Marine Licence Application
Stakeholder Comment Clarifications

Llŷr Floating Wind Limited

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SIGNATURES					
A1	23/05/2025	For Issue	M Murray	D Keenlyside	M Murray
Rev	**Date**	**Purpose of issue**	**Prepared by**	**Checked By**	**Approved By**

	A	B	C	D	E
1		Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
2		1	1.0 National Security	**National Security** Significant concerns have been raised by the Ministry of Defence (MoD) who have objected to the project. This is due to the export cable route running through Danger Areas D113A and D113B. Policy DEF_01 of the Welsh National Marine Plan (WNMP) states that 'consent for such proposals will only be granted where the MoD is satisfied that the proposal will not cause unacceptable risk to defence and national security interests', which includes the use of exercise areas. Given the concerns raised by the MoD, we strongly recommend you discuss the comments made with them directly and provide evidence of a working position. Due to the Safeguarding policy DEF_01 of the WNMP, we would be unable to proceed if the MoD objection to the project remains	Llŷr Floating Wind have agreed with the MOD/DIO to insert a condition into the Marine Licence/Section 36 consent to ensure that an Access and Communications Protocol is agreed and implemented with the DIO Castlemartin before any project offshore activities commence and that the agreed protocol is maintained throughout the lifetime of the project. This includes no works will be undertaken in Castlemartin Offshore Danger Area D113B. The following suggested condition is to be included in the Marine Licence to address the cable route through Danger Area D113A: "*The undertaker must ensure that an Access and Communications Protocol is agreed and implemented with the DIO Castlemartin before any project offshore activities commence and that the agreed protocol is maintained throughout the lifetime of the project* ." As a consequence the DIO/MOD have agreed to withdraw their objection to the Marine Licence application.
3		2	2.2 Physical Processes	**Horizontal Directional Drilling (HDD)** Further information and assessment of the construction phase for the HDD exit pits is required. Clarification is sought regarding details of the construction methods that impact the assessment, such as the proposed material planned to be left on the seabed post-construction. NRW A also indicates that there are potential impacts to waves and currents during the construction phase of the HDD exit pits and that this should be assessed on its own, independently from the operation and maintenance assessment. NRW A requests evidence that a 3 m depth is sufficient for HDD exit pits to remain buried without the requirement for additional cable protection throughout the operation and maintenance phase, taking into consideration the impacts of storm events over the lifetime of the project. If there is a possibility that the HDD exit pits could become exposed, the MLT seeks clarification on the proposed plans or mitigation measures that would be used.	The detailed clarification on the HDD approach is addressed in each of the specific comments. however in response to the aspects highlighted by NRW - MLT: The material excavated to create the HDD exit pits will be the material used for the backfilling of the HDD exit pits. If required, the preference in a similar fashion to onshore, the first 1m of seabed sediment/material will be stockpiled separately to the rest of the material and in the infilling, the material will be backfilled, with the 1m seabed 'top-sediment' filled in above it. The values provided are worst case maximums. The Llŷr Project may not need to construct an HDD exit pit, as the base case plan is to punch out to the seabed surface with HDD, and then carrying out a post lay burial on the HDPE duct/cable once installed. This would minimise the disturbance. The HDD exit pits, if required, will be excavated and reinstated within 4 weeks, there will be not required for maintenance dredging, nor should there be any residual hydrodynamic process to mitigate. Potential impacts to sediment transport, both directly and indirectly via changes to wave and current climate during the construction phase of the HDD exit pits are assessed in Volume 3: Chapter 17 (Section 7.8.1, para 129-135). Paragraph 103 (the source of the quoted statement) relates to Potential Changes to Sediment Transport Systems by Changes in Wave and Current Climate caused by other infrastructure. From para 102 - The installation of offshore export cable protection, floating platform foundations with WTGs and/or the presence of anchoring structures all have the potential to result in a localised blockage of waves, tides and sediment transport. This blockage will commence when offshore construction begins, increasing incrementally up to the RWC, which is represented by the fully operational proposed Project. Explicit assessments of the impact of this type of blockage for stages of partial construction of the project are not usually undertaken. Assessments for the full MDS blockage case during the operational phase are provided in Volume 3: Chapter 17 (Section 17.8.2).
4		3	2.2 Physical Processes	**Modelling Parameters** NRW A have stated that insufficient information has been provided with respect to the methodology of the empirical modelling approach applied. NRW A request a methodology statement or technical note, outlining the details of the proposed project-specific assumptions used in the empirical Suspended Sediment Concentration (SSC) plume model . Without an understanding of the hydrodynamic and sediment characteristics applied to the model, NRW A cannot appropriately assess the SSC impact and the environmental assessments based on the modelled results.	Potential cumulative increases in SSC and associated changes in bed level during construction are assessed in Volume 3: Chapter 17 (Section 7.11.3, para 234-241). This section outlines the principles and (limited) circumstances in which two or more sediment plumes might combine to produce a cumulative effect (which may or may not be additive in terms of extent, duration or SSC magnitude, depending on the relative location and nature of the plume sources). During a clarification meeting (25/3/25), additional assessment was requested for the particular (very unlikely) case of two cable lay vessels working simultaneously in relatively close proximity (realistically not closer than 1 nautical mile or 1.85km) and at a similar time (realistically passing a similar point within 3.5-4.5 hours, based on a representative high cable lay rate of 400-500m/hr). The majority of the disturbed sediment volume, comprising sand and gravel sized sediment, will resettle to the seabed within relatively short distances (tens to a few hundred metres) and timescales (less than 30 to 60 minutes), depending on the height of ejection, current speed and grainsize. Due to the limited spatial extent and short duration of each plume, and the realistic minimum separation between the sources, there is highly unlikely to be any cumulative (spatially overlapping) effects in terms of seabed deposition or SSC. Finer sediments that remain in suspension for longer will be advected away from the moving source by tidal currents in a narrow plume. The SSC in the plume becomes rapidly diluted to lower concentrations with time and therefore with distance downstream. Due to the limited spatial extent of each plume, and the realistic minimum separation between the sources, there is highly unlikely to be any additive cumulative (spatially overlapping) effects leading to SSC higher than that assessed for single activities. The total area simultaneously affected by the multiple plumes will be proportionally larger. Sensitive receptors downstream of the cable route might experience a longer duration of elevated SSC as a result of two or more consecutive plumes being advected over a specific location. However, the absolute SSC in each of the (partially dispersed) plumes is expected to be relatively low in absolute terms (less than tens to hundreds of mg/l) and within the natural range of variability (e.g. similar to that naturally arising during a large storm event). Also, the duration of measurable effect on any particular receptor location will be limited (in the order of minutes) as the relatively narrow plume is advected past.
5		4	2.2 Physical Processes	**Worst-case Scenario** NRW A notes that there are inconsistencies in the reporting of project design details, for example, in relation to the location for the HDD exit pits or the impacts associated to the export cable protection around Turbot Bank. NRW A have concerns that the worst-case scenario may not have been assessed and therefore clarification is sought on this matter.	We confirm that the export cables will be routed around the eastern end of Turbot Bank. The reference to the western end was made in error. The HDD exit pits will be between depths of 5m to 8m below LAT. 3 was a typo. The Applicant confirms that, as stated in Volume 1 Chapter 4, 'burial will be the preferred option of protection, where this is not possible, the export cables will continue to be surface laid within iron articulated pipe protection alongside Turbot Bank'. In Volume 3 Chapter 17, reference to 1.5 m berms along the OfECC as it 'passes between Turbot Bank and St Gowan Shoals' is a typo from an earlier design stage and do not form part of the project proposition. Clarifications on the specific concerns on, the HDD Location, embedded mitigation, CEA/in-combination for Marine Ornithology and Marine Mammal are addressed in each specific response to the NRW (A) advice relevant to each receptor groups.
6		5	2.2 Physical Processes	**Cumulative Impact Assessment** NRW A considers that further assessment is needed in relation to: the cumulative impact assessments of the SSC plume generation, the potential secondary impacts to hydrodynamics and sediment transport processes as a result of cable protection measures and sand wave levelling activities during construction, maintenance and operation phases.	As stated above, the majority of the disturbed sediment volume, comprising sand and gravel sized sediment, will resettle to the seabed within relatively short distances (tens to a few hundred metres) and timescales (less than 30 to 60 minutes), depending on the height of ejection, current speed and grainsize. Due to the limited spatial extent and short duration of each plume, and the realistic minimum separation between the sources, there is highly unlikely to be any cumulative (spatially overlapping) effects in terms of seabed deposition or SSC.

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7		6	2.3 Benthic Subtidal and Intertidal Ecology	**Worst-case Scenario** NRW A request that the potential impact pathway of the Offshore Export Cable Corridor (OfECC) intersecting and impacting the Pembrokeshire Marine SAC Annex 1 Reef Feature is included in the assessments as this is a realist worst-case scenario. Nevertheless, NRW A agrees that the proposed mitigation will allow the avoidance of adverse effect on the integrity of the Pembrokeshire Marine SAC Annex 1 Reef feature, e.g., additional post-consent surveys proposed as part of the Cable Specification and Installation Plan and Cable Burial Risk Assessment, and the subsequent careful placement of the articulated cable in sensitive areas.	The assessment has been based on the routing of the Offshore Cable Corridor through the Annex I reef. When in situ, the cable will be secured in place (either through the weight of the cable itself or through additional pins) and will be unable to result in scour to the surrounding Annex I habitat. On this basis, and that additional surveys will be undertaken and detail will be provided in an approved CBRA prior to works commencing, it is not considered that further assessment would contribute to / amend the conclusion of the assessment as the effects are considered to be not significant.
8		7	2.3 Benthic Subtidal and Intertidal Ecology	**Decommissioning** The Joint Nature Conservation Committee (JNCC) points out that the impacts of decommissioning should be considered at this stage to understand the effects of the totality of the project and refers you to the OEUK 'Designing for Decommissioning of Offshore Wind' guidelines and assessing decommissioning based on available technologies now and not in the future. Please ensure these comments are reviewed and addressed in your response. Additional comments and clarification requests relating to benthic ecology have been raised by NRW A and JNCC in their responses. Please ensure these comments are reviewed and addressed in your response.	The EIA has taken a worst-case scenario for decommissioning, taking seabed interaction to be the same as it is for construction, using equipment and techniques that are currently available, as per the OEUK guidance mentioned. The assessment has also taken a worst-case scenario approach to allow for consideration of the whole project should only current techniques be available. Thus, on this basis it has been assumed that all infrastructure from the proposed Project will be removed during decommissioning and that this is likely to be undertaken using equipment that is similar to that used to install the infrastructure. Thus, decommissioning has assumed a reversed process to the installation process which includes disturbance to the seabed at a level experience during installation even though it is generally accepted that decommissioning via full removal would have a lower impact than installation. Accordingly, the area of seabed impacted during decommissioning would be similar to the area assessed as impacted during construction. It is possible that by the time the project is decommissioned there may be more environmentally favourable techniques that can be used. In addition, assessments to be undertaken at the time may indicate the best environmental approach is to leave infrastructure in place. In both cases the worst-case scenario using current techniques in the decommissioning methodology ensures other scenarios are encompassed within the scenario assessed.
9		8	2.4 Marine Water and Sediment Quality (MW&SQ)	NRW A are satisfied that appropriate impact pathways have been accounted for and that the relevant aspects of the marine environment have been assessed for impact. However, minor comments and clarification requests have been raised by NRW A in their response. Please ensure these comments are reviewed and addressed in your response.	Clarifications on the specific concerns raised by NRW(A) are detailed against each comment raised.
10		9	2.5 WFD: Coastal and Transitional Water Bodies	**Water Bodies** NRW A considers that Pickleridge Lagoon should be screened into the WFD assessment.	Pickleridge Lagoon is at least 8km from the project area and so has not been screened into the WFD assessment. The only pathway with the potential to affect distant waterbodies is the transportation of suspended sediments from installation activities and HDD drilling fluids. However, not only is this WFD waterbody outside the screening distance the location within an inlet on the other side of the entrance to Milford Haven, and any effects are unlikely.
11		10	2.5 WFD: Coastal and Transitional Water Bodies	**Protected Areas** NRW A considers that Lower Cleddau Shellfish Water Protected Area should be included in the WFD Compliance Assessment as it falls within the Zone of Influence. NRW A also advise that Marloes Sands, Dale, Sandy Haven, West Angle and Freshwater West Bathing Waters are included in the assessment and considered accordingly. Furthermore, Broadhaven South and Barafundle Bathing Waters should be considered for inclusion in the assessment.	The only Shellfish Protected Area on the NRW data portal is the Upper Cleddua Shellfish Water and as this is some considerable distance from the project area it has not been screened in. The bathing waters specified have not been included since they are outside the 2km required screening distance and are also beyond the zone of influence of all project impact pathways. The bathing waters specified have not been included since they are outside the 2km required screening distance and are also beyond the zone of influence of all project impact pathways.
12		11	2.5 WFD: Coastal and Transitional Water Bodies	**Physical Processes** The WFD compliance assessment should be updated in line with the required changes on the evaluation of impacts around the HDD exits pits mentioned in section 2.2.	The aspects identified in section 1.2. and section 2.2 have been clarified and addressed . Based on the responses, it is thought that the WFD compliance assessment does not need to be updated.
13		12	2.5 WFD: Coastal and Transitional Water Bodies	**Water Quality** NRW A advise that further information is needed on the mitigation of potential effects of accidental bentonite breakout (e.g., increase turbidity and associated effects) on bathing waters during HDD operations. NRW A request that this is considered as part of a Bathing Water Mitigation Plan which will require approval post consent prior to works taking place on the foreshore and in the nearshore.	Lĺŷr will ensure that consideration of the effects of accidental bentonite release on Bathing Water Quality, including the addressing the actions to be taken in the event of a bentonite breakout in the drilling plan and the PPEIRP, and will be discussed with NRW (A) during the consideration the Construction Environmental Management Plan. A Pollution Prevention and Emergency Incident Response Plan (PPEIRP) will form part of the environmental measures to be adopted during construction.
14		13	2.6 Fish and Shellfish	**Sandeel and Herring** NRW A agrees that the proposed development alone will not cause significant adverse effects on fish receptors. However, NRW A raises concerns with regards to the potential in-combination impacts to sandeel and herring, and advise that quantification of the impacted areas of sandeel habitat and herring spawning is assessed (from construction and disturbance impacts from piling). This should be carefully considered and robust relevant justification and/or additional information provided. A series of additional comments and clarification requests have been raised by NRW A in their response. Please ensure these comments are reviewed and addressed in your response.	The clarification to the potential impacts to sandeel and herring are addressed in the detailed comments
15		14	2.6 Fish and Shellfish	**Baseline Environment** Concerns were also raised by National Federation of Fishermen's Organisations (NFFO) and the Welsh Fishermen's Association (WFA) with many of the data sources used to characterise the baseline environment within Chapter 20 of the Environmental Statement (ES). Please ensure these comments are reviewed and addressed in your response.	The limitations of the individual commercial fisheries datasets are acknowledged and described in the ES. Therefore, multiple datasets have been sourced and analysed to build up a robust understanding of fishing activity in the study area. The datasets used represented those that are publicly available and contain the most recent data that is available at the time of application. In addition to the datasets, engagement with fisheries stakeholders was undertaken to aid the description of fishing activity in the study area. In summary, as stated against the specific comments, the baseline is considered to be thorough and sufficiently robust to inform EIA.
16		15	2.7 Marine Ornithology	**Cumulative Impact Assessment** NRW A and JNCC are largely satisfied with the assessments carried out relating to ornithology. However, concerns have been raised by both NRW A and JNCC with regards to the cumulative and in-combination impact assessment. It is considered that additional work is needed on the cumulative and in-combination assessments. The cumulative and in-combination assessment should consider impacts from relevant projects within the population or the foraging range of the relevant bird features. NRW A refer you to the figures in the Mona deadline 7 submission. Please see detailed comments in section 1.7.2.6 of NRW A response for more information. Additional comments and clarification requests have been raised by NRW A and by JNCC in their responses. Please ensure these comments are reviewed and addressed in your response.	The Lĺŷr project has engaged with both NRW(A) and the JNCC on clarifying the approach on the cumulative and in-combination assessment on marine ornithology. The clarification notes are attached and do not change the overall outcome of the Assessment (just a clarification on the approach and how the conclusion was reached). The detail of the information has been presented in the ES and clarification responses are provided against each specific concern raised by NRW(A) within the spreadsheet and provided within the 4 clarification notes.

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17		16	2.7 Marine Ornithology	**Protected Sites** Please note that Royal Society for the Protection of Birds (RSPB) has objected to the project due to the potential damaging impacts on the populations of Gannets, Guillemots and Manx Shearwaters of nearby protected sites. This should be carefully considered and robust relevant justification and/or additional information provided.	The Llŷr project considers that the assessments provided within the ES are appropriate and followed current good practice guidance from the SNCBs. NRW(A) and the JNCC have not raised any concerns with the quality of the technical assessments or the modelling undertaken by the Llŷr project for gannet, guillemot or Manx shearwater. The Llŷr project has engaged with both NRW(A) and the JNCC on clarifying the approach on the cumulative and in-combination assessment on marine ornithology. The clarification notes are attached and do not change the overall outcome of the Assessment (just a clarification on the approach and how the conclusion was reached). The detail of the information has been presented in the ES and clarification responses are provided against each specific concern raised by NRW(A) within the spreadsheet and provided within the 4 clarification notes.
18		17	2.8 Marine Mammals	**Marine Mammal Mitigation Plan (MMMP)** NRW A and JNCC have concerns that the Report to Inform Appropriate Assessment (RIAA) and the EIA is overly reliant on the MMMP as well as the Construction Environmental Management Plan (CEMP), to avoid conclusions of significant impact for the project alone, cumulatively and in-combination. The current outline MMMP only provides an overview for mitigation. As such, NRW A are unable to agree with the overall conclusions of the assessments until more information on the mitigation measures are provided. Detailed comments have been made on the MMMP throughout the response from JNCC and NRW A. Please ensure these comments are reviewed and addressed in your response.	The detailed comments made on the MMMP by JNCC and NRW(A) are addressed in the response. The requirement for an agreed MMMP secured post consent and prior to any offshore activities is as per a standard Marine Licence consent condition(s). To date all the UK MMMPs (of which the Llŷr project is aware) have focused on piling. Therefore it was reasonable to adopt this same focus for Llŷr. All mitigation measures to be adopted for all impact pathways listed will either follow the SNCB guidance and/or industry good practice that is current at the point (post-consent) that these measures are to be agreed, which is consistent with other Marine Licence consent decisions within Wales and the wider UK. The Llŷr project ES has provided sufficient information within a design envelope to allow a conclusion to be made, otherwise previous consent decisions for similar offshore wind developments would be under question. The NRW(A) assessment may be assisted by reviewing Volume 6: Appendix 32A – Mitigation Register, which also addresses piling noise, UXO clearance, entanglement, and other construction noise.
19		18	2.8 Marine Mammals	**Report to Inform Appropriate Assessment (RIAA)** JNCC and have concerns with some of the information presented in the RIAA. JNCC disagree with the decision to scope out certain impact pathways for both the project alone and in-combination. Particularly, barrier effects from mooring lines and cables between platform and anchors, and entanglement with mooring lines and cables. In addition, JNCC have stated that the adverse effect due to noise disturbance within the sites has not been assessed correctly.	The Llŷr project considers that the state of knowledge around most impact pathways for marine mammal interests, is too uncertain to be able to make any meaningful judgement in terms of numbers of animals impacted, certainly for the qualitative impact pathways. As density of animals at any project site will also vary over time, the Llŷr project gave consideration to the status of the species, and whether it occurs consistently or irregularly on-site, as more informative criteria rather than using an arbitrary number. Detailed clarifications are provided in the response to the JNCC comments.
20		19	2.8 Marine Mammals	**Effective Deterrent Ranges (EDRs)** JNCC and NRW A acknowledge your response to the fitness check in relation to the use of applying EDRs; however, they state that these have not been presented or used correctly.	As addressed within the specific comments, the use of EDRs within the HRA assessment was made for comparative illustrative purposes only. The number of animals impacted using uncropped dose response curve are provided in table 21-32 and have been taken through for later assessment (i.e. iPCoD). As shown in Volume 6: Appendix 8E, Table 8-22, EDR is used for area-based assessment of impacts from geophysical surveys. For porpoise, for example, Volume 6: Appendix 8E, Table 8-23, page 152, shows the area-based worst-case percentage daily footprint overlap with the Harbour porpoise SACs. For both SACs, it is less than the daily limit.
21		20	2.8 Marine Mammals	**Piling Duration** The worst-case scenario for impact piling duration assessed does not reflect what has been described for the proposed project. The design envelope describes the worst-case scenario of days piling as 20 days, whilst the worst-case scenario for impact piling assessed for marine mammal disturbance in the ES and the RIAA is for a maximum duration of 10 days. The project design envelope should be the level assessed for disturbance assessment; therefore, please confirm and assess the worst-case scenario for days of piling forming the project design. Additional points of clarification have been raised by NRW A relating to piling duration and are detailed within their response, please ensure these are reviewed and addressed within your response.	It is correct that the project envelope identifies the minimum number of days piling will be 20 and that the marine mammal disturbance assessment for impact piling in both the Environmental Statement (ES) and the RIAA has used for the piling duration a maximum 10 days as the worst-case scenario. The underwater modelling was carried out relatively early in the assessment process and the project envelope was updated after the modelling had been carried out. This was missed by the internal review process. However, regarding the nature, magnitude and extent of extending the maximum number of days piling to 20 - 45, the iPCoD model output based on 10 days of piling activity identifies the number of Harbour porpoise impacted population as being less than 3 animals (99.99 % of un-impacted population after 12 years) and 0 animals (100% of un-impacted population after 12 years) for Grey Seal - source Llŷr 1 Floating Offshore Wind Farm, Environmental Statement, Volume 3 : Chapter 21 – Marine Mammals - "Table 21-36 Harbour porpoise iPCOD modelling results" and "Table 21-38 Grey seal iPCOD modelling results". It would be a reasonable to state that if the number of days piling were times 4 to 40 it would result in no more than 12 Harbour porpoise and even fewer Grey seals being impacted, which is less than 1% of the total population of both species, which is negligible significance. In relation to piling duration, as stated in paragraph 142 of Volume 3 : Chapter 21 – Marine Mammals, Section 21.9 Assessment of Environmental Effects, "*A static animal scenario was modelled over a range of time periods (single strike, 0.5 hrs, 1 hr, 2 hrs, 3 hrs, and 4 hrs)* ." All other detailed questions are clarified within the spreadsheet.

