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By Email

20 May 2021

Dear Katie Cross,

**SCREENING AND SCOPING OPINION UNDER THE MARINE WORKS
(ENVIRONMENTAL IMPACT ASSESSMENT) REGULATIONS 2007 (as amended)**

Project Valorous Floating Offshore Wind Farm (FLOW)

I am writing in response to your request for a screening and scoping opinion, dated 12 February 2021, made in accordance with The Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended) ("The Regulations").

The purpose of the Environmental Impact Assessment (EIA) scoping procedure is to determine what information should be provided in the Environmental Statement (ES).

Screening Opinion

We have also considered the proposed works against Schedule A1 and A2 of the above regulations and agree that the works fall within the categories of project listed within Schedule A2, paragraph 21 (*Installations for the harnessing of wind power for energy production (wind farms)*) of the above regulations, and therefore must be considered in terms of its size, nature and location, having regard to the relevant criteria listed in Schedule 1 of the above regulations. Based on the information provided, we consider the project has the potential to have a significant effect on the environment and, therefore, a statutory Environmental Impact Assessment is required.

We have come to this conclusion on the basis of the likely significant impacts of the project, specifically but, not limited to, the potential impacts on ornithology features based on the nature and scale of the project and its proximity to the Skomer, Skokholm and the Seas off Pembrokeshire SPA. In addition, there are potential significant impacts on benthic ecology, marine mammals, and navigation.

Scoping Opinion

In reaching our Scoping Opinion, we have had regard to the information provided in the “Blue Gem Wind Project- Project Valorous Environmental Impact Assessment Scoping Report”, dated 2 February 2021, and considered the requirements of Schedule 3 of the Marine Works Regulations. We have consulted with the bodies that we consider have an interest in the project by reason of their environmental responsibilities, or local or regional competences, as required by the above regulations, and had regard to their comments. This letter sets out the additional information that we consider necessary to be included and/or assessed in the ES for this Project.

Please note our Scoping Opinion is based on the information available to us at this time. The information provided is not a definitive list of the ES / EIA requirements and further information may be required following an application for this project, to ensure a full assessment is carried out.

This Scoping Opinion will be provided to all those bodies that were consulted and will be publicised on our website and on our Public Register.

The Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended)

Scoping Opinion (SC2102)

Summary of the proposal

Blue Gem Wind Ltd (BGW) is the developer for Project Valorous, a proposed Floating Offshore Wind (FLOW) development in the Celtic Sea.

The key components of Project Valorous are:

- Between 18 and 31 Wind Turbine Generators (WTGs), of total capacity up to 300 megawatts (MW) as well as the associated floating semi-submersible platforms and mooring infrastructure;
- A single (1) offshore substation;
- Inter-array cables and offshore export cables to landfall;
- Onshore cabling between landfall and the grid connection; and
- Onshore substation close to the grid connection point.

Location

The proposed Project Valorous is located approximately 47km southwest of the Pembrokeshire coastline, in an outline area of interest of approximately 155km². Water depths at the offshore array area are in the range of 70-84m. Indicative cable landfall options are presented at the Pembrokeshire coastline.

It is noted that the final offshore array area boundary (area within which all offshore infrastructure including offshore substation will be located) will be determined following award of an option agreement with The Crown Estate (TCE). This final area is anticipated to be reduced to approximately 100km² or less, and will be within the array area boundary of 155km² as presented within the Scoping Report.

Consultation Responses Received

In considering the Scoping Report, the NRW Permitting Service (NRW PS) consulted with various consultation bodies. The consultation bodies that responded are listed below:

- Natural Resources Wales Technical Experts (NRW TE) & JNCC (provided as a joint response)
- Maritime and Coastguard Agency (MCA)
- Royal Yachting Association (RYA)
- Trinity House Lighthouse Service (THLS)

- UK Chamber of Shipping
- Ministry of Defence (MOD)
- Pembrokeshire County Council Ecologist
- Pembrokeshire Coast National Park Authority (PCNPA)
- Pembrokeshire County Council (PCC)
- Royal Society for the Protection of Birds (RSPB)
- Cadw
- Dyfed Archaeological Trust
- Royal Commission on Historic Monuments Wales
- NERL Safeguarding
- Specialist underwater noise and vibration consultant

0. General comments

0.1. Marine and coastal guidance produced by NRW that may provide useful information to assist with your project is available here:

<https://naturalresources.wales/guidance-and-advice/business-sectors/marine/?lang=en>

0.2. The ES submitted should demonstrate consideration of the points raised in this scoping opinion. It is recommended that a table is provided in the ES summarising the scoping opinion comments and how they are addressed in the ES.

0.3. The EIA must be undertaken by a competent person and the ES must include a competent expert statement.

0.4. Where possible, other environmental assessments should be coordinated with the EIA process. However, it is important to note that the Habitats Regulations Assessment (HRA) and Water Framework Directive assessment (WFD), and any other assessment, are separate processes to the EIA.

0.5. Throughout the ES robust evidence should be presented so that the potential environmental impacts can be properly understood and evaluated; and appropriate measures identified to avoid, reduce or where necessary compensate for those impacts.

0.6. The ES must include:

- A Non-Technical Summary (NTS);
- A chart or map identifying where the activity will be carried out;
- A description of the likely significant effects of the project, whether direct, indirect, secondary, cumulative, transboundary, short-term, medium-term, long-term, permanent, temporary, positive and negative;
- A description of the methods used to make the assessment of the significant effects and difficulties encountered in compiling the information and uncertainties involved;

- A description of measures to avoid, prevent, reduce or offset identified significant adverse effects and proposed monitoring arrangements; &
- A description of the expected significant adverse effects of the project on the environment resulting from the vulnerability of the project to risks of major accidents or disasters.

0.7. The ES must consider any potential transboundary impacts where appropriate.

0.8. Early engagement with relevant stakeholders is encouraged. You are able to obtain further advice from NRW TE through the NRW Discretionary Advice Service, please see here: <https://naturalresources.wales/guidance-and-advice/business-sectors/planning-and-development/advice-for-developers/our-service-to-developers/>

0.9. We would also encourage you to engage with JNCC in terms of seeking advice on offshore nature conservation matters given the statutory responsibilities of JNCC to advise on potential environmental impacts for projects in waters around Wales that are further than 12nm from the coast.

0.10. The UK left the EU on 31 January 2020 – all legal obligations relating to compliance with environmental licences/permits and legislation will continue to apply. NRW on behalf of Welsh Ministers will continue to issue licenses in line with our current practice.

0.11. You must ensure that reference is made to and consideration of compliance with the UK Marine Policy Statement and the Welsh National Marine Plan and its associated policies within the submitted ES, alongside any further regional planning documentation. The published Welsh National Marine Plan can be found here: [Welsh National Marine Plan: document | GOV.WALES](https://gov.wales/welsh-national-marine-plan-implementation-guidance) Implementation guidance for the Welsh National Marine Plan can also be found here: <https://gov.wales/welsh-national-marine-plan-implementation-guidance>.

0.12. When describing legislation under which habitats and species are protected, we recommend listing the UK legislation and not the Habitats Directive e.g. The Conservation of Habitats and Species Regulations 2017 (as amended) and The Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended).

0.13. Some Figures presented within the report were difficult to interpret due to blurred legends e.g. Figure 6.2 and Figure 6.4. This should be reviewed if the same figures are to be submitted as part of the ES.

0.14. NRW TE have provided information on what should be included within a Construction Environmental Management Plan (CEMP) and this is presented within Annex A of this letter.

1. Introduction

- 1.1. As identified within the Scoping Report (Table 3-3), the ES must include a Non-Technical Summary (NTS).
- 1.2. Section 1.6.5 of the Scoping Report Marine Export Cables states, “A range of potential marine export cable routes from the main array site to landfall have been considered as part of early-stage feasibility work” and further states, “Key constraints considered in the appraisal of marine cable routes included marine habitats within the Pembrokeshire Marine Special Area of Conservation (SAC), large sand wave features, recorded wrecks, Ministry of Defence (MoD) firing areas, an explosive dumping ground and high-density shipping lanes”. Figure 5.1 only shows one export cable route from the array which then splits into four potential cable routes to landfall. It is not clear if other export cable routes leaving the array site were considered in the early stage feasibility work apart from the one shown in Figure 5.1. As such, this should be made clear within the ES.
- 1.3. We strongly recommend you engage in discussions with consultees, including NRW TE, early on in the route selection process and before possible cable routes are narrowed down into specific areas, in order to enable full engagement and understanding of constraints by all parties and identify the options with the least environmental impact.
- 1.4. Additionally, we would advise that consideration is given to the principles set out in the Cable Route Protocol (CRP) which was developed by The Crown Estate as part of the Plan-level Habitats Regulations Assessment for the 2017 Offshore Wind Farm Extensions, (available from TCE [Marine Data Exchange || Home](#)). The CRP provides best practice on how cable route planning should be undertaken by developers to ensure good management of land and seabed, and to minimise environmental impacts. NRW TE consider the principles in sections 3 and 4 of the CRP to represent best practise and recommend that they are applied to all power cables route planning. In addition, as per principle 3 in CRP, it is considered best practise to apply this protocol to all MPAs (including SSSIs and MCZs) and not just to Habitats Regulations Sites.

2. Consents and Scoping

- 2.1. We are satisfied that the Scoping Report comprehensively identifies the relevant policy and legislation which must be considered within the ES; including the consideration of both The Conservation of Habitats and Species Regulations 2017 (as amended) and The Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) due to the location of the Project in the UK’s offshore marine area. We would highlight that these pieces of legislation have been amended and should be referenced accordingly.
- 2.2. The requirement for a Habitats Regulation Assessment (HRA) and Water Framework Directive (WFD) assessment for Project Valorous are correctly identified.

- 2.3. As noted within the Scoping Report (section 2.7) you must ensure the submitted ES makes reference to and considers any impacts under the Wellbeing of Future Generations (Wales) Act 2015 and complies with the UK Marine Policy Statement, the Welsh National Marine Plan (and its associated policies) (refer paragraph 0.11 above), alongside any further regional planning documentation.

