WHITE CROSS

White Cross Offshore Wind Farm ES Addendum

Appendix B: The Applicant's Response to the MMO and Cefas

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Glossary of Acronyms

Acronym	Definition
AEZ	Archaeological Exclusion Zone
AfL	Agreement for Lease
AOD	Above Ordnance Datum
BAS	Burial Assessment Study
BSI	British Standards Institution
CAA	Civil Aviation Authority
CEMP	Construction Environmental Management Plan
CfD	Contracts for Difference
CEA	Cumulative Effect Assessment
DCO	Development Consent Order
DECC	Department for Energy and Climate Change
Defra	Department for Environment, Food and Rural Affairs
EEA	European Economic Area
EEZ	Economic Exclusion Zone
EIA	Environmental Impact Assessment
EMF	Electromagnetic Frequency
EPS	European Protect Species
ERCoP	Emergency Response Co-operation Plan
ES	Environmental Statement
EU	European Union
GIS	Geographical Information System
GT	Gross Tonnage
ha	Hectare
HDD	Horizontal Directional Drilling
HRA	Habitats Regulation Assessment
ICES	International Council for the Exploration of the Sea
JNCC	Joint Nature Conservancy Council
km	Kilometre
Km^2	Square kilometre
LPA	Local Planning Authority
m	Metre
MCA	Maritime and Coastguard Agency
MCZ	Marine Conservation Zone
MMO	Marine Management Organisation
MoD	Ministry of Defence
MW	Megawatts
NE	Natural England
NGC	National Grid Company
nm	Nautical Mile
NPPG	The National Planning Practice Guidance

Acronym	Definition
NtM	Notice to Mariners
OS	Ordnance Survey
PAD	Protocol for Archaeological Discoveries
PPG	Pollution Prevention Guidelines
RIAA	Report to Inform an Appropriate Assessment
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SNCB	Statutory Nature Conservation Body
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
TCE	The Crown Estate
TTS	Temporary Threshold Shift
UK	United Kingdom
UKHO	UK Hydrographic Office
UXO	Unexploded Ordnance
VMS	Vessel Monitoring Systems
WCOWL	White Cross Offshore Windfarm Limited
WTG	Wind Turbine Generator

Glossary of Terminology

Defined Term	Description
Agreement for Lease	An Agreement for Lease (AfL) is a non-binding agreement between a landlord and prospective tenant to grant and/or to accept a lease in the future. The AfL only gives the option to investigate a site for potential development. There is no obligation on the developer to execute a lease if they do not wish to.
Applicant	White Cross Offshore Wind Limited
Cumulative effects	The effect of the Project taken together with similar effects from a number of different projects, on the same single receptor/resource. Cumulative Effects are those that result from changes caused by other past, present or reasonably foreseeable actions together with the Project.
Environmental Impact Assessment (EIA)	Assessment of the potential impact of the proposed Project on the physical, biological and human environment during construction, operation and decommissioning.
Export Cable Corridor	The area in which the export cables will be laid, either from the Offshore Substation or the inter-array cable junction box (if no offshore substation), to the NG Onshore Substation comprising both the Offshore Export Cable Corridor and Onshore Export Cable Corridor.
Front end engineering and design	Front-end engineering and design (FEED) studies address areas of windfarm system design and develop the concept of the windfarm in advance of procurement, contracting and construction.
Generation Assets	The infrastructure of the Project related to the generation of electricity within the windfarm site, including wind turbine generators, substructures, mooring lines, seabed anchors and inter-array cables
High Voltage Alternating Current	High voltage alternating current is the bulk transmission of electricity by alternating current (AC), whereby the flow of electric charge periodically reverses direction.
High Voltage Direct Current	High voltage direct current is the bulk transmission of electricity by direct current (DC), whereby the flow of electric charge is in one direction.
In-combination effects	In-combination effects are those effects that may arise from the development proposed in combination with other plans and projects proposed/consented but not yet built and operational.
Landfall	Where the offshore export cables come ashore
Mean high water springs	The average tidal height throughout the year of two successive high waters during those periods of 24 hours when the range of the tide is at its greatest.
Mean low water springs	The average tidal height throughout a year of two successive low waters during those periods of 24 hours when the range of the tide is at its greatest.
Mean sea level	The average tidal height over a long period of time.
Mitigation	Mitigation measures have been proposed where the assessment identifies that an aspect of the development is likely to give rise to significant environmental impacts, and discussed with the relevant

Defined Term	Description
	authorities and stakeholders in order to avoid, prevent or reduce impacts to acceptable levels. For the purposes of the EIA, two types of mitigation are defined: • Embedded mitigation: consisting of mitigation measures that are identified and adopted as part of the evolution of the project design, and form part of the project design that is assessed in the EIA • Additional mitigation: consisting of mitigation measures that are identified during the EIA process specifically to reduce or eliminate any predicted significant impacts. Additional mitigation is therefore subsequently adopted by OWL as the EIA process progresses.
National Grid Onshore Substation	Part of an electrical transmission and distribution system. Substations transform voltage from high to low, or the reverse by means of the electrical transformers.
National Grid Connection Point	The point at which the White Cross Offshore Windfarm connects into the distribution network at East Yelland substation and the distributed electricity network. From East Yelland substation electricity is transmitted to Alverdiscott where it enters the national transmission network.
Offshore Development Area	The Windfarm Site (including wind turbine generators, substructures, mooring lines, seabed anchors, inter-array cables and Offshore Substation Platform (as applicable)) and Offshore Export Cable Corridor to MHWS at the Landfall. This encompasses the part of the project that is the focus of this application and Environmental Statement and the parts of the project consented under Section 36 of the Electricity Act and the Marine and Coastal Access Act 2009
Offshore Export Cables	The cables which bring electricity from the Offshore Substation Platform or the inter-array cables junction box to the Landfall
Offshore Export Cable Corridor	The proposed offshore area in which the export cables will be laid, from Offshore Substation Platform or the inter-array cable junction box to the Landfall
Offshore Infrastructure	All of the offshore infrastructure including wind turbine generators, substructures, mooring lines, seabed anchors, Offshore Substation Platform and all cable types (export and inter-array). This encompasses the infrastructure that is the focus of this application and Environmental Statement and the parts of the project consented under Section 36 of the Electricity Act and the Marine and Coastal Access Act 2009
the Offshore Project	The Offshore Project for the offshore Section 36 and Marine Licence application includes all elements offshore of MHWS. This includes the infrastructure within the windfarm site (e.g. wind turbine generators, substructures, mooring lines, seabed anchors, inter-array cables and Offshore Substation Platform (as applicable)) and all infrastructure associated with the export cable route and landfall (up to MHWS) including the cables and associated cable protection (if required).

Defined Term	Description
Offshore Substation Platform	A fixed structure located within the Windfarm Site, containing electrical equipment to aggregate the power from the wind turbines and convert it into a more suitable form for export to shore
Offshore Transmission Assets	The aspects of the project related to the transmission of electricity from the generation assets including the Offshore Substation Platform (as applicable)) or offshore junction box, Offshore Cable Corridor to MHWS at the landfall
Offshore Transmission Owner	An OFTO, appointed in UK by Ofgem (Office of Gas and Electricity Markets), has ownership and responsibility for the transmission assets of an offshore windfarm.
Onshore Development Area	The onshore area above MLWS including the underground onshore export cables connecting to the White Cross Onshore Substation and onward to the NG grid connection point at East Yelland. The onshore development area will form part of a separate Planning application to the Local Planning Authority (LPA) under the Town and Country Planning Act 1990.
Onshore Export Cables	The cables which bring electricity from MLWS at the Landfall to the White Cross Onshore Substation and onward to the NG grid connection point at East Yelland.
Onshore Export Cable Corridor	The proposed onshore area in which the export cables will be laid, from MLWS at the Landfall to the White Cross Onshore Substation and onward to the NG grid connection point at East Yelland.
Onshore Infrastructure	The combined name for all infrastructure associated with the Project from MLWS at the Landfall to the NG grid connection point at East Yelland. The onshore infrastructure will form part of a separate Planning application to the Local Planning Authority (LPA) under the Town and Country Planning Act 1990
Onshore Transmission Assets	The aspects of the project related to the transmission of electricity from MLWS at the Landfall to the NG grid connection point at East Yelland including the Onshore Export Cable, the White Cross Onshore Substation and onward connection to the NG grid connection point at East Yelland.
the Onshore Project	The Onshore Project for the onshore TCPA application includes all elements onshore of MLWS. This includes the infrastructure associated with the offshore export cable (from MLWS), landfall, onshore export cable and associated infrastructure and new onshore substation (if required).
the Project	the Project is a proposed floating offshore windfarm called White Cross located in the Celtic Sea with a capacity of up to 100MW. It encompasses the project as a whole, i.e. all onshore and offshore infrastructure and activities associated with the Project.
Project Design Envelope	A description of the range of possible elements that make up the Project design options under consideration. The Project Design Envelope, or 'Rochdale Envelope' is used to define the Project for Environmental Impact Assessment (EIA) purposes when the exact parameters are not yet known but a bounded range of parameters are known for each key project aspect.
Safety zones	A marine zone outlined for the purposes of safety around a possibly hazardous installation or works / construction area

Defined Term	Description
Service operation vessel	A vessel that provides accommodation, workshops and equipment for the transfer of personnel to turbine during OMS. Vessels in service today are typically up to 85m long with accommodation for about 60 people.
Transition joint bay	Underground structures at the Landfall that house the joints between the offshore export cables and the onshore export cables
Transition piece	The transition piece includes various functionalities such as access for maintenance, cable connection for the energy of the turbine and the corrosion protection of the entire foundation
White Cross Offshore Windfarm	100MW capacity offshore windfarm including associated onshore and offshore infrastructure
White Cross Offshore Windfarm Limited	White Cross Offshore Windfarm Ltd (WCOWL) is a joint venture between Cobra Instalaciones Servicios, S.A., and Flotation Energy Ltd
White Cross Onshore Substation	A new substation built specifically for the White Cross project. It is required to ensure electrical power produced by the offshore windfarm is compliant with NG electrical requirements at the grid connection point at East Yelland.
Wind Turbine Generators (WTG)	The wind turbine generators convert wind energy into electrical power. Key components include the rotor blades, nacelle (housing for electrical generator and other electrical and control equipment) and tower. The final selection of project wind turbine model will be made post-consent application
Windfarm Site	The area within which the wind turbines, Offshore Substation Platform and inter-array cables will be present

1. Introduction

1. This document provides the Applicant's responses to comments from statutory consultees on the Offshore Project as provided by the Marine Management Organisation (MMO). Where required, sign-posting to existing information within the ES is given. In some instances, further information and assessment has been provided on a topic-by-topic basis, this further information is provided as part of an Environmental Statement (ES) Addendum. This document is submitted to the MMO to address comments on the Offshore Project.

2. The structure of this document is as follows:

- **Section 2.1: Consultation Reponses** outlines the Applicant's responses to comments received from statutory consultees.
- **Section 2.2** outlines the Applicant's responses to comments received from organisations through the public consultation process.
- **Section 2.3** outlines the Applicant's responses to comments received from the MMO and Cefas via email correspondence following the statutory consultation period.
- **Section 2.4** outlines the Applicant's responses to comments received from the MMO and Cefas in relation to previous responses to Cefas Comments and provision of the Coastal Geomorphology Technical Note (see **Appendix F** of the **ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002)).

2. Response to comments on the Offshore Project

2.1 Section A: Consultation Responses

2.1.1 Protected species in consultation with MMO Marine Conservation Team

ID	Consultee Comments	Applicant Response
1.1	From 0 to 12 nautical miles (nm) cetaceans are protected from injury, death, disturbance, capture, possession, and from damage or destruction of their place of breeding or resting under regulations 43 and 45 of the Conservation of Species and Habitats Regulations 2017 (CHSR), and by section 9 of the Wildlife and Countryside Act 1981 (as amended) (WCA). Please see MMO's webpage guidance with details of offences for cetaceans here: https://www.gov.uk/government/publications/protected-marine-species/cetaceans-dolphins-porpoises-and-whales	The Applicant acknowledges this comment. These items of legislation are listed within **Section 12.2.4** of **Chapter 12: Marine Mammal and Marine Turtle Ecology** of the **Offshore ES**. If required, a European Protected Species / Marine Wildlife Licence application will be submitted post-consent when the proposed construction techniques have been further refined through detailed design, further detail will also be known for the mitigation measures that will be in place following the development of MMMPs for piling. The **Updated Draft Marine Mammal Mitigation Protocol** is provided in **Appendix V** of the **ES Addendum.**
1.2	From 0 to 12 nm seals are protected from prohibited methods of killing or capturing under regulation 45 of CHSR and from injury and killing under the Conservation of Seals Act 1970. Seals are additionally protected from disturbance when within a Site of Special Scientific Interest (SSSI) where they are listed as a special feature under section 28P(6A) of WCA. Please see MMO's webpage guidance with details of offences for seals here https://www.gov.uk/government/publications/protected-marine-species/seals The proposed activities overlap with Lundy Site of Special Scientific Interest (SSSI) which is designated for grey seals.	The impact of the Project on grey seals of Lundy SSSI is assessed as a negligible effect in terms of disturbance, mainly due to the offshore ECC being located 4km away from seal haul out sites, as presented in **Section 12.7.7**, **Chapter 12: Marine Mammal and Marine Turtle Ecology** of the **Offshore ES**. Impacts on Lundy Island SAC is assessed in **Section 7.2.2** of **Appendix 6.A: Habitats Regulations Assessment: Report to Inform Appropriate Assessment** of the **Offshore ES** as having no adverse effect on the integrity the SACs in relation to the conservation objectives.

ID	Consultee Comments	Applicant Response
1.3	Harbour porpoise is a protected feature of the Bristol Channel Approaches / Dynesfeydd Môr Hafren Special Area of Conversation (SAC), and grey seal is a protected feature of the Lundy Island SAC. Disturbance of marine mammals from above and under water noise may occur during any required unexploded ordinance (UXO) clearance and construction. Hammer impact piling is proposed as potential method, and it is acknowledged that this impulsive form of piling has the potential to cause temporary threshold shift (TTS), and permanent threshold shift (PTS) in marine mammals. These works therefore have the potential to cause auditory injury and disturbance offences.	Impacts due to underwater noise from piling is assessed in **Section 12.7.1, Chapter 12: Marine Mammal and Marine Turtle Ecology** of the **Offshore ES** as minor adverse (not significant) in EIA terms. Impacts on the Bristol Channel Approaches SAC and Lundy Island SAC is assessed in **Sections 7.2.1** and **7.2.2** of **Appendix 6.A: Habitats Regulations Assessment: Report to Inform Appropriate Assessment** of the **Offshore ES** as having no adverse effect on the integrity the SACs in relation to the conservation objectives.
1.4	The Habitat Regulations Assessment (HRA) produced by the Marine Licensing Team states that mitigation methods would be implemented if the project is licenced including; soft start procedures, Acoustic Disturbance Device (ADD) activation prior to piling, and Marine Mammal Observers (MMObs) required. This mitigation would reduce the risk of auditory injuries and disturbance offences, but given the scale of the works these offences cannot be ruled out.	The Applicant acknowledges this comment. If required, a European Protected Species / Marine Wildlife Licence application will be submitted post-consent when the proposed construction techniques have been further refined through detailed design, further detail will be also be known for the mitigation measures that will be in place following the development of MMMPs for piling. The **Updated Draft Marine Mammal Mitigation Protocol** is provided in **Appendix V** of the **ES Addendum.**
1.5	Chapter 12 of the Environmental Statement considers noise impacts to marine mammals. Table 12.1 of this report acknowledges that piling is likely to cause an offence to protected species. The report concludes that it is anticipated that an application for a European Protected Species / Marine Wildlife licence will be submitted post-consent. Based on the information provided to date, MCT are minded to consider that a wildlife licence may be required for potential	The Applicant acknowledges this comment. Please refer to response to **Comment ID 1.4** above. If required, an EPS licence will be produced for piling as required under the Conservation of Offshore Marine Habitats and Species Regulations 2017.

ID	Consultee Comments	Applicant Response
	disturbance and injury offences to marine mammals. Please see our webpage on the application process for a marine wildlife licence here: https://www.gov.uk/guidance/understand-marine-wildlife-licences-and-report-an-incident The MMO would like to remind you that you are responsible for satisfying yourselves that the activities will not result in an offence. If you deem the activities may cause an offence, it is your responsibility to consider the need for a wildlife licence.	

2.1.2 Impacts from underwater noise in consultation with Cefas Underwater Noise Team

ID	Consultee Comments	Applicant Response
2.1	MMO notes that for marine mammals, the key species included within the impact assessments are harbour porpoise, bottlenose dolphin, striped dolphin, common dolphin, minke whale and grey seal. Leatherback turtles have also been considered.	No response required **MMO Response on 11/06/2024**: *Agree – this comment was an observation only and requires no response.*
2.2	The Noise Modelling Report and specifically Section 2.2 Analysis of environmental effects states the general approach/methodology to the underwater noise modelling that is largely appropriate, and effort has been undertaken to produce an informative report, along with details of the input parameters used in the modelling. The assessment refers to appropriate peer-reviewed noise exposure criteria for marine receptors.	No response required **MMO Response on 11/06/2024**: *Agree – this comment was an observation only and requires no response.*
2.3	Page 6 (section 2.2.2.2) of the Noise Modelling Report, MMO notes that the title to Appendix 12.A is 'Marine Mammal and Marine Turtle Underwater Noise Modelling Report', and Leatherback turtles are considered in Chapter 12: Marine Mammal and Marine Turtle Ecology. However, page 6 of Appendix 12.A	The Applicant acknowledges this is an incorrect statement, turtles are included within the assessment. See Section **12.6.7** for information on turtles and Sections **12.7 – 12.10** for impacts

ID	Consultee Comments	Applicant Response
	states that "a further set of criteria also exists for turtles, which have not been included as part of this study as they are not expected to be present at the site". MMO requests that this discrepancy is clarified.	within **Chapter 12: Marine Mammal and Marine Turtle Ecology** of the **Offshore ES**. **MMO Response on 11/06/2024**: *Response acknowledged – no further action required.*
2.4	Page 9 (section 2.2.2.2) of the Noise Modelling Report states "Stationary animal modelling has been included in this study based on research from Hawkins et al. (2014) and other modelling for similar EIA projects. However, basing the modelling on a stationary (zero flee speed) receptor is likely to greatly overestimate the potential risk to fish species, assuming that an individual would remain in the high noise level region of the water column, especially when considering the precautionary nature of the parameters already built into the cumulative exposure calculations". MMO acknowledges that it is unrealistic to assume that a receptor will remain in close proximity to a loud noise source for an extended period of time. However, we are not aware of empirical evidence to support fleeing in fish, and some animals may be motivated to remain in a certain area despite harmful levels of noise. Thus, MMO requires that any noise assessment and conclusions are based on a stationary receptor for fish species.	Please see response to **Comment 10.1** in **Section 2.1.10** of this document. A summary of the conclusion to the response provided to **Comment ID 10.1** is given below: Within the original assessment the receptor impacts from UWN on fish and shellfish when considered as stationary receptors are not likely to impact additional populations of these species. The magnitude of impact from UWN during construction when considering fish and shellfish as stationary receptors is likely to be reversible over a period of 1-5 years and will occur occasionally throughout the lifetime of the project, however the change will be beyond that seen through natural background variation. Therefore, the magnitude of impacts from UWN during construction is considered to increase from low (for fleeing receptors) to medium (for stationary receptors). **MMO Response on 11/06/2024**: "*Apologies if this has been missed but it is not clear what (or where) Comment 10.1 is. Nonetheless, this was just a request to the Applicant to please base the assessment conclusions on the worst-case scenario.*" Applicant Response: **Comment 10.1** is in **Section 2.1.10: Impact to fisheries in consultation with Cefas Fisheries Team**.

ID	Consultee Comments	Applicant Response
		The Applicant maintains the position that the stationary model is inappropriate as it is highly unrealistic, noting that the use of fleeing response models have been accepted within other projects of similar scopes within the region. Notwithstanding this point, WCOWL have reviewed the assessment undertaken in the ES and have provided noise contour plots for relevant species with this response. Please refer to **Section 2.4.3** of this document for further detail.
2.5	Table 2-11 within the Noise Modelling Report states that levels for a 50 % response was observed in fish from Hawkins et al. (2014). Please note that the Hawkins et al. (2014) paper does not refer to unweighted peak sound pressure levels. MMO requests that the reference to the thresholds of 173 dB re 1 µPa and 168 dB re 1 µPa unweighted peak are removed from Table 2-11 to avoid confusion.	The Applicant notes the potential for confusion and agrees with the MMO's statement. However, an update to the chapter isn't considered necessary. **Annex 4: Noise Modelling Report Correction** of this document contains updated tables removing the references to the thresholds of 173 dB re 1 µPa and 168 dB re 1 µPa unweighted peak. **MMO Response on 11/06/2024**: "*This incorrect statement doesn't impact the assessment results; however, MMO recommends that the statement is removed or corrected for future reports. It is important that the evidence presented for review is accurate.*" The Applicant acknowledges this additional response and will ensure in that any reports in the future include this correction.
2.6	Table 4-5 and Table 4-6 provide the piling profile for the Offshore Substation Platform (OSP) foundation jacket piles, and the mooring anchor pin piles respectively. Given that floating offshore wind is a relatively novel technology, please could Subacoustech provide further context as to how these piling profiles have been derived? MMO queries whether the piling profiles presented represent the worst case? (e.g., maximum hammer energies, strike rates, profile duration, soft start and ramp-up details).	The piling profiles are the Applicant's realistic worst case and are their best prediction. Where data on the piling profile was not available, predictions for the ramp up and strike rates etc are assumed from Subacoustech's best estimates based on other subsea-driven pin pile advice received previously: as limited data are available for floating moorings, the anchor piles are treated as equivalent to a subsea-driven pin pile, with equivalent spectra, based on empirical data. There is good confidence in typical piling profiles for subsea driven pin piles. The calculation of changes in

ID	Consultee Comments	Applicant Response
	Additionally, it would be helpful if Subacoustech could provide their piling spectra within the report.	noise emissions from the mooring anchor piles as it is driven further subsea is calculated based on its changing length and therefore reducing surface area in the water column. Underwater noise monitoring during any piling at the Project (including sub-sea piling) would be undertaken in order to validate the predictions of impact to marine mammals and marine turtles (and fish) within **Chapter 12: Marine Mammal and Marine Turtle Ecology** of the **Offshore ES**. **MMO Response on 11/06/2024**: "*Comment acknowledged. As previously requested, it would be helpful if Subacoustech could provide their piling spectra (in the ES Addendum).*" INSPIRE is broadband by design, with the frequency spectra for each of the empirical measurements for the purpose of weightings and propagation built into the model for computational efficiency. Frequency spectra are not direct inputs to the model and so there is no single spectrum that can be presented.
2.7	Please note that the caption for Table 5-26 is incorrect and this should state 'modelling at the South West (mooring)' rather than at the South East OSP.	The Applicant acknowledges this error. **MMO Response on 11/06/2024**: "*MMO expect that no update to the chapter will be made but appreciate this has been acknowledged.*"
2.8	Based on the modelling assumptions and parameters, the results look plausible, and in some cases precautionary, for marine mammals and fish receptors. The results suggest that the risk of potential impact for floating offshore wind is similar to what we may expect for fixed offshore wind turbines. It will be important that appropriate mitigation is put in place to minimise potential	The Applicant will consult with the MMO in relation to noise abatement measures once the preferred installation technique is known. This will be secured in the final MMMP, in line with the potential measures identified in the draft MMMP, and upon consultation with the MMO. **Appendix V: Updated Draft Marine Mammal Mitigation Protocol** of the **ES Addendum** provides detail on the finalisation and consultation process. As

ID	Consultee Comments	Applicant Response
	risks, and MMO requests that all options, including the feasibility of noise abatement, are explored.	noted above (in response to **Comment ID 2.6**), underwater noise monitoring will be undertaken during any piling at the Project, as well as monitoring of the noise associated with operational floating turbines, in order to validate the findings of **Chapter 12: Marine Mammal and Marine Turtle Ecology** of the **Offshore ES**. An **Outline Underwater Noise Monitoring Plan** (WHX001-FLO-CON-ENV-PLN-0006) is provided as part of the **Further Environmental Information** submission **MMO Response on 11/06/2024**: "*Comment acknowledged.*"
2.9	It is appropriate that other non-piling sources have been considered. Section 4.4.1 also considers operational Wind Turbine Generator (WTG) noise. The formula from Tougaard et al. (2020) represents a statistical model that was used to assess the correlation between Sound Pressure Level (SPL) and various parameters (distance, wind speed, turbine size) for the data in the Tougaard study. Our understanding is that this is not suitable for estimation of the source levels at 1 m in a bespoke model, or as substitute for modelling the propagation loss to the far field. In particular, in terms of estimating propagation, the use of the formula would imply a loss of 23.7 log R, which is unrealistically large, and thus will lead to underestimation of the levels in the far field. However, and as highlighted in the assessment, MMO does acknowledge that the available monitoring data and analysis for the operational noise produced by floating WTGs (as well as larger fixed turbines) is still limited.	It is acknowledged that the availability of measured operational noise data for a variety of turbine sizes, especially larger designs, available for the Tougaard study is limited, and the amount of underwater noise data relating to operational turbines is small. This is even more so for floating turbines. The estimate at 1m is not material for the assessment (but included as an estimate for consistency in this table) as, in a similar way as for piling, this source level is only theoretical and used for prediction of impact ranges at a greater distance. An estimate in the far field is also not required, as any potential impacts are limited to being very close to the turbine (i.e. within 10m of the WTG (**Appendix 12.A Underwater Noise Modelling Report** of the **Offshore ES**)). An **Outline Underwater Noise Monitoring Plan** (WHX001-FLO-CON-ENV-PLN-0006) is provided as part of the **Further Environmental Information** submission **MMO Response on 11/06/2024**: "*Response acknowledged - no further action required.*"

ID	Consultee Comments	Applicant Response
2.10	The assessment also considers cable "snapping" in Section 4.4.2. The report mentions that analysis of the HYWIND data by Xodus (2015) predicted potential cumulative SELs of up to 157 dB re 1 µPa2s over 24 hours caused by snapping chains from six turbines; the equivalent for the maximum eight turbines planned the Windfarm Site would be approximately 159 dB re 1 μPa^2s (SEL). The report then states that "this prediction makes a series of worst-case assumptions (e.g., all turbines producing the maximum number of snaps in a day, equivalent noise levels from multiple locations affecting a receptor to the same degree) and this level is below any SPLpeak PTS or injury criteria for marine mammals or fish". MMO acknowledges that cable snapping is more of an impulsive (rather than continuous) sound, so it is appropriate to consider both the SELcum and SPLpeak. However, this reference to the SPLpeak criteria is confusing here, especially when the report is primarily talking about the cumulative sound exposure levels in the previous sentence. Please could Subacoustech add some further clarity or revise this section so it is clear?	The Applicant notes the potential for confusion and agrees with the MMO's statement. The reference to SPLpeak¬ at the end of the 3rd paragraph in the section is a typo and should read SEL_{cum}. **MMO Response on 11/06/2024**: *"Response acknowledged."*
2.11	It is generally not appropriate to use TTS-onset thresholds as a proxy for disturbance. TTS occurs at much higher sound exposures, and so will underestimate the risk of disturbance. For example, paragraph 403 of Chapter 12 (Marine Mammal and Marine Turtle Ecology) acknowledges that the Statutory nature Conservation Bodies (SNCBs) currently recommend that a potential disturbance range based on an EDR of 26 kilometres (km) around UXO high-order detonation is used to assess harbour porpoise disturbance. While we recognise the lack of data for other marine mammal species, the harbour porpoise EDRs are likely to be conservative (as porpoise are so sensitive to underwater noise). Thus, we believe they are a reasonable option	No response required. **MMO Response on 11/06/2024**: *" The Applicant therefore may wish to consider the use of EDRs for other species rather than the TTS-onset thresholds."* The Applicant acknowledges this additional advice, which will be taken into account during the separate marine licencing process for UXO clearance.

ID	Consultee Comments	Applicant Response
	in the absence of other data (rather than using TTS-onset thresholds).	
2.12	MMO notes that some of the modelling results have been mis-interpreted throughout this chapter and should be amended accordingly. For instance, paragraph 716 states that "all marine mammals are predicted to be at risk of TTS within 10m of cable laying, dredging, and rock placement, with the exception of harbour porpoise which would have to remain within 230m for a period of 24 hours to be at risk of TTS from suction dredging, and within 990m for 24 hours to be at risk of TTS from rock placement". The underwater noise modelling presented in Appendix 12.A assumes that all sources (apart from vessel noise) are operating for a worst-case of 12 hours (rather than 24 hours) in any given 24-hour period. Furthermore, the noise modelling is based on a fleeing receptor. Therefore, according to the predictions, harbour porpoise is simply at risk of TTS from suction dredging within 230 m of the source, and within 990 m of the source during rock placement.	The Applicant notes the discrepancy. However, it should be noted that the additional impact of these sources on a moving receptor for an additional 12 hours, to 24 hours in total, will not alter the overall outcomes of the assessments provided in **Chapter 12 Marine Mammal and Marine Turtle Ecology** of the **Offshore ES**. **MMO Response on 11/06/2024**: *If a fleeing receptor is assumed, then it is expected that that predicted effect ranges will be reduced (compared to a receptor that is assumed to remain stationary). Nonetheless, as above, it is important that the evidence submitted for review is accurate, and the results of the underwater noise modelling are interpreted correctly.* The underwater noise modelling has assumed a fleeing receptor. While the Applicant acknowledges the error in the wording of the impact assessment, it does not believe this would alter the results of the assessment, as the modelling (and resultant assessment) is based on a fleeing receptor.
2.13	Paragraph 238 in Chapter 12 should state the maximum PTS (SEL_{cum}) range is 2.1 km for harbour porpoise, and 6 km for minke whale (and not the other way round). The MMO recommends that this is amended.	The Applicant acknowledges this error; however, the assessments are based on the correct effect ranges for each species, and therefore an update to correct this error would not result in any changes to the assessment. **MMO Response on 11/06/2024**: *As above, it is important that the evidence submitted for review is accurate.*
2.14	A number of comments were provided by Cefas Underwater Noise team in relation to UXO clearance. Please see section 21 below. The MMO recommends that comments relating to UXO clearance	The Applicant acknowledges this comment. Comments relating to UXO clearance will be removed in the final MMMP.

ID	Consultee Comments	Applicant Response
	are removed from the Marine Mammal Mitigation Protocol (MMMP) for this licence.	The **Updated Draft Marine Mammal Mitigation Protocol** is provided in **Appendix V** of the **ES Addendum**. **MMO Response on 11/06/2024:** *It appears that some of our comments concerning UXO clearance have not been included in this document (or they may have been included elsewhere and we have not had sight of the responses).*
Comments on the draft Marine Mammal Protocol		
2.15	A discrepancy is noted in paragraph 91. MMO believes that the noise modelling is based on a worst-case of eight pin piles (rather than six) being installed in the same 24-hour period. Thus, this discrepancy should be amended. There will be up to six mooring pin piles per WTG, although it has been assumed that a maximum of up to 8 piles may be installed in a 24-hour period.	The Applicant acknowledges this discrepancy. This discrepancy will be addressed in the final MMMP. The **Updated Draft Marine Mammal Mitigation Protocol** is provided in **Appendix V** of the **ES Addendum**. **MMO Response on 11/06/2024:** *Comment acknowledged.*
2.16	MMO notes that the standard mitigation measures are proposed for piling and include a monitoring area, MMObs, ADDs, PAM, soft start and ramp up procedures. The procedures outlined for breaks in piling (section 1.2.2.1.6) are in keeping with the Joint Nature Conservation Committee (JNCC) (2010) recommendations. It Is also noted that a number of vessel management measures will be implemented and secured in the final MMMP, which the MMO supports.	No response required. **MMO Response on 11/06/2024:** *Agree - this comment was an observation only and requires no response.*

2.1.3 Impacts to heritage features in consultation with Historic England

ID	Consultee Comments	Applicant Response
3.1	MMO recommends that an archaeological Written Scheme of Investigation (WSI), based on the outline WSI (ES Chapter 16, Appendix 16.B) must be prepared in consultation with Historic England. The WSI must be submitted to MMO at least 12 weeks prior to the commencement of any survey work unless otherwise agreed by the MMO. The WSI must include: 1. responsibilities of the licence holder, archaeological consultant and contractor; 2. a methodology for any further project investigation including specifications for geophysical, geotechnical and diver or remotely operated vehicle investigations; 3. archaeological analysis of survey data, and timetable for reporting, which is to be submitted to the MMO within four months of any survey being completed; 4. delivery of any mitigation including, where necessary, identification and modification of Archaeological Exclusion Zones (AEZ) or employment of Temporary Exclusion Zones (TEZ); 5. the preparation of a reporting and recording protocol for archaeological discoveries, including reporting of any wreck or wreck material during delivery of the authorised project; and	The Applicant notes this comment. A WSI based on **Appendix 16.B: Offshore Outline Written Scheme of Investigation** of the **Offshore ES** will be prepared in consultation with Historic England in accordance with the comments made by the MMO. The WSI will be submitted to MMO at least 12 weeks prior to the commencement of any survey work unless otherwise agreed by the MMO.

ID	Consultee Comments	Applicant Response
	6. the licence holder must ensure that a copy of any agreed archaeological report is deposited with the National Record of the Historic Environment (NRHE), by submitting an OASIS (Online Access to the Index of archaeological investigations') form with a digital copy of the report within 6 months of completion of construction of the authorised scheme. The MMO must be notified that the OASIS form has been submitted to the NRHE within 10 working days of the submission. Please note that this condition wording may change during drafting (if positively determined). This condition is required as the assumptions made about the possible significant environmental impacts associated with this project are dependent of implementation of embedded mitigation strategies. MMO highlights the following: • the use of catenary mooring lines, anchor designs and intra-array cabling have potential to impact known and presently unknown elements of the historic environment; • the proposed electricity Export Cable Corridor has high risk of encountering elements of either the known or presently unknown historic environment; and • The ES identifies an "area of archaeological potential" in the Export Cable Corridor in the near shore area.	

ID	Consultee Comments	Applicant Response
3.2	MMO notes the comment in Section 4.1.1 of ES Chapter 4 (Site Selection and Assessment of Alternatives) explains that "…many of the engineering design aspects relating to construction methods, cable design, substructure design, wind turbine types, mooring designs, and offshore substation design (and requirement) are works in progress." There is a concern that this project is presenting a Project Design Envelope that doesn't seek to offer a worst-case scenario against which likely significant effects of the proposed development can be determined. For example, Section 4.2 (key components of the project) and Table 4.1 provide a general description of the infrastructure that could be deployed.	The approach to using a Project Design Envelope is outlined in **Chapter 6: EIA Methodology** of the **Onshore** and **Offshore ES**. Each individual topic defines the worst-case scenario within the Project Design Envelope. The specific worst-case scenario details in relation to Marine Archaeology and Cultural Heritage are presented in **Table 16.7** of the **Chapter 16: Marine Archaeology and Cultural Heritage** of the **Offshore ES**. This includes rationale for why each scenario has been assessed.
3.3	Section 4.2.2 of ES Chapter 4 (Site Selection and Assessment of Alternatives) in Table 4.2 (Siting and Routing Principles at Completion of Site and Route Selection) includes the principle at landfall of avoidance of "cultural heritage designations where possible". However, this principle is not sufficiently aligned with South West Marine Plan policy SW-HER-1 regarding the avoidance of harm to the significance of heritage assets. It must also be highlighted that the avoidance of harm is not limited to designated heritage assets and includes non-designated assets that are, or have the potential to become, significant. This same matter is applicable to the principle stated for offshore whereby if avoidance is not possible that it is demonstrated that the public benefits of proceeding must outweigh the harm to the significance of heritage asset(s). It is noticeable in Table 16.2 (Chapter 16) when focussing on SW-HER-1 that attention is given to prevention of damage through avoidance.	The primary mitigation, for both designated and non-designated heritage assets, is avoidance (preservation in situ). Where heritage assets cannot be avoided, measures will be taken to mitigate any harm to the significance of heritage assets, for example through further investigation, recording and publication (preservation by record). All decisions to mitigate through preservation by record will be guided by the principle that the public benefits of proceeding must outweigh the harm to the significance of heritage asset(s). High-level methodologies for further investigation works have been set out in **Appendix 16.B: Offshore Outline Written Scheme of Investigation** of the **Offshore ES**. A WSI, based on the Outline WSI will be prepared post-consent in consultation with Historic England and submitted to the MMO.

ID	Consultee Comments	Applicant Response
3.4	Regarding "Known and unknown non-designated heritage assets" the MMO concurs that disturbance is possible which should be informed by further survey with professional archaeological analysis to adequately inform route design and any requirement for micro-siting. Subject to this occurring, it is possible that avoidance of identified anomalies on, within and beneath the surface is possible. However, it is not clear how trenchless techniques could avoid potentially significant paleoenvironmental remains or other archaeological materials, unless archaeological analysis and interpretation is conducted and completed to the satisfaction of Historic England.	The depth of sedimentary sequences of archaeological interest at the landfall will be further clarified through the geoarchaeological assessment of geotechnical data post-consent, which will inform the design of nearshore cable installation. The installation of the export cables at the landfall will be undertaken using a combination of open trenching through the beach with a small section of pipe (trenchless) from the top of the beach into the car park as outlined in **Section 5.2** and **Appendix Y: Outline Cable Landfall Plan** of the **ES Addendum**. If the post-consent geotechnical data (and geoarchaeological assessment) demonstrates that it is not to avoid potentially significant paleoenvironmental remains, or other archaeological materials, then additional mitigation would be required in accordance with the measures set out in **Appendix 16.B: Offshore Outline Written Scheme of Investigation** of the **Offshore ES**.
3.5	MMO notes the attention given in Table 4.4 (ES Chapter 4) to UK Hydrographic Office (UKHO) charted wreck information, HER wreck records and other "wrecks and obstructions". MMO highlights, the statement that avoidance is expected and therefore that attention will be necessary to conduct and complete archaeological assessment of any such site(s) if avoidance is not possible.	The Applicant acknowledges this comment.

