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5th July 2022

Dear Marc Murray,

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

LLYR FLOATING OFFSHORE WIND PROJECT

I am writing further to your request for a screening and scoping opinion, dated 06 April 2022, made in accordance with The Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended) ("The Regulations").

The purpose of the Environmental Impact Assessment (EIA) screening procedure is to determine whether the proposed works require an EIA and submission of an Environmental Statement (ES). The purpose of the scoping procedure is to determine what information should be provided in the ES.

In reaching our Screening Opinion we have considered the proposed works against Schedule A1 and A2 of the above regulations. In reaching our scoping opinion we have had regard to the information provided in the "Llŷr floating offshore wind project Scoping Report", dated April 2022, and considered the requirements of Schedule 3 of the Marine Works Regulations. We have also 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.

Screening Opinion

It is our opinion that the works fall within the categories of projects listed within Schedule A2, paragraph 21 of the above regulations (see below), 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.

21. Installations for the harnessing of wind power for energy production (wind farms).

We have carefully considered the views of the consultation bodies alongside the criteria as set out in Schedule 1 of the regulations, and have determined, based on the information provided, that the project has the potential to have a significant effect on the environment and therefore a statutory EIA is required.

We have come to this conclusion on the basis of the likely significant impacts due to the nature and scale of the project, specifically, but not limited to, the potential impacts on ornithology features and the proximity of the project to the Skomer, Skokholm and the Seas off Pembrokeshire SPA as well as impacts to marine mammals, ornithology, benthic ecology, and fisheries/navigation.

Scoping Opinion

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 Screening and 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 (SC2202)

Summary of the proposal

Floventis Energy is developing proposals for two 100 megawatt (MW) floating offshore wind development projects (200 MW in total) in the Celtic Sea, known as Llŷr 1 and Llŷr 2.

The proposed Project will comprise of the following main components:

- Wind turbines, with a rating of between 12 and 20 MW per turbine;
- Floating offshore wind platforms and associated moorings;
- Offshore inter-array cables and up to one subsea connection point per project;
- Up to two electricity export cables per project following the same route to the landfall;
- Up to one transition joint bay / riser per project to connect the offshore cable to the onshore cable;
- Onshore cabling between the landfall and the grid connection;
- Onshore substation / control building near to the grid connection point; and
- Other associate infrastructure, such as navigational buoys.

Location

The proposed Project will be located in the Celtic Sea, within Welsh Waters, offshore from the Pembrokeshire coastline at approximately 38km from the Lundy Island shore and 31km from the Welsh coastline.

The proposed Project consists of two adjacent array areas, known as Llŷr 1 and Llŷr 2, with an initial outline area of interest of 50km², which will be refined through the EIA and design process.

Consultation Responses Received

In considering the scoping report, NRW Permitting Services (NRW PS) consulted with various consultation bodies. The consultation bodies that responded are listed below:

- Natural Resources Wales Technical Experts (NRW TE)
- Royal Yachting Association (RYA)
- Trinity House Lighthouse Service (THLS)
- Dyfed Archaeological Trust (DAT)
- Pembrokeshire County Council Planning Authority (PCC LPA)
- Pembrokeshire Coast National Park Authority (PC NPA)
- Cadw
- Joint Nature Conservation Committee (JNCC)
- National Air Traffic Service (NATS)
- National Federation of Fishermen's Organisation (NFFO)

- Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW)
- Royal Society for the Protection of Birds (RSPB)

0. General comments

0.1. Marine and coastal guidance produced by NRW that will provide useful information to help 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->

- 0.9. We would encourage you to engage with the appropriate SNCBs for advice on nature conservation matters within their specific statutory responsibilities: JNCC for offshore (beyond 12nm) and NRW TE for territorial limit (onshore to 12nm).
- 0.10. We request that clarification is provided in all future documentation as to whether potential impacts will occur within territorial or offshore waters (within or beyond 12nm) . This should include the provision of the 12nm boundary on all maps produced to support the application.
- 0.11. 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.
- 0.12. 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 (WNMP) can be found here: <https://gov.wales/welsh-national-marine-plan-document>. Implementation guidance for the Welsh National Marine Plan can also be found here: <https://gov.wales/welsh-national-marine-plan-implementation-guidance>.
- 0.13. The use of the title “Likely Significant Effects” in the report is confusing. Potential impact pathways to be considered in the EIA seem to be confused with the term likely significant effect which has significant meaning in the HRA process.
- 0.14. NRW TE would encourage you to use the NRW guidance that has previously been provided to inform project-level considerations and assessments (included in NRW TE email of 30 March 2022).
- 0.15. NRW TE advises you to ensure all permits/consents/licences relevant to the proposed project are secured. Upon receipt of detailed survey information, NRW TE will be able to provide advice on the risk of the proposal to protected species, and whether any European Protected Species (EPS) licences are required.
- 0.16. PC NPA reminds you that policy SOC_06 Designated landscapes (WNMP) requires proposals to demonstrate how potential impacts on the purposes and special qualities for which National Parks have been designated have been taken into consideration. These should, in order of preference:
- avoid adverse impacts on designated landscapes; and/or
 - minimise impacts where they cannot be avoided; and/or
 - mitigate impacts where they cannot be minimised.

The policy also states that opportunities to enhance designated landscapes are encouraged. Special qualities of Pembrokeshire Coast National Park include seascape, landscape, biodiversity, tranquillity, and wildness. Were the development

to proceed, Pembrokeshire Coast National Park Authority would anticipate that there would be residual adverse impacts, in which case mitigation would be required.

- 0.17. Concerns have been raised within the wider floating wind industry as to how the issue of wet storage areas is considered within the EIA ([The fourth element of floating wind consents - PES - Power & Energy Solution](#)). Fully constructed floating turbines or those awaiting/needing service could require storage adjacent to the coast or in port areas before being towed out to site (expected to be done in batches during good weather conditions). These wet storage areas will need to be adequately assessed in terms of impacts on birds, visual impacts, navigational risks, etc. Moreover, since there are currently no ports with the capacity for constructing and servicing these types of turbines, these might be floated from/to far away increasing the risk of spreading INNS, collision, and transboundary impacts. These risks should be considered, if necessary, in the EIA process.

1. Volume 1: The Proposed Project

(1) Introduction

- 1.1. No comments were received on this topic

(2) Regulatory and Planning Policy Context

- 1.2. No comments were received on this topic

(3) Site Selection

- 1.3. No comments were received on this topic

(4) Description of the Project

- 1.4. We would encourage you to engage early with relevant stakeholders to identify locations of minimal impact to decide on the export cable route and grid connection.
- 1.5. The PCC LPA highlights that the number of projects that would all involve the delivery west-east cable routes (within a relatively wide “development corridor”) across the Angle Peninsula and significant infrastructure near Pembroke Power Station (sub or converter stations for each project) would result in an extended impact timeframe during construction. The PCC encourage you to work with these other projects to minimise the combined duration of these works.
- 1.6. JNCC note that in Section 4.2.5 Electricity Export Cable it states that there will be “up to two 132 kV cables per project”. Section 4.2.5 then goes on to state that “the two cables for the projects will be laid in separate trenches with a cable separation of around 50m”. It is unclear to JNCC whether this applies to a scenario where each project requires one or two 132 kV cables. We would request clarity on this matter.
- 1.7. JNCC encourages you to minimise the amount of scour/rock protection required, acknowledging that the quantities are still unknown. The introduction of hard substrate into a mainly sedimentary environment is undesirable although it is not necessarily considered as having a significant impact in this point. JNCC note that

the long-term effect of the introduction of substratum into naturally sandy or muddy seabed is not fully understood at present and should be carefully considered by the regulators. Where stabilisation material cannot be avoided, JNCC recommend using a more targeted placement method e.g., fall pipe vessel rather than using vessel-side discharge methods.

1.8. In conjunction with the information to be gathered on the proposed offshore array and export cable corridor through survey work, JNCC highlight that it would be helpful to have details on the following technical aspects relating to the installation and operation of the Project:

- 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.

1.9. JNCC note that route clearance activities (Section 4.4.1.2) may include pre-sweeping of sandwaves and advise that modification/removal of sandwaves would result in temporary disturbance of the seabed and changes to patterns of sediment transport resulting in morphological change. JNCC would also like to highlight that any disturbed sediment resulting from these activities should be retained within the same sediment system.

1.10. JNCC indicates that any material disturbed through cable installation activities (section 4.4.1.4) such as ploughing or trenching should be maintained within the same sediment system, for example depositing the disturbed sediment up stream of the trenches to encourage natural backfill.

1.11. NRW PS strongly advise that you engage early with SNCBs to review and refine the export cable route corridor and landfall options (4.2 and 4.3), to avoid and mitigate environmental impacts, through a clear site selection process. Of particular concern is the potential for the cable route to interact with sensitive features (Annex 1 habitats) of the Pembrokeshire Marine Special Area of Conservation (SAC). Clarity is required as to whether alternative cable routes have been considered as part of the process.

1.12. NRW TE advise that in addition to the key guidance materials cited, you also consider NRW's advice note for offshore cabling in assessment processes ("*Sensitivity of marine ecology receptors to cabling activities in Wales*" <https://www.marinedataexchange.co.uk/details/1710/2019-natural-resources->

[wales-sensitivity-of-marine-ecology-receptors-to-cabling-activities-in-wales/summary](#)). NRW TE recommends that The Crown Estate's Cable Route Protocol (<https://www.thecrownestate.co.uk/media/3994/the-crown-estate-cable-route-identification-leasing-guidelines.pdf>) is also referenced and considered as well as considerations highlighted within the relevant National Policy Statements (see point 3.1).

- 1.13. NRW TE strongly encourage use of HDD where possible for the cable installation at landfall as the least environmentally damaging option, given the potential environmental impacts of trenching on conservation features.
- 1.14. It is NRW TE's position that in the absence of understanding future environmental conditions, all decommissioning options are considered (section 4.4.2); including the complete removal of installed infrastructure. This includes not only the buried cable, but all cable protection measures employed over the course of the project. We endorse Natural England's advice on scour and cable protection (<http://nepubprod.appspot.com/publication/5938793965420544>) which recommends that for future projects requiring scour protection, developers consider solutions that produce minimal to no negative environmental impact to the seabed, and therefore can remain in place at the end of the project as evidence suggests this is the most cost effective and sustainable approach.
- 1.15. NRW TE advice that the ES should consider the maximum number of cable repairs (section 4.4.3.2) predicted to occur during the operation of the project as the worst-case scenario (Rochdale Envelope) to assess the potential impacts. This should include the potential for cable protection to be required following cable repairs.