3. Proposed Approach to Environmental Impact Assessment

3.1. We consider the proposed methodology for the EIA (as detailed within Chapter 3) to be appropriate and agree with the use of the 'realistic worst-case scenario' to address uncertainty relating to Project design within the Project Envelope.

3.2. The ES must include:

- A description of the likely significant effects of the project, whether direct, indirect, secondary, cumulative, transboundary, short-term, medium-term, long-term, permanent, temporary, positive and negative;
- A description of the methods used to make the assessment of the significant effects and difficulties encountered in compiling the information and uncertainties involved;
- A description of measures to avoid, prevent, reduce or offset identified significant adverse effects and proposed monitoring arrangements; &
- A description of the expected significant adverse effects of the project on the environment resulting from the vulnerability of the project to risks of major accidents or disasters.

3.3. There is reference to the use of an adaptive environment management plan within Table 3.1 of the Scoping Report. Please refer to NRW guidance on our website (accessed via link below) regarding the use of adaptive management or project phasing. Again, we would strongly encourage you to discuss any AEMP proposals with NRW TE and JNCC.

<https://naturalresources.wales/permits-and-permissions/marine-licensing/applying-for-a-marine-licence-for-projects-using-adaptive-management-or-project-phasing/marine-development-submitting-proposals-for-project-level-adaptive-management/?lang=en>

3.4. All impacts on nature conservation interests must be fully described, assessed and the significance of impacts clearly explained in the ES. The mitigation hierarchy should be followed to avoid, mitigate or compensate for biodiversity losses. All impacts predicted should include fully worked up possible mitigation in the ES. Where applicable, monitoring should be utilised to verify predictions of impact significance and quantify any unexpected impacts.

- 3.5. The ES must draw upon a detailed programme of baseline surveys to inform the assessment and should include a comprehensive identification of protected sites and species that could be affected by Project Valorous. As Floating Offshore Wind is a new operation in Welsh waters, data must be collected and assessed to understand potential impacts. Existing evidence from other projects is welcomed to inform an assessment of impacts from Project Valorous and discussion with stakeholders on how to address any evidence gaps is encouraged.

4. Project Description

- 4.1. The Project will be operational for a period of 25 years, with additional years at each end of operation to construct and decommission the Project. You must ensure that the submitted ES fully clarifies the timescales for all Project stages and, therefore, ensure that the timeline being assessed is clear.
- 4.2. The Array layout is presented within Section 4.4 of the Scoping Report and, noting this layout is indicative only, Trinity House advise that for navigational safety, the Offshore Substation (OSS) should be aligned with the surrounding turbines and not located in the middle of a row (refer para 7.2.12 of this report).
- 4.3. Section 4.5 of the Scoping Report considers mooring options. We consider all potential options should be assessed for the OSS (as well as for the turbine mooring options) given that the exact construction method is not yet known.
- 4.4. It is noted that cable decommissioning will be decided toward the end of the project lifetime, with the preferred option being for the cable to be left in-situ (section 4.16). The UK Chamber of Shipping advocates the full removal of cabling from above and below the seabed, as recent occurrences of buried cabling becoming exposed at operational WTG developments within 3 years, highlights the dynamic nature of the seabed and how cabling left in-situ provides unnecessary hazard.
- 4.5. Section 4.5.1 (Drag Embedment Anchors)- Figure 4.5 of the Scoping Report does not show the mooring configuration. To fully assess potential impacts on the near-bed hydrodynamic and sediment transport processes, the proposed mooring configuration and the proposed distance between each anchor, the anchor clumps (if used), mooring lengths and any chains on the seabed should be presented in the ES.
- 4.6. It is acknowledged that the exact amount of scour protection and/or type of cable protection system and its required location along the export cable route are currently unknown (as stated within Section 4.10 Scour and Cable Protection). When narrowing down the area of search into a proposed cable corridor for further assessment, it is recommended that the approach is followed according to the avoid, reduce, mitigate hierarchy, to minimise impacts of the proposed route.

- 4.7. JNCC note that cable protection is likely to be required which will introduce hard substrate into a mainly sedimentary environment and, therefore, encourage the operator to continue working to minimise the amount of hard substrate material used. The long-term effect of the introduction of hard substratum into naturally sandy or muddy seabed habitats is not fully understood at present. Where stabilisation material cannot be avoided, JNCC recommend using a more targeted placement method e.g. fallpipe vessel rather than using vessel-side discharge methods.
- 4.8. Section 4.14.4 (Marine Export Cables) of the scoping report states, *“However, prior to deployment, the export cable corridors will need to be cleared from any recorded mobile features such as suspected UXOs and boulders”*. We would advise that boulders are relocated within the wider seabed cable corridor and are not removed from the marine environment. Additionally, there is no mention of sand wave clearance (see Section 5 para 5.1.4). If sand wave clearance is being proposed this must be clearly detailed and fully assessed within the ES.
- 4.9. NRW TE advise that any material excavated through cable installation activities should be deposited at a location that enables it to remain within the same sediment system, for instance depositing up stream of cable trenches to encourage natural backfill (this is particularly important within designated sites to avoid removing designated habitat). The exception to this would be when an upstream deposition would have an adverse impact on another feature, in which case a more suitable deposition site should be considered.
- 4.10. In conjunction with the information to be gathered on the proposed offshore array and export cable corridor through survey work, we highlight that the following technical aspects relating to the installation and operation of Project Valorous Floating Offshore Wind Farm must be provided within the ES:
- Footprint of area affected by laying of the export cables;
 - Footprint of area affected by export cable protection;
 - Footprint of area affected by inter-array electrical cables;
 - Footprint of area affected by inter-array cable protection;
 - Estimation of electromagnetic fields (EMF) potentially arising from cables both at exterior of cables and at surface of seabed above buried cables;
 - Footprint of area affected by placement of drag embedment anchors;
 - Footprint of area affected by mooring lines;
 - Duration and rate of cable-laying;
 - Number and types of vessels to be used in cable-laying operations; &
 - Routes of vessels for cable works.

5. Physical Environment

5.1. Marine Coastal Processes

- 5.1.1. We recommend you follow the NRW GN41 guidelines with specific reference to Data Requirements for EIA Baseline Characterisation which can be obtained from the NRW website or from the link below:

[guidance-on-best-practice-for-marine-and-coastal-physical-processes-baseline-survey-and-monitoring-requirements-to-inform-eia-of-major-development-projects.pdf \(naturalresources.wales\)](#)

- 5.1.2. Additionally, if using numerical model simulations within the assessment of environmental effects for physical processes, we recommend following the NRW GN41 guidelines with specific reference to 'Advice to Inform Development of Guidance on Marine, Coastal and Estuarine Physical Processes Numerical Modelling Assessments'. Which can be accessed from the following link:

[Contents \(naturalresources.wales\)](#)

- 5.1.3. For background information on Waves (Section 5.1.4.1 of the Scoping Report) NRW TE have recommend that you give consideration to the data and findings of Fairley, et. al. (2017)¹. This paper describes the wave climate from three buoys off the Pembrokeshire Coast. These buoys are Cefas' WaveNet, West Pembrokeshire Buoy and the other is LCRI Waverider owned by Swansea University. The West Pembrokeshire buoy is in deeper water (115m compared to 45m for the LCRI buoy). Data was also acquired from the UK Met Office for the Turbot Bank buoy, the only long-term buoy record in the South Wales wave resource area.
- 5.1.4. NRW TE have advised that there is potentially a requirement for sand wave clearance along the cable route, given that the review of the seabed sedimentary processes (section 5.1.5) indicates the presence of sand waves up to 10m high northward, within and north of the scoped area. Also, there are sand bank systems nearer to the coast, particularly off Freshwater West and to the south, Turbot Bank, which is a designated Annex 1 habitat feature of the Pembrokeshire SAC. We advise that sand wave levelling should be avoided where possible in a Marine Protected Area. Consideration should be given to the benefit of sandwave clearance in reducing potential need for cable protection versus potential impacts. Modification/ removal of sandwaves could influence patterns of sediment transport resulting in morphological change, and if sand wave clearance is considered then its impact must be included within your assessment.
- 5.1.5. Table 5.2 of the Scoping Report (Current Speeds and Directions for Tidal Diamond P, 6km to the Southwest of the Offshore Array Area) details time relative to High Water (hrs). However, it is not clear which port this time is relative to. The text states, "*Tides in the region flow from the west-northwest to east-southeast on the flood and reverse in direction on the ebb*". However, the tidal diamond data suggests the opposite, i.e. on flood the flow is towards the NW and on ebb its

¹ Fairley, et al., (2017) An analysis of the wave climate in South Wales, UK. Proceedings of the 12th European Wave and Tidal Energy Conference 27th Aug -1st Sept 2017, Cork, Ireland.

towards the SE. Additionally, in Figures 5.8 and 5.9 it is not clear on what stage of the spring and neap tide the maximum currents occur- flood or ebb. The submitted ES must clarify this and the current streams for the flood and ebb tide should be provided.

- 5.1.6. Within section 5.1.4.2 (Tides) of the Scoping Report it is stated that *“In the vicinity of the offshore array area tidal diamond data indicate that the tidal excursion is in the region of 3 km, well within the 10 km SIz previously advised by NRW”*. Clarification on how the tidal excursion has been calculated from the current velocity data is required and must be presented within the ES. NRW TE have highlighted the importance of tidal excursion, as it determines the spatial extent of impacts i.e. the suspended sediment plumes caused by sediment disturbance during construction, which may impact on sensitive habitats and species.
- 5.1.7. Within the Sedimentary Processes Baseline (section 5.1.5) it is stated that *“Information in SEA8 Technical Report – Hydrography (Uncles and Stephens, 2007) suggests that detailed sediment transport processes in St George’s Channel are poorly understood but are dominated by tidal currents, rather than waves (DTI, 2007) especially offshore (RWE, 2012)”*. NRW TE recommend that the research presented in King et. al. (2019)², which proposes that storm waves can cause sand movement at depths below 120m and can reverse sand transport pathways, is reviewed and considered within the sedimentary processes baseline of the assessment.
- 5.1.8. Within section 5.1.7 (Potential Mitigation Measures) of the Scoping Report, impacts on the offshore physical and sedimentary processes are considered to be, *“of small spatial and temporal scale (localised and temporary)”*. However, given the presence of sand waves up to 10-15m high offshore in the study area and the presence of sand banks near the coast, NRW TE have advised that if sand wave clearance is conducted during the cable laying then the rate of sand wave recovery which depends on sediment mobility and could potentially take years to recover, this should be considered within the assessment.
- 5.1.9. If sand wave clearance is to be conducted, then the impact on seabed morphology must be assessed within your ES. Additionally, boulder clearance should also be assessed accordingly.
- 5.1.10. Within your coastal erosion assessment consideration must also be given to impacts of cable protection. NRW TE have advised that cable protection placed in the nearshore zone and across the intertidal could act as a barrier to sediment transport, interrupt the sediment transport pathways to the coast, and over time could potentially cause a sediment loss which could accelerate coastal erosion. These potential impacts must be considered within the assessment.