ID	Consultee Comments	Applicant Response
3.6	Regarding the overall conclusion that "MZ-2 (Northern)" (see Appendix 4C, Figures 5.1 and 8.1) is the preferred electricity export cable route/corridor to landfall at the northern end of "Mid Zone", it is important to note that MZ-2 includes the largest number of wreck records (6) and "obstructions" (12) compared with other routes/corridors and landfall locations assessed. It is also apparent in the BRAG assessment exercise that the proposed "Mid Zone" landfall location has the greatest risk of encountering unknown heritage assets (i.e., potential for buried archaeology). MMO queries that this option presents the greatest risk of encountering known and unknown elements of the historic environment for which Marine Licence conditions (as noted above) will be required to deliver a suitable mitigation strategy.	As outlined, the preferred landfall was chosen for a variety of factors. Further geophysical survey has been undertaken since the initial route selection process to determine the locations of wrecks and obstructions, and anomalies of possible archaeological interest, so that these can be avoided through the application of AEZs and TAEZs and micrositing of the cable. High-level methodologies for further investigation works have been set out in the **Appendix 16.B: Offshore Outline Written Scheme of Investigation** of the **Offshore ES**. A WSI, based on the Outline WSI submitted with the application, will be prepared post-consent in consultation with Historic England and submitted to the MMO.
3.7	Subsection 5.5.2.1 (ES Chapter 5) gives attention to pre-lay intervention activities including grapnel run and sand wave clearance which could impact presently unknown heritage assets. If open trench excavation is selected for "unconstrained areas" (paragraph 79), it is important that archaeological analysis is completed before construction works commence utilising geophysical data and geotechnical material to determine whether the area is unconstrained.	Mitigation to avoid impacts on potential heritage assets will be in implemented where pre-lay intervention activities take place. Mitigation will include avoidance by micro-siting following the acquisition of high-resolution geophysical data, post-consent, in accordance with the WSI.
3.8	In reference to Section 5.7 (ES Chapter 5) Taw Estuary Crossing, it is not abundantly clear if works associated with conducting Horizontal Directional Drilling (HDD) will take place below Mean High Water Springs (MHWS) on either side of the Taw Estuary. Appendix 5.B (Taw Estuary Crossing Method Statement), which in paragraph 11 states that trenchless crossing "…entry and exit points will be located on the adjacent floodplains of the Taw Estuary". MMO requests for the exact locations of the entry and exit points to be clarified with reference to MHWS.	The Taw Estuary Crossing is proposed between an entry point on the south bank and an exit point on the north bank of the River Taw. The entry and exit compounds and pit locations will be set a minimum of 16m above MHWS. The HDD entry and exit points are identified within **Appendix 5.D: Onshore Export Cable Corridor Alignment Sheets** of the **Onshore ES** and in **Appendix B, Annex 3: Taw Crossing** of the **ES Addendum.**

ID	Consultee Comments	Applicant Response
3.9	Section 5.8.3 (ES Chapter 5) Offshore Installation of WTGs and floating substructures, explains that seabed preparation will be required and could include: • seabed levelling; • ground reinforcement; and • removal of subsurface debris such as boulders, fishing nets, lost anchors etc. It is therefore important to highlight the risk that this project could encounter presently unknown archaeological materials.	The Applicant acknowledges this comment. Mitigation measures are set out in **Appendix 16.B**: **Offshore Outline Written Scheme of Investigation** of the **Offshore ES**. This covers a Protocol for Archaeological Discoveries (PAD) to account for unexpected archaeological discoveries.
3.10	In reference to each proposed anchor design inclusive of drag embedded anchors, suction anchors, driven pile anchors and drilled pile anchors, further high-resolution survey will be required to determine if archaeological materials are present which may require excavation. High resolution geophysical survey will also be required for the possible routes of mooring lines laid directly on the seabed. It is therefore important that archaeological advice informs the identification process for anomalies. MMO adds that this matter is also applicable to planning the installation of intra-array cables (vis. section 5.8.4) and the electricity export cable(s) (vis. section 5.8.6), so that operation of a grapnel run (e.g. 2m wide along the length of the cable route) avoids anomalies of known or possible archaeological interest.	The Applicant acknowledges this comment and will seek early engagement and input from Historic England when planning further geophysical surveys in accordance with the WSI.

ID	Consultee Comments	Applicant Response
3.11	ES Chapter 16 (Marine Archaeology and Cultural Heritage) Section 16.3.6 (Worst-Case Scenario), in reference to Table 16.7, MMO has the following comments regarding the proposed "construction phase": • Impact 1 (Direct impact to known heritage assets) is considered "N/A" because direct impacts to known heritage assets will not occur due to the application of embedded mitigation. MMO appreciates that this statement may be considered applicable to avoidable known heritage assets; and • Impact 2 (Direct impact to potential heritage assets) it is estimated that a maximum area of disturbed seabed per WTG (including mooring lines) is 2,424m^2 Therefore, to address the risk of interaction with archaeological materials in this area, MMO requests high-resolution geophysical data acquisition and visual ground truthing inspection will be required to inform project planning.	A campaign of geophysical survey is planned for pre-construction and the advice of a specialist archaeologist will be sought in planning the survey. This will be followed by ground-truthing where further clarification is required, as set out in the WSI. The Applicant will also seek early engagement and input from Historic England when planning further geophysical surveys in accordance with the WSI.

ID	Consultee Comments	Applicant Response
3.12	Regarding any possible "operations and maintenance phase", the MMO notes that: • Impact 3 (Indirect impact to heritage assets from changes to physical processes) in reference to the proposed catenary mooring system and anchor footprint per turbine, it appears that this represents the worst-case scenario for direct impact to either the known or presently unknown historic environment. It does not appear to be mentioned if a catenary mooring system moves in any way and if a zone of seabed impact should be anticipated. This should be considered and updated in the documents.	The catenary system would allow for up to 40m deflection of the floating substructure in any direction from its notional position. The majority of this movement would be taken up by the suspended element of the mooring line, but it is anticipated that an approximate 50m length of mooring line on the sea bed would deflect with movement of the substructure. This would result in a slight increase to the seabed area affected by the proposed development, primarily as a result of pre-construction preparation works required to remove potential snags. Any such increase would, however, represent a minimal proportionate increase compared to the scale of the seabed works required for the generation assets. (See **Section 8.6**, **Chapter 8: Marine Geology, Oceanography and Physical Processes** of the **Offshore ES** where the impact of catenary action on suspended sediment and the impact on seabed scour are both deemed to be negligible). There are no identified archaeological remains and no AEZ's have been identified within the array area. Potential deflection of the substructure and associated moorings would be considered in the micro-siting and mitigation provisions and informed by the results of further surveys (See **Section 16.3.7**, **Chapter 16: Marine Archaeology and Cultural Heritage** of the **Offshore ES**.

ID	Consultee Comments	Applicant Response
		Deflection of seabed elements of the catenary mooring system would not result in any material increase to the area of direct physical impact and any such movement would be addressed by the existing mitigation proposals. No changes to physical sea-bed processes are anticipated. As a result, there would be no change to the assessed magnitude of any impact, whether direct or indirect, arising from the construction and operation of the proposed generation assets.
3.13	ES Chapter 16 (Marine Archaeology and Cultural Heritage) Section 16.3.7 (Summary of Mitigation), in reference to the detail provided in Table 16.8, MMO acknowledges that for known heritage assets the proposed measure is the use of Archaeological Exclusion Zones (AEZs) which are for "…archaeologically significant anomalies that are clearly identifiable in the survey data and where the extents are largely known…". However, for potential heritage assets the focus is on avoidance "…by micro-siting of design following the acquisition of high-resolution geophysical data, to be acquired post-consent." To ensure alignment with Table 16.3, it would seem a relevant that mitigation also includes the use of AEZs as specific spatial measures to assist avoidance.	AEZs will be applied throughout the lifetime of the Project and may be applied to heritage assets that are of a level of archaeological significance that warrants an AEZ. These will be identified through future surveys and investigations and agreed with Historic England.
3.14	ES Chapter 16 (Marine Archaeology and Cultural Heritage) Section 16.3.10 (Scope). MMO concurs with the summaries provided in Tables 16.10 (impacts scoped in) and 16.11 (impacts scoped out).	The Applicant acknowledges this comment.
3.15	MMO notes that "Unit E" should be investigated further (Chapter 16, Section 16.4, paragraph 114), with the focus on areas where it is identified with the thickest deposits, as expanded upon in Appendix 16A (Figure 29), including areas covered by sand waves which could conceal sedimentary sequences of palaeo-environmental interest.	Geotechnical investigations that include provisions for archaeological specific boreholes are planned to inform the FEED. These will target Unit E.

ID	Consultee Comments	Applicant Response
3.16	The description provided in Table 16.15 (Chapter 16, Section 16.4.2 (Maritime and Aviation Archaeology)) whereby it stated that "…several seabed features which have been identified at varying levels of archaeological potential." is welcomed. For anomalies considered to be of "medium" potential, the criteria should be focused towards investigation to establish its archaeological interest rather that "significance" per se to determine if a (potential) heritage asset is identifiable, and this should be updated.	The Applicant acknowledges this comment and will take this into consideration over the course of the Project.
3.17	Chapter 16, paragraph 125 highlights that there are 21 anomalies located in the array area and 37 located in the ECC. We note that "High potential" anomaly WC22_0063 corresponds with UKHO Record Ref: 72153, an obstruction first identified in 2007. If it becomes apparent that this anomaly is a contemporary (i.e. modern) there will be no requirement for an AEZ, although MMO appreciates that for other reasons this location might be best avoided.	The Applicant acknowledges this comment.
3.18	MMO notes the identification of a "high concentration of magnetic anomalies" within the nearshore area of the Offshore ECC, which are "likely" to be attributed to materials associated with the US Army Assault Training Centre (Chapter 16, Section 16.4.2.2 Magnetic Anomalies). MMO requests that primary attention should be given to safety factors should these anomalies require further investigation. However, we appreciate the attention to identifying a collective "higher archaeological importance" when considered spatially in reference to the US Army Assault Training Centre and its subsequent demolition (as highlighted in Table 16.26).	UXO investigations and clearance will be undertaken before further archaeological investigations commence.

ID	Consultee Comments	Applicant Response
3.19	Chapter 16 Table 16.22 (Historic England Reported Loses) includes records for losses of vessels (e.g. 18th century) for which geophysical signature is likely to be minimal. It is therefore appropriate for a precautionary approach to be adopted given the risk of this project encountering presently unknown archaeological sites (as stated in paragraph 158). It is also appropriate to highlight difficulty in identify seabed historic sites, particularly crashed aircraft, such as the record of an Armstrong Whitworth Whitley Mk. V bomber (ID Ref: 1342752) which ditched off Barnstaple in 1943. As stated in paragraph 167, if this site is found it will automatically have "protected place" status under the Protection of Military Remains Act 1986.	Archaeological mitigation measures are set out in **Appendix 16.B**: **Offshore Outline Written Scheme of Investigation** of the **Offshore ES**. This includes the provision for the archaeological assessment of further geophysical data. Additionally, a PAD has been adopted to allow for archaeological reporting and recording of archaeological remains in the event of unexpected discoveries during the course of works.
3.20	Chapter 16 Table 16.27 (Summary of historic seascape character types) when considering capacity to accommodate change in reference to "fishing" appears to conclude that fishing will not be prohibited during the operation phase of the Offshore Project. However, it would appear that as this is a proposed floating offshore wind farm, the type of fishing that might be possible could be different, MMO queries the qualification to Historic Seascape Characterisation (HSC) baseline to be "no identified change". We also query the suggested public perception of "no identified change" regarding the historic baseline for "military practice area" (vis. US Army Assault Training Centre).	While the type of fishing may change due the presence of the windfarm, MMO statistics have indicated only low levels of British fishing activity in the vicinity of the Windfarm Site (see **Chapter 14: Commercial Fisheries** of the **Offshore ES**). Similarly, while foreign vessels fish in the Windfarm site, only a small portion of the Windfarm Site is used for fishing. Regarding landfall this area is currently used for military re-enactments and was formerly associated with the US Army Assault Training Center. During the installation of the cable, re-enactment activities will not be possible, however, once the cable has been installed, normal activities will be able to resume. As set out in the **Appendix Y: Outline Cable Landfall Plan** of the **ES Addendum**, the duration of the works at the landfall, when these activities will be restricted, would be very short (days and weeks rather than months).

ID	Consultee Comments	Applicant Response
3.21	Regarding Impact 1: Direct impact to known heritage assets as noted in Section 16.5.1 and specifically Table 16.28 (Archaeological Exclusion Zones within the Offshore Development Area), MMO queries the inclusion of an anomaly considered to be "Likely geological" with an AEZ, when a temporary AEZs could be used. In addition to this, we query the assumption made in paragraph 202 regarding "low archaeological potential or small magnetic anomalies (<100nT)" and that they could be "…avoided by means of micrositing during detailed Offshore Project design". It would seem more likely that the concept of micro-siting would be used to avoid AEZs, whereas other anomalies are more likely to be cleared and therefore require assessment and should be subject to reporting through a protocol system.	An AEZ was applied as a cautionary measure as the anomaly had some potential to be of anthropogenic origin, therefore the original adoption of an AEZ, as opposed to a TAEZ, remains the most appropriate mitigation. Following route refinement of the export cable within the cable corridor, the primary form of mitigation will be avoidance. Should avoidance not be possible, ROV investigation will be undertaken during UXO investigation and clearance. Items will them be relocated or remain *in situ.* In terms of AEZs these will be avoided through route refinement and then investigated using an ROV during UXO investigations and clearance. If the anomalies are identified to not be of an archaeological significance to warrant an AEZ, consultation will be undertaken with Historic England to remove the AEZ and relocate the identified item.

ID	Consultee Comments	Applicant Response
3.22	Section 10.3 Quaternary deposits (Appendix 16.A) identifies that within the proposed WTG array area an identified "Unit E" that might have archaeological and palaeo-environmental potential. MMO notes the level of detail provided and clarity of the recommendations and the MMO confirms the necessity of a process for consultation on Method Statements produced from a WSI. It is important that mitigation through production of a sedimentary geoarchaeological deposit model contributes to the understanding of palaeo-landscapes as highlighted in Historic England published guidance. We also understand the use of a staged/phased approach to geoarchaeological analysis, but we consider it important that there is an agreed output, so that all parties are clear as to what it to be produced from any staged programme of analysis. It is therefore acknowledged that this project does offer an opportunity to enhance our understanding of sea level change through palaeo-environmental assessment at this location, which could be a substantial research output and public benefit of the proposed project.	The Applicant acknowledges this comment and are committed to ongoing consultation with Historic England as set out in the **Appendix 16.B: Offshore Outline Written Scheme of Investigation** of the **Offshore ES**. All future archaeological works packages will be subject to task specific archaeological method statements, prepared under the umbrella of the post-consent WSI, itself in accordance with the Outline WSI, and prepared in consultation with Historic England.
3.23	Appendix 16.A Section 11 details Mitigation. MMO concurs with the identification of an Area of Archaeological Potential (APP) for the ECC between the foreshore area and 1.2km offshore, in consideration of the considerable number of magnetic anomalies identified, which could be associated with the former US Army Assault Training Centre. The recommendation for further assessment of any geophysical data collected in support of UXO survey is appropriate together with a protocol reporting system. It is also possible that other, presently unknown archaeological material may exist buried within the intertidal zone, as highlighted in Section 9.4 (Devon Historic Environment Record) regarding 19th Century wrecking records spatially relevant to this project.	The Applicant acknowledges this comment.

ID	Consultee Comments	Applicant Response
3.24	Appendix 16.B Section 1.4 (potential impacts) includes installation of WTG moorings and OSP foundations and intra-array and platform link cabling; although (as noted above) it is not immediately apparent what attention has been given to unique design aspects of this proposed project such as subsea catenary mooring lines.	This will be further clarified following the acquisition of further geophysical and geotechnical data and the refinement of the Project design.
3.25	MMO notes the detail provided and the timing to optimise input to engineering design as stated in Appendix 16.B, Section 1.6 (Methodology for Further Site Investigation). Highlighting, if geotechnical investigations were conducted in Summer 2023 (informed by a geoarchaeological Method Statement), this section of the outline WSI will require updating.	The Applicant acknowledges this comment. An Archaeological Method Statement was supplied to Historic England in line with the **Appendix 16.B: Offshore Outline Written Scheme of Investigation** of the **Offshore ES** prior to the 2023 survey commencing. All future archaeological works packages will similarly be subject to task specific archaeological method statements, prepared under the umbrella of the post-consent WSI, itself in accordance with the Outline WSI, and prepared in consultation with Historic England.

2.1.4 Maritime safety in consultation with Maritime and Coastguard Agency and Trinity House

ID	Consultee Comments	Applicant Response
4.1	MMO notes that NASH Maritime has undertaken a detailed Navigation Risk Assessment (NRA) in accordance with Maritime and Coastguard Agency (MCA) guidance (MGN 654) and NRA risk assessment methodology. MMO is satisfied that appropriate traffic data has been collected in accordance with MGN654, which includes two 14-day marine vessel traffic survey in summer and winter of 2022. The hazard log is a reasonable and proportional assessment of the risks. Furthermore, a completed MGN 654 Checklist has been provided as part of the NRA, and MMO is content that all recommendations have been addressed.	The Applicant acknowledges this comment.

ID	Consultee Comments	Applicant Response
4.2	The turbine layout design will require MMO's approval (in consultation with MCA and Trinity House) prior to construction to minimise the risks to surface vessels, including rescue boats and search and rescue aircraft operating within the site. All structures must be aligned in straight rows and columns with a minimum of two lines of orientation. MMO will include a condition within the Marine Licence (if positively determined).	The Applicant acknowledges this comment and will continue to liaise with MCA and Trinity House during the detailed design stage when specific turbine locations are being planned. This will if include further navigational risk assessment if required.
4.3	All lighting and marking arrangements will require MMO approval (in consultation with MCA and Trinity House). All aviation lighting must be visible 360° and compatible with night vision imaging systems, as detailed in CAP 764 and MGN 654 Annex 5.	The Applicant acknowledges this comment and will adhere to the advice received.
4.4	MMO will include a condition within the Marine Licence (if positively determined). A search and rescue (SAR) checklist based on the requirements in MGN 654 Annex 5 will need to be completed and will require MMO approval (in consultation with MCA) before construction starts. This will include the requirement for an approved Emergency Response Co-operation Plan (ERCOP). MMO will include a condition within the Marine Licence (if positively determined). During SAR discussions, particular consideration will need to be given to the implications of the site size and location. Attention should be paid to the level of radar surveillance, AIS and shore-based VHF radio coverage and give due consideration for appropriate mitigation such as radar, AIS receivers and in-field, Marine Band VHF radio communications aerial(s) (VHF voice with Digital Selective Calling (DSC)) that can cover the entire wind farm sites and their surrounding areas.	The Applicant acknowledges this comment and will adhere to the guidance received regarding conditions included within the Marine Licence. A SAR checklist will be completed and submitted to MMO for approval before construction commences.
4.5	MMO requires linear progression of the construction programme avoiding disparate construction sites across the development	The Applicant acknowledges this comment and will adhere to the advice received, ensuring linear progression of the construction

ID	Consultee Comments	Applicant Response
	area. There will be a requirement for an agreed construction plan to be in place ahead of any works commencing.	programme and that an agreed construction plan is in place ahead of any works commencing.
4.6	MMO will include a condition within the Marine Licence (if positively determined). Third Party Verification of the mooring arrangements for all floating devices will be required prior to construction to provide assurance against loss of station. Guidance on regulatory expectations on mooring arrangements can be found on our website: https://www.gov.uk/guidance/offshore-renewable-energy-installations-impact-on-shipping.	The Applicant acknowledges this comment and will adhere to the advice received.
4.7	MMO notes that as per section 5.8 the semi-submersible platform will be moored or wet stored at quayside and will be towed into the site. There is also a possibility for the cable to be wet stored if they are installed ahead of the turbines. MMO requires the locations of these sites and the opportunity to consult with relevant maritime stakeholders including MCA and Trinity House.	The Applicant acknowledges this comment. The locations of the sites are not known at this stage. Once the information is available it will be shared with the MMO. Discussion have also taken place with the MMO regarding whether a separate Marine Licence will be required.
4.8	MGN 654 requires that hydrographic surveys should fulfil the requirements of the International Hydrographic Organisation (IHO) Order 1a standard, with the final data supplied as a digital full density data set, and survey report to the MCA Hydrography Manager and the UKHO. Further information can be found in MGN 654 Annex 4 supporting document titled 'Hydrographic Guidelines for Offshore Developers'. Please see https://www.gov.uk/guidance/offshore-renewable-energy-installations-impact-on-shipping. This includes surveys during the pre-construction, post-construction and post-decommissioning stages.	The Applicant acknowledges this comment and will adhere to the advice received.
4.9	Any consented cable protection works must ensure existing and future safe navigation is not compromised. The standard is a	The Applicant acknowledges this comment. A maximum reduction of 5% surrounding depth referenced to Chart Datum will be

ID	Consultee Comments	Applicant Response
	maximum of 5% reduction in surrounding depth referenced to Chart Datum.	maintained as set out in **Sections 15.5, 15.6 and 15.7** of **Chapter 15: Shipping and Navigation** of the **Offshore ES**.
4.10	There is a considerable amount of leisure traffic using the Taw estuary, any changes in work plans should be in consultation with local users and MCA.	The Applicant acknowledges this comment and any changes in work plans will be made in consultation with local users and MCA.
4.11	If HVDC cables are being considered then a desk-based study should be undertaken to establish the electromagnetic deviation, affecting ship compasses and other navigating systems, of the high voltage cable route to the satisfaction of the MMO (in consultation with MCA). The standard is a three-degree deviation for 95% of the cable route and for the remaining 5% no more than five degrees will be attained. On receipt of the study, MMO may request a deviation survey of the cable route post installation.	The Applicant acknowledges this comment. For clarity, The Project is not proposing the use of HVDC cables, they are not included within the design envelope. Please refer to **Chapter 15: Shipping and Navigation** of the **Offshore ES,** where it states that a Cable Specification and Installation Plan will be prepared. The **Outline Cable Specification and Installation Plan** (WHX001-FLO-CON-ENV-PLN-0007) is provided as part of the **Further Environmental Information** submission. Cable burial depths are considered in the **Appendix U: Cable Burial Risk Assessment** (WHX001-FLO-CON-ENG-RSA-0001) of the **ES Addendum**.
4.12	The requirement and use of safety zones as detailed in the application is noted. The MMO and MCA (as consultee) will comment separately on the safety zone application once submitted.	The Applicant acknowledges this comment.
4.13	It is reminded that contractors and subcontractors must have the required certification for all vessel operations, and early engagement with the local MCA Marine Office (plymouthmo@mcga.gov.uk) must be undertaken where necessary to ensure there are no issues with regards to survey and inspections, towage, and safety requirements. A load-line exemption for the turbine platforms will be required prior to any towage to site and the applicant must ensure any ballast water requirements are addressed.	The Applicant acknowledges this comment and will adhere to the advice received.

ID	Consultee Comments	Applicant Response
4.14	All dropped objects must be reported to the MMO, UKHO and HMCG using the Dropped Object Procedure Form as soon as reasonably practicable and no later than 24 hours of the undertaker becoming aware of an incident. Immediate notification should be made to HM Coastguard via telephone where there is a perceived danger or hazard to navigation. On receipt of the Dropped Object Procedure Form, MMO may require relevant surveys to be carried out by the undertaker (such as side scan sonar) if reasonable to do so and MMO may require obstructions to be removed from the seabed at the undertaker's expense if reasonable to do so.	The Applicant acknowledges this comment and will adhere to the advice received.
4.15	In case of damage to, or destruction or decay of, the authorised project seaward of MHWS or any part thereof, excluding the exposure of cables, notification must be issued to MCA, Trinity House, the Kingfisher Information Service of Seafish and the UKHO within 24 hours of becoming aware. In case of buried cables becoming exposed on or above the seabed, the undertaker must within three days following identification of a potential cable exposure, notify mariners and inform Kingfisher Information Service of the location and extent of exposure. Copies of all notices must be provided to the MCA, Trinity House, and the UKHO within 5 days. The plan must include proposals for monitoring offshore cables including cable protection during the operational lifetime of the authorised scheme which includes a risk-based approach to the management of unburied or shallow buried cables.	The Applicant acknowledges this comment and will adhere to the advice received, ensuring that the relevant bodies are notified within the stated timeframes in the event of damage or decay of the project, or exposure of buried cables. A programme of performance and compliance monitoring will be established for the Offshore Project which will include, but not necessarily be restricted to, site inspections, environmental audits, vessel inspections and audits, and environmental monitoring. These measures are outlined in an **Outline Project Environmental Management & Monitoring Plan (PEMMP)** (WHX001-FLO-CON-ENV-PLN-0003) and **Outline Construction Environmental Management Plan (CEMP)** (WHX001-FLO-CON-ENV-PLN-0010) which are provided as part of the **Further Environmental Information** submission.
4.16	MMO will include a condition within the Marine Licence (if positively determined). Notices to mariners will be required on the Marine Licence (if determined). This will include a local notification to mariners along with notices to HM Coastguard and the	The Applicant accepts this comment and states that Notice to Mariners will be issued in advance of the works or installation.

ID	Consultee Comments	Applicant Response
	Kingfisher Information Service of Seafish, prior to commencement of activities. Further weekly notices may be required.	
4.17	Post construction monitoring is required and must include vessel traffic monitoring by automatic identification system for a duration of three consecutive years following the completion of construction of the authorised project. An appropriate report must be submitted to MMO (in consultation with MCA and Trinity House) at the end of each year of the three-year period.	The Applicant acknowledges this comment and will adhere to the advice received.
4.18	MMO will include a condition within the Marine Licence (if positively determined). On completion of construction, the undertaker must submit a close out report to the MMO, MCA, UKHO and the relevant statutory nature conservation body within three months of the date of completion of construction. The close out report must confirm the date of completion of construction and must include the following details: i. the final number of installed wind turbine generators; ii. as built plans; iii. latitude and longitude coordinates of the centre point of the location for each wind turbine generator and offshore platform, substation, booster station and meteorological mast; provided as Geographical Information System data referenced to WGS84 datum. iv. latitude and longitude coordinates of the inter array and export cable routes; provided as Geographical Information System data referenced to WGS84 datum.	The Applicant accepts this comment and commits to producing a close out report including the mentioned details within three months of the date of completion of construction. A meteorological mast is not included within the design envelope.
4.19	MMO will include a condition within the Marine Licence (if positively determined). The authorised project shall not commence until a plan has been agreed in writing with MMO in	The Applicant accepts this comment and will produce a plan post-consent in agreement with the MMO setting out the mentioned

ID	Consultee Comments	Applicant Response
	consultation with Trinity House and the MCA setting out proposed details of the authorised project, including the: a) number, dimensions, specification, foundation type(s) and depth for each WTGs, offshore platforms, substations and meteorological masts; b) the grid coordinates of the centre point of the proposed location for each WTG, platform, substation and meteorological mast; c) proposed layout of all cables; and d) location and specification of all other aspects of the authorised project.	details of the authorised project. A meteorological mast is not included within the design envelope.
4.20	MMO will include a condition within the Marine Licence (if positively determined).No part of the authorised project may commence until the MMO, in consultation with the MCA, has confirmed in writing that the undertaker has taken into account and, so far as is applicable to that stage of the project, adequately addressed all MCA recommendations as appropriate to the authorised project contained within MGN654 "Offshore Renewable Energy Installations (OREIs) – Guidance on UK Navigational Practice, Safety and Emergency Response Issues" and its annexes.	The Applicant accepts this comment.
4.21	MMO will include a condition within the Marine Licence (if positively determined). A construction method statement must be agreed in accordance with the construction methods assessed in the environmental statement and including details of – i) Cable specification, installation and monitoring, to include: a) technical specification of offshore cables below MHWS;	The Applicant accepts this comment and will produce a construction method statement containing the information requested. An **Outline Cable Specification and Installation Plan** (WHX001-FLO-CON-ENV-PLN-0007) is provided as part of the **Further Environmental Information** submission.

ID	Consultee Comments	Applicant Response
	b) a detailed cable laying plan for the Order limits, incorporating a burial risk assessment encompassing the identification of any cable protection that exceeds 5% of navigable depth referenced to chart datum and, in the event that any area of cable protection exceeding 5% of navigable depth is identified, details of any steps (to be determined following consultation with the MCA and Trinity House) to be taken to ensure existing and future safe navigation is not compromised or such similar assessment to ascertain suitable burial depths and cable laying techniques, including cable protection; and c) proposals for monitoring offshore cables including cable protection during the operational lifetime of the authorised scheme which includes a risk based approach to the management of unburied or shallow buried cables.	
4.22	MMO will include a condition within the Marine Licence (if positively determined). The undertaker must conduct a swath bathymetric survey to IHO Order 1a of the Offshore Order Limits extending to an appropriate buffer around the site and the installed export cable route and provide the data and survey report(s) to the MCA and UKHO. The MMO should be notified once this has been done, with a copy of the Report of Survey also sent to the MMO. On post decommissioning, the undertaker must conduct a swath bathymetric survey to IHO Order 1a of the cable route and the installed generating assets area and provide the data and survey report(s) to the MCA and UKHO. [Decommissioning is not consented at this stage so this can't be included in the DCO/DML]	The Applicant accepts this comment and supports the inclusion of a swath bathymetric survey as a condition within the Marine Licence. The Applicant would like to note that this is not a Nationally Significant Infrastructure Project and therefore a DCO is not required. However, a Marine Licence(s) is required Clarification on the decommissioning phase of the Project is provided in **Section 5.4** of this **ES Addendum** and in an **Outline Decommissioning Programme** (WHX001-FLO-CON-ENV-PLN-0011) provided as part of the **Further Environmental Information** submission. The final decommissioning programme will be produced post consent and will include a swath bathymetry survey to IHO Order 1a of the cable route and installed generating assets area.

ID	Consultee Comments	Applicant Response
	These should fulfil the requirements of MGN654 and its supporting 'Hydrographic Guidelines for Offshore Renewable Energy Developers', which includes the requirement for the full density data and reports to be delivered to the MCA and the UKHO for the update of nautical charts and publications. This must be submitted as soon as possible, and no later than [three months] prior to construction. The Order Limit shapefiles must be submitted to MCA. The Report of Survey must also be sent to the MMO.	
4.23	MMO will include a condition within the Marine Licence (if positively determined). The undertaker must notify the UKHO of the completion (within 14 days) of the authorised project or any part thereof in order that all necessary amendments are made to nautical charts. Copies of all notices must be provided to the MMO and MCA within 5 days.	The Applicant accepts this comment.
4.24	MMO will include a condition within the Marine Licence (if positively determined). Third Party Verification (see HSE/MCA Regulatory expectations guidance on moorings for floating devices) of the mooring arrangements for all floating devices will be required prior to construction to provide assurance that the moorings are suitable for the expected metocean conditions at the location.	The Applicant accepts this comment.
4.25	An Aids to Navigation Management Plan to be agreed in writing by MMO following appropriate consultation with Trinity House specifying how the undertaker will ensure compliance with the below, from the commencement of construction of the authorised project to the completion of decommissioning. The undertaker shall during the whole period from the commencement of construction of the authorised project to the	An Aids to Navigation Management Plan will be produced and submitted to the MMO for agreement pre-construction. The Applicant will ensure that throughout the time between the commencement of construction of the authorised project and the competition of decommissioning the Applicant will: a. Give notice of commencement of construction of the authorised project within 24 hours of the commencement having occurred.

ID	Consultee Comments	Applicant Response
	completion of decommissioning exhibit such lights, marks, sounds, signals and other aids to navigation, and to take such other steps for the prevention of danger to navigation as Trinity House may from time to time direct. The undertaker must during the whole period from the commencement of construction of the authorised project to the completion of decommissioning keep Trinity House and the MMO informed of progress of the authorised project including; a. notice of commencement of construction of the authorised project within 24 hours of commencement having occurred; b. notice within 24 hours of any aids to navigation being established by the undertaker; and c. notice within 5 days of completion of construction of the authorised project. The undertaker must provide reports to MMO on the availability of aids to navigation in accordance with the frequencies set out in the aids to navigation management plan using the reporting system provided by Trinity House.	b. Give notice within 24 hours of any aids to navigation being established by the undertaker. c. Give notice within 5 days of completion of construction of the authorised project.
4.26	The undertaker must during the whole period from the commencement of construction of the authorised project to the completion of decommissioning notify MMO of any failure of the aids to navigation and the timescales and plans for remedying such failures, as soon as possible and no later than 24 hours following the undertaker becoming aware of any such failure.	The Applicant acknowledges this comment and will ensure that the MMO are notified of any aids to navigation failures along with a plan for remedying such failures and the associated timescales. Notice will be given no later than 24 hours following knowledge of the failure. This will be secured through the Aids to Navigation Management Plan which will be approved in consultation with MCA.
4.27	MMO will include conditions within the Marine Licence (if positively determined). Except as otherwise required by Trinity House the undertaker must paint all structures forming part of the authorised	The Applicant accepts this comment.

ID	Consultee Comments	Applicant Response
	project yellow (colour code RAL 1023) from at least the waterline to a height as directed by Trinity House. Unless MMO otherwise directs, the undertaker must paint the remainder of the structures grey (colour code RAL 7035). MMO will include a condition within the Marine Licence (if positively determined).	

2.1.5 Landowner's consent in consultation with the Crown Estate

ID	Consultee Comments	Applicant Response
5.1	The Crown Estate is affected by the proposed works and landowner's consent is required. MMO understands that the project is holding discussions with the Crown Estate.	The Applicant acknowledges this comment and states that AfL negotiations have commenced.

2.1.6 Impacts to aviation safety in consultation with the Ministry of Defence

ID	Consultee Comments	Applicant Response
6.1	MMO notes that within ES Chapter 5, that at this time the specific size and capacity of the turbines proposed has not been determined. The parameters set out in table 5.2 identify a maximum of eight wind turbines with indicative turbine dimensions including a hub height of 153 m above mean sea level, a rotor diameter of 262 m, and a maximum blade tip height of 284m above MHWS. The indicative location plan at figure 5.2 shows the eight turbines laid out in a line oriented approximately north/south, the turbines would be linked to the national grid through transmission cables routed to the east making landfall on the north part of Saunton Sands, to the west of Braunton.	The Applicant acknowledges this comment. This is the worst-case scenario as assessed within the **Offshore ES**.

ID	Consultee Comments	Applicant Response
6.2	The development envelope provided falls within, but below, managed danger areas in which intense aerial activity takes place. These danger areas, designated D064B and D064C, refer to airspace between 5000feet above mean sea level and 66,000feet above mean sea level. The proposed wind farm development has the potential to present an obstacle and danger to military aircraft operating below the managed danger area as well as vessels operating/navigating within this area. As such MMO requests that the wind turbines are fitted with MOD accredited aviation safety lighting, in addition to any that may be required under the provisions of the Air Navigation Order 2016, and that the development is accurately charted. MMO will include a condition within the Marine Licence (if positively determined).	All marking and lighting for aviation will be agreed post-consent with the appropriate bodies including Trinity House, Maritime and Coastguard Agency, Civil Aviation Authority and the Military of Defence with regard of the relevant guidance. The requirement for approved marking and lighting post-consent has been embedded in the project, please refer to **Section 17.5** and **17.7** of **Chapter 17: Civil and Military Aviation** of the **Offshore ES.**
6.3	The undertaker must exhibit such lights, with such shape, colour and character and at such times as are required in writing by Air Navigation Order 2016(a) and/or determined necessary for aviation safety in consultation with the Defence Infrastructure Organisation Safeguarding and as directed by the CAA. Lighting installed specifically to meet Ministry of Defence aviation safety requirements must remain operational for the life of the authorised development unless otherwise agreed in writing with the MMO, in consultation with the Ministry of Defence.	The Applicant acknowledges this comment and highlights that all marking and lighting for aviation will be agreed post-consent with the appropriate bodies including Trinity House, Maritime and Coastguard Agency, Civil Aviation Authority and the Military of Defence with regard of the relevant guidance.
6.4	MMO will include a condition within the Marine Licence (if positively determined). The undertaker must notify the Defence Infrastructure Organisation Safeguarding, on DIO-Safeguarding-Wind@mod,gov.uk at least 14 days prior to the commencement of the offshore works, in writing of the following information—	The Applicant acknowledges this comment and will adhere to the advice received.

ID	Consultee Comments	Applicant Response
	a. the date of the commencement of construction of the offshore works; b. the date any wind turbine generators are brought into use; c. the maximum height of any construction equipment to be used; d. the maximum heights of any wind turbine generator, meteorological mast, offshore electrical platform and accommodation platform to be constructed; and e. the latitude and longitude of each wind turbine generator, meteorological mast, offshore electrical platform and accommodation platform to be constructed, and the Defence Infrastructure Organisation Safeguarding must be notified of any changes to the information supplied under this paragraph.	
6.5	The undertaker must notify the Defence Infrastructure Organisation Safeguarding, on DIO-Safeguarding-Wind@mod,gov.uk, upon completion of the licenced activities. MMO will include a condition within the Marine Licence (if positively determined).	The Applicant acknowledges this comment and will adhere to the advice received.

2.1.7 Transboundary impacts in consultation with Natural Resources Wales

ID	Consultee Comments	Applicant Response
7.1	Given that the project is wholly in English Waters, Natural Resources Wales (NRW) Advisory will defer advice to Natural England (and JNCC if and where applicable). NRW advisory receptor specialists have liaised with their relevant SNCB counterparts to inform them of this approach and to ensure that relevant Welsh sites have been considered.	The Applicant acknowledges this comment.

ID	Consultee Comments	Applicant Response
7.2	MMO will continue to consult NRW Advisory where relevant, due to the potential for cross-border issues arising at a later date.	The Applicant acknowledges this comment.

2.1.8 Nature conservation in offshore waters in consultation with Joint Nature Conservation Committee

ID	Consultee Comments	Applicant Response
8.1	The requirement to agree and implement a mitigation plan to reduce the risk of auditory injury to marine mammals from piling should be secured as a condition of consent.	The Applicant accepts this comment. As stated within **Chapter 12: Marine Mammals and Marine Turtle Ecology,** a **Draft MMMP** was submitted as **Appendix 12.C** to the **Offshore ES** which will be further developed in the pre-construction period based upon best available information, methodologies, industry best practice, latest scientific understanding, current guidance, and detailed project design. This will include details of the embedded mitigation as well as details of the mitigation zone and any additional mitigation measures required. The **Updated Draft MMMP** is provided in **Appendix V** of the **ES Addendum.**
8.2	The draft MMMP provided in Appendix 12c should be for piling only. All reference to UXO clearance should be removed. UXO clearance will be subject to a separate Marine Licence Application and a separate MMMP.	The Applicant accepts this comment. All reference to UXO clearance will be removed in final MMMP produced pre-construction and a separate UXO Marine Licence supported by a separate MMMP will be produced. This approach has been confirmed with the MMO. The updated **Draft MMMP** (with references to UXO removal omitted) is provided in **Appendix V** of this **ES Addendum.**
8.3	MMO requests that noise abatement should be added to the list of potential mitigation measures that may be included in the final MMMP before the draft plan is accepted.	The Applicant accepts this comment. Noise reduction measures (which include noise abatement) will be considered as a mitigation measures in the final MMMP.

