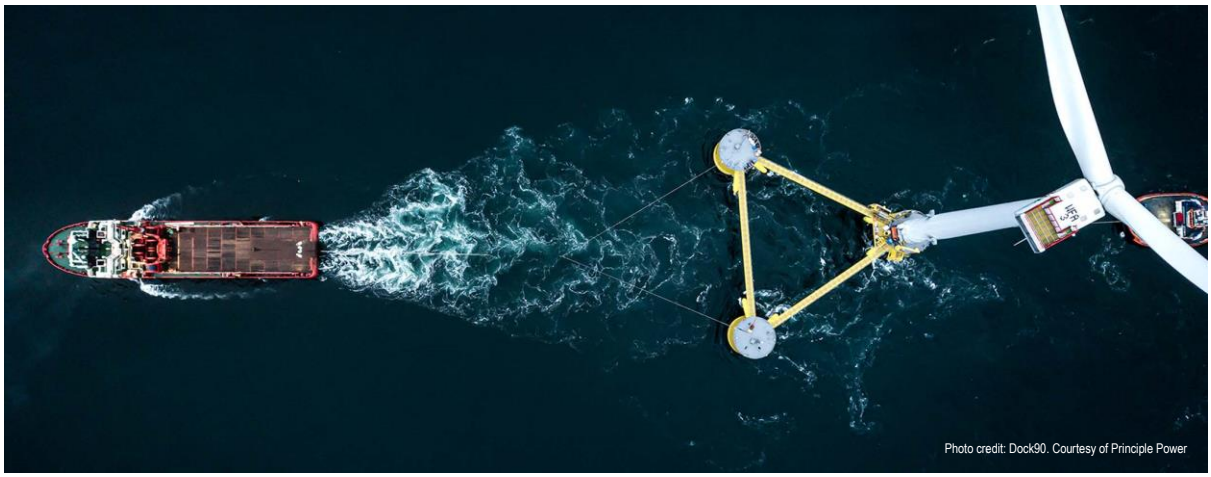

Project Erebus Environmental Statement
Chapter 8: Offshore Designated Sites

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Acronyms

Term	Definition
BGW	Blue Gem Wind
cSAC	Candidate Special Area of Conservation
DECC	Department for Energy and Climate Change
EIA	Environmental Impact Assessment
ES	Environmental Statement
FLOW	Floating Offshore Wind
GCR	Geological Conservation Review
HRA	Habitats Regulations Assessment
JNCC	Joint Nature Conservation Committee
MCAA	Marine and Coastal Access Act
MCZ	Marine Conservation Zone
MPS	Marine Policy Statement
MSFD	Marine Strategy Framework Directive
NNR	National Nature Reserve
NRW	Natural Resources Wales
PCNP	Pembrokeshire Coast National Park
PDE	Project Design Envelope
PINS	The Planning Inspectorate
PPW	Planning Policy Wales
RIAA	Report to Inform Appropriate Assessment
RIGS	Regionally Important Geological Site
SAC	Special Area of Conservation
SBE	Simply Blue Energy
SCI	Site of Community Importance
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
TAN	Technical Advice Note

Term	Definition
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WCA	Wildlife and Countryside Act
WNMP	Welsh National Marine Plan
WTG	Wind Turbine Generator

Chapter 8 Offshore Designated Sites

8.1 Introduction

8.1.1.1 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.

8.1.1.2 This assessment has been carried out by MarineSpace Limited, the lead offshore Environmental Impact Assessment (EIA) Consultants. The chapter has been authored by Liam Porter, who has two years' experience as a marine ecology professional, working on various EIA and monitoring projects around the UK.

8.1.1.3 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.

8.1.1.4 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.

8.1.1.5 This chapter considers national and international, statutory and non-statutory, offshore and coastal designated sites in the vicinity of the Proposed Development. The associated chapters of the ES assess potential impacts to regional populations of designated site features, such as seabirds, marine mammals and migratory fish. In addition, sites designated for far-ranging, mobile and migratory features are assessed in Technical Appendix 8.2: Habitats Regulations Assessment (HRA) Screening Report and Technical Appendix 8.3: Report to Inform Appropriate Assessment (RIAA). In order to prevent repeating lengthy information and details presented in the aforementioned appendices, this chapter does not include sites designated for far-ranging mobile species, such as seabirds and marine mammals.

8.1.1.6 A summary of the assessments made in the relevant physical, biological and seascape and visual chapters, and the assessments made in the HRA Screening Report and HRA RIAA is provided in Section 8.6 of this chapter.

8.1.1.7 The array area, array cables, landfall, and all other associated offshore infrastructure are collectively referred to as the Proposed Development throughout this chapter. The Study Area for this chapter is defined by a 19 km buffer around the Proposed Development (see Section 8.4.2).

8.1.1.8 This chapter of the Environmental Statement (ES) covers offshore and coastal designated sites within the vicinity of the Proposed Development and their protected features in relation to the Proposed Development.

8.1.1.9 The designated sites considered within this chapter are identified in the EIA Scoping Report (Volume 3, Technical Appendix 2.1: Scoping Report) and the HRA Screening Report (Volume 3, Technical Appendix 8.2: HRA Screening Report). Onshore designated sites are identified and assessed within the relevant onshore chapters of this ES Chapter 19: Onshore Geology, Hydrogeology and Hydrology, Chapter 20: Terrestrial and Coastal Ecology, and Chapter 21: Onshore Ornithology.

8.1.1.10 This chapter includes identification, description, and assessment of the potential effects of construction, operation and maintenance, and decommissioning of the Proposed Development on the identified designated sites and their features of conservation interest.

8.1.1.11 This chapter covers the following:

- A summary of the relevant legislation, policy and guidance;
- Consideration of NRW and JNCC feedback on the EIA Scoping Report and HRA Screening;
- A description of the assessment methodology study area; desk study; assessment of potential effect;
- Details of the baseline conditions, including the sensitivity of receptors to potential effects;
- A summary of the standard (embedded) mitigation measures that are relevant to the qualifying features of designated sites;
- A summary of the potential environmental effects associated with the Proposed Development, divided into effects during the construction, operation and maintenance, and decommissioning phases, including additional mitigation, residual effects[1], and inter-related[2] and cumulative effects[3], where relevant; and
- A summary of the chapter outlining the main points raised throughout.

8.1.1.12 Much of the content included in this chapter is informed by other chapters of this ES and the associated Technical Appendices (Volume 3, Technical Appendix 8.1: Marine Conservation Zone (MCZ) Assessment; Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA).

8.1.1.13 Therefore, this chapter should be read alongside the following chapters and appendices of this ES:

- Chapter 2: Overview of EIA Methodology;
- Chapter 4: Proposed Development Description;
- Chapter 6: Marine and Coastal Processes;
- Chapter 9: Marine and Coastal Ecology;
- Chapter 10: Fish and Shellfish Ecology;
- Chapter 11: Offshore Ornithology (and accompanying Technical Appendices);
- Chapter 12: Marine Mammals (and accompanying Technical Appendices);
- Chapter 13: Seascape and Visual Impacts;

[1] Residual effects are defined as impacts that remain following implementation of additional mitigation.
[2] Inter-related effects are considered to be effects of different aspects of the Proposed Development on the same receptor, e.g. collision risk and disturbance can both affect marine mammal receptors.
[3] Cumulative effects are effects of multiple projects or plans on the same receptor, e.g. a wind farm and aggregate dredging can both have displacement effects on offshore ornithological receptors.

- Chapter 29: Inter-Related Effects;
- Chapter 30: Cumulative Effects;
- Volume 3, Technical Appendix 8.1: Marine Conservation Zone Assessment;
- Volume 3, Technical Appendix 8.2: Habitat Regulations Assessment Screening Report; and
- Volume 3, Technical Appendix 8.3: Habitats Regulations Assessment: Report to Inform Appropriate Assessment.

8.2 Legislation, Policy and Guidelines

8.2.1.1 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 Natural Resources Wales (NRW).

8.2.2 Legislation

8.2.2.1 Relevant legislation and guidance documents have been reviewed and considered as part of this assessment. Of particular relevance to this chapter are:

- Marine and Coastal Access Act 2009 (as amended 2011) (UK Government, 2009, 2011);
- EC Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive) (European Council, 1992);
- EC Directive 2009/147/EC on the Conservation of Wild Birds (the Birds Directive) (European Parliament, 2009);
- The Conservation of Habitats and Species Regulations 2017 (as amended) (UK Government, 2010, 2017a, 2018a, 2019);
- The Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) (UK Government, 2010, 2017b, 2018a, 2019); and
- Wildlife and Countryside Act 1981 (as amended) (UK Government, 1981).

8.2.2.2 Detailed information on each piece of legislation listed above, its relevance to the Project, and which chapter(s) it is addressed within, can be found in Chapter 5: Policy and Legislation.

8.2.3 Policy

8.2.3.1 The following planning policy was reviewed and taken into account as part of this assessment:

- Overarching National Policy Statement (NPS) for Energy (EN-1) (Department of Energy and Climate Change, 2011a);
- NPS for Renewable Energy Infrastructure (EN-3), July 2011 (Department of Energy and Climate Change, 2011b);
- UK Marine Policy Statement (HM Government, 2011);
- Welsh National Marine Plan (Welsh Government, 2019); and

- Planning Policy Wales (Welsh Government, 2021).

8.2.3.2 A summary of the relevant sections of the above policies is included below. For full detail, refer to Chapter 5: Policy and Legislation.

8.2.3.3 The relevant parts of NPS EN-1 and EN-3 are outlined in Table 8.1.

Table 8.1 – National Policy Statements EN-1 and EN-3 assessment provisions relevant to offshore designated sites

NPS Requirement	NPS Reference	ES Reference
Applicants should ensure that the Environmental Statement (ES) clearly sets out any effects on internationally, nationally and locally designated sites of ecological or geological importance, on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity (paragraph 5.3.3).	EN-1, Section 5.3 (Biodiversity and geological conservation)	The construction, O&M and decommissioning of the Project have been assessed as part of the EIA process for designated sites (Section 8.6).
Applicants should demonstrate how the project has taken advantage of opportunities to conserve and enhance biodiversity (and geological) conservation interests (paragraph 5.3.4).	EN 1, Section 5.3 (Biodiversity and geological conservation)	Opportunities to conserve and enhance biodiversity have been explored and noted where relevant.
Applicants should assess the effects on the offshore ecology and biodiversity for all stages of the lifespan of the proposed offshore wind farm (paragraph 2.6.64).	EN 3, Section 2.6 (Offshore Wind)	Construction, O&M and decommissioning of the Project have been assessed as part of the EIA process (Section 8.6).
Applicants should assess the potential for the scheme to have both positive and negative effects on marine ecology and biodiversity (paragraph 2.6.67).	EN 3, Section 2.6 (Offshore Wind)	Both the positive and negative effects of the Project have been assessed (Section 8.6).
The designation of an area as Natura 2000 site does not necessarily restrict the construction or operation of offshore wind farms in or near that area (paragraph 2.6.69).	EN 3, Section 2.6 (Offshore Wind)	Natura 2000 sites have been considered throughout the EIA process.
Mitigation may be possible in the form of careful design of the development itself and the construction techniques employed (paragraph 2.6.70).	EN 3, Section 2.6 (Offshore Wind)	Embedded mitigation is detailed in each biological receptor group.

NPS Requirement	NPS Reference	ES Reference
Ecological monitoring is likely to be appropriate during the construction and O&M phases to identify the actual impact so that, where appropriate, adverse effects can then be mitigated and to enable further useful information to be published relevant to future projects (paragraph 2.6.71).	EN 3, Section 2.6 (Offshore Wind)	Where appropriate monitoring is discussed in each topic chapter.

UK Marine Policy Statement

8.2.3.4 The UK Marine Policy Statement (MPS) provides the policy framework for the preparation of marine plans and establishes how decisions affecting the marine area should be made in order to enable sustainable development (HM Government, 2011). All public authorities take the MPS and relevant Marine Plans into consideration when making decisions in regard to the marine area. This ensures that marine resources are used in a sustainable way, in line with the high level marine objectives.

8.2.3.5 The MPS has particular relevance to this chapter, detailing considerations for marine ecology and biodiversity and Marine Protected Areas (MPAs). The MPS (HM Government, 2011) states that:

"*Marine plan authorities should be mindful that, consistent with the high level marine objectives, the UK aims to ensure:*

- *A halting and, if possible, a reversal of biodiversity loss with species and habitats operating as part of healthy, functioning ecosystems; and*
- *The general acceptance of biodiversity's essential role in enhancing the quality of life, with its conservation becoming a natural consideration in all relevant public, private and non-governmental decisions and policies*."