5.2. Marine Sediment and Water Quality

² King, E. V., Conley, D. C., Masselink, G., Leonardi, N., McCarroll, R. J., & Scott, T. (2019). The impact of waves and tides on residual sand transport on a sediment-poor, energetic, and macrotidal continental shelf. *Journal of Geophysical Research: Oceans*, 124, 4974–5002.

- 5.2.1. We agree that topics detailed in Table 5.5 should be scoped in and recommend reviewing for requirements of marine sediment and water quality data collection in inshore waters. We recommend that you engage with NRW TE, JNCC and NRW PS to determine the suitability of any analysis proposed.

5.3. Intertidal/Onshore Geology, Geomorphology and Soils

- 5.3.1. No comments were received from consultees in relation to intertidal/onshore geology, geomorphology and soils and we have no comment to make on this section of the report (section 3.1). The ES should however include an assessment of impacts on intertidal/onshore geology, geomorphology and soils, as set out within the Scoping Report.

5.4. Onshore Groundwater and Hydrology

- 5.4.1. No comments were received from consultees in relation to onshore groundwater and hydrology and we have no comment to make on this section of the report (section 5.4). The ES should however include an assessment of impacts on onshore groundwater and hydrology, as set out in the scoping report.

5.5. Water Framework Directive

- 5.5.1. Project Valorous is located within two designated WFD waterbodies (Pembrokeshire South Coastal and Milford Haven Outer Transitional); a WFD Compliance Assessment is therefore required.
- 5.5.2. As the exact cable route and associated cable protection is not yet known, we advise that suspended sediments cannot be scoped out of the WFD Assessment for the operational phase at this time.
- 5.5.3. We advise that in addition to “*requiring that there should be no deterioration in status*”, the WFD also requires that no waterbody be prevented from achieving Good Status, which is also classed as non-compliance with the Directive.
- 5.5.4. In-combination and cumulative impacts must be included within the assessment.
- 5.5.5. It is expected that the WFD assessment will draw upon the wider EIA to inform its assessment and conclusions and a consistent approach to assessment should therefore be applied. For example, the assessment outputs from the marine sediment and water quality chapter will need to adequately assess the potential project effects against WFD objectives for any water bodies included in the study area and the results transposed into the WFD Assessment.

6. Biological Environment and Nature Conservation

6.1. Nature Conservation and Designated Sites

- 6.1.1. We note that the Study area for, *“Marine / Coastal designated sites that overlap with or are in close proximity to proposed offshore works”* is the offshore export cable corridor and offshore array area (plus 10 km buffer for physical marine processes) and the Study area for, *“Marine / Coastal designated sites that contain mobile interest / qualifying features (migratory fish; birds; marine mammals)”* is the accepted foraging ranges or regional sea study areas, is a sensible approach for designated sites in the HRA.
- 6.1.2. JNCC suggest that outputs of the Stage 1 HRA screening exercise should also be consulted on by Natural England, NatureScot, and Northern Ireland’s Department of Agriculture, Environment and Rural Affairs (in addition to JNCC and NRW) given the results of the screening may include protected sites within their jurisdictions. This may also extend beyond the UK e.g. relevant advisory bodies in Republic of Ireland or France.
- 6.1.3. We welcome the approach for migratory fish as described in Table 6.1, i.e. including migratory fish in any SACs situated within, or discharging to the Celtic and Irish Seas. With regard to onshore ornithology, we note that Table 6.1 (*Designated Sites Study Area Definition and Rationale*) does not list chough *Pyrrhocorax pyrrhocorax* within mobile species. This species should be scoped into your assessment and included within your submitted ES.
- 6.1.4. The Cardigan Bay / Bae Ceredigion SAC is not included within Table 6.3, but we note that this site is included in Appendix B as “Situated within the relevant marine mammal management unit” and “Designated for the following marine mammal species: bottlenose dolphin; grey seal”, alongside other SACs listing bottlenose dolphin as a feature. NRW TE advise using the relevant marine mammal management unit e.g. Irish Sea Marine Mammal Management Unit when scoping sites for marine mammal features such as bottlenose dolphin. NRW PS recommend that all sites within the relevant marine mammal management unit are screened into the assessment.
- 6.1.5. We consider the impact pathway, *“Behavioural changes and injury to individuals and potential stress to protected species”* applies to all marine mammal species, not just grey seal and harbour porpoise; including bottlenose dolphin as a feature of the Cardigan Bay SAC and the Pen Llŷn a’r Sarnau/ Llyn Peninsula SAC, and any other cetacean species as Annex IV European Protected Species. This impact pathway should therefore be scoped into your assessment for all marine mammal species.
- 6.1.6. Table 6.6 (*Key Sensitivities and Potential Impacts to Designated Sites that Contain Mobile or Qualifying Features within the Marine and Coastal Study Area (100 km)*) lists Ramsar sites and includes sites in France; however, the Severn Estuary Ramsar site, which includes designations for migratory fish, has been omitted and should be included within your assessment.

6.1.7. Within Appendix B (Table B.1) JNCC request clarification that the full list of SPAs includes all SPAs with features' foraging ranges that overlap the study area which includes a 10km buffer. JNCC also note that SPA breeding seabird assemblage features should also be listed in this table. For marine SPAs (which do not incorporate breeding colonies) the scale we advise includes a 10km buffer around the SPA, for all designated features (breeding and non-breeding). This applies to the Irish Sea Front SPA. Other omissions from the table which should be included within your assessment are:

- The Castle Martin SPA should be included within onshore ornithology assessments;
- Carmarthen Bay and Estuaries/ Bae Caerfyrddin ac Aberoedd SAC is also designated for Allis and Twaite shad;
- Afon Eden - Cors Goch Trawsfynydd SAC is also designated for Freshwater Peal mussel, which relies on salmonids to distribute their parasitic larvae within the river system; &
- Severn Estuary SAC is also designated as a Ramsar site (UK11081). The estuarine sub-feature includes the migratory fish assemblage for the following species; Atlantic salmon, sea trout, river and sea lamprey, Allis and Twaite shad and European eel.

6.1.8. NRW TE note that within Appendix C of the Scoping report Table C.1 (*Protected bird species and species of conservation importance scoped within the offshore ornithological study area*) has been prepared before any surveys have been completed, we do not know what birds are present and therefore it is too early to scope out species or sites, as there may be connectivity. In this table, scoping is done by a 100km within offshore project area which is different to that mentioned in the Scoping Report which used the mean max foraging range +1 SD from Woodward et al (2019). Due to this, it misses out SPAs that could be affected such as Aberdaron Coast and Bardsey Island SPA, for Manx shearwater. This scoping method also omits those sites that could be potentially affected during migration for both seabirds and wintering wildfowl and waders. Additionally, the table does not include all relevant seabirds, for instance Lesser Black-backed gull, which is a feature of Skomer and Skokholm and the Seas off Pembrokeshire SPA. It also duplicates species e.g. Puffin and some confusion in the categories of birds is also evident. The RSPB have also indicated that Balearic shearwater (and appropriate SPAs allocated/designated for this species) is a further omission. This is Europe's only critically endangered seabird which occurs in Welsh waters including the Celtic Sea³ and should also be included. For these reasons we therefore disagree with the results that are shown and suggest you review and include the omitted species and sites within your assessment. We strongly encourage you to engage

³ Phillips, J., A. Banks, M. Bolton, T. Brereton, P. Cazenave, N. Gillies, O. Padgett, J. van der Kooij, J. Waggitt, and T. Guilford. "Consistent concentrations of critically endangered Balearic shearwaters in UK waters revealed by at-sea surveys." *Ecology and Evolution* (2020).

with relevant stakeholders including NRW TE and JNCC as you carry out this assessment.

6.2. Benthic Subtidal and Intertidal Ecology

- 6.2.1. The proposed landfall and cable route options fall through several designated Annex I features of the Pembrokeshire Marine SAC (as detailed within Table 6.8), including and not limited to Annex I Reef (intertidal and subtidal) and Annex I Subtidal Sandbanks, and Section 7 habitats under the Environment Wales Act (2016). We advise early engagement with NRW TE on your cable route selection process to enable all parties to have a full understanding of constraints and identify the options with the least environmental impact.
- 6.2.2. With regards to the Environment (Wales) Act Section 7 habitats present along the export cable route, NRW TE would also like to advise that the following habitat is also present within and in close proximity to the cable route: ‘fragile sponge and anthozoan communities’. We consider the potential impacts to this habitat will need to be considered within your ES.
- 6.2.3. Overall, we agree with the potential impacts that will be scoped in and will require further assessment at an EIA stage (Table 6.9). However, “*changes in hydrodynamic regime*” during the operation of the project, must be scoped in at this stage as the location and amount of cable protection that might be required for the anchors and substation in the array and for the export cable route is currently unknown. In particular for the export cable route, there is the potential for waves in shallow waters to interact with cable protection and alter the sediment process in the nearshore, thus interacting with benthic habitats.
- 6.2.4. We also require that, “*changes in suspended sediment concentration and deposition*” are scoped in for the operational phase. This is to include maintenance activities such as cable repairs, that have the potential to impact benthic habitats through smothering or a reduction in water quality.
- 6.2.5. Further discussion on the timescales of what would be considered a permanent and/or temporary loss should be undertaken with NRW TE prior to the assessment.
- 6.2.6. We note potential mitigation (6.2.5), “*Avoidance of key sensitive habitats, where known, through pre-construction surveys and micro-siting of proposed Project infrastructure*”. Again, we would encourage you to engage with NRW TE early on in discussions on the cable route selection to avoid sensitive habitats where possible.
- 6.2.7. For the proposed approach to environmental assessment (section 6.2.6), we agree in principal to grouping similar types of habitats in terms of assessing their sensitivity to potential impacts to form Valued Ecological Receptor (VERs), noting that the rationale of developing these VERs will be checked with NRW TE prior to the impact assessment work commencing.