(5) EIA Approach and Methodologies

- 1.16. NRW recommend determining the landfall site and cable route before submission in order to inform the proposal further. We acknowledge the use of the Rochdale Envelope to assess worst case scenario but seek to encourage you to define the project as much as it is possible to avoid unnecessary delays.
- 1.17. There is a requirement to assess the potential transboundary impacts on another country within the European Economic Area. The potential for transboundary impacts will need to be considered within project-level assessments.
- 1.18. NRW TE generally agree with value/sensitivity and magnitude criteria applied on Table 5-1 to 5-4, however, the value/sensitivity category should be refined according to the level of protection of the feature, for example, under The Conservation of Habitats and Species Regulations 2017, Environment (Wales) Act 2016, or OSPAR Convention.
- 1.19. NRW TE points out that the Zone of Influence (Zol) must be defined based on robust evidence and any protected site (HRA) or water body (WFD) where there are (a) direct effects (e.g. host the export cable corridor) or (b) there is a pathway for effect (e.g. biotic or migratory routes) must be adequately considered.
- 1.20. In terms of mitigation, NRW TE points out that the proper process for consideration of mitigation in the context of the WFD, is to scope any potential effects

in to the detailed assessment stage and then consider mitigation, once the impacts have been adequately defined.

(6) Approach to the Environmental Statement

- 1.21. It is noted that in the scoping report 'Water Quality' is split by marine works and terrestrial works. NRW TE advise that in compiling the ES, marine water quality falls under its own section.
- 1.22. Clarity is sought with respect to how the WFD Assessment will be provided as part of the wider EIA package. Section 5.4.3 states that there will be a stand-alone WFD assessment; however, this is not included within the proposed structure of the ES (Section 6.1). Furthermore, WFD is discussed within Chapter 19, but not within the relevant elements Chapter 20 or 21. Since no scoping information specific to WFD has been provided, NRW TE advise that, where relevant, all potential impact pathways identified as part of the EIA process are transposed into the WFD Assessment. This assessment will need to be made in terms of potential project effects on the WFD quality elements at a water-body level and to identify potential pathways for effect between elements also (e.g., hydrodynamic changes may affect biological elements)
- 1.23. The RCAHMW indicates that the separation of the marine (Chapter 24) and intertidal zone (Chapter 9) is understandable from a purely geographical definition of the marine baseline lying at the low-water mark. However, the nature of the archaeological material likely to be located between high and low water has more in common with marine archaeology, than terrestrial archaeology. For the purpose of the EIA/ES, we would therefore recommend combining the intertidal elements with the marine elements, to give coverage from high water out, and leaving the terrestrial coverage (Chapter 9) to be purely concerned with historic assets above the high water mark.
- 1.24. NRW TE advise that a revised structure for the ES is considered, as the structure as currently proposed is not considered facilitative to the reader. NRW TE are happy to work with you on this.
- 1.25. Currently, insufficient information has been provided to assess the risk of the proposal against the protected site features (Section 6.4). Sufficient information will need to be provided at the point of submission. As reference of requirements, NRW TE highlights best practice included in NRW's species licensing website.
- 1.26. NRW TE considers that by satisfying the requirements regarding the SACs, under the HRA, it is likely the requirements for the SSSIs will also be met. However, NRW TE refer you to NRW's Development works within sites of special scientific interest page on the website (<https://naturalresources.wales/guidance-and-advice/business-sectors/planning-and-development/advice-for-developers/development-works-within-sites-of-special-scientific-interest/?lang=en>) for further advice.
- 1.27. NRW TE welcome the use of a Construction Environmental Management Plan (CEMP) and request the opportunity to review the document once produced.

However, NRW TE advise you to refer to relevant Guidance for Pollution Prevention, including GPP5 Works and Maintenance in or near water.

2. Volume 2: Terrestrial

2.1. NRW TE indicates that their advice is limited to the information available in the report presented; as the scoping report acknowledges that generally, insufficient information has yet been gathered on the project. Examples are:

- The detail of the proposed wind turbines, their floating pontoons, and the site layout, as these are still in the process of being tested. We will require this information, to assess the visual impact of the proposal, and to assess any impacts of the development on its proposed location.
- A detailed method statement explaining how the project will be transported to its location.
- Currently, it hasn't been decided how the cables will cross the land from the grid connection to the proposed wind farm. Three options are being considered, but the location will be agreed via an application through the grid.

2.2. NRW TE have concerns with the application as submitted because inadequate information has been provided in support of the proposal. To overcome these concerns, NRW TE advise that further information is provided with respect to flood risk, protected sites, protected species, sea and landscape, and ground contamination.

2.3. NRW TE notices that there is an error in the numbering of sections in Section 4.4.1.9 on page 49 and page 50 section 4.4.3.1. It is not clear whether there is a missing section that should be available for consideration.

2.4. As stated above, the PCC LPA stresses the large number of projects that would all involve the delivery west-east cable routes across the Angle Peninsula and Pembroke Power Station (sub or converter stations for each project). PCC LPA refers particularly to the Greenlink (under construction), Erebus (applications under the Electricity Act and Marine and Coastal Access Act awaiting determination), and Valorous (EIA Scoping request submitted to NRW February 2021) projects. PCC indicates that has previously advised of the need for an integrated approach to delivery.

(7) Seascape, Landscape and Visual

2.5. The PC NPA indicates that the proposal has potential for adverse seascape, landscape, and visual impacts on the Pembrokeshire Coast National Park.

2.6. PCC LPA considers that two visualisations are limited and one more viewpoint should be provided from Goldborough Road (Chapter 7).

2.7. NRW TE considers that NRW LANDMAP all-Wales evidence base should also be referred to with regard to the landfall, cable route and substation proposals. NRW has produced Guidance Note GN46 Using LANDMAP in Landscape and Visual Impact Assessment (<https://naturalresources.wales/guidance-and-advice/business->

[sectors/planning-and-development/evidence-to-inform-development-planning/using-landmap-in-landscape-and-visual-impact-assessments-gn46/?lang=en](https://naturalresources.wales/evidence-and-data/research-and-reports/landscape-and-geodiversity-reports/publications-about-landscape-geology-soils-and-features-of-historic-interest/?lang=en)).

2.8. Account should be taken of NRW's evidence reports on Offshore Wind Development: Seascape and Visual Sensitivity to Offshore Windfarms in Wales: Strategic assessment and guidance (<https://naturalresources.wales/evidence-and-data/research-and-reports/landscape-and-geodiversity-reports/publications-about-landscape-geology-soils-and-features-of-historic-interest/?lang=en>)

- Stage 1. Ready Reckoner of visual effects related to turbine size (report 315);
- Stage 2. Offshore windfarm siting and design guidelines in relation to seascapes (report 330);
- Stage 3. Visual sensitivity of marine settings of Wales's Designated Landscapes to offshore windfarms (report 331)

These reports are principally focussed on the visual effects in relation to Designated Landscapes. Stage 1 includes buffers to avoid significant adverse effects on high sensitivity receptors. For 280m turbines, there is a 41.6km buffer for low magnitude of effect and a 28km buffer for medium magnitude of effect. Combined with high sensitivity, low magnitude of effect is likely to result in effects of moderate significance. Moderate effects can potentially be significant. For sites offshore from the Pembrokeshire Coast National Park between 22.6 and 44km distance, proposals are likely to be visible and adversely affect the special qualities including the setting, tranquillity and apparent wildness of the National Park.

2.9. NRW TE considers the Study Area defined as 45km from the outermost wind turbines (Section 7.3) to be acceptable and in line with agreed best practice guidance (SNH, 2017). The area includes parts of the Angle and Dale peninsulas and the Islands of Skokholm and Skomer. We understand that the project area and layout of the arrays would be defined in more detail in due course, which may affect the final Zone of Theoretical Visibility (ZTV). Furthermore, 3km Study Area for the onshore substation/control building and 1km Study Area for the onshore cable route have been defined and considered acceptable.

2.10. NRW TE considers that Several Dark Sky Discovery Sites lie within the Study Area, including at Martins Haven and Kete, as such it is noted that aviation lighting is likely to be required on some/all of the wind turbine generators.

2.11. The report states that a separate assessment of night-time landscape & visual effect or night-time visualisations is not proposed, but dark sky characteristics will be taken into account in sensitivity judgements and proposed lighting would be considered in the overall magnitude of change (Section 7.4.1). NRW TE disagrees and considers that a night-time assessment and visualisations is expected for a project of this nature, where dark sky sensitivities are a particular concern. There is also the potential for cumulative night-time effects with other offshore wind farms. Viewpoints for night-time assessment could include Martins Haven, Kete and Freshwater West and NRW TE would be happy to facilitate further discussion with you in this regard.

- 2.12. NRW TE agree with the report that the National Landscape Character Areas and National Marine Character Areas provide context and the SLVIA (Section 7.4.2) should be undertaken on the basis of the smaller units set out in the National Park's Landscape Character Assessment and Seascape Assessment, with reference also to LANDMAP. There is likely to be some overlap between Seascape Character Areas (SCA) and Landscape Character Areas. However, NRW TE considers that SCAs should not be scoped out as stated in the report given that this is an offshore project.
- 2.13. NRW TE advise that visual receptors (Section 7.4.3) should also include recreational users of the sea and coastal areas, including those undertaking activities such as sailing, wildlife boat trips, kayakers, users of the Pembroke-Rosslare ferry. NRW TE welcome the opportunity to enter dialogue regarding viewpoint selection.
- 2.14. NRW TE suggest an additional viewpoints are needed. An onshore viewpoint further east along the B4320 towards Corseside/minor road to Neath Farm (Table 7.1). A suitable viewpoint e.g. from the Wales Coast Path at West Angle Bay, from Freshwater West or Angle Bay would be required depending on the cable landfall site. Offshore viewpoints (Table 7.2) from Skokholm Island, West Angle Bay, Hooper's Point and St Govan's Head are also suggested. Furthermore, an assessment of the sequential visual impacts on sections of the Wales Coast Path would also be required.
- 2.15. NRW TE agree that photomontages for the cable landfall and cable route would not be required (Section 7.4.4), unless HDD is not possible for the cable landfall and cables were to be laid over cliffs/open ground. NRW TE recommend that more than 5 photomontages may be required from representative viewpoints.
- 2.16. NRW TE considers that Section 7.5 should take account of NRW evidence reports: Seascape and Visual Sensitivity to Offshore Windfarms in Wales, Strategic assessment and guidance Stage 1, 2 & 3 (see above)
- 2.17. NRW TE advise that the size and height of turbines, the location, orientation and spread of the array within the lease area and the inclusion or exclusion of lighting are also potential mitigation options for the project.
- 2.18. NRW TE agree that there is the potential for long term seascape, landscape and visual effects associated with the wind turbine generators and with the substation/control building (Section 7.8). Effects from the landfall and onshore cable route are likely to be temporary and reversible and result mainly from construction and decommissioning, and operational effects of these aspects can be scoped out of the SLVIA, assuming HDD is used at the landfall.