ID	Consultee Comments	Applicant Response
		The updated **Draft MMMP** is provided in **Appendix V** of this **ES Addendum.**
8.4	The duration of the pre-piling search should be extended by 30 minutes to ensure no marine mammals are within proximity prior to switching the ADD on.	The Applicant accepts this comment. The pre-piling search will be extended by 30 minutes. This will be secured via the final MMMP. An updated **Draft MMMP** is provided in **Appendix V** of this **ES Addendum**.
8.5	Please note that JNCC will be publishing an update to their piling mitigation guidelines later this year, and Defra is currently investigating methods of mitigating impacts from piling. MMO recommends you ensure that you are familiar with any updates published when the final MMMP is developed.	The Applicant acknowledges this comment.
8.6	A number of comments were provided by JNCC in relation to UXO clearance. Please see section 21 below.	The Applicant acknowledges this comment and has responded to the comments in **Section 2.1.21** of this document.

2.1.9 Benthic Ecology in consultation with Cefas Benthic Team

ID	Consultee Comments	Applicant Response
9.1	MMO requests that clustering analysis is carried out as per the methodology in Clarke et al. 2016 so that group allocation, and the number of groups, is more robustly assigned and that sample membership of the groups is the best possible representation of the benthic macrofaunal assemblage present. However, the results presented in Chapter 10 of the ES are an adequate description of the benthic assemblage of the survey area.	The Applicant notes that the results presented in **Chapter 10: Benthic and Intertidal Ecology** of the **Offshore ES** are an adequate description of the benthic assemblage of the survey area. Therefore, it is considered unnecessary to undertake further analysis to supplement this. Following an email exchange with the MMO together with input from the Cefas Benthic Advisor, it was confirmed on 22/02/2024 that there is no further action to take regarding this comment.

ID	Consultee Comments	Applicant Response

9.2	While it is noted that the potential impact of "Colonisation of introduced artificial substrate including non-native species" is acknowledged in Section 10.6.5 of the ES, it is claimed that the project will not add to the 'steppingstone potential' already present within the area. However, the location of the semi-submersible floating platforms in the water column provides unique opportunity, in terms of physical substrate and environmental conditions, for colonising organisms that would not otherwise be present in the offshore environment and that the development of the project, alone or in conjunction with other similarly floating OWF projects in the area, may significantly increase the 'steppingstone potential' for both INNS and for native taxa and could result in changes to the benthic assemblage present in the area.
	
	MMO requests that consideration is given to the potential for colonisation of the semisubmersible structures by both INNS and native taxa and that the ES recognises the potential for cumulative impact from this impact.
		As stated in the **Chapter 10: Benthic and Intertidal Ecology** of the **Offshore ES**:
		• All semisubmersible substructures will be coated with antifoulant to reduce the potential for colonisation.
		• Biosecurity measures following relevant regulations and guidance will be in place for all structures so that they do not bring INNS into UK waters. This guidance includes:
		  ○ The Environmental Damage (Prevention and Remediation (England) Regulations 2015, which set out a polluter pays principle where the operators who cause a risk of significant damage or cause significant damage to land, water or biodiversity will have the responsibility to prevent damage occurring, or if damage does occur will have the duty to reinstate the environment to the original condition.
		  ○ The International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention), which provide global regulations to control the transfer of potentially invasive species.
		• Vessels will comply with MARPOL standards so that they are not vectors for INNS.
		• The measures outlined above will be implemented by all other OWF in the Celtic Sea. Therefore, OWFs are not considered to be a source of INNS into the region and there is no pathway for a cumulative impact in this respect.

ID	Consultee Comments	Applicant Response
		There is an assumption that all OWF projects will limit the potential for fouling, particularly with INNS, for practical reasons irrespective of any biosecurity rationale. In addition, the structures are in open waters which will be subject to dynamic processes which are likely to prevent a build-up of debris from any fouling species beneath the structures (which could conceivably occur in sheltered waters). Again, therefore it is considered there is no pathway for a cumulative impact. WCOWL will consider monitoring the semisubmersible structures for growth. The details of the possibility of monitoring substructures for colonisation by INNS is presented in the **Outline Invasive Non-Native Species Management Plan** (INNSMP) (WHX001-FLO-CON-ENV-PLN-0009) which is provided as part of the **Further Environmental Information** submission.
9.3	MMO notes that ES Chapter 10 does not propose any monitoring measures. MMO requires this to be updated, the assumptions in the ES regarding the magnitude of the potential impacts on benthic ecology receptors because of the project must be verified through adequate pre- and post-construction monitoring, particularly with regards to colonising taxa on the semi-submersible wind turbine generator foundations.	WCOWL commits to conducting post-construction surveys to monitor the integrity of mooring lines and cables. Monitoring for INNS will be conducted during this time. An **Outline Invasive Non-Native Species Management Plan** (INNSMP) (WHX001-FLO-CON-ENV-PLN-0009) is provided as part of the **Further Environmental Information** submission.

2.1.10 Impact to fisheries in consultation with Cefas Fisheries Team

ID	Consultee Comments	Applicant Response
10.1	It is noted that a desk-based assessment has been utilised to identify the relevant fish and commercial fisheries receptors in the study area. The study area has been defined as the International	The assessment of UWN impacts when relating to Fish and Shellfish receptors is presented within **Chapter 11: Fish and**

ID	Consultee Comments	Applicant Response
	Council for the Exploration of the Seas (ICES) Rectangles 31E5 and 31E4. This seems appropriate for the majority of impacts given the scope and scale of the anticipated works; however, it should be noted that the impacts of underwater noise are likely to extend beyond the study area into ICES Rectangles 30E4 and 30E5. The maximum range for recoverable injury and Temporary Threshold Shift (TTS) for fish with a swim bladder not used in hearing (e.g. cod and whiting) is 14km and 51km respectively. This extends far beyond the study area boundaries (Figure 11.1 of ES Chapter 11). The study area should be increased to encompass ICES rectangles 30E4 and 30E5 to ensure the full impacts of underwater noise are identified and assessed.	**Shellfish** (**Section 11.5.3** and **Section 11.6.3**) of the **Offshore ES**. When considering impact piling, this assessment was undertaken with the prediction that receptors would exhibit mobile fleeing or avoidance behaviours, as has been accepted within other projects of similar scopes within the region (Erebus FLOW[1]). This prediction limits potential impacts of UWN to within the defined study area, comprising ICES Rectangles 31E5 and 31E4. It is acknowledged that **Comment ID 2.4** from the MMO requests consideration to be given to fish and shellfish receptor as stationary receptors, which will extend the area of impact to beyond the currently assessed study area. A change to the Fish and Shellfish Ecology Study Area (ICES Rectangles 31E5 and 31E4) to include ICES Rectangles 30E4 and 30E5 is not predicted to identify additional species due to the similarities in habitats between the areas. Within the original assessment the receptor group 'fish with a swim bladder that is involved in hearing' were considered to comprise a worst-case scenario due to this receptor group being the most sensitive to impacts from UWN. As a change to the study area is unlikely to identify further species, and as an assessment has been undertaken on the most sensitive receptor group within the original assessment, no change in sensitivity to fish and shellfish receptors is predicted. When assessing fish and shellfish as stationary receptors, the area over which potential impacts may occur is increased. The

[1] Erebus FLOW Environmental Statement, Chapter 10: Fish and Shellfish Ecology. Project Erebus Environmental Statement (bluegemwind.com)

ID	Consultee Comments	Applicant Response
		maximum range for recoverable injury and TTS for the most sensitive receptor group 'fish with a swim bladder that is involved in hearing', is increased from 24km to 51km. Species within the 'fish with a swim bladder not used in hearing' receptor group are predicted to be impacted across an area lower than 51km, but exact distances were not modelled due to these species not representing a worst-case scenario. The presence of potential spawning and nursery grounds for Atlantic herring (from the 'fish with a swim bladder that is involved in hearing' receptor group), as well as cod and whiting (noted by the MMO within **Comment ID 10.4 of** this table below), remains consistent between both the current Fish and Shellfish Ecology Study Area (ICES Rectangles 31E5 and 31E4) and the suggested extension of ICES Rectangles 30E4 and 30E5 (i.e. herring spawning potential within these rectangles is primarily low). Therefore, impacts from UWN on fish and shellfish when considered as stationary receptors are not likely to impact additional populations of these species. The magnitude of impact from UWN during construction when considering fish and shellfish as stationary receptors is likely to be reversible over a period of 1-5 years and will occur occasionally throughout the lifetime of the project, however the change will be beyond that seen through natural background variation. Therefore, the magnitude of impacts from UWN during construction is considered to increase from low (for fleeing receptors) to medium (for stationary receptors). Due to the low magnitude of impact and medium sensitivity of fish and shellfish to disturbance, injury and mortality from underwater noise impacts when assessed as stationary receptors, these activities are assessed as having a **Minor Adverse** effect, which is **Not Significant** in EIA terms.

ID	Consultee Comments	Applicant Response
10.2	The specific habitat requirements of sandeel have been acknowledged (and spawning herring) which limit their ability to move away from areas of impact during construction. Therefore, habitat suitability assessments have been carried out for the study area using the approaches outlined by Latto et al., (2013) and Reach et al., (2013) for sandeel and herring respectively. These have been presented appropriately as habitat suitability heat maps in Figures 11.7 and 11.5 (ES Chapter 11) for herring and sandeel respectively. MMO notes that it is stated that the heatmap for sandeel shows that the array area and export cable corridor overlap mainly low to medium sandeel spawning potential habitat (paragraphs 88 and 126 of ES Chapter 11: Fish and Shellfish). This statement is misleading as the array area and a large proportion of the export cable corridor overlap areas of yellow and orange 'heat' which are defined as 'medium' and 'high' suitability habitat, with relatively small amounts overlapping areas of 'low' (green) habitat suitability midway along the export cable corridor (Figure 11.7 ES Chapter 11).	Text within the baseline section states: "*Results suggest that whilst the Fish and Shellfish Ecology Study Area contains regions of high potential sandeel habitat, the Maximum Footprint Area (the area determined to undergo direct benthic disturbance) comprises of mainly medium and low potential sandeel habitat, with a small number of discrete high potential areas along the Offshore Export Cable Corridor*". An exact breakdown of the proportions is given within **Table 11.14**, **Chapter 11: Fish and Shellfish** of the **Offshore ES,** with low, medium, and high habitat potential for sandeel presented as 1.10km^2; 53.14km^2; and 0.42 km^2 within the maximum footprint area of the project respectively. Within the assessment of Impact 1: Temporary habitat loss/physical disturbance (construction) it is stated that: *"...the secondary study area [Maximum Footprint Area] comprises mainly low to medium sandeel potential habitat, modelled using methodology by Latto et al. (2013)."* It is acknowledged that the majority of the Maximum Footprint Area comprises sandeel habitat of medium potential, noting that the second most available habitat potential type is low. However, the statement provided by the MMO suggesting "the array area and a large proportion of the export cable corridor overlap areas of yellow and orange 'heat' which are defined as 'medium' and 'high' suitability habitat, with relatively small amounts overlapping areas of 'low' (green) habitat suitability midway along the export cable corridor" is not accurate, as the majority of orange 'heat' presented within **Figure 11-5, Chapter 11: Fish and Shellfish** of the **Offshore ES** corresponds to a potential grade of 9, and therefore falls within the classification of medium potential. High potential sandeel habitat is located along the export cable route only. As presented with **Table 11.14**, **Chapter 11: Fish and Shellfish** of the **Offshore ES,** the proportion of 'low' potential

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		sandeel habitat is approximately 2.5x greater than that of 'high' potential sandeel habitat across the Maximum Footprint Area.
10.3	MMO requests an indication as to when (which months) piling is anticipated to take place is provided. Provision of these dates would allow an assessment of whether piling is to take place during the spawning seasons of sensitive fish receptors.	Piling could occur at any time of the year. However, as with all seaborne construction activity the preference is for benign weather and more likely to be Q2-Q4.
10.4	The ES has assessed the impacts of underwater noise to all fish receptors as minor adverse to negligible. However, the potential impacts to spawning gadoids (cod and whiting) have not been properly investigated and assessed. Gadoids have a swim bladder which is not involved with hearing, although not as sensitive as clupeids, they are still considered highly sensitive to the impacts of underwater noise (Popper et al., 2014). Cod can be considered more vulnerable than whiting as populations in the Celtic Sea have experienced decreases of 88% since 1980, with ICES recommending zero catch in 2023 (ICES 2022). Therefore, there may be the potential for underwater noise generated during piling operations to have significant effects on spawning cod at a population level. MMO acknowledges that the piling operations are expected to occur over relatively short periods, one day for the OSP foundations and 5.25 days for the anchors. MMO also notes that most of the piling duration (installation of the anchors) will only require a lower maximum hammer energy of 800 kilojoule (KJ). Due to the relatively low anticipated hammer energies and short piling duration, MMO does not consider a piling restriction for the cod spawning season would be proportionate. However, piling activities should be undertaken outside the cod spawning season where possible, correctly identified in the ES as winter and early spring, more specifically January to April, with	The Applicant acknowledges this comment. Piling could occur at any time of the year. However, as with all seaborne construction activity the preference is for benign weather and more likely to be Q2-Q4. Note that the assessment of impacts from UWN considered 'fish with a swim bladder that is involved in hearing' (including the clupeid Atlantic herring) as a worst-case receptor. Impacts on other receptor groups (including 'fish with a swim bladder not involved in hearing', within which gadoids fall) should be considered as equivalent or less significant. Further details regarding potential impact to these species in the context of assessment as stationary receptors is provided in response to **Comment ID 10.1** of this table above.

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	peak spawning occurring in February and March. This should be reflected within the programme of works.	
10.5	MMO also recommends the use of noise abatement measure such as bubble curtains, as these would also reduce the impacts of underwater to other sensitive receptors such as spawning whiting. It is noted that the ES states that these may be used during UXO clearance, and therefore could also be applied to piling operations.	The Applicant will use noise abatement measures where possible in areas of suitable depth. The use of noise abatement measures is summarised in the **Outline Construction Environmental Management Plan (CEMP)** (WHX001-FLO-CON-ENV-PLN-0010) which is provided as part of the **Further Environmental Information** submission.
10.6	The impacts of underwater noise and vibration have not been investigated for the export cable crossing of the river Taw. The method used is anticipated to be HDD with the maximum distance expected to be 1.3km. The potential impact of this to migratory fish receptors has not been acknowledged in the ES. Although MMO notes that as works are to take place beneath the riverbed, and not within the water course, the impacts of noise and vibration to fish receptors will likely be negligible, however, it should still be considered.	It is noted that modelling of underwater noise from HDD was not specifically undertaken, however the comment received acknowledges that the magnitude of noise from HDD activities will be **negligible**. The impacts of low level non-impulsive noise making activities (i.e., those activities other than UXO or impact piling) are assessed within **Section 11.5.3.1.3, Chapter 11: Fish and Shellfish** of the **Offshore ES**. Modelling of noise from these activities is intended for application across any location in or around the Project site, and so remains relevant at the River Taw. The magnitude determined for other noise making activities is determined as low within **Section 11.5.3.2.3, Chapter 11: Fish and Shellfish** of the **Offshore ES**, which is a greater magnitude than HDD is considered. Sensitivity remains as **negligible**, as indicated within **Section 11.5.3.3.3, Chapter 11: Fish and Shellfish** of the **Offshore ES**. Due to the negligible magnitude of HDD and the negligible sensitivity of the most sensitive receptor group to other noise making activities, these activities are assessed as having a **Negligible** effect, which is **Not Significant** in EIA terms.

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		Appendix 5.A: Braunton Burrows and Taw Estuary Crossing Method Statement of the **Onshore ES** includes figures showing the depth profile below the bed of the estuary. Furthermore, **Appendix T: Onshore Ground Investigation Interpretative Report** of the **ES Addendum** confirms the suitability of this method for this location.
10.7	The total volume of 391,898m^2 is quoted for the barrier effect in Table 11.7 for both the operation and maintenance phase. This figure however is quoted at 327,865.07m^3 in Table 11.23. It should also be noted that figure in Table 11.7 in m^2 and should be a volume (m^3). MMO requests clarity on which figure is correct along with correcting the units if required.	The Applicant acknowledges this error. 327,865.07m^3 is correct.
10.8	It is noted that the intention is to bury the majority of the cable infrastructure at an average depth of 1m, with the addition of cable protection where burial is not possible, although some extent of the inter array cables will be suspended between the WTG and the seabed. MMO generally agrees that the impacts of Electric and Magnetic Fields (EMF) to fish receptors will likely be small due to the relatively small area affected and the burial of the majority of the cables. However, MMO requests that the aim should be for a minimum cable burial depth of 1.5m (subject to local geology and obstructions) to minimise the effects of EMF, as recommended in the Department of Energy and Climate Change report (2011). If this is not possible justification should be provided.	The Applicant accepts this comment. Where possible given local geology and obstructions, the target cable burial depth will be 1.5m. Further information is provided in the following documents: • **Outline Cable Specification and Installation Plan** (WHX001-FLO-CON-ENV-PLN-0007) provided as part of the **Further Environmental Information** submission • Appendix U: Updated Cable Burial Risk Assessment (WHX001-FLO-CON-ENG-RSA-0001) of the **ES Addendum** • **Appendix Y: Outline Cable Landfall Plan** (WHX001-FLO-CON-DES-PDE-0001) of the **ES Addendum**.
10.9	It should be noted that the impacts of underwater noise to gadoids including Cod could be significant at a population level (point 11.3 above). This could have a significant impact to commercial fisheries receptors targeting cod, although due to the depleted status of stocks in the Celtic Sea, cod does not form a	Impacts of underwater noise on cod are not determined to be significant, either when considered as a fleeing or stationary receptor (see **Section 11.5.3** of **Chapter 11: Fish and Shellfish** of the **Offshore ES** and response to **Comment ID 10.1** of this table above).

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	large proportion of the total catch. This potential impact needs to be further explored.	
10.10	MMO recommends that independent fisheries survey data such as the Environment Agency's Transitional and Coastal (TRaC) waters fisheries survey data (NFPD: TraC (Transitional & Coastal waters) fish survey relational datasets - data.gov.uk), to be used to inform the assessment around the river Taw and surrounding area, especially when identifying migratory fishes.	Baseline data sources are listed within **Table 11.9** of **Chapter 11: Fish and Shellfish** of the **Offshore ES**. Whilst additional fish survey data may be available, a precautionary approach was instead taken when establishing a baseline. Fish surveys represent only those species registered at the specific time/season and location present during the survey. Species are therefore susceptible to being overlooked, especially those with migratory behaviour that may only be present in a given region for a limited portion of the year. Therefore, all migratory species present known to the region were included within the Migratory Species receptor group within this assessment, as listed within the Fish and Shellfish Technical Appendix. This includes Atlantic salmon *Salmo salar*; European eel *Anguilla anguilla*; River lamprey *Lampetra fluviatilis*; Sea lamprey *Petromyzon marinus*; Brown/sea trout *Salmo trutta*; Shad species (allis *Alosa alosa and* twaite *A. fallax).*
10.11	MMO notes that the impacts to spawning grounds and habitat as a percentage of area affected throughout the report (e.g., Tables 11.14 - 11.15) has been quantified. The calculation of total spawning habitat approach can over- or underrepresent spawning grounds and is solely based on substrate suitability. The overlap with the spawning and/or nursery grounds should be acknowledged but quantifying the impacts based on percentage overlap is not appropriate due the reasons described in (i) and (ii) below (i) Spawning areas can change over time or become recolonised.	The provided caveats when utilising the quantification of potential spawning grounds for Atlantic herring and habitat for sandeel within the region are acknowledged. Values provided within **Tables 11.14** and **11.15** of **Chapter 11: Fish and Shellfish** of the **Offshore ES** have been used to contextualise the heatmaps (**Figures 11-5 and 11-7** of **Chapter 11**) and have been considered as just one part of the overall impact assessment. When acknowledged as just one part of the wider assessment for their respective receptor groups the quantification of these values is not determined to have altered the overall assessment of significance from any given impact.

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	(ii) Whilst spawning and nursery ground maps are used to provide the most recent and appropriate information to identify spawning areas, they do not fully define/consider/identify the following: • All potential areas of spawning, • Any habituation that may occur i.e., identify areas where higher densities of spawning are present, • Specific substrate requirements e.g., substrates which are most suitable within the wider broadscale sediments, • More suitable topography e.g., ridges/edges of sandbanks where sandeel may spawn or furrows where herring may spawn, • Environmental factors that may influence spawning intensity such as temperature, oxygenation, natural disturbance, anthropogenic disturbance etc., • Calculations of specific spawning areas are based on peak spawning times i.e., the number of days of a spawning period rather than considering the entire spawning season. This section should be updated.	Modelling undertaken based on Reach *et al.,* 2013 and Latto *et al.*, 2013 are presented within these figures, and may be consultant in isolation from the provided tables to allow for a more qualitative interpretation of findings. Additional figures showing the noise contours for mortality and TTS thresholds as presented in Popper et al, 2014 were requested by Natural England in a Marine Mammals and Fish and Shellfish Ecology ETG held on 14th December 2023 (see **Annex 1: Meeting Minutes** of this document). These two figures are provided in **Annex 2: Figures Showing Fish and Shellfish Impact Range** of this document and are titled: • **Figure 10 Impact ranges for impact piling modelling at the SE (OSS) location using the unweighted SELcum piled riving criteria from Popper. (2014) for species of fish assuming stationary animals.** • **Figure 11 Impact ranges for impact piling modelling at the SE (OSS) location using the unweighted SELcum piled riving criteria from Popper., (2014) for species of fish assuming stationary animals alongside herring spawning potential based on Reach., (2013).**
10.12	ES Chapter 11 Fish and Shellfish states that a Basking Shark technical report has been provided, this is stated as 'Appendix XX', however 'Appendix XX' does not appear to exist. Please provide this Appendix or signpost to where this is located in the documents that have been provided.	The Applicant acknowledges this error. Text and assessments relating to basking shark were mistakenly incorporated into the chapter for issue. Text should be disregarded.
10.13	Similarly, 'Appendix 13A: Underwater Noise and Vibration Technical Report' is referred to in ES Chapter 11, however does	The Applicant acknowledges this error. The underwater noise modelling report is **Appendix 12.A: Marine Mammal and**

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	not seem to exist as Appendix 13.A is the Offshore Ornithology Technical Report. Please amend to avoid confusion.	**Marine Turtle Underwater Noise Modelling Report** of the **Offshore ES.**

2.1.11 Impact to shellfish in consultation with Cefas Shellfish team

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11.1	MMO notes that appropriate data sources such as MMO Landings data and site-specific surveys have been used to inform a baseline. However, the information specifically pertaining to Shellfish species is limited.	MMO landings data is available for the region with wide scope from both temporal and spatial perspectives. The species identified as present within this dataset is considered as being likely to include all species considered as Shellfish within the context of **Chapter 11: Fish and Shellfish Ecology** of the **Offshore ES**. Whilst the inclusion of datasets from small-scale artisanal fisheries may result in higher levels of data granularity, the approach to assessment of impact will remain the same due to the worst-case approach used in assessment (presence of a species anywhere within the study area will result is its assumed presence across the whole study area). More detailed consideration of invertebrate species based on project-specific data, including data collected from within the inshore area, is undertaken with **Chapter 10: Benthic and Intertidal Ecology** of the **Offshore ES.**
11.2	The only data used in relation to shellfish is the MMO landings data, while this can provide details on commercial shellfish species present in the area, there are several caveats, such as no representation of small-scale artisanal fishers, specifically those inshore. MMO requests the use of data collected from the local IFCA on inshore fisheries in proposed project area, with particular importance of the area surrounding the landfall site for the cable corridor, including the inner mouth of the estuary. MMO queries why additional evidence, such as survey data to define the	Within **Chapter 11: Fish and Shellfish Ecology** of the **Offshore ES**, shellfish are largely taken to be those larger/more prominent species that often have an intrinsic commercial value within the given region. Species noted within MMO landings data often overlaps with species targeted by local artisanal fishers, with a wide range of shellfish species included within the **Appendix 11.A: Fish and Shellfish Technical Report** of the **Offshore ES**. Additional evidence including site-specific survey data both within and outside of the 6nm limit is considered within **Chapter 10: Benthic and Intertidal Ecology** of the **Offshore ES** where

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	baseline for species outside 6 nautical miles (NM), has not been used, in addition to MMO landings data. This should be updated and upon review of this information further mitigation and monitoring measures may be required.	additional consideration is given to a wide range of benthic invertebrates to define the topic specific baseline. Consideration of impacts to the fisheries themselves is given with **Chapter 14: Commercial Fisheries** of the **Offshore ES**. As survey data has been considered within the aforementioned chapters, and an assessment of impact has been undertaken when considering a worst case scenario, no mitigation or monitoring measures beyond those indicated within the EIA are anticipated. The Final Fisheries Liaison and Coexistence Plan will include details of current mussel stocks in the Taw Torridge estuary. It should be noted that no impacts are predicted to the Taw Estuary due to the use of trenchless technology to install the cable approximately 10m below the bed of the estuary. **Appendix 5.A: Braunton Burrows and Taw Estuary Crossing Method Statement** of the **Onshore ES** includes figures showing the depth profile below the bed of the estuary. Furthermore, **Appendix T: Onshore Ground Investigation Interpretative Report** of the **ES Addendum** confirms the suitability of this method for this location.
11.3	It is noted that suspended sediment concentrations has been identified as a potential impact. It is stated in 11.5.2.2 of Chapter 11 Fish and Shellfish that 'Directly adjacent to construction activities, smothering at an extent where shellfish mortality may be experienced is likely to occur' and assessed this as medium. However, the conclusion is that this will only result in a Minor Adverse effect, despite limited baseline data having been considered for shellfisheries present inshore and at the mouth of the estuary. MMO requests this is reviewed and queries whether this impact has been appropriately assessed.	It is agreed that the sensitivity of shellfish to this impact is assessed as **medium** within **Section 11.5.2.2** of **Chapter 11: Fish and Shellfish** of the **Offshore ES**. However the magnitude of the effect is considered **low** as stated within **Section 11.5.2.1** of **Chapter 11** due to the short-term nature and potential for rapid dispersal of the plume. As defined within **Table 11.5** of **Chapter 11**, this combination of low magnitude and medium sensitivity results in the impact of suspended sediments and sediment deposition having a **Minor Adverse** effect, which is **Not Significant** in EIA terms.

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		Please see **Appendix F: Coastal Geomorphology Technical Note of the ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002) for further information.

2.1.12 Coastal Processes in consultation with Cefas Coastal processes team

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12.1	There is a concern regarding the justification for the use of an uncalibrated wave model using the default settings (Section 3.2.3 Appendix 8.A Wave Modelling Report). For example, wave heights are sensitive to the wave breaking parameter which is also sensitive to the direction of waves in relation to the bathymetry. A calibration process has not been undertaken given there is an existing wave buoy in Bideford Bay (i.e. within the study site) that is freely available that would have provided the necessary data.	As stated in **Section 8.3.6** of **Chapter 8: Marine Geology, Oceanography and Physical Processes** of the **Offshore ES**, a range of wave conditions representing characteristic 'optimal' surfing waves for the North Devon region were input into the model. The default model parameters and settings were adopted, and no wave model calibration was carried out. This approach is reasonable because the purpose of the wave modelling was to quantify the difference in nearshore wave conditions with and without the Offshore Project.
12.2	Whilst the primary purpose of the wave modelling is to show the difference with and without the structures, for example a 10% reduction of a 1m wave is very different to a 10% reduction of a 5m wave. The model does not account for processes such as diffraction nor does it model the influence of the local reduction in wind due to the turbines. Whilst the use of a full depth fixed structure is a reasonable and conservative approximation, the modelling does not use the worst-case assumption for the foundation structure, it includes the structures with three semi-submersible jackets despite the worst case stated to be four (see Table 8.8). The five wave scenarios model all run with the same wave height and period with only direction and directional	The model input parameters were reviewed and approved by the University of Plymouth as an appropriate representation of the development. The purpose of the modelling, to determine any potential changes to waves at the coast to the detriment of the surfing community, was what set the approach to modelling. The modelling was not set up for coastal defence or potential inundation event purposes as there will be no disturbance or changing any of the beach morphology / defences, over and above the temporary five days for installation of the cable at the landfall. In the model each floating structures supporting turbines includes three "legs" represented by full-depth "monopiles" with diameter of 13m; and the floating structure supporting substation includes

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	spreading varying. This does not capture the range of impacts likely to occur. This should be reviewed and updated.	four "legs" represented by full-depth "monopiles" with diameter of 5m. The five wave scenarios were given by University of Plymouth addressing the concern of the surfing community in relation to the Project.
12.3	Whilst the use of a Source-Pathway-Receptor (S-P-R) conceptual model is appropriate in most cases, the use of numerical modelling is appropriate under certain circumstances despite the statement (paragraph 16 section 8.3.2) "Numerical modelling of these processes effects of the Offshore Project would be disproportionate to the potential impact…". Whilst modelling of sediment transport (both bedload and suspended sediments) within the offshore area and the majority of the cable route would likely be unnecessary, it would be necessary close to the shoreline where the cable route makes landfall. Given the proximity of the landfall site to sensitive receptors (Polycete reef within 500m of landfall and sessile mussel farms in the mouth of the Tor-Torridge Estuary) a quantitative assessment to the risk of burial is required. Despite the repeated statement that because of the sand fraction, the disturbed sediment will settle quickly and will not persist long, suspended sand can still travel several kilometres and be repeatedly resuspended over several days. Given the large tidal range in the Tor-Torridge estuary, tidal currents in excess of 1 m/s and wave height in Bideford Bay exceeding 6m, the potential plume from dredging activities associated with the cable route making landfall can easily be conceived to have a potential impact on nearby sensitive features. MMO requests that a quantitative assessment is required of the burial risk from dredging/tunnelling activities. In order for this to be achieved a calibrated/validated hydrodynamic model	A hydrodynamic model to drive a sediment transport model at the coast is considered disproportionate and a conceptual view on potential effects close to the coast is robust. We appreciate that there is the potential for finer sand to be transported in suspension but the view that tidal currents are strong close to the coast to drive this transport is misleading. Tidal currents in the Taw-Torridge Estuary system may reach 1m/s, but this is not the case elsewhere along this coast, where the predominant driver in shallower water is waves with negligible current speeds close to the coast. The relatively low-speed currents in the coastal zone suggests that the original assertion that the disturbed sandy sediment will settle quickly through the water column still holds true. The very small volumes of fine sediment (including very fine sand) in the disturbed component will then be dispersed rapidly away by the high energy waves in the coastal zone rather than by tidal currents. The dispersion would continue through repeated deposition and resuspension, so that the end-product deposition of fine sediment on the seabed would be immeasurable in practice. The impact on sensitive receptors would be negligible. The presence of low-speed currents at the coast in combination with the predominantly sand particle size of the disturbed sediment leads to the conclusion that numerical modelling to quantify sand transport is not necessary because of the limited potential for redistribution of the sand by currents once it has been

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	would be required to drive a sediment transport model. This would require in situ measurements of tidal currents and elevations.	disturbed. Waves will certainly transport the sand, but they will be of sufficient energy to winnow the finer material offshore away from the coast where it would be dispersed to background concentrations, enabling sorting of the sand on the nearshore and coastal bed into the particle components that replicate what is transported naturally. This can all be deduced conceptually.
12.4	In paragraph 100 of Section 10.5.2.2 of the ES Chapter 10: Benthic and Intertidal Ecology it states: "The pressure 'Smothering and siltation rate changes (light)' has been used to assess the significance of effect as the MarESA justification for light smothering and siltation is 'up to 5cm' and in Chapter 8: Geology, Oceanography and Physical Processes the worst-case level sediment smothering, and deposition is approximately <1mm". The evidence for this statement cannot be found in Chapter 8. MMO requests the evidence for this statement.	The quantification of the final deposition thickness is not presented in **Chapter 8: Marine Geology, Oceanography and Physical Processes** of the **Offshore ES**. This is an omission. The low amount of mud-sized sediment present in the seabed sediments would be advected and persist in the water column for hours to days, before depositing to form a thin layer on the seabed. The predicted thickness of sediment resting on the seabed would only amount to a maximum of 1mm (based on expert judgement). After this initial deposition, this sediment will be continually re-suspended to reduce the thickness even further to a point where it will be effectively zero. This will be the longer-term outcome once the sediment supply from installation has ceased. Please see also **Appendix F: Coastal Geomorphology Technical Note** (WHX001-FLO-CON-CAG-ASS-0002) of this **ES Addendum**.
12.5	The cable route passes through regions of sand waves that would require 5.6 km of sand waves to be levelled (Paragraph 81, section 8.5.2). It is also stated that the effects are anticipated to be small given the mobile nature of these features. However, no evidence is provided that these features can recover nor what the impact is on local sediment transport pathways. Sand waves can move on the scale of months to greater than a year, meaning it could	Evidence for sandwave recovery has been published for Race Bank and Haisborough Hammond and Winterton SAC (the Norfolk Projects). At Race Bank, the assessment showed that the direct changes to the seabed associated with sandwave levelling are likely to recover over a short period of time due to natural sand transport pathways. The results showed that the seabed had completely or nearly completely recovered to pre-construction levels (greater than 75% recovery of sand waves in all areas in

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	be a very slow process. MMO requests that further evidence be provided.	<1 year). At Haisborough, Hammond and Winterton SAC sand bank system, it was concluded that the overall form and functioning of any sandwave is not disrupted by levelling. The proposed sediment excavated during sandwave clearance will not be removed from the offshore development area ensuring no net loss of sediment in the system. Therefore, it is not expected that a disposal site is required. **Section 6** of **Appendix U: Updated Cable Burial Risk Assessment** (WHX001-FLO-CON-ENG-RSA-0001) of the **ES Addendum** accurately defines the preferred burial depth to mitigate future exposure through sandwave migration.
12.6	It should be noted that the use of satellite derive suspended particulate matter (SPM) only describes the surface concentrations and not the full environment. Also, the annual average does not describe the total range of potential concentrations. For example, SPM concentrations in the Southern North Sea show as 30 mg/l, but in situ observations show this can be twenty times larger (Sizewell C DCO application). Therefore, levels may be grossly underestimated. Whilst this unlikely to alter any conclusions of the EIA on coastal processes, this may be more pertinent to ecological assessments to benthic and shellfish assessments. MMO wishes to point out that ecological assessments to benthic and shellfish assessments may need to be reassessed based on the review of this point.	Noted. Potentially larger suspended sediment concentrations (SSC) than the concentrations extrapolated from satellite data would not alter the conclusions of the assessment. This is because a higher concentration baseline means that release of disturbed fines into the water column will have less of an effect than if the baseline concentrations were lower. The assessments for benthic and fish and shellfish receptors in **Chapter 10: Benthic and Intertidal Ecology** and **Chapter 11: Fish and Shellfish Ecology** of the **Offshore ES** would be unchanged. As described above, if the baseline SSC is higher the any increases from project would have less effect. The magnitude of effect is already **negligible** and would remain **negligible**.
12.7	The use of bentonite as part of the horizontal directional drilling for the cable route crossing the Taw Estuary and also for connecting the cable route above MHWS down to the connection pit below MHWS at Saunton Sands is well documented and explained in Appendix 5.B Taw Estuary Crossing Method Statement. However, whilst the statement made in paragraph 76	Noted. Further assessment of the risk of a bentonite frac-out is provided in **Appendix S: Hydrofracture Report** of the **ES Addendum**, which has been updated using data from **Appendix T: Onshore Ground Investigation Interpretative Report** of the **ES Addendum**. These provide data which shows the ground

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	Section 1.5.3 of Appendix 5.B is accurate ("[bentonite] drilling fluid breakouts are rare") the question remains what would be the impact of a bentonite frack out? The release of bentonite would act as a fine muddy silt risking smothering sessile shellfish in the Taw Estuary. The estuary is designated as a shellfish water protected area under the Water Environment (Water Framework Directive). MMO queries how much bentonite could be released before a leak is detected and what is the quantitative risk of burial to the mussel beds? Likewise, what is the risk to the Polychaete reef from the exit of the drilling for the cable connection at Saunton Sands? This should be included in the documents.	conditions are suitable for use of a trenchless technology under the Taw Estuary and confirms the previous conclusion that risk of frac out is low. Monitoring and any remediation measures in the unlikely event of frac-out are set out in an **Outline Bentonite Management Plan** (WHX001-FLO-CON-ENV-PLN-0012) is provided as part of the **Further Environmental Information** submission. More general measures to manage and mitigate impacts during the construction phase of the Project are set out the **Outline Construction Environmental Management Plan (CEMP)** (WHX001-FLO-CON-ENV-PLN-0010), and an **Outline Marine and Intertidal Pollution Contingency Plan** (WHX001-FLO-CON-ENV-PLN-0004) which are also provided as part of the **Further Environmental Information** submission. Regarding the amount of bentonite that could be released before a leak is detected, generally, the drilling fluids engineer (mud man) will identify $2m^3$ in volume. Therefore, the potential leakage volumes during drilling is $2m^3$. Please note that this is where pressures and returns are seen to be outside of design parameters. In addition, this is mud and not pure bentonite. The concentration of bentonite at this stage is calculated to be ~$17.5Kgm^3$. However, all the volumes given above will be refined during detailed design. Recent geotechnical investigation at Landfall and within the Onshore Development Area has indicated that there is sufficient depth within the beach to undertake open trenching in the intertidal area. Therefore, trenchless technology will not be used at Landfall, see **Section 5.2** and **Appendix Y: Outline Cable Landfall Plan** (WHX001-FLO-CON-DES-PDE-0001) of the **ES**

ID	Consultee Comments	Applicant Response
		Addendum for further detail on the construction technique at landfall..

2.1.13 Sediments in Consultation with Cefas SEAL Team

ID	Consultee Comments	Applicant Response
13.1	The trace heavy metal results of the contaminant analyses show few if no exceedances of Action Level 1 (AL1) for all contaminants analysed for. Four samples exceed AL1 for arsenic, and one sample exceeds AL1 for nickel, however, these are marginal exceedances when comparing the concentrations to the respective AL2 values.	The Applicant acknowledges this comment.
13.2	Organotins were below the limit of detection (LOD) [0.001 mg/kg] in each sample. Polycyclic Aromatic Hydrocarbons (PAHs) were below AL1 in each sample except for Fluoranthene, for which the exceedance is marginal. Lastly, Polychlorinated Biphenyls (PCBs) exceed AL1 for the ICES 7 list of PCBs in one sample and the ∑25 PCBs in two samples, however, these are again largely marginal. Samples were not tested for other contaminants typically tested for such as organochlorine pesticides and brominated diphenyl ethers, however, given that the location of the cable corridor and array is not within a river or estuary known to be off risk for these contaminants (e.g., rivers with high agricultural effluent and those with historic chemical manufacturing sites), the MMO does not consider that this is required.	The Applicant acknowledges this comment.
13.3	According to the OSPAR guidance 2008-03 all chemicals to be used in the construction of offshore windfarms should be notified to the regulator and should have their ecotoxicological properties	The Applicant acknowledges this comment.