8.2.3.6 Issues for consideration are also outlined in the document, noting that marine planning is a key tool that will need to be utilised if the targets and measures determined by the UK as part of the Marine Strategy Framework Directive (MSFD) are to be met. Development should aim to avoid adverse impacts to marine ecology, biodiversity, and geological features of conservation interest through project location, mitigation, and consideration of alternatives. In situations where adverse effect is unavoidable, suitable compensatory measures should be implemented. The MPS recognises that some developments may include aspects that are beneficial to marine ecology, biodiversity, and geological interests, and that these benefits may outweigh adverse effects.

8.2.3.7 A risk-based approach should be taken by marine plan authorities in accordance with sustainable development policies. The marine plan authority should ensure that appropriate weight is applied to designated sites, protected species, habitats, species of importance for the conservation of biodiversity, and to geological interests.

8.2.3.8 Marine plan authorities and decision makers should consider the regime for MPAs in the UK. This includes obligations to ensure that the site objectives are contributed to, or at least not hindered, by the decision. Table 8.2 outlines the relevant policies within the NMPS.

Table 8.2 – National and regional policy requirements from the Marine Policy Statement relevant to offshore designated sites

Policy Description	MPS Reference	ES Reference
Development should aim to avoid harm to marine ecology, biodiversity and geological conservation interests (including geological and morphological features), including through location, mitigation and consideration of reasonable alternatives. Where significant harm cannot be avoided, then appropriate compensatory measures should be sought. Additional requirements apply in relation to developments affecting Natura 2000 sites.	Section 2.6.1.3	Natura 2000 sites have been considered throughout the EIA process.
It is also recognised that the benefits of development may include benefits for marine ecology, biodiversity and geological conservation interests and that these may outweigh potential adverse effect.	Section 2.6.1.4	Both the positive and negative effects of the Project have been assessed (Section 8.6).

Welsh National Marine Plan

8.2.3.9 The Welsh National Marine Plan (WNMP) was published in November 2019 (Welsh Government, 2019) and, since publication, must be adhered to; and relevant authorities must make consideration of its policies in decision making in the Welsh marine area. The WNMP covers the inshore and offshore waters of Wales, aiming to ensure that marine resources are utilised in a sustainable manner, in line with the high level marine objectives.

8.2.3.10 The plan sets out a wide range of policies, including general and sector specific. Further detail on the WNMP is provided in Chapter 5: Policy and Legislation. Table 8.3 outlines the policies of the plan that are of relevance to offshore designated sites.

Table 8.3 - Relevant policies of the Welsh National Marine Plan

Policy	Policy Description
ENV_01: Resilient marine ecosystems	Proposals should demonstrate how potential impacts on marine ecosystems have been taken into consideration and should, in order of preference: a. avoid adverse impacts; and/or b. minimise impacts where they cannot be avoided; and/or c. mitigate impacts where they cannot be minimised. If significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding. Proposals that contribute to the protection, restoration and/or enhancement of marine ecosystems are encouraged.

Policy	Policy Description
ENV_02: Marine Protected Areas	Proposals should demonstrate how they: • avoid adverse impacts on individual Marine Protected Areas (MPAs) and the coherence of the network as a whole; • have regard to the measures to manage MPAs; and • avoid adverse impacts on designated sites that are not part of the MPA network.

Planning Policy Wales

8.2.3.11 Planning Policy Wales (PPW) outlines the Welsh Government's approach to facilitating the delivery of the aims set out in Energy Wales: A Low Carbon Transition (Welsh Government, 2012), as well as UK wide and European renewable energy targets (Welsh Government, 2021). Whilst the PPW document itself does not have particular relevance to this chapter, the associated Technical Advice Note (TAN) relating to nature conservation and planning (TAN 5) has been reviewed with regard to the offshore designated sites. PPW TAN 5 (Welsh Government, 2009) outlines key principles of planning in relation to nature conservation. These principles are similar to the aforementioned policies and aims of the UK MPS and WNMP, with an overarching aim to minimise adverse effect on nature conservation and biodiversity.

8.3 Consultation and Scoping

8.3.1.1 Consultation on key marine biodiversity EIA topics such benthic habitats, marine mammals, fish, and offshore ornithology has been undertaken at all stages of the EIA process to date and will continue in the future. This has included a wide range of technical meetings as well as issue of the Project Erebus EIA Scoping Report (MarineSpace Ltd, 2019) which contained details on offshore and coastal designated sites in the Study Area (refer to Volume 3, Technical Appendix 2.1: EIA Scoping Report and Volume 3, Technical Appendix 2.2: EIA Scoping Opinion). In addition, consultation with NRW and the Joint Nature Conservation Committee (JNCC) on the HRA Screening is of relevance to this chapter.

8.3.1.2 Consultation comments and discussions of particular relevance to Offshore Designated Sites have been summarised in Table 8.4.

8.3.1.3 It should be noted that several comments and discussions were made in relation to the HRA screening long list, and thus have been fully addressed within Technical Appendix 8.2: HRA Screening Report and, where applicable, Technical Appendix 8.3: RIAA.

Table 8.4 – Consultation comments and responses of particular relevance to offshore designated sites

Consultee	Issue	Applicant Action
EIA Scoping Opinion (SC1905) January 2020	We request potential risk to marine mammal features from entanglement must be scoped into, and subsequently assessed within, the designated sites assessment in the submitted ES.	Entanglement risk (associated with mooring lines and ghost fishing gear) to marine mammals has been assessed in Chapter 12: Marine Mammals. A summary of the assessment made can be found in Section 8.6.6.1 of this chapter.
EIA Scoping Opinion (SC1905) January 2020	Impacts on Skomer MCZ should be the same as those for SAC with grey seal features and as such should include impacts within the operational phase.	Grey seal is recognised as a qualifying feature of the Skomer MCZ (see Section 8.6.6 of this chapter) and has been assessed accordingly. Potential impacts, including during the operational phase, to marine mammals, including grey seals, have been assessed in Chapter 12: Marine Mammals, and impacts to features of the Skomer MCZ have been assessed in Volume 3, Technical Appendix 8.1: MCZ Assessment.
EIA Scoping Opinion (SC1905) January 2020	We recommend that all sites within the relevant marine mammal management unit are screened into the assessment. As such, in addition to those identified in Table 6.3 and 6.4 [of the Scoping Report] the following sites should be included: • North Anglesey Marine SAC; • Pen Llyn a'r Sarnau SAC.	This chapter considers regional SACs in the vicinity of the Proposed Development (i.e., within 19 km). The ES assesses regional populations of mobile marine mammal (as well as seabird and fish) features of designated sites, refer to Chapter 10: Fish and Shellfish; Chapter 11: Offshore Ornithology; and Chapter 12: Marine Mammals. The HRA and RIAA assess impacts to designated populations of marine mammals (as well as seabirds and fish), as features of designated sites. Therefore the aforementioned SACs are included in Volume 3, Technical Appendix 8.2: HRA Screening Report and Volume 3, Technical Appendix 8.3: RIAA.

Consultee	Issue	Applicant Action
EIA Scoping Opinion (SC1905) January 2020	When assessing potential impacts on the Skomer, Skokholm and Seas off Pembrokeshire SPA connectivity of foraging ranges and breeding colonies must be included in the submitted ES to fully assess potential disturbance and displacement effects from the development.	Potential impacts to local and regional seabird populations have been assessed in Chapter 11: Offshore Ornithology. Assessment of seabird populations as qualifying features of SPAs, including for far-ranging features, has been conducted in Volume 3, Technical Appendix 8.2: HRA Screening Report and Volume 3, Technical Appendix 8.3: RIAA. A summary of the assessments made can be found in Section 8.6.5 of this chapter.
EIA Scoping Opinion (SC1905) January 2020	The spatial context of the project area with Skomer, Skokholm and Seas off Pembrokeshire SPA must be clarified in the submitted ES.	Where present, the degree of spatial overlap between the Proposed Development and designated sites has been included throughout this chapter (Table 8.9, Table 8.10 and Table 8.11).
JNCC and NRW, via HRA Screening Opinion November 2020	Screening has been carried out by looking at foraging ranges only (Woodward *et al.*, 2019), however these are not applicable to all offshore SPAs. The non-breeding season and migration have not been considered.	All regional SPAs have been considered within this chapter, and regional populations of seabird species have been assessed in Chapter 11: Offshore Ornithology. Classified populations of seabirds, including breeding, wintering, and migration, have been assessed in Volume 3, Technical Appendix 8.2: HRA Screening Report and Volume 3, Technical Appendix 8.3: RIAA. A summary of the assessments made can be found in Section 8.6.5 of this chapter.
NRW, via HRA Screening Opinion November 2020	Wintering SPAs have not been included.	Potential impacts to classified populations of wintering birds have been assessed in Volume 3, Technical Appendix 8.2: HRA Screening Report and Volume 3, Technical Appendix 8.3: RIAA. Regional seabird populations, informed by monthly surveys conducted over a 24-month period, have been assessed in Chapter 11: Offshore Ornithology. A summary of the assessments made can be found in Section 8.6.5 of this chapter.

Consultee	Issue	Applicant Action
NRW, via HRA Screening Opinion November 2020	Species which are part of the assemblage of an SPA should be considered for both seabird SPAs and for wildfowl and waterfowl SPAs.	Assemblage species for the SPA have been listed in Table 8.10. Potential impacts to regional and local populations of these species are assessed within Chapter 11: Offshore Ornithology, and potential impacts to the classified populations, including the assemblage, are assessed within Volume 3, Technical Appendix 8.2: HRA Screening Report and Volume 3, Technical Appendix 8.3: RIAA. A summary of the assessments made can be found in Section 8.6.5 of this chapter.
JNCC, via HRA Screening Opinion November 2020	Foraging range data are only applicable to breeding colony SPAs, not entirely offshore SPAs or SPAs for wintering features. For these SPA, we would recommend a buffer of 10 km from the footprint.	A precautionary 19 km buffer has been applied for designated sites in the vicinity of the Proposed Development. This is based upon the maximum mean tidal excursion distance across the project area.
NRW, via HRA Screening Opinion November 2020	The use of Woodward *et al.* (2019) is the recommended method for screening for marine bird features of SPAs during the breeding season. However, potential impacts on wintering bird features and the potential impacts on birds migrating to and from SPAs must also be considered.	All regional SPAs have been considered within this chapter, and regional populations of seabird species have been assessed in Chapter 11: Offshore Ornithology. Classified populations of seabirds, including breeding, wintering, and migration, have been assessed in Volume 3, Technical Appendix 8.2: HRA Screening Report and Volume 3, Technical Appendix 8.3: RIAA. A summary of the assessments made can be found in Section 8.6.5 of this chapter.
JNCC, via HRA Screening Opinion November 2020	The only listed offshore SPA that is within the vicinity of the Erebus footprint and/or the cable corridor is Skomer, Skokholm and Seas off Pembrokeshire Coast SPA, however, this should include the assemblage species such as kittiwake, razorbill and guillemot.	Assemblage species for the SPA have been listed in Table 8.10. Potential impacts to regional and local populations of these species are assessed within Chapter 11: Offshore Ornithology, and potential impacts to the classified populations, including the assemblage, are assessed within Volume 3, Technical Appendix 8.2: HRA Screening Report and Volume 3, Technical Appendix 8.3: RIAA.

Consultee	Issue	Applicant Action
		A summary of the assessments made can be found in Section 8.6.5 of this chapter.
JNCC, via HRA Screening Opinion November 2020	No other offshore SPAs are within 10 km of the Erebus footprint, therefore the Irish Front SPA does not need to be screened in.	It is noted that the Irish Front SPA is outside 10 km of the Proposed Development and thus has not been included in this chapter.
NRW, via HRA Screening Opinion November 2020	It would be helpful to include whether SPAs are located within Wales, England, Scotland or Northern Ireland rather than only stating they are within the UK	This chapter of the ES focusses on regional SPAs in the vicinity of the Proposed Development. A comprehensive list of designated sites, including the country within which they are located, has been considered within Volume 3, Technical Appendix 8.2: HRA Screening Report and Volume 3, Technical Appendix 8.3: RIAA. A summary of the assessments made can be found in Section 8.6.5 of this chapter.
JNCC and NRW, via HRA Screening Opinion November 2020	In relation to distant SPAs (2,415 km); it would not be appropriate to conclude at this stage [HRA screening] which projects or SPAs would be in scope of an in-combination assessment.	Cumulative an in-combination effects to SPAs, including distant SPAs, have been considered in Volume 3, Technical Appendix 8.2: HRA Screening Report and Volume 3, Technical Appendix 8.3: RIAA. A summary of the cumulative and in-combination effects assessment made in the HRA screening report and in Chapter 11: Offshore Ornithology can be found in Section 8.6.5 of this chapter.
NRW, via HRA Screening Opinion November 2020	In combination assessment should consider the following: • Projects started but not finished; • Projects with consent but not started; • Applications logged and not determined; • Refusals subject to appeal; • Known projects not needing consent;	A cumulative effects assessment (CEA) has been carried out for all receptors (Chapter 30: Cumulative Effects). Where relevant to offshore designated sites, a summary has been included in Section 8.6.5 of this chapter. In combination effects on qualifying features of designated sites have been assessed in Volume 3, Technical Appendix 8.2: HRA Screening Report and Volume 3, Technical Appendix 8.3: RIAA. A summary of the assessment made can be found in Section 8.6.5 of this chapter.