(8) Ecology and Biodiversity

- 2.19. NRW TE have concerns that an adverse effect from the proposed development on the integrity of the following protected sites designated as part of the National Site Network (and as identified by the ES, Chapter 8) cannot be ruled out:
- Limestone Coast of South Wales/Arfordir Calchfaen De Orllewin Cymru SAC
 - Pembrokeshire Marine/Sir Benfro Forol SAC

- West Wales Marine/Gorllewin Cymru Forol SAC
- Castlemartin Coast SPA
- Pembrokeshire Bat Sites and Bosherton Lakes/Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherton SAC

The following protected sites identified as being within scope:

- Broomhill Burrows Site of Special Scientific Interest (SSSI)
- Angle Peninsula Coast/Arfordir Penrhyn Angle SSSI
- Milford Haven Waterway SSSI
- Gweunydd Somerton Meadows SSSI
- Castlemartin Corse SSSI
- Castlemartin Range SSSI
- Limestone Coast of South Wales/Arfordir Calchfaen De Orllewin Cymru SAC
- Orierton Stable Block and Cellars SSSI
- Stackpole SSSI
- Stackpole Courtyard Flats and Walled Garden SSSI
- Park House Outbuildings, Stackpole SSSI
- Newgale to Little Haven/Arfordir Niwgwyl Aber Bach SSSI

2.20. NRW TE advise that the species-specific impacts in the short, medium, and long term together with any mitigation and compensation measures proposed to offset the impacts identified should be included in the EIA. Should potential impacts be identified, NRW TE advise that the Ecological Impact Assessment (EclA) should set out how the long-term site security of any mitigation or compensation will be assured, including management and monitoring information and long term financial and management responsibility.

2.21. PCC LPA point out that there are dormouse records on the Angle Peninsula. The effects of the development corridor as well as the in-combination impacts with the other projects of temporary but significant impacts of hedgerow removal (Chapter 8) should be addressed, in terms of dormouse crossing points and bats.

(9) Historic Environment and Cultural Heritage

2.22. The DAT are happy with the approach taken to scoping archaeology, but understand that the extent of the study area for the landfall and grid connection point may need to be adjusted, depending on the height/extent of above ground elements, in line with the criteria outlined by Cadw in their guidance document *Setting of Historic Assets in Wales (2017)*.

2.23. The DAT indicates also that the DBA should assess both the visual impact of the development on the historic landscape and on the setting of historic assets and the potential direct impact on archaeological deposits and would expect to see a Written Scheme of Investigation (WSI) for this assessment.

- 2.24. CADW notes that it is proposed in section 9.27 Historic Landscape to prepare an Assessment of the Significance of the Impact of Development on Historic Landscapes (ASIDOHL2). CADW will welcome discussions with your cultural heritage experts to determine whether this will be the best approach and the appropriate methodology for assessing the impact on the historic landscape given the type of proposed development.
- 2.25. Section 9.2.1 refers to 2018 PPW, however, the latest version (ed.11) dates to 2021. Furthermore, the 2021 Historic Environment (Archaeology) SPG prepared by PCNPA is a joint document with PCC.

(10) Water Environment

- 2.26. NRW TE note that Groundwater Regulation 2009 (Section 10.2.1) no longer exist and are now part of the EPR 2016 under schedule 22 and the reference should be updated.
- 2.27. NRW TE notes that the objectives for each element include reaching good status by a given date and section 10.4.7.1, para 3 statement in relation to individual WFD elements having objectives is incorrect. Some of these elements (e.g. Dissolved inorganic nitrogen) are currently at Moderate status which is considered a fail. It should not be considered that these objectives will be achieved by 2025/2026 as a cycle 4 classification will not have been released by that time. NRW TE advise that you will need to use the most up-to-date classifications in their project assessments. You should note that the 2021 cycle 3 WFD classifications have been published and can be found on Water Watch Wales (<https://waterwatchwales.naturalresourceswales.gov.uk/en/>). The WFD Compliance Assessment must utilise this information as this is the most recent and relevant to use (e.g., Section 10.2.3.1).
- 2.28. NRW TE disagree scoping out of the assessment small, non-reportable streams running into coastal water bodies (or indeed the Pembrokeshire Marine SAC) due to scale (Section 10.7.6). For example, the potential to create a mixing zone of a pollutant could impact biota and needs consideration.
- 2.29. NRW TE have reviewed the Flood Consequences Assessment (FCA, Section 10.7.7) which is reliant on the final agreed design of the project. As such, NRW TE comments are limited at present, until a completed site-specific FCA is available. The criteria, which should normally be undertaken by a suitably qualified person carrying an appropriate professional indemnity, are given in Chapter 7 and Appendix 1 of TAN15. The FCA should be proportionate to the development proposed. You may also refer to our Building in Flood Risk Areas on the website (<https://naturalresources.wales/guidance-and-advice/business-sectors/planning-and-development/advice-for-developers/building-in-flood-risk-areas/?lang=en>), which contains technical advice and recommendations.
- 2.30. The scoping report has identified the need for a Flood Risk Activity Permit (FRAP), but this is again reliant on final designs and location. As such NRW TE cannot comment further and advise a FCA is required which includes but not limited to the information set out above.

- 2.31. NRW TE would like to get clarity on WFD water bodies proposed for inclusion within the WFD Assessment. There are inconsistencies between chapters of the report, as Milford Haven Outer and Pembrokeshire South waterbodies are considered in Chapter 19 and Milford Haven Inner and Outer on Chapter 10. NRW TE advise that Milford Haven Inner, Milford Haven Outer and Pembrokeshire South should all be considered within the Marine Chapter 19, as there are potential pathways for effect to this water body.
- 2.32. NRW TE disagrees with the statements within Section 10.7.6 and considers that all non-reportable water bodies will need to be considered within the WFD Compliance Assessment, regardless of scale, if there is a pathway for effect.

(11) Geology And Hydrogeology

2.33. There are three proposed landfall sites for the cables, but no defined cable routes. NRW TE are therefore providing high level advice assuming that Pembroke Power Station will be used for onward connection and recommends the proposal to be further defined before submission. NRW TE comments would likely change once finalised locations and routes are confirmed, but recommend the following surveys, supported by risk assessment, to determine the level of risk to controlled waters from the proposed project infrastructure:

1. Water Feature Survey is completed with a 300m buffer either side of the cable route and around buildings and compounds, which should include the following:
 - Identification of all water features both surface and groundwater (ponds, springs, ditches, culverts etc.) within a 300m radius of the site or either side of a linear development area, e.g., cabling route;
 - Use made of any of these water features. This should include the construction details of wells and boreholes and details of the lithology into which they are installed;
 - An indication of the flow regime in the spring or surface water feature, for example whether or not the water feature flows throughout the year or dries up during summer months;
 - Accessibility to the spring/well;
 - This information should be identified on a suitably scaled map (i.e. 1:10,000), tabulated and submitted to NRW. It would be useful to photograph each of the identified water features during the survey.
2. Preliminary Risk Assessment to define historical land uses to:
 - Follow the risk management framework provided in Land contamination risk management

(LCRM <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>)

- Refer to 'Land Contamination: a guide for developers' (WLGA, 2017) for the type of information that we require in order to assess risks to controlled waters from the site. The Local Authority can advise on risk to other receptors, such as human health.
 - Refer to our groundwater protection advice on www.gov.uk
- 2.34. Based on the results of the Water Feature Survey you must assess the likely impacts from the development on both quantity and quality of the surface water and groundwater. This should take into consideration both the preferred methods of construction and the assumed hydrogeology in the vicinity of the development.
- 2.35. NRW TE may require that identified groundwater features are monitored during the proposed workings and would therefore recommend that the Water Feature Survey be undertaken as soon as possible to enable the developer to carry out suitable baseline monitoring prior to the commencement of workings at the site.
- 2.36. NRW TE also point out that:
- Any use of HDD will require a groundwater risk assessment to ensure there are no risk to controlled waters from this construction method.
 - Were the onshore cables be fluid filled, pollution prevention measures will need to be developed to avoid risks from leakage. NRW TE indicates that there is a groundwater position statement regarding fluid fill cables – C5 in "approach to groundwater protection" (an NRW adopted guidance from the Environment Agency, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/692989/Environment-Agency-approach-to-groundwater-protection.pdf).

(12) Agriculture and Soils

- 2.37. No comments were received on this topic

(13) Traffic and Transport

- 2.38. The PCC LPA indicates that the vehicular traffic corridor identified should be extended back to include the A4075 to the Finger Post Junction of the A477 Trunk Road.
- 2.39. The PCC LPA considers that the route from Pembroke Port to the potential sites via the highway should be considered unless it is to be fully ruled out. This is of particular relevance as reference is made to possible abnormal loads which would be restricted due to the presence of railway bridges between the trunk road and the southern strategic route.

(14) Aviation and Radar

- 2.40. No specific comments were received on this topic, however, please refer to related comment on dark skies in Seascape, Landscape and Visual section regarding the probable requirement for aviation lighting.

(15) Air Quality

2.41. No comments were received on this topic

(16) Noise and Vibration

2.42. No comments were received on this topic

(17) Socio-Economics, Recreation and Tourism

2.43. No comments were received on this topic

(18) Health and Wellbeing

2.44. No comments were received on this topic

3. Volume 3: Marine Environment:

3.1. NRW TE advises that the relevant National Policy Statements (NPS) are considered and referred to for all relevant receptors in their appropriate chapters throughout the ES. Please note that a review of the energy NPSs is currently underway (<https://www.gov.uk/government/consultations/planning-for-new-energy-infrastructure-review-of-energy-national-policy-statements>) which you may need to take account of in further developing their proposals.

3.2. NRW TE highlights that the following are (but not limited to) other environmental matters relevant to consider:

- the interaction with Welsh Government's MPA Network Completion project which could identify Marine Conservation Zones in areas of Floating Offshore Wind (FLOW) interest;
- the implications of work under the Offshore Transmission Network Review;
- the implications of The Crown Estates FLOW leasing round, aggregates and Round 4 plans, and
- the inevitable need to build the evidence base for FLOW.