- 6.2.8. JNCC note that the proposed benthic surveys will need to be undertaken to inform the EIA include:
- A desktop study to characterise the baseline line, identify gaps in existing data, assess potential level pressure pathways and receptor sensitivity and identify cumulative effect; &
 - A project specific benthic survey to gain baseline subtidal and intertidal benthic evidence for both habitats and species within the offshore array site and along the export cable corridor / landfall.
- 6.2.9. JNCC consider that the benthic surveys proposed above will be sufficient in identifying features of nature conservation interest (including Annex I habitats, List of Threatened and/or Declining Species and Habitats and Habitats of Principal Importance).
- 6.2.10. We welcome the proposed project specific benthic surveys and would encourage engagement in discussions with JNCC and NRW TE to ensure they are of adequate scope. Relevant NRW guidance on how to design marine benthic habitat surveys in relation to maritime developments is available from the following link:
- [Natural Resources Wales / Benthic habitat assessments for marine developments.](#)

6.3. Fish and Shellfish Ecology

- 6.3.1. Within your submitted ES, you should present a full list of potential receptor species based upon available data on their presence in the region and within the development area; their relative conservation and commercial importance; their sensitivity to pressures; and potential for being impacted by the proposed development.
- 6.3.2. The region is important for a number of biodiversity species (Environment (Wales) Act Section 7 species) and commercially important species, such as cod, whiting and sole. However, the existing baseline (section 6.3.3) is focussed on describing impacts to primarily sandeel, herring, elasmobranchs, and migratory fish. The region is a known spawning and nursery habitat for these species (Ellis et. al., 2012) and also figure in maps presented in the report (Figure 6.5 a and b), however there appears to be no discussion of potential impacts to these species. These must be considered within the ES.
- 6.3.3. For migratory species, twaite and allis shad are referenced as features of the nearby Pembroke Marine SAC (page 6-45). NRW TE note that while this is the nearest SAC for shad species, there are no records of shad spawning in the Cleddau rivers and it is likely that shad in the Pembroke Marine SAC and within the development area, originate from SACs rivers designated for twaite shad in the Bristol Channel, as well as sites in Ireland. Recent tagging and tracking work carried out as part of 'The Unlocking the Severn' project has identified connectivity between the River Severn twaite shad population and the Plymouth Sounds and Estuaries SAC, Blackwater River (Cork / Waterford) SAC, River Barrow and River

Nore SAC and Slaney River Valley SAC, providing evidence of shad migration across the Celtic/Irish seas.

- 6.3.4. Please note, European eel are not listed as an Annex II species of the EC Habitats Directive (this should be amended). However, European eel are listed in the Severn Estuary/Mor Hafren SAC – migratory fish assemblage as a sub-feature Estuary feature, as well as in the Severn Estuary Ramsar migratory fish assemblage feature. Furthermore, European eel are listed as critically endangered in the IUCN ‘Red list’ and are subject to EC Regulation (Council Regulation 1100/2007) for the recovery of the eel stock required Member States to establish eel management plans for implementation in 2009.
- 6.3.5. Within Table 6.13 (*Key Sensitivities and Potential Impacts to the Fish and Shellfish Receptors in the Study Area*) the potential for disturbance to spawning and nursery habitats of hearing sensitive marine fish species, eggs and larvae, will also need assessing. This may be implied as the ‘Receptor column’ states ‘All Species’. However, in the ‘Rationale column’ underwater noise is only described in the context of disturbance to migratory routes for migratory fish. The development area is a cod spawning area and cod which are particularly sensitive to underwater noise, both in the form of particle motion and sound pressure; these aspects must therefore be considered within the assessment.
- 6.3.6. Within the proposed approach to the environmental assessment, the key receptor species and in particular herring and sandeel are discussed; however, no rationale as to why these species have been selected is apparent. We would strongly recommend that in the EIA, a full review of all the available data on fish distribution is undertaken and that the need for further fish surveys is not discounted at this early stage. NRW TE further note that the available references for marine fish spawning and nursery areas is primarily the work done by Ellis et al. (2012) and Coull et al. (1998) but that these works are now 10-20 years old and subject to numerous constraints and uncertainties in terms of methodology. We would expect that these are discussed and considered in the receptor discussion in the EIA.
- 6.3.7. We welcome the intention to carry out noise modelling and the use of the response thresholds proposed by Popper et. al., 2003 and Hawkins et. al., 2014.

6.4. Marine Mammal and Marine Reptile Ecology

- 6.4.1. We agree with the conclusions of the scoping document for marine mammals but have the following comments:
- 6.4.2. The section describing “*Designated sites for marine mammals*” needs to include SSSIs, as identified in Table 6.3.
- 6.4.3. It is described that, “*established foraging ranges*” will be used for seal species. NRW TE recommend the use of OSPAR unit III in the absence of an agreed MMMU for grey seal (NRW 2020).
- 6.4.4. Without more information on the construction methodology, particularly in regard to the need for piling, it is not possible at this stage to conclude if impacts to marine mammals are “minor / negligible”.

- 6.4.5. The RSPB also agree with the impacts identified for Marine Mammal features of designated sites in Table 6-6 of the Scoping Report. However, as identified within Table 6-14 of the Scoping Report, that potential risk to marine mammal features from entanglement must be considered. As such, risk of entanglement must be scoped into, and subsequently assessed within, the designated site assessment in the submitted ES.
- 6.4.6. We agree that the list of species in Table 6.14 (Species, Description and Protection Status) within the Marine Mammal and Reptile Study Area is appropriate, but highlight that any other rarely occurring cetacean species in the region are also protected under Annex IV of the Habitats Directive.
- 6.4.7. Within Table 6.15 (Key Sensitivities and Potential Impacts for Marine Mammals) we agree that carrying out noise modelling as part of a noise assessment to ascertain the potential for injury from exceedance of underwater noise impact thresholds is appropriate, given the likely impacts of this project. Given the uncertainties, this noise assessment should assess all noise sources from the project, including, *“trenching, or cable and cable protection laying”* as listed within the table.
- 6.4.8. Assessment of the significance of the potential for barrier effects should be carried out within your assessment once the final configuration of the WTGs and moorings is known, and only at that stage can a conclusion be drawn as to whether it is appropriate for this to be scoped in or out.
- 6.4.9. A citation is required for, *“The level of disturbance is correlated with the distance from the vessel; at <900 m seals can exhibit a fleeing response, at 900-1,500 m the vessels is detectable, and at 1,500 m the vessel is not detectable”*, as currently this argument is unsupported and as such we cannot consider it without evidence.
- 6.4.10. It is not clear if there is an intention to conduct a survey or UXO risk assessment. It is stated that, *“Should UXOs be discovered in the project area” that “a more detailed consideration of underwater noise modelling will be required”*, but it is not explained how the UXO presence will be ascertained. This should be clarified.
- 6.4.11. Within Table 6.16 (proposed Additional Data Collection for Marine Mammals and Reptiles) it is not clear what the difference between the entry for survey and desktop study is, as the ‘method’ under the survey section does not mention any kind of survey or fieldwork, instead describing requesting information. It would be appropriate for additional survey work to be undertaken to characterise the study area to inform the assessment. We would encourage you to engage with NRW TE as you carry out this assessment.
- 6.4.12. The potential for injury from noise, alongside disturbance, should be included as a ‘potential impact’ for the marine mammal SACs within Table 9.1 (page 9-10).
- 6.4.13. Many of the comments already provided above for marine mammals are also applicable to marine turtles; however, JNCC also highlight the following:
- 6.4.13.1. Leatherback turtles are described as ‘resident’ and migrating through the Irish Sea (section 6.4.3). However, section 6.4.4 (Identification of key sensitivities and potential impacts) only considers marine mammals with no

explanation as to why turtles are not considered, even though they are referred to in Table 6.15.

- 6.4.13.2. Leatherback turtles are also listed on Schedule I of The Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) as a European Protected species and this should be included within your assessment.
- 6.4.13.3. Within Table 6.15 (Key Sensitivities and Potential Impacts to Designated Sites within the Marine and Coastal Study Area) the rationale for scoping sediment resuspension and changes in water quality out of the EIA explains why this has been ruled out for marine mammals, but no rationale is given for marine turtles, you should provide this rationale within your submitted ES.
- 6.4.13.4. The potential mitigation identified for marine mammals may need to be extended to include marine turtles within the EIA.

6.5. Ornithology

- 6.5.1. We consider that the Scoping Report describes the effects on seabird ornithology well and the techniques you will use to assess them, but does not fully scope in sites adequately (e.g. SSSIs). The study areas used for different features, and the rationale behind them, requires greater clarification will need to be assessed within the EIA.
- 6.5.2. The RSPB consider it essential to establish the presence of vulnerable species of seabird. All species of seabirds need to be considered as part of the screening process for the EIA and HRA. Possible adverse impacts may be applied to a range of birds (including seabird features of SPAs and SSSIs) both breeding and non-breeding populations over a wide area of search; to include seabird features within their mean maximum foraging ranges.
- 6.5.3. The Study Area (section 6.5.1) has been defined largely by SPAs and seabird colonies that lie within species-specific foraging ranges of the project, and JNCC note that whilst this gives a good starting point for indicating potential receptors, this is the methodology for HRA screening not EIA. For the Report to Inform Appropriate Assessment (RIAA), we welcome the use of the mean max foraging range +1 SD from Woodward et al (2019). JNCC advise the scale of potential impact which should be used for EIA purposes should be assessed against the regional population. JNCC further advise the use of Biologically Defined Minimum Population Scales (Furness, 2015⁴) or other defensible regional population scale.
- 6.5.4. Within Table 6.17 (Mean maximum foraging range plus 1 standard deviation for species that have a foraging greater than 100 km (Source: Woodward et al., 2019))

⁴ Furness, R.W. (2015) Non-breeding season populations of seabirds in UK waters: Population sizes for Biologically Defined Minimum Population Scales (BDMPS). Natural England Commissioned Reports, Number 164.

the JNCC require further clarity as to why only those species with foraging ranges over 100km are displayed in this table and an explanation as to why 100km has been used. Also, the foraging range (from Woodward *et al.* 2019) presented for Leach's storm-petrel is the mean, not mean max + 1SD and this should be amended.