Consultee	Issue	Applicant Action
	• Proposals in adopted plans (potentially); • Firm proposals in published final draft plans (potentially).	
NRW, via HRA Screening Opinion November 2020	Impacts on species migrating through the development area as well as those potentially wintering within the development area cannot be ruled out at this stage [HRA screening]. Welsh wintering SPAs should be screened in at this stage as there is the potential for collision and/or barrier effects. An assessment of all wintering SPAs should be included, e.g. Burry Inlet. Other SPAs where breeding birds migrate to and from the site should also be considered.	All regional SPAs have been considered within this chapter, and regional populations of seabird species have been assessed in Chapter 11: Offshore Ornithology. Classified populations of seabirds, including breeding, wintering, and migration, have been assessed in Volume 3, Technical Appendix 8.2: HRA Screening Report and Volume 3, Technical Appendix 8.3: RIAA. A summary of the assessments made can be found in Section 8.6.5 of this chapter.
NRW, via HRA Screening Opinion November 2020	The assessment needs to be made on the assemblage of SPAs for both seabird and wintering species. Species which are part of the assemblage of an SPA should not be screened out without justification. For example; kittiwake, razorbill and guillemot are all part of the bird assemblage of Skomer, Skokholm and the Seas off Pembrokeshire. These species have the potential to be impacted by the development and should be included in the assessment.	Bird assemblages (seabird, as well as waterfowl and wildfowl), and the species which form part an assemblage, have been assessed in Volume 3, Technical Appendix 8.2: HRA Screening Report and Volume 3, Technical Appendix 8.3: RIAA. Regional populations of bird species, that are not necessarily qualifying features of SPAs, have been assessed in Chapter 11: Offshore Ornithology. A summary of the assessments made can be found in Section 8.6.5 of this chapter.
NRW, via HRA Screening Opinion November 2020	Information from SCOS Seal Management Units has been used for site identification [within the HRA Screening Report], but the SMU used has not been listed.	This chapter covers regional SACs in the vicinity of the Proposed Development. Potential impacts to regional populations of seals have been assessed in Chapter 12: Marine Mammals.

Consultee	Issue	Applicant Action
		Detail on the screening of sites for cetaceans can be found in Volume 3, Technical Appendix 8.2: HRA Screening Report, which includes all sites within the relevant marine mammal management unit. Where not screened out, these sites have been assessed in Volume 3, Technical Appendix 8.3: RIAA. A summary of the assessments made can be found in Section 8.6.6 of this chapter.
NRW, via HRA Screening Opinion November 2020	The criteria used to screen sites for cetaceans have not been detailed.	All SACs within the vicinity (19 km) of the Proposed Development are considered within this chapter. Chapter 12: Marine Mammals assesses regional populations of cetaceans, as informed by monthly surveys conducted over a 24-month period. Detail on the screening of sites for cetaceans can be found in Volume 3, Technical Appendix 8.2: HRA Screening Report, which includes all sites within the relevant marine mammal management unit. Where not screened out, these sites have been assessed in Volume 3, Technical Appendix 8.3: RIAA. A summary of the assessments made can be found in Section 8.6.6 of this chapter.
NRW, via HRA Screening Opinion November 2020	All SACs within the relevant Marine Mammal Management Unit for cetaceans should be considered.	This chapter considers regional SACs in the vicinity of the Proposed Development. Potential impacts to regional cetacean populations have been assessed in Chapter 12: Marine Mammals and are informed by monthly surveys undertaken over a 24-month period. All SACs within the relevant management unit have been included in Volume 3, Technical Appendix 8.2: HRA Screening Report, and where not screened out, have been assessed in Volume 3, Technical Appendix 8.3: RIAA. A summary of the assessments made can be found in Section 8.6.6 of this chapter.

Consultee	Issue	Applicant Action
JNCC and NRW, via HRA Screening Opinion November 2020	The West Wales Marine SAC is designated for harbour porpoise. The SAC is not designated for any Annex I habitats and as such, does not need to be screened into the Annex I habitats assessment.	The SAC has been considered for marine mammals and not Annex I habitats in Volume 3, Technical Appendix 8.2: HRA Screening Report and Volume 3, Technical Appendix 8.3: RIAA. A summary of the assessments made can be found in Section 8.6.6 of this chapter.
NRW, via HRA Screening Opinion November 2020	The applicant should include the Annex I habitat features designated for each of the SACs that will be screened into the assessment in order to ensure that all relevant Annex I habitats have been included to inform the HRA.	All qualifying Annex I habitat features of SACs within the Study Area have been listed in Table 8.9 and have been considered in Volume 3, Technical Appendix 8.2: HRA Screening Report and Volume 3, Technical Appendix 8.3: RIAA. Regional benthic habitats have been assessed in Chapter 9: Marine and Coastal Ecology. A summary of the assessments made can be found in Section 8.6.3 of this chapter.
NRW, via HRA Screening Opinion November 2020	The screening distance for Annex I habitats will depend on the specific hydrological conditions at the site and maximum extent should be informed by the SEASTATES model outputs of the spring tidal excursion ellipse buffers which will vary across the project area.	A precautionary 19 km buffer has been applied for designated sites in the vicinity of the Proposed Development. This is based upon the maximum mean tidal excursion distance across the project area.

8.3.1.4 These discussions and consultations have, by the nature of the topics involved, addressed issues related to offshore and coastal designated sites. Full details on consultation comments and issues raised, and responses/actions taken in order to resolve comments are provided in the associated chapters of this ES:

- Chapter 6: Marine and Coastal Processes;
- Chapter 9: Marine and Coastal Ecology;
- Chapter 10: Fish and Shellfish Ecology;
- Chapter 11: Offshore Ornithology;
- Chapter 12: Marine Mammals;
- Chapter 13: Seascape and Visual Impacts;
- Chapter 29: Inter-Related Effects;

- Chapter 30: Cumulative Effects;
- Volume 3, Technical Appendix 8.1: Marine Conservation Zone Assessment;
- Volume 3, Technical Appendix 8.2: Habitat Regulations Assessment Screening Report; and
- Volume 3, Technical Appendix 8.3: Habitats Regulations Assessment: Report to Inform Appropriate Assessment.

8.3.1.5 Additionally, a full consultation log and all details has been included in the supporting consultation report provided alongside the submission of this ES.

8.4 Assessment Methodology and Significance Criteria

8.4.1.1 Detailed discussion on the EIA methodology can be found in Chapter 2: Overview of EIA Methodology. Impacts to designated sites are based on the impacts defined within the associated biological chapters, a summary of each is provided in this chapter.

8.4.1.2 The following stages have been adopted for the assessment approach:

- Identification of sources of relevant data and information, including literature and stakeholders;
- Review of existing relevant data and information;
- Formulation of a conceptual understanding of baseline conditions;
- Determination of the worst-case scenarios through the Project Design Envelope (PDE);
- Consideration of embedded/standard mitigation measures; and
- Summary of the assessment of effects provided in other relevant biological chapters of this ES, namely Chapters 9: Marine and Coastal Ecology, Chapter 10: Fish and Shellfish Ecology, Chapter 11: Offshore Ornithology, and Chapter 12: Marine Mammals.

8.4.2 Study Area

8.4.2.1 The Project Erebus EIA Scoping Report (MarineSpace Ltd, 2019) initially proposed that the Study Area for offshore designated sites should be the (marine) export cable corridor and offshore array plus a 4 km buffer around the array site. An extended, 10 km, buffer was used for physical processes, based upon an indicative tide-parallel secondary impact zone; a 100 km buffer or mean maximum foraging range plus 1 standard deviation, whichever is larger, was used for offshore ornithological features; and all sites within the relevant marine mammal management unit were included for marine mammals (MarineSpace Ltd, 2019).

8.4.2.2 Since the Scoping Report was issued, further work has been undertaken with respect to potential impacts and local hydrodynamic conditions and, therefore, the Study Area used throughout this chapter is based upon a larger, 19 km, buffer around the footprint of the Proposed Development, including the offshore array area, offshore cable corridor and landfall at West Angle Bay. This 19 km zone of influence has been used to account for indirect effects on offshore designated sites and features within their boundaries. This distance is based upon the maximum mean spring tidal excursion distance within the Proposed Project area, as detailed in Chapter 6: Marine and Coastal Processes.

8.4.2.3 The 19 km buffer region has been used for all designated sites and qualifying features, including those that are mobile, migratory or have far ranging foraging areas, in order to ensure the chapter remains manageable and avoids repetition of information presented in other chapters, whilst still considering sites in the vicinity of the Proposed Development.

8.4.2.4 It is important to note that this chapter does not make consideration for sites located further afield whose qualifying features may utilise the marine area within 19 km of the Proposed Development. These features include migratory fish, marine mammals, and foraging and migratory birds. Such features are considered in detail in their respective chapters of the ES; and where they form a qualifying feature of a Natura 2000 site, are considered in Volume 3, Technical Appendix 8.2: HRA Screening Report and Volume 3, Technical Appendix 8.3: RIAA. Therefore, it is imperative that these chapters and appendices are read in conjunction with this chapter. A summary of the assessments made is provided in Section 8.6 of this chapter.

8.4.2.5 The 19 km buffer applied to the footprint of the Proposed Development is referred to as the Study Area throughout the remainder of this chapter and is shown in Volume 2, Figure 8.1.

8.4.3 Desk Study

8.4.3.1 A desk study has been conducted, in order to identify all offshore and coastal designated sites in the vicinity of the Proposed Development, and those that overlap with the Study Area. The qualifying features of each site have been listed and, if relevant, the qualifying status and conservation status for each site has been summarised. Information on the designation process and relevant legislation has been included, where applicable.

8.4.3.2 As previously noted, it is important that this chapter is read alongside the other relevant physical and biological chapters of the ES, and Volume 3, Technical Appendix 8.2: HRA Screening Report and Volume 3, Technical Appendix 8.3: RIAA. These chapters and technical appendices assess regional populations and receptors and include full assessment of sites designated for far-ranging, mobile and migratory species. This chapter provides detail on the qualifying features of designated sites, with particular relevance to the region surrounding the Proposed Development.

8.4.3.3 The desk study has been conducted using the most recent, best available information on international and domestic designated sites in the UK and Welsh waters. The primary sources used to inform this chapter include:

- Lle Geoportal (Lle, 2021a);
- JNCC Marine Protected Area (MPA) Mapper (Joint Nature Conservation Committee, 2020a);
- Defra MAGIC Map (Defra, 2021);
- JNCC Site Information Centres (Joint Nature Conservation Committee, 2020b);
- NRW designated sites search (Natural Resources Wales, 2021a);
- Site Management Plans, Departmental Briefs, Conservation Objectives, and Advice on Operations, as published by NRW and JNCC; and
- Designated site citation documents, standard data forms, and site summary information, available from JNCC, NRW, and European Environment Agency (EEA).

8.4.4 Assessment of Potential Effect Significance

8.4.4.1 A detailed description of the Impact Assessment Methodology is provided in Chapter 2: Overview of EIA Methodology. Criteria relating to designated sites and their qualifying features have been developed for the sensitivity of each receptor (Table 8.5) and the magnitude of the impact (Table 8.6). Each aspect (sensitivity and magnitude) was considered using the available evidence, including official data sources, feedback from consultation and expert judgement.

8.4.4.2 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 effect.

8.4.4.3 This chapter is informed by several other chapters of the ES, as well as technical appendices. These chapters contain detailed, receptor-specific assessment criteria and therefore, this section should be read in conjunction with the equivalent section of the following chapters:

- Chapter 6: Marine and Coastal Processes;
- Chapter 9: Marine and Coastal Ecology;
- Chapter 10: Fish and Shellfish Ecology;
- Chapter 11: Offshore Ornithology;
- Chapter 12: Marine Mammals;
- Chapter 13: Seascape and Visual Impacts;
- Volume 3, Technical Appendix 8.1: Marine Conservation Zone Assessment;
- Volume 3, Technical Appendix 8.2: Habitat Regulations Assessment Screening Report; and
- Volume 3, Technical Appendix 8.3: Habitats Regulations Assessment: Report to Inform Appropriate Assessment.