NRW TE would be happy to have discussions about these matters with you at a convenient time.

3.3. JNCC note that "a buffer distance of 10km of the proposed Project has been considered which encompasses all likely Zol to benthic receptors within the subtidal". We await the establishment of the Project's Zol as per Section 30.3.2.1. and further clarity as to how the Zol has been determined.

3.4. RSPB encourages that the developer opens discussions with The Wildlife Trust of South and West Wales and The Wildlife Trusts for advice on Marine Mammals and Benthic Ecology.

(19) Physical Environment

- 3.5. NRW TE advise that marine water quality is a receptor in its own right and should not be embedded in the physical processes chapter of the ES. Therefore Section 19.1, 19.4.11, Table 19.4 should be modified to take this into consideration and present a separate marine water quality chapter.
- 3.6. NRW TE would like to clarify that apart from the seabed morphological features at the coast, physical processes are not in themselves receptors. These are instead pathways through which any alteration to the hydrodynamics (waves, currents, water levels) and sediment transport caused by the development proposals, can indirectly impact other environmental receptors. For example, impacts on water quality, and subtidal and intertidal benthic ecology.
- 3.7. NRW TE welcome the breadth of guidance already sourced to inform the physical processes impact assessment. However, NRW TE would like to point out additional guidance and peer reviewed research papers that in their view should also be used to inform the baseline and impact assessment:
- King *et al.* (2019). The impact of waves and tides on residual sand transport on a sediment-poor, energetic, and macrotidal continental shelf.
 - Guidelines in the use of metocean data through the lifecycle of a marine renewables development'. (ABPmer *et al.*, 2008b); and
 - Offshore Windfarms: Guidance note for Environmental Impact Assessment in Respect of FEPA and CPA requirements'. (Cefas, 2004).
 - Further review of sediment monitoring data'. (COWRIE ScourSed-09). (ABPmer *et al.*, 2010);
 - Review of Round 1 Sediment process monitoring data - lessons learnt. (Sed01)' (ABPmer *et al.*, 2007);
 - Dynamics of scour pits and scour protection - Synthesis report and recommendations. (Sed02)' (HR Wallingford *et al.*, 2007); and
 - Potential effects of offshore wind developments on coastal processes'. (ABPmer and METOC, 2002).
- 3.8. NRW TE would like to point out the following in relation to Table 19.2 (beside the point made about removal of mention to water quality impacts as it is not considered to be a direct Physical Processes impact), some of which will change what is scoped in/out of the EIA:
- Installation: surveys – temporary disturbance causing increase in SSC: Suspended sediment plumes generated that will be advected away from site by the prevailing currents and the maximum extent of these plumes will depend on the sediment size and the maximum tidal excursion. The redeposition of sediment onto the seabed will potentially cause an alteration to the sediment morphology through change to sediment type and sediment thickness variations.
 - Installation: the destruction of sand waves is not necessarily a temporary disturbance. Sand wave recoverability is dependent on the sediment mobility at

that site and the hydrodynamics. If the sand waves are stable features with very low movement, then the sand waves may never recover. Sand wave clearance is not just disturbance but a potential alteration to seabed morphology.

- Cable Laying: Installation: we disagree that cable laying will have no significant impact on the seabed or on associated physical processes. No rationale is provided as to why this is scoped out from further assessment, and we strongly advise that it remains scoped in until evidence is presented that confirms that the cable laying activities do not cause significant impacts to the seabed features or cause alterations to sediment morphodynamics, particularly in relation to the impact on offshore sand banks and beach morphodynamics.
- Installation: Cable burial: The rationale notes that this will only be scoped in for cable burial >10m water depth. It is not clear what methods are proposed for water depths <10m. The whole cable route should be assessed.
- Installation: Cable Protection: The cable protection will directly impact on other receptor areas such as benthic ecology and Water Framework Directive (WFD) depending on where it is in proximity to the coast. However, the impacts of cable protection should be assessed in their respective chapters and not specifically in the physical processes chapter.
- Installation: anchor deployment: it is not explicitly clear what activity this is referring to. The FLOW structures will be anchored to the seabed. No reference has been made to the potential impacts caused by the drag anchors in deeper water e.g., sediment disturbance. Clarity is sought with regard what this pathway is specifically referring too – we assume that it refers to the boat anchors during cable laying of the export cable.
- Installation: Mooring systems: the impacts arising from installing the floating offshore wind structure mooring systems, for example, using drag anchors or pile foundations have not been included. Such impact pathways need to be further considered and scoped in at this stage.
- Operation and Maintenance: We are concerned that a number of impacts have been omitted (scoped out) from Table 19.2. We strongly advise that you consider and scope in the following:
 - i. Potential changes to tidal regime, wave regime and sediment transport regime through blockage effects of the floating OWF structures and mooring cables. Please note that persistent changes to waves and currents may have a net effect over time on net patterns of sediment transport (rate and direction). The sensitivity of these patterns of change will depend upon the relative importance of currents and/or waves, the magnitude and extent of any effect, the nature of the seabed system and degree to which the system is presently in balance e.g., is the present rate and direction of transport essential to the maintenance of a dynamic morphological feature.
 - ii. Abrasion impacts arising through movement of the mooring chains across the seabed leading to scour pits and change to seabed sediment type and increase in SSC plumes. Extent and depth of scour may vary over time.

iii. Effects of increased turbulence on sediment transport immediately adjacent to any laying objects, for example in relation to anchoring structures on the seabed which can cause scour.

iv. The requirement for cable protection in the nearshore zone and across the intertidal cannot be ruled out at this time, particularly if the cable has to cross another cable. Presence of cable protection so close to the shore will potentially interrupt the longshore sediment transport pathway and cause alteration to the beach morphodynamics downstream of the site. Wave refraction and diffraction processes caused by the presence of the cable protection in shallow water could also cause energy refocussing towards the coast leading to coastal erosion.

3.9. NRW TE consider that clear rationale and evidence should be provided to justify the study area to be 10km as presented in figure 19.1 (Section 19.3). NRW TE strongly advise that the maximum spring tidal excursion is used to define the Zol which will vary from offshore to inshore depending on the spring tidal ellipses (which are generated by the current velocity and direction of flow). Tides in the region flow from the west-north-west to east-south-east on the flood and reverse in direction on the ebb. The study area shown in figure 19.1 does not suggest that the direction of flow has been considered in defining the Zol particularly for the offshore array area. The submitted ES must clarify the tidal excursion being proposed with sufficient justification and evidence presented to demonstrate why the value is considered appropriate. Early engagement with NRW TE is advised to agree the Zol for physical processes as it will also be relevant to the impact assessment for the other receptor areas.

3.10. NRW TE advise to include only the physical processes criteria in Table 19.3. The table refers to marine receptors that are indirectly impacted by the physical processes i.e., where physical processes is a pathway acting on sediment and water quality. Sensitivity on other receptors should be addressed in their respective chapters, otherwise, important impacts may be omitted if it is considered that the sensitivity to physical processes is low.

3.11. JNCC would like to better understand how the baseline (section 19.4) is expected to evolve over the lifespan of the proposed project.

3.12. NRW TE considers that the detail presented in this scoping report to describe the seabed geomorphology (section 19.4.9) for the study area is insufficient and strongly advise that seabed geomorphology (including: bedform features, sand waves, sand banks, sediment type, mobile sediment depth) are described for the entire project area. This should be done using high resolution multibeam bathymetric survey data, and a description of the bedload and suspended sediment transport processes presented. A data gap analysis should be carried out to determine the requirement for further high-resolution bathymetric surveys if there is insufficient data publicly available. Please note that accurate determination of the bedform migratory rates of sand wave fields and understanding the complexities of the sediment transport regime around sandbanks present in the study area (e.g., Turbot Bank), will be critical for an accurate assessment of the impacts arising from cable laying activities and cable protection measures.

- 3.13. NRW TE understand that the baseline environment for the chosen landfall location has to be well described in terms of coastal sediment transport processes and beach morphodynamics (section 19.4.13) at the point of submission.
- 3.14. The boundaries of the designated sites on the map in section 19.4.14 and the project study area overlaid with the features of interest relating to physical processes should be presented to aid the assessment.
- 3.15. NRW TE advise that the list in section 19.6 Likely Significant Effects is revisited and the effects to only include the physical processes. The effects on the other receptors should be separated from the physical processes and moved to their respective chapters. Marine physical processes are pathways and the impact to the hydrodynamics and sediment transport processes caused by the development activities can potentially cause indirect impacts to other environmental receptors including the coast, offshore sand banks (Turbot Bank) and seabed areas contained within nationally or internationally designated sites.
- 3.16. NRW TE considers in Table 19.2, with regards to WFD, should consider water-body scale impacts and the potential effects of the project on the WFD status and objectives, at an element level. Also, in relation to the composition of the drilling fluids to be used for HDD, it is expected that bentonite could be used which will remain in suspension increasing suspended solid concentration. Therefore, bentonite release (or similar) would need to be assessed in the context of suspended sediment releases.
- 3.17. NRW TE generally agree the potential impact pathways included for water quality elements noted on Table 19-2, however, consider that there are some omissions:
- Installation / Decommissioning: Contaminants must be considered throughout the cable corridor and all the way up to landfall and must be compared against CEFAS action levels. (Note: at landfall, dependent on sediment type present, the potential to release bacteria from the sediment (noting it is typically associated with fine sediment) might also need to be considered;
 - Operation: The potential to increase temperature as a result of cabling must be considered – this could also impact both on benthic ecology and bacterial growth;
 - Installation: While HDD has been included (and scoped out) in terms of water contamination, trenching has not. Trenching should be included and the impacts scoped in due to the potential to release chemicals and / or bacteria;
 - It would be helpful to lay out the potential impact pathways for marine water quality more explicitly and within its own chapter of the ES, so that it can be determined if all correct impact pathways have been identified. For example, it appears that there is no (or very limited) consideration has been made of the potential for bacterial and turbidity releases to impact on Bathing water quality.
- 3.18. Please note that disturbance of Suspended Sediment Concentrations (SSC) will also lead to advection and redeposition of the sediment plume with the spatial extent and concentration of the sediment plume dependent on the percentage distribution of sediment size and type, the water depth, and the hydrodynamics.

Redeposition of the suspended sediment plume will also cause seabed morphological change which can indirectly impact on the benthic ecology receptor.