ID	Consultee Comments	Applicant Response
	known. This includes, but is not limited to the list of chemicals in section 5.4.2 of the ES, such as any paints, coatings etc. It is usual practice that developers will provide a chemical risk assessment register (CRAR) for any and all chemicals proposed for use, even for those to be used within closed systems (such as engines) (such chemicals do not require assessment but do require notification). MMO requests that the applicant provides this before works begin for the MMO to approve. This is most often completed post-consent via a condition on the marine licence (if positively determined). The MMO would like the project to commit to providing a CRAR for any and all chemicals proposed for use. MMO will include a condition within the Marine Licence (if positively determined).	A **Draft Chemical Risk Assessment** (WHX001-FLO-CON-ENV-RSA-0001), which includes a Chemical Risk Assessment Register, is provided as part of the **Further Environmental Information** submission. This will be further developed post-consent, and the Applicant is open to a condition being placed on the Marine Licence(s) requiring this.
13.4	Due to the lack of fixed foundation WTGs, MMO does not consider that a disposal site requires designating for these works. However, any sandwave clearance may require the designation of a disposal site. It does not appear from the ES that exact volumes required for any sandwave clearance have been estimated. MMO requests that the need for sandwave clearance be clarified to a level of granularity such that one or more disposal sites can be designated, volumes and areas should be provided.	Locations of sand waves are identified in **Figure 5-3** of **Appendix 8.B: Geophysical Survey Results Report** of the **Offshore ES** and summarised in **Section 8.4.1.7** and **Section 8.5.2**. An additional figure identify locations of sand wave megaripples is provided in **Appendix A: Response to Natural England Annex 1: Bathymetry and Seabed Features** of the **ES Addendum.** **Appendix U: Cable Burial Risk Assessment** (WHX001-FLO-CON-ENG-RSA-0001) of the **ES Addendum** presents currently known information on volumes and areas of sandwaves to be cleared. In addition, **Section 8.5.2** of **Chapter 8: Marine Geology, Oceanography and Physical Processes** of the **Offshore ES**, it states that within the Offshore Export Cable Corridor, sand wave levelling is estimated to require 5.6km of excavation along two cables, across an area of 280,000m^2 (volume of 842,400m^3 for two cables assuming an average sand wave

ID	Consultee Comments	Applicant Response
		height of 3m). Along the inter-array cables, excavation of 29,760m^3 of sand is anticipated (across an area of 14,880m^2). The total area of sand waves defined by Wood (2022) along the Offshore Export Cable Corridor and inter-array cables is 7.62km^2, so the area of sand wave levelling (294,880m^2) equates to only 3.9% of the total area of sand waves in the corridor. The proposed sediment excavated during sandwave clearance will not be removed from the offshore development area ensuring no net loss of sediment in the system. Therefore, it is not expected that a disposal site is required.

2.1.14 Comments in Consultation with Environment Agency

3. The same comments were received from the Environment Agency on both the Onshore and Offshore Project consent applications. Therefore, to avoid repetition, these have been provided in **Appendix C: Response to Environment Agency** of the **ES Addendum**. This document includes responses to two comments received from the MMO in relation to flood risk.

2.1.15 Impacts to Fishing in Consultation with National Federation of Fishermen's Organisation

ID	Consultee Comments	Applicant Response
15.1	MMO notes the difficulty of assessing the impact on commercial fisheries when many details are still yet to be decided. Without the detailed information about the known type of turbines and mooring systems to be used in this project, it is difficult to assess whether the impacts identified are appropriate. For example, a catenary mooring system, with a maximum length of 700 m, radius of 750 m with a chain thickness of 175 mm, with 80 % of the chain as a hazard in contact with the seabed, poses vastly different issues to industry than a tension system.	The Applicant notes this comment. The assessment presented in **Chapter 14: Commercial Fisheries** of the **Offshore ES**, takes a conservative approach, and is based on the worst-case scenario that all vessels are unable to undertake fishing operation within the Windfarm Site.

ID	Consultee Comments	Applicant Response
	However, we acknowledge that the ES assesses impacts to commercial fisheries under a "worst-case" scenario.	
15.2	There is conflicting information provided in the non-technical summary: point 6 states there will be 6 – 8 turbines whereas point 52 states there will be 5 – 8 turbines, this is essential information to accurately understand impacts. The role of fisheries stakeholders input into cable routing decisions is also unclear. The list presented in the non-technical summary does not include commercial fisheries, however this is included in the Chapter 7, stakeholder engagement, as the key focus of several meetings with commercial fisheries stakeholders. Clarity is needed on these issues and consistency throughout the documentation should be checked.	The Applicant apologies for the discrepancy. In order to ensure clarity, the correct number of WTGs is 6-8. The Applicant reiterates that only the worst-case scenario was considered within the ES and the RIAA. The first consultation meetings with national and regional representative fisheries associations as well as individual fishers occurred in September 2022 to inform **Appendix 14.A: Commercial Fisheries Technical Report** of the **Offshore ES**. Identified fisheries associations and individual fishers relevant to the Project were met to inform them further of the project plans, gain understanding of their fishing activity and take on board their feedback and concerns. A summary of the key issues raised during the consultation meetings are presented in **Table 14.10** of **Chapter 14: Commercial Fisheries** of the **Offshore ES**. Further meetings have been held with fisheries stakeholders on 26/06/2023, 15/12/2023 and 05/02/2024 to discuss future survey plans, potential interaction with static gear fishing and provide project updates. The Project is committed to continuous engagement with the local fishing industry throughout all stages of the project and ongoing liaison is planned with fisheries stakeholders through quarterly meetings.
15.3	ES Chapter 11 Fish and Shellfish Ecology, presents a concern of the lack of site-specific data used to characterise the baseline environment for fish and shellfish. Specifically, with regards to the	A site-specific Benthic Characterisation Survey was undertaken in 2022 (see **Appendix 8.C: Benthic Survey Report** of the **Offshore Project ES**).

ID	Consultee Comments	Applicant Response
	desk-based study on data from Coull et al., (1998) to characterise a baseline and that these data are over 25 years old.	Please see response to **Comment ID 10.1** in **Section 2.1.10** of this document.
15.4	Chapter 14 identifies that key fisheries that are supported in the study area are crustacean fisheries. There is limited information presented on the distribution, abundance, or population dynamics of these key crustacean stocks and this should be updated.	Landings data have been used to determine the presence of these key crustacean stocks within the region and to establish the baseline used in the assessments in **Chapter 14: Commercial Fisheries** (**Section 14.4**) of the **Offshore ES**. Where available further data have been considered, however where data is unavailable it has been assumed that these species are present across the study area. Impacts have been assessed on a worst-case basis, assuming that these species will be present within regions where impacts associated with the development occur. Further information on fish and shellfish species, including where available information on their distribution, abundance, or population dynamics, is provided in **Chapter 11: Fish and Shellfish Ecology** (**Section 11.4**) of the **Offshore ES** where it is used to form the baseline for the assessment. The level of data and assessment is considered proportionate by the Applicant.
15.5	As one of the first floating wind projects deployed, site specific studies are needed to understand impacts of an entirely new technology.	The Applicant acknowledges this comment and in fitting with the project being a test and demonstration site, WCOWL are open to working with the fishing community to understand how the technology will interact with the local environment and other industries. An **Outline Underwater Noise Monitoring Plan** (WHX001-FLO-CON-ENV-PLN-0006) is provided as part of the **Further Environmental Information** submission.
15.6	It is recognised that the applicant has engaged with the key fisheries stakeholders in the region at various stages of the application process. ES Chapter 14 characterises the commercial	The commercial fisheries baseline included in **Chapter 14: Commercial Fisheries** (**Section 14.4**) of the **Offshore ES**,

ID	Consultee Comments	Applicant Response
	fishing industry well and effort has been made to describe the fisheries using a variety of sources, including fisheries expertise. MMO queries how those data have been interpreted, known limitations of the data, and how the data were used to assess the impacts on the diverse fishing fleets that are the current users of the area, this should be clarified and updated where required.	integrates the various publicly available fisheries datasets with information collected via consultation with fisheries stakeholders. The limitations of each dataset used in the assessment are outlined in **Section 14.3.6** (Data Limitations) and further detailed in **Appendix 14.A: Commercial Fisheries Technical Report** (**Table 4.1. Key Datasets used to inform the Baseline**) of the **Offshore ES.** The baseline characterisation and impact assessments included in **Chapter 14: Commercial Fisheries** and **Appendix 14.A: Commercial Fisheries Technical Report** of the **Offshore ES** are provided separately for each national fleet and for individual methods within each fleet as appropriate, reflecting the diversity of activities that the area of relevance to the Project supports.
15.7	ES Chapter 14 assesses impacts on commercial fisheries during the construction phase under the assumption of a complete exclusion from the array and export cable corridors. MMO notes the commitment to mitigation via Fishing Liaison with Offshore Wind and Wet Renewables Group (FLOWW) recommended mechanisms for the static gear sector. MMO would like to see a commitment to using the most recent FLOWW guidelines which are under review, as opposed to the 2014/2015 guidelines. Whilst the static gear sector is identified as exposed to an impact requiring mitigation, this is not the same for the mobile gear sector. The assumption that mobile gear can relocate is not Is be the case and should be considered when impacts are assessed. Additionally, as the displaced static gear fleet is likely to be displaced into areas where mobile gear operates, this should be considered as part of the impact assessment. We acknowledge displacement is assessed as an impact, but this is at the primary	The Applicant is committed to adhere to existing FLOWW guidelines. Similarly, The Applicant will adhere to relevant guidance for floating projects which the FLOWW Group may publish in the future. The Applicant notes, however, that information on the ongoing review of existing FLOWW guidance is not publicly available at present, hence reference to this review has not been made within the EIA submissions. The impact assessment takes account of the potential impacts of loss of access and associated displacement on the various fisheries receptors of relevance in the context of the Project. The assessment is carried out taking account of the level of activity that the array area and export cable corridor support, the sensitivity of the various fisheries to loss of access and displacement and the magnitude of the impact during construction and operation for the various receptors.

ID	Consultee Comments	Applicant Response
	phase and not secondary or tertiary effects of displacement to the wider industry.	The mitigation in respect of static fisheries identified in the chapter relates to instances where the removal of gear may be required and makes provisions to prevent displacement effects on other vessels as a result of this. Gear removal is not required for the mobile sector and therefore no agreements are proposed in relation to mobile fisheries. Efficient communication and liaison with mobile fisheries to make them aware of areas of work and of the restrictions in place at a given time, with appropriate and sufficient notice, would minimise potential impacts associated with loss of access during construction on UK mobile fisheries vessels. It is important to note that loss of access during construction would be temporary and short term and for UK vessels this would be for the most part localised to a discrete area of the inshore section of the export cable. During operation, UK mobile fisheries would be able to resume activity over the area of the export cable corridor. As shown in **Chapter 14: Commercial Fisheries** and **Appendix 14.A Commercial Fisheries Technical Report** of the **Offshore ES**, levels of activity by UK mobile vessels within the Windfarm Site are very low. Whilst it is difficult to predict where fishing activity may be displaced to and how this may affect individual vessels, in all cases, the level of displacement would be a function of the extent of loss or restricted access to fishing grounds. Given the small loss of access that mobile vessels are expected to sustain, any potential displacement associated with this would also be very small. In the case of the static gear sector, as previously mentioned, where static gear removal is required, provisions will be made to prevent displacement effects on other vessels. In the context of the small level of access expected to be lost as a result of the Project, and

ID	Consultee Comments	Applicant Response
		the provision made to minimise displacement effects where static gear removal is necessary, any secondary/tertiary effects associated with the displacement of fishing activity would be negligible.
15.8	Under the worst-case scenario for the operational phase there are no significant effects assessed for commercial fisheries. If the construction phase, under complete exclusion, highlights impacts requiring mitigation, MMO queries why is the same not observed for the operational phase? MMO notes the justification relating to the fact that fishing can continue along the export cable corridor and effort was not evident during the baseline characterisation exercise. This does not account for the complete exclusion of fishing in the array and a subsequent loss of ground and fishing opportunities.	As noted in **Chapter 14: Commercial Fisheries** of the **Offshore ES**, for the most part, it is exclusion during construction works along the export cable corridor in particular, that have potential to result in impacts on local UK fisheries. During the operational phase, fishing by will be able to resume in the area of the export cable corridor. Whilst some activity by UK vessels, predominately potters, is carried out within the array area this is only at very low levels, and by vessels that have wide operational ranges and fishing opportunities. Similarly, there is potential for activity by some non-UK-vessels in the array, predominantly Belgian beam trawlers and French trawlers, but both cases by vessels that have very extensive operational ranges and fishing opportunities. Significant impacts (above minor significance) have therefore not been identified in respect of loss of grounds during operation.

2.1.16 Comments in Consultation with Devon and Severn IFCA

ID	Consultee Comments	Applicant Response
16.1	Bideford Bay is an important fisheries area for trawling and netting. With regard to trawling in Bideford Bay, the cabling should be buried as deep as possible across the Bay so that trawling can continue in this vicinity. Trawling takes place for much of the year, is focussed in this area and is an important	The Applicant acknowledges this comment. However, the reference to 1.5 m burial provided in the NP-3 (DECC (2011) relates to information on some existing research suggesting that where cables are buried at depths greater than 1.5m below the seabed impacts from EMFs are likely to be negligible. The

ID	Consultee Comments	Applicant Response
	income for those fishers operating out of Bideford, Appledore and Ilfracombe. MMO notes that a maximum depth of 3m would protect the cabling whilst allow for the trawling activity to continue. Although the Department of Energy and Climate Change report (2011) states 1.5m should be achieved, 3 m would be better for co-existence and justification should be provided if this is not possible.	statement does not make a recommendation on appropriate burial depths to minimise interactions with trawl gear. The **Outline Cable Specification and Installation Plan** (WHX001-FLO-CON-ENV-PLN-0007) is provided as part of the **Further Environmental Information** submission. As outlined in **Sections 8.5.1** of the **Onshore and Offshore ES's**, the Cable Burial Risk Assessment has been updated to accurately define the requirement for cable protection and its locations. This is provided in **Appendix U: Updated Cable Burial Risk Assessment** (WHX001-FLO-CON-ENG-RSA-0001) of the **ES Addendum.**
16.2	The habitats under the Taw Torridge SSSI are supporting habitats for overwintering birds, in particular the wild mussel beds. Annual Mussel stock assessments have been carried out by Devon and Severn IFCA since 2016. Reports can be viewed here: https://www.devonandsevernifca.gov.uk/environmentresearch/research/molluscan-research-in-ds-ifcas-district/mussels/ MMO requests that consideration is made on any impacts to the supporting habitats and therefore the overwintering birds and the impacts of suspended solids and smothering the mussels due to the cabling and trenchless cabling. It is appreciated that the exit and entry point will be above the mean high-water mark, but this comment relates to the importance of the shellfish beds in the Taw Torridge SSSI.	As outline in **Chapter 5: Project Description** and **Appendix 5.A: Braunton Burrows and Taw Estuary Crossing Method Statement** of the **Onshore ES** the cable will be installed via a trenchless method c. 10m or more below the bed of the Taw-Torridge Estuary system. Geotechnical investigation has been undertaken, the results of which confirm the suitability of the site for trenchless technology. Further detail can be found in **Appendix T: Onshore Ground Investigation Interpretative Report** of the **ES Addendum.** The Project will incorporate several mitigation measures to ensure the potential for impacts from suspended sediments and smothering of mussels remains minimal, please see applicant response to **Comment ID 12.3** in **Section 2.1.12** above. The trenchless approach would avoid any anticipated disturbance within the estuary bed or water column, with the exception being if there was frac-out.

ID	Consultee Comments	Applicant Response
		The likelihood of this is very limited for reasons of the nature of the geology and depth of trenchless techniques, in the unlikely event of frac-out this is more likely to occur to the start or end of the drill as detailed in **Appendix S: Hydrofracture Report of** the **ES Addendum.** The entry and exit points of the HDD crossing where the risk of bentonite breakout is greatest will be at least c.50m in land from MHWS. A figure outlining the location of these points is provided **Annex 3: Taw Crossing** of this document. However, further actions intended to mitigate and avoid such likelihood occurring are detailed in the **Outline Bentonite Management Plan** (WHX001-FLO-CON-ENV-PLN-0012) provided as part of the Further Environmental Information submission. This includes the following measures: • Site monitoring during drilling operations by dedicated personnel. • Installation of a down hole annular pressure sensor. • Effective removal of drill cuttings. • Appropriate equipment will be available on-site at all times to respond to a breakout With the use of these plans and processes no likely sediment or estuary bed disturbance is expected and thus no indirect impacts on mussels or overwintering birds are predicted as stated in **Section 11.5.2** of **Chapter 11: Fish and Shellfish Ecology** of the **Offshore ES.**
16.3	There are concerns regarding the loss of habitat during construction of the site and the cabling in particular in regard to fish spawning and breeding grounds, and sensitivity of species to	**Section 11.6.4 of Chapter 11: Fish and Shellfish Ecology** of the **Offshore ES** concludes that the low magnitude of impact, combined with the negligible to medium sensitivity of all fish and

ID	Consultee Comments	Applicant Response
	sound and electromagnetic fields (section 11.3-11.5 of Chapter 11.). Under Section 11.4.1.2 points are raised about the fish species caught by varying fishing methods. It discusses the pelagic species including pilchards, mackerel, horse mackerel, herring. It states that herring is caught in smaller quantities and therefore of lesser concern. Atlantic Herring are referred to in detail in section 11.4. The social and heritage importance of the small-scale fishery in Clovelly and Minehead should be referenced and impacts assessed along with the important spawning grounds in this area and along the North Devon and Somerset coast (Blue Marine, 2020; Clarke et al, 2021.)	shellfish receptor groups, results in the impact of EMFs having a **Minor Adverse** effect, and is therefore **Not Significant** in EIA terms. Please see **Section 23.5.6** of **Chapter 23: Socio-Economics** of the **Offshore ES** where the assessment concluded that no impacts are expected on recreational fishing. Regarding spawning habitats, please see applicant response to **Comment ID 10.11** in **Section 2.1.10** of this document. As outlined in **Table 14.10 of Chapter 14: Commercial Fisheries** of the **Offshore ES**, extensive consultation has been undertaken for the Project, including with the Cornish Fish Producers Organisation. Information for vessels from the port of Clovelly have been reported in **Appendix 14.A Commercial Fisheries Technical Report** of the **Offshore ES** and used to inform the baseline for assessment in **Chapter 14** of the **Offshore ES**.
16.4	With reference to tope, in Section 11.4.1.3.5 it lists tope as commercially important. It should be noted that tope cannot be landed under the Tope (Prohibition of Fishing) Order 2008 which limits by-catch to 45 kilograms (kg) per day and prevents the development of commercial tope fishing operations. MMO requests that the references to tope being commercially important are clarified.	The Applicant acknowledges this comment and clarifies this included in the list in error.
16.5	In Chapter 11 Environmental Statement page 39 it states that as EMF can affect the many ray species which spawn in the Bristol Channel and have their nursery grounds in the vicinity of the farm and associate infrastructure and are shown to have medium sensitivity to EMF. Ray species have habitat preferences in the Bristol Channel in particular North Devon (Ross et al, 2015). Section 11.6.4. – 11.6.4.2 details the impacts of EMF on ray species. However, in Section 11.6.4.3, it states that the	**Chapter 11: Fish and Shellfish Ecology** of the **Offshore ES (Section 11.3.4)** contains an outline of embedded mitigation related to EMF. **Table 11.8** states that "The target burial depth is 1.5m where possible (recognised industry good practice and reducing effects of EMF), with a burial depth range of 0.5m – 3m. A detailed CBRA will also be required, to confirm the extent to which cable burial can be achieved. A CBRA was submitted as part

ID	Consultee Comments	Applicant Response
	significance of the effect overall is minor and therefore not significant in EIA terms and there would be no mitigation of the impacts. However, the MMO has concerns regarding the fact that ray species have medium sensitivity to EMF and as ray species are important commercial and recreational fishery species in the Bristol Channel (Hunter eta al 2018) and recommends further consideration of mitigation. The Non-technical summary recognises that some species have medium sensitivity but have assessed no significant effect on their ecology, spawning or nursery grounds and no mitigation is needed. Chapter 11 describes the sensitivity of thornback egg development to EMF detection. Thornback ray and other ray species are important commercially as recognised in the documents, can clarification be provided on what mitigation, if any, is proposed relating to their sensitivity to EMF?	of the **Offshore ES** (see **Appendix 8.D: Cable Burial Risk Assessment**). An update to this has been provided in **Appendix U: Updated Cable Burial Risk Assessment** (WHX001-FLO-CON-ENG-RSA-0001) of the **ES Addendum.** Where it is not possible to achieve cable burial, additional cable protection (rock placement, concrete mattressing or grout bags) will be required, and this will also increase the minimum distance between the cable and a migratory fish. Cables will be specified to reduce EMF emissions, as per industry standards and best practice, such as the relevant IEC (International Electrotechnical Commission) specifications."
16.6	Please confirm if there is any reference to the Bass Nursery Area in the Taw Torridge Estuary? It would appear from the charts submitted in the Introduction Chapter 1 that the crossing across the Taw Estuary is downstream of the start of the River Taw Bass Nursery, however, MMO requests an assessment of the impacts of the crossing works on the nursery areas and bass use of the estuary as a whole. Research has been undertaken on tagging of bass and its movements in the estuary (Stamp et al, 2021). To note: River Taw and River Torridge: Fishing for bass, or fishing for any species of sea fish using Sand Eels (Ammodytidae spp) as bait, by any fishing boat within any part of the River Taw and	The Applicant can clarify that the Bass Nursery Area has not been assessed specifically. The crossing underneath the River Taw will be undertaken by trenchless technology, for further detail on the crossing and the assessment of direct impacts on the Taw Estuary see **Comment ID 16.2** above. Therefore, it is considered that there is no direct impact pathway to bass. The impacts of other noise making activities, superficially those of low level non-impulsive types are assessed within **Chapter 11: Fish and Shellfish Ecology** of the **Offshore ES (Section 11.5.3.1.3)**. It is noted that HDD modelling was not specifically undertaken, however works of this type will likely fall within this scale of magnitude, as opposed to the magnitude of impact

ID	Consultee Comments	Applicant Response
	River Torridge Bass Nursery Areas is prohibited between 30th April and 1st November.	anticipated from UXO or impact piling. To clarify, the assessment was carried out using the worst case, this being fish with a swim bladder. The modelling of low level non-impulsive noise is intended for application across any location in or around the Project site, and so remains relevant at the River Taw. It is agreed that the magnitude of HDD activities will be **negligible**. As this is less than the potential magnitude of other low level non-impulsive noise impacts, the magnitude for Other Noise Making Activities therefore remains as low, as indicated within **Section 11.5.3.2.3** of **Chapter 11: Fish and Shellfish** of the **Offshore ES**, and sensitivity remains as **negligible**, as indicated within **Section 11.5.3.3.3** of **Chapter 11: Fish and Shellfish** of the **Offshore ES**. Due to the low magnitude of the impact and the negligible sensitivity of the most sensitive receptor group to other noise making activities, these activities are assessed as having a **Negligible** effect, which is **Not Significant** in EIA terms.
16.7	With reference to Chapter 14 - Commercial Fisheries, it is noted that during the 1–2-year construction phase that all fishing vessels will be excluded from the site. MMO requests clarification as to if this will be a phased approach with only certain areas having the fishing grounds closed, whilst others remain open prior to further construction within the site.	The assessment presented in **Chapter 14: Commercial Fisheries** of the **Offshore ES** has been carried out on the basis of the worst-case scenario that all activity may be excluded throughout construction across the whole array area. It should be noted, however that as shown in **Figure 5.2** of **Chapter 5: Project Description** of the **Offshore ES** project infrastructure is only expected to be installed in approximately 20% of the total array area. Therefore, the areas potentially affected by exclusion during construction works would be expected to be much smaller. In addition, as described in **Appendix 14.C: Outline Fisheries Liaison and Co-existence Plan** of the **Offshore ES,** minimising

ID	Consultee Comments	Applicant Response
		fishing clearance zones during surveys and construction where safe and practicable is amongst the measures expected to be used to facilitate co-existence. It is expected that these measures will evolve through consultation with fisheries stakeholders.
16.8	It is reassuring to see in the Commercial Fisheries Technical Report that both MMO landings/ sightings and EMODnet AIS data are used to inform the impact on commercial fisheries and vessel prosecuting those fisheries, but also that information has been gathered from Stakeholders (Fishing grounds figure 6.19). MMO agrees that the area where the cable comes into landfall at Saunton in Bideford Bay contains important fishing grounds for bottom towed gear and netting and the cable crosses important potting and some whelking ground. Whilst Figure 6.19 suggests trawling takes place right up to the west of Lundy Island, this may not be the case as trawling in prohibited to the west of the Island in the Lundy MCZ/SAC. MMO suggests that Figure 6.19 is updated.	The fishing grounds included in **Figure 6.19** of **Appendix 14:A: Commercial Fisheries Technical Report** of the **Offshore ES**, are based on hand- drawings provided by fishermen during consultation. The areas depicted in the charts should be taken as indicative of broad fishing grounds. These are not intended to provide accurate spatial evidence of fishing activity. Reference is made to the restrictions on trawling activity in the Lundy MCZ/SAC in **Chapter 14: Commercial Fisheries** (**Paragraph 177**) of the **Offshore ES**.
16.9	Non-Technical Summary Document Section 3.1.7 Point 125 refers to the impact the development site will have on some of the potting fishermen and we welcome that continued engagement will take place with these fishers and mitigation of potential impacts discussed. Whilst the site might not impact fishing ground at a national fleet level it will impact both inshore and offshore fleet members by varying degrees. As previously mentioned the inshore fleet operating out of Clovelly, Bideford, Appledore and Ilfracombe do rely on this part of North Devon for their fishing income and MMO reiterates the importance of Bideford Bay to the local fishing industry and to minimise disruption in this area	Consideration has been given in **Chapter 14: Commercial Fisheries** of the **Offshore ES** to activities carried out by local inshore vessels, including both static and mobile fisheries. An **Outline Fisheries Liaison and Co-existence Plan** (**Appendix 14.C** of the **Offshore ES**) has already been submitted and will be further developed post-consent. Suitable procedures to facilitate co-existence will evolve through consultation with fisheries stakeholders and will include consideration of procedures to minimise fishing clearance zones during surveys and construction. The export cable will be buried in a minimum target depth of 1.5m and protected where burial is not possible, see **Appendix U: Updated Cable Burial Risk Assessment** (WHX001-FLO-CON-

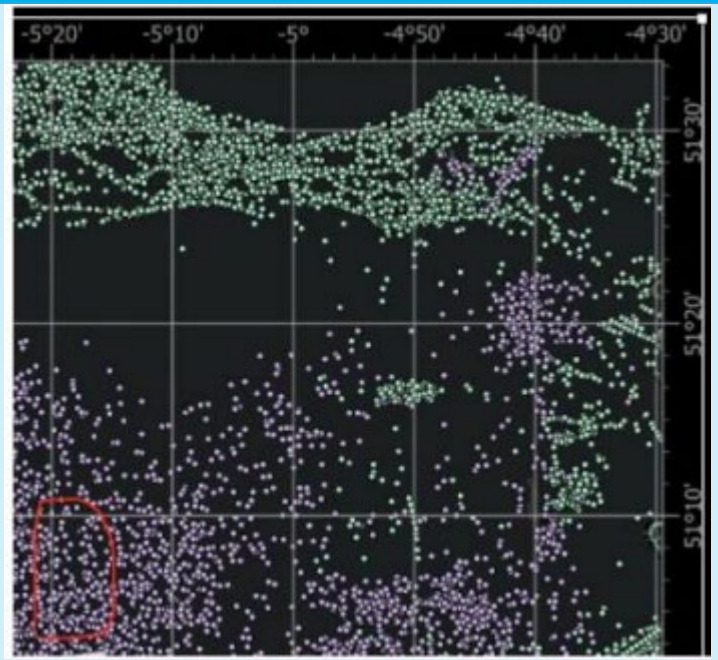
ID	Consultee Comments	Applicant Response
		ENG-RSA-0001) of the **ES Addendum**. Fishing is expected to be able to resume in the area of the export cable during the operational phase.
16.10	Devon and Severn IFCA have previously supplied charts showing fishing activity gathered from past surveys undertaken by IFCA and IVMS tracks of the trawling activity in Bideford Bay and North Devon. The MMO requests signposting to the relevant areas within the ES or supporting documents to where these have been used.	A consultation meeting was held with D&S IFCA on 22 September 2022 who advised that they could not share inshore vessel monitoring (I-VMS) and suggested requesting data from the MMO. The MMO were contacted and advised that the iVMS project was in roll-out phase at that time and that they were not in a position to share iVMS data externally. Meeting minutes are provided in **Annex 1** of this document. Following the initial meeting, IFCA provided a summary of fishing activity based on their own surveys for D&S IFCA District only. In the summary IFCA state that "the level of activity is likely to be an underestimate as the surveys are not fully responded to by fishers. It is important to note that this is therefore not the true picture of the fishing activity nor types of activity taking place outside the 6nm within the White Cross Offshore Wind Farm proposed site or export cable corridor"." In addition, the IFCA survey data was based on information from 2009 and 2014 and with low response rate. A second meeting was held with the D&S IFCA on 22/11/2022 to provide a project update and discuss fishing activities in the area. The anonymised fishing ground chart produced from consultation with fishers and fisheries stakeholders included in **Chapter 14: Commercial Fisheries** was shared and the IFCA confirmed that the data on fishing grounds collected corroborated their data. As data from the consultation undertaken by the Project was more recent and aligned with previous IFCA's survey results, this was

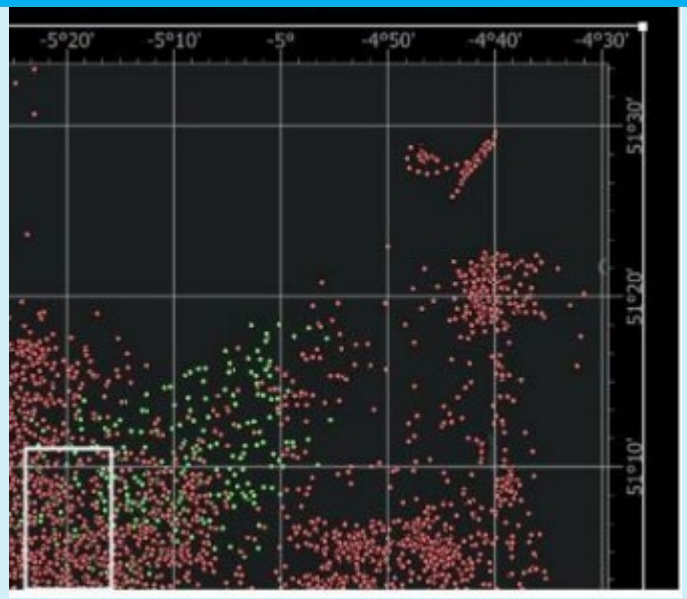
ID	Consultee Comments	Applicant Response
		included in **Figure 14.2** of **Chapter 14: Commercial Fisheries** of the **Offshore ES.**
16.11	In Annex 4 of the Commercial Fisheries Chapter 14 the summary of Devon and Severn IFCA Byelaws is not correct and MMO requests that this is amended. Devon and Severn IFCA's website contains the management measures in place for its District. Devon and Severn IFCA has permit conditions associated with its Mobile Fishing, Potting, Netting and Diving Permit Byelaws. The management measures can be read here: https://www.devonandsevernifca.gov.uk/enforcement-and-legislation/current-permit-byelaws-permit-conditions/	The Applicant will refer to the link provided for information and potential future updates on management measures of relevance to the Devon and Severn IFCA.
16.12	Devon and Severn IFCA have noted that a correct summary of the management measures can be provided on request or alternatively, IFCA Officers would happily talk to the applicant to give details of the management measures in place.	The Applicant notes this comment. WCOWL will refer to the link provided in response **Comment ID 16.11** above for information and potential future updates on management measure of relevance to the Devon and Severn IFCA.

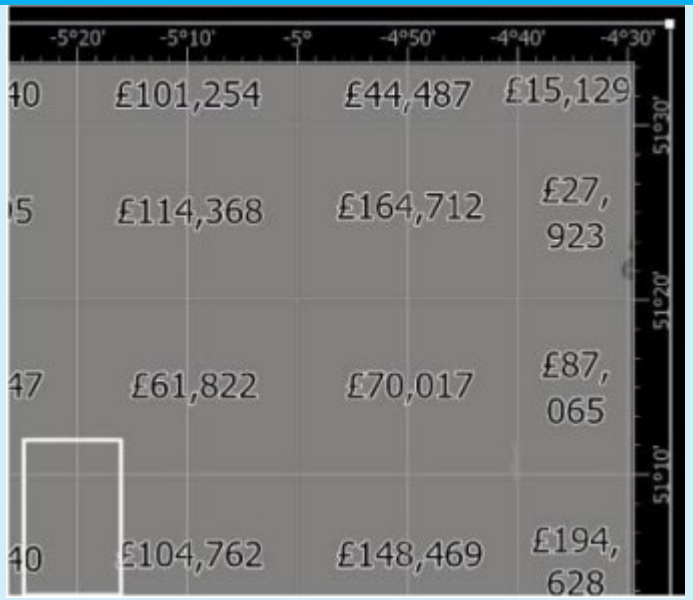
2.1.17 Comments in Consultation with Cornish Fish Producers' Organisation

ID	Consultee Comments	Applicant Response
17.1	The Cornish Fish Producers' Organisation (CFPO) engaged and attended the National Federation of Fishermen's Organisations and Crown Estate virtual planning project in 2022, which determined fishing will not return within floating offshore wind farms, as there is no ability to safely and efficiently operate between the anchors and chains and under turbines. However, the application is assuming fishing will return within the site once the construction is complete. The MMO requests clarity on this point.	The Applicant acknowledge that due to navigational safety risks, exclusion from a proportion of the array area of all non-Project vessels will result in loss of fishing area/long-term displacement of fishing effort (i.e., for the life of the Project). However, placement of the infrastructure (substructures, mooring lines, anchors, inter-array cables and an offshore substation platform) is expected to only occupy approximately 20% of the array area (as shown in **Figure 5.2** of **Chapter 5: Project Description** of the **Offshore ES**). For the purposes of the environmental impact assessment, as a conservative worst-case scenario, it was considered that fishing would be excluded during the operational phase from the 100% of the array area. Evidence from early trials carried out in Hywind, however, indicates that fishing using static gear methods can be viable within floating arrays. Where appropriate, WCOWL will explore the viability of undertaking potting fishing trials within the array area. Any proposals for such trials would be developed in consultation with the MMO and local fishermen. With regard to the Offshore Export Cable Corridor, once cable installation, burial and protection works are successfully completed and surveyed, normal fishing activities should be able to resume over it.
17.2	The CFPO would prefer dialogue through the CFPO office, so to ensure the most accurate data and input. The CFPO can then ensure its members are aware of any works taking place in good time. There is a concern that the survey that took place for this site in the summer had a very short notice to mariners (1 week time frame) limiting time to move gear or engage. MMO is working	Since 2022, the Applicant have been contracting Brown and May Marine Ltd (BMML) to facilitate liaison with the fishing industry and develop an open and clear relationship between WCOWL and affected fishers. To date this has been to manage disruption to fishers during the 2022 and 2023 offshore geophysical and geotechnical surveys. WCOWL will maintain this liaison throughout

ID	Consultee Comments	Applicant Response
	with the CFPO to establish what notice to mariners period is required for the gear type expected in these waters.	the Project's construction, operation, and maintenance. Please see **Appendix 14C: Outline Fisheries Coexistence Liaison Plan** (FLP) of **Chapter 14: Commercial Fisheries** of the **Offshore ES** which outlines measures including appointing an Onshore Fishing Industry Representative (FIR), a FLO and an Offshore Fisheries Liaison Officer (OFLO) during offshore works. WCOWL will work with commercial fishers to avoid key areas within the array area to ensure any impact is minimised. Where fishing effort remains affected, WCOWL are committed to working with commercial fishers to develop suitable agreements for coexistence within the array area, if it can be demonstrated that the risk of gear entanglement is very low. See response to **Comment ID 17.1** above.
17.3	The below evidence highlights the CFPO fleet footprint on the Project site and shows the level of displacement this will cause, both during survey and construction works, as well as permanent displacement once the site is running. CFPO data (CFPO VMS data from 2014-2021) and evidence for Project turbine site: Purple = static gear (nets and pots) Green = mobile gear (trawl and beam trawl) Polygons in lower left corner = White Cross OWF array area.	The Applicant welcomes the detailed information provided on the distribution of CFPO's vessels activity and the feedback on their concerns over the impact of the Project. It is not clear from the information provided, however, whether the VMS records shown in the charts provided are of vessels engaged in fishing activity or in transit. Similarly, it is unknown what methodology has been used to calculate the loss of catch stated in the CFP's response. WCOWL highlights that VMS data combined with logbook data publicly available from the MMO, was used to inform the assessment presented in **Chapter 14: Commercial Fisheries** of the **Offshore ES**. This includes information from all UK registered vessels including those which are members of the CFPO. As shown in **Appendix 14.A: Commercial Fisheries Technical Report**, **Figure 6.14**, MMO VMS data indicates that the level of

ID	Consultee Comments	Applicant Response
	 The below shows potting as red and netting as green. The White Cross site has both fishing methods taking place within it.	potting activity that takes place within the Wind Farm Site is very low. The total catch value of £ 500,000 over a 30-year period for the Wind Farm Site, stated in CFPO's response would equate to a total of approximately £16,700 per year. Assuming this total relates to two or three vessels, the catch value of the site for each vessel would be £8,350 and £5,600 annually, respectively. It is important to note that loss of access to the site does not necessarily mean loss of income as the affected vessels would be able to target grounds elsewhere. With the above in mind the impact on these vessels is expected to be minimal and not significant. In this context it is also important to note that the assessment presented in **Chapter 14: Commercial Fisheries** is based on the worst-case scenario that fishing cannot resume across the whole array site. As shown in **Figure 5.2** of **Chapter 5: Project Description** of the **Offshore ES** project infrastructure is only expected to be installed in approximately 20% of the total array area. Therefore, the area potentially lost for fishing during operation is expected to be much smaller. Fishing along the export cable corridor will be able to–resume - cables will be buried and protected where burial cannot be achieved. **Chapter 14: Commercial Fisheries** identified an impact of **minor significance** on UK fishing vessels and as such, no additional mitigation was proposed in respect of the operational phase.