Sensitivity

8.4.4.4 The sensitivity of a receptor is considered in terms of its ability to avoid, adapt, accommodate or recover from an impact. Appropriate data sources (such as peer reviewed literature), feedback from consultation and expert judgement were used to inform the sensitivity assessment conducted for designated sites and their features. In addition, site-specific surveys have been conducted, including digital aerial survey (DAS) for offshore ornithological and marine mammal features (refer to Chapter 11: Offshore Ornithology and Chapter 12: Marine Mammals), and benthic and geophysical surveys for benthic species and habitats (refer to Chapter 9: Marine and Coastal Ecology and Chapter 6: Marine and Coastal Processes).

8.4.4.5 Table 8.5 details the parameters used to assess sensitivity.

Table 8.5 – Sensitivity levels for receptors (Offshore Designated Sites)

Sensitivity	Description
High	The receptor has very limited capacity to avoid, adapt to, accommodate, or recover from the anticipated impact.
Medium	The receptor has limited capacity to avoid, adapt to, accommodate, or recover from the anticipated impact.

Sensitivity	Description
Low	The receptor has some tolerance to avoid, adapt to, accommodate, or recover from the anticipated impact.
Negligible	The receptor is generally tolerant of and can accommodate or recover from the anticipated impact.

Magnitude

8.4.4.6 Magnitude of the impact on designated sites and their features is based on extent and duration. Appropriate data sources (such as peer reviewed literature), feedback from consultation and expert judgement were used to inform the assessment of magnitude of impacts to designated sites and their features. The parameters used to ascribe magnitude are outlined in Table 8.6.

Table 8.6 – Magnitude levels for impacts (Offshore Designated Sites)

Magnitude	Description
High	Loss of resource, but not affecting the integrity of the resource; partial loss of or damage to key characteristics, features or elements (adverse). Permanent/irreplaceable change, which is likely to occur.
Medium	Improvement to, or addition of, key characteristics, features or elements of the resource; improvement of attribute quality (beneficial).
Low	Minor loss of, or alteration to, one (or maybe more) key characteristics, features or elements; measurable change in attributes, quality or vulnerability (adverse). Long-term though reversible change, which is likely to occur.
Negligible	Minor improvement to, or addition of, one (maybe more) key characteristics, features or elements of the resource; a minor improvement to attribute quality (beneficial).

Significance of Effect

8.4.4.7 The sensitivity of receptor (Table 8.5) will be combined with the magnitude of impact (Table 8.6) to determine the effect, as shown in the matrix provided in Table 8.7 (i.e. high magnitude and high sensitivity results in a major effect).

8.4.4.8 When determining magnitude, spatial extent (size of geographical area/population), probability of impact occurring, frequency of impact(s) occurring, duration of impact, and reversibility of impact should all be considered.

Table 8.7 – 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

8.4.4.9 The following terms are used in the ES, unless otherwise stated in specific chapters, to determine the level of effects predicted to occur:

- **Major beneficial or adverse effect** – where the Project would result in a significant improvement (or deterioration) to the existing environment;
- **Moderate beneficial or adverse effect** – where the Project would result in a noticeable improvement (or deterioration) to the existing environment;
- **Minor beneficial or adverse effect** – where the Project would result in a small improvement (or deterioration) to the existing environment; and
- **Negligible** – where the Project would result in no discernible improvement (or deterioration) to the existing environment.

8.4.4.10 Using professional judgement, and with reference to established good practice, the majority of the assessments within this ES consider moderate and major effects to be significant in EIA terms, while minor or negligible effects are considered to be non-significant.

8.4.5 Standard Mitigation

8.4.5.1 A range of standard mitigation measures has already been applied to the Proposed Development 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 avoid potential impacts or to minimise impacts if avoidance is not reasonably possible of the Proposed Development on any affected receptors.

8.4.5.2 Standard mitigation measures which the Proposed Development has already implemented or is committed to in the future, in order to minimise potential impacts on Offshore Designated Sites and their qualifying features are listed below.

8.4.5.3 A summary of the standard mitigation measures is provided below, with further details available in the corresponding chapters:

- Site selection and route of the ECC to avoid sensitive features (Marine and Coastal Processes; Marne and Coastal Ecology; Fish and Shellfish Ecology; Seascape and Landscape Visual Impacts);
- Scour protection to be used where infrastructure cannot be buried and seabed is erodible (Marine and Coastal Processes);
- Deposition of dredged material within 200 m of extraction site (Marine and Coastal Processes);
- Cable burial risk assessment and development of cable specification and installation plan (Marine and Coastal Processes; Marine and Coastal Ecology);

- Preferred use of HDD rather than open cut trenching (Marine and Coastal Processes; Marine and Coastal Ecology);
- Preferred use of mooring anchors rather than drilling/piling (Marine and Coastal Ecology);
- Production of an Invasive Non-Native Species Plan (Marine and Coastal Ecology);
- Marine Biodiversity Enhancement Strategy to be developed to account for any loss of key habitats (Marine and Coastal Ecology);
- Production of a Project Environmental Management Plan to include pollution contingency plans (Marine and Coastal Ecology; Fish and Shellfish Ecology);
- Best practices techniques throughout all construction, operation and maintenance and decommissioning activities (Marine and Coastal Ecology);
- Environmental Mitigation and Monitoring Plan to be produced prior to construction (Marine and Coastal Ecology);
- Aim to conduct work within a shortest time period as logistically possible to reduce disturbance (Fish and Shellfish Ecology);
- Soft-start approach for any piling activities (Fish and Shellfish Ecology);
- UXO deflagration only and pre-deflagration mitigation (e.g., route cable around identified UXO) (Fish and Shellfish Ecology; Offshore Ornithology);
- Remotely Operated Vehicle (ROV) inspections of moorings and substructures (Offshore Ornithology);
- Use of additional datasets to inform the baseline and assessment (Offshore Ornithology);
- Implementation of a vessel monitoring plan (Offshore Ornithology; Marine Mammals);
- Where possible, lighting on walkways and doorways will be sensor activated (Offshore Ornithology); and
- Implementation of piling, UXO and decommissioning Marine Mammal Mitigation Plans (Marine Mammals).

8.4.6 Limitations to Assessment

8.4.6.1 In undertaking the assessments for each receptor group, limitations have been identified. These are detailed in the corresponding chapters, and a summary is provided in Table 8.8.

Table 8.8 Assessment limitations identified for receptor groups

Receptor Group	Identified Limitations
Marine and Coastal Processes	Pre-existing (i.e., before Project-specific surveys) are of limited spatial coverage and resolution, thus it is hard to determine bedform migration rates.

Receptor Group	Identified Limitations
Marine and Coastal Processes; Marine and Coastal Ecology; Fish and Shellfish Ecology	Uncertainty regarding characterisation of the future baseline, arising from storm events, rising sea levels, and changes in management or other human activities (e.g., fisheries).
Marine and Coastal Ecology; Fish and Shellfish Ecology; Offshore Ornithology	The data used to inform the assessment will only provide a representation as it was at the time of data collection.
Offshore Ornithology	Digital aerial survey limitations: • Limited to daylight hours and as such may not pick up dusk/dawn or night activity; • Focus on seabirds and are not designed to pick up wildfowl and waders; • Could not calculate flight height for some species (Manx shearwater *Puffinus puffinus*, common guillemot *Uria aalge* or razorbill *Alca torda*).
Marine Mammals	Underwater noise modelling limitations: • Uncertainties regarding the amount of noise actually produced at source; • Uncertainties regarding the position of individual animals; • Masking of noise by ambient and other anthropogenic sources of noise; • Uncertainty on the threshold for permanent and temporary threshold shift (permanent and temporary deafness); • All animals were modelled to swim away from the source at a speed of 1.5 m/s, apart from minke whales, which were modelled at 3.25 m/s; • Only 18-19% of animals expected to experience PTS once threshold has been met; • Uncertainty on the duration of the impact and when marine mammals return to the area; • High spatial and temporal variation in density of marine mammals; and • Uncertainty in predicting cumulative exposure.
Seascape and Landscape Visual Impacts	Limitations associated with producing accurate and representative visualisations of the proposed development.
Seascape and Landscape Visual Impacts	Fieldwork was restricted during periods of COVID-19 lockdown and it was not possible to visit all parts of the study area.

8.5 Baseline Conditions

8.5.1 Overview

8.5.1.1 A variety of different designated sites and protected areas form the MPA network or Offshore Designated Sites network in the UK. This includes international statutory sites within the UK maritime area, designated or classified under EU legislation that has been transposed into UK law (the Habitats Regulations); domestic statutory sites, classified or notified under UK legislation; and domestic non statutory local sites, such as National Parks and geological sites, designated for protection of local features.

8.5.1.2 The following section presents the details of the sites in each category located within the Study Area.

8.5.2 International Statutory Sites

Special Areas of Conservation

8.5.2.1 Special Areas of Conservation (SACs) are designated under the Habitats Regulations 2017 (Joint Nature Conservation Committee, 2020c) for the protection of Annex I habitats, 78 of which occur within the UK; and/or Annex II species, 43 of which are native to, or residents within, the UK; as listed under the Habitats Directive (European Council, 1992).

8.5.2.2 As of December 2021 (most recently available data), there are a total of 656 designated SACs, one Site of Community Importance (SCI) and one cSAC within the UK and UK waters. Of these sites, three with marine and/or coastal features overlap with the Study Area (Volume 2, Figure 8.2). The overlapping sites and their qualifying features are listed in Table 8.9, along with signposting to other relevant chapters of this ES.

8.5.2.3 It is important to note that whilst this chapter makes consideration for sites within 19 km of the Proposed Development, it is informed by the HRA Screening Report and RIAA. Therefore, this chapter does not include sites designated for far ranging mobile features whose distributions overlap with the Proposed Development and does not make consideration of all sites within the associated Marine Mammal Management Units. For information on, and full assessment of, these sites and features, please refer to Chapter 12: Marine Mammals; Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA.

Special Protection Areas

8.5.2.4 Special Protection Areas (SPAs) are classified under the Wildlife and Countryside Act (WCA) 1981 and the Habitats Regulations 2017 (Joint Nature Conservation Committee, 2020d) for a wide variety of bird species, listed under Annex I of the Birds Directive (European Parliament, 2009). Site selection is a two stage process, the first of which is identification of areas which may qualify for SPA status, based on their importance to species or assemblages (>1 % of Great British or biogeographic population, or >20,000 individuals in an assemblage); and the second is selection of the most suitable areas for classification, accounting for species demographics (e.g., population, range) and site details (naturalness, weather refuges).

8.5.2.5 As of December 2021 (most recently available data), there were a total of 284 classified SPAs in the UK (Joint Nature Conservation Committee, 2020d). Of these 284 sites, just one with marine features overlaps with the Study Area associated with the Proposed Development (Volume 2, Figure 8.2). This site, and its qualifying features, is listed in Table 8.10 along with signposting to other relevant chapters of this ES.

8.5.2.6 In addition to this, there are two other coastal SPAs that are partially within the 19 km Study Area (Ramsey and St David's Peninsula Coast SPA and Castlemartin Coast SPA), however, these SPAs are not classified for protection of any marine features. The only classified feature of either SPA is chough *Pyrrhocorax pyrrhocorax*, and thus these SPAs are not considered any further within this chapter. Terrestrial birds are considered in detail in Chapter 20: Terrestrial and Coastal Ecology and Onshore Ornithology.

8.5.2.7 It is important to note that whilst this chapter makes consideration for sites within 19 km of the Proposed Development, it is informed by Chapter 11: Offshore Ornithology and the HRA Screening Report and RIAA. Therefore, sites designated for far-ranging features are not considered in detail within this chapter. For information on, and full assessment of, regional seabird populations (including far-ranging and migratory species), informed by monthly surveys conducted over a 24-month period, refer to Chapter 11: Offshore Ornithology. Sites designated for far ranging Annex I seabird features whose foraging ranges may overlap with the Proposed Development are considered in detail in Volume 3, Technical Appendix 8.2: HRA Screening Report and Volume 3, Technical Appendix 8.3: RIAA. Section 8.6 of this chapter provides a summary of the assessments made in the forementioned chapter and appendices.