3.19. NRW TE recommend in relation to section 19.7.1 that you follow the NRW GN041 guidelines (<https://naturalresources.wales/guidance-and-advice/business-sectors/marine/marine-physical-processes-and-environmental-impact-assessment-eia/?lang=en>), with specific reference to Chapter 6 of the embedded Evidence Report (Guidance on Best Practice for Marine and Coastal Physical Processes Baseline Survey and Monitoring Requirements to Inform EIA of Major Development Projects, NRW Evidence Report 243, Brooks *et al.*, 2018). You will need to clearly demonstrate that the sourced data is fit for purpose and still valid to characterise present day conditions. NRW TE advise that any data used to inform the baseline understanding must have been collected and analysed in accordance with recognised data quality standards. The sourced data will need to provide the appropriate temporal and spatial coverage and resolution which will adequately describe the present-day conditions within the study area as well as longer-term historical change; both of which are essential to establishing a full conceptual understanding of the natural physical environment baseline of the site and surrounding area. The data sourced should be fit for purpose to sufficiently address the key themes of baseline understanding as described in Brooks *et al*, 2018 (see below for information):

- Identification of the processes maintaining the system, the reasons for any past changes, and sensitivity of the system to changes in the controlling processes.
- Identification and quantification of the relative importance of high-energy, low frequency (“episodic” events), versus low-energy, high frequency processes.
- Identification of the processes controlling temporal and spatial morphological change (e.g., longevity and stability of bedforms; cliff recession; loss of beach volume; or bank and channel migration; inter-tidal accretion/ erosion), which may require a review of bathymetric and topographic data.
- The identification of sediment sources, pathways and sinks, and quantification of transport fluxes.
- The identification of the inherited geological, geophysical, and geotechnical properties of the sediments at the site, and the depth of any sediment strata.
- Interaction of waves and tides and the subsequent quantification of the extent to which seabed sediment is mobilised.
- The assessment of the scales and magnitudes of processes controlling sediment transport rates and pathways.

3.20. NRW TE disagrees with the intention to rule out the potential requirement for numerical modelling to inform the impact assessment for the proposed project (Section 19.7.2). NRW TE will expect a review of available evidence (for example evidence reports from other similar projects / windfarm schemes) to fully understand the range of evaluation techniques and best practice applied to similar schemes. NRW recommend early engagement with NRW TE in this topic before agreeing that numerical modelling is not required.

- 3.21. Furthermore, JNCC would like to better understand which surveys are proposed, as the information provided in Section 19.7.3 is very limited.
- 3.22. NRW TE indicates that Vessels should also follow the Work Boat Code (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/441389/Workboat_Code_IWG_Tech_Std_14-06-09-sgs.pdf) as found on the Marine and Coastguard Agency website.

(20) Benthic Ecology

- 3.23. It is stated that the assessment methodology for benthic ecology will follow the standard methodology for ecological receptors outlined Chapter 8, which is in line with CIEEM guidance for ecological impact assessments (CIEEM, 2018). This methodology relates to terrestrial receptors, and NRW TE indicates that some of the criteria are not appropriate for benthic habitats. For example, Section 8.7.3.2 describes how the sensitivity of the receptor will be assessed based on geographical frames of reference, some of which are not relevant in the marine environment. NRW TE recommend further clarity is requested on the frames of reference that will be used for marine receptors.
- 3.24. JNCC have stated that the turbine's anchor placement impacts should be considered within Table 20-1, given that will be in place for the duration of the project and result in long term disturbance of the seabed. Further discussion on the timescales of what would be considered a permanent and/or temporary loss may be required.
- 3.25. NRW TE considers that in relation to Table 20-1:
- Operation: Introduction and spread of Invasive non-native species (INNS): New infrastructure could act as a stepping stone for the introduction of INNS. NRW advise that biosecurity is considered and assessed in all stages of the development including the operation phase.
- Operation: Maintenance potential effects the same as route preparation and cable installation: NRW TE advise the following potential impact pathways should be scoped in for the operation phase:
- i. Temporary increase in SSC and sediment deposition leading to contaminant mobilisation, turbidity, and smothering effects – from maintenance operations
 - ii. Operation Indirect habitat loss – potential impacts on adjacent benthic habitats from on-going scour, changes in hydrodynamics and abrasion from the movement of catenary chains.
 - iii. Operation Disturbance to benthic habitats – potential disturbance to benthic habitats from planned maintenance, cable failure, excavation but also disturbance and potential impacts to benthic habitats from the movement of the catenary chains.
 - iv. Operation Habitat alteration – The introduction of hard substrate in the form of cables and scour protection may lead to increased heterogeneity and

consequently to new different biological communities, particularly in areas of soft sediment where hard substrate is uncommon. Adjacent habitats may be indirectly affected by infrastructure through scour, changes in hydrodynamics, increased sedimentation/smothering in the construction phase and through additional ongoing scour and change in hydrodynamics in the operation and maintenance phase.

- v. Operation Effects of electromagnetic fields (EMF) emissions – NRW TE disagree this potential impact can be scoped out as there is some evidence that EMFs affect crustacea behavioural patterns (e.g. Scott *et al.*, 2021, Harsanyi *et al.*, 2022) which would potentially include certain species under Section 7 (Environment Wales Act 2016) e.g., Crawfish *Palinurus elephas*. As Chapter 7 habitats and species have not been incorporated into the current scoping document it is not possible to scope out these elements without further assessment.
 - vi. Operation Changes in hydrodynamics – We note this potential impact pathway has not been scoped in for benthic habitats. We advise it will be important to make links between potential impacts to the physical environment and subsequent impacts on benthic habitats in the ES given the close interlinkages and inter-dependencies between both receptors i.e., impacts on physical processes informs impacts on benthic habitats. It is currently unclear from the scoping report how impacts that span across both of these receptors (physical processes and benthic habitats) will be assessed and/or how links will be made between chapters with other receptors e.g., water quality. See also the physical processes section above
- 3.26. NRW TE would like to refer to comments made in Physical Processes with regards to the definition of the Zol to revise accordingly the buffer distance defining the study area (Section 20.3).
- 3.27. Native oyster (*Ostrea edulis*) beds are also present within the offshore cable scoping boundary. *Ostrea edulis* beds are also a habitat present within the Annex I Estuaries and Large Shallow inlets and Bays features of the Pembrokeshire Marine SAC, a Section 7 species and an OSPAR habitat. NRW TE advise that you contact NRW's data distribution team to be provided with a copy of the relevant data points.
- 3.28. NRW TE (Section 20.4.3) advise potential impacts to Limestone Coast of South West Wales SAC are also scoped in as the "Submerged or partially submerged sea caves" feature are cross-boundary features between the Limestone Coast SAC and the Pembrokeshire Marine SAC. Whilst NRW TE acknowledge the sensitivity of this feature to project secondary effects may be lower than for other habitat features, some biotopes within this feature may still be sensitive to project secondary effects.
- 3.29. JNCC would like to highlight that impacts from the introduction of scour protection should be considered within Section 20.6 and Table 20-1.
- 3.30. NRW TE welcome the proposal to gather project-specific survey data and encourages engagement with NRW TE on survey requirements (Section 20.7). NRW TE would like to remind you of NRW guidance on benthic habitat assessments for

marine developments (<https://naturalresources.wales/guidance-and-advice/business-sectors/marine/benthic-habitat-assessments-for-marine-developments/?lang=en>).

- 3.31. JNCC will also require further information regarding the project-specific surveys mentioned in section 20.7 and 20.8 before providing further comments.

(21) Fish and Shellfish Ecology

- 3.32. NRW TE welcomes the intention to further assess sandeel and herring spawning in light of the results of the benthic sampling and would advise that GIS modelling is carried out using the methodology described by Reach *et al* (2015), Latto *et al* (2013) and Marine Space Ltd *et al* (2013a, 2013b).
- 3.33. For oceanic species, such as Bluefin tuna (*Thunnus thynnus*) and Basking shark (*Cetorhinus maximus*) (a Wildlife and Countryside Act and OSPAR protected species), NRW TE indicates that additional data should be consulted to assess the species-specific risk of entanglement. The ES for Project Erebus list several data sources and records which can be used.
- 3.34. NRW TE recommends that surveys proposed for marine mammals, Digital Aerial Surveys for birds, as well as sampling of benthic habitats are used to record any fish encountered. For example sandeel from grab sampling, or fish encountered in video surveys as well as to include observations of large oceanic fish to inform the assessment.
- 3.35. Figure 21-1 Map of study area: NRW TE advise that Cardigan Bay and River Teifi SAC, both of which have Annex II diadromous fish features, are borderline on the screening criteria but should be included on the map and scoped in for migratory fish species.
- 3.36. The Salmon and Freshwater Fisheries Act (1975) should be included in the list of relevant legislation for the project (Section 21.2). Although the site is offshore and outside the 6nm distance from the coast, the cable corridor and wider study area is inside the boundary where the legislation applies.
- 3.37. NRW TE agrees that underwater noise from construction activities is likely to be a primary effect on fish, especially for fish where the swimbladder is near or connected to the ear, such as in the clupeids. Recent evidence (Davies *et al* 2020b) has found that Twaite shad from the River Severn undertake long range migration across the Celtic Sea, and NRW TE therefore recommend that to ensure any fish passing through the Study Area are considered, a regional approach is taken, screening in all sites with noise sensitive fish features (Section 21.3). Furthermore, NRW TE recommend that site and project specific noise modelling is undertaken to inform the detailed assessment.
- 3.38. NRW TE does not disagree with the species described in section 21.4.1 to 21.4.4, and understand that this is not an exhaustive list. However, NRW TE advise that for EIA purposes, receptor fish species should primarily be informed through a combination of species conservation status (e.g. Annex II, OSPAR, Section 7), species of commercial importance and their ecological role, e.g. species which form

important prey species for other receptors, such as marine mammals and birds and as such this list should be refined and appropriate processes for species selection identified.