- 6.5.5. Within section 6.5.1 you have stated that the FAME and STAR modelling work show that colonies of 4 species fall within the area of interest, it should be noted however, that only razorbill use the area in any great intensity. We cannot comment on the usage of the area for any species until the site-specific surveys have been completed, to clarify what species actually use the site. JNCC would also like further information presented on the colonies of these 4 species and clarification regarding the definition of the 'area of interest'.
- 6.5.6. For the baseline data sources you may also wish to consider the dataset created by NRW which combines WWT aerial surveys and ESAS at a finer scale. This is available on [Lle - Home \(gov.wales\)](https://lle.gov.wales).
- 6.5.7. As part of the baseline environment for offshore ornithology (section 6.5.3.1), you should also consider the use of the Study Area as a travel corridor for migration or foraging trips during the breeding season. For context, it would also be useful to discuss the SPAs and SSSIs i.e. where the birds are likely from, as has been presented for the onshore ornithology.
- 6.5.8. RSPB request that offshore survey methods should comply with contemporary guidance, the most appropriate being detailed in NatureScot (2020) 'Marine Bird Impact Assessment Guidance Workshop Report'. They also note the limitations of aerial surveys being confined to limited hours of daytime owing to visibility and logistic requirements but, consider it crucial to consider the nocturnal and crepuscular activity patterns for all seabirds, especially given the high prevalence of nocturnal species. RSPB are also aware that the developer is currently considering / sourcing tracking data from a number of on-going seabird study projects in the vicinity. This data will be of importance in the context of temporal limitations of the survey method, especially for shearwater species. It will also be of benefit for parameterising the collision risk and apportioning models.
- 6.5.9. For onshore ornithology, the EIA must assess the bird populations currently using the application area in the form of a breeding bird survey and the impact of the development on these birds, in terms of loss of habitat and displacement. Impacts to chough breeding sites in proximity to the proposed cabling routes, as well as potential loss of foraging habitat both within the SPA, and any functionally linked land must also be assessed.
- 6.5.10. We note that onshore ornithology surveys are not yet adequately defined. However, we recognise that onshore bird surveys will depend upon final selection of the onshore project options. RSPB have stated that they can provide terrestrial bird data for onshore options, including chough data, and are happy to offer further advice if required on suitable survey methods. Guidance on appropriate methodology can be found in:

Bird Monitoring Methods: A Manual of Techniques for Key Species Gilbert, G. Gibbons, DW and Evans, J. Pub. RSPB, BTO, WWT, JNCC, ITE Sandy 1998. ISBN 1 901930 03 3

- 6.5.11. Within Table 6.18 (*Key sensitivities and potential impacts for offshore ornithology receptors*) it is not clear why diving birds have been separated for disturbance impacts; this could apply to all seabirds which can be displaced due to the disturbance during construction and decommissioning. Again, reduction in foraging success could also apply for non-diving species, as well as diving species due to noise. Displacement of birds during operation includes vessel movements associated with maintenance activities within the wind farm and its surrounds, and between the project and vessel base and should be suitably considered within your assessment. A further impact pathway which must be considered is underwater collisions with mooring lines and cables.
- 6.5.12. Attraction to artificial light is also identified in Table 6.18, the RSPB have commented that the potential for nocturnal species such as petrels and shearwaters to be negatively affected (attraction or disorientation) by lighting associated with project infrastructure is unknown and should thus be considered as part of the EIA process. It has to be clarified that there is no uncertainty about the attraction of fledgling shearwaters to light sources in general, but only about the magnitude of this effect from offshore wind turbines. It should be highlighted that the assessment of this sensitivity will be made more difficult by the temporal limitations of the survey method and therefore the tracking data will be of great value to gain the best possible understanding without any direct assessment.
- 6.5.13. For the proposed approach to Environmental Assessment (section 6.5.6) clarification is required on how data on flight height will be collected. We welcome the use of the SNCB displacement note but there could also be the potential to use the SeabORD CEH tool for some species. JNCC also advise that species displacement sensitivity scores have been updated in Wade et al. 2016⁵ and are used in the Joint SNCB Interim Displacement Advice Note. This reference should also be reviewed.
- 6.5.14. The RSPB have acknowledged that baseline data from site-specific surveys will inform the need for mitigation measures and have noted that they are happy to discuss mitigation and feasibility of potential options following establishment of the baseline.
- 6.5.15. The RSPB have noted that they are likely to consider that there will be a requirement for a thorough monitoring plan, to include post-consent monitoring of seabird behaviour in and around the turbines, to identify displacement and avoidance behaviours, if the project is consented.
- 6.5.16. We would strongly encourage you to engage with all relevant stakeholders at an early stage to consider the scope of any survey and assessments, to ensure they are adequate.

⁵ Wade H.M., Masden, E.A., Jackson, A.C. and Furness, R.W. (2016) Incorporating data uncertainty when estimating potential vulnerability of Scottish seabirds to marine renewable energy developments. Marine Policy 70, 108–113. Available online at doi:10.1016/j.marpol.2016.04.045

6.6. Terrestrial Ecology

- 6.6.1. Any habitat surveys should accord with the NCC Phase 1 survey guidelines (NCC (1990) Handbook for Phase 1 habitat survey. NCC, Peterborough). NRW TE advise that Phase 1 surveys are undertaken and completed during the summer to ensure the best chance of identifying the habitats present to fully inform the baseline for your EIA. These surveys also identify the presence of any invasive species. Targeted species surveys should also be undertaken for all species scoped in and be undertaken by qualified, experienced and where necessary, licensed ecologist; and comply with current best practice guidelines.
- 6.6.2. We welcome that some species of bats have been scoped into the assessment; however we recommend further discussion with NRW TE once the final route has been selected to consider if additional bat species will need to be assessed. NRW TE advise that the Castlemartin Peninsula supports a diversity of bat species, with a number of roosts present in the area. Impact on local roosts and connectivity of habitat (e.g. hedgerows) will therefore be important considerations for the project. There are several important sites for bats within relatively close proximity to the proposed development. Consideration will need to be made of any impacts for foraging and commuting bats. If the habitat assessment identifies suitable foraging habitats, which will be lost as a result of the proposal, then activity surveys may be required. Furthermore, any security lighting (during construction and operation) may impact upon bat movements in the area, therefore if significant lighting is proposed, activity surveys may be required in order to establish important areas for bats which must remain dark and inform any lighting plan to ensure there is no impact upon the bats and other nocturnal wildlife. The Scoping Report confirms that activity surveys will be undertaken along the proposed route.
- 6.6.3. NRW TE are aware of records of dormice on the peninsula, south of Pembrokeshire power station, which were picked up by Arup during surveys for the (now consented) Greenlink Interconnector project. Dormice must therefore be scoped in and considered within your assessment. NRW TE note that once further information on landfall and potential cable route options are available, it may be necessary to undertake full dormouse surveys. Dormice are protected under European and UK legislation; their presence is a material consideration in the consenting process.
- 6.6.4. NRW TE would also draw to your attention that any activity within 30 metres of a badger sett will require a badger licence, therefore surveys may need to be undertaken to ensure there will be no disturbance of setts outside the red line boundary. Badgers are protected under The Protection of Badgers Act 1992.
- 6.6.5. We welcome the proposal for further discussions with NRW and the LPA ecologist to agree the scope of the terrestrial surveys. We would also expect you to contact other relevant people/organisations for biological information/records relevant to the site and its surrounds to inform your assessment. These include the relevant Local Records Centre and any local ecological interest groups (e.g. bat groups, mammal groups). This will ensure that regional and local biodiversity issues are

adequately considered, particularly those habitats and species listed in the relevant Local Biodiversity Action Plan, and are considered important for the conservation of biological diversity in Wales.

- 6.6.6. We note there is potential with the onshore cable route running close to hedgerows for impacts during the construction phase, and possible long-term negative effects on trees owing to the need for overhead clearance for machine operations and the potential damage to roots. This must be assessed within the EIA.
- 6.6.7. Where proposals implicate protected species, which are also notified features of designated sites (e.g. SAC, SSSI), we advise that the EIA considers the impacts on those species from both perspectives. This is particularly pertinent in respect of Horseshoe bats and otters.
- 6.6.8. The ES should also set out how the long term site security of any mitigation or compensation will be secured; including management and monitoring information and long term financial and management responsibility. Where the potential for significant impacts on protected species is identified, NRW TE advocate that a Conservation Plan is prepared for the relevant species and included as an Annex to the ES.
- 6.6.9. We advise that where a European Protected Species is identified and the development proposal will contravene the legal protection they are afforded, a licence should be sought from NRW further details are available on the species licensing webpage (<https://naturalresources.wales/permits-and-permissions/species-licensing/?lang=en>). Where this is the case, the ES should include consideration of the requirements for a licence and set out how the works will satisfy the three requirements as set out in the Conservation of Habitats and Species Regulations 2017 (as amended). One of these requires that the development authorised will 'not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status (FCS) in their natural range'. These requirements are also translated into planning policy through Planning Policy Wales (PPW) February 2021 and Technical Advice Note (TAN) 5, Nature Conservation and Planning (September 2009).
- 6.6.10. The EIA should contain sufficient information for the determining authority to consider the proposals under Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended) in the context of European sites potentially affected.
- 6.6.11. Where proposals impact on the notified features of designated sites (e.g. SAC, SSSI), we advise that the ES considers the impact on those species from both legal perspectives.
- 6.6.12. NRW TE advise that any lighting required at any stage of the development must be installed with nocturnal species in mind. Where lighting is required close to ecologically sensitive areas this impact must be considered within the ES. NRW TE note a lighting scheme may be required in order to ensure there is no light spill on to dark corridors.