Table 8.9 – Special Areas of Conservation within the Study Area of the Proposed Development

Site Code	Site Name	Designated Marine and Coastal Features (Conservation Status in Parentheses – latest NRW assessment: 2018)	Interaction and Further Information
UK0013116	Pembrokeshire Marine/ Sir Benfro Forol SAC	Annex I Habitats: • Estuaries (Unfavourable); • Large shallow inlets and bays (Unfavourable); • Reefs (Unfavourable); • Sandbanks which are slightly covered by sea water all the time (Unfavourable); • Mudflats and sandflats not covered by seawater at low tide (Unfavourable); • Coastal lagoons (Unfavourable); and • Submerged or partially submerged sea caves (Unknown). Annex II Species: • Grey seal *Halichoerus grypus* (Favourable); • Sea lamprey *Petromyzon marinus* (Unfavourable); • River lamprey *Lampetra fluviatilis* (Unfavourable); • Allis shad *Alosa alosa* (Favourable); and • Twaite shad *Alosa fallax* (Favourable).	Site overlaps with the offshore export cable corridor and the landfall at West Angle Bay and is located approximately 16.5 km from the offshore array. The Proposed Development overlaps with approximately 2.81 km^2, or 0.20 % of the SAC. Annex I marine habitat features are considered in Chapter 9: Marine and Coastal Ecology; Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Annex II migratory fish features are considered in Chapter 10: Fish and Shellfish Ecology; Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Annex II marine mammal features are considered in Chapter 12: Marine Mammals; Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Source: Natural Resources Wales (2018a)

Site Code	Site Name	Designated Marine and Coastal Features (Conservation Status in Parentheses – latest NRW assessment: 2018)	Interaction and Further Information
UK0014787	Limestone Coast of South West Wales/ Arfordir Calchfaen de Orllewin Cymru SAC	Annex I Habitats: • Vegetated sea cliffs of the Atlantic and Baltic Coasts; • Fixed coastal dunes with herbaceous vegetation (grey dunes); and • Submerged or partially submerged sea caves (Unknown).	Site is located approximately 4 km from the offshore export cable and landfall at West Angle Bay. Annex I marine habitat features are considered in Chapter 9: Marine and Coastal Ecology; Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Source: Natural Resources Wales (2018b).
UK0030397	West Wales Marine / Gorllewin Cymru Forol SAC	Annex II Species: • Harbour porpoise *Phocoena phocoena* (no feature condition assessment conducted by NRW since site designation).	Site overlaps with the offshore export cable and landfall at West Angle Bay and is located approximately 11.5 km from the offshore array. The Proposed Development overlaps with approximately 11.96 km^2, or 0.16 % of the SAC. Annex II marine mammal features are considered in Chapter 12: Marine Mammals; Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Sources: Natural Resources Wales and Joint Nature Conservation Committee (2015; 2019a).
UK0030396	Bristol Channel Approaches/ Dynesfeydd Môr Hafren SAC	Annex II Species: • Harbour porpoise *Phocoena phocoena* (no feature condition assessment conducted by NRW since site designation).	At its closest, the site is located approximately 17.5 km to the east of the offshore export cable and landfall is located 26.3 km to the southeast of the offshore array. Annex II marine mammal features are considered in Chapter 12: Marine Mammals; Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Sources: Natural Resources Wales and Joint Nature Conservation Committee (2016; 2019b).

Table 8.10 – Special Protection Areas in the Study Area of the Proposed Development

Side Code	Site Name	Classified Marine Features (Percent of Relevant Populations and Feature Condition in Parentheses – latest NRW assessment: 2018)	Interaction and Further Information
UK9014051	Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA	Annex I Bird Features: • European storm petrel *Hydrobates pelagicus* (4.1% of the Great British breeding population) (Unknown). Migratory Bird Features: • Atlantic puffin *Fratercula arctica* (1.1% of the global population; 2.1% of the Great British Population) (Favourable); • Lesser black-backed gull *Larus fuscus* (16.4% of global population; 24.5% of the Great British population) (Unfavourable); and • Manx shearwater *Puffinus puffinus* (56.9% of the global population; 68.6% of the Great British population) (Favourable). Seabird assemblage (394,260 individuals) (Favourable): • Atlantic puffin; • Black-legged kittiwake *Rissa tridactyla*; • Common guillemot *Uria aalge*; • European storm petrel; • Lesser black-backed gull *Larus fuscus*; • Manx shearwater; and • Razorbill *Alca torda*.	The array area is adjacent to the site boundary and there is direct overlap between the offshore export cable and the designated site. The site is located approximately 6 km from the landfall at West Angle Bay. The array area and offshore export cable corridor overlaps with approximately 13.3 km^2 or 0.90 % of the SPA Annex I bird features are considered in Chapter 11: Offshore Ornithology; Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Source: Natural Resources Wales (2015; 2018c).

Ramsar Sites

8.5.2.8 Ramsar Sites, designated under the Convention on Wetlands of International Importance (the Ramsar Convention), are generally designated in conjunction, and as part of, European Sites or European Marine Sites (SACs and SPAs). Under the Ramsar Convention, wetlands are defined as:

8.5.2.9 "*Areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres"* (United Nations Educational, Scientific and Cultural Organisation, 1994).

8.5.2.10 Under the Ramsar Convention, a wetland site is classified as being of 'International Importance' when the site meets any one of nine criteria detailed within the convention (Ramsar Convention, 2014).

8.5.2.11 Ramsar Sites are often associated with, or are a component of, SACs or SPAs. There are several Ramsar Sites on the Welsh coast, however, none fall within, or overlap with, the Study Area. The closest Ramsar site to the Proposed Development is Burry Inlet (site code: UK14001), located approximately 90.1 km to the east of the offshore array and 55.9 km to the east of the Landfall at West Angle Bay. A summary of the assessments made to Ramsar Sites, and to regional populations of mobile features of Ramsar Sites, can be found in Section 8.6 of this chapter.

8.5.3 Domestic Statutory Sites

8.5.3.1 In addition to the aforementioned international designated sites, the UK boasts a network of nature conservation sites protected under various pieces of domestic legislation. These include Sites of Special Scientific Interest (SSSIs), which are designated under the WCA 1981; Marine Conservation Zones (MCZs), designated under the MCAA 2009; and National Nature Reserves (NNRs), designated under the National Parks and Access to the Countryside Act (NPACA) 1949 or the WCA 1981.

8.5.3.2 There are over 1,000 SSSIs in Wales, covering approximately 12% of the country (Lle, 2021b); 12 coastal SSSIs are located within or overlap the Study Area (i.e., SSSIs that are within 19 km of the Proposed Development and within 500 m of the coast) (Table 8.11).

Table 8.11 – Sites of Special Scientific Interest in the Study Area of the Proposed Development (Source: Natural Resources Wales, 2021a)

Site Code	Site Name	Marine and Coastal Features of Sites of Special Scientific Interest	Interaction and Further Information
SSSI_923 (32WWH)	Arfordir Penrhyn Angle/Angle Peninsula Coast SSSI	Habitat Features: • Intertidal rock, sand and gravel communities; • Kelp, sea squirts and sea mats on tide swept lower shore rock; • Serrated wrack and piddocks on lower mid shore soft rock; and • Specialised marine habitats (including rockpools, overhangs, cave and underboulder communities).	There is direct overlap between the site and the offshore export cable and landfall at West Angle Bay. The Proposed Development overlaps with approximately 0.10 km^2, or 7.80 % of the SSSI. Marine and intertidal habitat features are considered in Chapter 9: Marine and Coastal Ecology. Where these features are also features of Natura 2000 sites, they are also considered in Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Impacts to coastal and geological features are considered in Chapter 6: Marine and Coastal Processes.
SSSI_282 (32WP3)	Milford Haven Waterway SSSI	Habitat Features: • Estuaries (contains all shore types and communities); • Specialised marine habitats (including eelgrass beds, rockpools, overhangs and underboulder communities); • Sand gapers and bristle worms in muddy gravel shores; • Bristle worms in poorly sorted mixed sediment shores; • Bristle worms in variable salinity muddy gravel shores;	Site is located approximately 0.34 km from the offshore export cable and landfall at West Angle Bay. Marine and intertidal habitat and species features are considered in Chapter 9: Marine and Coastal Ecology. Where these features are also features of Natura 2000 sites, they are also considered in Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Offshore ornithological features are considered in Chapter 11: Offshore Ornithology. Where these features are also qualifying features of Natura 2000 sites, they are also considered in Volume 3, Technical Appendix 8.2:

Site Code	Site Name	Marine and Coastal Features of Sites of Special Scientific Interest	Interaction and Further Information
		• Serrated wrack, sponges and sea squirts on tide swept lower mid shore rock; • Serrated wrack with sponges, sea squirts and red seaweeds on tide swept lower mid shore mixed substrata; • Kelp, sea squirts and sea mats on tide swept subtidal fringe rock; • Oysterbeds on shallow subtidal muddy sediment; and • Saltmarsh (including Atlantic salt meadows). Species Features: • Dwarf eelgrass *Zostera (Zosterella*) noltei; • Assemblage of saltmarsh and intertidal flowering plants; • Shelduck *Tadorna tadorna*; • Wigeon *Anas penelope*; • Teal *Anas crecca*; • Curlew *Numenius arquata*; • Dunlin *Caldris alpina*; • Little grebe *Tachybaptus ruficollis*; and • Otter *Lutra lutra*.	HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Impacts to coastal and geological features are considered in Chapter 6: Marine and Coastal Processes of this ES.

Site Code	Site Name	Marine and Coastal Features of Sites of Special Scientific Interest	Interaction and Further Information
SSSI_585 (32WTB)	Dale and South Marloes Coast SSSI	Habitat Features: • Maritime cliff crevice and ledge vegetation; and • Coastal scrub. Species Features: • Rockpool and overhand communities; • Red alga *Gigartina pistillata*; • Mixture of intertidal communities; • Grey seal *Halichoerus grypus*.	Site is located approximately 1.6 km from the offshore export cable and 3.5 km from the landfall at West Angle Bay. Marine and intertidal habitat and species features are considered in Chapter 9: Marine and Coastal Ecology. Where these features are also features of Natura 2000 sites, they are also considered in Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Marine mammal features are considered in Chapter 12: Marine Mammals. Where these features are also qualifying features of Natura 2000 sites, they are also considered in Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Impacts to coastal and geological features are considered in Chapter 6: Marine and Coastal Processes.
SSSI_1136 (32WVY)	Broomhill Burrows SSSI	Habitat Features: • Mobile dune; • Dune grassland; and • Dune slack vegetation. Species Features: • Rare sand dune plants. Geological Features: • Cliff structures.	Site is located approximately 3.3 km from the landfall at West Angle Bay. There are no marine or intertidal features of scientific interest for this site. Impacts to coastal and geological features are considered in Chapter 6: Marine and Coastal Processes.

Site Code	Site Name	Marine and Coastal Features of Sites of Special Scientific Interest	Interaction and Further Information
SSSI_140 (32WP3)	Castlemartin Range SSSI	Habitat Features: • Scarce and specialised intertidal rock communities; • Maritime cliff crevice and ledge vegetation; and • Sand dune habitats. Species Features: • Seabird assemblage (including common guillemot *Uria aalge*, razorbill *Alca torda*, and black-legged kittiwake *Rissa tridactyla*); • Grey seal *Halichoerus grypus*; and • Otter *Lutra lutra*. Geological Features: • Coastal landforms and natural processes.	Site is located approximately 4.5 km from the landfall at West Angle Bay. Marine and intertidal habitat features are considered in Chapter 9: Marine and Coastal Processes. Where these features are also features of Natura 2000 sites, they are also considered in Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Offshore ornithological features are considered in Chapter 11: Offshore Ornithology. Where these features are also qualifying features of Natura 2000 sites, they are also considered in Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Marine mammal features are considered in Chapter 12: Marine Mammals. Where these features are also qualifying features of Natura 2000 sites, they are also considered in Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Impacts to coastal and geological features are considered in Chapter 6: Marine and Coastal Processes.
SSSI_342 (32WHS)	De Porth Sain Ffraid/St Bride's Bay South SSSI	Habitat Features: • Specialised marine habitats (including rockpools, caves, overhangs and underboulder communities);	Site is located approximately 8.0 km from the offshore export cable and 8.8 km from the landfall at West Angle Bay. Marine and intertidal habitat features are considered in Chapter 9: Marine and Coastal Ecology. Where these features are also features of Natura 2000 sites, they are also considered in Volume 3, Technical Appendix 8.2:

