible to coordinate construction schedules and the likely overlap would be limited to a very short period at the end of 2026. Therefore, the magnitude of impact would not increase, and the effect is considered **minor adverse**, which is not significant in EIA terms.

Additional Mitigation and Residual Effect

18.10.2.6 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remains as detailed above.

Damage or disturbance to existing subsea cables during construction

18.10.2.7 The potential impacts on the Greenlink Interconnector are considered in Section 18.6.2.1518-2418.6.2.1 and the cumulative effects are not considered to be significantly worse than the Project in isolation.

18.10.2.8 The location of array cables or offshore export cable corridor for Project Valorous is not yet known, so it is not possible to assess the potential impact of damage or disturbance to existing subsea cables. However, Project Valorous would implement project specific Crossing and Proximity Agreements with cable owners where necessary; thus reducing the risk of damage. Therefore, the magnitude of impact would not increase, and the effect is considered **minor adverse**, which is not significant in EIA terms.

Additional Mitigation and Residual Effect

18.10.2.9 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remains as detailed above.

18.10.3 Operational Phase

Disturbance and obstruction to other marine renewable project activities arising from the use of the Port of Milford Haven, O&M vessels and associated safety zones during O&M activities.

18.10.3.1 This impact is considered in Section 18.6.3.1 and the cumulative effects are not considered to be significantly worse than the Project in isolation.

18.10.3.2 Therefore, the magnitude of impact would not increase, and the effect is considered **minor adverse**, which is not significant in EIA terms.

Additional Mitigation and Residual Effect

18.10.3.3 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remains as detailed above.

Disruption to firing exercises and other military activities due to the presence of O&M vessels

18.10.3.4 There would no cumulative effect from the Project, META sites, and Greenlink Interconnector as they are located north of the Castlemartin military practice area/sea danger area and would not contribute to the disruption of military exercises.

18.10.3.5 The operational phase of the Project will initially overlap with construction of Project Valorous and, subsequently, the operational phase. This will result in increased numbers of installation and O&M vessels, and associated safety zones, within Castlemartin military practice area/sea danger area. As both projects are being developed by the same Applicant it will be possible to coordinate O&M activities with the aim of reducing vessel movements. Therefore, the magnitude of impact would not increase, and the effect is considered **minor adverse**, which is not significant in EIA terms.

Additional Mitigation and Residual Effect

18.10.3.6 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remains as detailed above.

Damage or disturbance to existing cables during O&M activities

18.10.3.7 The potential impacts on the Greenlink Interconnector are considered in Section 18.6.3.1318-2418.6.2.1 and the cumulative effects are not considered to be significantly worse than the Project in isolation.

18.10.3.8 The location of array cables or offshore export cable corridor for Project Valorous is not yet known, so it is not possible to assess the potential impact of damage or disturbance to existing subsea cables. However, Project Valorous would implement project specific Crossing and Proximity Agreements with cable owners where necessary; thus reducing the risk of damage. Therefore, the magnitude of impact would not increase, and the effect is considered **minor adverse**, which is not significant in EIA terms.

Additional Mitigation and Residual Effect

18.10.3.9 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remains as detailed above.

18.10.4 Decommissioning

18.10.4.1 The same type and significance of cumulative impacts as described for the construction phase would, potentially, arise if decommissioning of the Project and the other projects in the vicinity occurred simultaneously, resulting in no greater than **minor adverse** effects, which are not significant in EIA terms.

18.11 Transboundary

18.11.1.1 As set out in Section 18.5.418.5.4.2, Greenlink Interconnector is a subsea and underground electricity interconnector cable linking the existing electricity grids in Ireland and Great Britain. This receptor has been identified and assessed within this chapter, specifically in respect of damage or disturbance to existing cables during all phases of the Project. The impacts resulted in no greater than minor adverse effect. Given the low likelihood of damage, no transboundary effects have been identified arising for this receptor.

18.12 Summary

18.12.1.1 This chapter has provided an overview of the potential effects which may occur on coastal and marine infrastructure and other users within the construction, operation and maintenance and decommissioning phases of the Project.

18.12.1.2 The review of existing baseline concluded the Study Area is of significant importance to shipping, with the Port of Milford Haven playing a key role in delivering shipping and navigational services.