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		21	2.8 Marine Mammals	**Noise and Disturbance** JNCC and NRW A have concerns with the assessment of magnitude of impact as no impact to the population (number of individuals) has been considered. Furthermore, noise impact assessment should be considered as a multiple event, as all the activities assessed will occur multiple times during the project. JNCC considers that cumulative sound exposure levels (SELcum) together with the sound pressure level are best practice and further justification is needed to justify an alternative approach to determine mitigation requirements to reduce the risk of auditory injury. Furthermore, JNCC considers that noise abatement technology or the use of acoustic deterrents should be included as an option in the outline MMMP given some of the predicted injury ranges using the SELcum metric. NRW A raises numerous concerns regarding the Underwater Noise Impact Study and requires clarification on M-weightings, logarithmic spreading model, magnitude criteria and piling among others. Please ensure these clarification requests are reviewed and addressed in your response. NRW A consider the impact from individually smaller disturbance events (e.g. vessel noise) is being overlooked and underestimated due to a lack of consideration of the potential effects of repeated disturbance events over a long period on the same population. The assessment conclusions appear to have been based on numbers disturbed from fixed points in time only. NRW A have noted that the Interim Population Consequences of Disturbance (iPCoD) modelling has not been carried out for disturbance of the bottlenose dolphin . NRW A disagree with the approach of using a disturbance threshold of 1% as a trigger for requiring iPCoD modelling of the population. Please ensure these comments are reviewed in full and addressed in your response. Additional comments and clarification requests relating to noise and disturbance have been raised by NRW A and by JNCC in their responses. Please ensure these comments are reviewed and addressed in your response.	Detailed clarifications are provided in the response to specific JNCC and NRW(A) comments raised.
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		22	2.8 Marine Mammals	**Entanglement** The impact of entanglement (primary and secondary) is considered minor/negligible based on mitigation and monitoring. However, JNCC and NRW A have concerns that the outline MMMP does not propose potential mitigation methods. JNCC and NRW A considers that the potential methods that could be applied to reduce the risk of entanglement should be included in the outline MMMP for assessment of their feasibility.	It is incorrect to state that there are no specific references to monitoring potential entanglement with mooring lines. The Llŷr project has specifically committed to the following within the register of (embedded) mitigation measures - Volume 6: Appendix 32A – Mitigation Register: Embedded Mitigation ID E232 - "*Mooring lines and floating inter-array cables will be inspected during the operation and maintenance phase using a risk-based adaptive management approach. Mooring line and cable inspections are expected to occur at a higher frequency initially and then reduce in frequency over a number of years, with changes to inspection periods based on evidence of risk garnered from the inspections* ." The Llŷr project team is unaware of any other examples where such information was provided in advance of knowing the final project design (principally, the number of turbines and number of mooring cables).
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		23	2.8 Marine Mammals	**Cumulative Impact Assessment** NRW A have raised concerns that there are inconsistencies with respect to the cumulative effects assessments and that a review of the projects screened into the cumulative effects and in-combination assessments is needed ensuring consistency across receptors with similar impact pathways.	It is appropriate to undertake a receptor-by-receptor consideration of cumulative and in-combination impacts. Other relevant developments to consider will not all be the same across receptor groups, and for the receptor's marine ornithology and marine mammals receptors the specific developments to consider for cumulative / in-combination also vary within the receptor group, i.e., it is a species specific consideration. These aspects are addressed in the specific concerns on CEA/in-combination for marine ornithology and Marine Mammals raised by the NRW (A) advice relevant to these receptor groups. It is unnecessary to 'update' the CEA cumulative and in-combination assessment. The Llŷr project team have clarified all the relevant and appropriate issues raised and conclude that no further information is required to be provided, nor is any review necessary, as the relevant information has already been presented in the application.
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		24	3. Onshore	**3.1 European Protected Species Terrestrial** NRW A consider the assessment is insufficient in relation to impacts on bats, otters and dormice. There is not sufficient information in the ES to confirm there will be no detrimental impact to these species and the conservation status of their populations. Please ensure the comments made by NRW A are reviewed and addressed in your response	Despite a request from Llŷr Floating Wind, NRW(A) did not provide specific input into the assessment pre-application due to inadequate specialist resource availability and advised the project to seek feedback from the Pembrokeshire County Council and Pembrokeshire Coast National Park Authority species specialists (ecologist) as an adequate alternative and to copy NRW in correspondence to keep them informed (which the Llŷr project did). The onshore ecological assessment was agreed with the Pembrokeshire County Council's Planning Ecologist & Conservation Team Leader addressing the approach, survey data to be utilised; including the current status of terrestrial ecology surveys, where the Llŷr ecology consultants (Aecom) used a Public Right Of Way (PROW) to obtain bat activity data from the two substation areas and a Preliminary Ecological Appraisal throughout the corridor. In addition to survey data collected by the Llŷr project, the assessment also used the information provided by the Erebus ES and Greenlink ES (surveys undertaken in 2018 and 2021), which has received consent for construction through essentially the same corridor for the same activity. For clarity, as stated within the Environment Statement, the buildings and structures with the potential to be affected by the proposed development will be subject to roost surveys prior to construction, in order to inform the final Construction Environmental Management Plan (CEMP). The CEMP will be finalised post-consent and submitted for approval to Natural Resources Wales (NRW) and the Local Planning Authority (LPA), in accordance with the Outline CEMP submitted as part of the planning application. The ES submitted confirmed that all identified structures have been assessed as having 'Low Suitability' for bat roosting. This is defined as: "*A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of year, but which do not offer sufficient space, shelter, protection, appropriate conditions, and/or suitable surrounding habitat for regular use or for use by large numbers of bats (i.e., unlikely to support maternity colonies or act as typical hibernation sites, though individual bats may hibernate sporadically).*" These structures are not considered capable of supporting roosts of high conservation significance, and as they are not being demolished, there will be no direct loss of bat roost habitat. In relation to otters, the impact on otter has been considered within the ES as features of designated sites, under Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended) - Documented in the 08D HRA Screening and 08E Appropriate Assessment. Impacts on otter as a protected species outside of the context of the SAC has been considered in the ES Chapter (though the assessment aims to avoid double counting of impacts on bats) and will be considered in the CEMP pre-construction. A habitat suitability assessment was undertaken by Llŷr Floating Wind. An otter presence/absence survey (to search for signs of otter or breeding/resting sites) could not be completed (due to an inability to agree access with the landowner at the time), so therefore the ES assumes presence of otter within the onshore development area based on desk based information from previous third-party assessments. As detailed by Pembrokeshire County Council in their response to the applications "*The confirmation of further survey works is welcome, including those for bats, dormice and badgers. Comments are mindful of pre-existing consultations with the PCC and PCNP planning ecologist, particularly those conversations around the acceptability of surveys and proposing 'worst case scenario' mitigation in light of these gaps. The LPA is in agreement with what has been suggested and put forward for the worst-case scenarios planning.*" The outline CEMP will be updated and finalised post consent in line with any relevant Section 36 and/or marine licence conditions and approved by NRW, Pembrokeshire County Council and the Pembrokeshire Coast National Park Authority. The surveys will inform the CEMP. The results of the pre-construction surveys will be used to determine the need for licences and the need for, and extent of, habitat and protected species management plans. Following completion of the surveys, the LPA [and NRW] will be informed of the survey results and recommendations for any associated
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		25	3. Onshore	**3.2 Designated Landscapes** Concerns have been raised by NRW A that there has been the underestimation of some seascape and visual effects on receptors within the National Park. Further consideration is required regarding impacts to seascape views and also impacts of night-time lighting. NRW A does not agree with the approach taken for the Seascape, Landscape and Visual Impact Assessment. NRW A considers that the effects have been under reported due to issues in the methodological approach as follows: • the sensitivity or susceptibility of receptors is underestimated with insufficient evidence provided; • the outcome of the assessment is lessened when combining judgement factors (e.g. high sensitivity and small magnitude of change should result in moderate rather than minor adverse effect) • there is a lack of consideration of sensitivity differences when calculating the outcome of the assessment (e.g., high and low sensitivity receptors combined with small magnitude of change resulting in the same overall minor effect). Further detail is described within NRW A response along with additional comments and clarification requests. Please ensure these comments are reviewed and addressed in your response.	Llŷr Floating Wind stands behinds the technical assessment detailed within the ES. However, in recognition of the concerns raised by NRW, the project team has reevaluated the Project Design Envelope and are proposing a commitment within the Project Design Envelope to limit the turbine tip height to 300 meters above Highest Astronomical Tide (HAT). The Llŷr project will provide a Lighting and Marking Plant (or Aviation Lighting Scheme Plan) to confirm lighting requirements necessary for both civil and military aviation safety and detail how they will be implemented for the lifetime of the Project prior to the commencement of the licenced activity. The navigational lights will be designed to be legally compliant with CAA SARG Policy Statement (g) "*If the horizontal meteorological visibility in all directions from every wind WTG generator in a group is more than 5 km, the intensity for the light positioned as close as practicable to the top of the fixed structure required to be fitted to any generator in the windfarm and displayed may be reduced to not less than 10% of the minimum peak intensity specified for a light of this type.*" Subject to the MCA, CAA/NATS and DOD approval the project will integrate a detection system to detect when visibility is greater than 5 km. When this is the case, the aviation lights will be dimmed to 10% of the 2,000 candela (cd) maximum so that the intensity of the light emitted would be 200 cd. The detailed clarifications in relation to the technical assessment are addressed in each of the relevant sections of the response.
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		26	4. Shipping and Navigation	Responses were received from the Maritime Coastguard Agency, Trinity House and the UK Hydrographic Office. Numerous conditions have been requested to be attached to the licence, which includes the requirement to submit the following: • Aids to Navigation Management Plan • Cable Specs Installation and Monitoring Plan • Emergency Response Co-operation Plan These will need to be submitted for approval prior to commencement of any Licensed Activities. The MLT ask that you review their responses in order to ensure you can comply with the requested conditions and address any comments they have raised. Following the removal of Llyr 2 from the application, and the realignment of Llyr 1 to be in in keeping with the flow of navigational traffic, The Chamber of Shipping has stated that most of their concerns have been allayed. However, they have made comments on the Navigational Risk Assessment which you should address in your response. The Royal Yachting Association has no objections to the project, however they have stated that the standard minimum blade tip clearance from the sea is set at 22m. There are inconsistencies in the ES between the 22m clearance being above Mean High Water Springs (MHWS) or Mean Sea Level (MSL). The proposal should ensure that the 22m clearance is maintained under all conditions for a floating structure.	The Llŷr project have reviewed the MCA, Trinity House and UKHO condition requested, are content to include their requirements as a post consent licence conditions and we are confident we can comply with the requested conditions. The comments raised by The Chamber of Shipping on the NRA are noted and have provided clarification responses to each comment on the relevant tab. In relation to the RYA comment, it is not an inconsistency as the Offshore turbines are floating, so will always be a minimum of 22 m above the water level, the MSL was used since this is the reference point that does not move with a floating structure - further detail can be found against the specific comment.
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		27	5. Aviation and Radar	The proposed development has been examined by technical and operational safeguarding teams within NATS and have deemed that the impacts to Aviation and Radar to be unacceptable. Please review the response from NATS carefully, and if necessary, engage with them directly, prior to providing your response. You may also wish to discuss this matter with the Civil Aviation Authority.	The project is progressing a mitigation contract for Llŷr 1 with NATS that started at the end of 2023. We have had confirmation that a proposed blanking solution recently secured internal approval within NATS to address the issues raised. As a consequence a Radar Mitigation Agreement is being progressed with NATS and the project is progressing an undertaking with the NATS legal representatives at Knights on this.
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29		28	6. Commercial Fisheries	The NFFO and the WFA have provided a joint response on the impacts to commercial fisheries. They have raised specific concerns in the reduction or loss of access to established fishing grounds as well as the reduction in, or temporary loss of access to, established fishing grounds and displacement due to gear conflict. Please ensure these comments are reviewed and addressed in your response, including clarification on how the assessment of a complete exclusion from an area for the lifetime of the project changes the conclusions of the ES. The NFFO and WFA welcome the commitment to the development of a Fisheries Liaison and Co-Existence Plan; however, they have concerns about the specific mitigation that will be included. We would advise that you produce and submit an outline Fisheries Liaison and Co-Existence Plan to address these concerns raised, given that it is their position that fisheries cannot co-locate with floating offshore wind farm developments.	The commercial fisheries impact assessment precautionarily assumes that fishing will not be possible within the Array Area and acknowledges the potential for significant impacts on the potting fleet. The Llŷr project is committed to developing and engaging upon a Fisheries Liaison and Coexistence Plan post-consent. It is envisaged that this will need to be developed in collaboration with fisheries stakeholders to discuss and agree the most appropriate approach to delivery of additional mitigation to affected fishers. The Applicant will welcome NFFO and WFA input to the development of the FLCP.
30		29	7. Archaeology and Cultural Heritage	Since the cable export area has changed since the original survey work was completed, there is a section of the route for which survey and archaeological appraisal has not yet been undertaken. You may wish to consider carrying these surveys out prior to the licence being determined to ensure there is a suitable route to lay the cable within the corridor being applied for. Responses were received from Cadw, Welsh Archaeological Trust (Dyfed) and the Royal Commission on the Ancient and Historical Monuments of Wales who have requested numerous conditions to be attached to the licence. This includes the requirement to update and submit the following: • Archaeological Exclusion Zones • Protocol for Archaeological Discovery • Written Scheme of Investigation These will need to be submitted for approval prior to commencement of any Licensed Activities.	The surveys by necessity will be carried out post consent, which will include archaeological appraisal. The condition requests received from Cadw, Welsh Archaeological Trust (Dyfed) and the Royal Commission on the Ancient and Historical Monuments of Wales to be attached to the licence have been reviewed and accepted. The detail is provided against each comment raised by each individual stakeholder.
31		30	Stakeholders	Once the above and the individual consultee responses have been reviewed, we strongly recommend you engage directly with the relevant consultee prior to providing your response.	We have engaged directly with most stakeholders to discuss aspects raised and have sent back clarification to those where needed.
32		31	Addendum	When providing your response, we recommend you provide an addendum which clearly demonstrates how each point above and within the consultation responses has been addressed/responded to. Where documents require updating, we would also expect you to submit a clean and track changed copy of the relevant document. We also request that an updated document list (continuation sheet 2) is submitted with the further information.	Non-material clarifications have been provided within this spreadsheet to the aspects raised by the stakeholders. There is no new information provided that changes the nature or outcome of assessment provided in the original application, therefore an addendum is not required.
33		32	Public Notices	Please note that further information must be publicised in accordance with the requirements stipulated in Regulation 16 of the Marine Works (Environmental Impact Assessment) (EIA) Regulation 2007 (as amended). Therefore, once the information is received by the MLT, you will be provided with a public notice to publish at your own expense in the same newspapers as the project was previously publicised. The public notice must be placed twice in the same publication a week apart. e.g., 1st notice published on a Tuesday, must be published on the following Tuesday in the same newspapers, with the 42 days starting from the first notice.	As stated above, non-material clarifications or resolutions (as in pointing to where information has been provided or providing reasoning as to why certain aspects have not been provided, e.g. outside the agreed scope of assessment) to information already provided in the original application, or agreements to stakeholder requests, have been provided. No new information has been provided that changes the nature or outcome to what was submitted. Therefore it is considered that there is no further requirement for additional public notices to be undertaken.

Number / reference	Aspect	Response (Key concern, etc)	Chapter / Paragraph	Response from Llŷr Floating Wind
1	National Policy - Fish Species and Habitats	It's important that this application complies with Policy ENV_07 of the Welsh National Marine Plan.	Volume 3: Chapter 20 – Fish and Shellfish Ecology	Whilst ENV_07 policy of the Welsh National Marine Plan is not specifically referenced in Llŷr 1 Floating Offshore Wind Farm, Environmental Statement, Volume 3: Chapter 20 – Fish and Shellfish Ecology, the project has considered the requirements of the Welsh National Marine Plan fully (including the ENV-07 policy). The identification of the fish and shellfish baseline environment is set out in **Section 20.5**. A full impact assessment is provided in **Section 20.8**, with embedded mitigation and best practice measures to safeguard fish and shellfish ecosystems set out in **Section 20.7**. **Table 20-35 Summary of Assessment of Environmental Effects** (page 148) presents a summary of the Effects and Conclusions from the fish and shellfish ecology assessment; including an assessment of those impacts potentially affecting important feeding, breeding (including spawning & nursery) and migration areas or habitats for key fish and shellfish species of commercial or ecological importance. As stated in paragraph 456, there were no significant effects to fish and shellfish ecology identified as a result of the proposed Project and no requirement for additional mitigation. As a consequence, the residual effects to fish and shellfish remain Not Significant. As a result, it has been demonstrated that the project has provided appropriate consideration of the potential impacts of the proposal on fish stocks, key habitats (including feeding and breeding areas) and migratory routes, contributing towards achieving the goals for Descriptor 3 of the UK Marine Strategy. Therefore, the application is compliant with ENV_07 policy of the Welsh National Marine Plan

Number / reference	Aspect	Response (Key concern, etc)	Objection (yes/no)	Condition Requested	Response from Llŷr Floating Wind	Evidence	Comments
1	National Security	The proposed export cable route, as shown on drawing Site Location Figure 1.1 (attached), runs through the designated danger areas in place to protect military training activities undertaken at the Castlemartin Range in Pembrokeshire. In particular, the cable routes through Danger Areas D113A and D113B. Live firing from the Range out into designated Sea Danger Areas takes place here. The presence of a cable running through the range would not be compatible with Range activities. Live firing exercises are also undertaken at Castlemartin Range. Castlemartin Range is the only range in the United Kingdom where these particular exercises can take place, and these exercises utilise all of the designated Sea Danger Area. The range is therefore in high demand.	Yes	Yes	The Castlemartin Firing Range, DIO, and the Llŷr project team have agreed: - No works will be undertaken in Castlemartin Offshore Danger Area D113B - The following condition is to be included in the Marine Licence to address the MoD concerns relating to the installation of the cable route through Danger Area D113A and to withdraw their objection to the application: "*The undertaker must ensure that an Access and Communications Protocol is agreed and implemented with the DIO Castlemartin before any project offshore activities commence and that the agreed protocol is maintained throughout the lifetime of the project*.""	Email exchange between Marc Murray (13/03/2025) and Major John Poole (17/03/2025)	DIO agree access dependent on agreed post consent agreed protocol
2	National Security	A cable, or any type of infrastructure, within a danger area where live firing takes place would be at risk of damage from projectiles or fragments fired from the Range. The associated survey work required before a cable is laid, the construction phase and any periods of maintenance required post installation, would result in firing activities having to stop. Survey, installation and maintenance periods would cause disruption to range operations and therefore affect military training and Defence outputs.	Yes	Yes	The cable will either be buried or surface laid with cable protection and is unlikely to be damaged by the Castlemartin activities. The agreed Access and Communication Protocol will ensure that all Llŷr works within Castlemartin Offshore Danger Area D113A must obtain written authorisation from the Officer in Charge of the Castlemartin RAC Range (or his designated representative) before commencing works and that all Llŷr works are to be scheduled and undertaken during Castlemartin RAC Range offshore 'down time', when no Castlemartin RAC Range activities are intended to be undertaken offshore	As Above	As Above
3	National Security	In addition, the sea floor beneath the Sea Danger Area would feature Unexploded Ordnance (UXO). UXO surveys and clearance (if possible), would also cause disruption to the Range. This is unacceptable to the MOD. It for this reason the MOD objects to the Marine Licence due to the cable route running through the Castlemartin Range danger areas.	Yes	Yes	All Project offshore activities (survey, installation, or maintenance) that interact with the seabed will necessitate a UXO survey and appropriate risk assessment before being carried out (either within or outside of the Sea Danger Areas). Following the completion of the UXO survey, it is assumed that it will be possible to avoid any UXO encountered through micrositing. However, should a UXO threat be detected within the D113A Danger Area that requires removal, the Llŷr Project Director will contact the Officer in Charge of the Castlemartin RAC Range to discuss the approach to UXO clearance. As detailed above all activities (including surveys and installation) will be addressed in an agreed protocol and authorised by the Castlemartin range prior to any activity being carried out.	As Above	As Above

Number / reference	Aspect	Response (Key concern, etc)	Objection (yes/no)	Condition Requested	Response from Llŷr Floating Wind
1	Notice to Mariners	The UKHO requires FIVE WEEKS advance notice of offshore installation activities to allow preparation of Admiralty Notices to Mariners. Please send notifications and correspondence to SDR@ukho.gov.uk.	No	Yes	Accepted and content to include this requirement as a licence condition
2	Radio Navigation Warnings	The operator should also be advised to contact our Radio Navigation Warnings section 24 hours before offshore work is due to commence, Email: NavWarnings@UKHO.gov.uk, Tel: 01823 353448 (direct line) Fax: 01823 322352.	No	Yes	Accepted and content to include this requirement as a licence condition
3	Communications	The UKHO should be notified of any changes to the existing installations as offshore work progresses (e.g. structure height changes, new/altered aids to navigation). Please send notifications and correspondence to SDR@ukho.gov.uk.	No	Yes	Accepted and content to include this requirement as a licence condition
4	Communications	The information supplied must include the start date and end date, a description of the works, positions of the work area and structures (referred to WGS84 datum), and details of any marking arrangements. Copies of any bathymetric survey data should be provided to sdr@ukho.gov.uk Copies of all local notice to mariners must be provided to the UKHO within 5 days.	No	Yes	Accepted and content to include this requirement as a licence condition

Number / reference	Aspect	Response (Key concern, etc)	Chapter / Paragraph	Response from Llŷr Floating Wind
1	n/a	We have determined that there is no risk to public health and is therefore outside our remit to comment on the application	n/a	Noted

Number / reference	Aspect	Response (Key concern, etc)	Objection (yes/no)	Condition Requested	Response from Llŷr Floating Wind
1	General	The Crown Estate is affected by the proposed works and landowner's consent is required. The Crown Estate has already granted the applicant landowner's consent for the proposed activity and has no objection to this Marine Licence application.	No	No	Noted

Number / reference	Aspect	Response (Key concern, etc)	Objection (yes/no)	Condition Requested	Chapter / Paragraph	Response from Llŷr Floating Wind
1	Visual	Views of the proposed turbines may be possible from the designated historic assets identified above may be possible: however, in these views they will be seen on the horizon at a distance where they will not have any impact on the settings of the designated historic assets.	No	No	Volume 3: Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	Noted
2	Marine Archaeology	The impact of the proposed development on the marine archaeology has been fully considered apart from a section of the route of the export cable that has been recently changed. The survey and archaeological appraisal of this section of the route will need to be completed before any construction work is commenced. It is noted that a condition enforcing this requirement is proposed in the environmental statement and we agree this is appropriate.	No	No	Volume 3: Chapter 24 - Marine Archaeology and Cultural Heritage.	Noted and content to include this requirement as a licence condition
3	WSI and PAD	The offshore and onshore historic environment assessments have identified archaeological features and proposed mitigation measures to reduce the impact of the proposed development on them. These are appropriate and a condition requiring a written scheme of archaeological investigation and a protocol for archaeological discoveries to be approved prior to the commencement of the development is required to ensure that these mitigation measures are implemented.	No	Yes	Volume 2: Chapter 09 - Onshore Historic Environment and Cultural Heritage Volume 3: Chapter 24 - Marine Archaeology and Cultural Heritage.	Noted and content to include this requirement as a licence condition

Number / reference	Aspect	Response (Key concern, etc)	Objection (yes/no)	Condition Requested	Chapter / Paragraph	Response from Llŷr Floating Wind
	Marine Licence conditions	We are in agreement with the conditions suggested within Chapter 24 of the ES relating to maritime archaeology	No	Yes	Volume 3: Chapter 24 - Marine Archaeology and Cultural Heritage.	Noted and content to include this requirement as a post consent licence condition
	Marine Licence conditions - survey and archaeological appraisal of unsurveyed cable route	The proposed cable export area has changed since the original survey work was done, and so there is a section of the route for which survey and archaeological appraisal has not yet been undertaken. We therefore agree with the condition proposed by the ES that completion of this survey work to the same standard as the rest of the scheme must be completed prior to the scheme commencing.	No	Yes	Volume 3: Chapter 24 - Marine Archaeology and Cultural Heritage.	Noted and content to include this requirement as a post consent licence condition
	Marine Licence conditions - update to the Archaeological review of marine geophysical and landfall survey data (post consent)	As part of this, a condition to undertake archaeological interpretation and assessment of this data, as has been done for the rest of the survey work. This should result in an updated version of Volume 6: Appendix 24B, including updated archaeological exclusion zones (AEZs) being submitted for review and sign-off by ourselves.	No	Yes	Volume 6: Appendix 24B - Archaeological review of marine geophysical and landfall survey data	Noted and content to include this requirement as a post consent licence condition
	Marine Licence conditions - WSI and PAD	We agree with the proposed condition for the submission of a WSI and PAD, which should be reviewed and signed-off by ourselves, prior to work commencing. This may only be submitted AFTER the survey work and archaeological assessment noted above for 1) and 2) has been completed as it is likely to be informed by the findings of that work.	No	Yes	Volume 3: Chapter 24 - Marine Archaeology and Cultural Heritage.	Noted and content to include this requirement as a post consent licence condition
	Marine Licence conditions - separate WSI for HDD landfall	As set out in the ES (paras 162-165) the pre-HDD geotechnical investigation associated with the cable landfall will require a full archaeological/geoarchaeological assessment, sampling, and appropriate dating programme (e.g. C14, OSL, Dendro) due to the nationally important nature of the submerged forest remains at Freshwater West. We would suggest that a separate WSI is prepared for this, that is tailored and specific to that work, to be reviewed and signed-off prior to that element of the project commencing. We would also note that this element of the scheme has high potential for knowledge enhancement, as per the Welsh National Marine Plan Policy Soc_05.	No	Yes	Volume 3: Chapter 24 - Marine Archaeology and Cultural Heritage.	Noted and content to include this requirement as a post consent licence condition
	Marine Licence conditions - submission of data to National Monuments Record of Wales archive	As proposed in the ES, survey data covering the AEZs (see Table 24b-2) is archived within the National Monuments Record of Wales, including for any AEZs arising from the as yet to be completed surveys (above). This will contribute both to Knowledge Enhancement (WNMP Policy_Soc05), and also ensure the availability of archaeological monitoring data for the future. We are happy to liaise with Coracle Archaeology (the archaeological contractors) to advise on suitable formats, metadata, etc.	No	Yes	Volume 3: Chapter 24 - Marine Archaeology and Cultural Heritage.	Noted and content to include this requirement as a post consent licence condition

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1		**Number / reference**	**Aspect**	**Response (Key concern, etc)**	**Objection (yes/no)**	**Condition Requested**	**Chapter / Paragraph**	**Response from Llŷr Floating Wind**
2		1	Archaeology Mitigation Strategy post consent	The potential impacts of the proposed scheme on the historic environment have been addressed from the start and the supporting documentation includes a Historic Environment Desk-based Assessment carried out by DAT Archaeological Services (report no. 2021/57) in 2021. The findings of this assessment have now been incorporated into Volume 2 (chapter 9) of the Environmental Statement – Onshore Historic Environment and Cultural Heritage prepared by AECOM, August 2024. This includes a section on embedded mitigation (9.7) and additional mitigation measures (9.9), which include avoiding areas of archaeological sensitivity, geophysics survey, evaluation trenching and watching brief. It states (176) that "*an appropriate mitigation strategy for the identified impacts from construction will be agreed with the statutory consultees.* "	No	Yes	Volume 2: Chapter 9 – Onshore Historic Environment and Cultural Heritage	Noted and content to include this requirement as a licence condition
3		2	Archaeology Mitigation Strategy post consent	Volume 6: Appendix 24B, of the ES includes an Archaeological review of marine geophysical and landfall survey data prepared by Coracle Archaeology, August 2024. This provides the results of walkover, metal-detecting and geophysics surveys conducted at both proposed landfall locations at Freshwater West. No new sites or features of archaeological potential were identified during the surveys. We are satisfied that the historic environment is being adequately safeguarded as part of this scheme and that all appropriate mitigation measures have been undertaken to date. We understand that we'll be further consulted on the mitigation strategy for the construction phase in due course, which seems likely to include measures to protect known areas of archaeological sensitivity through avoidance and a programme of archaeological monitoring.	No	Yes	Volume 6: Appendix 24B	Noted and content to include this requirement as a licence condition

Number / reference	Aspect	Response (Key concern, etc)	Chapter / Paragraph	Response from Llŷr Floating Wind	Comments
1	Predicted Impact on Burrington RADAR	Using the theory as described in Appendix A and development specific propagation profile it has been determined that the terrain screening available will not adequately attenuate the signal, and therefore this development is likely to cause false primary plots to be generated. A reduction in the RADAR's probability of detection, for real aircraft, is also anticipated.	Volume 3: Chapter 27 - Aviation and Radar	The project is progressing a mitigation contract for Llŷr 1 with NATS that started at the end of 2023. We have had confirmation that a proposed blanking solution secured internal approval within NATS to address the issues raised. A NATS Radar Mitigation Agreement is being progressed with NATS and the project is progressing an undertaking with the NATS legal representatives at Knights on this.	Confirmation that the Mitigation Solution has now been signed off internally within NATS as a Large Blank.
2	En-route operational assessment of RADAR impact	Where an assessment reveals a technical impact on a specific NATS' RADAR, the users of that RADAR are consulted to ascertain whether the anticipated impact is acceptable to their operations or not. Swanwick Centre ATC - unacceptable Military ATC - acceptable	Volume 3: Chapter 27 - Aviation and Radar	The proposed mitigation contract should address any outstanding issues to allow NATS to withdraw their objection	Confirmation that the Mitigation Solution has now been signed off internally within NATS as a Large Blank.
3	En-route Navigational Aid Assessment	No impact is anticipated on NATS' navigation aids.	Volume 3: Chapter 27 - Aviation and Radar	Noted	n/a
4	En-route Radio Communication Assessment	No impact is anticipated on NATS' radio communications infrastructure	Volume 3: Chapter 27 - Aviation and Radar	Noted	n/a
5	En-route Consultation	The proposed development has been examined by technical and operational safeguarding teams. A technical impact is anticipated, this has been deemed to be unacceptable	Volume 3: Chapter 27 - Aviation and Radar	The proposed mitigation contract should address any outstanding issues to allow NATS to withdraw their objection	Confirmation that the Mitigation Solution has now been signed off internally within NATS as a Large Blank.

Number / reference	Aspect	Response (Key concern, etc)	Objection (yes/no)	Condition Requested	Chapter / Paragraph	Response from Llŷr Floating Wind
1	Navigable sea room, collision and allision risks	Following consultation from the applicant with key stakeholders some navigational safety risks were deemed to be unacceptable. This led to a decision by the applicant to amend the red line boundary (RLB) and through further assessment and consultation, including a Hazard Identification (HAZID) workshop, the refined RLB and risk controls reduced the perceived collision and allisions risk to tolerable levels.	No	No	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	None required
2	Shipping and Navigation Mitigation Measures	The list of applied (embedded) risk controls in Table 21.1 of the NRA and additional risk control in identified in paragraph 21.2 of the NRA, are appropriate for reducing safety risks to As Low As Reasonably Practicable (ALARP).	No	No	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	None required
3	Layout Design	The turbine layout design must be compliant with MGN654 and it will require MCA and Trinity House approval prior to construction to minimise the risks to surface vessels, including rescue boats, and search and rescue aircraft operating within the site. MCA will seek to ensure all structures are aligned in straight rows and columns with a minimum of two lines of orientation.	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include a requirement to submit a Lighting and Marking Plan ("LMP") for approval as a post consent licence condition
4	Marking and Lighting	MCA will seek to ensure the turbine numbering system follows a 'spreadsheet' principle and is consistent with other windfarms in the UK. All lighting and marking arrangements will need to be agreed with MCA and Trinity House. The MCA requires all aviation lighting to be visible 360° and compatible with night vision imaging systems, as detailed in CAP 764 and MGN654 Annex 5.	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include a requirement to submit a Lighting and Marking Plan ("LMP") for approval as a post consent licence condition
5	Emergency Response and Search and Rescue	There is an expectation that the presence of wind farms will increase the likelihood of the requirement for emergency response, not just from navigational incidents but from other incidents such as medical evacuation or pollution. A SAR checklist based on the requirements in MGN654 Annex 5 will need to be completed in agreement with MCA before construction starts. This will include the requirement for an approved Emergency Response Co-operation Plan (ERCoP).	No		**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include a requirement to submit an Emergency Response Co-operation Plan (ERCoP) for approval as a post consent licence condition
6	Emergency Response and Search and Rescue	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 site and surrounding areas. It would have been helpful for the NRA to consider radio reception interference caused by larger turbines; however we would expect radio surveys to be conducted pre-construction and post-construction to confirm and compare levels of coverage. It will also be expected to discuss the provision of AIS and VHF capability to the MCA with direct access to HM Coastguard systems.	No	No	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to conduct radio surveys pre-construction and post-construction to confirm and compare levels of coverage and also to include the provision of AIS and VHF capabilities within the Emergency Response Co-operation Plan ("ERCoP").
7	Construction scenarios	We would expect to see some form of linear progression of the construction programme avoiding disparate construction sites across the development area, and the consent needs to include the requirement for an agreed construction plan to be in place ahead of any works commencing.	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include a requirement to submit a Construction Method Statement specific to the Llŷr 1 project to address this aspect for approval as a post consent licence condition.
8	Cable Routes	Cable routes, cable burial protection index and cable protection are issues that are yet to be fully developed., however it is noted in section 13.6.1 that HVDC will not be used. Due cognisance needs to address cable burial and protection, particularly close to shore where impacts on navigable water depth may become significant. Any consented cable protection works must ensure existing and future safe navigation is not compromised. As per Section 6.3.2 we note that the project expects approximately 27% of the cable route to need additional protection measures, if cable protection measures are required e.g., rock bags or concrete mattresses, the MCA would accept a maximum of 5% reduction in surrounding depth referenced to Chart Datum. This will be particularly relevant where depths are decreasing towards shore and potential impacts on navigable water increase.	No	No	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to address this requirement within the Cable Burial Risk Assessment ("CBRA").
9	Safety Zones	The requirement and use of safety zones as detailed in the application is noted, and MCA will comment on the safety zone application once submitted. Safety zones during the construction, maintenance and decommissioning phases are supported. A detailed justification would be required for a 50m operational safety zone, with significant evidence from the construction phase in addition to the baseline NRA required supporting the case. Safety zones triggered by a Service Operation Vessel connecting to a wind turbine will not be supported.	No	No	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted.
10	Cumulative impacts	It is noted within Chapter 15 of the NRA (Future Case Vessel Traffic) the applicant has considered The Crown Estate Potential Development Areas (PDA) as Tier 3 developments. It should be noted that if those PDAs are developed in the future the future case routes (Option A and Option B) predicted in Section 15.5 will not be viable and all the traffic to and from Milford Haven will be forced to operate east of Llyr increasing the collision and allision risks to what is predicted in this Navigation Risk Assessment. Therefore the project should consider leaving as much sea room practicable from eastern boundary of the RLB to allow for this future scenario	No	No	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted

11	Mooring Arrangements	Third Party Verification of the mooring arrangements for all floating devices will be required prior to construction to provide assurance against loss of station. Ideally this will be a condition of the marine licence. 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	No	No	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to secure a third party certification for the floating devices prior to construction.
12	Marine Licence Condition - Notifications	1. The Kingfisher Information Service of Seafish, must be informed of details of the vessel routes, timings and locations relating to the construction of the authorised project or any part thereof by email to kingfisher@seafish.co.uk :- a) at least 14 days prior to the commencement of offshore activities, for inclusion in the Kingfisher Fortnightly Bulletin and offshore hazard awareness data, and; b) as soon as reasonably practicable and no later than 24 hours of completion of all offshore activities. Confirmation of notification must be provided to the NRW within 5 days.	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
13	Marine Licence Condition - Notifications	2. The undertaker must ensure that a local notification to mariners is issued at least 14 days prior to the commencement of the authorised project or any part thereof advising of the start date of each Work No.<insert> and the expected vessel routes from the construction ports to the relevant location. Copies of all notices must be provided to the NRW, MCA and UKHO within 5 days.	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
14	Marine Licence Condition - Notifications	3. The undertaker must ensure that local notifications to mariners are updated and reissued at weekly intervals during construction activities and at least 5 days before any planned operations (or otherwise agreed) and maintenance works and supplemented with VHF radio broadcasts agreed with the MCA in accordance with the construction and monitoring programme approved under marine licence condition <insert>. Copies of all notices must be provided to the NRW and UKHO within 5 days.	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
15	Marine Licence Condition - Notifications	4. 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 NRW and MCA within 5 days.	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
16	Marine Licence Condition - Notifications	5. 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, the undertaker shall as soon as reasonably practicable and no later than 24 hours following the undertaker becoming aware of any such damage, destruction or decay, notify NRW, MCA, Trinity House, UKHO, the Kingfisher Information Service of Seafish and regional fisheries contacts.	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
17	Marine Licence Condition - Notifications	6. In case of buried cables becoming exposed on or above the seabed, the undertaker must within three days following identification of a cable exposure, notify mariners, regional fisheries contacts and the Kingfisher Information Service of Seafish of the location and extent of exposure. Copies of all notices must be provided to the NRW, MCA, Trinity House, and the UKHO within 5 days.	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
18	Marine Licence Condition - Pre-construction plans and documents	7. A plan to be agreed in writing with the NRW following appropriate consultation with Trinity House, the MCA and UKHO, 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.	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
19	Marine Licence Condition - Pre-construction plans and documents	8. An Aids to Navigation Management Plan to be agreed in writing by the NRW following appropriate consultation with Trinity House specifying how the undertaker will ensure compliance with conditions (1) to (4) of 'Aids to Navigation' from the commencement of construction of the authorised project to the completion of decommissioning.	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
20	Marine Licence Condition - Pre-construction plans and documents	9. No part of the authorised project may commence until the NRW, 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.	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition

21	Marine Licence Condition - Pre-construction plans and documents	10. A construction method statement 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; 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.	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
22	Marine Licence Condition - Pre-construction plans and documents	1. A Third Party Verification of the mooring arrangements for all floating devices must be undertaken prior to construction to ensure the mooring design is suitable for the location.	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
23	Marine Licence Condition - Pre-construction monitoring and surveys	11. A swath bathymetric survey to IHO Order 1a of the area within the Offshore Order Limits extending to an appropriate buffer around the site, must be undertaken. The survey shall include all proposed cable routes. This 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 NRW.	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
24	Marine Licence Condition - Aids to Navigation	12. The undertaker shall during the whole period from the commencement of construction of the authorised project to the 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.	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
25	Marine Licence Condition - Aids to Navigation	13. 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 NRW 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.	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
26	Marine Licence Condition - Aids to Navigation	14. The undertaker must provide reports to Trinity House on the availability of aids to navigation in accordance with the frequencies set out in the aids to navigation management plan agreed pursuant to condition <insert> using the reporting system provided by Trinity House.	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
27	Marine Licence Condition - Aids to Navigation	15. The undertaker must during the whole period from the commencement of construction of the authorised project to the completion of decommissioning notify Trinity House and the NRW 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.	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
28	Marine Licence Condition - Colouring of structures	16. Except as otherwise required by Trinity House the undertaker must paint all structures forming part of the authorised project yellow (colour code RAL 1023) from at least HAT to a height as directed by Trinity House. Unless the NRW otherwise directs, the undertaker must paint the remainder of the structures grey (colour code RAL 7035).	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
29	Marine Licence Condition - Construction Monitoring	17. Construction monitoring must include vessel traffic monitoring by automatic identification system for the duration of the construction period. An appropriate report must be submitted to the NRW, Trinity House and the MCA at the end of each year of the construction period.	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition

30	Marine Licence Condition - Post-construction plans and documents	18. The undertaker must conduct a swath bathymetric survey to IHO Order 1a of the installed export cable route and provide the data and survey report(s) to the MCA and UKHO. The NRW should be notified once this has been done, with a copy of the Report of Survey also sent to the NRW.	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
31	Marine Licence Condition - Post-construction plans and documents	19. 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] This 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.	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
32	Marine Licence Condition - Post-construction plans and documents	20. Post construction monitoring must include vessel traffic monitoring by automatic identification system for a duration of three consecutive years following the completion of construction of authorised project, unless otherwise agreed in writing by the NRW. An appropriate report must be submitted to the NRW, Trinity House and the MCA at the end of each year of the three year period.	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
33	Marine Licence Condition - Completion of Construction	21. The undertaker must submit a close out report to the NRW, 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; and 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.	No	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition

Number / reference	Aspect	Response (Key concern, etc)	Chapter / Paragraph	Response from Llŷr Floating Wind
1	Cumulative	The Chamber has been engaged with the Llyr project development team for some years during the pre-application planning process. The Chamber originally had severe navigational safety concerns when consider the intent for both Llyr 1 and 2 developments, in particular for tanker traffic transiting to/from Milford Haven and Bristol Channel to the Isles of Scilly Traffic Separation Scheme. Following the removal of Llyr 2 from the application, and the realignment of Llyr 1 to be in in keeping with the flow of navigational traffic, our most serious concerns have been allayed. However, should Llyr 2 subsequently be submitted for consent the Chamber view is that would be unacceptable for navigational safety and not permissible.	n/a	Noted
2	The Crown Estate Celtic Flow Project Development Areas (PDAs)	The Chamber is disappointed to see in Figure 25-9 dated 06/03/24 an outdated representation of the cumulative projects. Given the Crown Estate released to the public in December 2023, its intent to proceed with three finalised PDAs for Celtic Floating Offshore Wind (FLOW), the Chamber would have expected to see up to date shape files utilised. The Chamber acknowledges that the three final PDAs have the same footprint as the four PDAs as presented in the NRA, however, would expect to see up to date information used where in the public domain. The Chamber further questions how the overlap between the Llyr 1 site with the northerly Celtic FLOW PDA will be addressed, the implications of this to the suitability of the site development and mitigations. In the Chamber's view the potential for a patchwork of disconnected developments in the Celtic Sea which use up considerable sea area is a poor use of space and should be avoided.	Volume 3: Chapter 25 - Shipping and Navigation - Figure 25-9	Noted, but as acknowledged by the Chamber of Shipping, the final PDA footprint is confined to those areas considered within the NRA, so has no impact on the overall findings of the assessment.
3	Offshore Export Cable Corridor	The Chamber welcomes the change to the Offshore Export Cable Corridor in the northern section, with this portion now passing east of Turbot Bank, before returning to landfall at Freshwater West. In doing so, it also results in the OfECC no longer interacting with the tanker routeing into Milford Haven. Figure 10.35 in the NRA shows anchoring activity along the OfECC. The figure shows tankers regularly anchoring within the study area and occasionally adjacent to the cable corridor within the 28 day study period. The Chamber has concerns about anchor snagging risk and the intended mitigations proposed by the applicant, specifically whether the 1.2m target burial depth as informed by the CBRA is sufficient for the size of vessel and anchor anchoring in the area.	Volume 3: Chapter 25 - Shipping and Navigation - Figure 10-35	The Llŷr project notes the concerns raised about anchor snagging and, given the frequency of anchoring activity by large vessels within the area, the Llŷr project will ensure that the post consent Cable Burial Risk Assessment (CBRA) will take account of this to inform the appropriate degree of burial required.
4	Cumulative Route Deviations	The cumulative route deviations presented by the applicant in the NRA provide two options (A or B) with rerouted traffic either passing east or west of Llyr 1. The routeing however fails to consider the impact of the Celtic FLOW PDAs and the combined deviation. Whilst this overall cumulative deviation is recognised as only in part caused by the proposed Llyr development, it nonetheless is disappointing not to see represented and measured.	Volume 6: Appendix 25A – Navigational Risk Assessment	The Cumulative deviations within the NRA are based on those developments screened in Tier 1/2 for quantitative assessment and the PDAs were Tier 3 (qualitative assessment only) because of low data confidence and their preliminary status. It is not reasonable for the Llŷr project to assume deviations around the full footprints given the likely potential for the areas to be leased in part rather than in full.

5	Mooring Arrangements and Inter Array Cables	The Chamber has navigational concerns regarding the inter-array cabling and under keel clearance. The Chamber notes in paragraph 74 of the NRA that: "*The inter-array cables will be buoyant close to the point of contact with each WTG, with minimum under keel clearance expected to be between 25 and 55 m, at a distance of approximately 50 to 100 m from the WTG* ." The Chamber welcomes that UKC will be provided but wishes to know how this will be marked on charts for mariners' information. Furthermore, it is displayed in Figure 16.5 of the NRA that Option 1 or Option 2 for the mooring lines extend away from the WTG to distances in excess of 800m or 1000m. This is a considerable distance, and the Chamber wishes to understand how this will be charted and marked for the site. The Chamber also seeks confirmation that no anchors, cables or other mooring apparatus will be outside the licensable area, as this should not be permitted. Figure 6.5 of the NRA shows the indicative array layout and positions turbine centres approximately 0.3nm from the array area boundary (Chamber measurement). Given 0.3nm is 555 metres, the only Option 3 of mooring line arrangements would be feasible for this array layout whilst maintaining all infrastructure within the array area boundary. The Chamber therefore wishes to see an indicative array for Option 1 and Option 2 mooring line arrangements to consider impact upon safety to navigation. The Chamber notes that the separation between WTGs is stated as a minimum of 1140m, a distance that is of similar magnitude to Option 1 for mooring options and therefore wishes to know whether shared mooring arrangements are being considered by the applicant. Should they be, what is the difference in risk profile from a potential loss of mooring?	Volume 6: Appendix 25A – Navigational Risk Assessment	The anchor lines and cables will be shown on UKHO charts but the associated under keel clearance will not be shown. However to note there will be no under keel risk to mariners as no vessel at risk from a 25m clearance will be navigating 50-100m from the WTG (mainly because these vessels could potentially succumb to a blade allision in that instance). The final layout of the mooring lines will be dependent on the floating platform technology taken forward. The layout showing the indicative array in Figure 6.5 of the NRA was used as a 'worst case scenario' but the Llŷr project confirms that no anchors, cables or other mooring apparatus will be placed outside the licensable area. As committed to in Vol. 6: Appendix 4C - Post Consent Environmental Management Plan Log, the final layout of the array will be set out in the Project (Array) Layout Plan which will meet Marine Guidance Note (MGN) 645 and will be consulted upon with the Chamber of Shipping, Trinity House and the MCA prior to finalisation. The project will not share mooring / anchoring arrangements between turbines
6	Cumulative Navigational Safety	The Chamber's main interest is in ensuring continued navigational safety for commercial vessels and their ability to trade safely, accessing the ports and harbours necessary to deliver goods, energy, materials etc. Given the importance of Milford Haven as the UK's foremost energy port, safe navigation to and ease of access into / out of harbour for tankers and LNG vessels cannot be overstated. The area to the south of Milford Haven is extensively used for vessels loitering, anchoring and awaiting orders. At present the availability of searoom allow for this practice to occur safely and with sufficient space, however with the wider development of the Celtic Sea via The Crown Estate's FLOW programme and other projects, and the available searoom shall decrease significantly. With the reduction in searoom, so the navigational risk to vessels increases and the Chamber has concerns that this will need careful consideration and enhanced mitigation as time progresses. This does not preclude the development of Llyr in the Chamber's opinion but necessitates NRW and other planning authorities to holistically and precautionarily consider risk.	n/a	Noted

Number / reference	Aspect	Response (Key concern, etc)	Condition Requested	Chapter / Paragraph	Response from LlŷrFloating Wind
1		A plan to be agreed in writing with the NRW following appropriate consultation with Trinity House, the MCA and UKHO, 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	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
2	Aids to Navigation Management Plan	An Aids to Navigation Management Plan to be agreed in writing by NRW following appropriate consultation with Trinity House specifying how the undertaker will ensure compliance with conditions (1) to (4) below, from the commencement of construction of the authorised project to the completion of decommissioning.	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
3	Aids to Navigation Management Plan / Lighting and Marking Plan ("LMP") for approval	The undertaker shall during the whole period from the commencement of construction of the authorised project to the 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.	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
4	Notifications to Trinity House	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 NRW 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.	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
5	Aids to Navigation Management Plan	3) The undertaker must provide reports to Trinity House 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.	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
6	Notifications to Trinity House	4) The undertaker must during the whole period from the commencement of construction of the authorised project to the completion of decommissioning notify Trinity House and NRW 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.	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
7	Aids to Navigation Management Plan / Lighting and Marking Plan ("LMP") for approval	Except as otherwise required by Trinity House the undertaker must paint all structures forming part of the authorised project yellow (colour code RAL 1023) from at least the waterline to a height as directed by Trinity House. Unless NRW otherwise directs, the undertaker must paint the remainder of the structures grey (colour code RAL 7035).	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
8	Provison of a construction method statement fo approval	A construction method statement 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; 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.	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
9	Notifications	The undertaker must ensure that a local notification to mariners is issued at least 14 days prior to the commencement of the authorised project or any part thereof advising of the start date of each work activity and the expected vessel routes from the construction ports to the relevant location. Copies of all notices must be provided to NRW and UKHO within 5 days.	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
10	Notifications	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, the undertaker shall as soon as reasonably practicable and no later than 24 hours following the undertaker becoming aware of any such damage, destruction or decay, notify NRW, MCA, Trinity House, the Kingfisher Information Service of Seafish and the UKHO.	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition

11	Notifications	In case of exposure of cables on or above the seabed, the undertaker must within 3 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 NRW, MCA, Trinity House, and the UKHO within 5 days.	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
12	Vessel monitoring during construction period	Construction monitoring must include vessel traffic monitoring by automatic identification system for the duration of the construction period. An appropriate report must be submitted to the NRW, Trinity House and the MCA at the end of each year of the construction period.	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition
13	Vessel monitoring post construction period	Post construction monitoring must include vessel traffic monitoring by automatic identification system for a duration of three consecutive years following the completion of construction of authorised project, unless otherwise agreed in writing by NRW. An appropriate report must be submitted to the NRW, Trinity House and the MCA at the end of each year of the three year period.	Yes	**Chapter 25** - Shipping and Navigation **Appendix 25A** – Navigational Risk Assessment	Noted and content to include this requirement as a post consent licence condition

Number / reference	Aspect	Response (Key concern, etc)	Chapter / Paragraph	Response from Llŷr Floating Wind
1	Blade clearance to sea level	Having reviewed the application documents, and discussed with our regional planning representative, the RYA has only one point to raise with regard to navigational safety for recreational boaters. The standard minimum blade tip clearance from the sea is set at 22m. Within App 25A Llyr ES - Navigational Risk Assessment.pdf this is correctly referenced in paragraph 466, as “22m above Mean High Water Springs”, and further referenced in an extract from MGN 654 in Appendix A. However, in table 21.1 (embedded mitigation measures) the reference is to 22m above MSL (mean sea level). Clarification of this point is requested to ensure that the 22m clearance is maintained under all conditions for a floating structure.	Volume 6: Appendix 25A – Navigational Risk Assessment - paragraph 466 and table 21.1	The Offshore turbines are floating, so will always be a minimum of 22 m above the water level, irrespective if MSL or MHWS. However, just to clarify the use of MHWS has been taken out of context – we refer to this in relation to the RYA’s guidance provided in their Position Paper on Wind Energy* and MGN 654, where referring to the min blade tip clearance for the project (Table 21.1 of the NRA) we use MSL since this is the reference point that does not move with a floating structure **https://www.rya.org.uk/knowledge/environment/guidance-notes*

Number / reference	Aspect	Response (Key concern, etc)	Chapter / Paragraph	Response from Llŷr Floating Wind
1	General	Commercial fisheries are faced with an ever changing landscape of legislative and spatial restrictions in the region of the proposed development. This project will contribute to this extensive burden on fisheries in the region. It is the current position of the NFFO that commercial fisheries are currently unable to co-locate with floating wind farm projects and will be permanently displaced from the proposed development area for the lifetime of the project. It is our opinion that the assessment methodology, defining sensitivity and magnitude for specific receptors, is not robust enough to capture the social, economic, and cultural elements of commercial fisheries and conclusions drawn from this methodology should be treated with caution, especially when co-location is not possible.		The Applicant welcomes NFFO feedback on the application. The commercial fisheries impact assessment has been undertaken in line with existing good practice approaches as applied with relative consistency in UK offshore wind farm EIAs to date - acknowledging there is no formal guidance on commercial fisheries impact assessment and that floating foundation technology remains relatively novel. The assessment is based on the precautionary assumption that fishing will not resume within the operational wind farm array. The assessment identifies potentially significant impacts on the UK potting fleet during all Project phases and proposes that additional mitigation is adopted to address these significant impacts. The Applicant maintains that the commercial fisheries impact assessment is objective and robust, and reflective of the fishing activity in the study area and the scale of the Project.
2	Fish and Shellfish Ecology	We are concerned with many of the data sources used to characterise the baseline environment within this chapter. The ES uses data from studies that are temporally and spatially limited, mostly to areas that are beyond the boundaries of the development area and makes assessments of impacts from such data. This methodology only provides a 'temporal snapshot' of data specific to the studies cited and their spatial limits – a fundamental flaw in impact assessments. These data should be supported by site specific surveys appropriate for the receptors identified.	Fish and Shellfish Ecology chapter of the ES, Volume , Chapter 20	The data sources used represent the best available at the time of the impact assessment, to be able to identify the species likely to be present within the study area. These are required to outline those receptors of ecological (including those that are protected) and commercial importance. The information provided is considered sufficient to provide a robust baseline to inform the impact assessment of effects to fish and shellfish. The current guidelines for cable installation and floating offshore wind farms does not currently require site-specific surveys for fish and shellfish. This was the approach presented to NRW as part of the scoping stage and was agreed through consultation that no project specific surveys were required. Furthermore, effort based surveys of fish and shellfish for the project would be insufficient in providing detailed information on species present compared to studies that have already been analysed and undertaken, such as the recent Cefas PELTIC surveys which were provided within the main assessment. The species known to be present within the study area are well understood and have not varied significantly in assemblages over time.
3	Fish and Shellfish Ecology	The reliance of offshore wind impact assessments on Coull et al., (1998) and Ellis et al., (2012) has been called into question in nearly all our responses to offshore developments. These data are over a decade old but seem to be used as a 'gold standard' to assess impacts on spawning and nursery grounds. We would expect to see a more precautionary use of these data within the assessments based on their well described limitations.	Fish and Shellfish Ecology chapter of the ES, Volume , Chapter 21	The limitations of the Coull et al. (1998) and Ellis et al. (2012) data sources have been acknowledged within paragraph 172. To address these limitations a range of data sources have been used, whilst a specific herring and sandeel spawning assessment was undertaken using the Cefas, MMO, and Natural England approved guidelines. Due to the impact pathways considered for the project, the focus is on the fish species which are demersal spawners (i.e. herring and sandeel).
4	Fish and Shellfish Ecology	There is minimal site-specific and contemporary data used that can support the assessments made within this chapter and little precautions given to the impacts assessed and conclusions drawn, not demonstrating a robust and sufficient approach. Sites specific surveys that have been used to infer information are not the correct methodology to assess the receptors identified (for example benthic surveys used to inform crustacean dynamics). Chapter 26 documented that shellfish species such as whelk and crab are the most important commercial fisheries species in the region but were only given a medium importance in Table 20-24. For example, point 202 states there is minimal suitable habitat for species such as crabs, indicating low abundance, therefore no significant effect, however Chapter 26 confirms that commercial potting activity is the same region. Therefore, it must be assumed there is a population in the region that can support a commercial fishery. The conclusions drawn from the two chapters contradict each other. Minimal data has been presented in the ES with regards to potential impacts to these specific receptors, but any proposed impacts have been assessed as negligible in all cases with no mitigation needed (this is prevalent for all receptors assessed). A paucity of data and evidence should be treated with caution when assessing impacts to the described receptors.	Fish and Shellfish Ecology chapter of the ES, Volume , Chapter 22	The approach to using data sources and the limitations of the fish and shellfish impact assessment are discussed in section 20.4.4 and section 20.6.2. The criteria for importance provided in the fish and shellfish chapter, takes into consideration commercial importance but is focussed on ecological value, such as protection at a national and international level. The importance value provided for shellfish and whelk is inline with the criteria provided in Table 20-7. This criteria has been approved by NRW. These fisheries have been given a higher value within the commercial fisheries chapter (chapter 26), where the impacts to commercial species have been considered in greater detail. Potting has been identified as being present within the study area for commercial fisheries. The baseline also discusses the presence of these species and their potential overlap of the OfECC and array area, noting their sediment preferences and general abundance within the area. The statement made was based on the availability of rocky habitat within the study area which was identified through the project specific surveys (however, this is not the only data source relied upon - please see the shellfish baseline in section 20.5.8). However, the sensitivity of these species was still discussed and a precautionary approach was taken, meaning that they have been considered as part of the conclusions of the assessment. NRW have also agreed with the conclusions of this assessment.

5	Fish and Shellfish Ecology	We acknowledge the difficulties with the lack of site-specific, contemporary data, but we would expect to see some element of precaution taken when assessing impacts to fish and shellfish ecology, specifically when advised by inappropriate methodologies and the development deploying technologies with little known about the environmental impacts.	Fish and Shellfish Ecology chapter of the ES, Volume , Chapter 23	The approach to using data sources and the limitations of the fish and shellfish impact assessment are discussed in section 20.4.4 and section 20.6.2. The precautionary approach used within the impact assessment is detailed within the assessment methodology (paragraph 32). This is inline with the UK Marine Policy Statement.
6	Commercial Fisheries	The proposed Llyr floating wind farm site supports a diverse and economically important fishing fleet this is well characterised within the baseline report, we also welcome the inclusion of fisheries-based qualitative data within the baseline report. However, it must be acknowledged that no site specific commercial fisheries surveys have been conducted (26.4.4), therefore conclusions drawn from data inputted should be treated with caution due to data being purely desk-based and not capturing all fisheries activities. We would expect spatial restrictions to form part of the Future Baseline Environment, this is a key factor that needs including due to the extensive developments planned for the Celtic Sea region. We welcome the commitment to the development of a Fisheries Liaison and Co-Existence Plan; we would like to see this developed with all fisheries stakeholders in the region.	Commercial Fisheries chapter of the ES, Volume 3, Chapter 26 and the Commercial Fisheries Baseline Report, Volume 6, Appendix 26A.	**Baseline data:** Limitations of individual commercial fisheries datasets are acknowledged and described in the ES. Multiple datasets have therefore been sourced and analysed to build up a robust understanding of fishing activity in the study area. Datasets used represented those that are publicly available and contain the most recent data that is available at the time of application. Engagement with fisheries stakeholders was undertaken to aid the description of fishing activity in the study area. In summary, the baseline is considered to be thorough and sufficiently robust to inform EIA. **Future spatial restrictions:** Existing spatial fisheries management measures are considered in the baseline (Volume 6, Appendix 26A, Section 26.6). The cumulative effects assessment presented in Section 26.11 of Volume 3, Chapter 26 considers how reasonably foreseeable projects, plans and activities may interact with the Project to cumulatively impact commercial fisheries. This assessment was informed by information on other projects, plans and activities that was available at the time of ES preparation. **Fisheries Liaison and Co-existence Plan:** The Applicant is committed to developing and engaging upon a Fisheries Liaison and Coexistence Plan post-consent. It is envisaged that the NFFO and WFA and other relevant fisheries representatives will be engaged during the development of the FLCP.
7		There are specific concerns raised by NFFO and WFA members for the export cable that are not reflected in the ES and the conclusions drawn from the assessment. It is the opinion of the members that they will be severely impacted by the installation of the export cable, however the assessment does not reflect these concerns with a negligible significance assessed for all receptors. The inshore fleet is limited in their operational capabilities and will be directly impacted by the installation of the export cable, whether through direct displacement or having to relocate static gear. Aggregating impacts for the whole export cable across a fleet, masks potential impacts to smaller operators that are less resilient to disruption. The assessment does not consider this distinction.	Commercial Fisheries chapter of the ES, Volume 3, Chapter 26 and the Commercial Fisheries Baseline Report, Volume 6, Appendix 26A.	The effects of export cable installation on commercial fishing activity are expected to be temporary and localised during the construction phase. The impact assessment acknowledges the potential impact on fishing fleets where static fishing gear may need to be temporarily removed from areas under construction, resulting in a loss of earnings. As described in Section 26.8.1 of Volume 3, Chapter 26, a potentially significant impact on the local potting fleet during the construction phase is identified. In response to this, the Applicant proposes to deliver additional measures to mitigate this impact via the FLCP (to be developed post-consent and informed by engagement with fisheries stakeholders); these are expected to include evidence-based mitigation measures in line with FLOWW guidance, and the Applicant is open to exploring alternative measures with the fishing industry. The Applicant considers that potential impacts on the inshore static fleet are fully considered within the ES and reiterates that potentially significant impacts are identified with the need for additional mitigation noted.
8	Reduction in, or temporary loss of access to, established fishing grounds and displacement leading to gear conflict	The assessment identifies impacts to static gear fisheries as being significant in EIA terms but not impacts assessed for mobile gear fisheries. It is a misnomer to assume that the term mobile gear refers to the mobility of the fleet, it actually refers to the active catching method (i.e., being mobile) rather than the fleet having high mobility. The assumption that mobile gear fleets are infinitely relocatable is used to de-mitigate impacts within the ES. We do not agree with this assessment as mobile gear fleets face greater fishing restrictions in the region on where and when they can fish, therefore any spatial restrictions will have a greater effect.	Commercial Fisheries chapter of the ES, Volume 3, Chapter 26 - 26.8.1	The Applicant shares the same understanding of mobile gear as NFFO. Fishing fleets deploying trawl gear in the commercial fisheries study area are considered to have a relatively large operational range and moderate-high levels of alternative fishing grounds. Given sufficient notice of any Project activities it is considered these fleets can avoid construction/maintenance works. The commercial fisheries impact assessment acknowledges that other gear types operate across more distinct areas of fishing ground.

9	Reduction in, or temporary loss of access to, established fishing grounds and displacement leading to gear conflict	The assessment of displacement effects leading to gear conflict highlights a medium adverse effect for static gear. Whilst we agree static gear fisheries show strong site fidelity and displacement effects will be felt keenly, the assessment does not consider the effect of displaced static gear on other fisheries – hence the gear conflict. The assessment does not address the increased potential for gear conflict due to displacement, just the effects of being displaced for each receptor.	Commercial Fisheries chapter of the ES, Volume 3, Chapter 26 - 26.8.2	The Applicant notes the potential for significant displacement effects on the UK potting fleet. In response to this, the Applicant proposes to deliver additional measures to mitigate this impact via the FLCP (to be developed post-consent and informed by engagement with fisheries stakeholders); these are expected to include evidence-based mitigation measures in line with FLOWW guidance.
10	Reduction in or loss of access to established fishing grounds	It is welcomed that an assessment of fisheries exclusion for the operational phase was conducted. However, citing studies such as the Hywind fisheries trials are not reflective of the reality faced by the fishing industry interacting with floating offshore wind. The Hywind study, whilst demonstrating the potential for limited fishing activity, the results show that this limited activity is highly unlikely to be economically viable for a commercial fishery, results from this study should be interpreted accordingly.	Commercial Fisheries chapter of the ES, Volume 3, Chapter 26 - 26.8.2	The commercial fisheries impact assessment precautionarily assumes that fishing will not be possible within the Array Area. Hywind is cited as an example in the absence of other points of learning/reference to date, though Volume 3, Chapter 26 acknowledges that the learnings from Hywind are specific to that project.
11	Reduction in or loss of access to established fishing grounds	It is disappointing that an assessment for complete exclusion from an area for the lifetime of the project results in the same conclusion as the assessment assuming return to fish. The return to fish mitigation is the key factor to mitigate for operational phase impacts across UK wind farms. On an occasion where this mitigation is not possible, there will be complete loss of revenue from the array area for all fleet sectors. We strongly disagree that complete exclusion for up to 30 years has resulted in the same significance level as a return to fish scenario. The Commercial Fisheries chapter correctly, and extensively, highlights the importance of the array area to static gear fisheries that are likely to face an annual loss of ~£10,000 (based on Figure 26.1.33). Operating margins within static gear fisheries is limited, therefore any economic loss to revenue is significant at the individual business level. There is no defined mitigation proposed for this loss of revenue beyond “defining measures” in a yet to be developed FLCP. We would expect mitigation measures to be discussed with all impacted stakeholders for the lifetime of the project as there is no evidence of efforts to “avoid” or “minimise” impacts as part of the process to date. Alterations to the turbine number and site layout, whilst having a benefit to commercial fisheries, were decided by other factors and are not mitigation measures for the fishing sector.	Commercial Fisheries chapter of the ES, Volume 3, Chapter 26 - 26.8.3	The commercial fisheries impact assessment precautionarily assumes that fishing will not be possible within the Array Area and acknowledges the potential for significant impacts on the potting fleet. The Applicant recognises that the FLCP, to be developed post-consent, will need to be developed in collaboration with fisheries stakeholders to discuss and agree the most appropriate approach to delivery of additional mitigation to affected fishers. The Applicant will welcome NFFO and WFA input to the development of the FLCP.
12	Reduction in or loss of access to established fishing grounds	Commercial fisheries impacts, due to complete exclusion for the lifetime of the project, are compounded by the location of this project, adjacent to the Round 5 PDAs and other smaller scale floating wind demonstration sites. If fisheries cannot co-locate with floating offshore wind farm development, and it is our position that this is not currently possible, then the Llyr project will be contributing to extensive exclusion of fishing activities in the region. This is not adequately assed in the cumulative assessment which resulted in the same conclusion as the project only assessment. This indicates the assessment methodology is not fit for purpose, if fisheries are to be excluded from an ever-increasing area in a region, but there is still no effect assessed, we cannot support a methodology that derives these conclusions	Commercial Fisheries chapter of the ES, Volume 3, Chapter 26 - 26.8.4	The NFFO acknowledges the concerns of the NFFO regarding spatial squeeze. The cumulative effects assessment presented in Section 26.11 of Volume 3, Chapter 26 considers how reasonably foreseeable projects, plans and activities may interact with the Project to cumulatively impact commercial fisheries. This assessment was informed by information on other projects, plans and activities that was available at the time of ES preparation. The Applicant maintains that the cumulative effects assessment accurately reflects the contribution of the Project to potential cumulative effects on fishing fleets active across the study area.
13	Reduction in or loss of access to established fishing grounds	The commercial fisheries in the region will be expected to see a vastly changing landscape through the lifespan of the Llyr project. The spatial squeeze on fisheries due to offshore developments in the region will become extensive and the likelihood of further restrictions with regards to the potential ban on all mobile gear within MCZs. There are also factors associated with the renegotiation of the Trade and Cooperation Agreement that will affect opportunities in the region. Whilst these elements are acknowledged in the ES as possible factors, they are not accounted for in the assessments.	Commercial Fisheries chapter of the ES, Volume 3, Chapter 26 - 26.8.5	The commercial fisheries impact assessment has been undertaken in line with existing good practice approaches as applied with relative consistency in UK offshore wind farm EIAs - acknowledging there is no formal guidance on commercial fisheries impact assessment. The assessment (both in ES Volume 3, Chapter 26 and ES Volume 6, Appendix 26A) considers potential changes in the future baseline, and the potential for change in patterns of fishing activity over time in response to a range of factors forms the principal reason for considering up to five years of key baseline data. In summary, the commercial fisheries impact assessment considers and describes the expected the ‘future baseline’ within which the Project would be present.
14	Reduction in or loss of access to established fishing grounds	The Llyr development will have a direct impact on commercial fisheries and their communities, and we feel the impacts assessed in the ES under-represent these impacts, especially when considering complete exclusion from the site.	Commercial Fisheries chapter of the ES, Volume 3, Chapter 26 - 26.8.6	The Applicant maintains that the commercial fisheries impact assessment is objective and robust, and reflective of the fishing activity in the study area and the scale of the Project.