Site Code	Site Name	Marine and Coastal Features of Sites of Special Scientific Interest	Interaction and Further Information
		• Serrated wrack, sponges and sea squirts on tide swept lower mid shore rock; • Kelp, sea squirts and sea mats on tide swept subtidal fringe rock; and • Other intertidal communities. Species Features: • Grey seal *Halichoerus grypus*.	HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Marine mammal features are considered in Chapter 12: Marine Mammals. Where these features are also qualifying features of Natura 2000 sites, they are also considered in Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA.
SSSI_297 (32WTL)	Skokholm SSSI	Habitat Features: • Maritime cliff crevice and ledge vegetation; • Reefs (littoral rock); and • *Laminaria digitata*, ascidians and bryozoans on tide swept sublittoral fringe rock. Species Features: • Grey seal *Halichoerus grypus*; • European storm petrel *Hydrobates pelagicus*; • Manx shearwater *Puffinus puffinus*; • Atlantic puffin Fratercula arctica; • Razorbill *Alca torda*; • Common guillemot *Uria aalge*; • Lesser black-backed gull *Larus fuscus*; and • Assemblage of breeding seabirds.	Site is located approximately 8.3 km from the offshore export cable and 11.1 km from the landfall at West Angle Bay. Marine and intertidal habitat features are considered in Chapter 9: Marine and Coastal Ecology. Where these features are also features of Natura 2000 sites, they are also considered in Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Offshore ornithological features are considered in Chapter 11: Offshore Ornithology. Where these features are also qualifying features of Natura 2000 sites, they are also considered in Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Marine mammal features are considered in Chapter 12: Marine Mammals. Where these features are also qualifying features of Natura 2000 sites, they are also considered in Volume 3, Technical Appendix 8.2: HRA

Site Code	Site Name	Marine and Coastal Features of Sites of Special Scientific Interest	Interaction and Further Information
			Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Impacts to coastal and geological features are considered in Chapter 6: Marine and Coastal Processes.
SSSI_873 (32WSS)	Arfordir Niwgwl – Aber Bach / Newgale to Little Haven Coast SSSI	Habitat Features (specialised marine habitats): • Surge gullies; • Rockpools; • Overhangs; • Caves; and • Underboulder communities. Species Features: • Mixture of intertidal communities. Geological Features (geological exposures): • Variscan structures; • Quaternary of Wales; and • Upper Carboninferous.	Site is located approximately 8.9 km from the offshore export cable and the landfall at West Angle Bay. Marine and intertidal habitat features are considered in Chapter 9: Marine and Coastal Ecology. Where these features are also features of Natura 2000 sites, they are also considered in Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Impacts to coastal and geological features are considered in Chapter 6: Marine and Coastal Processes.
SSSI_953 (32WAG)	Skomer Island and Middleholm SSSI	Habitat Features: • Maritime cliff crevice and ledge vegetation; • Maritime grassland; • Reefs (littoral rock); and	Site is located approximately 10.2 km from the offshore export cable and approximately 11.5 km from the landfall at West Angle Bay. Marine and intertidal habitat features are considered in Chapter 9: Marine and Coastal Ecology. Where these features are also features of Natura 2000 sites, they are

Site Code	Site Name	Marine and Coastal Features of Sites of Special Scientific Interest	Interaction and Further Information
		• Sea caves. Species Features: • Assemblage of nationally rare and scarce lichens; • Assemblage of nationally rare and scarce vascular plants; • Grey seal Halichoerus grypus; • European storm petrel *Hydrobates pelagicus*; • Manx shearwater *Puffinus puffinus*; • Atlantic puffin Fratercula arctica; • Razorbill *Alca torda*; • Common guillemot *Uria aalge*; • Lesser black-backed gull *Larus fuscus*; • Black-legged kittiwake *Rissa tridactyla*; and • Assemblage of breeding seabirds. Geological Features: • Silurian igneous (Geological Conservation Review, see Section 8.5.3.3)	also considered in Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Offshore ornithological features are considered in Chapter 11: Offshore Ornithology. Where these features are also qualifying features of Natura 2000 sites, they are also considered in Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Marine mammal features are considered in Chapter 12: Marine Mammals. Where these features are also qualifying features of Natura 2000 sites, they are also considered in Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Impacts to coastal and geological features are considered in Chapter 6: Marine and Coastal Processes.
SSSI_24 (32WQ4)	Stackpole SSSI	Habitat Features: • Marine intertidal and terrestrial cliff-crevice communities;	Site is located approximately 13.1 km from the offshore export cable and the landfall at West Angle Bay. Marine and intertidal habitat features are considered in Chapter 9: Marine and Coastal Ecology. Where these features are also features of Natura 2000 sites, they are

Site Code	Site Name	Marine and Coastal Features of Sites of Special Scientific Interest	Interaction and Further Information
		• Scarce and specialised intertidal rock communities; • Maritime cliff crevice and ledge vegetation; • Maritime grassland; and • Sand dune habitats. Species Features: • Otter Lutra lutra; • Assemblage of vascular plants; • Assemblage of lichens; • Bird assemblage.	also considered in Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Offshore ornithological features are considered in Chapter 11: Offshore Ornithology. Where these features are also qualifying features of Natura 2000 sites, they are also considered in Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Marine mammal features are considered in Chapter 12: Marine Mammals. Where these features are also qualifying features of Natura 2000 sites, they are also considered in Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Impacts to coastal and geological features are considered in Chapter 6: Marine and Coastal Processes.
SSSI_113 (32WQ5)	Stackpole Quay – Trewent Point SSSI	Habitat Features: • Cliff and crevice vegetation; • Maritime grassland; and • Rocky shore communities. Geological Features: • Folds and faults from the 'Variscan' mountain-building period; and • Rock layers and fossils form the 'Wenlock' era.	Site is located approximately 16.6 km from the offshore export cable and the landfall at West Angle Bay. Marine and intertidal habitat features are considered in Chapter 9: Marine and Coastal Ecology. Where these features are also features of Natura 2000 sites, they are also considered in Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Impacts to coastal and geological features are considered in Chapter 6: Marine and Coastal Processes.

Site Code	Site Name	Marine and Coastal Features of Sites of Special Scientific Interest	Interaction and Further Information
SSSI_1379 (32WUS)	Freshwater East Cliffs to Skrinkle Haven SSSI	Habitat Features: • Maritime cliff communities; • Coastal grassland. Geological Features: • Faults and other structural geology features within the Old Red Sandstone.	Site is located approximately 17.4 km from the offshore export cable and the landfall at West Angle Bay. Marine and intertidal habitat features are considered in Chapter 9: Marine and Coastal Ecology. Where these features are also features of Natura 2000 sites, they are also considered in Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA. Impacts to coastal and geological features are considered in Chapter 6: Marine and Coastal Processes.

8.5.3.3 There are also several National Nature Reserves (NNRs) in Wales, all of which are legally protected as SSSIs, and most are afforded protection as SACs, SPAs, and/or Ramsar Sites (Natural Resources Wales, 2021c). Three NNRs fall within the Study Area: Skokholm, Skomer and Stackpole (Volume 2, Figure 8.3). Table 8.12 provides details on these three sites.

8.5.3.4 The seas around Skomer were designated as a Marine National Nature Reserve (MNNR) in 1990, which was changed to a MCZ designation in 2014 (Natural Resources Wales, 2021d). This site has partial overlap with the Study Area (Volume 2, Figure 8.3). Skomer MCZ is designated to protect marine life around the island and west of Milford Haven. The MCZ protects a variety of species, including littoral communities, sponge assemblages, plankton, pink sea fan *Eunicella verrucosa*, red sea fingers *Alcyonium glomeratum*, yellow cluster anemone *Parazoanthus axinellae*, ross coral *Pentapora foliacea*, cup corals *Balanophyllia regia* and *Caryophyllia smithii*, and grey seal *Halichoerus grypus* (Burton *et al.*, 2020; Newman *et al.*, 2021).

8.5.3.5 As previously noted, assessment of the features of designated sites are considered in accompanying chapters and technical appendices of the ES:

- Geological and coastal features are considered in Chapter 6: Marine and Coastal Processes;
- Intertidal and benthic species and habitats are considered in Chapter 9: Marine and Coastal Ecology;
- Offshore ornithological features in Chapter 11: Offshore Ornithology;
- Marine mammal features in Chapter 12: Marine Mammals;
- An MCZ risk assessment has been conducted (Volume 3, Technical Appendix 8.1: Marine Conservation Zone Risk Assessment); and
- Where species or habitats are also qualifying features of Natura 2000 or Ramsar Sites, they are considered in Volume 3, Technical Appendix 8.2: HRA Screening Report; and Volume 3, Technical Appendix 8.3: RIAA.

Table 8.12 – National Nature Reserves within the Study Area of the Proposed Development

Site Code	Site Name	Important Features	Interaction and Further Information
00112	Skokholm NNR	Geological Features; Coastal habitats and species; Marine mammals, notably grey seal *Halichoerus grypus*; Several seabird species; Chough *Pyrrhocorax pyrrhocorax*	Located approximately 8.3 km to the northwest of the offshore export cable and 30.3 km to the northeast of the array area. The NNR was designated in 2008; however, has been afforded protection as a SSSI since 1954 (see Skokholm SSSI; Table 8.11) and an SPA since 1982 (see Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA; Table 8.10). Further information: Pembrokeshire Coast (2021a).
00061	Skomer NNR	Atlantic puffin *Fratercula arctica*; Manx shearwater *Puffinus puffinus*; Dolphins; Harbour porpoise *Phocoena phocoena*; Grey seal *Halichoerus grypus*; Razorbill *Alca torda*; Northern gannet *Morus bassanus*; Northern fulmar *Fulmarus glacialis*.	Located approximately 10.6 km to the northwest of the offshore export cable and landfall at West Angle Bay and 32.6 km northeast of the array area. The NNR was designated in 1959, and is also afforded protection by other designations, including: • Pembroke Marine SAC (see Table 8.9); • Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA (see Table 8.10); • Skomer Island and Middleholm SSSI (see Table 8.11); • Marine National Nature Reserve; • Marine Conservation Zone; Further information: Natural Resources Wales (2021d).

Site Code	Site Name	Important Features	Interaction and Further Information
00062	Stackpole NNR	Limestone cliffs and beaches; Dunes and shallow freshwater lakes; Greater horseshoe bat; Otters; Waterbirds; Dragonflies; Soil and rock lichens; Breeding chough *Pyrrhocorax pyrrhocorax*; Colonial seabirds (including common guillemot *Uria aalge* razorbill *Alca torda* and Atlantic puffin *Fratercula arctica*).	Located approximately 15.3 km southeast of the export cable and landfall at West Angle Bay and 45.5 km northeast of the array area. The NNR is associated with Stackpole SSSI (see Table 8.11). Further information: Natural Resources Wales (2021e).

8.5.4 Domestic Non-statutory Sites

8.5.4.1 There are also several designated non statutory sites that lie within the Study Area (Volume 2, Figure 8.4). The coastal sites, or sites with coastal features, include National Parks (NPs), Heritage Coasts, and geologically important sites.

8.5.4.2 There are 15 NPs, designated under the NPACA 1949 in the UK, three of which are in Wales, and one, the Pembrokeshire Coast National Park (PCNP), overlaps the Study Area (Pembrokeshire Coast, 2021b). NPs are managed by the associated National Park Authority, with funding from local government, in order to carry out specific purposes (National Parks UK, 2021) including:

- Conserve and enhance the natural beauty, wildlife and cultural heritage; and
- Promote opportunities for the understanding and enjoyment of the special qualities of national parks by the public (UK Government, 1995).

8.5.4.3 Two coastal Heritage Coast sites are located within the Study Area:

- Marloes and Dale Heritage Coast to the north and west; and
- South Pembrokeshire Heritage Coast to the southeast.

8.5.4.4 Instead of being designated like NPs, Heritage Coasts are defined, and therefore there is no statutory process. Heritage Coasts are defined in order to preserve stretches of outstanding, undeveloped coastline in the UK, and are managed by local authorities (Natural Resources Wales, 2021b). The status of these sites has no legal protection, however planning authorities must consider them when making decisions on development (Lle, 2021c).

8.5.4.5 Geological sites along the Pembrokeshire coastline, within the Study Area, include Geological Conservation Review (GCR) sites and Regionally Important Geological Sites (RIGS). The GCR designation was established in 1977 and was implemented to identify sites of national and international importance for their geological features, including sediments, rocks, fossils, and landscape features (Joint Nature Conservation Committee, 2020e). RIGS are sites selected by volunteer groups for their geological features. As the sites are identified on a purely voluntary scheme, they have no statutory protection; however local councils are notified (Lle, 2021d).

8.5.4.6 There are 27 GCR sites and 27 RIGS within the Study Area (Volume 2, Figure 8.4). Of these sites, three (West Angle Bay and West Angle Bay (North) CGR sites and West Angle Bay RIGS are located within the vicinity of the cable landfall (i.e., within the confines of West Angle Bay)). All coastal (i.e., within 500 m of the coast) GCR and RIG sites within 19 km of the Proposed Development are listed in Table 8.13.