- 6.6.13. NRW TE advise that the development should incorporate robust green infrastructure that where possible will remain unlit to allow protected species to continue to inhabit the site and move through it.
- 6.6.14. In accordance with the Environment (Wales) Act 2016 and Planning Policy Wales, the ES must consider how the development will maintain and enhance biodiversity and thus contribute to promoting ecological resilience. Opportunities to enhance and strengthen existing habitats and ecological corridors would be particularly welcomed by NRW TE and we would encourage you to engage with NRW TE to discuss potential opportunities.

7. Human Environment

7.1. Commercial Fisheries

- 7.1.1. In Section 7.1.3.2 relating to Shellfish species, it suggests that there is commercial trawling for native oyster in Milford Haven and Swansea Bay. NRW TE are not aware of any trawling for native oyster, although some limited hand-gathering may take place.
- 7.1.2. No further comments were received from consultees in relation to commercial fisheries and ES should therefore include an assessment of impacts on commercial fisheries, as set out in the Scoping Report.

7.2. Shipping and Navigation

- 7.2.1. The Environmental Statement must provide detail on the possible impact on navigational issues for both commercial and recreational craft, specifically:
- Collision Risk;
 - Navigational Safety;
 - Visual intrusion and noise;
 - Risk Management and Emergency response;
 - Marking and lighting of site and information to mariners;
 - Effect on small craft navigational and communication equipment;
 - The risk to drifting recreational craft in adverse weather or tidal conditions ;&
 - The likely squeeze of small craft into the routes of larger commercial vessels.
- 7.2.2. MCA highlighted the development area carries a significant amount of through traffic to major ports, with a number of important shipping routes in close proximity, and consideration should be given to routing, particularly in heavy weather, to ensure that shipping can continue to make safe passage without large-scale deviations.

- 7.2.3. In addition to the data sets detailed in Section 7.2.6, which will be used to inform the baseline conditions and address identified data gaps; the UK Chamber of Shipping would like to highlight that The Marine Accident Investigation Branch (MAIB) has informed the Chamber that digital geo-locational data for incidents dating back to 1992 is available and the Chamber recommends that this full data source be utilised. Also, due to Covid-19, AIS data from 2020 is not considered truly representative of typical navigational levels, neither for commercial nor recreational vessels. The Chamber have therefore recommend that full year 2019 data be utilised as a back-up comparator to validate AIS data within the ES. We would encourage you to engage with the Chamber of Shipping, MCA and Trinity House, to ensure any data sets used in your assessment are appropriate.
- 7.2.4. To support your assessment a Navigational Risk Assessment will need to be carried out in accordance with MGN 543 (and MGN 372) and the MCA Methodology for Assessing the Marine Navigation Safety & Emergency Response Risks of Offshore Renewable Energy Installations (OREI). It is noted these documents are being updated and new versions will be published in March or April 2021. This NRA should be accompanied by a detailed MGN 543 Checklist, which can be found at:
<https://www.gov.uk/guidance/offshore-renewable-energy-installations-impact-on-shipping>.
- 7.2.5. The MCA note, in Table 7.3, that a vessel traffic survey will be undertaken to the standard of MGN 543 i.e. at least 28 days which is to include seasonal data (two 14-day surveys) collected from a vessel-based survey using AIS, radar and visual observations to capture all vessels navigating in the study area. Trinity House note the 10km Proposed Spatial Extent of the Marine Traffic Survey should be confirmed with the MCA and that distances within this assessment should be quoted in Nautical Miles.
- 7.2.6. Attention should be paid to cabling routes and where appropriate burial depth for which a Burial Protection Index study should be completed and, subject to traffic volumes, an anchor penetration study may also be necessary. If cable protection measures are required e.g. rock bags or concrete mattresses, the MCA have indicated they would be willing to accept a 5% reduction in surrounding depths referenced to Chart Datum. This will be particularly relevant where depths are decreasing towards shore and potential impacts on navigable water increase, such as at the HDD location. Should any cable protection cause a >5% reduction in navigable clearance depth, then Trinity House and the MCA should be consulted further to assess the requirement for additional risk mitigation measures.
- 7.2.7. Within section 7.2.5 of the Scoping Report, it is considered that regulatory mooring expectations are identified as potential mitigation. The MCA confirms this guidance should be followed and that a Third-Party Verification of the mooring arrangements will be required.
- 7.2.8. Particular consideration will need to be given to the implications of the site size and location on Search and Rescue (SAR) resources and Emergency Response Co-operation Plans (ERCoP). Attention should be paid to the level of radar surveillance, AIS and shore-based VHF radio coverage and give due consideration

for appropriate mitigation such as radar, AIS receivers and in-field, Marine Band VHF radio communications aerial(s) (VHF voice with Digital Selective Calling (DSC)), that can cover the entire site and surrounding areas. A SAR checklist will also need to be completed in consultation with MCA.

- 7.2.9. MCA have highlighted that the MGN 543 Annex 2 requires that hydrographic surveys should fulfil the requirements of the International Hydrographic Organisation (IHO) Order 1a standard, with the final data supplied as a digital full density data set, and survey report to the MCA Hydrography Manager. Failure to report the survey or conduct it to Order 1a, might invalidate the Navigational Risk Assessment.
- 7.2.10. Trinity House have noted that this development will need to be marked with marine aids to navigation by the developer/operator in accordance with the general principles outlined in IALA (International Association of Marine Aids to Navigation and Lighthouse Authorities) Recommendation O-139 on the Marking of Man-Made Offshore Structures, as a risk mitigation measure. In addition to the marking of the structures themselves, it should be borne in mind that additional aids to navigation such as buoys may be necessary to mitigate the risk posed to the mariner, particularly during the construction phase. All marine navigational marking, which will be required to be provided and thereafter maintained by the developer, will need to be addressed and agreed with Trinity House. This will include the necessity for the aids to navigation to meet the internationally recognised standards of availability and the reporting thereof.
- 7.2.11. It is recommended that you engage with both Trinity House and the MCA in order to discuss proposed turbine layouts, which should minimise risks to marine navigation safety and surface vessels; including rescue boats, and SAR aircraft operating within the site. The MCA also require you to consult on the completion of an MGN checklist.
- 7.2.12. The UK Chamber of Shipping supports the application for safety zones for construction and O&M phases only of appropriate configuration, extent and application to specified vessels. Figure 4.2 suggests an exclusion zone around the entirety of the development – the Chamber strongly supports the freedom of navigation under UNCLOS and indicated that they may object to exclusionary zones unless there it is safety of life that is being protected. The Chamber supports the application for safety zones for construction and O&M phases only of appropriate configuration, extent and application to specified vessels.
- 7.2.13. Should infrastructure be proposed to remain in situ following decommissioning, the ES must consider potential risks from this infrastructure beyond the lifetime of the project (refer also para 4.4 above).

7.3. Coastal and Marine Infrastructure and Other Users

- 7.3.1. Impact on other military interests has been recognised at section 7.3.3.1 of the Scoping Report, with the offshore array being located 25km outside of MOD Castlemartin Practice Areas. Although the route is not yet finalised, it is recognised

that the export cable may pass through the Danger Area D113A (Castlemartin) and any impact must be considered in more detail in the ES. MOD have highlighted that a cable route running through a danger area would be incompatible with range activities. The proposed development areas do not overlap with any Practice and Exercise Areas (PEXA). Based on current information, MOD have indicated that they do not anticipate there to be any concerns with the wind farm array relating to military maritime activities.

- 7.3.2. The MOD have noted that the potential presence of UXO and disposal sites is also a relevant consideration when installing cabling or completing other intrusive works within the marine environment.
- 7.3.3. In relation to the onshore element of the proposed development, section 4.12 of the Scoping Report expects the export cable to be between 5.5km and 15km long, depending on the final landfall location. We strongly encourage you to engage with the MOD on the cable route and onshore landfall location, once available, to determine any impact pathways to MOD assets and activities.

7.4. Aviation and Radar

- 7.4.1. The Scoping Report identifies that the turbines have the potential to affect and be detectable to, Primary Surveillance Radars (PSR) and that there are 3 PSR's in the wider region, all located in North Devon. The PSR's are not listed. The turbines will be detectable to the MOD's PSR at Hartland Point. The report does not take into consideration the MOD's Air Defence Radars (ADR). In particular, the turbines will be detectable to the ADR at RAF Portreath. The impact of works on these radars must be considered within your ES and any impact on these radars will need to be mitigated for with the applicant providing appropriate technical mitigation(s).
- 7.4.2. At section 7.4.3.2 of the scoping report, MOD St Athan is listed as the closest operational RAF base to the offshore wind farm. MOD have noted that although the MOD still has a presence at MOD St Athan, the airfield has now transferred to the Welsh Government. RAF Valley is also listed under Military Airfields, however, the MOD do not expect Project Valorous to have any impact upon RAF Valley.
- 7.4.3. The installation of aviation warning lighting is mentioned as a potential mitigation option and reference is made to military low flying at section 7.4.3.7 of the Scoping Report. In the interests of air safety, the MOD have noted that they would request the development to be fitted with MOD accredited aviation safety lighting in accordance with the Civil Aviation Authority, Air Navigation Order 2016. The turbines will also need to be charted on aeronautical charts.

7.5. Archaeology and Cultural Heritage

- 7.5.1. Archaeology and Cultural Heritage is addressed in Section 7.5 of the Report and we consider the scope for data collation and potential mitigation outlined for Onshore Archaeology and Cultural Heritage in 7.5.3.2 – 7.5.6 to be appropriate. We note that consultation will be undertaken at key stages throughout the

assessment process with key stakeholders, such as Cadw, Pembrokeshire County Council (PCC), Pembrokeshire Coast National Park Authority (PCNPA) and Dyfed Archaeological Trust; including discussions to confirm the scope of archaeological assessment and surveys and that Standard and Guidance for Historic Environment Desktop Based Assessments (CifA2014) and Code of Conduct (CifA, 2017) are referenced.