Number / reference	Aspect	Response (Key concern, etc)	Chapter / Paragraph	Response from Llŷr Floating Wind
1	Transboundary and cumulative effects on seabirds	Despite the proposed windfarm development being located outside the territorial waters of Ireland's EEZ, we are commenting due to concerns of transboundary and cumulative effects on seabirds. There is no overall marine spatial plan for the Celtic Sea, but rather different plans from different jurisdictions at different stages of implementation. Along with our BirdLife International partner, the Royal Society for the Protection of Birds (RSPB), we would advocate for a strong commitment to a coordinated approach to strategic planning of ORE in the UK. We would also jointly advocate for the need for discussion between the UK and Irish governments on plans for ORE and the protection of shared marine biodiversity in the Celtic Sea. As a whole, the Celtic Sea is a unique and interconnected ecosystem and should be managed as such, with the range and habitats of many seabird species crossing the territorial borders within it. Ensuring transboundary communication and collaboration as multiple governments look to increase and implement more offshore renewable processes is key to ensuring that the cumulative effects of multiple projects do not negatively impact important marine species, including seabirds, and that the marine plans for one region do not undermine the management or ecosystem health of another.	Volume 3: Chapter 22 - Marine Ornithology	The matters raised by BirdWatch Ireland are noted by the Llŷr project. However, the aspects raised are not specifically related to the project, but address wider policy and regulatory aspects, which are outside of the scope of the project or its application. As a consequence, there is no further action for the Llŷr project to take in this regard, as the matters being raised relate to the respective regional (i.e. Welsh and Irish) government responsibilities for a co-ordinated approach to marine and sectoral policy and planning in the Celtic and Irish Seas.
		While we appreciate that transboundary and cumulative effects are assessed within the Llŷr Floating Offshore Wind Park's (henceforth referred to as LFOWP) Environmental Statement, we would ask for further assessment to conducted in relation to the project's potential impacts on Ireland's seabirds and marine environment. We understand that data gaps do exist and it is difficult to access data from another country; however, a simple qualitative assessment does not accurately represent the potential cumulative and transboundary effects to Ireland and Ireland's marine environment and biodiversity, particularly given the many proposed ORE developments in Ireland that are in advanced planning processes. This includes proposed development within the Irish portion of the Celtic Sea, which will begin the auction process this year, near to the proposed LFOWP location (more on this in a later section). In our response below, we have highlighted some issues which we would like to see addressed and more thoroughly considered. We stress that these issues may not be comprehensive, as additional concerns could arise as our knowledge increases and/or seabird populations change over time.	Volume 3: Chapter 22 - Marine Ornithology	As above
2	Potential transboundary effects on Irish birds moving through Wales's marine environment and LFOWP footprint	Many of the seabird species observed within the footprint of the site as part of the ornithological surveys for LFOWP Environmental Statement also occur in Irish waters, with some being of conservation concern. Those species which breed in Ireland include Kittiwake, Common guillemot (Uria aalge), Atlantic puffin, Northern gannet (Morus bassanus), Manx shearwater, European storm petrel, Razorbill (Alca torda), and Lesser black-backed gull (Larus fuscus); migratory or passage species in Ireland's waters include Balearic shearwater (Puffinus mauretanicus). Because the Celtic Sea is shared between Ireland and Wales, it is likely that these seabird populations are also 'shared' by the two countries. The Celtic Sea is a single biogeographic unit, with shared habitats and species occurring throughout, regardless of territorial borders [7]. The migratory nature of seabirds and the large size of their ranges means that conservation efforts to protect and improve their populations must be transboundary in scale and must seek to protect all seabirds occurring within the area, including those which may be passing through at certain times of the year on passage to breeding or foraging grounds elsewhere. For example, seabirds breeding in Ireland or using Irish waters for foraging may be passing through Welsh waters at different times of the year. Therefore, for ORE projects in the Celtic Sea, environmental assessments should include impacts on all seabirds passing through the area on their way to Irish breeding or foraging areas, as well as those known to be breeding or foraging in the footprint of a given proposal. To access the east coast of Ireland and the Irish sea, many species of seabirds will pass through the Celtic Sea and potentially through the LFOWP offshore footprint. While many of these individuals will be breeding and staying within the Irish Sea during different bioseasons, seabirds breeding within the Celtic Sea and Welsh waters will also move into the Irish Sea. Tracking studies on Northern gannets and Manx shearwaters from Wales show frequent movement of breeding Welsh seabirds into Irish waters, not only in the Celtic Sea, but also into and within the Irish Sea [8,9]. With increased ORE development in both countries and the associated disturbance and displacement of seabirds, the at-sea entrance to the Irish Sea could be made even narrower, limiting movement and migration. This could have effects on seabird fitness by making moving through this area more energetically difficult. In the long term, it could also potentially cut off foraging areas within the Irish Sea to seabirds in the Celtic Sea. It may also impact seabird population growth by constricting the movement of birds breeding in the Irish Sea. It is therefore important that impacts to seabirds not only utilising the Celtic Sea but also moving through the Celtic Sea on their way to other marine environments or passing through are fully considered throughout the LFOWP development and operation processes. BirdLife International maintains a global database of Important Bird and Biodiversity Areas (IBAs), sites which are of particular importance for the conservation of wild birds and their habitats [10]. While IBAs do not afford legal protection to a site, they are identified using a globally agreed standarised set of data-drive criteria and thresholds. In 2024, BirdWatch Ireland, working with BirdLife International, completed the identification of a network of marine IBAs in Irish	Volume 3: Chapter 22 - Marine Ornithology	As above

3	Cumulative effects of multiple offshore projects within the Celtic Sea	Given the amount of offshore renewable development planned in the Celtic Sea, we at BirdWatch Ireland appreciate that transboundary and cumulative assessments were included in the LFOWP Environmental Impact Assessment and would ask for more substantial assessments to be completed before construction, especially as it pertains to Ireland's South Coast Designated Maritime Area Plan (SC DMAP) for Offshore Renewable Energy. The SC DMAP 'identifies four Maritime Areas in the Irish part of the Celtic Sea within which proposed future ORE projects may be located' specifically referring to offshore wind development [11]. The plan was published in 2024, and the first of the four Maritime Areas (Tonn Nua) is expected to be auctioned in early 2025. Given the timing of this auction, and future auctions for the other three Maritime Areas, it is extremely likely that construction and operation of wind farms within the SC DMAP will overlap temporally with the construction and operation of the LFOWP, which would increase the potential cumulative impact and disturbance from offshore wind development to birds utilising the Celtic Sea marine environment in both countries (see Birdwatch Ireland submission for Figure 2 - a map of the locations of the SC DMAP and four auction areas in Irish waters and the LFOWP and nearby windfarms in Welsh waters). One central issue is whether the increase in turbines and expansion of windfarm development will have an effect where the birds are being squeezed into ever smaller areas within the Celtic Sea. To answer that we would need evidence on whether seabirds are avoiding other windfarm areas. Because of the uncertainty around seabird usage around offshore wind developments and the increased disturbance and displacement seabirds could be facing within the Celtic Sea, we at BirdWatch Ireland believe that increased caution should be exercised to limit the cumulative effects of these multiple ORE projects on seabirds. It is concerning that the cumulative impact assessment for the LFOWP does not consider cumulative impacts with the SC DMAP proposed areas. These proposed sites are not far from each other and, with displacement, there would be increasingly limited space for seabirds to utilise within and migrate through the Celtic Sea. As the Celtic Sea is also an entry point into the Irish sea and other breeding colonies in both Ireland and the UK, seabirds affected and pushed into ever smaller areas could include birds who utilise Irish sea as well. Additionally, with the lack of available data, it is possible that the LFOWP cumulative assessment presented in Appendix 22E may be inadequate and unable to capture the true likelihood of cumulative impacts from Irish and Welsh ORE development within the Celtic Sea. For this reason, we at BirdWatch Ireland would request that cumulative impacts are fully addressed, and reduced whenever possible, so that the movement of seabirds is not seriously inhibited by offshore wind development through and within the Celtic Sea.	Volume 3: Chapter 22 - Marine Ornithology	As above
4	Cautionary and flexible approaches to new technology	We appreciate that within the LFOWP Environmental Impact Assessment, it is stated and understood that floating windfarms are a relatively new technology to be used within the marine environment, particularly in the Celtic Sea. Because of this, we would ask for extra caution and careful consideration of possible unknown or unforeseen effects on seabirds. Given the novelness of floating windfarms within the Celtic Sea, there could be other new and unknown threats that arise during construction and operation that are not addressed in the Environmental Statement so caution and flexibility is important throughout construction and operation. If it becomes clear that impacts on seabirds are more severe than expected, new threats should be addressed in a timely manner to limit disturbance and negative impacts. The mooring lines that will be used to tether the floating wind turbines to the seabed represent a new type of entanglement risk to seabirds, particularly diving birds, though we appreciate that this threat is considered within the Environmental Statement Volume 3: Chapter 22- Marine Ornithology chapter. The novel use of remotely operated underwater vehicles (ROVs) to identify snagged fishing gear and other marine litter caught on the mooring lines that could entangle seabirds is welcome and we appreciate the use of innovative technology to try and address this new threat; however, we would also ask for a plan for the timely removal of debris and a recovery plan for any living seabirds picked up during the debris removal process.	Volume 3: Chapter 22 - Marine Ornithology	As above

5	Conclusion	With an increase in the proposed amount of renewable development in the Celtic Sea, from within Ireland and outside Irish borders, transboundary impacts and the cumulative effect these projects may have on birds needs to be better understood and planned for. The migratory nature of seabirds and the large size of their ranges make it possible that the populations of seabirds within the Celtic Sea intermix and are inter-connected between the countries; this should be further studied in order to understand how transboundary impacts could affect the overall populations of seabird species utilizing these waters. In the Irish waters of the Celtic Sea, several windfarm developments are being proposed, and with the proposed LFOWP wind farm development in Welsh waters as well, there is a very genuine possibility that cumulative effects of all these new wind developments could be a serious threat to seabirds that utilise the marine environment. We fear that assessing each development individually and within a bubble without a cumulative assessment of the totality of all the proposed developments within the Celtic Sea risks missing or underestimating impacts to birds and the marine environment and could negatively affect seabirds in the entire Celtic Sea marine environment, regardless of country boundaries. To better understand the inter-connected nature of seabirds utilising the Celtic Sea in both Ireland and Wales, and how seabirds are using the marine environment, increased tagging and tracking work should be done. We have worked with tagging and tracking projects with UK partners to show the movement of terns within colonies throughout the British Isles and would welcome the opportunity to collaborate on further tagging or tracking work, the results of which would further our understanding of how seabirds utilise our shared waters and could contribute to the seabird conservation strategies of both jurisdictions. Another possible mitigation we feel should be added to planning is that UK regulators should consider painting at least one turbine blade black as a collision-reduction measure [13], and request that funding is made available to find out if painting a blade black would lower any risk of collisions with seabirds in the Celtic Sea. From the evidence presented to us in the supporting documents to the application and overlap in construction and operation of several windfarms within the Celtic Sea, we at BirdWatch Ireland advocate for caution and conservative approaches to be taken within the planning and development of the Llŷr Floating Offshore Wind Project and that transboundary and cumulative impacts are considered throughout the lifespan of the project and addressed promptly and appropriately.	Volume 3: Chapter 22 - Marine Ornithology	As above

Number / reference	Aspect	Response (Key concern, etc)	Chapter / Paragraph	Response from Llŷr Floating Wind
1	General	The proposal is for a Test and Demonstration Floating Wind Farm project located in a highly sensitive marine environment. We understand that this project has been granted a lease as a Test and Demonstration project for floating offshore wind. The aim of this proposal is to enable a small scale Floating Offshore Wind deployment which will seek to capture data both in terms of the technology and potential impacts. This data can then be utilised in the future to help determine whether there is scope for further, large scale, commercial floating offshore wind farms in the Celtic Sea. Therefore, it is important that this project not only delivers data on the commercial viability of the technology but vital that data and evidence on ecological impacts on birds, mammals and the wider marine ecosystem is captured. However, whilst we appreciate the scale of this project is smaller than a commercial scale windfarm, and we recognise the importance of testing new technology, it should be noted that the precautionary principle needs to underpin any decision. Given the location of the proposal and its proximity to a number of protected marine sites the RSPB objects to this application due to the potential damaging impacts on the populations of gannets, guillemots and Manx shearwaters.		Noted - The precautionary principle is one the key arguments for undertaking Test and Demonstration projects, so that there is a basis for evidence and understanding prior to the deployment of larger GW scale offshore wind farms in the region. During discussions with the RSPB the potential for utilising the T&D sites within the Celtic Sea as a basis for setting up a regional working group to work through key environmental interaction issues associated with floating wind technology and/or issues within the Celtic Sea was considered. The group would be similar to the working groups set up by the Marine Directorate in Scotland for the Forth and Tay and the Moray Firth Offshore Wind Developments. This group could be chaired by an independent organisation such as the Crown Estate or NRW and co-ordinate actions to identify and prioritise key research needs (e.g. secondary entanglement). The T&D projects could offer their sites as a basis for research with funding being provided from enabling actions funds, such as the Crown Estate or Offshore Wind Industry Council. It would be anticipated that participation would include T&D developers, the Round 5 lease holders, Welsh Government, Crown Estate, SCNBs and key academic organisations and ENGO's. The Llŷr project is supportive of this initiative and believe it will assist in ensuring that key learnings are secured from the T&D projects for wider regional and industry benefits.
2	Site Integrity	We consider, that at present it is not possible to conclude that there will be no adverse effects on the integrity of the following internationally designated sites and their seabird features: • Grassholm Special Protection Area (SPA); • Sgomer, Sgogwm a moroedd Penfro / Skomer, Skokholm and the Seas off Pembrokeshire SPA. The RSPB's key concerns are summarised below. We have set out detailed comments on the ES in an Annex attached to this letter. These relate principally to the assessment of potential impacts on the ornithological interests.	Volume 3: Chapter 22 - Marine Ornithology	The Llŷr project considers that the assessments provided within the ES are appropriate and follow current good practice guidance from the SNCB's. NRW(A) and the JNCC have not raised any concerns with the quality of the technical assessments, or the modelling undertaken by the Llŷr project for gannet, guillemot or Manx shearwater.
3	Gannet, guillemot and Manx shearwater impacts	We consider there will be potential damaging impacts of collision mortality, barrier effects and displacement effects on populations of gannet, guillemot and Manx shearwater, specifically: o Grassholm SPA (gannet); and o Sgomer, Sgogwm a moroedd Penfro / Skomer, Skokholm and the Seas off Pembrokeshire SPA (guillemot and Manx shearwater). o Lundy SSSI (guillemot & Manx shearwater).	Volume 3: Chapter 22 - Marine Ornithology	The Llŷr project considers that the assessments provided within the ES are appropriate and follow current good practice guidance from the SNCB's. NRW(A) and the JNCC have not raised any concerns with the quality of the technical assessments, or the modelling undertaken by the Llŷr project for gannet, guillemot or Manx shearwater.
4	Nocturnal Impacts	We consider there will be potential adverse impacts on nocturnal species such as petrels and shearwaters through attraction or disorientation by lighting associated with project infrastructure.	Volume 3: Chapter 22 - Marine Ornithology	The Llŷr project is content to discuss post-construction monitoring requirements for these species and to explore their attraction to nocturnal lighting. We would welcome RSPB input alongside NRW(A) and the JNCC. There is no additional assessment possible at this stage.
5	Non-breeding SPA species	We consider there will be potential adverse impacts on the non-breeding seabird features of SPAs including Balearic shearwater (Europe's only critically endangered seabird and protected in marine SPAs in Spain, Portugal, and France) through collision risk, barrier effect and displacement.	Volume 3: Chapter 22 - Marine Ornithology	The Llŷr project is content to discuss any post-construction monitoring options or wider research in relation to Balearic shearwater with RSPB alongside NRW(A) and JNCC.
6	General	The RSPB recognises the need for more renewable energy generation as part of a range of measures to address climate change. Our view is that expansion of renewable energy must be 'in harmony with nature' so that we address global biodiversity collapse and the climate emergency in tandem. Our Energy Vision research sets out ten principles to achieve this including: • Plan for nature: strategic spatial planning to identify suitable sites with low ecological sensitivity. • Develop roadmaps for de-carbonisation in harmony with nature. In Wales policy choices should be informed by the effects of different scenarios on biodiversity and ecosystem resilience. We are concerned that the ecological sensitivity of the location will result in unacceptable impacts on biodiversity.	Volume 3: Chapter 22 - Marine Ornithology	Noted
7	Mitigation and Monitoring	We commend the effort undertaken to survey and collect baseline data. Unfortunately, despite this approach to establishing a baseline for offshore ornithology, there are a number of significant concerns regarding the impact assessment and lack of sufficient detail regarding mitigation and monitoring.	Volume 6: Appendix 22A – Marine Ornithology Baseline	The Llŷr project is content to engage with the RSPB, alongside NRW(A) and the JNCC on future requirements for mitigation and monitoring. The mitigation for ornithological interests proposed in the application follows industry good practice.
8	General	Our comments mainly relate to Offshore Ornithology; and Ecology and Biodiversity. The RSPB wishes to defer to the technical expertise of NRW advisory on non-avian ecological chapters, especially in respect of potential changes to coastal processes and potential impacts on benthic ecology, fish and marine mammals.	n/a	Noted
9	Grassholm SPA	Grassholm SPA The SPA is designated for its ornithological interest most notably breeding gannet. It is one of only two Gannet colonies in Wales and it is the third biggest colony in the world.	Volume 3: Chapter 22 - Marine Ornithology	Noted
10	Sgomer, Sgogwm a moroedd Penfro / Skomer, Skokholm and the Seas off Pembrokeshire SPA	Sgomer, Sgogwm a moroedd Penfro / Skomer, Skokholm and the Seas off Pembrokeshire SPA (hereafter referred to as Skomer, Skokholm and the Seas off Pembrokeshire SPA) The SPA is designated for its ornithological interest including the following qualifying breeding seabird features: Manx shearwater, storm petrel, lesser black-backed gull and puffin. Also a seabird assemblage: the main components are razorbill, guillemot, kittiwake, puffin, lesser black-backed gull, Manx shearwater and storm petrel.	Volume 3: Chapter 22 - Marine Ornithology	Noted
11	Manx Shearwater	**Baseline characterisation** Manx shearwater can be active throughout the day and night, with different levels of activity at different times. Such activity is variable, for example, for birds tracked from Skomer, diving occurred during the day and peaked in the evening (Shoji et al., 20161), while nocturnal foraging was observed from tracking of birds from High Island, Ireland (Kane et al., 20202). These diel variations in activity mean that the somewhat limited amount of time digital aerial surveys (DAS) were carried out is unlikely to properly characterise the activity of Manx shearwater at the Application site. For these reasons the RSPB does not have confidence in the baseline densities of Manx shearwater presented, and therefore it is impossible to make any conclusions as to the significance of impacts. Issues of detectability are not only whether the nocturnal and crepuscular nature of some of the at-sea behaviours means that they are not captured by the survey flights but also whether the size and flight characteristics of the species make them harder to detect. Evidence that the surveys are recording Manx Shearwaters should not be taken as evidence that all of this species' occurrence within the footprint during surveys has been detected. Deakin et al., 20223 highlight a need for experimental validation of these potential biases in aerial survey methods, including detectability, identification and diel variation. Without addressing these concerns, we are unable to rely on the densities of Manx Shearwater presented in the assessment and therefore unable to reach conclusions as to the significance of adverse impacts.	Volume 6: Appendix 22A – Marine Ornithology Baseline	An adequate baseline characterisation has been undertaken for the Llŷr project, and no outstanding concerns have been raised by NRW(A) or the JNCC with the quality of work. The Llŷr project acknowledge the limitations of DAS with reference to Manx shearwater, Balearic shearwater and other species more usually active at night. These are not limitations specific to DAS survey, and apply equally to earlier survey methods such as visual aerial or boat-based surveys. Also, no quantification of attraction effects is possible from any baseline characterisation method, in absence of the impact source giving rise to such attraction. The risk of increased collision from shearwater and petrel attraction to nocturnal lighting is likely to be low (especially in relation to a small-scale demonstrator project), and this is a matter that the Llŷr project is content to discuss through post-construction monitoring. It is unclear what further assessment RSPB think is possible for this species at application stage, no matter the method chosen for baseline characterisation.

12	Manx Shearwater	**Potential impacts arising through collision** In respect of Manx shearwater, the Applicant has concluded no adverse impact arising through collision with rotating turbines. We disagree that such a conclusion can be reached because the manner in which the calculations have been carried out do not reflect potential behaviour in the vicinity of turbines. Fundamental to the consideration of collision risk for this species is the extent to which nocturnally active seabirds, such as Manx shearwaters, may be attracted to the illuminations required for turbines, support vessels and the construction or expansion of ports. Such attraction will cause behaviour change, which could in turn increase collision risk, for example if birds fly higher when attracted to lights. There is abundant evidence of light-induced disorientation of Manx shearwaters. This evidence includes the grounding of fledglings in lit areas (Miles et al., 20104) and collision with lighthouses and other illuminated structures (Guilford et al., 20195, Archer et al., 20156). If light-induced disorientation leads to individual birds circling the navigation lights on the nacelle or tower of turbines for protracted periods (as has been reported for birds disorientated by lighthouses or gas flares) the probability of collision with turbine blades or other surfaces is vastly increased. Alongside this increased collision risk, the energetic costs of attraction and disorientation may be sufficient to impact on long term survival and the ability to successfully rear young.	Volume 3: Chapter 22 - Marine Ornithology	As above
13	Balaeric Shearwater	In tandem with the above comments on Manx shearwater, the critically endangered Balearic shearwater will not easily or reliably be detected by DAS. While this species was not detected during the baseline characterisation surveys, this may because of nocturnal and crepuscular activity precludes detection, as described, or potentially because they are confused during survey with Manx shearwater, which they resemble. The Celtic Sea is known to be an important area for wintering Balearic shearwaters with recent work demonstrating that the area around the Celtic Sea Front is likely to be a hot-spot in UK waters (Philips et al., 20217). This species will have similar risks to Manx shearwaters that need to be adequately considered in the assessment.		Balearic shearwater were included and assessed qualitatively in the application for Llŷr, acknowledging their presence in the Celtic Sea and referencing Philips et al., 20217. In light of the very limited information available on this species, it is unclear what further assessment the RSPB think is possible at project application stage. As noted above the applicant would be happy to discuss potential options in respect of PCM or wider research for this species.
14	Gannet	The application of a macro-avoidance correction to gannet collision risk modelling RSPB's advice on macro avoidance of wind farms by gannets differs to that provided by the Statutory Nature Conservation Bodies (NRW and NE). The current evidence of a strong macro avoidance of wind farms by gannets, established from observed behaviour, is almost entirely derived from non-breeding birds (Cook 2021). The evidence for macro avoidance during the breeding season is limited with the exception of a study of gannets breeding on Helgoland in the German North Sea. However, it is unclear from this study what the breeding status of the tracked birds was, or how their behaviour differed from what would have been expected pre-construction as two of the three wind farms were already operational during the first year of tracking. What the study does clearly show is that breeding gannets do fly through offshore wind farms, often showing no avoidance behaviour at all. While some tracks show clear avoidance others do not and may even show attraction to the wind farm. In the Cook (2021) report that suggests the application of macro avoidance to baseline densities, the suggestion is based on reviews that do not include this German tracking study, although it does acknowledge that it shows clear differences between individuals in relation to their response to wind farms. The previous gannet recommended avoidance rate was based on 'all gulls' data because no gannet data were available. The evidence of macro avoidance of gulls in response to wind farms is equivocal, so this rate was only calculated from 'within wind farm' avoidance. As gannets can show macro avoidance it therefore was suggested that this was applied to the baseline densities, and then collision risk modelling was carried out using the 'all gull' avoidance rate, so effectively applying avoidance twice. In response to this suggestion Natural England commissioned a further review of gannet avoidance rates, including whether macro avoidance should be incorporated in this way but this has not yet been reported. In the absence of having this report, the recommendations from it should not be acted upon, and the suggestions in Cook (20218) should not be taken up without the context of this review. Notwithstanding the above, the RSPB does not agree with the approach for two reasons. Firstly, it does not take into account the likely seasonal variation in macro avoidance as described above. Secondly, by basing the 'within wind farm' avoidance rate on the 'all gull' rate, it assumes that gannets will have the same 'within wind farm' reactive flight response as gulls. This assumption is very unlikely to be met, as gannets have much lower flight manoeuvrability than gulls. This will result in a lesser ability to make rapid reactions and consequently have a greater risk of collision. This should be reflected in the 'within wind farm' avoidance rate if any further changes are to be made. Any evidence of macro avoidance should also be seen in the context of recent work in Belgian offshore windfarms that has shown potential habituation to the presence of turbines. This effectively results in lower macro avoidance and so an elevated risk of collision. It is also important to acknowledge that corpses of Northern Gannets with injuries consistent with collisions with offshore wind farms have been recovered (Rothery et al., 20099), and the imperfect detection of these corpses indicate that there may be many more.		This is a wider technical/policy matter (i.e. not specific to just this project) that the RSPB need to address with NRW(A) and the JNCC. The application followed the approach on gannet macro-avoidance as advised by the SNCBs.
15	Kittiwake	Updated impact assessment work presented during the Mona OWF examination has highlighted potential in-combination adverse effects on the integrity of the kittiwake part of the seabird assemblage of the Skomer, Skokholm and the Seas off Pembrokeshire SPA. The impacts arising from collision and distributional change associated with the Mona OWF development in combination with other wind farms are predicted to result in the annual population growth rate of Kittiwake at the Skomer, Skokholm and the Seas off Pembrokeshire SPA declining with a ratio of impacted to unimpacted population growth rate of between 0.993 and 0.996. This means that after the 35-year lifetime of the development, the population size of the SPA is expected to be between 77.1 and 85.4% of what it would have been in the absence of the development. The RSPB considers this new information should be included in the Habitats Regulations Assessment work for the Llyr scheme.		As noted here by RSPB and in the NRW(A) response, these cumulative and in combination impacts have been considered and assessed in the Mona examination, as Mona included the kittiwake impact estimates for Llŷr in the total modelled under PVA for the Skomer, Skokholm and the Seas off Pembrokeshire SPA.
16	Lunday SSI	We note that Lundy SSSI has not progressed to assessment under either HRA or EIA. The populations of seabirds at Lundy have changed significantly as a result of a successful rat eradication scheme carried out over the winters of 2002/03 and 2003/04. This is most notable for Manx shearwater compared to the datasets referenced in the ES. While notified as a SSSI for its seabirds, the success of the restoration scheme has resulted in significantly increased seabird populations such that it now meets the qualifying thresholds for designation as a Special Protection Area (see table and graph below), including for its overall assemblage which has now reached over 42,000 individual seabirds in 2023. [*see RSPB response for table and Seabird Assemblege figure*] Vertical column is the number of individuals. We strongly recommend that further, detailed consideration is given to the impacts of the proposal on this SSSI in the EIA, based on the significant increase of breeding seabird populations and their vulnerability to impacts associated with offshore wind farms.		Detailed consideration was given to Lundy SSSI, including with reference to Manx shearwater movements between this protected site and the Irish Sea Front SPA. Based on current assessment practice to determine the relative weightings to apportion colony impacts, Lundy SSSI did not comprise a significant percentage of the birds at sea recorded in Llŷr survey work, with the closer and larger colonies of Skomer, Skokholm and the Seas off Pembrokeshire SPA receiving most of the calculated impact.