Table 8.13 – Geological Conservation Review sites and Regionally Important Geological Sites within 500 m of the coast and within the Study Area

Regionally Important Geological Sites		**Geological Conservation Review Sites**	
Site Code	Site Name	Site Code	Site Name
453	East Pickard Bay	0	Freshwater West
464	St Brides Haven	43	Freshwater East

Regionally Important Geological Sites		Geological Conservation Review Sites	
466	Lindsway Bay	953	Marloes
467	Gelliswick Bay	954	Freshwater East
470	The Settlands	1418	Nolton Haven Coast
477	Mascle Bridge Quarry	1458	West Angle Bay
479	Sandy Haven	1477	Druidston
482	Townsend	1656	Stackpole Quay
483	Sawdern Point	1657	Freshwater East (North)
485	Mullock Bridge	1658	St Ann's Head
487	Pennar Point	1659	Musselwick Bay
488	West Angle Bay	1660	Marloes Sands to Albion Sands
491	Marloes	1661	Broad Haven to Settling Nose
492	Little Haven	1662	Druidston Haven
502	Westdale Bay	1663	Freshwater West (North)
519	Longstone Down	1664	Musselwick Sands
520	Bullslaughter Bay	1665	Mill Haven
522	Musselwick Sands	1666	Freshwater West (South)
529	New Quay	1732	Little Castle Head
530	Martin's Haven	1733	West Angle Bay (North)
535	Wear Point	1734	Albion Sands & Gateholm Island

Regionally Important Geological Sites		Geological Conservation Review Sites	
536	Monk Haven	1735	Tenby Cliffs
545	Newgale Beach	1759	Blucks Pool - Bullslaughter Bay
546	Pwll March	1769	Marloes
555	Middle Cove	1913	South Pembroke Cliffs
556	Stackpole Head	2413	Skomer Island
561	Angle Bay	2414	Deer Park

8.6 Potential Environmental Effects

8.6.1.1 The following assessment provides a summary of impacts to offshore designated sites and their qualifying features identified during Scoping, and those which have been noted as the EIA has progressed.

8.6.1.2 The assessment made within this chapter is predominantly informed by the outcomes of other assessments made within the ES and associated supporting documents. A summary of the main assessment and conclusions made for each receptor group has been included in this chapter. As this chapter does not make standalone assessment of potential impacts, it is imperative that the chapter is read in conjunction with the following chapters and supporting documents:

- Chapter 6: Marine and Coastal Processes ;
- Chapter 9: Marine and Coastal Ecology;
- Chapter 10: Fish and Shellfish Ecology;
- Chapter 11: Offshore Ornithology;
- Chapter 12: Marine Mammals;
- Chapter 13: Seascape and Visual Impacts;
- Chapter 29: Inter-Related Effects;
- Chapter 31: Cumulative Effects;
- Volume 3, Technical Appendix 8.1: Marine Conservation Zone Assessment;
- Volume 3, Technical Appendix 8.2: Habitat Regulations Assessment Screening Report; and
- Volume 3, Technical Appendix 8.3: Habitat Regulations Assessment: Report to Inform Appropriate Assessment.

8.6.1.3 Each impact is not necessarily relevant to all stages of the Project, and thus impacts 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 8.4 of this chapter and in Chapter 2: Overview of EIA Methodology.

8.6.1.4 The assessments are based on Realistic Worst Case (RWC) scenarios. As the worst-case parameters assumed for each individual potential impact on offshore designated sites vary considerably, the reader is referred to individual PDE worst-case parameter tables included in topic-specific ES chapters.

8.6.2 Marine and Coastal Processes

8.6.2.1 Chapter 6: Marine and Coastal Processes outlines the maximum parameters for the increase in suspended sediment concentration (SSC) and the spatiotemporal extent of the suspended sediment plume in several scenarios, including release of fine and coarse sediments from the top and bottom of the water column in several locations with differing tidal excursions. Changes to sediment transport systems are also discussed. The outputs of the modelling, and the information included in Chapter 6: Marine and Coastal Processes has been used to inform the assessments made in other chapters of the ES.

8.6.2.2 In addition to the above, several effects are assessed within Chapter 6: Marine and Coastal Processes, including:

- Construction:
  - Potential changes to the morphology of the seabed including from scour (**minor adverse** effect);
  - Potential changes in morphology of the coast (**minor adverse** effect);
- Operation and Maintenance:
  - Potential changes to the morphology of the seabed including from scour (**minor adverse** effect);
  - Potential change in morphology of the coast (**minor adverse** effect);
- Decommissioning:
  - Potential changes to the morphology of the seabed including from scour (**minor adverse** effect); and
  - Potential changes in morphology and sediment transport at the coast (**minor adverse** effect).

8.6.2.3 The assessment concluded that, for all the above effects on all receptors, the predicted outcome is **minor adverse** effect, which is not considered significant in EIA terms. As such, no additional mitigation is required for fish and shellfish receptors.

8.6.3 Marine and Coastal Ecology

8.6.3.1 In Chapter 9: Marine and Coastal Ecology, several potential effects associated with all parts of the project on benthic habitats and species. For the purpose of the assessment, habitats/biotopes were grouped into Valued Ecological Receptor (VER) groups according to physical and environmental parameters, as well as sensitivity to effects. A total of 12 VER groups (A-L) were identified, and the following effects on each VER group have been assessed:

- Construction:
  - Temporary habitat disturbance during installation activities (**minor adverse** effect for all VER groups);
  - Temporary increases in SSC and smothering (**minor adverse** effect for all VER groups);
  - Introduction of Invasive Non-native Species (INNS) (**minor adverse** effect for all VER groups);
  - Accidental release of pollutants from vessels during installation (**minor adverse** effect for all VER groups);
  - Accidental release of contaminants through disturbance of the seabed (**minor adverse** effect for all VER groups);
- Operation and Maintenance:
  - Long term habitat loss from infrastructure (**minor adverse** effect for all VER groups);
  - Temporary habitat disturbance from cable repair and remediation and catenary-swept areas (**minor adverse** effect all VER groups; except VER group K, where significance is **negligible** effect);
  - Temporary potential increases in SSC and smothering via cable repairs and remediation and catenary-swept disturbances (**minor adverse** effect for all VER groups);
  - Colonisation of infrastructure by INNS (**minor adverse** effect for all VER groups);
  - Colonisation of infrastructure by marine organisms (non-INNS) (**minor beneficial** effect for all VER groups);
  - Protection of benthic habitats from fishing restrictions (**minor beneficial** effect for all VER groups);
  - Accidental release of pollutants from vessels and from WTGs (**minor adverse** effect for all VER groups);
  - Accidental release of existing contaminants through disturbance of the seabed (**minor adverse** effect for all VER groups);
  - Effects of electromagnetic field (EMF) and heat from active power cables (**minor adverse** effect for all VER groups);
  - Long-term changes to physical processes (**minor adverse** effect for all VER groups);
- Decommissioning:
  - Temporary habitat disturbances from infrastructure removal (**minor adverse** effect for all VER groups);

- Temporary increases in SSC/smothering from removal of infrastructure (**minor adverse** effect for all VER groups);
- Introduction of INNS (**negligible** effect for all VER groups);
- Protection of benthic habitats from fishing restrictions (**minor adverse** effect for all VER groups);
- Accidental release of pollutants from vessels (**minor adverse** effect for all VER groups);
- Accidental release of contaminants (**minor adverse** effect for all VER groups).

8.6.3.2 The assessment concluded that, for all effects on all VER groups, the predicted outcome is either **negligible** effect or **minor adverse** effect, or **minor beneficial** effect, none of which are considered significant. As such, no additional mitigation is required for fish and shellfish receptors.

8.6.4 Fish and Shellfish Ecology

8.6.4.1 Potential effects on fish and shellfish receptors are assessed within Chapter 10: Fish and Shellfish Ecology. For the purpose of the assessment, fish and shellfish receptors were categorised into several groups, including elasmobranchs, demersal fish, pelagic fish, shellfish, and migratory fish. The following effects on each receptor group are assessed in Chapter 10: Fish and Shellfish Ecology:

- Construction:
  - Temporary habitat disturbance/damage (**minor adverse** effect);
  - Increased SSC and sediment deposition (**minor adverse** effect);
  - Low-level, non-impulsive subsea noise (**negligible** effect);
  - High-level impulsive subsea noise (piling) (**minor adverse** effect);
  - Disturbance, injury and mortality from subsea noise produced via unexploded ordnance (UXO) (**minor adverse** effect);
- Operation and Maintenance:
  - Long-term loss of habitat via project infrastructure (**minor adverse** effect);
  - Temporary habitat disturbance via repair and remediation works (**minor adverse** effect);
  - Increased SSC and sediment deposition via repair and remediation works (**minor adverse** effect);
  - Fish aggregating device and collision effects (**minor adverse** effect);
  - Reduced fishing pressures within the Project area (**negligible** effect);
  - Electromagnetic field effects from cables (**minor adverse** effect);
  - Disturbance, injury and mortality from subsea noise produced via operation activities (**negligible** effect);
- Decommissioning:
  - Temporary habitat disturbances/damage to sedentary species via moorings and cable decommissioning (**minor adverse** effect);
  - Increased SSC and sediment deposition (**minor adverse** effect); and
  - Disturbance, injury and mortality from subsea noise produced via decommissioning activities (**minor adverse** effect).

8.6.4.2 The assessment concluded that, for all effects on all receptor groups, the predicted outcome is either **negligible** effect or **minor adverse** effect, neither of which is considered significant. As such, no additional mitigation is required for fish and shellfish receptors.

8.6.5 Offshore Ornithology

8.6.5.1 Potential impacts to offshore ornithological receptors (seabirds, as well as waterbirds and wildfowl with migratory routes that may interact with the Project) are assessed in detail in Chapter 11: Offshore Ornithology, and with consideration for SPAs and Ramsar Sites, in Volume 3, Technical Appendix 8.3: Report to Inform Appropriate Assessment. The assessments compared impacts against the baseline and two years of Project-specific survey data (Volume 3, Technical Appendix 11.1: Baseline and Technical Appendix 11.6: 2 Year Bird Survey Report). The assessment was informed by a series of technical appendices, including modelling, assessments and analyses:

- Volume 3, Technical Appendix 11.1: Baseline;
- Volume 3, Technical Appendix 11.2: Apportioning;
- Volume 3, Technical Appendix 11.3: Collision Risk Modelling;
- Volume 3, Technical Appendix 11.4: Displacement Assessment;
- Volume 3, Technical Appendix 11.5: Population Viability Analysis; and
- Volume 3, Technical Appendix 11.6: 2-Year Bird Survey Report.

8.6.5.2 The following potential impacts on offshore ornithological receptors were assessed:

- Construction:
  - Indirect impacts as a result of displacement of prey due to construction activities (**negligible adverse** effect);
  - Disturbance and displacement from increased vessel activity (array and EEC) (**minor adverse** effect for auk species; and **negligible** effect for northern fulmar *Fulmarus glacialis*, shearwaters and storm-petrels, northern gannet *Morus bassanus*, gulls); and
  - Disturbance and displacement from underwater noise via construction activities (including piling and UXO) (**minor adverse** effect);
- Operation and Maintenance:
  - Collision risk (**minor adverse** effect for Manx shearwater *Puffinus puffinus*; Balearic shearwater *Puffinus mauretanicus*, northern gannet, herring gull *Larus argentatus*, great black-backed gull *Larus marinus*, lesser black-backed gull *Larus fuscus*, black-legged kittiwake *Rissa tridactyla*; and **negligible** effect for northern fulmar, European storm-petrel *Hydrobates pelagicus*, Atlantic puffin *Fratercula arctica*, common guillemot *Uria aalge*, razorbill *Alca torda*);
  - Displacement (**minor adverse** effect for Manx shearwater, Balearic shearwater, northern gannet, Atlantic puffin, common guillemot, razorbill; and **negligible** effect for European storm-petrel, black-legged kittiwake);
  - Disturbance and displacement from vessel activity (O&M and cable repairs) (**minor adverse** effect for auk species; and **negligible** effect for northern fulmar, shearwaters and storm-petrels, northern gannet, gulls);
  - Disturbance to foraging birds from underwater noise and vibration via operational activities (**negligible** effect);

- Barrier effect of WTGs to regular movements of birds to and from breeding colonies or on migration (**minor adverse** effect);
- Indirect impacts through effects on habitats and prey species (**negligible** effect);
- Aggregating effects of turbine structures (**minor adverse** effect);
- Entanglement risk from ghost fishing gear (**minor adverse** effect); and
- Attraction of nocturnal seabirds (shearwaters and petrels) to lighting on Project infrastructure (**minor adverse** effect);

- Decommissioning:
  - Indirect impacts as a result of displacement of prey due to decommissioning activities (**negligible** effect);
  - Disturbance and displacement from increased vessel activity and array and ECC (**minor adverse** effect for auk species; **negligible** effect for all other species assessed); and
  - Disturbance and displacement from underwater noise (**minor adverse** effect).