ID	Consultee Comments	Applicant Response
	 The below shows the first sale value extracted from the site by CFPO vessels between 2014 – 2021. There are only a small number of vessels working these grounds but given that this is a 30-year project there will be an estimated loss of 0.5 million pounds worth of catch by being displaced from this site.	As previously mentioned, early trials carried out at Hywind Scotland suggest that some degree of static gear fishing may be able to resume within floating arrays (see response to **Comment ID 17.1** above). WCOWL will explore the potential compatibility of the Wind Farm Site with fishing in line with the Fisheries Liaison and Co-existence Plan and through on-going engagement with the fishing industry post-consent. Regarding project monitoring to better understand the impact of floating wind and a suspended EMF cable on the local fish and shellfish populations, please see the response to consultee **Comment ID 26.8** in **Section 2.2.4** of this document. To date, in-situ EMF strength measurement has been conducted by universities and research laboratories, and this has been primarily focussed on seabed cables (Gill, 2023). Field studies of EMF impacts on fish, shellfish and marine mammals are highly limited. These studies were primarily one-off measurement campaigns, and not monitoring over project life cycles (i.e. 25 years). There has been no published measurement of the EMF strength around dynamic subsea power cables, nor is there any equipment yet developed to achieve this. The equipment used for the seabed EMF measurements was bespoke and is not suitable for use in the water column (i.e. too heavy and required mounting on a skid on the seabed to be pulled along by a surface vessel). The seabed EMF measurement equipment could also only be used in calm weather, which is when the wind speed is less, the power capture is reduced, and corresponding voltage is lower and hence the electric field is reduced. The Applicant are involved in a project, as part of the Offshore Renewable Energy Catapult Floating Offshore Wind Centre of Excellence in the UK, that has recently commenced and is aimed

ID	Consultee Comments	Applicant Response
	 MMO requests clarity on the ability to return to fish within the site and along the cable route, and queries if a long term compensation package in place if this project is determined. This would enable a disruption payment to those vessels. An outline fisheries liaison plan (FLP) must be provided and a condition will be included within the Marine Licence (if positively determined). Please note the MMO does not act as an arbitrator in the discussions for any compensation packages but this process should clearly be defined within the outline FLP. Given that this is a test and development project monitoring is required to collect data pre, during and post construction to better understand the impact of floating wind and a suspended EMF cable on the local	at reviewing the current technological and ecological understanding of the potential effects of dynamic cable EMFs on marine ecology. The work will undertake: • a semi-technical overview of the physics of dynamic cable EMFs • a state-of-the-art review of current EMF modelling capabilities • summarise the current understanding of the environmental considerations of EMFs, including the known relevant UK electro-magnetic-receptive species, and the potential nature of ecological impacts. This work will identify potential environmental risks, and recommendations for relevant follow-on research projects, to address priority knowledge gaps and develop relevant technologies for future assessment of EMF surrounding dynamic cables. The knowledge from this will be employed, in the future, on the White Cross Offshore Wind Farm to help develop the capacity to monitor and understand the ecological impacts around the offshore floating substructures in the Celtic Sea.

ID	Consultee Comments	Applicant Response
	fish and shellfish populations. This will be valuable for the full commercial sites in the Celtic Sea.	

2.1.18 Comments in Consultation with Heanton Punchardon Parish Council

ID	Consultee Comments	Applicant Response
18.1	Heanton Punchardon Parish Council expressed concerns regarding; the anticipated volume of HGV traffic through the Parish increasing congestion and air pollution; possible damage to the landscape. The MMO requests further discussion is to take place and further information is provided to ensure all concerns can be reviewed as part of the determination process.	Please refer to **Chapter 19: Traffic and Transport** of the **Onshore ES**, where the potential for congestion has been assessed as negligible for Driver Delay (capacity) and not significant for Driver Delay (highway geometry). For further response please see Table **6.10** of the **ES Addendum**. Please refer to **Chapter 13: Air Quality** of the **Onshore ES** for the assessment of impacts from construction road vehicle exhaust emissions, where the impact at human receptors was negligible and not significant. For further response please see Table **6.2** of the **ES Addendum**.

2.1.19 Comments in Consultation with Torridge Council

ID	Consultee Comments	Applicant Response
19.1	Torridge Council have summarised the landscape and seascape visual impacts, lighting impacts and traffic and transport impacts. After reviewing the information, they have concluded that they have no comments to make at this time and no action is required at this time.	The Applicant acknowledges this comment.

2.1.20 Comments in Consultation with Devon County Council

ID	Consultee Comments	Applicant Response
20.1	MMO has received a query from Devon County Council regarding White Cross. They query is relating to the concrete was required for each turbine's base, which is then moored. Their question is how many tonnes of concrete is required and where is this aggregate is coming from? They noted that this question was raised at pre-app stage and never got a response. The updated response provided by the Project was passed onto Devon County Council on 07 November 2023. No further response from the Council has been received.	No further response required.

2.1.21 Comments on UXO Clearance

ID	Consultee Comments	Applicant Response
21.1	MMO notes that UXO clearance, including high-order, low-order, and low yield, have been considered at the Offshore Project. As per the Governments position statement, the MMO expect the use of low noise technology (e.g. low order deflagration) to be the primary method of clearance. Should high order be requested as a contingency, it should be for no more than 10% of the total clearances required. It is not acceptable to expect a high order contingency for all potential clearances.	A UXO marine licence application will be submitted during detailed design. As advised, low noise technology will be the primary method of clearance.
21.2	For low order clearance, a charge weight of 2 kg has been assumed in the assessment (ES section 4.2.1.2). Low-yield clearance has also been considered (ES section 4.2.1.3). The low-yield clearance is associated with the HYDRA UXO clearance system developed by EORCA UK. As with the low order deflagration technique, this involves the use of a small charge to initiate destruction of the UXO. Unlike deflagration, the HYDRA	The measurements of the HYDRA system by Cook and Banda showed that the noise levels at 500m and 1500m produced by the system were higher than the methodology used for prediction. To correct for this, the predicted 'source level' for the HYDRA system in the ES calculations was increased by 11.5 dB SPL_{peak} and 10.6 dB SEL, which produced equivalent noise levels to the study's empirical measurements at the defined ranges.

ID	Consultee Comments	Applicant Response
	uses shaped charges to produce high pressure water jets that disintegrate the explosive material. Within section 4.2.1.3 (Low-yield clearance) it states that "*As with the low order clearance, the low yield clearance still generates sound from the donor charge. Based on recent tests from clearance using the HYDRA system at the Seagreen Alpha and Bravo offshore wind farm development site (Cook and Banda, 2021), the donor charge is predicted to be 750 g, which will be used in the calculations of noise impact on the environment. This study also showed that for the low-yield technique, Soloway and Dahl (2014) underestimated the noise impacts at approximately 500 m and 1500 m. Although Cook and Banda's conclusions note that the reasons for this underprediction cannot be determined on the basis of that study, a correction has been added to account for it to ensure a precautionary assessment*". The report does not specify what correction factor has been applied here. This information must be presented.	
21.3	Section 4.2 states that five UXO clearance scenarios have been considered for this study: (1) High-order detonation, unmitigated (2) High-order detonation, with bubble curtain, (3) Low-order clearance (e.g., deflagration), (4) Low-yield clearance (e.g., HYDRA system), and (5) Low-yield clearance (e.g., HYDRA system, with bubble curtain). The modelled predictions are presented in Section 5.1. It appears that mitigated low order has also been considered, as smaller ranges are presented in Table 5-5 (UXO clearance with bubble curtain mitigation), compared to Table 5-1 showing unmitigated clearances. The report must clearly outline the (mitigation) assumptions for low order.	The low order clearance has also been included in the mitigated modelling, alongside the high order and low yield scenarios. The same nominal bubble curtain providing 10dB attenuation has been included.
21.4	The MMO and our advisors (Cefas) have undertaken a spot check of the predictions (for marine mammals and fish) presented for	The Applicant acknowledges this comment.

ID	Consultee Comments	Applicant Response
	the largest charge size of 309 kg and the predictions look plausible and in line with what we would expect to see. The low order (2 kg) ranges also look reasonable. Based on the source levels presented for low-yield, the predicted ranges are also reasonable.	
21.5	With reference to section 6 (Summary and conclusions): Please note that there is a risk of Permanent Threshold Shift (PTS) of ~11 km for the largest UXO considered, a 309.4 kg device (TNT equivalent charge weight) using the Southall et al. (2019) SPLpeak criteria for very high frequency (VHF) cetaceans (and not 7.4 km). This should be amended.	The Applicant notes this error and it will be addressed in the UXO specific MMMP that will be submitted prior to construction.
21.6	To help facilitate our impact considerations, as much information as possible regarding the clearance activities should be provided. For example, the location and type of each UXO, its expected volume of explosive content (TNT equivalent), its level of degradation, degree of marine growth on the device, the method of clearance for each device and distance to any sensitive features.	Detail where available for the UXO, its condition and clearance method will be identified on the UXO Marine Licence application.
21.7	If clearance is required within an MPA (or for the Bristol Channel Approaches SAC, within 26km of its boundary) sufficient information should be provided to inform the HRA. If high order clearance is included in the application as a contingency and the level of information described above is not provided, the precautionary principle requires us to assume the worst-case scenario will occur i.e. that all clearances will be undertaken using high order regardless of how likely this. This will have implications for the HRA.	The Applicant acknowledges this comment. The assessments in **Section 12.7.2** of **Chapter 12: Marine Mammal and Marine Turtle Ecology** of the **Offshore ES** and **Section 7.2.1.2.2** of **Appendix 6.A: Habitats Regulations Assessment: Report to Inform Appropriate Assessment** of the **Offshore ES** assess high order detonation without mitigation as the worst-case.
21.8	A noise assessment will be required to understand potential injury and disturbance to marine mammals. When predicting ranges within which permanent auditory injury could occur, the Southall et al 2019 injury thresholds and functional hearing groups should	If required, an EPS licence will be produced for the clearance of UXO as required under the Conservation of Offshore Marine Habitats and Species Regulations 2017 (see **Section 7.2.1.2.2** of

ID	Consultee Comments	Applicant Response
	be applied. Note, if the predicted injury ranges cannot be mitigated, MMO advise an EPS licence for injury is required.	**Appendix 6.A: Habitats Regulations Assessment: Report to Inform Appropriate Assessment** of the **Offshore ES**).
21.9	When considering disturbance, JNCC recommend using EDRs as described in the noise management approach for the Bristol Channel Approaches SAC. Note, this document does not currently include an EDR for low order deflagration. MMO requires a 5km EDR be applied for deflagration tools however, this is currently under review the latest advice must be checked prior to submitting a UXO clearance application.	5km EDR for low-order has been used and assessed within **Section 7.2.1.2.2** of **Appendix 6.A: Habitats Regulations Assessment: Report to Inform Appropriate Assessment** of the **Onshore ES.**
21.10	A separate MMMP specific to the clearances required and associated risks will be required for UXO clearance.	A separate MMMP specific to the clearances required and associated risks will be produced pre-construction.

2.1.22 Comments on Draft Marine Mammal Mitigation Protocol – UXO Clearance

ID	Consultee Comments	Applicant Response
21.1	It is appropriate that low-order clearance will be the preferred method. This is in line with the Government joint interim position statement (BEIS et al., 2022). It is also appropriate that a bubble curtain will be used where possible "for any high order detonations". In keeping with other MMMPs however, it is only proposed to deploy bubble curtains where the UXO is larger than 50 kg charge weight (see paragraph 44 and 47 of the MMMP). The MMO recommends that a bubble curtain is deployed for all high-order detonations (and not just for UXOs larger than 50 kg).	The Applicant acknowledges this comment and will adhere to the advice received. A separate MMMP will be submitted for UXO clearance if required in line with all guidance and best practice measures. Reference to UXO Clearance has been removed from the **Updated Draft Marine Mammal Mitigation Protocol** that is provided as **Appendix V** of the **ES Addendum.**
21.2	It is noted in para 48 of the MMMP that bubble curtains are unlikely to be a viable option for UXO clearance at the windfarm site due to the water depths of over 70 m, however, they may be possible for any UXO clearance required in the export cable corridor. While water depth is a consideration, the potential	The Marine Mammals, Fish and Shellfish ETG on the 14th of December 2023 noted this to be too far in advance to have all the detail and the use of noise abatement will be assessed in a separate marine licence for UXO closer to the time. The minutes

ID	Consultee Comments	Applicant Response
	application and feasibility of deploying a bubble curtain will need to be discussed with an experienced contractor. Verfuss et al. (2019) reports of one example of a Big Bubble Curtain being applied during UXO clearance in water depths up to 90 m. Further consideration is required.	from this ETG are provided in **Annex 1: Meeting Minutes,** of this document.

2.2 Section B: Public Consultation Process

2.2.1 Public Representor 1 – Pentire Fishing Ltd./Camel Fish Ltd.

ID	Consultee Comments	Applicant Response
22.1	MMO has received the below comment from Pentire fishing ltd/Camel fish ltd. '*Where the proposed site is for the wind farm we currently fish with 2 of our crabbing vessels of 15 meters each. By putting the farm in this proposed area it will effect our fishing effort and area we can fish. It will redistrict are area considerably. We cannot see the point of them putting a wind farm there as no one has taken up any of the government licences to do so? We would need compensation for the area we are loosing if this was to go ahead where proposed*.' As set out within Sections XX of this document on fishing matters further work is required to alleviate the concerns raised. Please can you advise if previous consultation has taken place with Pentire fishing ltd/Camel fish ltd during the pre-application phase, what has been discussed and whether any mitigation/compensation has been proposed. Although the MMO are not directly involved in the discussions on compensation the impact raised by the consultees needs to be address during the determination process.	Pentire Fishing Limited representatives attended a pre-application phase commercial fisheries meeting with the Cornish Fish Producers Organisation on 29 September 2022. The aim of the meeting was to introduce the Project and provide an opportunity for attendees to provide feedback. Pentire Fishing Limited provided details on their fishing activities in relation to the Project. As shown in **Appendix 14.A: Commercial Fisheries Technical Report** of the **Offshore ES**, **Figure 6.14**, MMO VMS data indicates that the level of potting activity that takes place within the Wind Farm Site is very low. It is important to note that loss of access to the site does not necessarily mean loss of income as the affected vessels would be able to target grounds elsewhere. With the above in mind the impact on these vessels is expected to be minimal. Fishing along the export cable corridor will be able to resume - cables will be buried and protected where burial cannot be achieved. Please see **Appendix 14C: Outline Fisheries Coexistence Liaison Plan** (FLP of **Chapter 14: Commercial Fisheries** of the **Offshore ES** which) which includes appointing an Onshore Fishing Industry Representative (FIR), a FLO and an Offshore Fisheries Liaison Officer (OFLO) during offshore works.

2.2.2 Public Representor 2 – Seal Research Trust

ID	Consultee Comments	Applicant Response
23.1	MMO has received the below comment from Seal Research Trust. `*We would like to support the need for the following mitigation actions:* *• At all times the minimum number of vessels in operation as possible* *• Vessel activity should be a minimum of 1km away from all identified seal haul outs* *• Use of Acoustic Deterrent Devices where considered appropriate by the statutory authorities* *We couldn't see a mention of the following possible mitigation actions and would advise the use of these for marine mammals:* *• Slow start up of any piling activity* *• Bubble curtains being used for noise reduction during high volume activity* *Whilst we acknowledge that disturbance during the pupping and moulting seasons on land may represent a medium level risk, it should be noted that at-sea disturbance during the summer offshore foraging season could seriously impact individual seal chances of survival for the rest of its life cycle by preventing its ability to build up the fat reserves needed to survive the high energy seasons of pupping and moulting. We would like to point out misrepresentation of the paper Sayer et al (2018) section 12.6.6.4. This describes the Boscastle haulout as 'minor'. This is not true as seen from the data provided to the MMO below confidentially. If this is your interpretation, we would like to highlight that this is a critical complex of sites for grey seals (along with West Cornwall) in this particular Celtic Sea management unit. We also couldn't see a reference anywhere about the nearest*	The Applicant commits to including slow start up of any piling activity. Bubble curtains (or alternative) will also be used for noise reduction during high volume activity such as high-order UXO detonation, and this will be set out within a separate MMMP which will be produced during the pre-construction phase when more information will be known about the UXO clearance required. The Cornwall Seal Research Trust (SRT) was consulted in the pre-application stage. The Project first contacted the SRT on 16/12/2022, where the project shared the minutes, slides and information from the first ETG. The SRT was included as part of the distribution list for the marine mammal's aspect of the project from here on. The SRT was invited to attend the second marine mammals ETG on 08/12/2023 but could not attend. On 31 January 2024, a meeting was held between SRT and the Applicant. A project update was given, with the rest of the discussions focussing on SRT's support of projects that mitigate the impact of climate change on seals, the importance of southwest England grey seal haul out locations, the connectivity of Celtic Sea seals with populations outside of English waters, the key threats to seals, the best mitigation measures during construction, and entanglement risk. On 11 March 2024, upon being consulted on the draft Outline Entanglement Monitoring and Remediation Plan, WCOWL provided further information to the MMO and SRT on the use of load cells proposed for detection of entanglement, and illustrations of the proposed subsea infrastructure configuration. The **Outline Entanglement Monitoring and Remediation Plan** (WHX001-

ID	Consultee Comments	Applicant Response
	mainland seal haulout site in north Devon either. To this end have provided the following information about the location of key sensitive seal sites, monthly peak occupancy and their maximum numbers recorded between 2011-2021 in this region of the Celtic Sea to Karen.Schnetler@marinemanagement.org.uk. *In an ideal world, cable laying would cover the shortest possible distance and narrowest width passage to minimise any social, economic and environmental impacts. Dune habitats are naturally mobile and may represent the best option, but the relevant statutory agencies are the best people to make this decision. We are happy to support the local community's preferred option for routing the cable. To fulfil the precautionary principle, it may be prudent to invest in post mortem investigation of any marine mammals washed ashore in the vicinity of the project to ensure that cause of death is not attributable to it's construction and operation. Devon Strandings Network and the wider Cetacean Strandings Investigation Programme cover this area of work and may be in a position to support this reciprocally. This could perhaps be used as a compensatory measure for this development project. We would welcome the opportunity to discuss making floating platforms a seal friendly haul out location to increase wild seal habitat, with associated remote monitoring for survey and photo-identification research. We are really keen to work with you going forward, we are supportive of climate change mitigation solutions and hope this project is successful for both wildlife and people.'* MMO queries whether previous consultation has taken place with Seal Research Trust during the pre-application phase and would welcome review of this consultation. Please could you provide a comment into the issues raised within this response. Please make	FLO-CON-ENV-PLN-0002) is submitted as part of the **Further Environmental Information** submission. The Applicant is open to a condition to the Marine Licence (if approved) relating to the provision of operational noise monitoring and is happy to share data with the SRT when possible. The Applicant has provided an updated version of the MMMP, please see **Appendix V: Updated Marine Mammal Mitigation Protocol** of the **ES Addendum**.

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	relevant updates to the MMMP in relation to mitigation. going forward the MMO strongly recommends engagement with the seal research trust, noting any changes to the project must be part of the assessed project.	

2.2.3 Public Representor 3 – Ilfracombe Harbour

ID	Consultee Comments	Applicant Response
24.1	MMO has received the below comment from Ilfracombe Harbour. '*RE: The location of the project, this will have no impact on the Harbour itself, however, I wish to note that the location will effect the commercial fishing grounds of the fishing community based here. I have no other comments to make on this project.*' As set out within Sections XX of this document on fishing matters further work is required to alleviate the concerns raised. Please can you advise if previous consultation has taken place with Ilfracombe Harbour and the fishing community during the pre-application phase, what has been discussed and whether any mitigation/compensation has been proposed. Although the MMO are not directly involved in the discussions on compensation the impact raised by the consultees needs to be address during the determination process.	Please see the Applicant's responses to comments relating to fishing in **Sections 2.1.15** and **2.1.17** above. Consultation within the pre-application phase did take place with the Cornish Fish Producers Organisation and North Devon Fisherman's Association. Since then, further consultation has taken place with the Cornish Fish Producers Organisation on 05/01/2024 and the North Devon Fishman's Association on 15/12/2023. Minutes for each are provided in **Annex 1: Meeting Minutes** of this document.

2.2.4 Public Representor 5 – Devon Wildlife Trust

ID	Consultee Comments	Applicant Response
26.1	MMO has received the below comment from Carlotta Cocciardi, Marine Nature Recovery Officer *'General Points* *DWT recognises the vital contribution that renewable energy makes to reducing our greenhouse gas emissions and reliance on fossil fuels. Increased supply of renewable energy is essential if we are to mitigate the serious impacts that climate change will exert on people and wildlife. DWT fully supports the principle of new renewable power generation but expect developments to take the same regards of wildlife and the environment which are expected of any other development. White Cross and other floating offshore wind generation in the Celtic Sea may be viable but must recognise and respond to the high nature value of this area which is afforded many statutory and non-statutory designations onshore and offshore.* *There are a substantial number of documents associated with the submission of this application. DWT has limited resources to respond to a project of this scale within the timescales determined by the MMO (and associated onshore application to North Devon Council). In comparison we commend the approach adopted by the Atlantic Array proposal where routine workshop sessions were he'd with the developer's ecologists to explore each component and impacted feature in a less time constrained manner.* *Due to these concerns, especially regarding the chosen cable route, we object to this application.'* Please could you provide a comment into the issues raised within this response and how these have been addressed.	The Applicant acknowledges this comment. Please see responses to the issues raised below.

ID	Consultee Comments	Applicant Response
26.2	*Route design* *The route of the proposed cable passes through several areas which have been afforded the highest level of protection for nature conservation. While all route options pass through Bristol Channel Approaches Special Area of Conversation (SAC), the selected route crosses Braunton Burrows SAC/Site of Special Scientific Interest (SSSI), Bideford to Foreland Point MCZ and Taw-Torridge Estuary SSSI when alternative routes were feasible that would avoid these or reduce the area crossed. DWT objects to this proposed route selection and the likely impact on these designations. Braunton Burrows SAC is a unique and dynamic habitat of dunes, mudflats and sandflats; development within an SAC and the ongoing need for maintenance and subsequent replacement/removal should not be permitted unless clear justification is provided, with assessment of alternative routes and identified Imperative Reasons of Overriding Public Interest. This is particularly important given the mobile nature of the habitats for which the SAC is designated. An alternative route which avoids sensitive habitats and areas of highest designation should be considered and formally assessed e.g., the route selected by the Atlantic Array (extended to Yelland sub-station) as previously suggested by DWT and considered through the 'south' route option by the applicant.* *With the proposed expansion of offshore floating wind development in the Celtic Sea, together with other renewable energy projects such as XLinks seeking to bring cables ashore in North Devon, it is essential that a strategic and coordinated approach is taken by the Crown Estate, the National Grid and renewable energy developers to cable routing. We strongly recommend a strategic masterplan approach is developed under the auspices of National Significant Infrastructure Planning. This*	The cable route assessment process is presented in **Chapter 4: Site Selection and Assessment** of Alternatives of the **Offshore ES**. The chosen cable route was the result of a detailed site selection process taking into account environmental, physical, technical, commercial and social considerations and opportunities. The Applicant acknowledges the concerns raised in relation to the Braunton Burrows SAC. However, following assessment set out in the ES, it has been determined that there will be no long-term impact on the Braunton Burrows SAC and SSSI or the Taw-Torridge SSSI. Undertaking a trenchless cable installation method beneath those areas of the Braunton Burrows SAC and SSSI with the most important and sensitive features (dunes) will ensure these features are protected and therefore that there are no long-term impacts. As assessed in the **Offshore ES** the impacts from the construction of the offshore export cable through the intertidal mudflats and sandflats that are also features of the Braunton Burrows SAC and SSSI are temporary and short-term with these features expected to recover within a very short period. The Applicant acknowledges the comment regarding the need for a strategic and coordinated approach to cable routing. The project is however, outside the scope of the National Grid HNDR and is not an NSIP, and as a test and demonstration project it is important that it is delivered first and ahead of the leasing round 5 projects.

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	would help to mitigate the cumulative impacts of the multiplicity of forthcoming applications, each with associated cabling requirements.	
26.3	***Benthic and intertidal ecology*** *The proposed cable route overlaps with Bideford to Foreland Point MCZ, crossing sandy habitats within the southern end of the MCZ where the subtidal sand component of the MCZ is currently in unfavourable condition requiring recovery. The route also crosses the Braunton Burrows SAC/SSSI which, while the littoral sand component is in favourable condition, we note the Natural England condition assessment states that 'the coastal geomorphology interest feature is recorded as favourable as there are no obvious barriers to natural geomorphological functioning'. Any barriers (including cables or associated infrastructure) may alter the condition of this habitat and Natural England state that operations likely to damage the special interest of this site 'include (our emphasis):'21 Construction, removal or destruction of roads, tracks, walls, fences, hardstands, banks, ditches or other earthworks, or the laying, maintenance or removal of pipelines and cables' above or below ground.'* *The precautionary principle should be applied to avoid the likely significant effect to this SAC feature.* *Under the mitigation hierarchy, efforts must be made to avoid any harm or impact to the site first, and only if avoidance is not feasible, efforts should be made to minimise or mitigate impact. In this case, the avoidance of damage to an SAC/SSSI and an MCZ, and the smaller crossing distance for the Taw-Torridge*	The Applicant acknowledges this comment. Please refer to **Section 8.5.1, Chapter 8: Marine Geology, Oceanography and Physical Processes** of the **Offshore ES**, where impacts on the form and function of the coast due to buried cable installation are assessed. This assumes the worst-case scenario of open trenching to bury two cables across the entire width of Saunton Sands. Despite Natural England's condition assessment stating that 'barriers including cables or associated infrastructure may alter the condition of the habitat', the magnitude of the impact was considered negligible. The cable burial will not create a barrier unless the cable is laid directly on the seabed with cable protection. In cases where complete burial is not feasible, WCOWL will carefully plan around sensitive features. As the subtidal sand will be returned to its original morphology, short-term changes in form and function would not be significant. Therefore, the overall significance of the effect under a worst-case scenario is deemed negligible adverse, reducing to no significant effect upon cessation of the works and restoration of the beach to its former profile. Further information to support this response is provided in **Appendix F: Coastal Geomorphology Technical Note of this ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002), **Appendix T: Onshore Ground Investigation Interpretative Report** of this **ES Addendum**, **Outline Cable Specification and Installation Plan** (WHX001-FLO-CON-ENV-PLN-0007) and the **Outline Cable Landfall Plan** (WHX001-FLO-CON-DES-PDE-

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	Estuary SSSI, and their notified habitats is potentially feasible by choosing an alternative cable route that bypasses these areas. This alternative (south) route appears to have been ruled out due to financial costs, with environmental costs being considered less important. *We recognise the proposal for Horizontal Directional Drilling (HDD) as a mitigation method to minimise installation impacts. However, impacts associated with maintenance/replacement/ decommissioning of the cable would unlikely be feasible using HDD. We continue to advocate that the cable route must be realigned to avoid sensitive habitats and areas highest designation e.g. by adopting the route selected by the Atlantic Array application.* *It is advisable to establish a single designated landfall point for all the FLOW projects. Ideally, this landfall point should also be coordinated with other ongoing developments in the area to collectively minimise the impact on the seabed. If a strategic approach is adopted to cable routing, involving prospective developers, the financial viability of alternative options which are less environmentally damaging may be enhanced.*	0001) present the trenchless technique that is proposed at the landfall. Please refer to **Section 4.4 of Chapter 4: Site Selection and Assessment of Alternatives** for the rationale behind East Yelland being selected as the grid connection point as opposed to Alverdiscott. Impacts associated with maintenance, replacement and decommissioning of the export cable are expected to be minimal. During the operational phase, there is expected to be minimal maintenance required. Regarding decommissioning, the cables can be left in-situ with the cable ends cut, sealed, and securely buried. Alternatively, the cables can be removed by pulling them through the ducts and leaving the ducts in-situ. The decommissioning methodology will be finalised nearer the end of the lifetime of the Project. Further clarification on both can be found within **Section 5** of this **ES Addendum**. The Applicant acknowledges Devon Wildlife Trust's comment around establishing a single designated landfall point for all FLOW projects, however this is a situation that the project cannot address and would require a strategic/statutory coordinated approach. Further as a test and demonstration project it is important that it is delivered first and ahead of the leasing round 5 projects.
26.4	*Decommissioning* *We understand that there are no current decommissioning plans in place, and this is due to the intent to finalise the decommissioning methodology closer to the end of the Offshore Project's operational lifetime, in accordance with guidance, policies, and legislation at that time. DWT consider that a*	The Applicant acknowledges this comment. Further detail on the decommissioning phase is provided in **Section 5.4** of this **ES Addendum** and in the **Outline Decommissioning Programme** (WHX001-FLO-CON-ENV-PLN-0011) which is being submitted as a standalone document as part of the package of further environmental information. A full decommissioning plan

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	preliminary decommissioning plan prepared as part of this application would inform decisions around cable infrastructure and protection options as well as allow an understanding of the decommissioning process to inform public comment on the long-term potential environment effects of the proposed development. *DWT expects the full decommissioning plan to assess the actions that will yield the greatest net environmental benefits at the time of decommissioning, in conjunction with analysis of the risks associated with the decay of artificial features. For example, where new high ecological value habitats have developed and directly associated with infrastructure (e.g. reef habitats established on submerged rock armour), the retention of these features may provide long term net ecological benefits.*	will be produced pre-construction that will aim to yield the greatest net environmental benefits at the time of decommissioning.
26.5	***Wind turbines anchors and moorings*** *We are aware that the project is considering three distinct mooring methods. We would like to see more comprehensive information concerning the final selection of the mooring method. This additional information is necessary for us to provide an informed and constructive consultation response. Furthermore, we recommend that the MMO refrains from granting permission until a well-defined plan for the mooring method is established.*	The approach to using a Project Design Envelope is outlined in **Chapter 6: EIA Methodology** of the **Onshore and Offshore ES**. Each individual topic defines the worst-case scenario within the Project Design Envelope. There is sufficient information provided within **Section 5.8.3** of **Chapter 5: Project Description** of the **Offshore ES**. The final decision on the mooring method will be made post-consent.
26.6	***Offshore ornithology*** *We would like to highlight that the RSPB have submitted a response to the ornithology chapter of the consultation, and we extend our full support to their input.* *In addition, we highlight that, in light of the significantly elevated bird mortality resulting from the Highly Pathogenic Avian*	As outlined in **Paragraph 103** of **Chapter 13: Offshore Ornithology** of the **Offshore ES**, The Applicant's statement that its assessments remain a valid representation of typical seabird distribution and density, which are also able to be assessed against the baseline populations prior to the outbreak, is determined by the Natural England recommendation to DEFRA in relation to baseline characterisation of offshore renewable projects (The

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	Influenza during the 2022 breeding season, the claim asserting the continued validity of the offshore ornithology assessment, despite the data collection predating the outbreak of this disease, is not appropriate. The profound impact of such an event on avian populations necessitates a reconsideration of the assessment's accuracy and relevance to the current bird population and distribution. Given the potential for this outbreak to have substantially altered the local avian community, DWT advocates that the responsible authorities and project developers revisit and update the ornithological study to ensure a more accurate representation of the present bird population and distribution within the proposed offshore wind farm area.	Department of Environment, Food and Rural Affairs) on bird flu (Natural England (2022) *Highly Pathogenic Avian Influenza (HPAI) outbreak in seabirds and Natural England advice on impact assessment (specifically relating to offshore wind)*. Natural England statement, September 2022). This document is issued at defra's Sharepoint site '**Natural England's advice on the environmental considerations and use of data and evidence to support offshore wind and cable projects in English waters**', access to which can be requested by email to neoffshorewindstrategicsolutions@naturalengland.org.uk As of January 2024, this remains the most recent guidance issued by Natural England on HPAI and impact assessment regarding offshore wind. The relevant text within this Natural England recommendation is: *"4. We expect seabird data prior to summer 2022 (approx. June) to remain a valid representation of 'typical' seabird distribution and density, as this was before mass mortality* *events began to take place. (At this point, we assume affected colonies will recover in the short or long term, depending on available recruits to colonies, scale of further outbreak, and other factors). Data collected at sea from summer 2022 onwards will need discussion with Natural England, to understand how the species and colonies of concern, and their density at sea at certain times, may have been affected by HPAI. We welcome engagement with developers actively engaged in data collection through the Evidence Plan process.* *"6. Broadly, we expect any changes in abundance at colonies to be reflected proportionately in the at sea data. That is, it is*

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		reasonable to assume distribution patterns will remain broadly similar, but densities to change accordingly. *"7. This assumption means that the scale of impact is likely to remain in proportion to the size of the colony. For instance, if a population were reduced by 10% then we would expect 10% fewer collisions."* I.e., distribution data of seabirds with respect to the turbine array is expected to remain similar, and lower densities or birds within the windfarm site are expected in cases where source populations decline. That is, there is not considered to be a mechanism wherein HPAI or associated declines result in equal or higher numbers of individuals being exposed to potential impacts from the offshore wind farm (than in the absence of HPAI mortality). Rather, declines in seabird populations will coincide with lower densities, and exposure of fewer individuals to potential impacts. Point 7 goes on to outline: *"However, where a population has been significantly depleted, it should be considered whether an equivalent level of impact would have greater implications for the newly reduced population."* I.e., where the population is reduced to one or more orders of magnitude smaller, or a near zero size, the absolute magnitude of a potential impact should be considered as, although proportionately small, this may have greater implications for severity of impact on a colony or population. No colonies for which 2023 data is available within the Seabird Monitoring Programme database (accessed January 2024), which are of relevance to the assessment in **Chapter 13: Offshore Ornithology** of the **Offshore ES**, are reported to be depleted: Guillemot, puffin and razorbill colony counts in 2023 at Skokholm and Lundy are comparable to those in other recent years. (While the decline in gannet at Grassholm is approximately 50% from

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		2015 population, 16,000 nest sites remain and this 50% decline is expected to be associated with a 50% reduction in collisions in line with Natural England points 6 and 7 above.) In summary, a revisit of the offshore ornithological study involving recalculation against revised colony counts and density estimates (following assumptions relating to effects on distribution, density and impact as above) is expected to have no material effect on the outcomes of impact assessment compared to those currently found within the existing **Chapter 13: Offshore Ornithology** of the **Offshore ES**.
26.7	*Ghost nets and entanglement* *The document demonstrates a commitment to employ ROVs for ongoing monitoring of anchor/mooring systems and the identification of entanglement hazards throughout the project's entire lifespan. Nevertheless, it is important to note that the frequency of this monitoring and the regularity of ROV inspections are not specified. It is essential to have a clearly defined and regular monitoring schedule in place to ensure the timely detection and mitigation of entanglement hazards, such as Abandoned, Lost or otherwise Discarded Fishing Gear (ALDFG). The absence of a specific monitoring frequency leaves room for uncertainty regarding the project's capacity to promptly address potential entanglement issues. This is critical given Floating Offshore Wind is still an emerging technology that has not been used in the Celtic Sea before. Therefore, it is recommended that a fully funded, financially ring fenced, monitoring plan be clearly outlined, detailing the frequency and intervals at which these inspections will take place to ensure the effectiveness of the entanglement hazard mitigation strategy. We also recommend*	The Applicant acknowledges this comment. An **Outline Entanglement Monitoring and Remediation Plan** (WHX001-FLO-CON-ENV-PLN-0003) is provided as part of the **Further Environmental Information** submission.