17	Highly Pathogenic Avian Influenza	RSPB Cymru has expressed concern regarding the potentially severe population scale impacts on seabird populations from the outbreak of the H5N1 strain of Highly Pathogenic Avian Influenza (HPAI). An example of the scale of impact of HPAI on gannets has been observed at Grassholm. Prior to the outbreak of HPAI the island's gannet population was ~33,000 pairs. 12 months later the population had dropped by 54% to ~16,500 pairs (2023). The 2024 census showed a slight increase to ~19,000 pairs. This scale of the impact of HPAI means that seabird populations will be much less robust to additional mortality arising from offshore wind farm developments. It also means that there may need to be a reassessment of whether SPA populations are in Favourable Conservation Status. RSPB Cymru does not consider that the implications on assessment of the outbreak have been adequately assessed for the following reasons. The impacts of HPAI and thus reductions in colony sizes may be manifested through the direct effects of mortality or the indirect effects arising through physiological constraints due to infection. These could arise for example, through impaired foraging ability or lower productivity. The severity and rate of recovery from these effects will determine the utilisation of space by seabird populations and consequently their interactions with wind farms. As well as changes to population numbers, HPAI infection is likely to cause variation in space use over time between individual birds and colonies, in part due to a likely decrease in competition, but also potentially related to physiological changes, such as in vision and fitness. This change in space use will be reflected in changes in the extent of interactions with wind farms, and in the lethal and sub-lethal consequences of those interactions. Recent research into the impact of the 2022 HPAI outbreak on gannet movements and space use has revealed that surviving gannets instigated unprecedented long-distance exploratory movements during the outbreak, likely as a short-term response to HPAI-related disturbance (Jeglinski et al. 202310). Breeding gannets tracked several months following the outbreak showed a high degree of breeding colony fidelity and foraging time budgets that are characteristic for the species, but birds showed reduced foraging effort, that is foraging trips were shorter in duration, and in maximal and total distance travelled, compared to data from previous years, likely because of reduced competition (Gremillet et al. 202311). RSPB Cymru is concerned that the implications arising from the HPAI outbreak have not been fully considered in the assessment. As a consequence, the RSPB request that the following consequences of the HPAI outbreak are explicitly considered by the Applicant: • Consideration of how the HPAI outbreak will influence the representativeness of the baseline characterisation. This should include the direct influence of population size and through changes in space use; • Alterations of the extent of interactions with wind farms, potentially related to physiological changes, and in the lethal and sub-lethal consequences of those interactions; and • Consequences in changes in the robustness of protected populations to additional mortality arising through the presence of wind farms.		As noted in the Llŷr assessment, the survey work for quantification of impacts predates the HPAI outbreak, and therefore relates to the at sea activity of birds from the relevant breeding colonies at that time, i.e., to pre-HPAI population numbers. Advice from NRW(A) and the JNCC is to ensure this matches, so that PVA is carried out against the most closely contemporaneous population to the timing of the DAS. If this is not done, then population consequences may be over-estimated if impacts are over-estimated relative to population size.
18	Ecology and Biodiversity - Chough (onshore)	Our main concern about the onshore element of the project relates to chough. There are potential adverse impacts on breeding and foraging chough (a feature of Castlemartin Coast SPA), through disturbance and loss of foraging habitat from onshore construction works associated with the cable landfall and cable corridor within the SPA. A comprehensive programme of ornithological survey work along the route of the cable landfall and grid connection has been undertaken although there are some limitations which are acknowledged in the ES. The chapter is supplemented with a specific Chough Survey Report. We understand the cable route is some distance from the nearest nest site. However, there is a paucity of information on where chough forage in proximity to the onshore development from the limited number of surveys. Thus, potential disturbance to foraging chough in proximity of the development area needs further consideration. We acknowledge the applicant's efforts to assess and mitigate the risks of impact on the chough population. However, we recommend that additional chough foraging surveys are undertaken in the vicinity of the cable corridor within the SPA.		The Llŷr project is content to commit to further post consent Chough foraging surveys in the vicinity of the cable corridor within the SPA, The Llŷr project Construction Environmental Management Plan (CEMP) has a commitment to undertaking a number of post consent species surveys (to include Chough foraging) at an appropriate time before construction activities commence by a suitably experienced licensed ecologist (to take account of potential changes to species presence or activity). The survey results and recommendations will be shared with the local authority ecologist and agreement will be reached with the local authority on whether further licences are required or species specific management plans are required or updated. (Llŷr ES, Volume 6: Appendix 4A - Outline Construction Environmental Management Plan (OCEMP), Paragraph 197 to 200, page 41). In addition, as stated in the Chough Survey report, the Llŷr project CEMP will require a pre-works check for nesting birds by an ECoW, followed by the implementation of a precautionary 1km buffer zone before works may commence with an experienced ornithologist present to observe behaviour of any chough to determine whether a smaller buffer is appropriate. As also noted in the Chough Survey report, chough typically forage within 500m of nest sites so impacts are unlikely beyond 1 km. (Llŷr ES, Volume 6: Appendix 8A - Chough Survey Report, Section 8.7 Summary and Conclusions, Paragraph 31, page 10) Discussions with the RSPB highlighted the existence of the Pembrokeshire Chough Study Group and the Llŷr project committed to contact them for advice and dialogue when undertaking the Chough foraging surveys.
19	Assembly and Wet Storage	It is vitally important that we have a full understanding of the assembly process and the wet storage aspect of the project, as the impacts on ecology and the marine landscape could be significant. We are concerned about the lack of detail and impact assessment of the wet storage and assembly areas for the offshore turbines. Chapter 4 – Description of the Proposed Project touches upon this matter, Paragraph 153 states: It is proposed that the WTGs will be installed on the floating platform at a nearby port facility and/or nearby sheltered waters prior to being towed to the Array Area…….. The location for assembly of WTGs and platforms will be confirmed at a later stage during detailed design. The location for assembly and storage of materials, where they have the potential to have an environmental or ecological impact, should be included within an EIA. Wet storage has potential to displace coastal birds such as species of auks (such as guillemot) and sea ducks (including common scoter). We need to know the impact of wet storage within the marine ecosystem and the biosecurity measures that will be put in place.	Chapter 4 – Description of the Proposed Project touches upon this matter, Paragraph 153	These aspects are outside the scope of the Llŷr project marine licence and section 36 application. The location of wet storage / assembly / construction locations are closely associated with the future technology selection and contracting / procurement arrangements. Awarding and entering into supply contracts can only be undertaken after financial close is achieved, which amongst other things requires project permits and consents. It will be the responsibility of the contracted EPC or host construction port to have / secure the appropriate environmental licences/permits to undertake the works (including wet storage).

Number / reference	Aspect	Response (Key concern, etc)	Chapter / Paragraph	Response from Llŷr Floating Wind
1	Marine ornithology	It is unclear how the magnitude of an impact is assessed at regional, Biologically Defined Minimum Population Scales (BDMPS) under Environmental Impact Assessment (EIA) given reference to Appendix 22F which presents colony-specific Population Viability Analysis (PVA) for key (impacted) colonies only. Note our comments under relevant sections below on the need for a regional PVA for common guillemot, given that regional annual mortality exceeds 1% of baseline mortality.	Volume 3 Chapter 22: Marine Ornithology	The Llŷr project do not consider that a further (regional) PVA for guillemot is necessary, as two PVAs have already been run for the key guillemot populations in Pembrokeshire and a further regional PVA would not add value to the decision-making process. There is much less certainty in the demographic information for input into a regional PVA compared to the colony-specific ones, and therefore little confidence can be placed in the associated outputs. If JNCC need to refer to regional PVA for guillemot, then this has been done by Mona - as set out in Table 5-86 of their Deadline 7 report - ES Cumulative Assessments, REP7-033. As detailed in ther Llŷr clarification notes attached, Mona have adopted the correct figures for Llŷr (across all species, including guillemot) in assessment.
2	Marine ornithology	Are these predicted annual mortalities or predicted across lifetime of the project? If the former these are very overinflated criteria, and we would suggest anything over 1% being a large impact.	Volume 3 Chapter 22: Marine Ornithology - Table 22-6, page 30	The definitions of magnitude presented in Table 22-6 for the quantitative impacts (collision risk/displacement) are annual rather than summed across the wind farm lifespan. However, these have not been used in isolation in consideration of significance under EIA, as the NRW(A) and JNCC advice on thresholds (provided 15/08/2023) has also been followed, i.e. that any predicted annual mortalities above 1% of annual baseline mortality may be significant and should be considered further under PVA. PVA models the long-term population consequences of the predicted rates of annual mortality, applied year-on-year over the lifetime of the project. The 1% mortality thresholds calculated following NRW (A) and JNCC advice are presented in Table 22-23 (displacement), and Table 22-27 (collision risk). This information is also used in assessment, and underpins the conclusions presented on EIA significance for these two impact pathways.
3	Marine ornithology	It would be helpful to state explicitly that displacement mortalities will be added to collision mortalities (annual) for gannet before assessing against regional and SPA populations baseline mortalities.	Volume 3 Chapter 22: Marine Ornithology - Section 22.8, paragraph 228, page 67	Noted. The process was set out in *Appendix 22E_Marine Ornithology Impact Scenarios* giving the supporting detail.
4	Marine ornithology	Can the Applicant please confirm whether razorbill are intended to be included in this table or if this is a mistake and should read lesser black-backed gull.	Volume 3 Chapter 22: Marine Ornithology - Table 22-27, page 68	Yes, it's a typo and should read lesser black-backed gull.
5	Marine ornithology	It appears to be the case that model-based density estimates have been used for collision estimates, but this has not been stated clearly or explicitly for species except for greater black-backed gull. This should be stated explicitly for all species.	Volume 6 Appendix 22A: Marine Ornithology Baseline	Noted.
6	Marine ornithology	The paragraph states that apportioning of unidentified birds to species level has been undertaken based on ratio of abundances. An example is provided for guillemots and razorbills whereby if they occurred in a 4:1 ratio, then 80% of unidentified birds would be assigned to guillemot and 20% assigned to razorbill. Further detail is required regarding which unidentified species groupings were included. For example, for razorbills and guillemots the groupings 'auk/shearwater species', 'auk/small gull species', 'auk species', and presumably 'large auk species' could all potentially include guillemots and razorbill (although clarity as to which auk species are considered large is not provided, but as the two largest species of auk which occur in the UK we assume that this would include razorbill and common guillemot). Are all of these groupings considered and apportioned to razorbill and to common guillemot?	Volume 6 Appendix 22A: Marine Ornithology Baseline - Section 22.2.2, paragraph 29, page 21	Addressed in the accompanying clarification note: 2025 03 28 - Llŷr - marine ornithology - clarification note 2 - auk non-ID apportioning
7	Marine ornithology	JNCC have concerns around the suitability of the density outputs from INLABRU as inputs for stochastic Collision Risk Modelling (sCRM). This has been discussed extensively in pre-application discussions, but a summary of our concerns is provided here:	Volume 6 Appendix 22A: Annex B Survey Data Analysis – Technical Papers -	Noted
8	Marine ornithology	INLABRU produces abundance estimates and a mean, median, standard deviation and quantiles of these estimates. It does not provide a distribution of densities which could be used as inputs for sCRM in accordance with the recommendations in the recently updated joint SNCB advice note on collision risk modelling (JNCC et al., 2024). There are three options in the sCRM tool (Caneco & Humphries, 2022) for providing the bird density inputs with uncertainty measures in the sCRM: 1. Mean species densities with standard deviations. 2. Maximum (max), minimum (min), and selected percentiles from a distribution of mean density estimates. 3. 1,000 samples from a distribution of mean densities (e.g. from a bootstrapped sample). JNCC et al. (2024) state that option 1 (use of mean densities with standard deviations) is not recommended for use with the sCRM as the model samples from a truncated normal distribution and this may not reflect the distribution of the bird density data from the site (as described in Trinder, 2017). JNCC et al. (2024) recommends option 3 is used but states that option 2 may be acceptable. The densities produced from INLABRU facilitates only option 1 of the above, which is not a recommended option. To address these concerns, the Applicant has provided a comparison of resulting annual collision mortalities based on design-based bootstrap outputs (option 3) and on design-based mean and SD (option 1) to allow consideration of the influence of the INLABRU density modelling process and the use of option 1 above within sCRM, on resulting mortality estimates. This seems like a proportionate response to JNCC concerns and makes use of the observed baseline data without the need for Llŷr 1 to undergo additional density modelling. Based on the information provided in Table 2.1, JNCC are content with basing our conclusions around collision mortality for gannet and kittiwake on the sCRM as undertaken by Llŷr, using INLABRU-derived mean and SD (option 1 from above) as inputs to sCRM, in this instance. It should be noted that this does not in any way constitute a more general JNCC opinion on the use of INLABRU, and at present this is not a recommended approach to modelling bird densities for input into sCRM.	Volume 6 Appendix 22A: Annex B Survey Data Analysis – Technical Papers	Noted

9	Marine ornithology	Whilst it is not clear from this document itself, the Addendum provided by the Applicant in response to the fitness check states that the numbers provided in Table 2.1 are the estimated collision mortalities modelled from each of the three types of input density (types explained below). This matches what is provided in Volume 6 Appendix 22C: Marine Ornithology Collision Risk Modelling for the model taken forward by the Applicant. Please re-word the legend for Table 2.1 to make this clear.	Volume 6 Appendix 22A: Annex B Survey Data Analysis – Technical Papers - Table 2.1, page 98	This is correct, but we do not think re-wording the legend is strictly necessary.
10	Marine ornithology	Given that gannets display colony segregation in foraging areas (Wakefield et al., 2013), and that given tracking data shows Grassholm gannets as the only colony utilising the project footprint and surrounding seas (e.g. Wakefield et al., 2013; Langley and Votier, 2021), we would like to see scenario with apportioning weight of 1 for adult gannets to Grassholm SPA (Table 22B-8). However, given the already very high apportioning weight of 0.969 for adult gannets to Grassholm SPA we do not believe this would make a material difference to conclusions reached for gannet and are content to base our advice on the apportioning undertaken by the Applicant.	Volume 6 Appendix 22B: Marine Ornithology Colony Apportioning	Noted
11	Marine ornithology	The Applicant has used McGregor et al. (2018) stochastic CRM tool, as advised by NRW in pre-application advice and which was our recommended preference at that time. JNCC et al. (2024) recommend use of Caneco and Humphries (2022) tool which is an update and improvement on McGregor et al. (2018). Annex 5 of Ozsanlav-Harris et al. (2023) shows that the results from using McGregor et al. (2018) are very similar to results from using Caneco & Humphries (2022) tool as such, we are content to base our conclusions around collision mortality on the outputs provided by the Applicant using the McGregor et al. (2018) tool.	Volume 6 Appendix 22C: Marine Ornithology Collision Risk Modelling	Noted
12	Marine ornithology	The Applicant has provided collision mortalities for gannet based on flight speeds estimated from Grassholm tracking data and analysed to inform the Erebus Offshore Wind Farm (OWF) impact assessment and HRA (Langley and Votier, 2021), as well as those based on generic flight speeds recommended for gannet in JNCC et al. (2024) (from Pennycuick, 1997). The analysis of gannet tracking data provided by Langley and Votier (2021) provides a flight speed for flying gannets overlapping the Erebus array footprint, and for flying gannets not overlapping the Erebus array footprint. Whilst the Llŷr 1 array footprint does not overlap Erebus array footprint, the two footprints are close together in space in relation to the wider area used by gannets from Grassholm, and it is likely that these gannets may show similar behavioural patterns and use of the two footprint areas. Therefore, we agree with the Applicant that the gannet flight speeds used by Erebus, based on flying gannets overlapping the Erebus array footprint, are appropriate for use in collision risk modelling for Llŷr 1, as are generic flight speeds as per JNCC et al. (2024) recommendations for gannet, as taken through the process by the Applicant, given that this is our published generic advice and that this provides a more precautionary assessment of collision risk in this instance.	Volume 6 Appendix 22C: Marine Ornithology Collision Risk Modelling	Noted
13	Marine ornithology	The bird parameters provided in Table 22C-2 mostly match those recommended in JNCC et al. (2024). The exception is nocturnal activity factor for gannet, kittiwake and lesser black-backed gull. JNCC et al. 2024 recommend updated nocturnal activity factors which are based on Cook et al. (2023) for these species. However, the values used by the Applicant are those provided by NRW in pre-application advice and which were our recommended values at that time, and which were based on Furness et al. (2018) for gannet and on Garthe & Hüppop (2004) for other species. The values used by the Applicant are more precautionary for all species except for kittiwake and in this case the difference in nocturnal activity values is small. We are content to base our conclusions around collision mortality on the seabird parameters provided in Table 22C-2.	Volume 6 Appendix 22C: Marine Ornithology Collision Risk Modelling - Table 22C-2, page 9	Noted
14	Marine ornithology	We have based our conclusions regarding displacement impacts on specific species/sites on displacement matrix outputs as provided by the Applicant. However, we are grateful for the SeaBORD outputs which provide additional context and scenarios to consider.	Volume 6 Appendix 22D: Marine Ornithology Displacement Assessment	Noted
15	Marine ornithology	We are unclear what the displacement rate of 50% for Manx shearwater is based on. Given the lack of species-specific evidence of displacement rates, we would recommend a range of 30% to 70% displacement rate in line with other species. We are content with the mortality rate of 10% for this species, again matching more precautionary rates advised for other species. Using 70% displacement and 10% mortality as a displacement scenario would lead to 331 Manx shearwater mortalities (Table 22D-15) and 278 of these would be apportioned to Skomer, Skokholm and Seas Off Pembrokeshire SPA (Table 22D-16), neither of which exceed or approach the relevant 1% baseline mortality thresholds for Llŷr 1 alone. The correct displacement mortality should be considered alongside Manx shearwater mortalities from other plans and projects, in the cumulative and in-combination assessment.	Volume 6 Appendix 22D: Marine Ornithology Displacement Assessment - Table 22D-15, page 23 and Table 22D-16, page 24	Noted, and **clarification notes 1 and 3** confirm that the correct Manx shearwater figures taken forward by Mona for cumulative / in combination assessment, as submitted for examination. No further requirements on Llyr in this regard.
16	Marine ornithology	We advise that the quantitative cumulative and in-combination assessment undertaken by Mona OWF is used to inform impacts of Llŷr 1 in-combination with other plans and projects. This includes a gap-filling exercise undertaken by Mona to generate estimated impact values for species and projects for which no suitable numerical information was available from submitted environmental statements or other available documentation. The Mona assessment includes quantitative impact estimates for several of the projects approached qualitatively in Table 22E-16 by the Applicant, including Burbo Bank and Burbo Bank extension, Walney phases 1, 2, 3 and 4, White Cross, Ormonde, Rhyl Flats, West of Duddon Sands, Rampion and Robin Rigg. In addition to calculating in-combination impacts across plans and projects, apportioned to the relevant colonies, as described in section 22.2.5, a cumulative regional mortality impact across plans and projects, for consideration under EIA, should also be presented. This should make use of information collated by Mona as described above. In-combination impacts are presented in section 1.5 of the S D5 23 document submitted by Mona. Regional impacts are presented in sections 1.3 to 1.5 of the S D5 24 document submitted by Mona. It is these, cumulative and in-combination impact totals, that should then be considered against relevant baseline mortality numbers and, if appropriate (above 1% baseline mortality of the population in question), taken through to PVA. Without this being provided, we are unable to come to conclusions regarding cumulative and in-combination impacts.	Volume 6 Appendix 22E: Marine Ornithology Impact Scenarios	As above , the **clarification notes 1 and 3** confirm that that Mona have taken forward the correct Llyr figures for all species for cumulative / in combination assessment, and associated PVAs, as submitted for examination. No further requirements on Llŷrin this regard.
17	Marine ornithology	It is stated that there are “negligible puffin mortalities to be assigned against the SSSP SPA population from either Awel y Mor or Twin Hub offshore wind projects or from the Morlais tidal project”. We question what is negligible? Any mortalities should be added to those from Llŷr 1 and considered cumulatively	Volume 6 Appendix 22E: Marine Ornithology Impact Scenarios - Section 22.2.5, paragraph 19, page 13	Addressed for the Mona examination, as per the clarification notes.

18	Marine ornithology	The table shows that all project-alone impacts fall below the 1% of baseline mortality threshold for EIA regional populations, except for common guillemot. We advise that a regional PVA is therefore required to assess the scale and significance of any impacts on the regional population, from Llŷr 1 alone and cumulatively with other plans or projects which may act in combination. With regards to this, we are aware that Mona OWF have recently undertaken a regional PVA for common guillemot incorporating cumulative impacts across the regional populations scale. The Mona cumulative totals can be found in sections 1.3 to 1.5 of their S D5 24 document submitted by Mona. Given that the Llŷr 1 array footprint is within the same BDMPS region (Furness, 2015) as Mona OWF, then this can be used to inform a comprehensive EIA cumulative assessment for Llŷr 1.	Volume 6 Appendix 22E: Marine Ornithology Impact Scenarios - Table 22E-3, page 9	As pre previous comment, the Llŷr project do not consider that a further (regional) PVA for guillemot is necessary, as two PVAs have already been run for the key guillemot populations in Pembrokeshire. It is not considered that a further regional PVA would add value to the decision-making process. There is much less certainty in the demographic information for input into a regional PVA compared to the colony-specific ones, and therefore little confidence can be placed in the associated outputs. If JNCC need to refer to regional PVA for guillemot, then this has been done by Mona - as set out in Table 5-86 of their Deadline 7 report - ES Cumulative Assessments, REP7-033. As checked for Llŷr clarification note 1, Mona have adopted the correct figures for Llŷr (across all species, including guillemot) in assessment.
19	Marine ornithology	It is stated that White Cross windfarm has not been included in the quantitative displacement assessment for guillemot as the determination is currently on hold and therefore no mortality estimates can be used here with any certainty. Values are available from White Cross and therefore should be used in a cumulative assessment, acknowledging that there remains some uncertainty around the values. This is the case for several other plans or projects for which numerical information on seabird mortalities is available, albeit with some uncertainty, and which should be included.	Volume 6 Appendix 22E: Marine Ornithology Impact Scenarios - Section 22.2.5, paragraph 26, page 12	Addressed for the Mona examination, as per the clarification notes.
20	Marine ornithology	There is a mistake for guillemot mortalities from Erebus for Matrix 70%/10%, Castlemartin SSSI, this should be ~121.	Volume 6 Appendix 22E: Marine Ornithology Impact Scenarios - Table 22E-6, page 12	Noted
21	Marine ornithology	Northern gannet at Grassholm have been impacted by Highly Pathogenic Avian Influenza (HPAI) with an observed decline between 2021 and 2024 (Tremlett et al., 2024). If we look at the trend previous to HPAI we see a slight increase between a gannet census in 2003-2005 and Seabirds Count (2015-2021). The Llŷr 1 PVA outputs show a baseline scenario (in the absence of additional mortality from Llŷr 1 OWF) for gannet at Grassholm increasing substantially. We would advise that use of a regional productivity rate might better reflect the observed (pre HPAI) trend. Note that we assume Grassholm gannets will show a recovery from HPAI and observations in 2023 and 2024 (available within Seabird Monitoring Programme database) seem to support this. We note that the counterfactual for growth rate for gannet at Grassholm is 0.999 or higher under all displacement scenarios taken through to PVA and including lower confidence limits. This metric is relatively insensitive to misspecification of demographic rates, indicating that any change in population growth rate over the 30 years of Llŷr 1 operation as a result of Llŷr 1 impacts on gannet, is likely to be very small regardless of which productivity rate is chosen (colony or regional or national). However, given that we advise the need for a revised PVA, based on comprehensive in-combination impacts from the full range of existing plans and projects, we advise that such a PVA is based on regional or national productivity to better reflect the observed trend in gannet numbers at Grassholm. Guillemot counts at Skomer, Skokholm and the Seas Off Pembrokeshire SPA have been very variable, with little overall increase observed within the SMP counts over the last decade or so, but more consistently high numbers in recent years. The Llŷr 1 PVA outputs show a baseline scenario (in the absence of additional mortality from Llŷr 1 OWF) for guillemot at Skomer, Skokholm and the Seas Off Pembrokeshire SPA increasing substantially, with the median population at the end of the modelled period being over double the initial population size. Given the discrepancy between observed and projected baseline population trend, we would advise that use of a regional productivity rate might better reflect the observed trend. We note that the counterfactual for growth rate for guillemot at Skomer, Skokholm and the Seas Off Pembrokeshire SPA remains high especially for project alone, under all displacement scenarios taken through to PVA and including lower confidence limits. This metric is relatively insensitive to misspecification of demographic rates, indicating that any change in population growth rate over the 30 years of Llŷr 1 operation as a result of Llŷr 1 impacts on guillemot, may be small regardless of which productivity rate is chosen (colony or regional or national etc). However, given that we advise the need for a revised PVA, based on comprehensive in-combination impacts from the full range of existing plans and projects, we advise that such a PVA is based on regional productivity to better reflect the observed trend in guillemot numbers at	Volume 6 Appendix 22F: Marine Ornithology Population Modelling	Addressed for the Mona examination, as per the clarification notes.
22	Marine ornithology	European storm petrel. We are content with reasoning regards Ouessant-Molène SPA, but given lack of telemetry data for Baie de Morlaix SPA or Côte de Granit Rose-Sept-Iles SPA we would suggest that for these two sites Likely Significant Effect (LSE) screening should be on the basis of generic foraging range from Woodward et al. (2019), or with further discussion with the Applicant, potentially an updated generic (mean max + 1SD) combining data from Woodward et al. (2019) and Mahéo and Cadiou (2021).	Volume 6 Appendix 8D: HRA Screening - Table 8D-17, page 102	Noted, however, this makes no material difference to apportioning weightings, and does not affect any assessment outcomes or HRA conclusions.
23	Marine ornithology	Manx shearwater. We do not agree with the approach described. Some of the transboundary SPAs which are described as no potential for LSE, are closer to Llŷr than SPAs within UK which are described as potential LSE. Ecologically this does not make sense, and we propose that a standard, consistent and objective screening is undertaken using the standard approach	Volume 6 Appendix 8D: HRA Screening - Table 8D-17, page 103	Noted, however, this makes no material difference to apportioning weightings, and does not affect any assessment outcomes or HRA conclusions.
24	Marine ornithology	Gannet. We do not agree with the approach described. Some of the transboundary SPAs which are described as no potential for LSE, are closer to Llŷr than SPAs within UK which are described as potential LSE. Ecologically this does not make sense, and we propose that a standard, consistent and objective screening is undertaken using the standard approach.	Volume 6 Appendix 8D: HRA Screening - Table 8D-17, page 105	Noted, however, this makes no material difference to apportioning weightings, for which JNCC advise a value of one be used for Grassholm SPA anyway. i.e., no impacts to be assigned to any other SPAs, whether transboundary (Irish) or other UK.