8.6.5.3 The assessment concluded that, for all effects on all offshore ornithological receptors, the predicted outcome is either **negligible** effect or **minor adverse** effect, neither of which is considered significant. As such, no additional mitigation is required for offshore ornithology.

8.6.6 Marine Mammals

8.6.6.1 Potential impacts to marine mammal receptors, informed by desk-based review of relevant and appropriate literature sources, Project-specific surveys and underwater noise modelling, are detailed and assessed in Chapter 12: Marine Mammals. The impacts assessed, and the assessment conclusions are as follows:

- Construction:
  - Low order UXO detonation – permanent threshold shift (PTS) (i.e., permanent hearing loss) (**negligible** effect);
  - Low order UXO detonation – disturbance (**negligible** effect);
  - PTS onset from pile driving (**negligible** effect);
  - Temporary threshold shift (TTS) (i.e., temporary hearing loss) (no thresholds to determine significance have been set, and therefore no assessment made, as agreed with members of Marine Mammals and Marine Ecology Expert Topic Group (21st September 2020));
  - Disturbance from pile driving (**minor adverse** effect for common dolphin *Delphinus delphis* and bottlenose dolphin *Tursiops truncatus*; **negligible** effect for minke whale *Balaenoptera acutorostrata*, harbour porpoise *Phocoena phocoena* and grey seal);
  - PTS and disturbance from other construction activities (**negligible** to **minor adverse** effect);
  - Collision with vessels (**minor adverse** effect);
  - Disturbance from vessels (**minor adverse** effect for cetaceans; **negligible** effect for grey seals);
  - Disturbance at seal haul-outs (**negligible** effect); and
  - Indirect impacts on prey (**negligible** effect);

- Operation and Maintenance:
  - Barrier effects (**negligible** effect);
  - Entanglement (**minor adverse** effect);
  - Collision with vessels (**minor adverse** effect);
  - Disturbance from vessels (**minor adverse** effect for cetaceans; **minor adverse** effect for grey seal);
  - Disturbance at seal haul-outs (**negligible** effect); and
  - Indirect impacts on prey (**negligible** effect);
- Decommissioning:
  - Disturbance from removal of structures (**minor adverse** effect);
  - Collision with vessels (**minor adverse** effect);
  - Disturbance from vessels (**negligible** effect);
  - Disturbance at seal haul-outs (**negligible** effect); and
  - Indirect impacts on prey (**negligible** effect).

8.6.6.2 The assessment concluded that, for all effects on all marine mammal receptors, the predicted outcome is either **negligible** effect or **minor adverse** effect, neither of which is considered significant. As such, no additional mitigation is required for marine mammals.

8.6.7 Seascape, Landscape and Visual Impacts

8.6.7.1 A Seascape and visual impact assessment (SLVIA) was undertaken and is detailed in Chapter 13: Seascape and Visual Impact and Chapter 21: Landscape and Visual Impact. The assessment determined that, from all assessed viewpoints, and for all aspects of the Project (onshore and offshore; construction, operation and maintenance and decommissioning), it was determined that visual impacts (including those to the PCNP) would be no greater than **minor adverse** effect, which is not considered significant. As such, no additional mitigation is required for seascape, landscape and visual impacts.

8.6.7.2 As such, no additional mitigation is required for seascape and coastal landscape impacts.

8.6.8 Inter-related Effects and Cumulative Effects

8.6.8.1 Inter-related effects, or the effect of multiple aspects of the Project on the same receptor or receptor group, are assessed in detail in Chapter 29: Inter-related Effects. The assessment takes all effects of the project on all receptors into consideration and makes determination as to whether or not the result is considered significant. For all receptors of relevance to this chapter, including physical, biological and human environment receptors, inter-related effects were determined to be **minor adverse** effect at worst, which is not considered significant. As such, no additional mitigation is required.

8.6.8.2 Cumulative and transboundary effects, assessed in the individual receptor group chapters (Chapters 6 to 27), consider potential effects arising from all other reasonably foreseeable projects and plans that may impact receptor groups alongside effects from the Project. A comprehensive summary of the Cumulative Effects Assessment (CEA) for the Project is provided in Chapter 30: Cumulative Effects Assessment. In summary, the CEA determined that impacts would be no greater than **minor adverse** effect for all receptors and receptor groups, which is not considered significant. As such, no additional mitigation is required.

8.6.9 Marine Conservation Zone Assessment

8.6.9.1 A MCZ risk assessment has been undertaken for the Project (Volume 3, Technical Appendix 8.1: Marine Conservation Zone Assessment), which includes screening for relevant MCZs and identification of potential receptor-hazard pathways. MCZs that were screened in (i.e., a potential receptor-hazard pathway between the Project and the features of conservation interest was identified) underwent full assessment.

8.6.9.2 Skomer MCZ, designated for the protection of grey seal, pink seafan, sponge communities, eelgrass and algal communities, was the only site screened in for assessment due to potential risk to the MCZ from adverse effects associated with the Project.

8.6.9.3 The benthic features (pink seafan, sponge communities, eelgrass and algal communities) were assessed for adverse risk associated with temporary increases in suspended sediments/smothering. The assessment determined that due to distance from the Project, no Likely Significant Risk is concluded for all benthic receptors.

8.6.9.4 As Skomer MCZ is within the Welsh Seal Management Unit (SMU), the RIAA made for designated seal populations of SACs is considered adequate and as such the assessment for the Skomer MCZ seal population is presented within Volume 3, Technical Appendix 8.3: Report to Inform Appropriate Assessment, as summary of which is presented in the following subsection.

8.6.9.5 As such, in alignment with the assessments conducted for marine and coastal ecology and marine mammals, no additional mitigation is required for MCZ features of conservation interest.

8.6.10 Habitats Regulations Assessment and Report to Inform Appropriate Assessment

8.6.10.1 The HRA screening (Volume 3, Technical Appendix 8.2: HRA Screening Report) identified several sites (SACs and SPAs) to be screened in for Stage 2 Assessment as no LSE could not be determined at the screening stage. Potential pressures on the qualifying features of the site screened in for assessment have been considered in Volume 3, Technical Appendix 8.3: Report to Inform Appropriate Assessment.

8.6.10.2 A brief summary of the sites, by receptor group, and the assessment conclusion for each is provided below:

- Annex I benthic habitats:
  - Pembrokeshire Marine/Sir Benfro Forol SAC (no adverse effect on site integrity); and
  - Limestone Coast of South West Wales/Afordir Calchfaen de Orllewin Cymru SAC (no adverse effect on site integrity).
- Annex II migratory fish:
  - Pembrokeshire Marine/Sir Benfro Forol SAC (no adverse effect on site integrity); and
  - Afonydd Cleddau/Cleddau Rivers SAC (no adverse effect on site integrity).
- Annex II marine mammals (cetaceans and pinnipeds):
  - West Wales Marine/Gorllewin Cymru Forol SAC (no adverse effect on site integrity);
  - Cardigan Bay/Bae Ceredigion SAC (no adverse effect on site integrity);

  - Pen Llŷn a'r Sarnau/Lleyn Peninsula and the Sarnau SAC (no adverse effect on site integrity); and
  - Skomer MCZ (no likely significant risk).
- SPAs with marine components (i.e., seabirds):
  - Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA (no adverse effect on site integrity);
  - Grassholm SPA (no adverse effect on site integrity); and
  - Irish Sea Front SPA (no adverse effect on site integrity).
- SPAs with migratory features (waterbirds or wildfowl with migratory routes that may interact with the Project):
  - Bae Caerfyrddin/Carmarthen Bay SPA (no adverse effect on site integrity);
  - Burry Inlet SPA (no adverse effect on site integrity);
  - Northern Cardigan Bay/Gogledd Bae Ceredigion SPA (no adverse effect on site integrity);
  - Dyfi Estuary/Aber Dyfi SPA (no adverse effect on site integrity);
  - Severn Estuary SPA (no adverse effect on site integrity);
  - Traeth Lafan/Lavan Sands, Conwy Bay SPA (no adverse effect on site integrity); and
  - The Dee Estuary SPA (no adverse effect on site integrity).
- Annex I onshore habitats:
  - Pembrokeshire Marine/Sir Benfro Forol SAC (no adverse effect on site integrity);
  - Limestone Coast of South West Wales/Afordir Calchfaen de Orllewin Cymru SAC (no adverse effect on site integrity); and
  - Pembrokeshire Bat Sites and Bosherton Lakes/Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherton SAC (no adverse effect on site integrity).
- Annex I terrestrial birds:
  - Castlemartin Coast SPA (no adverse effect on site integrity).

8.6.10.3 The RIAA concluded that, there is no potential for an adverse effect on integrity, having regard to the conservation objectives of any feature of any of the SACs or SPAs from any pressures associated with any effect associated with the Project (alone or in-combination).

8.6.10.4 As such, in alignment with the assessments conducted for marine and coastal ecology, fish and shellfish, offshore ornithology and marine mammals, no additional mitigation is required for any qualifying feature of any SAC or SPA.

8.7 Summary

8.7.1.1 This chapter has provided an overview of the potential impacts which may occur on offshore designated sites within 19 km of the Proposed Development and their qualifying features. A summary of the potential impacts to each receptor group has been included, highlighting the key impacts associated with the construction, operation and decommissioning phases of the Project.

8.7.1.2 The Proposed Development is in the vicinity of a variety of offshore and coastal designated sites, including statutory international sites, and statutory and non statutory domestic sites. The sites offer protection to a range of important biological features, such as benthic habitats, seabirds, and marine mammals, and to geological and cultural features.

8.7.1.3 The qualifying features of designated sites fall into the following receptor groups:

- Geological receptors;
- Benthic and intertidal ecology;
- Migratory fish;
- Offshore ornithology;
- Marine mammals; and
- Seascape and landscape.

8.7.1.4 The assessments conducted for each receptor group within the associated chapters and accompanying technical appendices of this ES have been summarised.

8.7.1.5 Effects on marine and coastal processes, during the construction, operation and maintenance, and decommissioning were associated with changes in seabed and coastal morphology and were all assessed as **minor adverse** effect.

8.7.1.6 Effects on benthic and intertidal ecology were predominantly assessed as **minor adverse** effect for all stages of the Project, with impacts to some VER groups assessed as **negligible** effect. Two impacts (colonisation of infrastructure of marine organisms (non-INNS) and protection of benthic habitats from fishing restrictions) were assessed as **minor beneficial** effect.

8.7.1.7 Fish and shellfish receptors, most impacts associated with all stages of the Project were assessed as **minor adverse** effect, with most impacts relating to changes in habitat or prey availability, disturbance/displacement effects and injury from underwater noise and EMF. Reduced fishing pressures within the Project area was assessed as having a **negligible** effect on fish and shellfish receptors.

8.7.1.8 The main impacts identified for offshore ornithology (i.e., seabird) receptors were collision risk and displacement effects, both present during operation and maintenance. Construction and decommissioning phase impacts included vessel disturbance, underwater noise, and changes to prey and habitat availability. All impacts were, at worst, assessed as **minor adverse** effect, with some impacts for some receptors assessed as **negligible** effect.

8.7.1.9 Underwater noise impacts (arising from UXO detonation, pile driving and vessels), collision with vessels, and entanglement (ghost fishing gear) were identified as the main impacts to underwater mammals, predominantly being assessed as **minor adverse** effect. Impacts such as barrier effect, disturbance at seal haul-out sites and indirect impacts to prey were assessed as **negligible** effect.

8.7.1.10 The seascape and landscape visual impact assessment determined that visual effects on the PCNP and on Heritage Coasts were **minor adverse** effect as a worst-case.

8.7.1.11 No significant inter-related, cumulative, or transboundary effects were identified for any receptor or receptor group.

8.7.1.12 Impacts to designated sites (MCZs, SACs, SPAs and Ramsar Sites) and their qualifying interest features are assessed in full detail in Volume 3, Technical Appendix 8.1: Marine Conservation Zone Assessment; Technical Appendix 8.2: HRA Screening Report; and Technical Appendix 8.3: Report to Inform Appropriate Assessment. The assessments determined that the Project would result in no likely significant risk to MCZs and no adverse effect on site integrity of SACs, SPAs and Ramsar Sites.

8.7.1.13 Full details of the receptors, potential effects, and the assessments conducted are provided in the corresponding chapters and technical appendices.

8.8 References

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