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	that a fully funded contingency plan is adopted for addressing entanglement incidents, as well as plans for how monitoring information will be publicly reported to feed into industry best practice. These plans should be completed and available for scrutiny prior to any decision on this development.	
26.8	***Fish and shellfish*** *Potential impacts during construction/operation and maintenance:* *The assessment of impacts from temporary habitat loss and destruction on fish and shellfish within the study area primarily relies on modelling and research papers published between 1998 and 2013. The evidence and associated conclusions are therefore based on outdated data in relation to the current population and distribution of these species. In light of the dynamic nature of marine ecosystems, up-to-date and comprehensive assessments should be conducted.* *Herring:* *There is still a lack of data on the critical habitats for the Clovelly herring, which the Marine Pioneer work identified as a race genetically and morphologically distinct from the Atlantic herring. Even though the report highlights the genetic uniqueness of the North Devon spawning ground, later sections do not mention any efforts to gather more data to understand and protect this species' habitat from potential impacts.* *Cumulative effects:* *In the cumulative impact section, it is concerning to note the absence of proof or empirical data regarding cumulative impacts. The report predominantly relies on speculative language, such as*	Potential impacts during construction/operation and maintenance: Coull *et al.* (1998) and Ellis *et al.* (2013) represent the best available modelling of spawning and nursery grounds of fish and shellfish species in UK waters. These papers are used regularly across the assessment of offshore developments and are accepted by regulators when undertaking impact assessment. Herring: The assessment of impacts on herring populations has been undertaken throughout the report, with particular focus given to the species where relevant. Herring modelling undertaken considers the distribution of *Clupea harengus* which includes Clovelly herring despite genetic and morphological differences from other Atlantic herring stocks. Impacts on herring are considered to be not significant at all stages of project development. The collection of data relevant to this sub-population is therefore not recommended. Cumulative effects: The methodology and language used through the assessment of cumulative effects has been developed to ensure compliance with UK guidance and regulations. This approach is required by regulators and has been followed as necessary. Cumulative effects – Suspended sediments:

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	"potentially," "likely," or "unlikely," without providing substantial data to support these assertions. *For example, the report (section 11.8.2 Cumulative impact 2: increased suspended sediments an" sediment disposition) states " Increased magnitude of impact of suspended sediments and sediment deposition as a result of cumulative effects during the construction phase is a possibility. However, suspended sediment and sediment deposition effects as a result of these activities are not predicted to expand significantly beyond the extents of the Offshore Project boundaries. Furthermore, the majority of suspended sediment is likely to clear within several tidal cycles, therefore any cumulative works would need to occur within this same period. Similarly, suspended sediments during operation are predicted to arise only during repair and remediation works, and will dissipate within several tidal cycles, it is unlikely there will be any cumulative effect."* *Mention is made of 'predicted' results – it is important these studies are available for scrutiny as part of this application. Without such evidence in the public domain it is not possible to comment on the validity of the conclusions presented. It is imperative to emphasise that without a more robust and data-driven analysis of cumulative impacts, their potential consequences cannot be determined. Given such uncertainty, a prudent approach would be to consider the appropriate mitigation measures.* *Section Cumulative impact 5:"Electromagnetic Fields states " the presence of additional cables within the Celtic Sea may alter the behaviour of some wide-ranging receptors, such as demersal shark and ray species, and the cumulative effect of additional renewable projects may increase the spatial scale of impact. There*	Further details pertaining to the distribution of suspended sediments and clearance times are provided within **Chapter 8: Marine Geology, Oceanography and Physical Processes** of the **Offshore ES**. Values within this chapter have been transposed from here to allow for specific assessment of impacts on Fish and Shellfish receptors. Language such as "potential" and "likely" has been used due to the reliance on modelling, noting that this has been undertaken when considering worst-case parameters. Cumulative effects – Electromagnetic fields: As noted within the text, a more detailed assessment as to the potential impacts of EMF on Fish and Shellfish receptors in association with this development is provided in **Chapter 11: Fish and Shellfish Ecology** (**Section 11.6.3**) of the **Offshore ES**. The cumulative assessment must rely on the assessment of these impacts as undertaken by other developing parties, which unanimously determined no significant effect. It is acknowledged that the body of research relating to the impacts of EMF is changing regularly, and findings and developments are noted by both developers and regulators. To date, in-situ EMF strength measurement has been conducted by universities and research laboratories, and this has been primarily focussed on seabed cables (Gill, 2023). Field studies of EMF impacts on fish, shellfish and marine mammals are highly limited. These studies were primarily one-off measurement campaigns, and not monitoring over project life cycles (i.e. 25 years). There has been no published measurement of the EMF strength around dynamic subsea power cables, nor is there any equipment yet developed to achieve this. The equipment used for the seabed EMF measurements was bespoke and is not suitable

ID	Consultee Comments	Applicant Response
	is a lack of data as to both the cumulative effect of EMF between distant renewable developments, and the location/extent of power cable used within future floating OWF projects. It is therefore assumed that the low magnitude of impact assessed for the Offshore Project in Section 11.6.3 and in other OWF projects will reflect that of Round 4 leasing sites in the future". *While it is acknowledged that there is a lack of data, it is crucial that a more thorough and detailed assessment of these potential EMF impacts is conducted to better understand the potential consequences. Dismissing the significance of these effects as "minor adverse" and "not significant" without comprehensive assessment and mitigation consideration may not adequately address the potential risks and challenges that could arise from cumulative EMF effects in the region. A precautionary, data-driven approach is warranted, and we expect to see a commitment from the project for sufficient monitoring to gather evidence on this subject.* *Ensuring an accurate assessment of cumulative effects on shellfish and fish populations is important, as any inaccuracies would cascade into other chapters that involve species dependent on these resources, such as marine mammals and birds.* *When data is limited or unavailable, it's essential to either gather the required information or, following the precautionary principle, have mitigation plans in place when in doubt.* *Moreover, given the lack of data on the effects of floating offshore wind, the project should establish a monitoring plan to assess environmental impacts over its lifetime. This approach ensures that any unforeseen issues are promptly identified and addressed, promoting environmental stewardship and risk mitigation.*	for use in the water column (i.e. too heavy and required mounting on a skid on the seabed to be pulled along by a surface vessel). The seabed EMF measurement equipment could also only be used in calm weather, which is when the wind speed is less, the power capture is reduced, and corresponding voltage is lower and hence the electric field is reduced. WCOWL are involved in a project, as part of the Offshore Renewable Energy Catapult Floating Offshore Wind Centre of Excellence in the UK, that has recently commenced and is aimed at reviewing the current technological and ecological understanding of the potential effects of dynamic cable EMFs on marine ecology. The work will undertake: • a semi-technical overview of the physics of dynamic cable EMFs • a state-of-the-art review of current EMF modelling capabilities • summarise the current understanding of the environmental considerations of EMFs, including the known relevant UK electro-magnetic-receptive species, and the potential nature of ecological impacts. This work will identify potential environmental risks, and recommendations for relevant follow-on research projects, to address priority knowledge gaps and develop relevant technologies for future assessment of EMF surrounding dynamic cables. The knowledge from this will be employed, in the future, on the White Cross offshore wind farm to help develop the capacity to monitor and understand the ecological impacts around the offshore floating substructures in the Celtic Sea.

ID	Consultee Comments	Applicant Response
	Finally, we recommend that the project details the proposed approach to collaborate with the other Test & Demonstration floating offshore wind sites in the Celtic Sea to share evidence, in order to minimise disturbance and damage to both the environment and the local communities. Collaboration and evidence sharing between the developments is necessary to build best practice and prevent environmental harm. We will be approaching The Crown Estate on this topic.	Should a need for the collection of monitoring data relating to EMF be determined as a necessary requirement of any future marine licence, the feasibility of this will be investigated. Accurate cumulative assessment: The assessment undertaken within this section has been completed with consideration given to both the impact assessment undertaken in the project specific EIA chapter as well as the relevant chapters of other projects where potential for cumulative effects are present. The importance of these populations as prey items is noted. Data availability: Data is collected or identified and utilised in assessment wherever possible. Where data is unavailable assessment is undertaken considering a worst-case scenario basis. Should this result in a significant effect on any receptor group, relevant and considered mitigation would be implemented. Operational data collection: The collection of operational data will be undertaken as determined appropriate by regulatory bodies to aid in the determination of future impacts associate with floating offshore wind.

2.3 Additional Ad-Hoc MMO Comments received via email

Email details	Consultee Comments	Applicant Response
Received 29th December 2023 – comment from Cefas on Document Index	In terms of Underwater Noise, it appears that nothing further is being provided on this. Can you provide details on how the MMO's comments are being addressed?	The Applicant has provided responses the MMO's comments relating to Underwater Noise in **Section 2.1.2** of this document.
	Please can you clarify how the comments from Cefas fisheries are being addressed? Specifically, since some of the comments require further information to be provided. Comments were as follows: ▪ Major comment: The potential impacts to spawning gadoids (cod and whiting) have not been properly investigated and assessed. ▪ Major comment: The study area should be increased to encompass ICES rectangles 30E4 and 30E5 to ensure the full impacts of UWN are identified and assessed. ▪ Major comments regarding the calculation of total spawning habitat (quantified the impacts to spawning grounds and habitat as a percentage of area affected throughout the report), as this approach can over- or underrepresent spawning grounds and is solely based on substrate suitability.	The Applicant has provided responses to the MMO's comments relating to Fisheries in **Section 2.1.10** of this document.
	Please can you clarify how the comments from Cefas Shellfish are being addressed? Specifically, since some of	The Applicant has provided responses to the MMO's comments relating to Shellfish in **Section 2.1.11** of this document.

Email details	Consultee Comments	Applicant Response
	the comments require further information to be provided. Comments were as follows: ▪ Additional data sources were requested with regards to shellfish. ▪ Concerns were raised regarding the proposed work causing increased suspended sediments and sediment depositions during the construction phase of the project, specifically during the laying of the cable corridor near shore and in the Taw estuary. As stated in 11.5.2.2 of Chapter 11 Fish and Shellfish that '*Directly adjacent to construction activities, smothering at an extent where shellfish mortality may be experienced is likely to occur*' and this was assessed as medium. However, the conclusion is that this will only result in a Minor Adverse effect, despite limited baseline data. There is a concern whether this impact has been appropriately assessed.	
	MMO requests to also see an outline Fisheries liaison plan.	This was provided with the application as **Appendix 14.C: Fisheries Liaison and Coexistence Plan** of **Chapter 14: Commercial Fisheries** of the **Offshore ES.**
	I note that an In Principle Monitoring Plan, an Outline Project Environmental Monitoring Plan and an Outline Entanglement Monitoring and Remediation Plan will be provided. It would be good to understand how these work	The **Outline Project Environmental Management & Monitoring Plan (PEMMP)** (WHX001-FLO-CON-ENV-PLN-0003) includes an overview of the Project's in-principle monitoring proposals.

Email details	Consultee Comments	Applicant Response
	together. It is always best where possible to have all monitoring together, for clarity. I think NE have previously requested a summary of all mitigation and perhaps the same can be summarised for all monitoring.	The **Outline Entanglement Monitoring and Remediation Plan** (WHX001-FLO-CON-ENV-PLN-0002) is provided as part of the **Further Environmental Information** submission.
Received 8th January 2024 – further comments relating to benthic ecology 27.2 27.3	Table 3.1. of the White Cross Offshore Windfarm (OWF) document index indicates which documents relating to the offshore application will be updated in within the Environment Impact Assessment (EIA) Addendum Report. MMO notes that of the reports listed, only the version of the 'Hydrofracture' assessment will be updated within the EIA Addendum Report and White Cross will either provide justification/clarification/signposting to original Environmental Statement (ES) documents within their subsequent response or, produce new documents which will provide the responses to comments where appropriate.	An updated Document Index will be provided as part of the Further Environmental Information submission. The **Hydrofracture Report** is provided as **Appendix S** of the **ES Addendum**.
	It is MMO's understanding that White Cross will confirm the use of trenchless techniques for cable burial / crossing at the Taw-Torridge Estuary in the Outline Cable Specification and Installation Plan (listed in Table 3.1 as 'new documents'). MMO seek confirmation from Flotation Energy that the associated excavation pits for use with the trenchless techniques are included in this assessment and the relevant information is provided in the Outline Cable Specification and Installation Plan.	The **Outline Cable Specification and Installation Plan** (WHX001-FLO-CON-ENV-PLN-0007) and **Appendix Y: Outline Cable Landfall Plan** (WHX001-FLO-CON-DES-PDE-0001) of the **ES Addendum** are provided as part of the **Further Environmental Information** submission. **Appendix Y: Outline Cable Landfall Plan** (WHX001-FLO-CON-DES-PDE-0001) describes in detail the proposed open cut cable installation across the intertidal at Saunton Sands, now that the trenchless cable installation option at this location is no longer proposed. There are no excavation pits required for the open cut methodology at Saunton Sands that are below MHWS.

Email details	Consultee Comments	Applicant Response
		The **Outline Cable Specification and Installation Plan** (WHX001-FLO-CON-ENV-PLN-0007) does not present information on the proposed use of trenchless techniques at the Taw-Torridge Estuary. The proposed entry and exit areas for the trenchless technique used to cross the Taw Estuary are above MHWS (in land) so no supporting infrastructure will be required on the seawards side (below MHWS) at this location. This was further confirmed in **Appendix 5.A: Taw Estuary and Braunton Burrows Crossing Method Statement** of the **Onshore ES**. Therefore, no assessment updates are required to inform the marine licence application.
	The In Principle Monitoring Plan is also relevant to benthic ecology receptors and would be ideally suited to addressing comments raised previously (MMO letter dated 17 November 2023). MMO expects the In Principle Monitoring Plan to address the potential impacts of the White Cross OWF, in particular the impact from "colonisation of introduced artificial substrate including non-native species", and to identify appropriate monitoring measures to verify the assumptions made within the ES through adequate pre- and post-construction monitoring.	The **Outline Project Environmental Management & Monitoring Plan (PEMMP)** (WHX001-FLO-CON-ENV-PLN-0003) includes an overview of the Project's in-principle monitoring proposals. This document outlines the principles that will drive the delivery of proposed pre- and post-construction monitoring.
Received 12th January 2024 – comments from Cefas SEAL team on the	MMO notes that the applicants intend to update the EIA addendum report with regard to operation and maintenance information including new cable landfall and bentonite management plan. This suggests that the assessment of chemical use for horizontal direction drilling will be assessed as part of the ES. Also, the in principal	The ES Addendum includes additional information and clarifications. In addition, further information is provided in standalone documents being submitted as part of the Further Environmental Information submission. This is includes: • an **Outline Cable Specification and Installation Plan** (WHX001-FLO-CON-ENV-PLN-0007)

Email details	Consultee Comments	Applicant Response
Document Index	environmental monitoring plan and outline marine and intertidal pollution contingency plan are to be updated.	• an **Outline Bentonite Management Plan** (WHX001-FLO-CON-ENV-PLN-0012) • an **Outline Project Environmental Management and Monitoring Plan** (WHX001-FLO-CON-ENV-PLN-0003) includes an overview of the Project's in-principle monitoring proposals, • an **Outline Marine and Intertidal Pollution Contingency Plan** (WHX001-FLO-CON-ENV-PLN-0004). • **Appendix T, Annex 1: Onshore Ground Investigation Factual Report** of the **ES Addendum** provides data which shows the ground conditions are suitable for use of a trenchless technology under the Taw Estuary and confirms the previous conclusion that risk of frac out is low (see also **Appendix S: Hydrofracture Report** of the **ES Addendum**). The Applicant considers that this supports the conclusions of the ES that as the entry and exit areas for the trenchless technique used to cross the estuary are above MHWS, no benthic or intertidal ecology receptors will be impacted. A Bentonite Management Plan, which will include details of the monitoring and any remediation measures in the unlikely event of frac-out, will be included within the final CEMP that is expected to be a condition to planning permission and Marine Licence consent. Agreement with Natural England will be sought on this condition on the trenchless technique methodology and response procedures. An **Outline Bentonite Management Plan** (WHX001-FLO-CON-ENV-PLN-0012) is provided as part of the **Further Environmental Information** submission.

Email details	Consultee Comments	Applicant Response
	MMO would expect to see provision of a chemical risk assessment included with the outline construction management plan or preliminary environmental management plan. The chemical risk assessment is often provided along with consideration of emergency response and dropped objects plans and MMO have no objection to the inclusion of the risk assessment of chemicals to be used for White Cross OWF within these sections (to address major comment 13.3 in MMO letter dated 17 November 2023).	The **Draft Chemical Risk Assessment** (WHX001-FLO-CON-ENV-RSA-0001) provided as part of the **Further Environmental Information** submission details the nature, magnitude, and probability of a potential adverse environmental effect of a chemical. Assessing the hazard and exposure will inform an understanding of the nature and magnitude of risk, and, if required, the assessment will also recommend additional risk management measures. This document will be developed further at detailed design stage once the exact chemicals to be used are known.
	MMO suggests that consideration with regard to chemicals used should be for construction operation maintenance and decommissioning within the ES. Therefore, inclusion of potential chemicals either left within or on structures should also be considered in the planned update for the Outline Decommissioning Programme Version 00.'	The **Outline Decommissioning Programme** (WHX001-FLO-CON-ENV-PLN-0011) is provided as part of the **Further Environmental Information** submission. This document sets out the responsibilities and environmental standards that decommissioning will comply with. It will outline the details the roles and responsibilities for those managing decommissioning activities. Management measures will also be detailed.
23rd January 2024 – comment from Cefas Coastal Processes regarding the Document Index	MMO note from the list there is no change to either FLO-WHI-REP-0002-08 Version 00 or FLO-WHI-REP-0002-10 Version 01. There will be submission of a new document titled 'Coastal Geomorphology Technical Note Version 00'. However, given 'Chapter 10: Benthic and Intertidal Ecology' made direct reference to information that did not exist in 'Chapter 8: Marine Geology, Oceanography and Physical Processes' (noted below), there is major concern that neither of these documents are being amended.	The **Coastal Geomorphology Technical Note** is provided in **Appendix F** of the **ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002). Clarification regarding the information presented in **Chapter 8: Marine Geology, Oceanography and Physical Processes** and **Chapter 10: Benthic and Intertidal Ecology** of the **Offshore ES** relating to smothering and siltation rates has been addressed in **Comment ID 12.4** in **Section 2.1.12** of this document.

2.4 Additional MMO Comments Received Via Email (11/06/2024)

2.4.1 Benthic Ecology

Comment ID	MMO/Cefas Comment	Applicant Response
1.1	WCOWL has confirmed that "semi-submersible structures will be coated with antifoulant to reduce the potential for colonisation." However, it is not clear if WCOWL intends to apply antifouling to all submerged artificial structures to prevent the colonisation of the mooring system configuration used to secure the semi-submersible foundations to the seabed. MMO would like clarification on this matter and recommends that monitoring of the mooring structures is required to ensure that the predictions made regarding the colonisation of submerged project infrastructure during the Environmental Assessment can be validated.	The Applicant can clarify that antifoulant will be used on the substructures as a mitigation measure. However, it is not known yet whether this will be used on the remaining submerged infrastructure. The Applicant is open to investigating the feasibility of using antifoulant on the remaining submerged infrastructure in consultation with the MMO during the post-consent phase.

2.4.2 Coastal Processes

Comment ID	MMO/Cefas Comment	Applicant Response
2.1	There were three main points of clarification from the initial consultation regarding bentonite frack out, sand wave recovery and risk of siltation. Two of the three issues have been addressed. The issue regarding siltation, has not been fully addressed. Additional material is presented in Appendix B Coastal Geomorphology Technical Note but does not address the key point. Whilst the risk of siltation is likely to be low given the low concentration of fine materials, the short duration of installation and the natural resuspension and transport occurring locally, the key issue is the statement in paragraph 14, Section 2.1 of the Preliminary WCOWL responses to Cefas Comments: "The predicted thickness of sediment resting on the seabed would only	The response to comment 12.4 (Section 2.1.12) has been updated with greater clarity on the numerical values provided. The predicted maximum thickness of 1mm is based on expert judgement. Also, **Section 1.6** of **Appendix F: Coastal Geomorphology Technical Note** of the **ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002) has been updated to clarify the rating of low sensitivity for A5.252/A5.351 Abra prismatica, Bathyporeia elegans and

Comment ID	MMO/Cefas Comment	Applicant Response
	amount to a maximum of 1mm". This is a quantified depth of siltation, and the evidence has not been provided for this number. Either this number is derived from expert judgment or a numerical estimate. If the former, this needs to be stated. If the latter the evidence of the assessment should be produced. Sufficient evidence has yet to be provided to support to conclusion of no adverse risk to the Polychaete reef from smothering. This should be provided in the ES Addendum so it can be verified, and the evidence recorded, without which, no conclusion can be drawn on no impact.	polychaetes in circalittoral fine sand, in relation to increased suspended sediment pressures.

2.4.3 Fisheries

Comment ID	MMO/Cefas Comments	Applicant Response
3.1	Concerning WCOWL's response in Paragraphs 25 – 26 on the use of additional data sources, it states that the use of additional data sources such as the Environment Agency's TraC fish counts (NFPD: TraC (Transitional & Coastal waters) fish survey relational datasets - data.gov.uk), for the river Taw and surrounding area would not add any additional value to the assessment. Whilst MMO agrees that WCOWL has identified the relevant migratory fish receptors using Barne et al., (1995) and (1996) which are appropriate sources, it is generally best practice to use all the sources that are available, particularly those that provide the most recent data, as fish abundances and distributions may change over time. Identifying which fish species are currently present in the vicinity of the works allows the assessment to focus on minimising the impacts to such species. The TraC fish counts represents recent site-specific data for river Taw and surround area, and thus should be used	The MMO states that it accepts that the sources of evidence used (Barne et al, 1995 & 1996) are appropriate, therefore. WCOWL maintain the position that it is not proportionate to undertake further work with these data. The approach taken by WCOWL is considered to be precautionary since the TraC surveys represent only those species present at the specific time/season and location Instead, we have used all migratory species known to be using the region as the baseline. Given that the assessment is not quantitative and does not take into account abundances and distributions, having more granular information from the TraC surveys would not add value or change the conclusions.

Comment ID	MMO/Cefas Comments	Applicant Response
	to inform the assessment in combination with other data sources. We recognised that there are limitations with the TraC fisheries data, such as seasonality and selectivity of fishing gear used in surveys, but these can be acknowledged in the discussion.	
3.2	In consideration of WCOWL's response in Paragraph 31 concerning the use of a larger study area (including ICES rectangles 30E4 and 30E5), MMO recommends that UWN modelling is based on a stationary animal model, which in turn results in a large range of effect, as is demonstrated in Table 11.21 of the ES. Whilst MMO appreciates that an increase in the study area is unlikely to identify further species for inclusion in the assessment, a wider study area would identify all fish spawning, nursery grounds or other sensitive habitats which could potentially be affected by UWN. This is pertinent when providing visual representations of the impact ranges from piling (or UXO detonation) in relation to sensitive habitats, i.e. when mapped noise contours are overlaid on maps of spawning and nursery grounds, the extent of spatial overlap from UWN impacts with sensitive habitats can be seen more accurately. This is especially relevant, when taking into account the increase range of effect for UWN noise when using a stationary receptor model, as impacts ranges are considerably larger than those based on a fleeing receptor.	The Applicant maintains the position that the stationary model is inappropriate as it is highly unrealistic, noting that the use of fleeing response models have been accepted within other projects of similar scopes within the region (Erebus FLOW[2]). Notwithstanding this point, WCOWL have reviewed the assessment undertaken in the ES and have provided additional noise contour plots for relevant species with this response (Annex 2). From the species assessed in **Chapter 11: Fish and Shellfish** of the **Offshore ES**, only herring, cod and whiting are considered sensitive to underwater noise effects beyond the nearfield based upon Popper et al (2014). Modelling was conducted at three locations within the Windfarm Site: the southeast (SE) corner giving a worst-case location for the OSP at the closest point to the Bristol Channel Approaches SAC, and mooring anchor locations covering the extents of the Windfarm Site at the northwest

[2] https://www.bluegemwind.com/wp-content/uploads/2020/07/Erebus-ES-Vol-1-Chapter-10-Fish-Shellfish-Ecology_final.pdf

Comment ID	MMO/Cefas Comments	Applicant Response
3.3	In response to WCOWL's comments in Paragraphs 32 – 34, the modelled impact ranges presented in Table 11.21 of the ES include the relevant thresholds for determining impacts to fish of all hearing capabilities, i.e. for fish with a swim bladder involved in hearing, fish with a swim bladder that is not involved in hearing, fish without swim bladder, and eggs and larvae. The thresholds presented also cover the appropriate physiological impact scenarios, i.e. mortality and potential mortal injury, recoverable injury and Temporary Threshold Shift (TTS). However, in the ES only the impact ranges based on a fleeing receptor were discussed, and on this basis, the magnitude of impact was assessed as low. Hence, MMO did not support this conclusion for the reasons outlined in points 14 – 15. In point 33 of WCOWL's response, the assessment has been revisited assuming a stationary receptor and the maximum impact range of 51 kilometre (km) for fish with a swim bladder that is involved in hearing (i.e. the most sensitive category) which is the relevant hearing category for herring and cod. It is stated that the presence of potential spawning and nursery grounds for Atlantic herring, as well as cod and whiting, remains consistent between both the current Fish and Shellfish Ecology Study Area (ICES Rectangles 31E5 and 31E4) and the suggested extension of ICES Rectangles 30E4 and 30E5 (i.e. herring spawning potential within these rectangles is primarily low). Given the low heat scores for herring in the heat map presented in Figure 1 (WCOWL response to Cefas comments) and noting that there are no significant spawning grounds for herring in this region	(NW) and south-west (SW) corners. Further details of modelling locations are included in **Chapter 13 Appendix 13.A: Underwater Noise and Vibration** **Technical Report**. Key parameters were as follows: • For the WTG foundations the assumptions there were a maximum of 8 WTGs each with a maximum of 6 x 2m pin-piles. This is a maximum of 48 piles. It is also assumed that the maximum number of installations would be 8 piles per day, which equates to 6 days of piling. Assuming that half that rate was reached, piling would still be completed within 2 weeks. • For the OSP there would be a maximum of 4 x 4m pin-piles. It is assumed that these could be piled in a single day. • Therefore, there is a maximum of 52 pin-piles which could be installed within a few weeks or a few short campaigns. There would be no months-long campaign required. **Nursery grounds**. These were shown in **Figure 11.4** (cod and whiting) and **Figure 11.6** (herring) of **Chapter 11: Fish and Shellfish** of the **Offshore ES**. Cod nursery grounds (with the nearest off the East of Ireland, Anglesey) and herring nursery grounds (nearest off east Irish coast) are considered suitably distant from the Project to be

Comment ID	MMO/Cefas Comments	Applicant Response
	that are overlapped by the noise contours, MMO is satisfied that risks from piling on spawning herring is negligible.	relevant. Therefore, we have only mapped whiting for this response (see **Figure 1**, **Figure 2** and **Figure 3**).
3.4	However, WCOWL still has not provided an assessment of the impacts of UWN generated from piling activities on Atlantic cod at their spawning grounds. There is potential for UWN generated during piling operations to have significant effects on spawning cod at a population level if piling activities are undertaken during their spawning season. This is due to their conservation status in the Celtic Sea and the proximity/overlap of their spawning grounds with the area of operations. In a meeting held on 14th December 2023, between WCOWL, the MMO and its consultees, Cefas fisheries advisors and Natural England advisors both requested that noise contour plots be made available in mapped form so that the extent of overlapping noise disturbance with sensitive features and spawning areas could be clearly seen. Mapped noise contours depicting other fish spawning and nursery grounds in the study area (apart from Herring) have still not been presented. MMO requests that these are presented. The shapefiles for the Ellis et al. (2012) fish spawning and nursery grounds can be downloaded here: www.cefas.co.uk/data-and-publications/fishdac/	**Whiting: Figure 1**(of **Annex 2: Fish and Shellfish Figures** of this document) presents the fleeing model at 186db (i.e. TTS) for both WTG locations and the OSP. There is no overlap with the mapped nursery areas using this model and therefore would be no disturbance impacts. **Figure 2** shows the stationary model for the WTGs and **Figure 3** shows the stationary model for the OSP. It can be seen that for the WTGs even with this highly precautionary model there is no overlap with the nursery areas. For the OSP, there is a limited spatial overlap, however given that there would only be 4 piles involved in this scenario, the duration of impacts would be restricted, potentially a single day, and this would not give rise to significant effects. The ES assumed negligible sensitivity to piling for all receptors (based upon unrecoverable injury). If the sensitivity were increased to reflect potential disturbance, given the small spatial overlap even in the stationary model and limited duration of piling, the magnitude would be negligible (given the size of the nursery area and the length of the spawning period (February to June inclusive (Ellis et al, 2012)) leading to a minor adverse effect at worst. **Spawning grounds.** These were shown in **Figure 11.4** (cod and whiting) and **Figure 11.6** (herring) of **Chapter 11: Fish and Shellfish Ecology** of the **Offshore ES.** In addition, a figure was produced for the previous submission which showed the herring heat mapping together with the herring spawning grounds which MMO has stated they are satisfied with. Therefore, we have only mapped cod (see

Comment ID	MMO/Cefas Comments	Applicant Response
		Figure 4, **Figure 5** and **Figure 6**) and whiting (**Figure 7**, **Figure 8** and **Figure 9**). These are discussed below: • **Cod: Figure 4** presents the fleeing model at 186db (i.e. TTS) for both WTG locations and the OSP. In all cases there is some overlap with the spawning area, with the greatest from the OSP. **Figure 5** presents the stationary model for the WTGs and shows that there is overlap of impact with the spawning area with some of the WTGs being within the area itself. These show that as well as disturbance (TTS) there is also some potential for injury. **Figure 6** shows the stationary model for the OSP and this has the greatest overlap with the spawning ground, although at a worst case this represents just 4 piles likely to be installed in a single day. As discussed above, given that there is a maximum of 52 piles, it is considered that these could all be installed within a few weeks or a few short campaigns. There would be no months-long campaign required as with the large gigawatt scale projects. Ellis et al (2012) show that spawning takes place from January to April inclusive (with a peak February to March), therefore given such a long period and the duration of piling, the installation period would not represent a material proportion of the spawning season. • **Whiting: Figure 7** presents the fleeing model at 186db (i.e. TTS) for both WTG locations and the OSP. There is no overlap of impact from the NW WTG, limited overlap from the SW WTG, with the greatest overlap from the OSP. **Figure 8** presents

Comment ID	MMO/Cefas Comments	Applicant Response
		the stationary model for the WTGs and shows that there is overlap of impact with the spawning area although unlike for cod there are no WTGs within the spawning area itself and no potential for injury based on this modelling (cf the 203dB and 207dB contours). **Figure 9** shows that there is potential for both injury and TTS from the OSS, with the TTS contour covering a large part of the spawning area, although at a worst case this represent just 4 piles likely to be installed in a single day. As discussed above, given that there is a maximum of 52 piles, it is considered that these could all be installed within a few weeks or a few short campaigns. There would be no months-long campaign required as with large gigawatt scale projects. Ellis et al (2012) show that spawning takes place from February to June inclusive, therefore given such a long period and the duration of piling, the installation period would not represent a material proportion of the spawning season. The ES assumed negligible sensitivity to piling for all receptors (based upon unrecoverable injury). If the sensitivity were increased to reflect potential disturbance, given the limited duration of piling, the magnitude would be negligible or low at worst (given the size of the nursery area and the length of the spawning period (February to June inclusive for whiting and January to April inclusive (Ellis et al, 2012)) leading to a minor adverse effect at worst.
3.5	It is noted that WCOWL has stated that 'the magnitude of impacts from UWN during construction when considering fish	Impacts from piling (or UXO clearance) will be limited to the construction phase. As described in the response above, the

Comment ID	MMO/Cefas Comments	Applicant Response
	and shellfish as stationary receptors is likely to be reversible over a period of 1-5 years and will occur occasionally throughout the lifetime of the project, however the change will be beyond that seen through natural background variation.' MMO requests that suitable evidence is provided to support this statement.	during of piling will be limited to a few weeks, most likely in a single campaign and therefore if piling did overlap with a spawning period this would be a single period and not affect subsequent years, hence there would be no impediment to recovery. The phraseology used in the previous response is derived from the definitions of magnitude within **Section 11.3** of **Chapter 11: Fish and Shellfish** of the **Offshore ES**.
3.6	For the reasons outlined above MMO does not agree with the conclusion that the magnitude of impact for fish receptors is 'medium'. In the ES, all fish receptors have been classified as having 'low' sensitivity to impact piling and Unexploded Ordinance (UXO). This assumption overlooks the various hearing capabilities in fish. Fish that have a swim bladder involved in hearing (e.g. Atlantic herring and cod) should be classified at 'high' sensitivity due to their vulnerability to barotrauma and tissue damage from impulsive noise, whereas a fish with no swim bladder (e.g. sandeel or Dover sole) would be classed as having 'low' sensitivity (see Popper et al. (2014). Only when receptors have been categorised based on their sensitivity to the impact, can the risk of impact be assessed. However, as the ES and the further information provided do not provide suitable information (i.e. maps) showing the extent of UWN disturbance with fish spawning and nursery grounds, we cannot tell whether there is a risk or the extent of the risk, and hence the magnitude of risk cannot be determined.	In order to provide a proportionate assessment, given the scale of the Project, the ES only presented a worst case receptor, in this case '*fish with a swim bladder involved in hearing'* (see **Table 11.21**), on the assumption that less sensitive groups would come out with lesser adverse effects. As discussed above, the magnitude of effect needs to be considered not only in terms of the spatial overlap (which is based upon precautionary modelling and spawning maps based on interpolated data) but arguably the duration of that impact. Whatever the spatial overlap (which will be minimal for nursery areas but substantial for spawning areas (see response to **Comment IDs 3.2-3.4**)) the duration will be minimal, covering a few weeks of those periods during which time noise would be intermittent. It is arguable whether '*fish with a swim bladder involved in hearing'* should automatically be given a high sensitivity in EIA terms as suggested by the MMO. **Table 11.3** of **Chapter 11** provided the sensitivity criteria used in the original assessment. For example, whilst *the individual cod subject to injury effects* (i.e. those within very close range of the piling operations) clearly fit the definition of having limited

Comment ID	MMO/Cefas Comments	Applicant Response
		tolerance (they would be injured or have mortal injury) and be of 'high' sensitivity, the majority of spawning cod (judged by the spatial footprint) would suffer disturbance only, and recovery would be possible because the effect would be a one off for the duration of the piling campaign. Recovery could take place in future spawning seasons without impediment. It is the recoverability of spawning cod as a whole, which drives the sensitivity ***in EIA terms*** not ***physiological sensitivity of an individual*** in this case. Given that the sensitivity is not considered to be high and as discussed above they magnitude would be low or negligible, there would not be significant effects.
3.7	Regarding WCOWL's response in Paragraphs 35 and 36, MMO welcomes the clarification regarding the sandeel heat map in Figure 11.5 of the ES, and agree that medium and low 'heat' overlap most of the array area and cable corridor.	Noted.
3.8	In Paragraph 37 of WCOWL's response, it is stated that 'the proportions of overlap provided have been used to contextualise the heatmaps in the ES and have been considered as just one part of the overall impact assessment. When acknowledged as just one part of the wider assessment for their respective receptor groups the quantification of these values is not determined to have altered the overall assessment of significance from any given impact.' MMO welcomes the justification and suggest that this be included as a caveat in the final ES.	Noted.
3.9	The need for mitigation and monitoring should be determined on the outcomes of the forthcoming ES addendum.	As discussed above, WCOWL has provided the mapping of the impacts for herring (previous response) and now for cod and whiting. Whilst the spatial overlap of noise contours

Comment ID	MMO/Cefas Comments	Applicant Response
	There is a potential requirement for a temporal restriction on piling during the spawning season for Atlantic cod. However, the requirement for mitigation is dependent on the appropriate classification of receptor sensitivity for cod, and a review of the extent of UWN disturbance at the cod spawning ground in the study area, hence the request for further evidence in point 2.5.	onto cod and whiting spawning areas (using the highly precautionary stationary model) are large in some cases (notably from the OSP) the duration of these impacts need to be considered when assigning significance of effect. The OSP will have only 4 piles and could be installed in a single day. The maximum number of piles for the WTGs is 48 and these piles could be installed within a few weeks (and a minimum of 6 days). Compared to the length of the spawning period, the magnitude of effect would be low or negligible. The classification of sensitivity is discussed in 3.6, and WCOWL maintains the position that '*fish with a swim bladder involved in hearing*' do not default to high sensitivity in EIA terms simply because some individuals subject to impact would suffer non-recoverable injury. Therefore, WCOWL maintains the position that there are no significant effects on these species and no requirement for mitigation or seasonal restrictions

2.4.4 Shellfish

Comment ID	MMO/Cefas Comments	Applicant Response
4.1	Barrier effects for Shellfish fisheries could be defined. Also previously highlighted was the inclusion of the potential for electromagnetic field (EMF) to impact edible crab movements (Scott; 2021). WCOWL noted "requested that consideration be given to small-scale inshore artisanal fishery data (i.e., Inshore Fisheries and Conservation Authority data) to inform the shellfish baseline, particularly in the area surrounding the landfall location, cable corridor and the inner mouth of the estuary. However, it is WCOWL's position that this would not add any value to the assessment either as species noted within MMO landings data often overlaps with species targeted by local artisanal fishers and the assessment already includes a large range of shellfish species". MMO requested recent relevant data and consultation with IFCA's to ensure that smaller localised artisanal fisheries are appropriately considered alongside the dataset as Vessel Monitoring System (VMS) data does not capture activity by a majority of the inshore commercial fishing fleet. The response from WCOWL states there is no intention to update data source due to current coverage. However, Chapter 10 of ES, notes "A Fisheries Liaison Officer (FLO) will be appointed for the Construction Phase and as required during the Operation Phase (including maintenance and repair) Phase" and "The Fisheries Liaison and Coexistence Plan will detail the scheduling, approach and stakeholders with whom liaison will be conducted and the content and formats of information to be provided and the process of recording and acting upon feedback from stakeholders". It would be expected that the IFCA and fishers be included in consultation by the FLO to detail any potentially relevant local shellfisheries as part of this remit.	The response to **Comment ID 16.10** in **Section 2.1.16** of this document details the existing consultation that has taken place with the Devon and Severn IFCA. The Final The Fisheries Liaison and Coexistence Plan will include details of current mussel stocks in the Taw Torridge estuary. It should be noted that no impacts are predicted to the Taw Estuary due to the use of trenchless technology to install the cable approximately 10m below the bed of the estuary.

Comment ID	MMO/Cefas Comments	Applicant Response
	Sources such as Devon and Severn IFCA for details of current mussel stocks in the Taw Torridge estuary and any potential interaction.	

2.4.5 Underwater Noise

Comment ID	MMO/Cefas Comments	Applicant Response
5.1	MMO raised other queries (points 21.1 to 21.10 in our letter dated 17 November 2023) in relation to UXO clearance which do not appear to have been included in the response document.	The Applicant acknowledges this comment, and the responses can be seen above in **Section 2.1.21** of this document.
5.2	As the ES is not going to be updated, despite WCOWL acknowledging that there are various errors throughout the assessment – please see the response to comments in Annex I. MMO requests that a record or log of errors will therefore be included within the ES Addendum.	The Applicant acknowledges this comment and will provide this.
5.3	MMO previously asked for further information regarding the piling spectra (comment 2.6 in our letter dated 17 November 2023, and it would be helpful if this was included in the forthcoming ES Addendum.	As stated in response to **Comment ID 2.6** in **Section 2.1.2** of this document, INSPIRE is broadband by design, with the frequency spectra for each of the empirical measurements for the purpose of weightings and propagation built into the model for computational efficiency. Frequency spectra are not direct inputs to the model and so there is no single spectrum that can be presented.
5.4	Section 1.1 of the Outline Underwater Noise Monitoring Plan (OUNMP) sets out that the purpose of this document is to monitor underwater noise during the operation of the Project (and enable real-time collection of data). The plan states that underwater noise emitted during the construction phase will be managed by other mechanisms (such as through an Unexploded Ordnance clearance	The Applicant acknowledges this comment and will consider the different monitoring requirements and techniques applicable in

Comment ID	MMO/Cefas Comments	Applicant Response
	plan). Please note that there may be a requirement for underwater noise monitoring to be undertaken during the actual construction phase (as there is for fixed turbine foundations), however, this would largely depend on the final installation methods/techniques.	the Final OUNMP, which will be dependent on the final installation methods/techniques.
5.5	The OUNMP will be revised and updated as the project progresses to construction and operation, and as further information becomes available following decisions on final project design. However, it is noted that, at this early stage, it is proposed that a similar method of noise profiling is undertaken as that at Kincardine Offshore Windfarm. The plan states (section 6.1) that data was collected using the Scottish Association for Marine Science (SAMS) designed Drifting Ear whose methodology was specifically designed for noise measurements in high flow tidal sites. However, no specific reference is provided. MMO requests that this is included.	The applicant acknowledges this comment and will include a similar method of noise monitoring as that which was undertaken as part of the Kincardine Offshore Windfarm. The methodology of underwater noise modelling at Kincardine Offshore Windfarm is presented in the Project Environmental Monitoring Plan available on the Marine Scotland website (https://marine.gov.scot/data/kincardine-offshore-windfarm-project-environmental-monitoring-plan-pemp).