- 7.5.2. Stretches of the proposed route of the onshore cable corridor are located within a Registered Historic Landscape: Milford Haven Waterway (HLW(D)3) and it is possible that an Assessment of Significance of the Impact of the Development on Historic Landscape (ASIDOHL) may also be required as part of the EIA. We recommend further consultation with Cadw on this.
- 7.5.3. Cadw have reviewed the Scoping Report and have noted 107 listed buildings, 47 scheduled monuments, 1 registered historic park and garden and 1 registered historic landscape within the study area. These designated historic assets are presented in Annex B below.
- 7.5.4. The ES must also consider the impact of the proposed development on the setting of the designated historic assets. Cadw advise that this assessment should be carried out following the Welsh Government's guidance contained in "The Setting of Historic Assets in Wales".

7.6. Land Use

- 7.6.1. No comments were received from consultees in relation to land use and we have no comment to make on this section of the Report (section 7.6). The ES should however include an assessment of impacts on land use, as set out in the Scoping Report.

7.7. Traffic and Transport

- 7.7.1. No comments were received from consultees in relation to traffic and transport and we have no comment to make on this section of the Report (section 7.7). The ES should however include an assessment of impacts on traffic and transport, as set out in the Scoping Report.

7.8. Seascape, Landscape and Visual Impacts

- 7.8.1. There is potential for landscape, seascape and visual impacts on the Pembrokeshire Coast National Park; including from sensitive viewpoints along the coast, this must be appropriately assessed within the ES.
- 7.8.2. NRW TE note a number of viewpoints along the coast are required to be selected for photographs and photomontages to assess the impacts, as part of the Seascape, Landscape and Visual Assessment (SLVIA). Additional viewpoints would be required to assess the cable landfall and substation impacts as part of

- an LVIA. It is recommended that you engage with NRW TE on the selected viewpoints and photomontage production to ensure any assessment is suitable.
- 7.8.3. We agree that the Study Area based on a 45km offset from the currently defined array boundary is acceptable and is based on SNH 'Visual Representation of Wind Farms: Good Practice' (SNH 2017).
- 7.8.4. The initial Zone of Theoretical Visibility (ZTV) from the outer edge of the wind farm is stated to represent the distance at which the WTGs could be theoretically visible – we advise reference to NRW's evidence reports on Offshore Wind Development (see below) with regard to distances from which turbines may be visible, to inform the ZTV. A ZTV for the onshore Substation will also be required.
- 7.8.5. As well as potential visual impacts from the onshore substation, there are also potential landscape impacts. We also consider these impacts may arise from both the cable landfall and the onshore cable route and should therefore be considered within your assessment.
- 7.8.6. If lighting is required (e.g. for aviation and/or navigational purposes) then an assessment of night-time impacts would also be required. Dark Skies are a feature of many offshore areas at night and contribute to perceptions of tranquillity and remoteness.
- 7.8.7. In regards to Section 7.8.2 of the Scoping Report (Baseline Data), NRW TE highlight that they have commissioned evidence reports on Offshore Wind Development: 1. Ready Reckoner, 2. Siting Guidance & 3. Sensitivity Assessment. NRW TE advise that these reports are principally focussed on the visual effects in relation to Designated Landscapes; therefore, rather than our Marine Character Areas, the assessment units used are bespoke to the assessment and the marine settings of Designated Landscapes. It should be noted that the reports are an evidence base, rather than NRW's position or guidance. The reports can be found on NRW's website and via the following links:
<https://cdn.naturalresources.wales/media/689503/eng-evidence-report-315-seascape-and-visual-sensitivity-to-offshore-wind-farms-in-wales.pdf>
- 7.8.8. With regard to the information sources for the baseline information; NRW TE advise there is also a Seascape Assessment available for Carmarthen Bay, Gower and Swansea Bay (refer to attached NRW Seascape policy guidance provided with this letter). Also the Register of Historic Landscapes in Wales is published by ICOMOS, CCW & CADW (not Dyfed Archaeology), and there is also a more recent version of the Seascape Character Assessment SPG, available on the Local Planning Authority's website; however, the seascape character areas relevant to this proposal have not undergone any modifications.
- 7.8.9. The Marloes & Dale Heritage Coast was omitted from Section 7.8.3 of the Scoping Report but, should be referred to within the ES for completeness. We agree that the Gower AONB (approx. 88km east of the proposed project area) can be scoped out.

- 7.8.10. We consider that Tables 7.14 of the Scoping Report identifies the relevant Seascape Character Areas (SCAs) and National Marine Character Areas; and that Table 7.16 lists the relevant Landscape Character Areas. In addition, the SCAs in the Carmarthen Bay, Gower & Swansea Bay Assessment should also be considered in the ES.
- 7.8.11. The ES must consider Landscape, as well as visual considerations with regard to the final site selection for the onshore substation and potential mitigation for the cable landfall and cable route also requires consideration within your assessment.
- 7.8.12. Pembrokeshire coastal authority advise, in terms of mitigation, that all technologies are explored to reduce the reliance on any additional masts and/or communication equipment required both offshore and onshore.
- 7.8.13. Within the summary of potential impacts (Table 7.17 of the Scoping Report); NRW TE have commented that in addition to the landscape character of the National Park, its purposes and special qualities are highly sensitive to this type of development, as well as the visual amenity of receptors within the National Park. All these aspects must be taken into account within your assessment. Additionally, the Pembrokeshire Coast Path also forms part of the Wales Coast Path National Trail.
- 7.8.14. The ES must consider the Cumulative Zone of Theoretical Visibility (ZTVs) of both offshore and onshore wind turbines. Wirelines should also be considered for visual information; in line with Landscape Institute TGN 06/19.
- 7.8.15. The proposed approach to the assessment refers to LANDMAP GN1 & GN3. Please note that GN3 has now been replaced by GN046 ([Natural Resources Wales / Using LANDMAP in Landscape and Visual Impact Assessments GN46](#)). The ES must also assess the overall scale of the turbines, including height and rotor diameter and the worst-case scenario with regards to orientation of the array in relation to visually sensitive viewpoints.
- 7.8.16. There must also be recognition and appropriate consideration of the construction phase visual impact within the assessment, if elements are assembled at quay-side e.g. Pembroke Dock. Pembrokeshire County Council note that whilst these impacts could be large, they may not necessarily be viewed as negative owing to the local interest that they may generate.

7.9. Underwater Noise and Vibration

- 7.9.1. We agree that the Scoping Report has identified all the potential issues that are relevant in relation to underwater noise and vibration and that should be scoped into the Environmental Impact Assessment (EIA). We therefore consider the proposed approach to the underwater noise and vibration assessment as proportionate and reasonable given the current understanding of the activities involved over the lifetime of the project. No significant gaps or issues have been identified in the Scoping Report.

7.10. Airborne Noise and Vibration

- 7.10.1. No comments were received from consultees in relation to airborne noise and vibration and we have no comment to make on this section of the Report (section 7.10). The ES should however include an assessment of impacts on airborne noise and vibration, as set out in the Scoping Report.

7.11. Air Quality

- 7.11.1. No comments were received from consultees in relation to air quality and we have no comment to make on this section of the Report (section 7.11). The ES should however include an assessment of impacts on air quality, as set out in the Scoping Report.

7.12. Tourism and Recreation

- 7.12.1. No comments were received from consultees in relation to tourism and recreation and we have no comment to make on this section of the Report (section 7.12). The ES should however include an assessment of impacts on tourism and recreation, as set out in the Scoping Report.

7.13. Socioeconomics

- 7.13.1. No comments were received from consultees in relation to socioeconomics and we have no comment to make on this section of the Report (section 7.13). The ES should however include an assessment of impacts on socioeconomics, as set out in the Scoping Report.

7.14. Human Health

- 7.14.1. No comments were received from consultees in relation to human health and we have no comment to make on this section of the Report (section 7.14). The ES should however include an assessment of impacts on human health, as set out in the Scoping Report.

8. Cumulative impacts and in-combination effects

8.1. The ES must include an assessment of cumulative and in-combination effects.

8.2. The following data sources may provide useful information on other projects for the assessment of cumulative effects:

- The Nationally Significant Infrastructure Projects register:
<https://infrastructure.planninginspectorate.gov.uk/projects/register-of->

[applications/](#)

- The Developments of National Significance Register:
[Developments of National Significance \(planninginspectorate.gov.uk\)](#)
- Planning Policy e.g. Local Development Plans, Transport Plans (National and Local) and National Policy Statements.
- An up to date list of marine licensable developments can be found at the following link:
<http://lle.gov.wales/catalogue/item/MarineLicences>
- Due consideration should also be given to Natural Resources Wales' emerging Area Statements (Marine and South West Wales Areas).

8.3. We welcome the inclusion of a tabulated Cumulative Effects Assessment (CEA) Offshore Search Area Extents (Table 8.3), however, NRW TE recommend it could be improved with the inclusion of distances and/or locations of the projects and plan in relation to Project Valorous. This must be included within the assessment.

8.4. JNCC note the extent of the search area for offshore works has not been specified, therefore it is unclear whether the plans and projects listed in Table 8.3 are an exhaustive list, if any are missing, or if the extent of the search area is appropriate. The ES must demonstrate how the extent of the search area has been defined (a map of the projects scoped in, or CEA extent would be here). JNCC note that based on foraging ranges of some species, and regional population scales for some species, that there are several projects missing from Table 8.3 (for example, Awel y Môr and Round 4 proposals in the Anglesey region) which should be included within your assessment.

8.5. Other project types that should be considered within the assessment include aggregate dredging.

8.6. It was also highlighted by the RSPB that the Emerald Project (a Floating Offshore Wind project also located within the Celtic Sea off the south coast of Ireland) has been omitted. You should include this within your assessment.