25	Marine ornithology	JNCC agree with the conclusions of no AEoSI regarding project alone impacts on all SPAs for which JNCC have jurisdiction. These are Skomer, Skokholm and the Seas off Pembrokeshire (SSSOP) SPA and Irish Sea Front SPA. However, JNCC are unable to conclude regarding impacts in combination with other plans and projects, given the lack of a complete and comprehensive inclusion of mortalities from other plans and projects within PVA analysis, relevant to SSSOP SPA. The location of Llŷr 1 is such that it could present a barrier to connectivity between Irish Sea Front SPA and breeding Manx shearwaters at Lundy (e.g. Dean et al., 2015; Padget et al., 2019). This is relevant for conservation objective 3 of the Irish Sea Front SPA (ensure connectivity between the site and its supporting habitats and Manx shearwater breeding colonies is maintained). Very little is currently known about potential for OWF to disrupt commuting activities and the impact that such disruption may have on breeding individuals. Erebus OWF is close to Llŷr 1 and may act in-combination with Llŷr 1 regarding barrier to connectivity between Irish Sea Front SPA and breeding Manx shearwaters at Lundy. Erebus undertook an assessment of impacts against this conservation objective, by considering that barrier effects may be captured within a displacement analysis. They thus concluded that Erebus may lead to a mortality of two individuals from Lundy SSSI. Whilst we are not assessing impacts to Lundy but rather impacts to Irish Sea Front SPA as a result of loss of connectivity, it is not possible to separate barrier effects from displacement with the currently available assessment methods. Given the very small numbers concerned and the likely very small impact overall on flight path length from avoiding Llŷr 1 and Erebus OWFs, JNCC agree with the conclusion of no AEoSI to Irish Sea Front SPA as a result of Llŷr 1 in combination with other plans and projects. Given the unknowns around potential alterations of flight-paths and impacts on connectivity, of OWFs on Manx shearwater, comprehensive monitoring of flight paths in the wider vicinity of Llŷr before, during, and after construction of Llŷr 1 would improve understanding of any potential impacts on connectivity. If well designed, such monitoring could also inform understanding of potential attraction and related impacts from lighting of offshore structures, which could inform future lighting design and management to minimise potential future risks and impacts on Manx shearwater. We therefore suggest post-consent monitoring of Manx shearwater is undertaken by Llŷr 1 and JNCC would welcome discussions with the Applicant regarding monitoring.	Volume 6 Appendix 8E: HRA RIAA	Noted. The Llŷr project is happy to engage in any required dialogue over post-consent monitoring with all the relevant stakeholders.
26	Marine ornithology	JNCC do not think this is relevant and it is not clear to us what the purpose of this is. It is also not clear how this step has been undertaken and what criteria has been used to assess significance (e.g. what is "non-significant levels of such mortality"?). Even very small numbers of mortalities may be significant for rare/declining species or those present in small numbers as a feature of a protected site. Therefore, for sites and qualifying features not screened out in the HRA screening (App 08D Llŷr ES - HRA Screening), the (combined) annual displacement and collision impacts attributable to a site need to be considered against baseline mortality to understand whether the additional mortality resulting from Llŷr might result in AEoSI. This information should be presented as part of the HRA RIAA.	Volume 6 Appendix 8E: HRA RIAA - Table 8-32 and paragraphs 543 to 547, page 174	Noted. This information was provided in Appendix 22E: Marine Ornithology Impact Scenarios which supported the RIAA as well as the EIA Chapter.
27	Marine ornithology	We have made comments above regarding Volume 6 Appendix 22E: Marine Ornithology Impact Scenarios, which also apply to this document.	Volume 6 Appendix 5A: Approach to Cumulative Effects Assessment	As above, this information was provided in Appendix 22E: Marine Ornithology Impact Scenarios which supported the RIAA as well as the EIA Chapter.
28	Marine Mammals	In line with JNCCs remit in offshore waters, we defer to NRW-A regarding potential impacts to seals and bottlenose dolphins as these are coastal populations and MPAs for these species are in territorial waters.	General	Noted
29	Marine Mammals	Our review has focussed on Special Areas of Conservation (SACs) designated for harbour porpoise. We have concerns with some of the information presented in the Report to Inform Appropriate Assessment (RIAA) to support this conclusion. Subsequently, we do not believe sufficient or appropriate information is provided to the Regulator to inform their HRA of the harbour porpoise SACs. We do not agree with the decision to scope out certain impact pathways for both the project alone and in-combination assessment. Particularly, barrier effects from mooring lines and cables between platform and anchors, and entanglement with mooring lines and cables. In addition, the assessment of adverse effect due to noise disturbance within the sites has not been assessed correctly. While the Applicant has responded to our comment following the fitness check (27 September 2024) in relation to the use of applying Effective Deterrent Ranges (EDRs), they have not been presented or used correctly. The correct EDRs have not been applied, and the results do not identify the percentage of either the West Wales Marine SAC or Bristol Channel Approaches SAC that would be unavailable to harbour porpoise. Instead, the percentage of the population impacted within the respective areas for each receptor is provided. While this is useful when determining the impact of an activity in the context of European Protected Species (EPS), it is not how they should be applied when determining adverse effect via disturbance on the site integrity (AEoSI).	General - Habitat Regulations Appraisal (HRA)	The Llŷr project considers that the state of knowledge around most impact pathways for marine mammal interests, is too uncertain to be able to make any meaningful judgement in terms of numbers of animals impacted, certainly for the qualitative impact pathways. As density of animals at any project site will also vary over time, the Llŷr project gave consideration to the status of the species, and whether it occurs consistently or irregularly on-site, as more informative criteria rather than using an arbitrary number.
30	Marine Mammals	The information provided in Chapter 4: Description of the Proposed Project outlining the worse-case scenario for impact piling duration does not reflect what has been assessed in Chapter 21. Chapter 4, section 4.5.1, paragraph 85 states that the minimum number of days piling will be 20. However, the marine mammal disturbance assessment for impact piling in both the Environmental Statement (ES) and the RIAA has used for the piling duration a maximum 10 days as the worst-case scenario. The design envelope should not exceed that assessed. We advise that either the disturbance assessment be re-visited to reflect the worst-case scenarios as outlined in the project design, or the correct project design be confirmed.	General - Worse-Case scenarios	It is correct that the project envelope identifies the minimum number of days piling will be 20 and that the marine mammal disturbance assessment for impact piling in both the Environmental Statement (ES) and the RIAA has used for the piling duration a maximum 10 days as the worst-case scenario. The underwater modelling was carried out relatively early in the assessment process and the project envelope was updated after the modelling had been carried out. This was missed by the internal review process. However, regarding the nature, magnitude and extent of extending the maximum number of days piling to 20 - 45, the iPCoD model output based on 10 days of piling activity identifies the number of Harbour porpoise impacted population as being less than 3 animals (99.99 % of un-impacted population after 12 years) and 0 animals (100% of un-impacted population after 12 years) for Grey Seal - source Llŷr 1 Floating Offshore Wind Farm, Environmental Statement, Volume 3 : Chapter 21 – Marine Mammals - "Table 21-36 Harbour porpoise iPCOD modelling results" and "Table 21-38 Grey seal iPCOD modelling results". It would be a reasonable to state that if the number of days piling were times 4 to 40 it would result in no more than 12 Harbour porpoise and even fewer Grey seals being impacted, which is less than 1% of the total population of both species, which is negligible significance.

31	Marine Mammals	Conclusions regarding the impact of entanglement (primary and secondary) and reducing this to minor/negligible levels are based on the assumption that mitigation and monitoring will be undertaken. However, no potential methods to support this assumption have been included in the outline Marine Mammal Mitigation Plan (MMMP). We understand that these methods would be discussed and agreed in consultation with JNCC and NRW-A post-consent and form part of the final MMMP. We also understand doing this would be secured as a consent condition of any license awarded. But as no details of what methods could be used are presented at this stage (or any evidence provided to indicate their potential effectiveness), it is not possible to ascertain whether methods are available to reduce potential impacts as indicated in the assessment. We strongly advise that details and/or discussion of what potential methods could be applied to reduce the risk of entanglement are included in the outline MMMP. Without this we are unable to agree with the conclusions of the impact assessment. We advise that an assessment in relation to the tertiary risk of entanglement is also considered (Genesis, 2024).	General - Entanglement	The requirement for an agreed MMMP secured post consent and prior to any offshore activities as per a standard Marine Licence consent condition(s). To date all the UK MMMPs (of which the Llŷr project is aware) have focused on piling. Therefore it was reasonable to adopt this same focus for Llŷr. However, contrary to the comment raised, in addition to piling (which includes addressing construction noise) both entanglement and potential disturbance from vessel activity are addressed in the register of (embedded) mitigation measures - Volume 6: Appendix 32A – Mitigation Register: UXO Clearance - Embedded Mitigation ID E152 and ID E230 Entanglement - Embedded Mitigation ID E232 Vessel Noise (including construction) - Embedded Mitigation ID E154 The key aspect of entanglement, as identified by the JNCC, is secondary entanglement (mainly as a result of derelict fishing gear). As stated in the Environment Statement, the Embedded Mitigation identified in **ID E232** stated - "*Mooring lines and floating inter-array cables will be inspected during the operation and maintenance phase using a risk-based adaptive management approach. Mooring line and cable inspections are expected to occur at a higher frequency initially and then reduce in frequency over a number of years, with changes to inspection periods based on evidence of risk garnered from the inspections* ." As the floating wind technology has not been selected, the number of mooring lines, type of mooring line (tension or catenary) or number and spacing of floating platforms are still to be defined; all of which has an influence on the frequency and methodology employed for monitoring. In addition, as identified by NRW(A), there are currently no fixed recommendations for entanglement monitoring specific to floating wind farms (and thus the reason for the need of scaled test and demonstration projects prior to the roll out of commercial scale floating wind farms).The Llŷr project is committed to engaging with NRW and the SNCB's to discuss further the requirements for entanglement monitoring post consent (once the selection and detailed design of the floating technology is completed), and agreeing in writing the content and approach to the monitoring prior to the commencement of any offshore works. In the absence of any specific guidance from the SNCB's for entanglement monitoring, the project monitoring arrangements will include as a minimum to report any entanglement or mortality events to NRW and the detail of the monitoring methods (which may be via load cells attached to mooring lines or via ROV surveys across the offshore array) will be agreed with NRW, in consultation with the SNCB's. Llŷr Floating Wind is content to have the requirement for written consultation and agreement of the MMMP prior to the commencement of offshore works as a post consent condition.
32	Marine Mammals	While impacts from UXO clearance have been assessed within the ES, the Applicant has committed to applying for a separate marine licence should clearance be required. JNCC agree with this approach as it provides a holistic view of potential risks associated with the construction of this development, while recognising the lack of information on clearance requirements available at this stage. We are also content with the scenario assessed and believe these are sufficiently precautionary given the information available at this stage. We highlight that an update to the Governments UXO position statement has been published. We highlight the new statement requires low noise methods of clearance to be the default method, and that high order clearance should only be used in extreme circumstances. We also highlight that guidance to support licence applications has been published along with the new statement, and that JNCC have published new marine mammal mitigation guidelines specifically for UXO clearance.	General - Unexploded ordnance (UXO)	As acknowledged by the JNCC, separate Marine Licences will be applied for UXO clearance should it be required. By its very nature the applications will take into account the existing policies and requirements that are relevant at the time. The Llŷr project will align itself with the relevant DEFRA guidance (published in January 2025, after submission of the application, and adopted by both Welsh Government and NRW) and the MMMP will be compliant with the new guidance.
33	Marine Mammals	JNCC do not agree with the approach to scope out impact pathways for auditory injury, disturbance from unexploded ordnance UXO clearance, collision with vessels, barrier effects, and entanglement from this assessment. In addition, no justification is provided for scoping Llŷr 2 and Valorous out of the short-list for the marine mammal assessment. We understand that this has been included in the CEA for benthic receptors. JNCC do not feel the cumulative assessment is adequate.	General - Cumulative Effects Assessment (CEA)	These impact pathways were scoped out on the basis that the project alone assessment concluded that they were of negligible significance. This approach aligns with other Celtic Sea demonstrator projects i.e Erebus, also WhiteCross. There is no guide on how cumulative assessment would be undertaken for such impacts when they are all to be addressed by project level mitigation and are qualitative impacts anyway, or mitigated to an assumed zero in the case of instantaneous injury.
34	Marine Mammals	JNCC have concerns with the assessment of magnitude as presented in Table 21-6 (Chapter 21, page 31). The magnitude has only considered the temporal duration of each activity with no consideration of the number of animals or percentage of the population that will be impacted. In addition, for the assessment of noise, these are all based on one single event whereas all of the activities assessed will occur multiple times during the project. This has caused uncertainty in how conclusions have been made throughout the assessment.	General - Magnitude	The Llŷr project considers that the state of knowledge around most impact pathways for marine mammal interests, is too uncertain to be able to make any meaningful judgement in terms of numbers of animals impacted, certainly for the qualitative impact pathways. As density of animals at any project site will also vary over time, the Llŷr project gave consideration to the status of the species, and whether it occurs consistently or irregularly on-site, as more informative criteria rather than using an arbitrary number. The duration and number of each auditory event is unknown, for example the number of UXO encountered is unknown. It is common practice to address these aspects within the post consent Mitigation plan.
35	Marine Mammals	JNCC maintains our previous advice that density estimates based on the site-specific survey are used when assessing impacts to common dolphin as this is the more precautionary density. Instead, the Applicant has applied densities from the SCANS IV surveys. We do note a comparison is presented in Appendix 21C: Annex B - Common Dolphin Impact Assessment Comparison Using Site-Specific Density, following discussions with JNCC pre-application, however we advise this should have formed part of the primary assessment in the ES.	General - Density estimates for common dolphin	This comparison was made for illustrative purposes only. The number of animals impacted using dose response curve are provided in Llŷr 1 Floating Offshore Wind Farm, Environmental Statement, Volume 3 : Chapter 21 – Marine Mammals, Table 21-32 and have been taken through for later assessment (i.e. iPCoD).

36	Marine Mammals	JNCC advise the outline MMMP is not sufficient to support conclusions made in the impact assessment. JNCC do not agree with the approach to only use instantaneous Permanent Threshold Shift (PTS) (i.e. sound pressure level, SPL) to determine mitigation requirements to reduce the risk of auditory injury to negligible levels. The use of cumulative sound exposure levels (SELcum) in addition to the SPL is currently best practice and insufficient justification has been provided to deter from this approach. We also do not agree with the decision to rule out noise abatement technology for piling, or the use of acoustic deterrents. While it may be decided later these are not needed, given some of the predicted injury ranges using the SELcum metric, they should be a consideration at this stage and included in the outline MMMP. We highlight a position statement published by JNCC, Natural England and Cefas regarding the use of noise abatement during piling. We also highlight that no potential monitoring or mitigation measures are provided to support the conclusions of the entanglement assessment. Potential options need to be included in the outline MMMP. We agree the requirement for a final MMMP to be agreed with JNCC and NRW-A prior to operations commence should be a condition of consent (if awarded).	General - Outline Marine Mammal Mitigation Plan (MMMP)	Advice as to which sonar to use for which geophysical activity came from the Genesis (2011) report as stated in the legend for Table 21b-1. The data for each specific geophysical sonar came from individual Equipment Spec sheets. As stated previously, both entanglement and potential disturbance from vessel activity are addressed in the register of (embedded) mitigation measures - Volume 6: Appendix 32A – Mitigation Register: UXO Clearance - Embedded Mitigation ID E152 and ID E230 Entanglement - Embedded Mitigation ID E232 Vessel Noise (including construction) - Embedded Mitigation ID E154
37	Marine Mammals	JNCC feel that key information is missing from the ES marine mammal chapter (Chapter 21) and is instead presented within associated appendices. For example, no auditory injury ranges for PTS onset for impact piling presented in Chapter 21 but this is presented in Appendix 21C: Marine Mammal Underwater Noise Assessment. The role of the ES is to present all key information that relates to the conclusions of the assessment of impact on marine mammals. The appendix should reflect supplementary technical information to expand further on the details of how key information has been calculated. This approach has not been consistently applied.	General - Magnitude	Noted
38	Marine Mammals	JNCC consider the data sources provided in the baseline section appropriate for marine mammal receptors in offshore waters. The appropriate management units have also been used, as agreed at the pre-application phase with JNCC and NRW-A. We welcome the use of site-specific surveys to support density estimates used for harbour porpoise. JNCC maintains our previous advice that density estimates based on the site-specific survey are used when assessing impacts to common dolphin as this is the more precautionary density. Instead, the Applicant has applied densities from the SCANS IV surveys. We do note a comparison is presented in Chapter 6 Appendix 21C: Annex B - Common Dolphin Impact Assessment Comparison Using Site-Specific Density, following discussions with JNCC pre-application, however, we advise this should have formed part of the primary assessment in the ES.	Volume 3 Chapter 21: Marine Mammals - Section 21.5, page 39	Noted
39	Marine Mammals	We agree with the methodology applied and that potential injury ranges using both the SPLpeak (referred to as instantaneous PTS) and SELcum (referred to as cumulative PTS) metrics be calculated. We appreciate the uncertainty inherent when estimating both metrics may result in precautionary injury ranges, however, they represent current industry best practice.	Volume 3 Chapter 21: Marine Mammals - Section 21.6, page 46	Noted
40	Marine Mammals	JNCC note that the design scenarios outlined in Table 21-16 have been selected as those having the potential to result in the greatest effect on marine mammals. However, the information provided in Volume 1 Chapter 4: Description of the Proposed Project outlining the worse-case scenario for impact piling duration does not reflect what has been assessed in Chapter 21. Volume Chapter 4, paragraph 85, page 23 states “It is estimated that the maximum number of days when piling may occur during construction would be 45 days with a minimum of 20 piling days over the construction period”. The worst-case scenario used for the piling duration in Chapter 21 is a maximum 10 days, less than the minimum number of days indicated in Chapter 4. Activities undertaken under any licence issued should not exceed those assessed. This has implications for the marine mammal disturbance assessment for impact piling in both the ES and the Report to Inform the Appropriate Assessment (RIAA). We advise that the project design envelope be clarified otherwise the disturbance assessment will need to be re-visited to reflect the worst-case scenarios outlined in the project design. Other than the concerns regarding impact piling described above, JNCC are satisfied with the realistic worst-case parameters considered for the quantitative assessment for all other potential impacts during the construction, operation and decommissioning phases of the project apart from for impact piling. Regarding unexploded ordnance, we highlight that an update to the Government UXO position statement in imminent, which requires low noise methods to be the default method of clearance, and that high order clearance should only be applied in exceptional circumstances. Subsequently JNCC consider low order deflagration to be a realistic scenario in this instance and but agree with high order clearance being included as the worst case.	Volume 3 Chapter 21: Marine Mammals - Section 21.7, paragraph 95, page 50 and Table 21-16, page 51	Appendix 21B, Figures 21B-6 (piling) and 21B-11 (UXO) show the third octave band frequencies for each source. Energy in lower frequencies is higher for UXO than for piling; therefore, LF mammals were given a higher sensitivity for UXO than for piling. It is correct that the project envelope identifies the minimum number of days piling will be 20 and that the marine mammal disturbance assessment for impact piling in both the Environmental Statement (ES) and the RIAA has used for the piling duration a maximum 10 days as the worst-case scenario. The underwater modelling was carried out relatively early in the assessment process and the project envelope was updated after the modelling had been carried out. This was missed by the internal review process. However, regarding the nature, magnitude and extent of extending the maximum number of days piling to 20 - 45, the iPCoD model output based on 10 days of piling activity identifies the number of Harbour porpoise impacted population as being less than 3 animals (99.99 % of un-impacted population after 12 years) and 0 animals (100% of un-impacted population after 12 years) for Grey Seal - source Llŷr 1 Floating Offshore Wind Farm, Environmental Statement, Volume 3 : Chapter 21 – Marine Mammals - "Table 21-36 Harbour porpoise iPCOD modelling results" and "Table 21-38 Grey seal iPCOD modelling results". It would be a reasonable to state that if the number of days piling were times 4 to 40 it would result in no more than 12 Harbour porpoise and even fewer Grey seals being impacted, which is less than 1% of the total population of both species, which is negligible significance. This comparison was made for illustrative purposes only. Number of animals impacted using dose response curve are provided in table 21-32 and have been taken through for later assessment (i.e. iPCoD). Separate Marine Licences will be applied for should UXO clearance be required, which by its very nature will take into account the existing policies and requirements that are relevant at the time. This will be included in the provision of an MMMP to be secured by consent condition, and this will be compliant with the most recent version of any updated Joint Position Statement on UXO clearance. We note the new / upcoming underwater noise policies from the JNCC, Natural England, and CEFAS joint position on the use of noise abatement systems as well as the decision report from Welsh Government published on 5th March 2025 indicating the intent to develop a policy position on managing Marine Noise in-line with the similar policy position in England; including the requirement for Applicants to demonstrate that they have employed ‘best endeavours’ to deliver noise reductions through the use of primary and/or secondary noise reduction methods. The Llŷr project is aware that quieter piling methods and noise abatement will be expected moving forward and we look forward to continuing our dialogue with NRW(A) and the JNCC post consent to ensure that their advice (based on this new guidance) can be incorporated into the development in due course, based on the Consenting Authority’s response.
41	Marine Mammals	The noise modelling presented predicts a risk of injury to marine mammals from the sub-bottom profiler (SBP) and ultra-short baseline (USBL) systems only. For the low frequency cetacean functional hearing group (e.g. minke whale), the predicted injury ranges are 82m and 100m for SBP and USBL respectively, with 10m predicted for high frequency (HF) and very high frequency (VHF) hearing groups. We agree with the conclusion of negligible significance as the predicted injury ranges can be mitigated. Mitigation methods are considered in the draft MMMP, and the final version will be agreed with JNCC and NRW-A post-consent (if awarded).	Volume 3 Chapter 21: Marine Mammals - Section 21.9.1, paragraphs 111 to 113, page 60	Noted
42	Marine Mammals	JNCC agree with the conclusion of not significant as the percentage disturbed of the reference populations for common dolphin, harbour porpoise and minke whale are all <1. While it is possible some animals will be disturbed, the impact will be low, for a short-term and recovery will be rapid.	Volume 3 Chapter 21: Marine Mammals - Section 12.9.1, paragraph 118, page 61	Noted
43	Marine Mammals	JNCC does not agree with the magnitude of impact applied for high order clearance (currently considered negligible). The injury ranges predicted (paragraph 123) are far greater than those predicted for the pre-construction geophysical surveys (as discussed in paragraph 111) and cannot be mitigated, yet the same magnitude has been applied. A magnitude re-assessed and amended to medium is therefore more appropriate. This will reflect the spatial extent of potential injury and demonstrate that the integrity of the population will not be adversely affected.	Volume 3 Chapter 21: Marine Mammals - Section 12.9.1, paragraphs 126 to 129, pages 63 and 64	High-order clearance is not anticipated, as low-order will be the preference. Appendix 21B, Figures 21B-6 (piling) and 21B-11 (UXO) show the third octave band frequencies for each source. Energy in lower frequencies is higher for UXO than for piling; therefore, LF mammals were given a higher sensitivity for UXO than for piling.

44	Marine Mammals	JNCC does not agree with the conclusions for disturbance from high-order (HO) and low-order (LO) UXO clearance. The magnitude applied is negligible with a low sensitivity assigned for all species. We recognise disturbance impacts will be short-term, however this assumes a single device clearance not disturbance from multiple clearance events. It is predicted that 3.05% of the minke whale MU is at risk from disturbance UXO clearance which represents a large number of animals impacted.	Volume 3 Chapter 21: Marine Mammals - Section 12.9.1, paragraphs 131 to 138, pages 64 and 65	As above, High-order clearance is not anticipated, as low-order will be the preference. Appendix 21B, Figures 21B-6 (piling) and 21B-11 (UXO) show the third octave band frequencies for each source. Energy in lower frequencies is higher for UXO than for piling; therefore, LF mammals were given a higher sensitivity for UXO than for piling.
45	Marine Mammals	The Applicant has assessed injury using both the peak pressure (SPLpeak) and cumulative exposure (SELcum) metrics as agreed pre-application. However, they have only presented the peak pressure results in this chapter and only used this metric when determining mitigation requirements. JNCC disagree with this approach and require both metrics to be considered with the most precautionary used to determine mitigation requirements. The Applicant has also presented auditory injury (PTS-onset) as a percentage reference of the population impacted for each receptor in Table 21-30. No auditory injury ranges for PTS-onset for impact piling have been presented in this document, instead they are provided in Appendix 21C - Marine Mammal Underwater Noise Assessment. The role of the ES is to present all key information that relates to the conclusions of the assessment of impact on marine mammals. Without knowing the range within which injury could occur it is not possible to ascertain what mitigation is needed to reduce the risk of this occurring. Therefore, this information should be in the ES and the appendix should reflect supplementary technical information to expand further on the details of how key information has been calculated.	Volume 3 Chapter 21: Marine Mammals - Section 12.9.1, paragraphs 150 to 156, pages 69 and 70	Advice as to which sonar to use for which geophysical activity came from the Genesis (2011) report as stated in the legend for Table 21b-1. The data for each specific geophysical sonar came from individual Equipment Spec sheets. Noted - the most relevant and important information was provided within the Environment Statement - all aspects raised within this comment have been provided in the technical appendix (as identified by the JNCC).
46	Marine Mammals	Disturbance risk from impact piling is predicted to impact 7.18% of the common dolphin MU which represents a large number of animals and would cause an impact. Table 21-33 compares the number of animals potentially impacted using the densities provided by SCANS III and SCANS IV. In addition, the discussion as outlined in this paragraph states: "However, for common dolphin the prediction is for 7.18% of the MU at risk of disturbance. If the calculation was performed using SCANS-III densities, the percentage of the reference population affected would be reduced to 3.19% of the MU." Presenting this information demonstrates the variability and therefore uncertainty of the impact of the project on common dolphins, further supporting the need to take the most precautionary approach. JNCC agree with the approach to use the density estimates based on the SCANS-IV surveys for common dolphins as these were deemed the most precautionary (after the site-specific survey estimates) and are based on the most recent SCANS surveys. We do not feel discussing the results in the context of a density based on older data is constructive to the discussion. That said, 3.19% of the common dolphin MU population still represents a large number of animals and would still cause an impact.	Volume 3 Chapter 21: Marine Mammals - Section 21.9.1, paragraph 164, page 72 and Table 12-33, page 73	Noted
47	Marine Mammals	The noise produced by multiple activities has been grouped and assessed under this heading, all of which produce what is termed continuous noise. The noise modelling has used the correct injury thresholds; however, the impact assessment would benefit from making this difference clearer. We note the PTS range predicted for very high frequency cetaceans (421m) assumes a stationary animal. We advise a fleeing animal model is a more realistic approach and therefore accept the reduced ranges predicted when using this model. We note there is no mention of the injury range for LF cetaceans and question why this has been omitted, especially as paragraph 192 (page 82) has assessed the sensitivity as medium for this hearing group and low for all other hearing groups. How sensitivity has been concluded for a number of these impact pathways could be made clearer (e.g. seabed preparation and cable installation); and when proxies have been applied to assess magnitude, justifications are required (e.g. cable installation). If this is based on expert opinion (e.g. if no other data available), this should be clearly stated.	Volume 3 Chapter 21: Marine Mammals - Section 21.9.1, paragraph 188, page 82	A stationary receptor will have a more conservative level of impact than a fleeing animal. Results of fleeing modelling are also presented in the technical appendices.
48	Marine Mammals	The maximum impact range for disturbance using the National Marine Fisheries Service (NMFS) Level B threshold for non-impulsive noise (120 dB re 1 µPa rms) (NRW, 2023) was 21.9km for cable laying activity which was the worst-case scenario. An estimate of 0.98% of the reference population of the common dolphin MU are at potential risk of disturbance from this activity. JNCC acknowledge that while this is a large percentage of the population any impact will be short-term and localised.	Volume 3 Chapter 21: Marine Mammals - Section 21.9.1, paragraph 194, page 82	Noted
49	Marine Mammals	JNCC agree with the conclusions of this assessment, however, it is not clear if the 168 additional transits during operation and maintenance relates to the project lifetime as this is not defined.	Volume 3 Chapter 21: Marine Mammals - Section 21.9.1, paragraph 225, page 86	To clarify, this is in relation to the project lifetime.
50	Marine Mammals	The table summary (Table 21-46) does not reflect the text in paragraph 230. The magnitude has been identified as negligible in the text and yet summarised in the table as small.	Volume 3 Chapter 21: Marine Mammals - Table 21-46 and paragraph 230, page 87	Noted. To clarify the magnitude value in the text is correct.
51	Marine Mammals	We agree with the conclusions for significance of the effect of accidental pollution or contamination from project vessels. As stipulated in paragraph 238, these conclusions must be supported with the development of a detailed and robust mitigation plan to prevent and act on any oil pollution or contamination events. Our comments raised in paragraph 225 (page 86) in relation to the duration of the 168 additional transits are also of relevance here.	Volume 3 Chapter 21: Marine Mammals - Section 21.9.1, paragraphs 237 and 238, page 88	Noted
52	Marine Mammals	JNCC agree with the overall conclusions of this assessment in relation to the project's array area. We would like justification in relation to any temporary and/or permanent loss of habitat during the construction of the offshore export cable corridor (OfECC). JNCC recognise that this could have impacts to prey and subsequent indirect impacts on marine mammal receptors, particularly for harbour porpoise as the cable corridor passes through the West Wales SAC designated for this species.	Volume 3 Chapter 21: Marine Mammals - Section 21.9.1, paragraphs 239 to 245, page 89	Indirect effects to prey are detailed as negligible on page 89. The same line of argument applies for the cable route, % loss of habitat (temporary or permanent) and associated prey species is negligible compared to the wider resource available in each species MMMU.
53	Marine Mammals	We welcome the assessment of intermittent noise generated by the re-tensioning of the mooring lines creating a 'snap' as this is an effect unique to FLOW projects. The Applicant states that due to FLOW being a relatively novel technology there is a lack of frequency spectra data to provide a quantitative assessment of the impact to marine mammals. However, it is understood that the noise levels are thought to be lower than PTS-onset criteria for marine mammals (Burns et al., 2022). JNCC does not disagree with the conclusions of operational underwater noise effects but note that the majority of evidence provided relates to fixed turbines. We recommend the Regulator includes, as part of the licence conditions, that the project monitor intermittent noise generated by the re-tensioning of the mooring lines to fill data gaps when determining the impact of operational underwater noise from FLOW.	Volume 3 Chapter 21: Marine Mammals - Section 21.9.2, paragraph 249, page 90	Noted