3. References

Erebus FLOW Environmental Statement, Chapter 10: Fish and Shellfish Ecology. Project Erebus Environmental Statement (bluegemwind.com)

Annex 1 Meeting Minutes

Marine Mammals, Fish and Shellfish Consultation Comments Meeting 14/12/2023

Minutes

HaskoningDHV UK Ltd.
Industry & Buildings

Present:	Conor Barron, Pete Thornton, Gemma Starmore, Lewis Ashton, Tom Murfin, Oliver Gardner, Melina Jack, Becky Jones, Karen Schnetler, Sarah Clark, Oscar Wald, Chloe Honess, Ed Ferris, Carli Cocciardi, Georgina Eastley, James Woodruff, Clare Sykes, Alison Atterbourne, Louise Burton
Apologies:	Tim Mason (Subacoustech), Rebecca Reed (MMO), Stephanie Dickens (Natural England), Sue Sayer (Cornwall Seal Research Group), CEFAS Underwater Noise Team, Alan Kavanagh (Natural England), Neale Hall (NDC), Al Rayner (Flotation Energy)
From:	Tom Murfin
Date:	14 December 2023
Location:	Teams
Copy:	
Our reference:	PC2978-RHD-ZZ-XX-MI-Z-0774
Classification:	Project related
Enclosures:	

Subject: **White Cross OWF Marine Mammals, Fish and Shellfish Consultation Comments Discussion – Response to Comments**

Introductions:
Conor Barron (CB) – Royal HaskoningDHV
Pete Thornton (PT) – Royal HaskoningDHV
Tom Murfin (TM) – Royal HaskoningDHV
Lewis Ashton (LA) – Royal HaskoningDHV
Gemma Starmore (GS) – Royal HaskoningDHV
Oliver Gardner (OG) – Flotation Energy
Melina Jack (MJ) – Flotation Energy
Becky Jones (BJ) – Flotation Energy
Karen Schnetler (KS) – Marine Management Organisation
Oscar Wald (OW) – Marine Space
Sarah Clark (SC) – Devon IFCA
Chloe Honess (CH) – Natural England
Louise Burton (LB) – Natural England
Clare Sykes (CS) – Natural England
Alison Atterbourne (AA) – Natural England
Georgina Eastley (GE) – CEFAS
James Woodruff (JW) – CEFAS
Ed Ferris (EF) – Devon Wildlife Trust
Carli Cocciardi (CC) – Devon Wildlife Trust

1. Introductions – ALL

2. Project Schedule and Update
MJ: Landfall cable installation technique change, trenchless dropped, cable will be installed via open-cut.
LB: Where will HDD exit pits for going under the golf course? Where is the TJB going to be?
OG: Exit pit will be in Saunton Sands car park, TJB will also be in the car park.

LB: We need information around the short HDD exit onto the beach.
CB: Worst case already accounted for this in the assessments.
MJ: Further information can be made available on the planned location of the TJB for the cables in the intertidal.

3. Marine Mammals

MJ: IAMMWG and SCANS-IV published after the finalisation of the EIA, not appropriate to request significant proportion of assessments to be updated.
CS: That's fine, comment said if possible. Regarding bottlenose dolphins, population is declining and the animals are closer to the project site than previous publications suggested.
MJ: The marine wildlife licencing process will take into account updated baseline provided by IAMMWG and SCANS-IV at the appropriate time.

CS: You've proposed a 0.01km distance for operational noise for worst case, is there any justification for where that came from?
GS: Based on TTS ranges that were modelled. The disturbance assessments were based on a literature review.
CS: Is that all fixed offshore wind or floating?
GS: Fixed
CS: We don't know the difference with floating. The fortune report is the only indicator of operational noise distances.
GS: We have reviewed the report and don't think it will make a significant difference.

MJ: We do support having monitoring conditions on the licence (i.e., to include entanglement monitoring and underwater operational noise monitoring).
CS: Opportunity to work together and fill evidence gaps.
OG: We're a test and demonstration project, where possible we're happy to fill evidence gaps by undertaking monitoring.

4. Fish and Shellfish

MJ: We received comments on the justifications for the study area and stationary receptors.
OW: We have reassessed fish and shellfish as stationary receptors.
AA: Would it be possible to see the species specific assessment? Is it possible to plot out the noise contours- i.e.,, for mortality, TTS thresholds as presented in Popper et al, 2014? This would be helpful.
OW: Will need to discuss whether noise contours are available. Areas have been calculated using the maximum and minimum ranges but noted there wasn't a figure produced for this. We can discuss internally and look to provide in further information.
GE: Very helpful to have noise contours plotted with fish spawning grounds too.
OW: Are there specific species you're concerned about?
GE: Cod, whiting, sand eel, species with ecological or commercial importance. Any acoustic barrier affect that may cause a barrier to migratory fish particularly looking at the Taw estuary.
CB: Happy to produce figures showing noise contours and spawning grounds.
AA: Noted a study which includes tagging of twaite shad in waters off Swansea.
AA: Many tagged twaite shad, can potentially put receivers in?
MJ: Definitely something to talk about outside of the meeting. As a test and demonstration project we're happy to hear these proposals and look to support them where we can.

OW: We have taken a precautionary approach to establishing the baseline for shellfish and migratory fish and believe using TRaC data to set the baseline would only provide a snapshot in time – risks

overlooking species that could be using the site at other times. So, including it would not add any value to the assessment.

MJ: Shellfish data – species noted within MMO landings data often overlaps with species targeted by local artisanal fishers and data held by IFCAs, so we also see not value of using this data to set the baseline for shellfish.
KS: This is something I can put back to shellfish team at CEFAS.
CR: I'll have to review once we've seen in writing then I'll get back to you.
OW: Looking through the IFCA data, I couldn't see any species in that data that wasn't including in the baseline.
OG: Every comment will be addressed individually.

MJ: IFCA submitted comments around noise and vibration related to HDD under the Taw estuary.
OW: Assessment of piling as the worst-case noise-making activity and other noise making activities has been undertaken. Worst case scenarios were based on species with a swim bladder used for hearing.
GE: Presumably that was with a stationary receptor?
OW: **We will check whether the modelling for impulsive noise differs between mobile and stationary receptors.**
OG: Exit pits are further than 20m away from the Taw on both north and south sides so we conclude there is not a pathway for noise or vibration impacts at the Taw estuary crossing.
MJ: Currently finalising the hydrofracture report, results show very low risk of frac-out. Inherent risk is at the entry/exit pits which are above mean high-water springs. Bentonite management plan is being produced for if the unlikely event that frac-out happens.
AA: Natural England made a comment around in combination effects with Hinckley point C and the Swansea Bay Tidal Lagoon project.
MJ: We understand that the Swansea Bay Tidal Lagoon consent application has been withdrawn.
AA: Swansea Bay Tidal Lagoon project consent lapsed but the prospect of project still exists. Essentially the project is now back in the pre-application stage.
MJ: So, it can be included, however, it's tier in the cumulative/in-combination assessment will be significantly reduced given the lack of confidence at this stage that the project will be developed.
CB: RHDHV will provide more information on in-combination effects with Hinckley Point C and Swansea Bay Tidal Lagoon project.

5. Underwater Noise Modelling
MJ: Subacoustech not available for the meeting today, but we have included written responses to comments on propagation, etc, in our written response.
GE: CEFAS Underwater Team are also unavailable, so we can address the floating piling profiles and propagation comments in writing.

6. UXO clearance
MJ: The depth of water in the array area is too deep fornoise abatement, i.e., bubble curtains.
SC: If using low noise alternative for UXO clearance, I wouldn't think you need noise abatement. Too far in advance to have all the detail. Impressed by the number of surveys being undertaken. Makes sense for a separate marine licence for UXO clearance.

7. Next Steps
KS: Would WCOWL like to receive comments now or should consultees wait for submission of WCOWL response?
MJ: Please wait for detailed response.

KS: We are content with applicant providing summary to NE comments, no need to address MMO summary comments individually as long as there is clear cross-referencing to additional MMO comments

LB: Once minutes are received, we will provide our deadline to respond back.

MJ: Purpose of calls is to address comments and get early agreement on what can be included as a condition and what is a barrier to consent.
LB: Natural England hasn't agreed to be engaged in an EIA Addendum. Several things aren't following the regular process. NE have concerns with an EIA/ES addendum approach and NE will be requesting an updated application.
KS: Aware of NDC letter for withdrawal of planning application, but the MMO have not yet sent the same letter to the Applicant to request withdrawal of the application.
OG: FLO are having these conversations with KS and NH during the week commencing 18/12/23

Actions:
WCOWF to provide response to comments on the application.
WCOWF to provide updated figure showing noise contours and spawning grounds.
WCOWF and NE to discuss

Commercial Fisheries Meeting 15/12/2023

Minutes

Title:	**White Cross Floating Offshore Windfarm Commercial Fisheries Meeting**
Date:	15 December 2023 **Time:** 1130 - 1200 **Location:** (Microsoft Teams)
Attendees:	John Balls (JB), North Devon Fisherman's Association Melina Jack (MJ), Flotation Energy Rhys Kibble (RK), Brown and May Marine Ross Clifford (RC), Brown and May Marine
Apologies:	N/A
Meeting Organiser:	RK/RC

DISCUSSION POINTS		
No.	**Item**	**Action** *(By whom, by when)*
0.	**Introductions**	
	MJ introduced the meeting and provided an overview of the agenda: • 2023 survey campaign overview and feedback • Broader project update • 2024 survey campaign • Future communication (meetings)	
1.	**Project update**	
	MJ confirmed the 2023 geotechnical survey campaign was cancelled, adding that they completed a UXO survey this year, but are expecting to have to carry out another UXO survey next year ahead of the rescheduled geotechnical survey. **MJ** added that they are not planning to request a full closure of the survey area for geotechnical surveys next year, but the UXO surveys may require full closure. **JB** explained that NDFA members generally have smaller vessels that are under 10 meters, with the largest member vessel being around 12 metres in length, and therefore need as much notice as possible as they can not always get out to sea due to poor weather/wave conditions.	

Minutes

	JB mentioned the importance of communications, adding that if fishing gear needs to be removed, members will need sufficient notice, suggesting a minimum of 1-2 weeks' notice. **MJ** apologised for not giving enough notice this year for fisheries clearance and confirmed that next year the Project will try to give as much notice as possible and look to improve communications by providing information earlier. **JB** mentioned BMM are dealing with fishers directly in terms of compensation and gear clearance, adding that there are some fishing vessels that are looking for compensation but there are also bonified fishers who will try to work around surveys as they do not want to risk losing their gear. **JB** asked if the Project / BMM have access to iVMS as the Devon and Severn IFCA has this data and it is useful in understanding where fishing activity takes place. **RK** confirmed they do not have access to iVMS. **MJ** explained that the Project is looking to work with the fishing industry, to find ways to support sustainable fishing and seek feedback on the Project e.g. turbine anchor locations. **JB** mentioned that from the very beginning of the Project the NDFA has wanted to know more on the mooring patterns of the turbines, as they do not expect any fishing activity to take place in the array area and that there will be no-go areas. **JB** added the importance of trenching cables to allow the mobile fishing activity to continue. Potting can work around unburied cables, but it is a big concern for mobile gear. JB confirmed there are vessels with mobile gear working in the area, with French, Belgians and Spanish working further offshore. **JB** explained that there is a lot more static fishing gear south of Lundy Island than there was before, and there are fishers working all along the southern cable route. JB added that some fishers with a lot of pots (e.g. 2,000 pots) no longer bring their gear ashore during winter months and instead will leave them in deeper water offshore. Static gear will therefore be in the water for 12 months per year. **JB** mentioned another cable project 'Xlinks', which also has a landfall in the Bideford Bay at Cornbrough, and so the area will become busier with Project work. **RK** shared a chart of the proposed geotechnical operational area. **JB** commented that there is whelk gear in Bideford Bay and that the cable route south of Lundy on the chart is now full of static gear. A lot of that gear is from Ilfracombe vessels.	

Minutes

	MJ mentioned the 2024 offshore geotechnical survey is planned for early summer and they are not expecting full closure to fishing activities. **MJ** commented that the Project can look to discuss micro-routing around specific areas and displacement related issues, and this can be something we discuss in future meetings. **MJ** explained that the Project is still going through its application, and this is ongoing. **JB** asked if the survey vessel will work out of Milford Haven again next year. **MJ** said she was usure and does not currently have that information. **MJ** confirmed the Project wants to continue regular communication and will continue to work with the NDFA, adding that we will be in contact regarding future meeting dates.	
	Actions	
	Schedule regular meetings with the NDFA to discuss the 2024 survey programme, project developments and provide opportunities for feedback on the Project.	**BMM**

NEXT MEETING

Date:	**Time:**	**Location:**

Commercial Fisheries Meeting 05/01/2024

Minutes

Title:	**White Cross Floating Offshore Windfarm Commercial Fisheries Meeting**
Date:	05 January 2024 **Time:** 1400-1430 **Location:** (Microsoft Teams)
Attendees:	Chris Ranford (CR), Cornish Fish Producers Organisation Melina Jack (MJ), Flotation Energy Oliver Gardner (OG) Flotation Energy Rhys Kibble (RK), Brown and May Marine Ross Clifford (RC), Brown and May Marine
Apologies:	N/A
Meeting Organiser:	RK/RC

DISCUSSION POINTS		
No.	**Item**	**Action** *(By whom, by when)*
0.	**Introductions**	
	MJ introduced the meeting and provided an overview of the agenda: • 2023 survey campaign overview and feedback • Broader project update • 2024 survey campaign • Future communication (meetings)	
1.	**Project update**	
	2023 survey campaign overview and feedback **MJ** discussed the 2023 geophysical and geotechnical survey campaign, adding that there were delays due to weather. The geotechnical surveys didn't request any fisheries clearance, but the geophysical surveys did request full site clearance due to fluid movement of the survey. **2024 survey campaign plans** **MJ** explained the 2024 survey campaign is currently in the tendering phase and are waiting for confirmation on vessel availability. They are aiming for Q2 2024 (starting in May but depending on Crown Estate etc.).	

Minutes

	MJ confirmed there will be another UXO geophysical survey with scoped 7 days' work (excluding weather) where full clearance will be requested. **MJ** added geotechnical will have a schedule forwarded and can provide that in advance to arrange any clearance needed (will have an OFLO on board). They might be able to complete the geotechnical survey without any gear clearance but will depend on the survey company. The entire survey campaign is expected to last 6-weeks, not including weather. **CR** commented that the month of May is a busy time of year for Padstow crabbers in that area. **OG** explained that by end of the February the project should have a good idea of who has won the tender and a better idea of the schedule. **Broader project update** **MJ** added that the White Cross project would like more regular meetings with the CFPO and suggested every quarter or 6 months. **CR** confirmed a meeting every 6 months for general updates is fine. **OG** highlighted that construction is looking like it will be delayed until 2028 rather than 2027, adding that the delay is due to supply chain issues and survey delays. **CR** asked about how the fisheries clearance process will work during surveys. **RK** confirmed we will ask you to collect evidence from members e.g. plotter shots, vessel certificates, and sales notes. We can then calculate a percentage based on the fishing grounds. **CR** confirmed he understood the process. **RK** added that full clearance would be needed for the geophysical survey. Ideally won't need clearance for the geotechnical survey but will need to be confirmed by contractor / Project. **CR** asked if the Project was keeping John Balls, North Devon Fishermen's Association (NDFA), updated.	

Minutes

	MJ confirmed the NDFA were being updated. **RK** asked whether the CFPO prefer BMM to contact them directly in relation to compensation payments and communication with fishers. **CR** confirmed that BMM should contact the CFPO for any PO member vessels. **CR** asked why there was a delay with construction timings. **OG** confirmed that the delay is mostly due to supply chains, and that the sub structure fabrication and turbine structures have long lead in times. **CR** asked if the Project knew which ports would be used for servicing / constructions vessels as this could interfere with member activity. **OG** responded that this is still being progressed but that construction elements will likely be undertaken in Europe, fabrication overseas and final build in South Wales. **OG** added that operation and maintenance vessels would likely be based in the South West.	
2.	**AOB**	
	OG commented that the Project are responding to the CFPO responses and MMO comments, and responses will be formally submitted in the next month when there will be second round of consultation and the CFPO can review them. **OG** added that the Project would look at returning draft CFPO responses earlier if possible and will speak with the MMO case officer. **CR** confirmed the CFPO should be available to review them at end of Feb/beginning of March. **CR** confirmed a meeting once every 6 months for regular communications.	**OG**
3.	**Actions**	
	Schedule regular meetings with the CFPO to discuss the 2024 survey programme, project developments and provide	

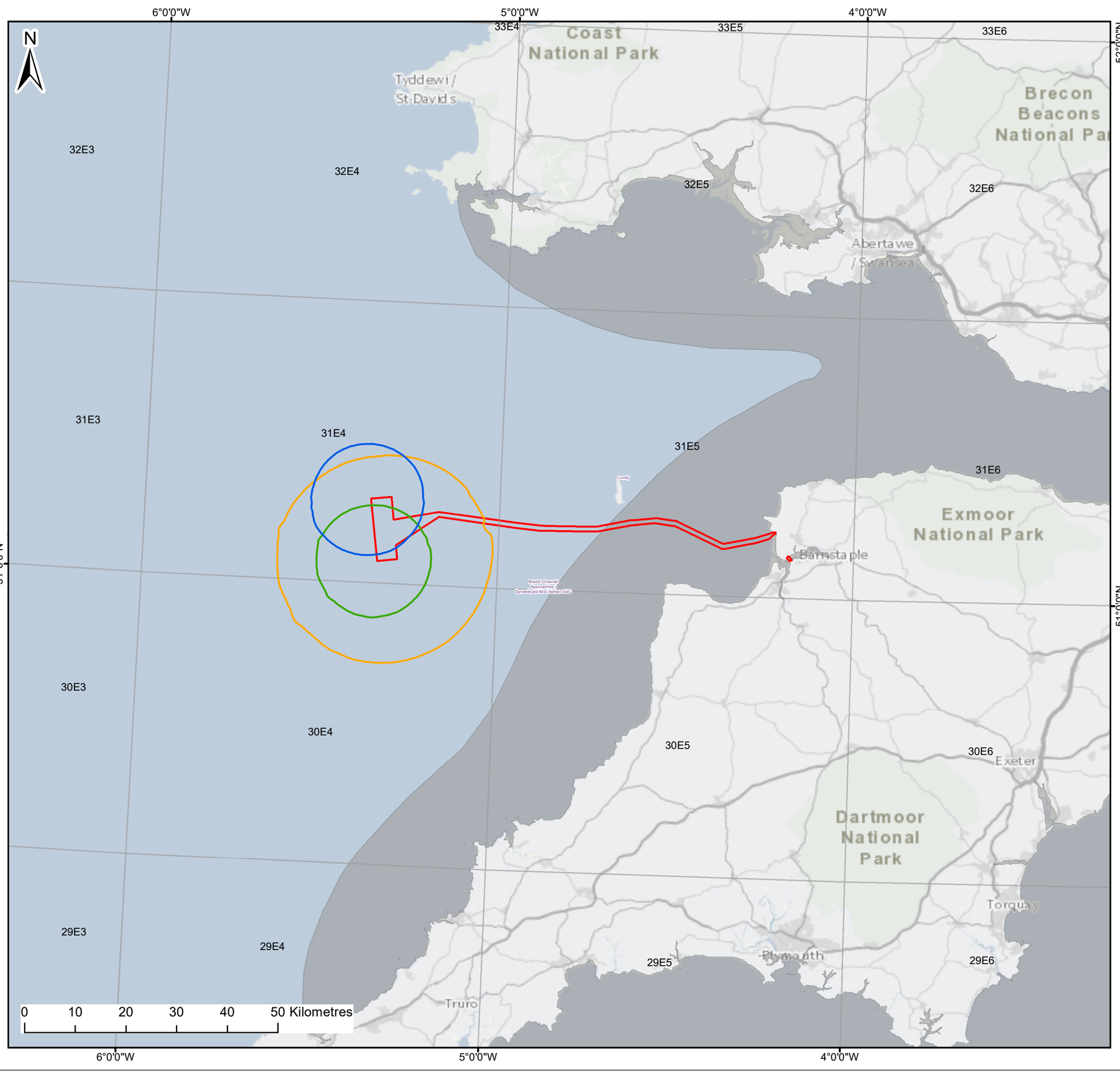
Minutes

	opportunities for feedback on the Project. Suggested next meeting date in summer 2024.	**BMM**
	The Project will confirm with the MMO case officer if draft CFPO responses can be sent earlier.	**OG**

NEXT MEETING

Date:	**Time:**	**Location:**

Annex 2 Figures Showing Fish and Shellfish Impact Range



Legend:

- Offshore Development Area
- ICES Rectangle
- Whiting Nursery
- WhCr MoorNW Unwtd SELcum (Flee) (Popper)
  - 186db
- WhCr MoorSW Unwtd SELcum (Flee) (Popper)
  - 186db
- WhCr OSS Unwtd SELcum (Flee) (Popper)
  - 186db

Client:	Project:
White Cross Offshore Wind Ltd.	White Cross Offshore Windfarm

Title: Whiting Nursery Fleeing Model

Figure: 1 | Drawing No: PC2978-RHD-ZZ-XX-DR-Z-0811

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
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Co-ordinate system: British National Grid

WHITE CROSS

Royal HaskoningDHV
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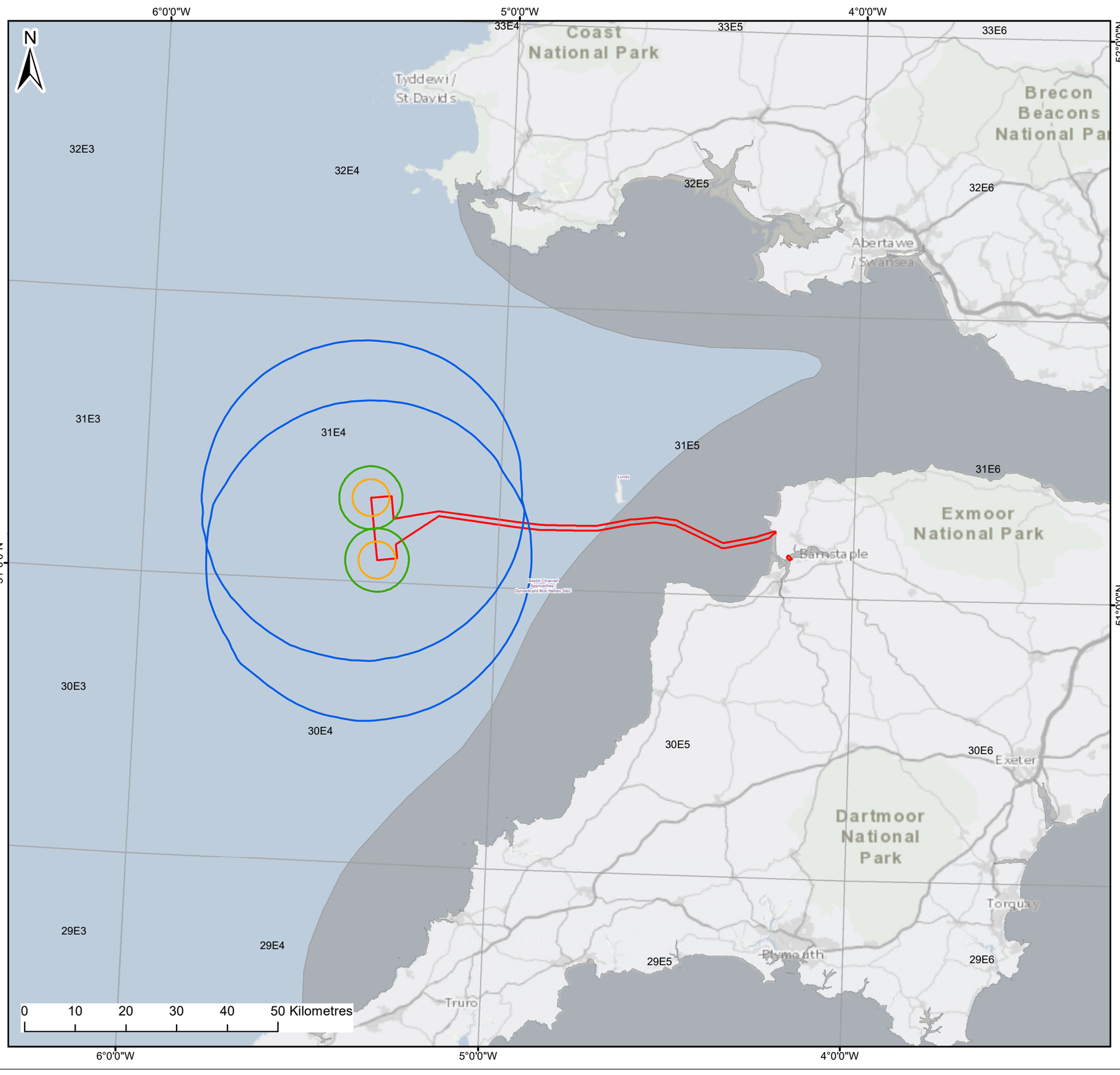

Legend:

- Offshore Development Area
- ICES Rectangle
- Whiting Nursery

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- 186 db
- 203 db
- 207 db

WhCr MoorSW Unwtd SELcum (St) (Popper)

- 186 db
- 203 db
- 207 db

Client:	Project:
White Cross Offshore Wind Ltd.	White Cross Offshore Windfarm

Title:

Whiting Nursery Stationary Model WTG

Figure: 2 | Drawing No: PC2978-RHD-ZZ-XX-DR-Z-0812

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
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Co-ordinate system: British National Grid

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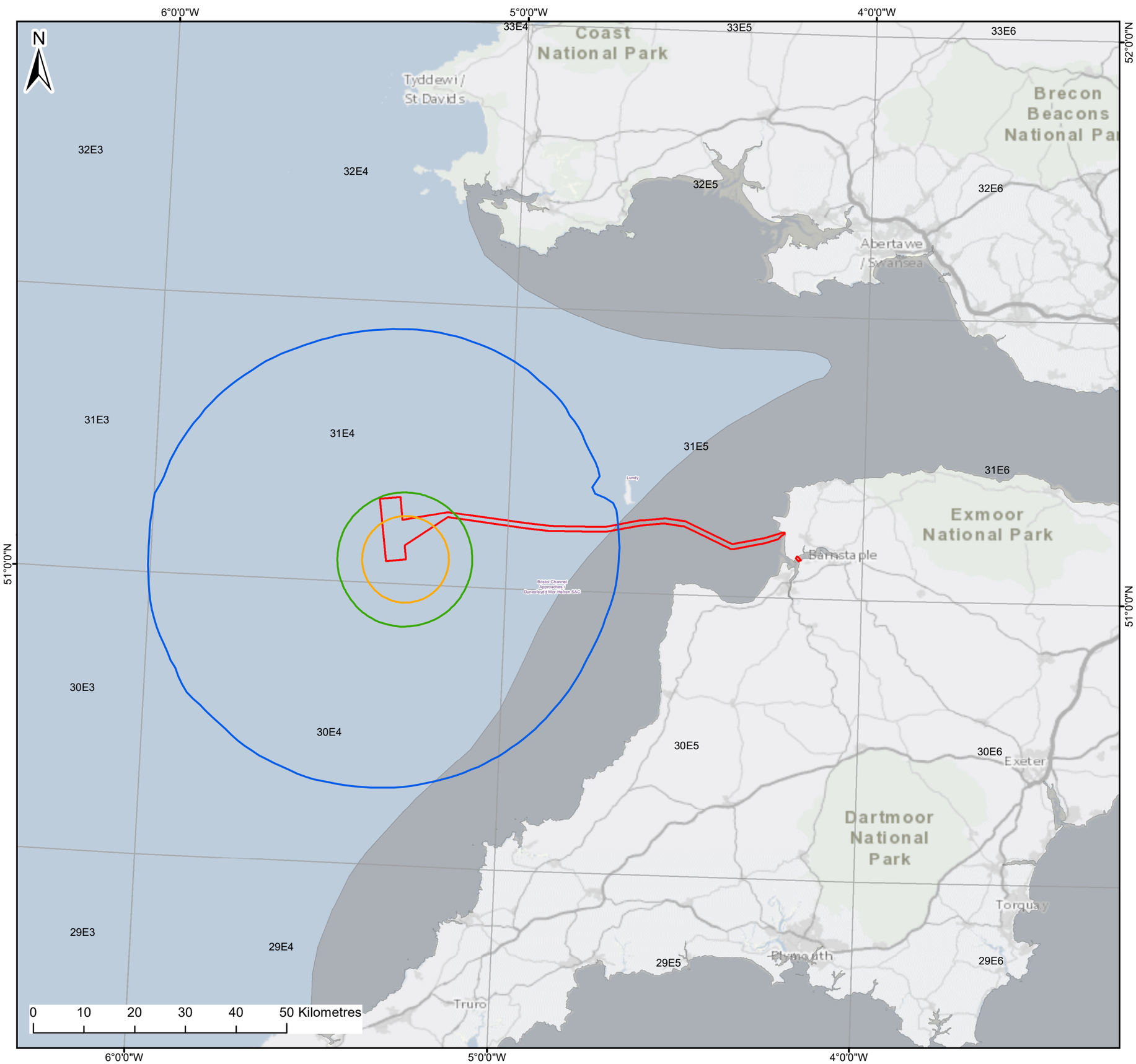
Royal HaskoningDHV
Enhancing Society Together



Legend:

- Offshore Development Area
- ICES Rectangle
- Whiting Nursery

WhCr OSS Unwtd SELcum (St) (Popper)

- 186 db
- 203 db
- 207 db

Client:	Project:
White Cross Offshore Wind Ltd.	White Cross Offshore Windfarm

Title: Whiting Nursery Stationary Model OSS

Figure:	Drawing No:
3	PC2978-RHD-ZZ-XX-DR-Z-0813

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
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Co-ordinate system: British National Grid

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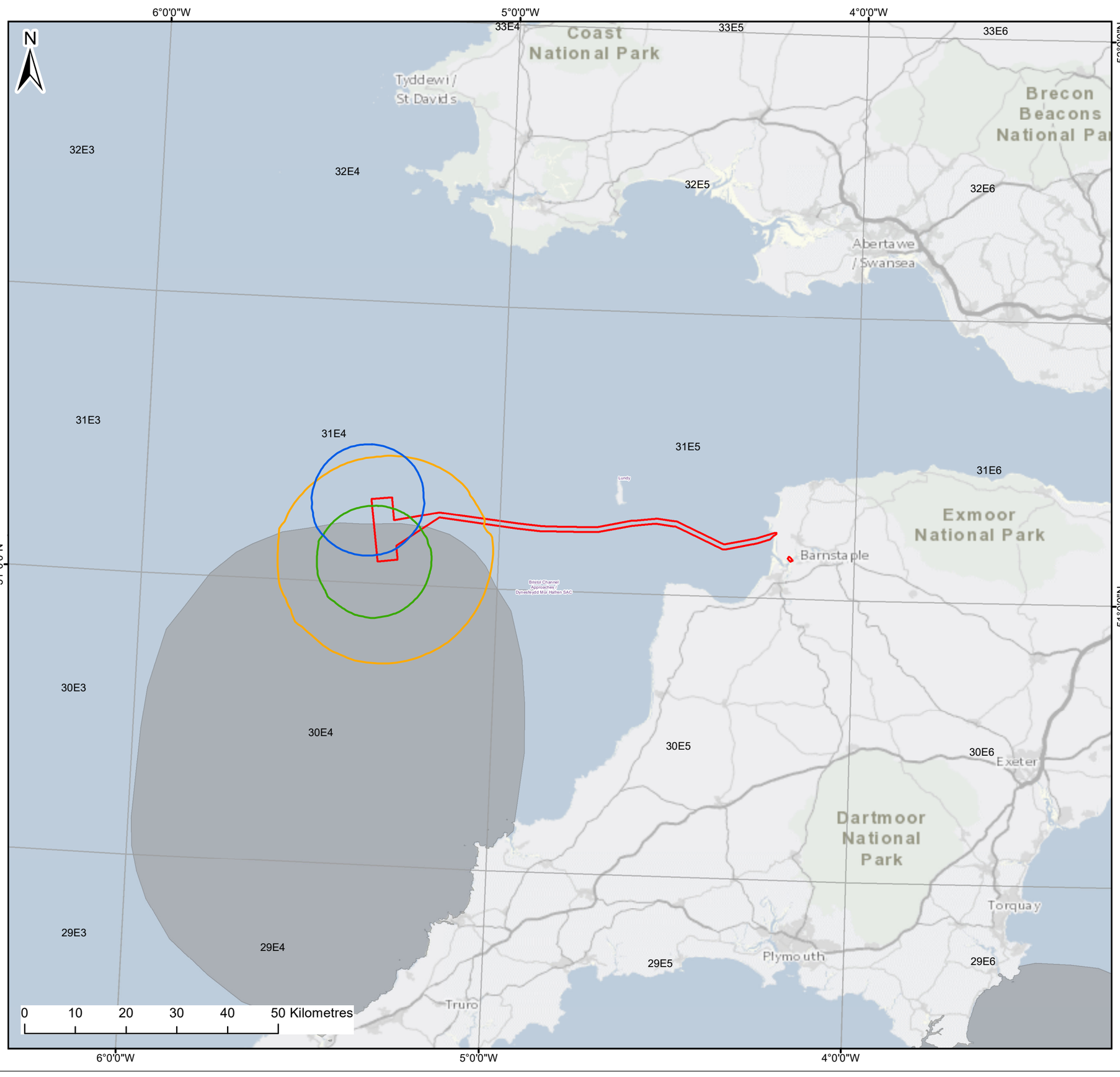

Legend:

- Offshore Development Area
- ICES Rectangle
- Cod Spawning Area
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  - 186db
- WhCr MoorSW Unwtd SELcum (Flee) (Popper)
  - 186db
- WhCr OSS Unwtd SELcum (Flee) (Popper)
  - 186db

Client:	Project:
White Cross Offshore Wind Ltd.	White Cross Offshore Windfarm

Title: Cod Spawning Fleeing Model

Figure: 4 | Drawing No: PC2978-RHD-ZZ-XX-DR-Z-0814

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Co-ordinate system: British National Grid

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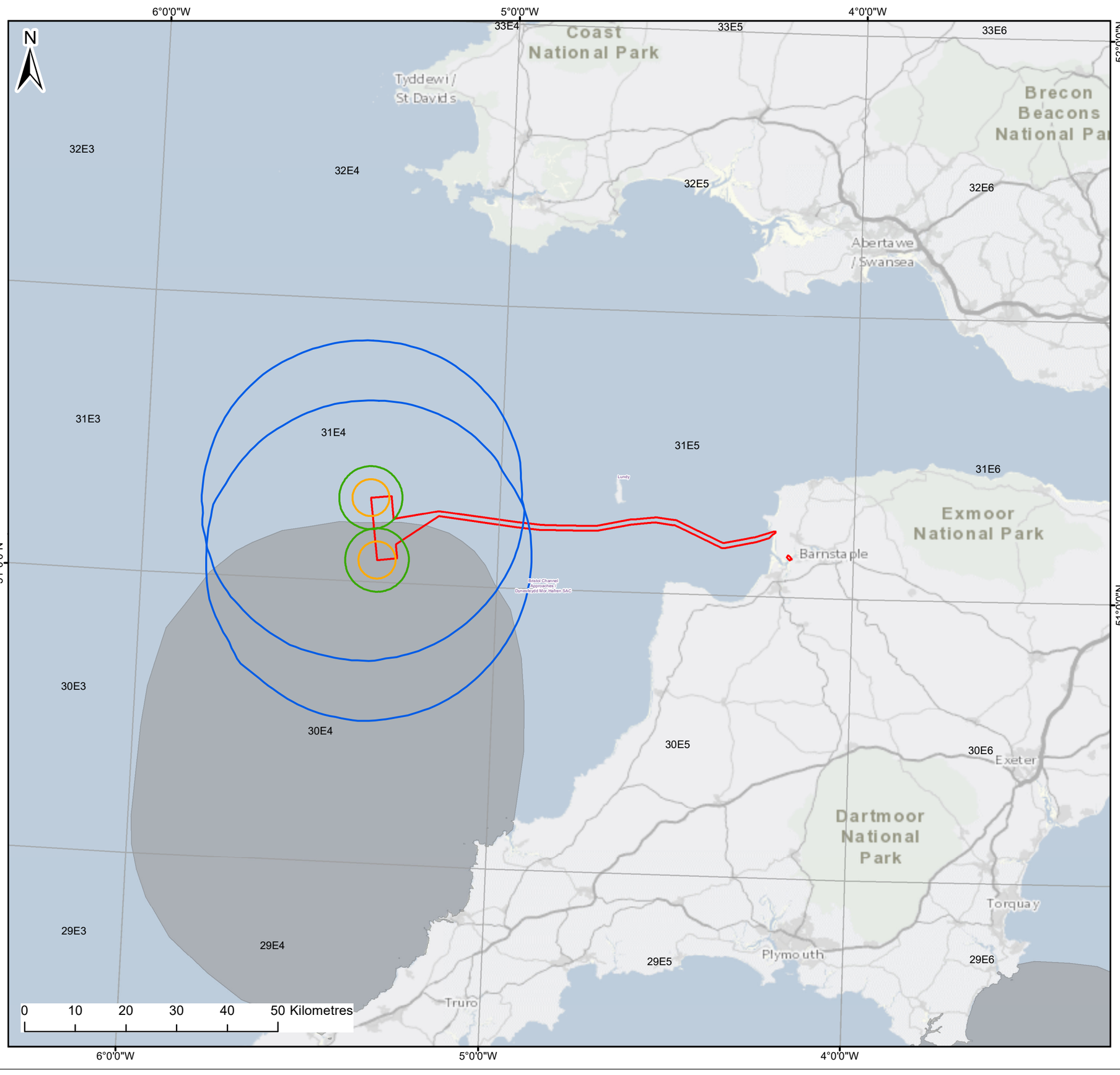
Enhancing Society Together



Legend:

- Offshore Development Area
- ICES Rectangle
- Cod Spawning Area

WhCr MoorNW Unwtd SELcum (St) (Popper)

- 186 db
- 203 db
- 207 db

WhCr MoorSW Unwtd SELcum (St) (Popper)

- 186 db
- 203 db
- 207 db

Client:	Project:
White Cross Offshore Wind Ltd.	White Cross Offshore Windfarm

Title:

Cod Spawning Stationary Model WTG

Figure: 5 | Drawing No: PC2978-RHD-ZZ-XX-DR-Z-0815

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Co-ordinate system: British National Grid