- 3.39. Angel shark (*Squatina squatina*) is listed as a species on the Wildlife and Countryside Act under Schedule 5; is an OSPAR/Section 7 Species, as well as being listed on the Convention on the Conservation of Migratory Species of Wild Animals. NRW TE considers that the angel shark should also be included in section 21.4.4 and the assessment due to historic and current presence in Welsh waters (Barker *et al.* 2021 in-prep) and the potential for this species to make seasonal inshore-offshore movements particularly in relation to potential effects of EMF.
- 3.40. You should note and be aware that there are Atlantic herring (*Clupea harengus*) spawning grounds inside the Pembrokeshire Marine SAC, as well as in the coastal areas (Davies *et al.*, 2020a) so these need to be appropriately captured and considered in the ES, Section 21.4.5. Whilst NRW TE agrees with the use of the fisheries sensitivity maps by Coull *et al.* 2012, and Ellis *et al.*, 1998 the limitations of these maps should be noted, especially around the lack of survey data for coastal waters and water less than 30m deep, as well as the age of some of the data. NRW TE further advise that additional data sources for the Celtic Sea should be consulted, such as the PELTIC surveys conducted by Cefas. The recent report 'Spawning and nursery grounds of forage fish in Welsh and surroundings waters' (Campanella & van der Kooij, 2021) presents a useful summary of data sources for a range of fish species in Welsh waters and NRW TE recommend that this is considered.
- 3.41. NRW TE also advise that Atlantic salmon (*Salmo salar*) (Annex II migratory fish), and sea trout (*Salmo trutta*) are included in Section 21.4.7, as described in Section 21.4.3, as these are features of the Severn Estuary SAC/Ramsar site migratory fish assemblage. NRW TE welcomes the intention to screen in the Severn Estuary SAC but would advise that the Rivers Usk and Wye SACs connected to the site, are also included and should therefore be scoped into the assessment.
- 3.42. NRW TE agree with the list of potential impacts identified in Section 21.8, and that no specific fish or shellfish surveys are required. However, as described above, should any fish be encountered during the benthic surveys this information should be used to validate the desk top study of spawning/nursery habitat, in addition to the recommendations above relating to the additional data sources and modelling for some receptor species.
- 3.43. NFFO understands that there are potential impacts on fish and shellfish stocks which this scoping document does not adequately capture. NFFO note that the ecological baseline to be used in assessing these impacts relies largely on studies of the regional marine fauna conducted in 2012 or earlier with no Project specific surveys planned for the assessment of impact pathways (section 21.8). NFFO understands that this reliance on outdated surveys, despite subsequent environmental changes and the completion of various offshore construction projects with the potential for ecological disruption lacks credibility. NFFO points at examples of other projects willing to conduct new baseline and post-construction monitoring surveys for their projects which have aided immeasurably the understanding of the actual environmental impacts of offshore development and the mitigation of any that

appear to be negative. NFFO would like to point at the work conducted by Ørsted on the Westermost Rough project is an exemplar of what can be achieved.

- 3.44. NFFO understands that the scoping report dismisses the potential impacts of electromagnetic field emissions (EMF) on fish, shellfish and cetaceans. A feature of floating, as opposed to fixed, wind farms, that the inter array cables descend gradually from each turbine, buoyed in mid water to achieve a 'lazy wave' configuration and allow for the movement of the turbine and as such cables will be suspended for long distances in the water column, not trenched and shielded by sediment or rock armouring. Organisms will therefore be exposed to EMF throughout the array. Therefore, NFFO as well as SNCBs understand that EMF should be scoped in the assessment and the potential impact on commercial fish and shellfish stocks or cetacean populations evaluated should be properly investigated. The NFFO points out that recent research has identified negative effects of EMF on the larval development of crab and lobster [Harsanyi *et al* (2022) The Effects of Anthropogenic Electromagnetic Fields (EMF) on the Early Development of Two Commercially Important Crustaceans, European Lobster, *Homarus gammarus* (L.) and Edible Crab, *Cancer pagurus* (L.) J. Mar. Sci. Eng., 10, 564] – both important commercial species in this region.

(22) Marine Mammals

- 3.45. NRW TE does not agree with the rationale of using a 50km buffer for scoping purposes for cetaceans, or the 135km buffer for grey seals. The Annex II marine mammal features of SACs are mobile and wide ranging. They are not limited to the boundaries of the SACs, and can be found, and therefore impacted anywhere within the relevant management unit (MU) – including within the impact footprint of the underwater noise activities described in the scoping report. NRW TE consider the MUs and the SACs within them as functionally linked areas (Chapman & Tyldesley 2016).
- 3.46. NRW TE advises that the MU is the appropriate scale for consideration of offsite impacts for marine mammals. The proposed works fall within both the Celtic & Irish Seas MU for Harbour porpoise, and the OSPAR Region III interim MU for grey seal. We therefore advise that the following SACs with marine mammal features within the relevant MU should be scoped into the assessment (NRW, 2020a):
- Gogledd Môn Forol / North Anglesey Marine (Harbour porpoise)
 - Gorllewin Cymru Forol / West Wales Marine (Harbour porpoise)
 - Dynesfeydd Môr Hafren / Bristol Channel Approaches (Harbour porpoise)
 - Pen Llŷn a'r Sarnau / Llyn Peninsula and the Sarnau (Grey seal)
 - Cardigan Bay / Bae Ceredigion (Grey seal)
 - Pembrokeshire Marine / Sir Benfro Forol (Grey seal)
- 3.47. Where the MUs include SACs outside of UK waters, transboundary impacts must also be considered, and the potential impacts on SACs within other jurisdictions should be assessed. Details of these sites can be found in NRW (2020a, attached).

- 3.48. NRW TE indicates that the proposed works fall within the Offshore Channel, Celtic Sea & SW England MU for Bottlenose dolphin. There are no SACs with bottlenose dolphin features within this MU. We do not consider that the bottlenose dolphin features from the SACs listed above are likely to be found within the project impact area and therefore advise that there is no likely significant effect on this feature.
- 3.49. With regards to the HRA, NRW TE advise that the proposed works are likely to have a significant effect (either alone or in combination with other plans or projects) on the aforementioned SACs and therefore recommend that an Appropriate Assessment (AA) is carried out on all of the sites listed. Advice on how to carry out the AA for those marine mammal features can be found in NRW (2020a, attached)
- 3.50. NRW TE agrees with the use of the data sources listed (section 22.7), although it is not clear what data source IAMMWG (2021) refers to as this reference is not listed in the reference list. NRW TE note the intention to use project specific survey data but there is no further information on what surveys are intended, or what data will be collected. NRW strongly recommend further engagement with NRW TE and JNCC to discuss what surveys are proposed, to avoid the risk of there being inadequate data to form an assessment.
- 3.51. JNCC indicates that for offshore areas the relevant Special Areas of Conservation (SACs) for this development have been identified. Potential impacts scoped in and out for the EIA are appropriate but need more detail added as this is a Floating Offshore Wind (FLOW) project, and some impacts are still poorly understood.
- 3.52. NRW TE agree with the stated intention that the Study Area (Section 22.3) will take into consideration (where available) species specific marine mammal Management Units (MUs) published by the Inter Agency Marine Mammal Working Group (IAMMWG, 2015) and a consideration of the designated sites within for the initial screening. However, JNCC indicates that the management unit (MU) for bottlenose dolphin relevant to this development is OCSW – offshore Channel, Celtic Sea and South West England, not Irish Sea MU.
- 3.53. JNCC would like to stress that the SCANS surveys proposed in Section 22.4.1 represent a snapshot of cetacean presence, as they represent a single survey conducted in each area. There may be other species present, for example, Risso's dolphins.
- 3.54. JNCC would like that Section 22.4.2 clearly state that the values represented in Table 22-2 are from counts from 2016 – 2019 itself. Also note in the text that the total population estimate is “<15”; the figure of <10 is observed individuals on the survey only.
- 3.55. JNCC indicates that it would be beneficial if the distance between Marine Protected Areas (MPAs) and the array/cable scoping areas in Table 22-3 were separated, as the potential impacts associated with each area could be different.
- 3.56. JNCC indicates the following in relation to potential impact pathways in relation to marine mammals during construction, operation and decommissioning of the proposed project (Table 22-4) under Potential Impact Pathway:

Effects of underwater sound: Underwater noise during the operational stage is not included as a potential impact pathway; this should be added. The effects of underwater sound during construction and operation will be very different. FLOW cable “thrums” and operational noise are not mentioned and noting that “maintenance potential effects same as construction” is not sufficient. Please note that cable “thrums” have not been well characterised in terms of underwater sound levels and potential to impact marine mammals either for individual turbines or arrays. This may require specific modelling or other studies. How turbine operating noise propagates from floating turbines is also poorly understood.

JNCC also note that the likelihood of finding UXOs, especially in the inshore part of the study area, is considered high. JNCC highlight a position statement¹ published Defra and signed by (amongst others) JNCC and NRW regarding UXO clearance methods.

Entanglement with mooring lines and cables: Please include the reference for the specific study mentioned. This is an emerging technology which is poorly understood in terms of potential to impact marine mammals and entanglement events of FLOW with marine mammals not well quantified. This should be made clear.

- 3.57. NRW TE supports the inclusion of the measures detailed in section 22.5 to minimise the risk of impact to marine mammals.
- 3.58. NRW TE agrees with the list of impact pathways as detailed in Table 22-4 to be scoped in to the assessment for marine mammals.
- 3.59. Section 22.7 states that the assessment methodology for marine mammals will follow the standard methodology outlined for ecological receptors outlined in Volume 2, Chapter 8, which is in line with CIEEM guidance for ecological impact assessments (CIEEM, 2018). However, NRW TE indicates that this assessment methodology relates to terrestrial receptors, and some of the criteria are not appropriate for marine mammals. For example, Section 8.7.3.2 describes how the sensitivity of the receptor will be assessed based on geographical frames of reference, some of which are not relevant in the marine environment. NRW TE recommend further clarity is requested on the frames of reference that will be used for marine receptors.
- 3.60. NRW TE note the potential for UXO to be present at the development site, and support the intention to collect magnetometer data to assess the potential for issues. NRW TE note that the potential for underwater noise impacts from UXO have already been scoped in to the assessment. We recommend that should UXO disposal be necessary, you should refer to the joint interim position statement on UXO clearance: <https://www.gov.uk/government/publications/marine-environment-unexploded-ordnance-clearance-joint-interim-position-statement/marine-environment-unexploded-ordnance-clearance-joint-interim-position-statement>