54	Marine Mammals	JNCC does not disagree with the conclusion for this assessment however we note that all the evidence provided relates to fixed not floating turbines. While this is an accepted approach due to the novel technology there are statements in this section that lack strength in argument. Paragraph 262 does not provide any evidence in support of the assumption that marine mammals *'are likely to pass through the mooring lines and cables'*. In addition, the statement *'The presence of marine mammals around offshore infrastructure at other offshore windfarms also suggests that some marine mammal species may have a high tolerance to changes in infrastructure in their environment and are able to adapt to its presence'* does not reference the other offshore windfarms as being fixed structures and not a 'string' or 'star' shape of cables and mooring lines. Not highlighting this significant difference in the potential barriers for marine mammal receptors weakens this argument. This assessment would have benefited from a stronger discussion of how the evidence provided is directly comparable with the proposed development.	Volume 3 Chapter 21: Marine Mammals - Section 21.9.2, paragraph 260, page 91	Noted
55	Marine Mammals	We agree with the conclusions of the assessment that this is a significant risk. We also agree the greatest risk relates to entanglement with ghost fishing gear and that quantifying this risk is challenging. The Applicant has used FLOW platforms for the offshore oil and gas industry as evidence within this assessment. While we agree this is an appropriate source of information, we highlight that while the oil and gas industry has not reported cases of entanglement with floating platforms, this does not mean that events have not occurred. Additionally, it is important to state that these projects are smaller than the current project being assessed as they do not involve multiple floating structures with intersecting mooring lines or cables which subsequently increase the risk of entanglement. We also highlight that only primary entanglement with mooring lines and cables and secondary entanglement with fishing gear attaching to the infrastructure have been discussed with no consideration of the impact of tertiary entanglement. Tertiary entanglement is the risk of entanglement to FLOW infrastructure by an animal with ghost fishing gear already attached to their body inadvertently becoming tangled when travelling through the array area. JNCC understand this to be the most like scenario by which entanglement occurs (Genesis, 2024). We welcome the commitment to consider monitoring and request this is secured as a condition of consent. We consider this important as conclusions regarding the impact of entanglement (primary and secondary) are reduced to minor/negligible levels on the assumption that mitigation and monitoring will be undertaken. However, no potential mitigation methods have been included in the draft MMMP. We understand that these methods would be discussed and agreed in consultation with JNCC and NRW-A post-consent and form part of the final MMMP. We also understand doing this would be secured as a consent condition of any license awarded. As a result, it is not possible to ascertain whether methods are available to reduce potential impacts, or any evidence provided to indicate their potential effectiveness. We strongly advise that details and/or discussion of what potential methods could be applied to reduce the risk of entanglement are included in the draft MMMP. Without this we are unable to agree with the conclusions of the impact assessment. We advise that an assessment in relation to the tertiary risk of entanglement is also considered (Genesis, 2024).	Volume 3 Chapter 21: Marine Mammals - Section 21.9.2, paragraph 274, page 94	Noted
56	Marine Mammals	JNCC are content with the conclusions of the assessment regarding the effects of electromagnetic field (EMF) emissions and the supporting evidence provided supporting this assessment.	Volume 3 Chapter 21: Marine Mammals - Section 21.9.2, paragraphs 276 to 281, pages 94 and 95	Noted
57	Marine Mammals	JNCC agree with the conclusions of the assessment regarding collision with project vessels, however, we note that the 168 additional transits referred to previously have been outlined as relating to the 25-year operational lifetime of the project. We recommend further clarity is sought around the reference to 'additional' and seek to understand if this refers to vessel movement already occurring within the area before the proposed development.	Volume 3 Chapter 21: Marine Mammals - Section 21.9.2, paragraphs 285 to 288, page 95	There is a maximum of 168 vessel transits anticipated for wind farm servicing and maintenance over the 25-year operational lifespan of the wind farm. If averaged, this is in the order of seven vessel transits each year associated with the wind farm, in addition to the existing baseline of vessel activity as referenced.
58	Marine Mammals	JNCC agree with the conclusions of the assessment regarding accidental pollution or contamination and note that it relates to the information as set out in section 21.9.1.	Volume 3 Chapter 21: Marine Mammals - Section 21.9.2, paragraphs 289 and 290, page 96	Noted
59	Marine Mammals	JNCC agree with the statement in paragraph 291 and the subsequent assessment conclusions relating to potential indirect effects through impacts to prey species during the operational phase. We are familiar with the evidence that suggests that the infrastructure of OWF creates artificial reefs that increases prey availability and foraging potential for marine mammals.	Volume 3 Chapter 21: Marine Mammals - Section 21.9.2, paragraph 291, page 96	Noted
60	Marine Mammals	We appreciate the limited information available to developers at this stage of the project, however, we are disappointed by the level of assessment undertaken by the Applicant regarding the impacts of decommissioning. The ES chapter 21 states it is not possible to provide details of methods that could be used at the time for decommissioning, but we question why an assessment cannot be undertaken assuming current decommissioning methods would be used? Please also see comments provided in response to benthic receptors on decommissioning.	Volume 3 Chapter 21: Marine Mammals - Section 21.9.3, page 96	As set out in paragraph 306 of Chapter 21 – Marine Mammals, *'A Decommissioning Programme will be developed in accordance with the standard industry practice at that time and approved prior to the commencement of any decommissioning activities and secured as a condition of the Marine Licence. This may be accompanied by a MMMP and / or VMP specific to the decommissioning stage, as required by statutory advisers and the Regulator at the time. Further, should it be necessary, a Marine Mammal Mitigation Plan will be implemented subject to the decommissioning Marine Licence application'*. Decommissioning impact pathways do not usually require separate assessment at application stage. If necessary, NRW Licensing can adopt the standard assumption that decommissioning impacts are less than, and certainly no greater than, the equivalent impact pathways during construction.

61	Marine Mammals	We note this section acknowledges residual impacts are still possible to individual animals. We welcome that the Applicant has committed to the development of a MMMP however the information currently provided in the outline Construction Environmental Management Plan (Appendix 4A) considers only the most basic of mitigation measures with no discussion of other options that could be considered post-consent to reduce the risk of these residual impacts. See comments below on the outline MMMP for further detail. We are not satisfied that there has not been any reference to noise abatement systems (NAS) within this section.	Volume 3 Chapter 21: Marine Mammals - Section 21.10, page 97	Construction noise and potential disturbance from vessel activity are addressed in the register of (embedded) mitigation measures - Volume 6: Appendix 32A – Mitigation Register: UXO Clearance - Embedded Mitigation ID E152 and ID E230 Vessel Noise (including construction) - Embedded Mitigation ID E154 In addition Volume 6: Appendix 4A – Outline Construction Environmental Management Plan (OCEMP), addresses piling noise, UXO clearance, entanglement, and other construction noise. As per the UXO guidance, clearance activities will utilise low order detonation which will not require mitigation solutions such as bubble curtains. The OCEMP commits to the provision of a Noise Monitoring Plan, which will be consulted upon and agreed with the Statutory Advisors. Mitigation measures include the use of MMO's, PAM Buoys and soft-start procedures. The OCEMP also includes the statement on page 56, para 269 "the use of Acoustic Deterrent Devices (ADDs) and at-source noise abatements methods (such as bubble curtains) were considered but given the very small instantaneous PTS-onset impact ranges that require mitigation (max 280 m), these were deemed to be unnecessary." As stated within the Mitigation register, the MMMP will be submitted as part of licence application for UXO works, should it be needed (as stated within the mitigation plan, the preference will be to avoid UXO through design) and once further information is available. It is anticipated that low-order detonation will be used; however, should high-order be required, the final MMMP will include options for mitigation and noise abatement. The MMMP will adhere to JNCC (2010b) guidelines for minimising the risk of disturbance and injury to marine mammals whilst using explosives, and the BEIS Marine Environment: unexploded ordnance clearance joint interim position statement (2021) We note the new / upcoming underwater noise policies from the JNCC, Natural England, and CEFAS joint position on the use of noise abatement systems as well as the decision report from Welsh Government published on 5th March 2025 indicating the intent to develop a policy position on managing Marine Noise in-line with the similar policy position in England; including the requirement for Applicants to demonstrate that they have employed 'best endeavours' to deliver noise reductions through the use of primary and/or secondary noise reduction methods. The Llŷr project is aware that quieter piling methods and noise abatement will be expected moving forward and we look forward to continuing our dialogue with NRW(A) post consent to ensure that their advice (based on this new guidance) can be incorporated into the development in due course, based on the Consenting Authority's response.
62	Marine Mammals	JNCC does not agree with all the conclusions of not significant within this assessment summarised and presented in Table 21-53. Our comments in relation to each individual effect have been outlined above for sections 21.9.1 to 21.9.2. However, details relating to specific mitigation to be applied as stated in Table 21-53 is miss-leading. Requirements for mitigation are listed as 'additional mitigation' but we are unsure of what the mitigation is in addition to, particularly as no reference is made to the outline MMMP in this table. Stating 'JNCC Guidelines' is not sufficient mitigation for all the effects assessed.	Volume 3 Chapter 21: Marine Mammals - Section 21.11, Table 21-53, page 99	Construction noise and potential disturbance from vessel activity are addressed in the register of (embedded) mitigation measures - Volume 6: Appendix 32A – Mitigation Register: UXO Clearance - Embedded Mitigation ID E152 and ID E230 Vessel Noise (including construction) - Embedded Mitigation ID E154 In addition Volume 6: Appendix 4A – Outline Construction Environmental Management Plan (OCEMP), addresses piling noise, UXO clearance, entanglement, and other construction noise. As per the UXO guidance, clearance activities will utilise low order detonation which will not require mitigation solutions such as bubble curtains. The OCEMP commits to the provision of a Noise Monitoring Plan, which will be consulted upon and agreed with the Statutory Advisors. Mitigation measures include the use of MMO's, PAM Buoys and soft-start procedures. The OCEMP also includes the statement on page 56, para 269 "the use of Acoustic Deterrent Devices (ADDs) and at-source noise abatements methods (such as bubble curtains) were considered but given the very small instantaneous PTS-onset impact ranges that require mitigation (max 280 m), these were deemed to be unnecessary." As stated within the Mitigation register, the MMMP will be submitted as part of licence application for UXO works, should it be needed (as stated within the mitigation plan, the preference will be to avoid UXO through design) and once further information is available. It is anticipated that low-order detonation will be used; however, should high-order be required, the final MMMP will include options for mitigation and noise abatement. The MMMP will adhere to JNCC (2010b) guidelines for minimising the risk of disturbance and injury to marine mammals whilst using explosives, and the BEIS Marine Environment: unexploded ordnance clearance joint interim position statement (2021) We note the new / upcoming underwater noise policies from the JNCC, Natural England, and CEFAS joint position on the use of noise abatement systems as well as the decision report from Welsh Government published on 5th March 2025 indicating the intent to develop a policy position on managing Marine Noise in-line with the similar policy position in England; including the requirement for Applicants to demonstrate that they have employed 'best endeavours' to deliver noise reductions through the use of primary and/or secondary noise reduction methods. The Llŷr project is aware that quieter piling methods and noise abatement will be expected moving forward and we look forward to continuing our dialogue with NRW(A) post consent to ensure that their advice (based on this new guidance) can be incorporated into the development in due course, based on the Consenting Authority's response.
63	Marine Mammals	JNCC are content with the use of identified marine mammal management units (MUs) as zones of influence when initially identifying projects to be included in this assessment. However, the cumulative effects assessment is not deemed adequate at this stage. We do not agree with the screening out of several impacts: auditory injury, disturbance from UXO clearance, collision with vessels, barrier effects, and entanglement. In addition, we note that two projects, Llŷr 2 and Valorous, have not been included in the short-list for the cumulative effects assessment (CEA) without any justification explaining this decision. Also, the Rampion 2 project is listed on the short-list in Table 21-60 but has not been considered in the subsequent CEAs for any of the receptors. We highlight that EDRs have been used when assessing noise disturbance by other projects considered in the CEA, to provide a comparable metric across projects. However, this project has not used EDRs in the project alone assessment. Therefore, like-for-like is not being compared. Had EDRs been used in addition to the dose response curves, a comparison would be available to help put the predicted numbers from the other projects into context.	Volume 3 Chapter 21: Marine Mammals - Section 21.12, page 102	The Llŷr project considers that the state of knowledge around most impact pathways for marine mammal interests, is too uncertain to be able to make any meaningful judgement in terms of numbers of animals impacted, certainly for the qualitative impact pathways. As density of animals at any project site will also vary over time, the Llŷr project gave consideration to the status of the species, and whether it occurs consistently or irregularly on-site, as more informative criteria rather than using an arbitrary number. Both Llŷr 2 and Valorous are at pre-applications stage so there is insufficient data to provide an assessment. As stated in Volume 6: Appendix 5A – Approach to Cumulative Effects Assessment; 5.4.2. Stage 2: Shortlisting of the long list of projects paragraph 45 "*If there was low data confidence in relation to a development screened into the CEA project long list (e.g. no information was available on construction timelines or there were limited project details), the proposed Project was screened out of the CEA project short list in stage 2 of the CEA, as the limited information available would not allow for a meaningful cumulative assessment to be undertaken.* " Rampion 2 was considered in the cumulative impact assessment but as identified in Paragraph 355 "*The Tier 4 project Rampion 2 makes little difference to the assessment* ." The final list has been agreed with NRW(A).

64	Marine Mammals	We note that as for the project alone assessment, ten days of piling has been applied within the CEA. We refer to our previous comments in relation to the inconsistencies between the maximum piling days presented in Chapter 4 Project design. JNCC have interpreted from Paragraph 346 that the conclusion of negligible impact from disturbance has been based on the outputs of the iPCoD model. We advise that further information is required to support population-level conclusions for disturbance, including caveats and limitations when interpreting data. We have based our understanding of the CEA on all results presented, not just those from iPCoD and feel that negligible is not an appropriate conclusion for the cumulative effect of disturbance arising from underwater noise on harbour porpoise.	Volume 3 Chapter 21: Marine Mammals - General - Disturbance arising from underwater noise during construction of offshore renewable energy projects	It is correct that the project envelope identifies the minimum number of days piling will be 20 and that the marine mammal disturbance assessment for impact piling in both the Environmental Statement (ES) and the RIAA has used for the piling duration a maximum 10 days as the worst-case scenario. The underwater modelling was carried out relatively early in the assessment process and the project envelope was updated after the modelling had been carried out. This was missed by the internal review process. However, regarding the nature, magnitude and extent of extending the maximum number of days piling to 20 - 45, the iPCoD model output based on 10 days of piling activity identifies the number of Harbour porpoise impacted population as being less than 3 animals (99.99 % of un-impacted population after 12 years) and 0 animals (100% of un-impacted population after 12 years) for Grey Seal - source Llŷr 1 Floating Offshore Wind Farm, Environmental Statement, Volume 3 : Chapter 21 – Marine Mammals - "Table 21-36 Harbour porpoise iPCOD modelling results" and "Table 21-38 Grey seal iPCOD modelling results". It would be a reasonable to state that if the number of days piling were times 4 to 40 it would result in no more than 12 Harbour porpoise and even fewer Grey seals being impacted, which is less than 1% of the total population of both species, which is negligible significance. If NRW Licensing prefer, then a conclusion of minor and not significant could be adopted instead of negligible in order to address JNCC's concerns here.
65	Marine Mammals	It is our understanding that disturbance from vessel activity has not been cumulatively assessed due to 'detailed information with regards to the cumulative increase in vessel traffic from all plans or projects considered is not available'. We question this decision as projects that have submitted an application will have provided a project description and/or a project design envelope (PDE) detailing the worst-case scenarios for vessel traffic. As a result, we cannot advise on whether we agree with the conclusion of not significant.	Volume 3 Chapter 21: Marine Mammals - Section 21.12.3, paragraph 372, page 125	The Llŷr project is following standard industry good practice in providing a Vessel Management Plan, Environmental Management Plan and Construction Method Statements. This is the usual means for addressing and closing out short-lived disturbance events. These are acknowledged and not overlooked, but it needs to be recognised that these aspects cannot currently be assessed quantitatively. The key points are that is it unreasonable to expect that this aspect would actually change the outcome of the assessment and that NRW(A) are seeking information from a small T&D project that is not being asked by regulatory authority elsewhere in Wales, England or Scotland for considerably much larger commercial developments.
66	Marine Mammals	JNCC request justification for the exclusion of some impact pathways to marine mammals provided within the inter-related effects of the proposed project. In particular, the risk of entanglement and barrier effects during the project lifetime are potential impact pathways considered which have been scoped out of this assessment.	Volume 3 Chapter 21: Marine Mammals - Section 21.13, page 125	These impact pathways were scoped out on the basis that the project alone assessment concluded that they were of negligible significance. This approach aligns with other Celtic Sea demonstrator projects i.e Erebus, also WhiteCross. There is no guide on how cumulative assessment would be undertaken for such impacts when they are all to be addressed by project level mitigation and are qualitative impacts anyway, or mitigated to an assumed zero in the case of instantaneous injury.
67	Marine Mammals	JNCC agree with the conclusion that the potential for transboundary effects is of negligible significance. However, we question the justification that a transboundary effect will be 'localised'.	Volume 3 Chapter 21: Marine Mammals - Section 21.14, page 128	Noted
68	Marine Mammals	In line with JNCC's remit we have only considered SACs with an offshore component, in this instance SACs designated for harbour porpoise. We defer to NRW regarding potential impacts to the bottlenose dolphin and grey seal SACs. We are content with the results of the assessment to determine LSE on SAC marine mammal features from the proposed Project as presented in Table 8D-10 (page 80). We note that all UK SACs spatially overlapping with the proposed Project and/or located within the species-specific MMMUs were screened in and taken forward to the report to inform appropriate assessment (RIAA). We note the Valorous and Llŷr 2 projects have not been included in the in-combination assessment for marine mammal receptors despite it being identified within the long-list in Appendix 5A: Annex 5A- Indicative Long List. JNCC require the reason for this omission be justified as the temporal and spatial proximity of the two projects suggests the potential for cumulative impacts.	Volume 6 Appendix 8D: HRA Screening	Noted Both Llŷr 2 and Valorous are at pre-applications stage so there is insufficient data to provide an assessment. As stated in Volume 6: Appendix 5A – Approach to Cumulative Effects Assessment; 5.4.2. Stage 2: Shortlisting of the long list of projects paragraph 45 "If there was low data confidence in relation to a development screened into the CEA project long list (e.g. no information was available on construction timelines or there were limited project details), the proposed Project was screened out of the CEA project short list in stage 2 of the CEA, as the limited information available would not allow for a meaningful cumulative assessment to be undertaken." The final list has been agreed with NRW(A).
69	Marine Mammals	As stated previously, our review has focussed on SACs designated for harbour porpoise. We have concerns with some of the information presented in this report to support this conclusion. Subsequently we do not believe sufficient or appropriate information is provided to the regulator to inform their HRA of the harbour porpoise SACs.	Volume 6 Appendix 8E: HRA RIAA	We believe that the information is adequate and clarification to the aspects raised by the JNCC are been addressed above. All the information provided to inform the HRA is provided in Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment; 8.5.3. Annex II Marine Mammals (page 123 onwards)
70	Marine Mammals	JNCC agree with the conclusion of likely significant effect on the West Wales Marine SAC (13.65km from Llŷr Array Area/0km from OfECC) and the Bristol Channel Approaches SAC (12.11km from Llŷr Array Area/1.94 from OfECC), as presented in Table 8-14.	Volume 6 Appendix 8E: HRA RIAA - Table 8-14, page 129	Noted
71	Marine Mammals	Applicant has stated in paragraph 388 that the JNCC Guidance for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise SACs (2020) has been used to inform the harbour porpoise assessment. However, the use of EDRs to assess disturbance has not been used as proposed in this document and as per JNCC's pre-application advice. The 2020 guidance describes thresholds above which an adverse effect will be concluded and advocates the use of EDRs when assessing how much of a site is unavailable to harbour porpoise due to underwater noise. This document favours the use of fixed EDRs based on empirical evidence as opposed to disturbance ranges estimated from noise modelling as the latter carries considerable uncertainty. In particular: – There are no agreed quantitative thresholds for disturbance as there are for auditory injury. – Depending on the choice of numerical models to estimate sound source and propagation one can end up with several orders of magnitude different predictions for disturbance ranges. – Received sound levels are not the single most influencing factor in triggering disturbance, other characteristics of sound and how they propagate with distance will influence how an animal perceives the noise. – Behavioural context, individual animal motivation and previous exposure will also all play a role in determining response. There are two harbour porpoise sites within the Bristol Channel, both of which are jointly managed by JNCC. Pre-application, JNCC advised the EDRs should be used for HRA purposes (4 August 2023) but agreed these could be presented alongside other methods required by NRW-A for comparison purposes. JNCC highlighted during the fitness check (27 September 2024) the use of EDRs had not been applied as agreed and while the Applicant has provided additional information in the form of a table in the Llŷr 1 Floating Offshore Wind Farm Addendum to the Environmental Statement' (Table 8-17), the EDRs have not been applied correctly.	Volume 6 Appendix 8E: HRA RIAA - Section 8.5.3, paragraph 388, page 129	As shown in Table 8-22, EDR is used for area-based assessment of impacts from geophysical surveys. For porpoise, for example, Table 8-23, page 152, shows the area-based worst-case percentage daily footprint overlap with the Harbour porpoise SACs. For both SACs, it is less than the daily limit. Regarding the use of the EDR for the noise assessment we aimed to use the most accurate value for each development; however, in some instances detailed predictions of impact were not available and EDRs had to be applied.

72	Marine Mammals	JNCC agree with the decision to scope into the assessment effects of underwater noise, and to scope out accidental pollution and contamination, collisions with project vessels and the effects of electromagnetic fields (EMF). We understand that the Applicant is committed to employing a Vessel Management Plan (VMP) which will adhere to a marine pollution contingency plan which will subsequently reduce the risk of any unlikely pollution event to be short-term, localised and of low intensity. However, JNCC does not agree with the decision to scope out barrier effects from mooring lines and cables between platform and anchors from the assessment, or entanglement with mooring lines and cables. The evidence to justify scoping out barrier effects (section 8.5.3, paragraph 436) is based on studies relating to fixed offshore wind projects which, in comparison to FLOW do not have mooring lines as a feature crossing through the array grid. We request clarity around the statement that 'Studies from parallel industries enable the conclusion that the physical presence of floating WTG is unlikely to cause a barrier effect (OSC, 2022).' What parallel industries is the Applicant referring to in this instance? If it relates to oil and gas we would further disagree with this statement as this industry does not have a large array of FLOW turbines within the projects, the numbers are not comparable.	Volume 6 Appendix 8E: HRA RIAA - Potential identified impact pathways	These impact pathways were scoped out on the basis that the project alone assessment concluded that they were of negligible significance. This approach aligns with other Celtic Sea demonstrator projects i.e Erebus, also WhiteCross. There is no guide on how cumulative assessment would be undertaken for such impacts when they are all to be addressed by project level mitigation and are qualitative impacts anyway, or mitigated to an assumed zero in the case of instantaneous injury. The studies from parallel industry referred to are Oil & Gas and aquaculture activities.
73	Marine Mammals	While we do agree that the primary risk of entanglement for Annex II harbour porpoise with mooring lines and cables connected to floating Wind Turbine Generators (WTGs) is low, the risk of secondary entanglement through marine debris and ghost fishing gear caught on this infrastructure is still a significant risk. In addition, the Applicant has not considered the tertiary entanglement (Genesis, 2024), in which entanglement may occur through ghost gear attached to the animal as it travels through the and past the mooring lines and cables.	Volume 6 Appendix 8E: HRA RIAA - Entanglement:	The requirement for an agreed MMMP secured post consent and prior to any offshore activities as per a standard Marine Licence consent condition(s). To date all the UK MMMPs (of which the Llŷr project is aware) have focused on piling. Therefore, it was reasonable to adopt this same focus for Llŷr. However, contrary to the NRW(A) comment, in addition to piling (which includes addressing construction noise) both entanglement and potential disturbance from vessel activity are addressed in the register of (embedded) mitigation measures - Volume 6: Appendix 32A – Mitigation Register: UXO Clearance - Embedded Mitigation ID E152 and ID E230 Entanglement - Embedded Mitigation ID E232 Vessel Noise (including construction) - Embedded Mitigation ID E154 The key aspect of entanglement, as identified by NRW, is secondary entanglement (mainly as a result of derelict fishing gear). As stated in the Environment Statement, the Embedded Mitigation identified in ID E232 stated - "*Mooring lines and floating inter-array cables will be inspected during the operation and maintenance phase using a risk-based adaptive management approach. Mooring line and cable inspections are expected to occur at a higher frequency initially and then reduce in frequency over a number of years, with changes to inspection periods based on evidence of risk garnered from the inspections.* " As the floating wind technology has not been selected, the number of mooring lines, type of mooring line (tension or catenary) or number and spacing of floating platforms are still to be defined; all of which has an influence on the frequency and methodology employed for monitoring. In addition, as identified by NRW(A), there are currently no fixed recommendations for entanglement monitoring specific to floating wind farms (and thus the reason for the need of scaled test and demonstration projects prior to the roll out of commercial scale floating wind farms).The Llŷr project is committed to engaging with NRW and the JNCC to discuss further the requirements for entanglement monitoring post consent (once the selection and detailed design of the floating technology is completed), and agreeing in writing the content and approach to the monitoring prior to the commencement of any offshore works. In the absence of any specific guidance from the SNCB's for entanglement monitoring, the project monitoring arrangements will include as a minimum to report any entanglement or mortality events to NRW and the detail of the monitoring methods (which may be via load cells attached to mooring lines or via ROV surveys across the offshore array) will be agreed with NRW, in consultation with the SNCB's. LlŷrFloating Wind is content to have the requirement for written consultation and agreement of the MMMP prior to the commencement of offshore works as a post consent condition.
74	Marine Mammals	*1. Conservation Objective 1 – The species is a viable component of the site* **Mortality:** We do not agree with the conclusions as discussed here because the effect of entanglement has not been assessed. **Auditory injury (PTS-onset)**: When assessing the risk of injury from UXO clearance the predicted injury range of 19.25km for high order clearance has been identified as overlapping with the West Wales Marine SAC, however, there is no mention of the potential overlap with Bristol Channel Approaches SAC which is 12.11km from the project area. As there is direct overlap with both sites from this impact pathway, the assessment should consider them both separately. We agree that based on the scenario assessed, injury from using low-order methods will not overlap with either SAC. We also note the Applicant's intention to follow JNCC guidance (2020), however, this does not provide sufficient mitigation for high order clearance. What additional mitigation could be employed is not considered. No other injury ranges from the activities identified (including impact piling) overlap with either SAC.	Volume 6 Appendix 8E: HRA RIAA - Information for Appropriate Assessment - Harbour Porpoise – Assessment of Adverse Effects Alone	Requirement for an MMMP will be secured via consent conditions. To date all the UK MMMPs (of which the applicant is aware) have focused on piling. Therefore, it was reasonable to adopt this same focus for LlŷrAlso note that both entanglement and potential disturbance from vessel activity are already covered in the register of (embedded) mitigation measures.
75	Marine Mammals	*2. Conservation Objective 2 – No significant disturbance of the species within the site* We refer to our previous comments (Section 8.5.3, Paragraph 388, Page 129) regarding the use of EDRs and how they should be used for HRA purposes. Table 8-23 demonstrates activities associated with this development will exclude harbour porpoise from large areas of the site however the daily threshold of 20% should not be exceeded. When considering the seasonal threshold, we refer to our previous comments in the relation to the inconsistencies in information between the worst-case scenario presented within Chapter 4 and the assessment of disturbance from impact piling as they also apply here in relation. While the information presented in Table 8-24 suggests the seasonal threshold would not be exceeded, this has assumed ten days of piling, which differs from the minimum 20 days referred to in Chapter 4. As a result, we cannot agree with the conclusions of this assessment.	Volume 6 Appendix 8E: HRA RIAA - Information for Appropriate Assessment - Harbour Porpoise – Assessment of Adverse Effects Alone	As shown in Table 8-23, seasonal % cover is considerably less than the 10% limit. If we recalculate using 45 days of piling, then seasonal percentage overlap is still below 5% of Bristol Channel Approaches and 1.5% of West Wales Marine SACs.
76	Marine Mammals	*3. Conservation Objective 3 – The supporting habitats and processes relevant to harbour porpoise and their prey are maintained* JNCC does not agree that this Conservation Objective has not been impeded as indirect impacts to prey species needs to be assessed during the construction phase of the project occurring in the OfECC in West Wales SAC. Temporary and/or permanent loss / removal of seabed has the potential to impact the prey species of the harbour porpoise feature of this site and should be assessed in the HRA.	Volume 6 Appendix 8E: HRA RIAA - Information for Appropriate Assessment - Harbour Porpoise – Assessment of Adverse Effects Alone	Indirect effects to prey are detailed as negligible on page 89 of Volume 3 : Chapter 21 – Marine Mammals. The same line of argument applies for the cable route, % loss of habitat (temporary or permanent) and associated prey species is negligible compared to the wider resource available in each species MMMU.