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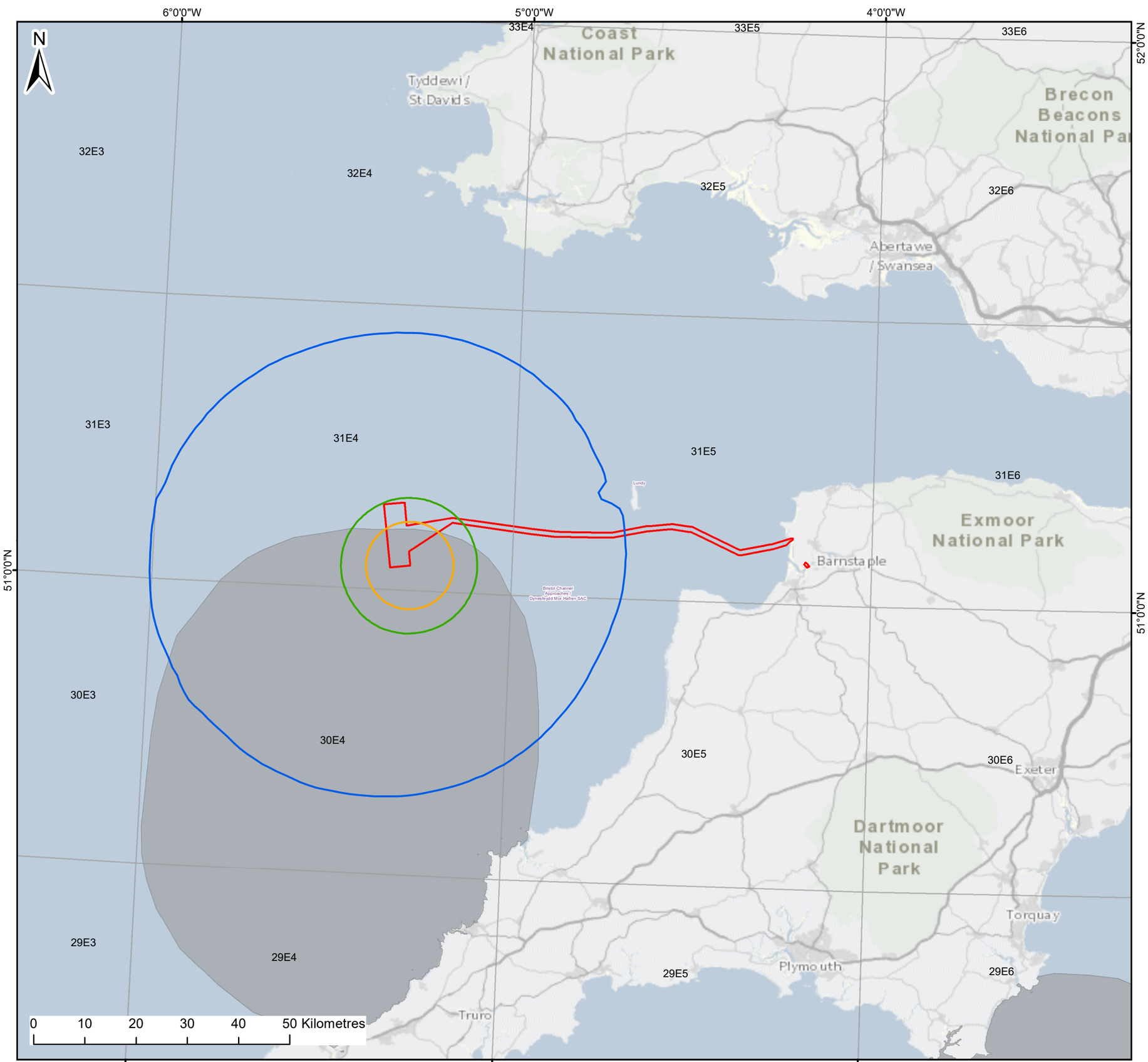
Royal HaskoningDHV
Enhancing Society Together



Legend:

- Offshore Development Area
- ICES Rectangle
- Cod Spawning Area

WhCr OSS Unwtd SELcum (St) (Popper)

- 186 db
- 203 db
- 207 db

Client:	Project:
White Cross Offshore Wind Ltd.	White Cross Offshore Windfarm

Title: Cod Spawning Stationary Model OSS

Figure: 6 | Drawing No: PC2978-RHD-ZZ-XX-DR-Z-0816

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
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Co-ordinate system: British National Grid

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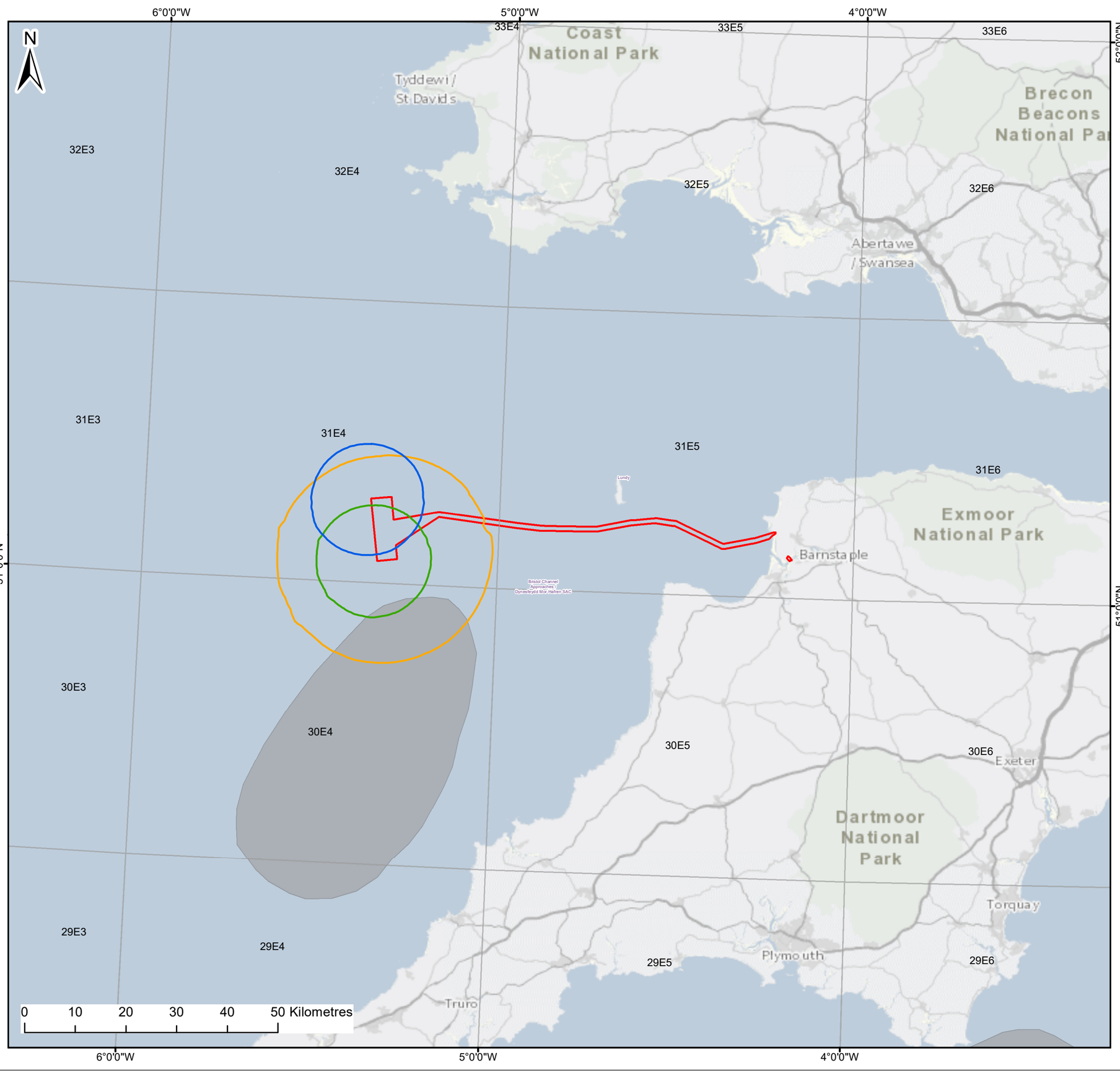
Royal HaskoningDHV
Enhancing Society Together



Legend:

- Offshore Development Area
- ICES Rectangle
- Whiting Spawning Area
- WhCr MoorNW Unwtd SELcum (Flee) (Popper)
  - 186db
- WhCr MoorSW Unwtd SELcum (Flee) (Popper)
  - 186db
- WhCr OSS Unwtd SELcum (Flee) (Popper)
  - 186db

Client:	Project:
White Cross Offshore Wind Ltd.	White Cross Offshore Windfarm

Title: Whiting Spawning Fleeing Model

Figure: 7 | Drawing No: PC2978-RHD-ZZ-XX-DR-Z-0817

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
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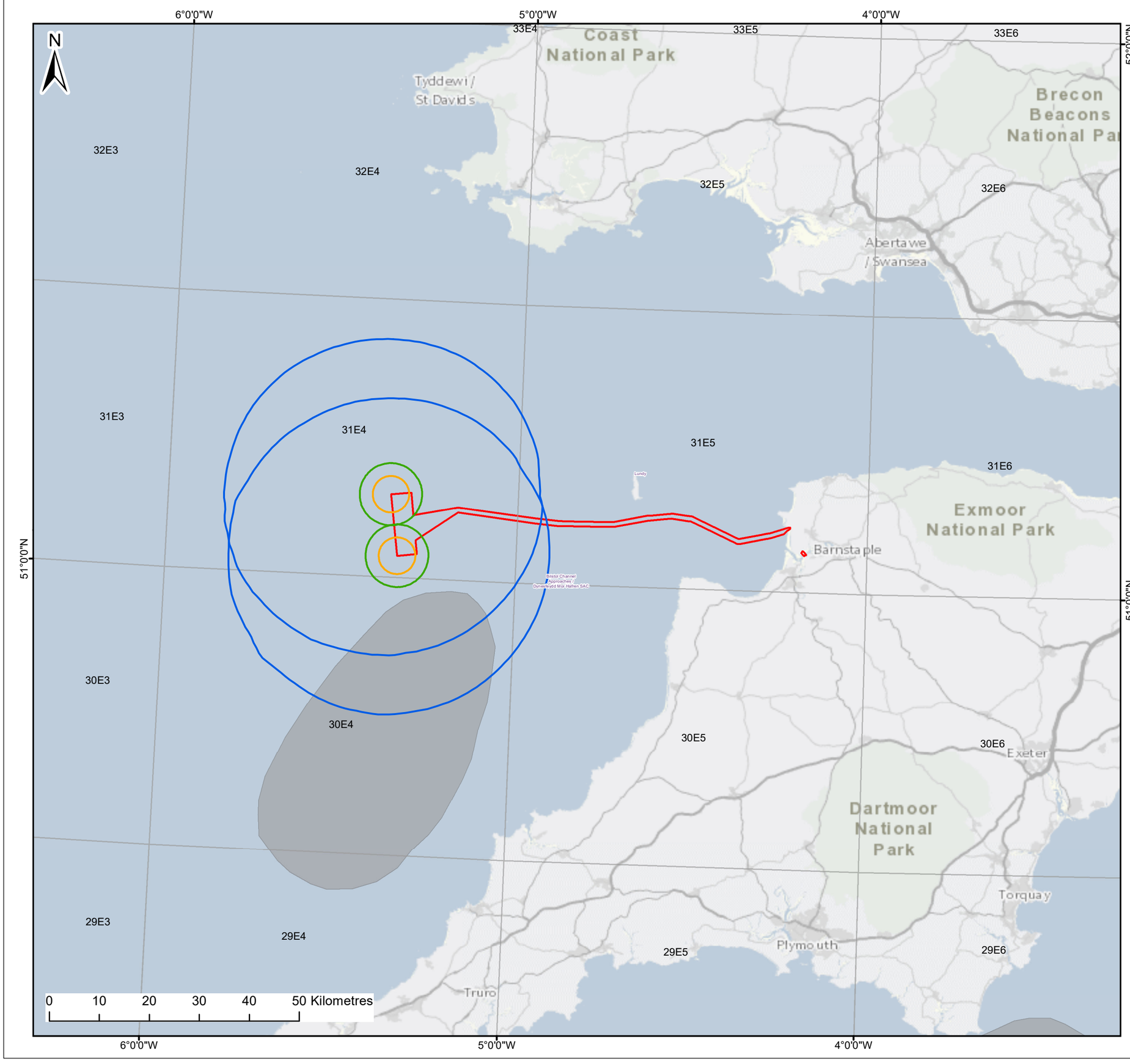
Co-ordinate system: British National Grid

WHITE CROSS

Royal HaskoningDHV
Enhancing Society Together



Legend:

- Offshore Development Area
- ICES Rectangle
- Whiting Spawning Area

WhCr MoorNW Unwtd SELcum (St) (Popper)

- 186 db
- 203 db
- 207 db

WhCr MoorSW Unwtd SELcum (St) (Popper)

- 186 db
- 203 db
- 207 db

Client:	Project:
White Cross Offshore Wind Ltd.	White Cross Offshore Windfarm

Title:

Whiting Spawning Stationary Model WTG

Figure: 8 | Drawing No: PC2978-RHD-ZZ-XX-DR-Z-0818

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P01	26/06/2024	MW	PP	A3	1:750,000

Co-ordinate system: British National Grid

WHITE CROSS

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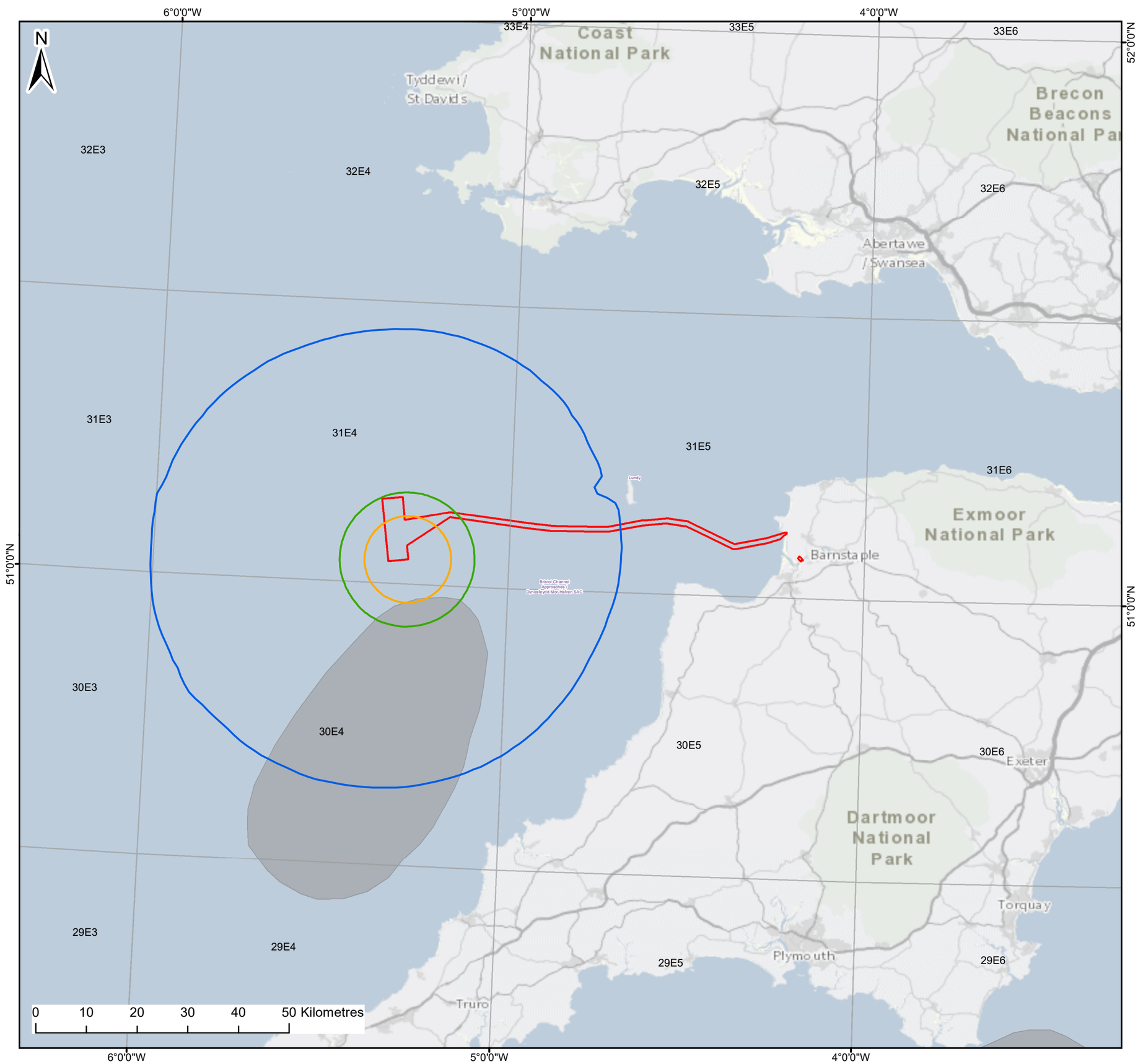

Legend:

- Offshore Development Area
- ICES Rectangle
- Whiting Spawning Area

WhCr OSS Unwtd SELcum (St) (Popper)

- 186 db
- 203 db
- 207 db

Client:	Project:
White Cross Offshore Wind Ltd.	White Cross Offshore Windfarm

Title: Whiting Spawning Stationary Model OSS

Figure: 9 | Drawing No: PC2978-RHD-ZZ-XX-DR-Z-0819

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P01	26/06/2024	MW	PP	A3	1:750,000

Co-ordinate system: British National Grid

WHITE CROSS

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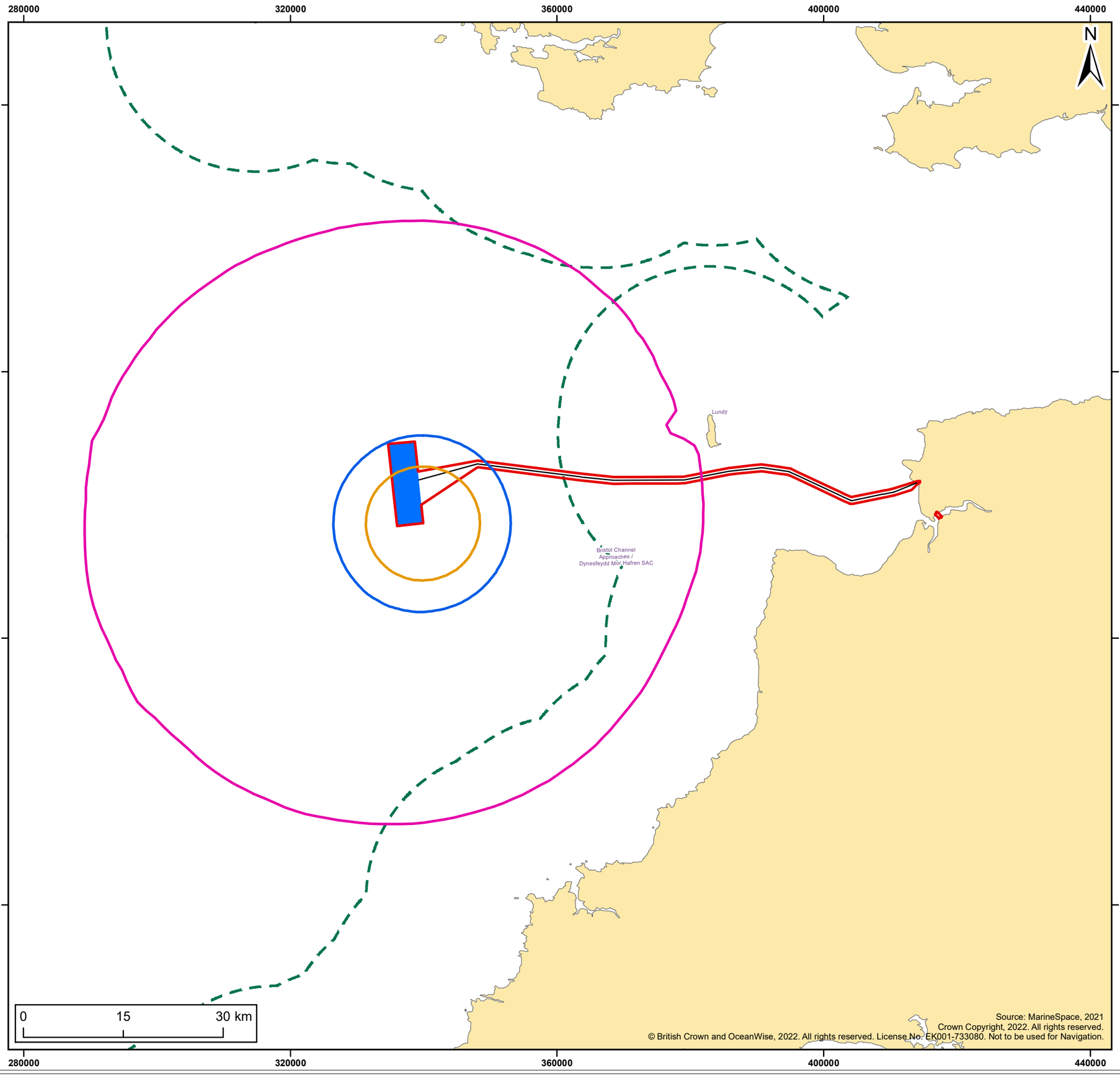

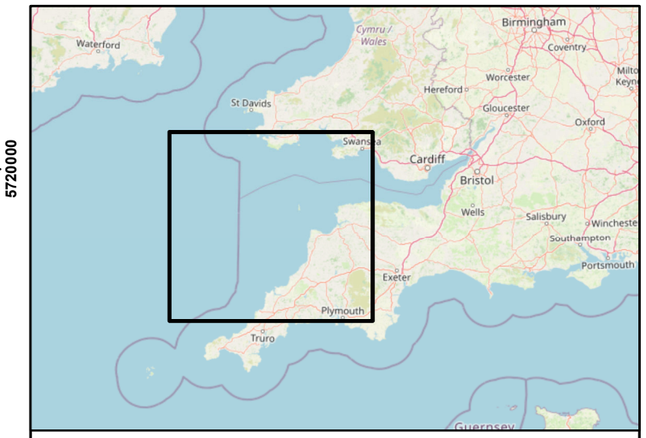

Legend

- Offshore Export Cable
- Offshore Development Area
- Windfarm Site
- UK 12nm limit

UWN Contours

- 186dB SELcum – Temporary Threshold Shift
- 203dB SELcum – Recoverable Injury
- 207dB SELcum – Mortality and Potential Mortal Injury

Client: Offshore Wind Ltd.	Project: White Cross Offshore Windfarm

Title: Impact ranges for impact piling modelling at the SE (OSS) location using the unweighted SELcum pile driving criteria from Popper *et al.* (2014) for species of fish assuming stationary animals

Figure: | Drawing No: PC2978-MSP_ZZ_XX_DR_Z_0312

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P01	13/02/2024	NB	IW	A3	1:570,680

Co-ordinate system: WGS 1984 UTM Zone 30N

WHITE CROSS

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MarineSpace
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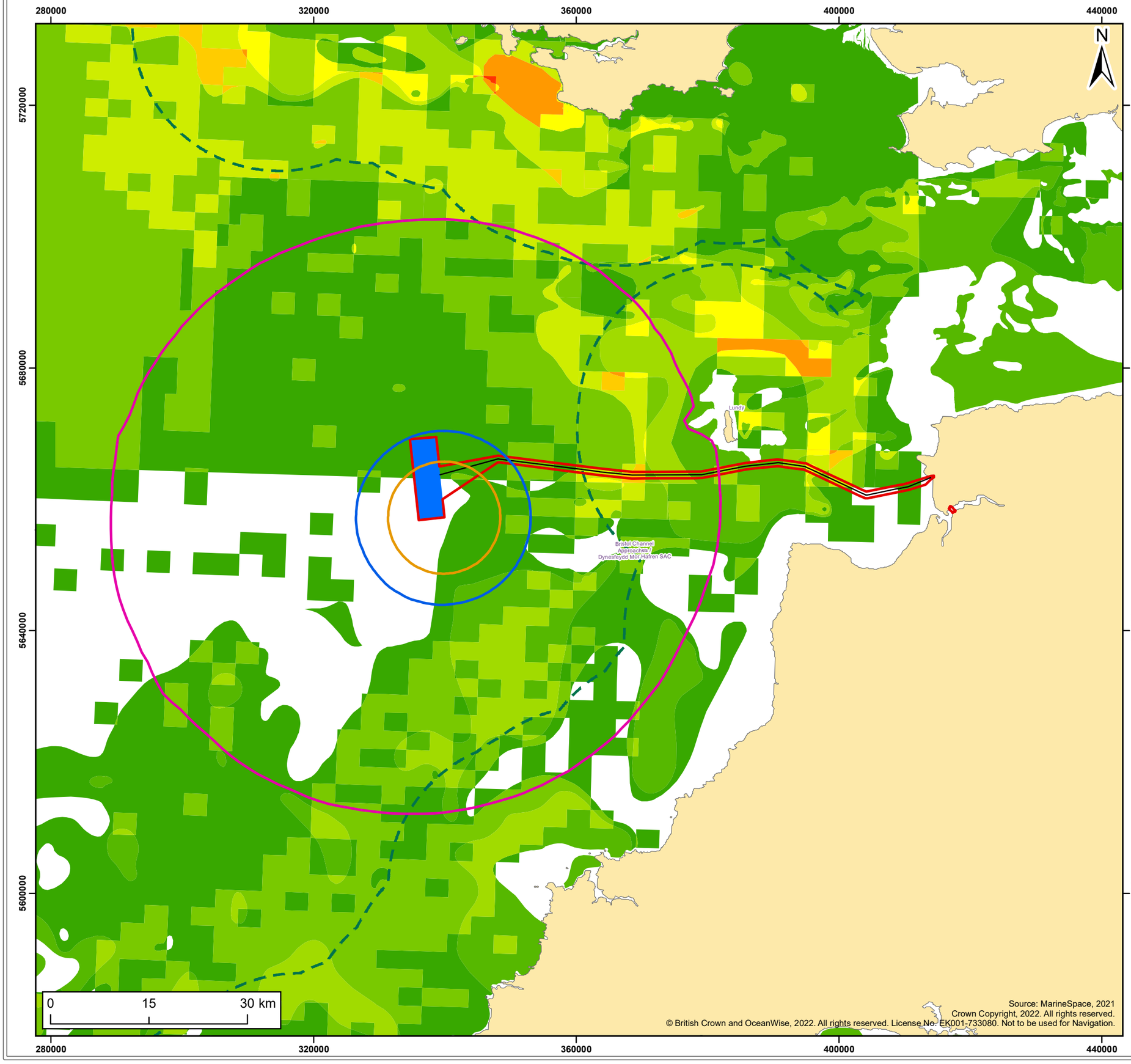

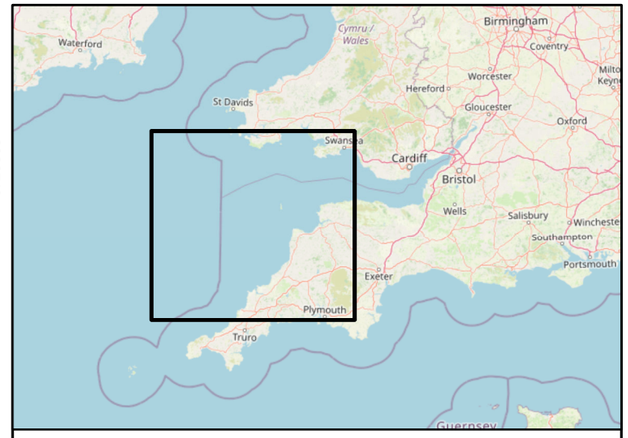

Legend

- Offshore Export Cable
- Offshore Development Area
- Windfarm Site
- UK 12nm limit

UWN Contours

- 186dB SELcum – Temporary Threshold Shift
- 203dB SELcum – Recoverable Injury
- 207dB SELcum – Mortality and Potential Mortal Injury

Herring spawning potential

- 2 (Low)
- 3 (Low)
- 4 (Low)
- 5 (Medium)
- 6 (Medium)
- 7 (Medium)
- 8 (Medium)
- 9 (High)
- 10 (High)
- 11 (High)
- 12 (High)

Client:	Project:
Offshore Wind Ltd.	White Cross Offshore Windfarm

Title: Impact ranges for impact piling modelling at the SE (OSS) location using the unweighted SELcum pile driving criteria from Popper *et al* ., (2014) for species of fish assuming stationary animals alongside herring spawning potential based on Reach *et al*., (2013)

Figure: | Drawing No: PC2978-MSP_ZZ_XX_DR_Z_0312

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P01	13/02/2024	NB	IW	A3	1:570,680

Co-ordinate system: WGS 1984 UTM Zone 30N

WHITE CROSS

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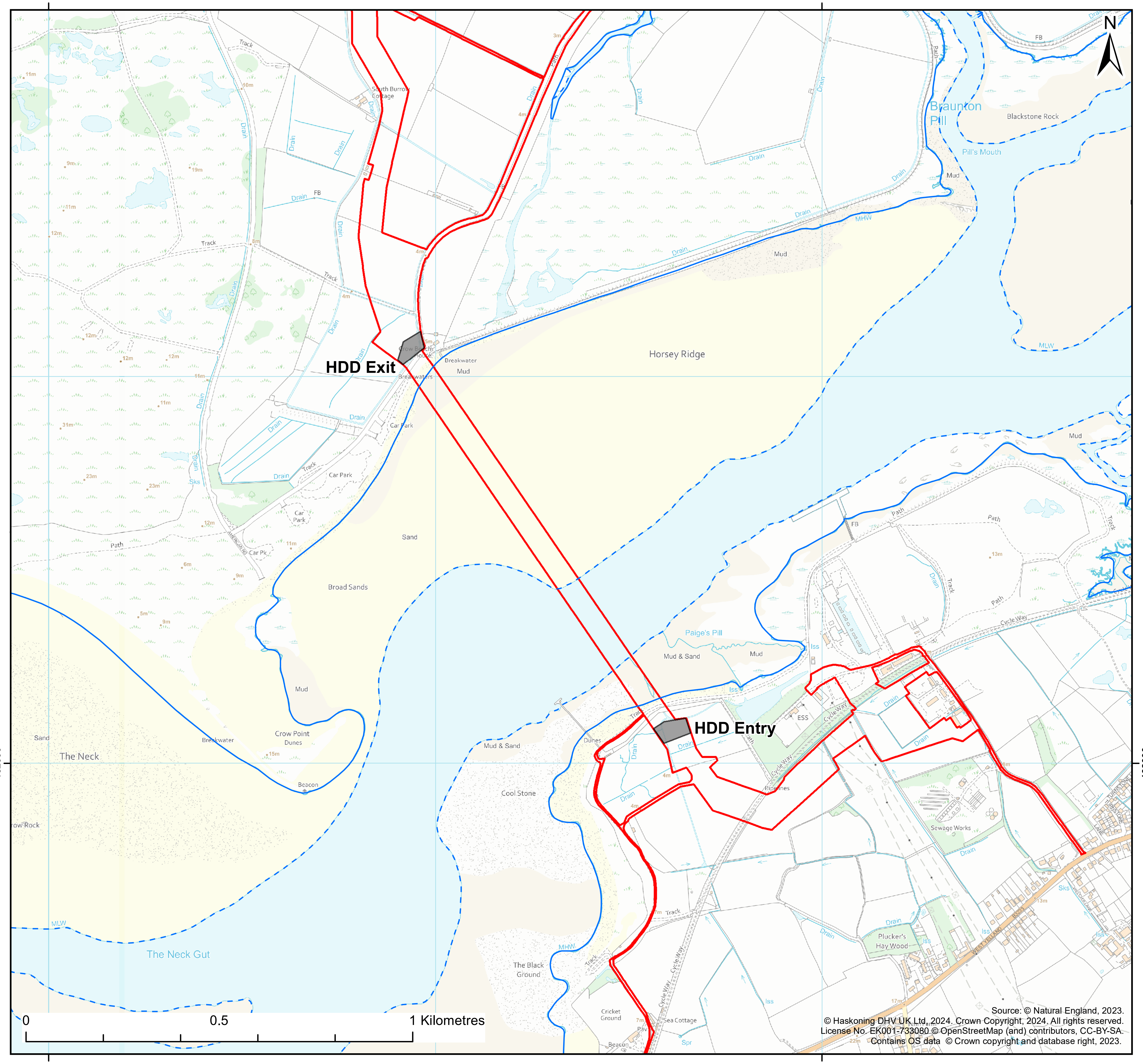
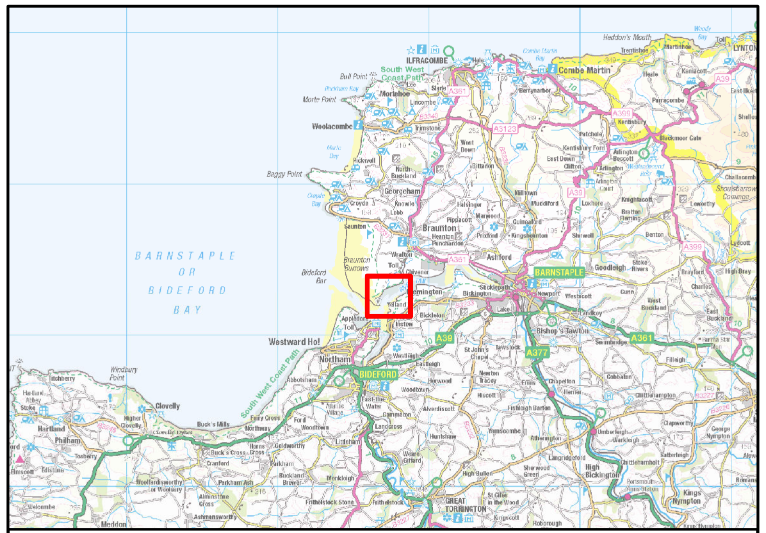
Annex 3 Taw Crossing





Legend:

- Onshore Development Area
- High Water Mark
- Low Water Mark
- HDD Location

Client:	Project:
White Cross Offshore Wind Ltd.	White Cross Offshore Windfarm

Title: Taw Crossing

Figure: 14 Drawing No: PC2978-RHD-ZZ-XX-DR-Z-0014

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P02	07/06/2024	MW	AB	A3	1:10,000
P01	22/11/2023	AB	CB	A3	1:10,000

Co-ordinate system: British National Grid

WHITE CROSS

Royal HaskoningDHV
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Annex 4 Noise Modelling Report Correction

ID 2.5 in Section 2.1.2 noted the following comment: "*Table 2-11 within the Noise Modelling Report states that levels for a 50 % response was observed in fish from Hawkins et al. (2014). Please note that the Hawkins et al. (2014) paper does not refer to unweighted peak sound pressure levels. MMO requests that the reference to the thresholds of 173 dB re 1 µPa and 168 dB re 1 µPa unweighted peak are removed from Table 2-11 to avoid confusion.*"

The Applicant notes the potential for confusion and agrees with the MMO's statement. However, an update to the chapter isn't considered necessary. The following correction is shown, first with the original table, then followed by the correction that is proposed.

Table 3-1 Levels where a 50% response was observed in fish from Hawkins et al. (2014)

Noise metric	Observed noise level for 50% response
Unweighted SPL_{peak}	173 dB re 1 µPa
	168 dB re 1 µPa
Unweighted $SPL_{peak\text{-}to\text{-}peak}$	163 dB re 1 µPa
Unweighted SEL_{ss}	142 dB re 1 μPa^2s
	135 dB re 1 μPa^2s

Table 3-2 Levels where a 50% response was observed in fish from Hawkins et al. (2014)

Noise metric	Observed noise level for 50% response
Unweighted $SPL_{peak\text{-}to\text{-}peak}$	163 dB re 1 µPa
Unweighted SEL_{ss}	142 dB re 1 μPa^2s
	135 dB re 1 μPa^2s

The change is proposed for the following tables, using the same technique of showing the original table first and the corrected table afterwards.

Table 3-3 Summary of the impact ranges for impact piling modelling at the SE (OSP) location using the observed levels from Hawkins et al. (2014)

Hawkins *et al*. (2014)		Area	Maximum range	Minimum range	Mean range
Unweighted SPL_{peak}	173 dB	1400 km^2	22 km	20 km	21 km
	168 dB	2700 km^2	32 km	28 km	29 km
Unweighted $SPL_{peak\text{-}to\text{-}peak}$	163 dB	8000 km^2	58 km	41 km	50 km
Unweighted SEL_{ss}	142 dB	7700 km^2	56 km	41 km	50 km
	135 dB	14000 km^2	81 km	44 km	66 km

Table 3-4 Summary of the impact ranges for impact piling modelling at the SE (OSP) location using the observed levels from Hawkins et al. (2014)

Hawkins *et al*. (2014)		Area	Maximum range	Minimum range	Mean range
Unweighted $SPL_{peak\text{-}to\text{-}peak}$	163 dB	8000 km^2	58 km	41 km	50 km
Unweighted SEL_{ss}	142 dB	7700 km^2	56 km	41 km	50 km
	135 dB	14000 km^2	81 km	44 km	66 km

Table 3-5 Summary of the impact ranges for impact piling modelling at the NW (mooring) location using the observed levels from Hawkins et al. (2014)

Hawkins *et al*. (2014)		Area	Maximum range	Minimum range	Mean range
Unweighted SPL_{peak}	173 dB	600 km^2	14 km	14 km	14 km
	168 dB	1400 km^2	22 km	20 km	21 km
Unweighted $SPL_{peak\text{-}to\text{-}peak}$	163 dB	54 km^2	45 km	37 km	41 km
Unweighted SEL_{ss}	142 dB	4400 km^2	40 km	34 km	37 km
	135 dB	9100 km^2	61 km	45 km	54 km

Table 3-6 Summary of the impact ranges for impact piling modelling at the NW (mooring) location using the observed levels from Hawkins et al. (2014)

Hawkins *et al*. (2014)		Area	Maximum range	Minimum range	Mean range
Unweighted $SPL_{peak\text{-}to\text{-}peak}$	163 dB	54 km^2	45 km	37 km	41 km
Unweighted SEL_{ss}	142 dB	4400 km^2	40 km	34 km	37 km
	135 dB	9100 km^2	61 km	45 km	54 km

Table 3-7 Summary of the impact ranges for impact piling modelling at the SE (OSP) location using the observed levels from Hawkins et al. (2014)

Hawkins *et al*. (2014)		Area	Maximum range	Minimum range	Mean range
Unweighted SPL_{peak}	173 dB	610 km^2	14 km	14 km	14 km
	168 dB	1400 km^2	22 km	21 km	21 km
Unweighted $SPL_{peak\text{-}to\text{-}peak}$	163 dB	5300 km^2	45 km	38 km	41 km
Unweighted SEL_{ss}	142 dB	4400 km^2	41 km	35 km	37 km
	135 dB	9000 km^2	62 km	45 km	54 km

Table 3-8 Summary of the impact ranges for impact piling modelling at the SE (OSP) location using the observed levels from Hawkins et al. (2014)

Hawkins *et al*. (2014)		Area	Maximum range	Minimum range	Mean range
Unweighted $SPL_{peak\text{-}to\text{-}peak}$	163 dB	5300 km^2	45 km	38 km	41 km
Unweighted SEL_{ss}	142 dB	4400 km^2	41 km	35 km	37 km
	135 dB	9000 km^2	62 km	45 km	54 km