18.12.1.3 The offshore area is of interest to other marine renewable project developers - currently only smaller test sites, although larger projects are anticipated in the Celtic Sea under TCEs early-commercial scale projects (300-350 MW) and full-commercial scale projects (of up to 1 GW) leasing rounds which may see rights awarded by the end of 2023 (TCE, 2021). A defined and regularly used firing range is present within the Study Area, which heavily influences the use of the marine environment, with military exercises limiting activities at key times of the year. Multiple subsea cables are present in the region.

18.12.1.4 A total of three receptor groups have been defined for this assessment, through review of data and feedback from key stakeholders. The receptor groups recognise the sensitivities of each user and are defined by their associated infrastructure or activity and have been defined as follows:

- Other marine renewable projects (e.g. META, Bombora, Valorous);
- Military activities (Castlemartin military practice area/sea danger area); and
- Subsea cables (SOLAS, Greenlink Interconnector).

18.12.1.5 The potential effects considered by this assessment include the disturbance and obstruction to other marine renewable project activities and military activities arising from the use of the Port of Milford Haven, construction, O&M and decommissioning vessels, and associated safety zones during all phases of the Project; and damage or disturbance to existing cables during all phases of the Project.

18.12.1.6 With consideration of the Standard Mitigation measures, the adverse effect of these pressures was assessed as **minor** or **negligible**, even when assessed with the worst case scenario. The Standard Mitigation measures will be implemented to ensure that the risks to coastal and marine infrastructure and other users are managed effectively over the lifetime of the project.

18.12.1.7 The EIA concluded that the significance of effect was not significant in EIA terms, as outlined in Table 18.12.

18.12.1.8 No significant cumulative effects on coastal and marine infrastructure and other users have been identified (Table 18.13).

Table 18.12 – Summary of Effects

Description of Effect	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Construction					
Disturbance and obstruction to other marine renewable project activities arising from the use of the Port of Milford Haven, construction vessels, and associated safety zones during decommissioning activities	Minor	Adverse	NA	Minor	Adverse
Disruption to firing exercise and other military activities due to the presence of construction vessels	Minor	Adverse	NA	Minor	Adverse
Damage or disturbance to existing cables during construction activities	Minor	Adverse	NA	Minor	Adverse
Operation					
Disturbance and obstruction to other marine renewable project activities arising from the use of the Port of Milford Haven, O&M vessels, and associated	Minor	Adverse	NA	Minor	Adverse

Description of Effect	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
safety zones during O&M activities.					
Disruption to firing exercise and other military activities due to the presence of O&M vessels	Minor	Adverse	NA	Minor	Adverse
Damage or disturbance to existing cables during construction activities	Minor	Adverse	NA	Minor	Adverse
Decommissioning					
Disturbance and obstruction to other marine renewable project activities arising from the use of the Port of Milford Haven, decommissioning vessels, and associated safety zones during decommissioning activities.	Minor	Adverse	NA	Minor	Adverse
Disruption to firing exercise and other military activities due to the presence of decommissioning vessels	Minor	Adverse	NA	Minor	Adverse

Description of Effect	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Damage or disturbance to existing cables during construction activities	Minor	Adverse	NA	Minor	Adverse

Table 18.13 – Summary of Cumulative Effects.

Description of Effect	Cumulative Developments	Significance of Cumulative Effect	
		Significance	Beneficial/ Adverse
Construction			
Disturbance and obstruction to other marine renewable project activities arising from the use of the Port of Milford Haven, construction vessels, and associated safety zones during decommissioning activities.	META – East Pickard Bay (Bombora) META – Warrior Way META – Dale Road Project Valorous	Minor	Adverse
Disruption to firing exercise and other military activities due to the presence of construction vessels	Project Valorous	Minor	Adverse
Damage or disturbance to existing cables during construction activities	Project Valorous	Minor	Adverse
Operation			
Disturbance and obstruction to other marine renewable project activities arising from the use of the Port of Milford Haven, O&M vessels, and associated safety zones during O&M activities.	META – East Pickard Bay (Bombora) META – Warrior Way META – Dale Road Project Valorous	Minor	Adverse
Disruption to firing exercise and other military activities due to the presence of O&M vessels	Project Valorous	Minor	Adverse
Damage or disturbance to existing cables during construction activities	Project Valorous	Minor	Adverse

Description of Effect	Cumulative Developments	Significance of Cumulative Effect	
		Significance	Beneficial/ Adverse
Decommissioning			
The same type and significance of cumulative impacts as described for the construction phase would potentially arise if decommissioning of the Project and the other projects in the vicinity occurred simultaneously, resulting in no greater than minor adverse impacts.			

18.13 References

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