(23) Ornithology

- 3.61. RSPB reminds the developer that the ES should provide a detailed programme of ornithological surveys and comprehensive identification of protected sites and species that could be affected by the proposal. All impacts on nature conservation interests should 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. Monitoring should be employed to verify predictions and identify any unexpected impacts.
- 3.62. 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.
- 3.63. JNCC indicates that the screening exercise for Special Protected Areas (SPA) at potential Likely Significant Effect (LSE), as part of Habitats Regulations Assessment (HRA), is incomplete and needs additional work.
- 3.64. It is of JNCC's opinion that the long list of projects to be included within an in-combination assessment is far from complete and needs additional work. This may be best undertaken after a screening exercise has identified the SPAs which may be impacted and upon which in-combination impacts need to be identified.
- 3.65. JNCC and NRW TE as the Statutory Nature Conservation Bodies (SNCBs) advise the use of Woodward *et al.* (2019) species-specific Mean Max +1SD. This represents a relatively quick and straightforward approach to establishing connectivity between a proposal's location and a site's qualifying features, as is required to establish likely significant effects. There is, however, the possibility that using this approach could miss out some colonies; therefore, a sense check will also need to be performed to ensure that all colonies for which there is a potential for likely significant effect are included at the screening stage. Assessments should always be based upon the best and most up to date evidence available.
- 3.66. The list of species to be included in scoping will need to be expanded to include all marine birds listed as features of designated sites within the mean max +1SD foraging ranges (Woodward *et al* 2019).
- 3.67. RSPB considers that the scoping document is generally comprehensive and covers most ornithological issues sufficiently. Nevertheless, there are some additional matters that we consider need further consideration as part of the EIA, including the screening of designated sites and cumulative/in-combination effects. Furthermore, the array area also falls within potential spawning and nursery areas for important seabird foods prey items which include sand eel, herring, and sprats.
- 3.68. Section 23.3. paragraph 2 for clarity JNCC suggest rewording to "and selected sites designated for far ranging species with a mean maximum +1 Standard Deviation foraging range (from Woodward *et al.* 2019) that is greater than 100 km." Furthermore, NRW TE advise that all designated sites with named features whose foraging ranges fall within the mean maximum foraging range +1 standard deviation (Mean Max +1SD) in Woodward *et al* 2019, should be included for scoping as it is

not possible to know what sites might be affected until the surveys show what species are present, and key work such as apportioning has been completed. Potential impacts on wintering bird features and the potential impacts on birds migrating to and from protected sites, along with estuarine Special Protection Areas (SPA) and Sites of Special Scientific Interest (SSSI) features which could be affected by collision risk on migration, should also be included in scoping and screening. Given that populations of breeding seabird qualifying features at SPAs are afforded protection throughout the year, projects or plans remote from the breeding colony site should be subject to the HRA process regardless of time of year at which birds may interact with those projects/plans, if an impact pathway exists. Therefore, there is a need for an HRA and EIA to consider species at colonies that are within foraging distance of the proposed development during the breeding season, and to also consider assessment of impacts to birds from these colonies in the non-breeding season.

- 3.69. In Table 23-1 JNCC notes that for common guillemot outside of the Northern Isles, JNCC recommend a foraging range of 95.2km, which excludes data from Fair Isle collected during years in which the species was thought to show unusual foraging ranges due to lack of food. For razorbill outside of the Northern Isles, JNCC recommend a foraging range of 122.2km, which excludes data from Fair Isle collected during years in which the species was thought to show unusual foraging ranges due to lack of food. For northern gannet at Grassholm SPA JNCC recommend a foraging range of 516.7km based on site-specific tracking data. These foraging ranges will identify SPAs which should be screened in for further consideration as part of the HRA process. Additionally, NRW TE requests that site-specific tracking data are available e.g. for northern gannet at Grassholm SPA should be assessed in addition to the Mean Max +1SD foraging ranges from Woodward *et al* 2019. These foraging ranges will identify SPAs and SSSIs which should be screened in for further consideration as part of the HRA and EIA process.
- 3.70. In Table 23-2, JNCC, NRW TE and RSPB indicate that many features of SPAs with foraging ranges which overlap the project array area have been missed in this table. The exercise should be repeated. For example, some missing SPAs include the Isles of Scilly SPA (European Storm Petrel, and assemblage which includes Manx shearwater, northern fulmar and Atlantic puffin as named components) and several SPAs including Manx shearwater as a feature across the western UK. It is not clear why this table does not include many more SPAs. JNCC notes that the text states “Once the ornithological receptors have been established, the foraging ranges set out in Table 23-1 will be used to identify any further designated sites, beyond those listed in Table 23-2, that will need to be assessed as part of the EIA”. However, it remains unclear what the purpose of Table 23-2 is, if it is not to conduct a full review of SPA features within foraging range, that could later be excluded if not present in ornithological characterisation surveys. NRW TE is in agreement that the list of sites and designated features needs to be significantly expanded to include all designated sites within mean max +1SD foraging ranges (Woodward *et al* 2019) which overlap with the project array. These foraging ranges will identify SPAs which should be screened in for further consideration as part of the HRA process and SSSIs for the EIA. RSPB also stresses that 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.

3.71. RSPB indicates that the Balearic shearwater and appropriate SPAs allocated/designated for this species should be also considered. This is Europe's only critically endangered seabird which occurs in Welsh waters including the Celtic Sea (Phillips *et al.* "Consistent concentrations of critically endangered Balearic shearwaters in UK waters revealed by at-sea surveys." Ecology and Evolution (2020).)

3.72. RSPB indicates that Table 23-2 should also include the following international sites:

- Aberdaron Coast and Bardsey Island SPA
- Isles of Scilly SPA
- Great Saltee SPA (Republic of Ireland)
- SPAs designated for Balearic shearwater
- SSSIs which are components or underpin SPAs

RSPB also indicates that some of the SSSI features for those listed are incorrect for example, the designated features of the Skerries are incorrectly listed as Herring gull, lesser black-backed gull and puffin. Whereas, the qualifying features are Arctic tern, common tern and roseate tern. RSPB recommend you to liaise with the relevant SNCBs to obtain the correct details of relevant designated sites.

3.73. JNCC and NRW TE strongly recommends the review of additional data to be used in conjunction with data from digital aerial surveys (section 23.4) to further inform several aspects of the screening, EIA and HRA assessments. For example:

- Tracking data to demonstrate use of the project array area and colony of origin, which is likely available for several species/colonies of relevance (e.g. gannet at Grassholm SPA, several Manx shearwater colonies). This may potentially also inform flight height and flight speed parameters for use within collision risk modelling (noting that discussion with SNCBs would be required in advance of relying on such information that is not currently included within SNCB advice around generic parameters).
- Colony monitoring to inform demographic parameters for use in Population Viability Analysis (PVA) (e.g. Skomer common Guillemot long-term monitoring study).

3.74. NRW TE agrees with the 4km buffer for the array area and cable route being applied for the two years of digital aerial surveys (section 23.4). However, NRW TE encourages you to provide details on survey design and coverage so that NRW TE can comment on whether or not it is sufficient. NRW TE would welcome early engagement and discussion with you regarding survey requirements.

3.75. NRW TE would like to understand how you propose to determine flight height (section 23.4 and 23.7). Flight height analysis from digital aerial footage has not yet been proven, or accepted by SNCBs so generic flight heights from Johnston *et al.*

(2014) should also be used in assessing collision risk. As part of the Collision Risk Mortality CRM assessment, applicants are advised to use the Basic Band model option 2 (Johnston *et al*, 2014) using flight height data. Discussions between the SNCBs and digital aerial providers are ongoing, but in the interim, until these investigations are completed, use of Johnston *et al*. (2014), is considered appropriate.

3.76. RSPB indicates that the scoping area for the EIA should be denoted by mean-maximum foraging ranges from seabird SPAs and SSSIs. RSPB note you reference to Thaxter *et al* (2012), the initial standard of mean-maximum foraging ranges based on seabird tracking data and more recent studies, Future of the Atlantic Marine Environment (FAME) and Seabird Tracking and Research (STAR) projects. Wakefield *et al*, 2017 should be used with caution when applied to Lundy.

3.77. RSPB indicates that based upon the Lundy 2017/18 Manx shearwater survey and the 2021 Cliff nesting survey, Lundy now supports over 27,000 seabirds (i.e. above the 20,000 seabird assemblage SPA qualifying threshold) including 5,504 pairs Manx shearwater, which also exceeds the published international importance threshold for this species.

3.78. With regards to site-specific ornithological surveys and baseline data, RSPB indicates:

For offshore:

- Survey methods must comply with up-to-date and best practice guidance. There are limitations associated with aerial surveys including the timing of flights being confined to limited hours of daytime owing to visibility and logistic requirements. Thus, it is crucial to consider the nocturnal and crepuscular activity patterns for all seabirds, especially given the high prevalence of nocturnal species.
- The most up to date information should be used including cliff nesting seabirds on Lundy in 2021. The RSPB can provide this information, which is not yet published. It should also be noted that evidence for the importance of the Celtic Sea for some species (e.g. Wakefield *et al*, 2017 which covered four species, kittiwake, shag, guillemot and razorbill) should be used with caution based on the age of the colony data used in the modelling. Where modelling is based upon old datasets (e.g. Seabird 2000) and where the populations of seabirds at colonies such as Lundy have changed significantly since, re-modelling should be undertaken to use the latest census data.
- RSPB strongly recommend that the developer opens discussions with ornithologists from NRW, NE, RSPB and with other experts who are working on a number of on-going seabird study projects, including tracking data. 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.

Onshore

- RSPB understand that the cable landfall and route corridor are in proximity to the Castlemartin Coast SPA and Angle Peninsula Coast SSSI which are designated for chough. Surveys for chough are not adequately defined in section 8.4.4.1. The RSPB can provide terrestrial bird data for the onshore options, including chough data, and would welcome the opportunity to offer further advice on suitable onshore ornithological survey methods. You recognise the potential for a variety of onshore bird surveys which will include a 100m buffer. Surveys under consideration include breeding and wintering bird surveys. Guidance on appropriate bird survey methods 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

- 3.79. JNCC indicates that in Table 23-3, the due to the lack of evidence, mortality effects resulting from displacement of diving birds due to underwater noise (e.g. UXO detonations) cannot be excluded for the *Construction of decommissioning Project Phase* at this stage. Furthermore, Table 23-3 indicates that creation of roosting habitat as a positive but JNCC would like also to note potential increase in collision risk as a result of this increased attraction for certain species. Related to this, benthic community structures may change as a result of floating wind infrastructure, and this could potentially increasing presence of some seabird species putting them at risk of increased collision.
- 3.80. NRW TE consider that the introduction of platforms for the creation of roosting habitat for birds (Table 23-3) should also be assessed with regards the potential increased collision risk.
- 3.81. RSPB notes that Seabird Food Prey items should be properly considered in the assessment. The RSPB recently commissioned desktop work focused on 11 species of forage fish, including Sandeel, Sprat and Herring which are key food prey items for seabirds (Campanella and van der Kooij, 2021). Spawning and nursery grounds of forage fish in Welsh and surrounding waters. Cefas Project Report for RSPB, 65pp). This report (and associated spatial data) provides information on the forage fish community in Welsh and surrounding waters, including the Irish and Celtic Seas and the western English Channel. Given that several forage fish (prey) species in the northeast Atlantic have shown major changes in distribution and abundance, up-to-date information on their recent distribution patterns is vital. The evidence-base for some food prey species such as sand eel, sprats or herring is either old or there is a lack of data (sprats and herring) and we would therefore recommend that appropriate surveys of these species are included within the site or areas where cumulative impacts could occur.
- 3.82. RSPB notes that nocturnal seabirds may be attracted to the offshore project infrastructure lighting causing them to become disorientated and/or increase their risk of collision with the offshore arrays (Table 23-3). The ongoing Llŷr Project offshore bird surveys being carried out will provide information to inform which species are present in the area. However, it is to clarify 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 value to gain the best possible understanding without any direct assessment.