8.7. JNCC have advised that clarity is required as to how built and operational wind farms will be considered within cumulative EIA and in-combination HRA. If built and operational projects are classed as part of the baseline conditions, then the project alone assessment needs to consider whether it brings 'baseline mortality' (including the mortality contributed from baseline projects) above a level that is unacceptable. Mortality that can be attributed to projects that were built and operational at the time that survey data were collected do need to be considered alongside predicted mortality from Project Valorous. JNCC have therefore suggested that, given the difficulties in assessing 'actual' mortality or population consequences for mobile species such as marine birds, from existing built and operational infrastructure (such as wind farms), then in practice this means that the assessment is based on a combined 'predicted' mortality across built, operational, under construction, consented and otherwise identified infrastructure projects. This is the premise behind a Cumulative Effects Framework tool being produced by a consortium led by CEH,

and supported by the SNCBs, which may help to implement a meaningful cumulative effects assessment (<https://www.ceh.ac.uk/our-science/projects/cumulative-effects-framework>).

- 8.8. There is the potential for multiple export cable routes for other proposed renewable and non-renewable energy projects (e.g. Erebus FLOW and Greenlink interconnector) to use the same landfall site as the ones proposed for Project Valorous. Potential cumulative effects will require further assessment depending on the temporal overlap between the proposed project and other projects in the area.
- 8.9. It is unclear from Table 8.3 (cumulative impacts) of the Scoping Report whether the cumulative impacts to benthic receptors will be assessed. We consider that, where appropriate, benthic receptors must be included within the cumulative assessment.
- 8.10. The likely cumulative and in combination effects on shipping routes should also be considered; this includes the impact on navigable sea room and an appropriate assessment of the distances between wind farm boundaries and shipping routes as required by MGN 543.
- 8.11. For cumulative visual impacts, PCC have advised that, in line with PCNPA guidance, onshore wind turbines (in addition to OWF) should be included. PCC have also highlighted that the Rhoscrowther Wind Farm may be in planning stages by the time of your assessment. An assessment of cumulative effects for the onshore substation should also be included, bearing-in-mind Greenlink and Project Erebus sub-station requirements.

Please note our Scoping Opinion is based on the information available to us at this time. The information provided is not a definitive list of the ES / EIA requirements and further information may be required following an application for this project, to ensure a full assessment is carried out.

Please do not hesitate to contact me should you require any clarification or would like to discuss any aspect of this scoping opinion.

Yours sincerely



Seran Davies
Marine Licensing Team
Natural Resources Wales

Approved by:

A handwritten signature in black ink, reading 'W. J. Dodds'.

Wendy Dodds

Marine Licensing Team Leader
Natural Resources Wales

Cc: All Consultation Bodies

Annex A- CEMP

NRW TE advise that a Construction Environmental Management Plan (CEMP) should include the following:

- Construction methods: details of materials, how waste generated will be managed.
- General Site Management: details of the construction programme including timetable, details of site clearance; details of site construction drainage, containments areas, appropriately sized buffer zones between storage areas (of spoil, oils, fuels, concrete mixing and washing areas) and any watercourse or surface drain.
- Biodiversity Management: details of tree and hedgerow protection; invasive species management; species and habitats protection, avoidance and mitigation measures.
- Soil Management: details of topsoil strip, storage and amelioration for re-use.
- CEMP Masterplan: details of the extent and phasing of development; location of landscape and environmental resources; design proposals and objectives for integration and mitigation measures.
- Control of Nuisances: details of restrictions to be applied during construction including timing, duration and frequency of works; details of measures to minimise noise and vibration from piling activities, for example acoustic barriers; details of dust control measures; measures to control light spill and the conservation of dark skies.
- Resource Management: details of fuel and chemical storage and containment; details of waste generation and its management; details of water consumption, wastewater and energy use.
- Traffic Management: details of site deliveries, plant on site, wheel wash facilities .
- Pollution Prevention: demonstrate how relevant Guidelines for Pollution Prevention and best practice will be implemented, including details of emergency spill procedures and incident response plan.
- Details of the persons and bodies responsible for activities associated with the CEMP and emergency contact details Landscape/ecological clerk of works to ensure construction compliance with approved plans and environmental regulations.

Annex B Designated Historic Assests within the Study Area (provided by Cadw)

Scheduled Monuments

PE020 Devil's Quoit Burial Chamber
PE021 Bulliber Hill Camp
PE055 Merrion Camp
PE059 Corston Beacon Round Barrow
PE064 Wallaston Round Barrows
PE067 Angle Dovecot
PE068 The Tower
PE069 Angle Castle
PE113 Standing Stone 290m S of Mabesgate
PE166 Castlemartin Castle
PE167 West Pickard Camp
PE180 Hut Groups on Gateholm Island
PE181 Hut Groups, Cairns & Cliff Castle on Skomer Island
PE194 Watery Bay Rath
PE195 Great Castle Head Rath
PE245 Kings Mill Camp
PE263 Eastington Manor House
PE264 West Popton Camp
PE314 Bulliber Camp (East)
PE315 Brownslade Round Barrow
PE316 Linney Head Camp
PE318 Flimston Bay Camp
PE319 Crocksydam Camp
PE322 Dale Point Promontory Fort (Defences)
PE323 Deer Park Promontory Fort
PE333 Chapel Bay Fort
PE334 Stack Rock Fort
PE335 West Blockhouse Fort
PE336 Dale Point Fort (Unoccupied Parts)
PE337 South Hook Fort
PE398 Remains of East Blockhouse N of Rat Island
PE400 Enclosure & Earthworks at Lewiston Hall
PE408 Promontory Fort on Little Castle Head
PE411 Promontory Fort at Sheep Island
PE416 Promontory Fort on Great Castle Head
PE431 Martin's Haven Early Christian Inscribed Cross
PE446 Fort Popton (Curtain Walls and Gun Emplacements only)
PE447 Flimston Farmhouse
PE451 Pricaston Farmhouse
PE467 Crow Back Tumulus
PE468 Linney Head Tumulus
PE469 Linney Deserted Medieval Village
PE494 Gravel Bay anti-aircraft battery
PE534 Linney Tobruk Shelters

PE536 Little Castle Point Defended Enclosure
 PE554 West Angle Bay Early Medieval Settlement
 PE566 Dale Airfield

Registered Parks and Gardens

PGW (Dy) 65(PEM) Trewarren (grade II)

Registered Historic Landscape

HLW (D) 3 Milford Haven Waterway

Listed Buildings

5921	Church of St Mary	II
5922	Dovecote	II*
5923	Pele Tower	I
5925	NO.7,,,,,DYFED,	II
5926	Windmill adapted as machine-gun post	II
5948	Church of St. Michael	I
5949	The Old Vicarage (remains)	II*
5951	Mounting Platform	II
5952	The Old Pound	II
5953	Cold Comfort	II
5954	Corse Bridge and attached Walled Channel	II
6034	Merrion Court	II
6035	St. Mary's Church	II*
6036	Warren Farmhouse	II
6037	Warren Farm Stable Block	II
6569	Corston House (Hotel)	II
6587	Former Church of Saint Mary	II*
6588	Former National School Building	II
6589	Stone Building (now as a Barn) at Old Henllan	II
6590	Garden Arch at Old Henllan	II
6591	Church of St Decumanus	I
	Shaft and Base of Churchyard Cross to N of Parish	
6592	Church	II
6593	Church Hall	II
6594	The Tower at Eastington Manor House	I
	Eastington Farmhouse including range of outbuilding to	
6595	SE	II
6596	Hilton Farmhouse	II
6597	Range of Outbuildings at Hilton Farm	II
6598	Sommerton Farmhouse	II
11990	Dale Castle	II
11999	Philbeach, S end section with round chimney	II
13019	Memorial Clock Tower	II
16576	The Old Shop	II
16578	The Old Shop	II
16583	Seaweed Hut on foreshore	II

16585	Corn Mill	II
16586	Corn Mill House	II
16587	Brownslade Farm Buildings	II
16588	Frainslake Limekiln Near Brownslade Farm	II
16589	Flimston Chapel	II
16590	Flimston Farmhouse	II*
16603	Cross in St. Mary's Churchyard	II
16604	Pricaston Farmhouse	II*
16610	Outbuildings to Merrion Court	II
16611	Merrion Court Granary Range and Mill	II
17147	Sailors' Chapel	I
17148	Preaching Cross	II
17149	The Almshouse	II*
17150	Monument to John Mirehouse	II
17151	The Globe Hotel	II
17153	12	II
17154	17	II
17155	18	II
17156	22	II
17157	23	II
17158	24	II
17159	34	II
17160	35	II
17161	The Old Point House	II
17162	War Memorial	II
17163	Chapel Bay Cottages	II
17164	Chapel Bay Cottages	II
17165	Chapel Bay Fort	II
17166	Rocket Cart House	II
17167	Lookout Tower	II
17168	Fort Popton	II*
17169	Thorne Island Fort	II*
	Skokholm Lighthouse with enclosure walls and stores	
18026	building	II
19128	Remains of old castle at Dale Castle and forecourt walls	II
19129	Church of Saint James the Great	II
	Walls and entrance arch to walled garden to E of Dale	
19130	Church	II
19131	The Old Post House	II
19132	Brook House	II
19133	Brook Cottage	II
19134	The Griffin Inn	II
19135	Richmond House	II
19136	Eaton House	II
19137	No 2 South Street,,,Dale,Haverfordwest,,SA62 3RE	II
19138	The Windmill Tower at Windmill Farm	II
19139	The Reading Room	II

19140	Coldstream Lodge	II
19141	The War Memorial	II
19142	Dale Fort	II
19143	Pair of limekilns at Pickleridge beach.	II
19144	Lower Dalehill Farmhouse	II
19145	Broomhill Farmhouse	II
19146	The Cottage	II
19147	Limekiln at South Haven	II
19148	West Blockhouse Fort	II*
19149	Veronica Cottage	II
19392	Mullock Bridge (partly in St Ishmaels community)	II
19393	Church of Saint Peter	II*
19394	Marloes Village Hall	II
19395	Musselwick	II
19396	Winterton	II
19404	Deer Park Wall	II
19405	West Hook	II
19406	Lime Kiln on Skomer Island	II
20343	Trewarren	II
20344	Church of St Ishmael	II
20345	Folly SE of Monk Haven	II
20346	Monk Haven Manor	II
20347	Wall at Monk Haven	II
20348	Mullock Bridge (partly in Marloes and St Brides Community)	II
20355	Leading light	II
82592	Stack Rock Fort	II*
82593	The defensible barracks at South Hook Fort	II*
87517	Hut Group at Former Dale Airfield	II