- 3.83. RSPB indicates that without detailed information regarding the proposed development in its entirety, it is not possible to consider appropriate mitigation. RSPB acknowledge that baseline data from site-specific surveys will inform the need for mitigation measures. RSPB will be happy to discuss mitigation and feasibility of potential options with the developer once the baseline is established.
- 3.84. JNCC are content with the 4km array buffer proposed (section 23.7), given the species present in this area. However, since there is no detail provided on survey design, coverage etc JNCC cannot comment any further on whether coverage is sufficient. There is no mention of density surface modelling; is this intended to be undertaken to inform density and spatial distributions? JNCC would like to stress that they are not satisfied with regard to accuracy of flight heights estimated from digital aerial survey data. As such, generic flight heights (from Johnston *et al.* (2014)) should also be used in collision assessments (with site specific flight heights shown as context or if desired, used in additional modelling for consideration).

(24) Marine Archaeology

- 3.85. We remind you that Historic England have no jurisdiction in Wales, as it wrongly stated in the report (Ancient Monuments are Archaeological Areas Act 1979, Paragraph 24.2.2.)
- 3.86. The Historic Environment (Wales) Act 2016 should be added to the list of relevant legislation given in 24.2. Regulatory and Planning Policy Context. Also, reference should be made to the Protection of Wrecks Act 1973 which is still one of the key pieces of UK-wide legislation for the protection and management of historic shipwrecks.
- 3.87. The RCAHMW indicates that reference should be made to (section 24.5) recently issued (2021) guidance by the Crown Estate regarding the provision of WSIs for offshore wind schemes:
- <https://www.thecrownestate.co.uk/media/3917/guide-to-archaeological-requirements-for-offshore-wind.pdf>
- 3.88. Formal reference should be made to Policy_SOC05 (Historic Assets) of the Welsh National Marine Plan (WNMP), with particular regard to the stated WNMP requirement to 'avoid, minimise, mitigate' impact on historic assets.
- 3.89. The RCAHMW would like to stress that a programme of marine archaeological geophysical survey should be put in place (rather than an option as stated in section 24.8) in order to fully understand and assess the marine archaeology located within the study area during the EIA process.

(25) Shipping and Navigation

- 3.90. Trinity House have indicated that a full Navigation Risk Assessment will be expected containing:

- A comprehensive vessel traffic analysis in accordance with MGN 654.
- An adequate assessment of the possible cumulative and in-combination effects on shipping routes and patterns.
- The consideration and assessment of a potential “corridor” between the Llyr 1 and Llyr 2 array areas, including future traffic patterns.

3.91. Trinity House consider 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) Guideline *G1162 - The Marking of Offshore Man-Made 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.

3.92. Trinity House considers that an assessment of impact on existing aids to navigation is needed.

3.93. A decommissioning plan, which includes a scenario where on decommissioning and on completion of removal operations an obstruction is left on site (attributable to the project) which is considered to be a danger to navigation and which it has not proved possible to remove, should be considered. Trinity House indicates that such an obstruction may require to be marked until such time as it is either removed or no longer considered a danger to navigation, the continuing cost of which would need to be met by the developer/operator.

3.94. Trinity House indicates that there is a possible requirement for navigational marking of the export cables and the vessels laying them. If it is necessary for the cables to be protected by rock armour, concrete mattresses or similar protection which lies clear of the surrounding seabed, the impact on navigation and the requirement for appropriate risk mitigation measures needs to be assessed.

(26) Commercial Fisheries

3.95. Section 26.4 reads: “Average yearly landings at Milford Haven total 686,239 tonnes at a value £1,026,295,194.” NFFO points at this as an obvious inaccuracy that should be checked. Whilst the Milford Haven fishing fleet is undeniably industrious and successful, it seems unlikely that it has ever landed over £1 billion of fish, particularly as this is more than the entire UK fleet has landed in some recent years.

3.96. NFFO disagrees with the assessment of the likely impact on fishing businesses of the construction of this wind farm. Table 26.1 assumes that the “loss or restricted access to commercial fishing grounds” during the operational phase of the project will be temporary or partial, at least for static gear fishing vessels. NFFO disagrees with this assumption as their members have been unanimous in the view

that it will be impossible to safely operate commercial fishing gear within a floating wind farm. The trailing mooring cables and inter-array electricity export cables present a severe snagging hazard and becoming fast on a seabed obstacle is extremely dangerous for any boat. Towed fishing gear would very easily become entangled, static gear also does not remain motionless, static pots routinely move with wind, waves and tide (displacement of 1km or more is not uncommon), hence fishing gear could easily become entangled in a turbine mooring system. Moreover, fisherman trying to haul this gear might not be aware of this until it is too late, and boats become snagged on the unseen obstacle. Therefore, fishing within a floating wind farm is highly unlikely to be possible from either a safety or economic standpoint.

3.97. NFFO considers that fisheries exclusion from the site will create the additional problem of displacement of fishing effort, which the scoping report does not acknowledge. Fishermen forced out of the area by the construction of the site will either have to accept a permanent reduction in their income, or will have to try to mitigate their losses by fishing elsewhere. This will entail increased fuel costs, longer working hours and an enhanced likelihood of gear conflict, as different fisheries attempt to share the same, increasingly restricted grounds. All of this will be exacerbated by the cumulative effects of displacement from the many other floating turbine arrays currently being proposed for the Celtic Sea. These harms to existing local businesses are substantial and reasonably foreseeable and should be with the scope of the Llŷr projects' impact assessment. The assessment should acknowledge this exclusion and displacement (i.e., that commercial fishing will not resume within the footprint of the array post-construction) as a realistic worst-case scenario.

(27) Other Sea Users

3.98. No comments were received on this topic

4. Volume 4: Project Wide Effects

(28) Designated Sites

4.1. Please see comments above on Fish and Shellfish Ecology, Marine Mammals and Ornithology for additional sites which should be scoped in Table 28-1.

(29) Climate Change and Major Accidents and Emergencies

4.1. No comments were received on this topic

(30) Combined and Cumulative Effects of the Project

4.2. JNCC and NRW TE advises that projects which are built and operational and have residual impacts would need to be considered in Cumulative Effects Assessment (CEA). Therefore, developments which have been constructed and have ongoing effects on features of protected sites (e.g., operational wind farms) should be included.

- 4.3. JNCC and NRW TE also advise that developments within foraging range of those SPAs scoped in for LSE should be included within the in-combination assessment. This may include developments beyond the extents indicated in Table 30-1.
- 4.4. JNCC and NRW TE are pleased that a variety of sectors/activity types have been considered in Table 30-2 (e.g. Greenlink Interconnector cable project) but understand that the list is far from complete. Additional projects may be relevant based on sites identified as at potential risk of LSE from screening exercise as well as MU overlay with other projects in relation to marine mammals. In addition, strategic plans such as TCEs Aggregates, FLOW and R4 plans will need to be considered in cumulative assessment. Round 4 preferred projects, Burbo Bank OWF, Burbo Bank Extension, Gwynt y Môr, Awel y Môr, Rhyl Flats, Robin Riggs, Walney, Arklow Bank, Celtic Interconnector (cable project) should be added. A series of floating offshore wind projects in the Celtic Sea have been omitted, including Llywelyn, Gwynt Glas, White Cross, and Petroc. There are also several offshore wind proposals within 200km in Irish territorial waters of the Celtic Sea, for example the Emerald Project. Please also note the Marine Energy Test Area (META) has applied for a marine licence variation.
- 4.5. NRW TE advise that particular attention is paid to temporal and spatial cumulative effects on spawning and nursery habitats for fish receptors, as well as underwater noise.
- 4.6. NRW TE does not agree with the scoping boundaries for marine mammals and therefore considers the cumulative assessment search areas needs to be revised (Table 30-1). The MU is the appropriate scale for screening of plans and projects for marine mammal impacts into the assessment. Therefore, these should also include the Morlais Tidal Energy Development Zone, Project TIGER, Whitecross FLOW and Awel y Mor.
- 4.7. In relation to seascape, landscape and visual effects, NRW TE indicates that the Rhoscrowther Wind Farm, Project Erebus (1.7km from the project) and Project Valorous (3km from the project) are likely to result in cumulative effects.
- 4.8. Although the cable route is not clearly defined in the report, section 8.3 implies it has been confirmed. NRW understand that you intend to work with the Erebus Project (Blue Gem Wind) to possibly integrate the two developments, which may include use of a common export cable route, grid connection location and substation/ control building for the two projects. Furthermore, cable routing has potential for interaction with the Greenlink interconnector cable which needs to be clarified. NRW encourage you to work with neighbouring developers on sharing cable routes and associated infrastructure to reduce cumulative environmental impacts.

(31) Conclusions

- 4.9. Please refer to comments throughout this report for impacts that should be included. For example, NRW TE advise the following impacts should be scoped in during the operation phase:
- Temporary increase in SSC and sediment deposition leading to contaminant mobilisation, turbidity and smothering effects;

- Indirect habitat loss;
- Disturbance to benthic habitats;
- Habitat alteration;
- Effects of electromagnetic fields (EMF) emissions;
- Changes in hydrodynamics and/or other potential impacts on physical processes that will inform impacts on benthic habitats (see comment above and in Physical Process section).

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,

A handwritten signature in black ink, appearing to read 'Maria Alvarez', with a long horizontal flourish extending to the right.

Maria Alvarez
Marine Licensing Team
Natural Resources Wales

Approved by:

A handwritten signature in black ink, appearing to read 'E. Litt', with a large, stylized initial 'E'.

Dr. Emmer Litt
Marine Licensing Team
Natural Resources Wales

Cc: All Consultation Bodies

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