77	Marine Mammals	*1. Conservation Objective 1 - The species is a viable component of the site* JNCC consider that there is a risk of secondary and tertiary entanglement from ghost gear during the construction phase and the operational phase for FLOW projects. Due to the uncertainty surrounding the risk of entanglement we feel the precautionary principle should be applied to the in-combination assessment. We strongly advise that details and/or discussion of what potential methods could be applied to reduce the risk of entanglement are included in the draft MMMP. Without this we are unable to agree with the conclusions of the RIAA. We advise that an assessment in relation to the tertiary risk of entanglement is also considered (Genesis, 2024).	Volume 6 Appendix 8E: HRA RIAA - Information for Assessment of Adverse Effects In-Combination	The requirement for an agreed MMMP secured post consent and prior to any offshore activities as per a standard Marine Licence consent condition(s). To date all the UK MMMPs (of which the Llŷr project is aware) have focused on piling. Therefore, it was reasonable to adopt this same focus for Llŷr. However, contrary to the NRW(A) comment, in addition to piling (which includes addressing construction noise) both entanglement and potential disturbance from vessel activity are addressed in the register of (embedded) mitigation measures - Volume 6: Appendix 32A – Mitigation Register: UXO Clearance - Embedded Mitigation ID E152 and ID E230 Entanglement - Embedded Mitigation ID E232 Vessel Noise (including construction) - Embedded Mitigation ID E154 The key aspect of entanglement, as identified by NRW, is secondary entanglement (mainly as a result of derelict fishing gear). As stated in the Environment Statement, the Embedded Mitigation identified in ID E232 stated - "*Mooring lines and floating inter-array cables will be inspected during the operation and maintenance phase using a risk-based adaptive management approach. Mooring line and cable inspections are expected to occur at a higher frequency initially and then reduce in frequency over a number of years, with changes to inspection periods based on evidence of risk garnered from the inspections.* " As the floating wind technology has not been selected, the number of mooring lines, type of mooring line (tension or catenary) or number and spacing of floating platforms are still to be defined; all of which has an influence on the frequency and methodology employed for monitoring. In addition, as identified by NRW(A), there are currently no fixed recommendations for entanglement monitoring specific to floating wind farms (and thus the reason for the need of scaled test and demonstration projects prior to the roll out of commercial scale floating wind farms).The Llŷr project is committed to engaging with NRW and the JNCC to discuss further the requirements for entanglement monitoring post consent (once the selection and detailed design of the floating technology is completed), and agreeing in writing the content and approach to the monitoring prior to the commencement of any offshore works. In the absence of any specific guidance from the SNCB's for entanglement monitoring, the project monitoring arrangements will include as a minimum to report any entanglement or mortality events to NRW and the detail of the monitoring methods (which may be via load cells attached to mooring lines or via ROV surveys across the offshore array) will be agreed with NRW, in consultation with the SNCB's. Llŷr Floating Wind is content to have the requirement for written consultation and agreement of the MMMP prior to the commencement of offshore works as a post consent condition.
78	Marine Mammals	*2. Conservation Objective 2 - No significant disturbance of the species* The assessment claims the only project from the plans and projects identified that could have a noise impact overlap in-combination is Erebus; at approximately 5km from the proposed Project (section 8.5.3, paragraph 509). It was also identified that Erebus could be constructing within the same period as this proposed Project (2025 -2026). As previously highlighted, EDRs have not been applied in the context of the HRA however we have based our interpretation of the results presented using the applied fixed thresholds. Both projects assessed in combination do not exceed the 20% daily threshold. Piling events at the edge (or in some cases beyond the edge) of the site will contribute less to the spatial disturbance footprint within the site. Similarly, EDRs from pile driving events planned near each other would overlap and reduce the spatial footprint, potentially enabling additional activities to take place within the site without causing significant disturbance.	Volume 6 Appendix 8E: HRA RIAA - Information for Assessment of Adverse Effects In-Combination	Noted
79	Marine Mammals	JNCC note that the in-combination assessment increases the daily percentage of the overlap with West Wales Marine SAC to 2.13% in the OfECC for geophysical surveys and 6.81% in the array area for piling during the summer months. As these do not exceed the daily threshold of 10%, we can agree with the conclusions of the assessment based on the application of fixed thresholds. However, we highlight that JNCC advocate the use of EDRs as these reflect empirical evidence.	Volume 6 Appendix 8E: HRA RIAA - In-combination (Erebus and this proposed Project) total daily percentage overlap with West Wales Marine and Bristol Channel Approaches SACs	Noted
80	Marine Mammals	In Table 8-28 (page 163) we note that there is an error with the identification of the SACs West Wales Marine SAC has been listed twice.	Volume 6 Appendix 8E: HRA RIAA - In-combination (Erebus and this proposed Project) total daily percentage overlap with West Wales Marine and Bristol Channel Approaches SACs	Noted
81	Marine Mammals	*3. Conservation Objective 3 – The supporting habitats and processes relevant to harbour porpoise and their prey are maintained* JNCC refers to our comment in relation to the project alone assessment and recommend the assessment includes the impact pathway relating to temporary and / or permanent loss of habitat with reference to the construction phase of the project occurring in the OfECC in West Wales SAC.	Volume 6 Appendix 8E: HRA RIAA - In-combination (Erebus and this proposed Project) total daily percentage overlap with West Wales Marine and Bristol Channel Approaches SACs	Indirect effects to prey are detailed as negligible on page 89. The same line of argument applies for the cable route, % loss of habitat (temporary or permanent) and associated prey species is negligible compared to the wider resource available in each species MMMU.
82	Marine Mammals	While the QA of digital aerial surveys (DAS) data must be proportionate, selecting 20% of the data for QA and the requirement of a 90% agreement leaves a degree of uncertainty or variation of up to 9%, which may have implications for the conclusions of any assessments which are based on predicted numbers of animals impacted. It is not clear how this 90% agreement was calculated, and whether group size and species are considered as separate contributing factors or if both being different would be considered a single differing result. Further clarification is required.	Volume 6 Appendix 21A: Marine Mammal and Megafauna Baseline - Section 21.2.1, page 26	This level of QA is standard across all HiDef projects and is better than industry standard. HiDef's QA process involves a blind review of 20% of all classified objects by a senior analyst who was not involved in the original classification. This sample is randomly selected to ensure it is representative across time, location, and observer. The 20% sample has been selected as a proportionate and based on our extensive operational experience. It allows us to monitor consistency and accuracy while exceeding industry recommended minimum of 10% . In cases where discrepancies are detected, targeted rechecks can be carried out on wider portions of the data. The 90% agreement figure refers to the proportion of objects in the QA sample where both species identification and group size agree between the original classification and the QA review. Agreement is defined as a species match (or appropriate species group match) and a group size within accepted tolerances. If species or group size is outside these thresholds, that object is counted as a mismatch. It is important to clarify that a 90% agreement in the QA sample does not translate directly into a 10% error in final survey outputs. Most mismatches are minor, for example, slight differences in group size or within-group species-level uncertainty (e.g. "gull sp." vs. "lesser black-backed gull") and do not materially affect statistical summaries or conclusions. These QA results are reviewed by senior analysts, and any patterns that emerge are investigated further. Where necessary, additional targeted reviews are carried out to ensure confidence in the final dataset
83	Marine Mammals	The Applicant refers to digital aerial surveys conducted for the Erebus project, however, JNCC had concerns regarding these surveys as survey effort in sea states greater than a Beaufort 3 were included in the analysis, which equated to nearly a quarter of the overall data. We note these concerns have not been discussed or caveated within this document which raises concerns that the Llŷr site surveys may reflect the same environmental constraints. This subsequently raises a concern regarding the confidence in the marine mammal identification process within the Llŷr site surveys. Further justification is required to provide confidence that species ID is accurate in this portion of the data.	Volume 6 Appendix 21A: Marine Mammal and Megafauna Baseline - Section 21.2.2, page 31	The HiDef survey methodology enables surveys to be performed effectively in this sea state with high confidence of ID. Details of species ID are provided in the baseline technical appendix.
84	Marine Mammals	JNCC agree that the site-specific surveys should be used for the quantitative impact assessment as a precautionary approach. We note that the model-based estimate of 0.137 animals/km2 for the Llŷr marine megafauna survey area represents an absolute density and is spatially relevant to the area of the proposed Project.	Volume 6 Appendix 21A: Marine Mammal and Megafauna Baseline - Section 21.3.2, page 63	Noted

85	Marine Mammals	JNCC agree that the large number of common dolphins observed in the DAS could reflect a group of animals ('super pod') passing through at the time of the survey. However, the DAS surveys for the Erebus project also recorded raw counts of dolphins that reflect a similar sightings pattern to this project. JNCC maintains our advice that the site-specific density estimates derived from the DAS surveys is the most precautionary density.	Volume 6 Appendix 21A: Marine Mammal and Megafauna Baseline - Section 21.3.3, page 89	Noted
86	Marine Mammals	JNCC agree with the approach to use the SCANS-III estimate for the quantitative impact assessment as the estimate of 0.011 animals/km2 represents absolute abundance and is spatially relevant to the area of the proposed Project. These are the most precautionary estimates.	Volume 6 Appendix 21A: Marine Mammal and Megafauna Baseline - Section 21.3.5, page 132	Noted
87	Marine Mammals	JNCC acknowledge that this appendix has been provided to justify the decision to not use the site-specific common dolphin density estimates derived from the 24-month DAS surveys. It was recommended at the pre-application stage by JNCC (11 September 2023) to use the site-specific density estimates derived from the DAS surveys as these are the most precautionary. JNCC advised that if that Applicant did not decide to use these density estimates, then a comparison with the preferred density could instead be provided to justify deviating from our recommendations. The Applicant chose to ignore JNCC advice and only used SCANS-IV density estimates when drawing conclusions in the impact assessment. The SCANS IV survey represents one survey on one day in one month, however, it is proposed (by the Applicant) this density is more appropriate for the wider study area than the DAS estimate. No evidence is provided to suggest this estimate is representative of other times of the year therefore JNCC maintain our stance on the use of density estimates for common dolphin.	Volume 6 Appendix 21C: Annex B - Common Dolphin Impact Assessment Comparison Using Site-Specific Density	The approach and rationale undertaken, as set out in the Appendix, has been accepted by NRW(A). The reasoning for not using the DAS survey estimate (as per the JNCC advice) was because it was an unrealistic density estimate. The technical details of the approach and justification are set out in Volume 6 Appendix 21C: Annex B - Common Dolphin Impact Assessment Comparison Using Site-Specific Density
88	Marine Mammals	Please refer to comments on the marine mammal underwater noise assessment presented in Volume 6 Appendix 21C: Marine Mammal Underwater Noise Assessment. JNCC agree with any concerns raised by NRW-A in relation to the underwater noise assessment presented in Volume 6 Appendix 21B: Underwater Noise Report	Volume 6 Appendix 21B: Underwater Noise Report	Noted
89	Marine Mammals	JNCC agree with any concerns raised by NRW-A in relation to the underwater noise assessment presented in Volume 6 Appendix 21C: Marine Mammal Underwater Noise Assessment. JNCC agree with the representative fleeing model swim speeds per marine mammal species as presented in Table 21C-4 (page 13). JNCC note that assessment of injury used Southall et al., (2019) and PTS-onset thresholds for cumulative noise (SELcum) using the static receptor model. However, in Chapter 21 the injury ranges for SPLpeak have been used to inform the conclusions of the assessment. JNCC also note the use of the EDR for the noise assessment for pre-construction geophysical surveys. There is a need to understand if this has been decided upon due to the worse-case scenario as this isn't the approach used throughout the entire EIA.	Volume 6 Appendix 21C: Marine Mammal Underwater Noise Assessment	Advice as to which sonar to use for which geophysical activity came from the Genesis (2011) report as stated in the legend for Table 21b-1. The data for each specific geophysical sonar came from individual Equipment Spec sheets. Regarding the use of the EDR for the noise assessment for pre-construction geophysical surveys, we aimed to use the most accurate value for each development; however, in some instances detailed predictions of impact were not available and EDRs had to be applied.
90	Marine Mammals	The assessment of injury for geophysical surveys has used SELcum thresholds using the static receptor model. Without justification for this metric being selected we have assumed that this represents the maximum (worst-case) injury ranges.	Volume 6 Appendix 21C: Marine Mammal Underwater Noise Assessment - Assessment Methods - Assessment of injury	Advice as to which sonar to use for which geophysical activity came from the Genesis (2011) report as stated in the legend for Table 21b-1. The data for each specific geophysical sonar came from individual Equipment Spec sheets. The SELcum thresholds using the static receptor model represents the maximum (worst-case) injury ranges.
91	Marine Mammals	The use of the EDR metric has been applied for the geophysical surveys disturbance assessment. Without justification for why this has been applied we have assumed that this represents the worst-case percentage population impacted.	Volume 6 Appendix 21C: Marine Mammal Underwater Noise Assessment - Assessment Methods - Disturbance	Without additional detailed information, EDR is an accepted metric for geophysical surveys from NRW(A)
92	Marine Mammals	JNCC acknowledge the information presented within Table 21C-8 outlines the equipment to be used within the pre-construction surveys that overlap with the marine mammal functional hearing groups (FHGs). We note that the following paragraph 39 lists the results but does not outline the injury ranges for each FHG. We advise that these are presented to provide clear information to inform the assessment.	Volume 6 Appendix 21C: Marine Mammal Underwater Noise Assessment - Table 21C-8 and paragraph 39, page 17	Full results are presented in the acoustic impact assessment technical appendix - section 21.7 Acoustic Impact Modelling Results in Appendix 21B - Underwater Noise Impact Study
93	Marine Mammals	JNCC note that the piling parameters used to assess auditory injury and disturbance including piling time per pin pile, strike rates, and the soft-start protocol were all taken from the noise study carried out for the Erebus FLOW EIA. JNCC request justification for the use of the Erebus FLOW EIA noise study for the Llŷr project.	Volume 6 Appendix 21C: Marine Mammal Underwater Noise Assessment - Section 21.5, page 26	Erebus was used as a proxy as the same activities and methods will be used for Llŷr
94	Marine Mammals	JNCC note that the maximum PTS onset ranges for impact piling have been presented in Table 21C-28. While the SPLpeak ranges are <10m for all hearing groups apart from VHF which is 39m. We note that the SELcum Static and fleeing receptor models show injury ranges at are far larger distances. JNCC would like clarity as to which metric is exceeded first as this should be used as the injury criteria.	Volume 6 Appendix 21C: Marine Mammal Underwater Noise Assessment - Table 21C-28, page 30	The largest modelled impact zone is unrealistic for the activities identified within the ES (i.e., the impact zone for LF mammals based on SPL is <10 m, and SEL with a static receptor is >29 km). It is unreasonable to request mitigation on a metric which quite clearly does not reflect reality.
95	Marine Mammals	Table 21C-32. provides a summary of the worst-case number of animals at risk of disturbance from impact piling using D/R curves for all cetaceans. In this table we understand that the percentage reference of the population of the common dolphin MU disturbed is 7.188%. We understand that the D/R curves are based on harbour porpoise responses so are therefore precautionary for other species, but this represents a large number of common dolphins potentially disturbed. Please see our previous comments in relation to the ES chapter 21 (Section 21.9.1, Paragraph 164, Page 72 and Table 12-33, Page 73).	Volume 6 Appendix 21C: Marine Mammal Underwater Noise Assessment - Table 21C-32 page 32	Noted - please see our previous responses
96	Marine Mammals	As previously stated, we do not agree with the decision to base mitigation requirements only on the PTS onset peak SPL metric (referred to as instantaneous PTS). This has resulted in not considering noise abatement systems (NAS) or acoustic deterrent devices (ADDs) for any mitigation plan (section 4.4.5.266). The current methods discussed are not sufficient for the SELcum impact ranges predicted.	Volume 6 Appendix 4A: OCEMP	The largest modelled impact zone is unrealistic for the activities identified within the ES (i.e., the impact zone for LF mammals based on SPL is <10 m, and SEL with a static receptor is >29 km). It is unreasonable to request mitigation on a metric which quite clearly does not reflect reality.
97	Marine Mammals	We are content with the proposed mitigation based on PTS onset peak SPL metric (referred to as instantaneous PTS) to define potential mitigation zones. But without consideration of both metrics, we advise this outline plan is not sufficient to support claims of no significant impact in the ES. Consideration of both metrics is currently the industry standard for assessing noise exposure to marine mammals and in the absence of an alternative method we do not agree with only considering PTS onset when identifying mitigation requirements.	Volume 6 Appendix 4A: OCEMP	The largest modelled impact zone is unrealistic for the activities identified within the ES (i.e., the impact zone for LF mammals based on SPL is <10 m, and SEL with a static receptor is >29 km). It is unreasonable to request mitigation on a metric which quite clearly does not reflect reality.
98	Marine Mammals	We also note mitigation has only been identified for impact piling and, although mentioned, the draft MMMP does not provide any indicative mitigation methods for UXO clearance or for the pre-construction geophysical surveys. All noise activities have specific guidance for mitigation measures, and they must be considered within the draft MMMP. For UXO clearance we assume that this will be reflected in a separate licence application prior to any UXO clearance activity.	Volume 6 Appendix 4A: OCEMP	Separate Marine Licences will be applied for should UXO clearance be required, which by its very nature will take into account the existing policies and requirements that are relevant at the time. This will be included in an updated MMMP and should address any concerns NRW/JNCC have about this aspect

99	Marine Mammals	In addition, the assessment conclusions of no significant effect from entanglement during the operational phase is reliant on mitigation via monitoring of the mooring lines and cables for ghost fish gear and marine debris. However, no indicative plan is contained with the draft MMMP to support these conclusions. We note that this MMMP establishes mitigation during the construction phase for marine mammals, however, it is of our view that there is risk of entanglement during the construction phase (after the first day). JNCC strongly recommend the inclusion of or discussion in relation to what methods could be applied to monitor for entanglement.	Volume 6 Appendix 4A: OCEMP	Entanglement is addressed in the register of (embedded) mitigation measures - Volume 6: Appendix 32A – Mitigation Register - Entanglement - Embedded Mitigation ID E232 states - "*Mooring lines and floating inter-array cables will be inspected during the operation and maintenance phase using a risk-based adaptive management approach. Mooring line and cable inspections are expected to occur at a higher frequency initially and then reduce in frequency over a number of years, with changes to inspection periods based on evidence of risk garnered from the inspections* ." As the floating wind technology has not been selected, the number of mooring lines, type of mooring line (tension or catenary) or number and spacing of floating platforms are still to be defined; all of which has an influence on the frequency and methodology employed for monitoring. In addition, as identified by NRW(A), there are currently no fixed recommendations for entanglement monitoring specific to floating wind farms (and thus the reason for the need of scaled test and demonstration projects prior to the roll out of commercial scale floating wind farms).The Llŷr project is committed to engaging with NRW and the JNCC to discuss further the requirements for entanglement monitoring post consent (once the selection and detailed design of the floating technology is completed), and agreeing in writing the content and approach to the monitoring prior to the commencement of any offshore works. In the absence of any specific guidance from the SNCB's for entanglement monitoring, the project monitoring arrangements will include as a minimum to report any entanglement or mortality events to NRW and the detail of the monitoring methods (which may be via load cells attached to mooring lines or via ROV surveys across the offshore array) will be agreed with NRW, in consultation with the SNCB's.THE MMMP will require approval from the NRW-Marine Licencing Team prior to offshore construction activities commencing.
100	Benthic Ecology	JNCC are of the opinion that decommissioning activities have not been fully considered. The recently published guidelines by Offshore Energies UK (OEUK), 'Designing for Decommissioning of Offshore Wind' states that: "Assets should be designed to be decommissioned with a technology available at the time of commissioning". In addition, the Examining Authority for Five Estuaries Offshore Wind Farm Limited (Project EN010115) has requested from the Applicant that: "Decommissioning is required to be assessed in order that the Examining Authority and Secretary of State can have regard to the likely significant effects of the whole project over its lifecycle in making a recommendation and determination". This can be achieved by following the OEUK 'Designing for Decommissioning of Offshore Wind' guidelines and assessing decommissioning based on available technologies now and not in the future. JNCC consider that without assessing decommissioning now, it is not possible to determine the likely significant effects of the project as a whole for the offshore environment.		The EIA has taken a worst-case scenario for decommissioning, taking seabed interaction to be the same as it is for construction, using equipment and techniques that are currently available, as per the OEUK guidance mentioned. The assessment has also taken a worst-case scenario approach to allow for consideration of the whole project should only current techniques be available. Thus, on this basis it has been assumed that all infrastructure from the proposed Project will be removed during decommissioning and that this is likely to be undertaken using equipment that is similar to that used to install the infrastructure. Thus, decommissioning has assumed a reversed process to the installation process which includes disturbance to the seabed at a level experience during installation even though it is generally accepted that decommissioning via full removal would have a lower impact than installation. Accordingly, the area of seabed impacted during decommissioning would be similar to the area assessed as impacted during construction. It is possible that by the time the project is decommissioned there may be more environmentally favourable techniques that can be used. In addition, assessments to be undertaken at the time may indicate the best environmental approach is to leave infrastructure in place. In both cases the worst-case scenario using current techniques in the decommissioning methodology ensures other scenarios are encompassed within the scenario assessed.
101	Benthic Ecology	There are some inconsistencies regarding the burial of the inter-array cables (IACs). Paragraph 96 states that "*cables will be buried where possible, however, where burial is not possible additional cable protection measures will be used* ". However, paragraph 193 states "*the IACs are not planned to be trenched/buried, unless required for physical stabilisation on the seabed, however, to provided worst-case scenario, an allowance is given to burial of the IACs between each WTG and at the IAC touchdown point* ". JNCC have based our advice on the worst-case scenario of cable protection of the entire length of the IACs.	Volume 1, Chapter 4: Description of the Proposed Project - Section 4.5.2, Paragraph 96, page 26 and Section 4.7.5, paragraph 193, page 49	The benthic assessment was based on a worst-case scenario which considered the burial of the IAC that are not dynamic in the water plus a worst-case contingency of the potential movement of the cable on the seafloor (i.e.. at the connection point between the dynamic cable 'touch down' point and cable point at which the cable is buried). Additional cable protection is based on an assumption of 20% of the IAC lengths requiring protection, with an assumed WCS of all of them needing to the buried from the touchdown points.
102	Benthic Ecology	Drill arisings from drilling of piles will create cuttings piles. The maximum drill arisings across the array area will be up to 42,300m3, however, a maximum seabed impact area should be calculated for these as cuttings piles will impact the local environment and should be considered in more detail. JNCC also note that no seabed impact area has been included in the assumptions log for drill arisings.	Volume 1, Chapter 4: Description of the Proposed Project - Section 4.5.2, paragraph 83, page 23	The volume of drill arisings is equivalent to 4,230 m3 per WTG. Assuming a simple 1m depth of the drill arisings the total area affected would be 4,230 m2 per WTG (in reality the cuttings pile would likely be smaller due to the cone shape expected to be produced and so this is a conservative assessment). The drill arisings will result in some habitat loss, though with water movements and tidal flow it is expected that these areas will level out over time as particulate matter is winnowed away. In addition, the presence of the WTG mooring cables on the ground, plus the presence of clump weights etc., are all in the same region around each of the structures and thus the increase in seabed impacts is limited. Nevertheless, assuming the loss of 42,300 m2 of habitat (assuming a 1 m depth pile) which is very localised, and within the overall disturbance footprint around each WTG, the area affected is limited in extent and is expected to recover within 1-2 years (i .e. in the short term) due to knowledge of the water movements and presence of sand waves etc. within the project area. Thus, the magnitude is considered to be negligible and the impact to be of minor significance.
103	Benthic Ecology	The IACs may be wet stored on the seabed should installation occur before the floating platforms. In order to assess the worst-case scenario, the Applicant should provide a footprint of possible seabed impact from the wet storage of the IACs.	Volume 1, Chapter 4: Description of the Proposed Project - Section 4.7.5, paragraph 190, page 48	The temporary footprint of the 'wet' placement of the cable will be the length of IAC x width of cable = 17.1 km x 20 cm = 17,100 m x 0.2 m = 3,432 m2 of seabed on which the IAC will lie. The placement of the cable is expected to result in very minimal disturbance to the seabed. The cable will be laid as normal for the IAC. The last 150m approximately, that normally forms the lazy wave, will just be lowered onto the seabed by the cable laying vessel and just left. The weight of the cable will just keep it in place. If there is a possibility of seabed movement over the relatively short period of time that the cable is left then a local marker may be attached to the end. The cable will not be left suspended in the water column. Thus, the effect is temporary and highly localised with minimal disturbance on the seabed. Thus, the impact is of a negligible magnitude. The seabed habitats in the Array Area are relatively homogenous, with sediments dominated by sand with varying compositions of gravel and small contributions of mud. This habitat type has been categorised as A5.25 Circalittoral Fine Sand as being present throughout the Array Area. This habitat, which sits within the Subtidal Sands and Gravels does have high sensitivity to physical loss and physical change. However, temporary placement of the IAC on the seabed will not cause loss or damage to this habitat and so sensitivity to this specific activity is low. The impact significance is therefore, for this temporary storage, is therefore, negligible and not significant.
104	Benthic Ecology	"[…] *There remains strong technical and environmental arguments to retain cables in-situ along with any cable and scour protection"*. JNCC advise that the leaving in-situ of infrastructure or cables should not be assessed as beneficial to the marine environment. The Applicant should not consider the impacts of introducing hard or artificial substrates into a mainly sedimentary habitat as beneficial to the area unless evidence can be presented to confirm this.	Volume 1, Chapter 4: Description of the Proposed Project - Section 4.11.2, page 68, paragraph 333	Noted. This has been mentioned only once and has not been a factor in the assessment itself. This will be considered for future projects.
105	Benthic Ecology	JNCC notes that the Applicant has not considered the impacts of Unexploded Ordnance (UXO) clearance on benthic habitats and species. JNCC would expect this to be factored into the impact assessment for benthic ecology.	Volume 3, Chapter 19: Benthic Ecology	It is known that UXO clearance can result in impacts to benthic ecology, particularly habitat loss due to significant disturbance of the seabed following detonation. However, in recent years it has been our experience that it generally preferred and standard practice to undertake a full UXO assessment only once the targeted UXO survey has been undertaken and the exact location and nature of the ordnance is understood. Previous assessments in relation to UXO based on assumptions of presence have been found to be inaccurate.

106	Benthic Ecology	The Applicant states that the impact assessment matrix acts as a guiding framework and that the application of expert judgement may deviate from the rigid outcome of the impact assessment matrix. JNCC advise that it should be made very clear where and why this deviation occurs.	Volume 3, Chapter 19: Benthic Ecology - Section 19.4.1, paragraph 21, page 21 and section 19.4.2, paragraph 29, page 22	As detailed in Section 5.2.2. Guidance and Best Practice of Chapter 5. Approach and Methodology the impact assessment has referred to a number of documents developed by decision makers, developers and professional institutions to guide the EIA process and preparation of the ES. In Chapter 19. Benthic Ecology, as described in Section 19.4.1 the EIA methodology for this specific chapter also follows CIEEM ecological guidance for impact assessments, which recommends using professional judgement as the final determinant of the significance rating, where adopting a strict adherence to the main EIA matrix approach presented in Chapter 5 generates an outcome that is not proportionate. This is a common approach for disciplines, particularly ecological disciplines, that do not have strict quantitative thresholds for the determination of impacts and instead rely on professional judgement and knowledge, and available evidence to determine the final significance assessment. Thus, where using the simple matrix approach, of magnitude x sensitivity, it maybe considered the actual rating may be higher or lower on the basis of professional judgement and understanding of the ecology and impacts.
107	Benthic Ecology	JNCC highlight that a number of comments raised in our scoping consultation response remain unanswered. JNCC previously advised that where stabilisation material cannot be avoided, we recommended using a more targeted placement method, for example a fall pipe, rather than using vessel side discharge methods. No description of placement methods have been provided in the ES. JNCC previously highlighted that where sandwave levelling is performed, any disturbed sediment resulting from these activities should be retained within the same sediment system. While this matter was addressed with regards to cable burial, this was not mentioned in relation to sandwave levelling. We reiterate our previous advice given in our scoping response.	Volume 3, Chapter 19: Benthic Ecology - Table 19-4, page 15	We agree with the Joint Nature Conservation Committee (JNCC) guidance and advice and would use a more targeted placement method, for example a fall pipe, rather than using vessel side discharge method. The primary methods of subsea rock placement for cable protection typically involve specialised vessels capable of accurately depositing rock material onto the seabed along the cable route. The choice of method depends on factors such as water depth, tidal currents, required accuracy of placement, and the volume of rock to be deposited. Common methods that may be considered include: 1. **Fallpipe Technique:** This is one of the most common and accurate methods for deeper waters. A specialised fallpipe vessel is used, equipped with a dynamic positioning system for precise station keeping. Rocks are loaded onto the vessel and then fed through a vertical or near-vertical pipe (the fallpipe) that extends down to just above the seabed. The rate of rock discharge and the vessel's movement are carefully controlled to create a continuous, even layer of rock over the cable. The accuracy of this method helps to minimize the footprint of the rock placement and reduce potential environmental impacts. 2. **Tremie Pipe Method:** This method involves using a pipe that extends from the vessel to the seabed. Rock is fed through the pipe, with the end of the pipe kept within the previously placed rock to minimise segregation and maintain better control over the placement. This is generally slower than the fallpipe method. 3. **Plough or Chute Method:** In some cases, a plough or chute attached to a vessel might be used to guide the rock from the vessel to the seabed with some degree of control, though this is often for shallower or less critical placements. In relation to sandwave levelling: to clarify, the project will retain any disturbed sediment within the same sediment system for all cable laying activities (including sandwave levelling), irrespective of whether the cable is being buried or being laid on the seabed.
108	Benthic Ecology	Given the remit of JNCC/SNCBs, it would be useful if the temporary and permanent impacts shown in Table 19-10 were divided into offshore and inshore as well as project components. Without clear differentiation is it hard to assess the offshore impacts. Sandwave levelling will occur for a total length of 10,351m and a width of 30m with a footprint of 310,524m2 per cable (621,048m2 in total); however, it is unclear how much of this will occur offshore. As such, JNCC have taken a worst-case scenario approach and assumed that all sandwave levelling will occur offshore. The Applicant should confirm how much of the sandwave levelling will take place in the offshore area. Modification or removal of sandwaves would result in temporary disturbance of the seabed and changes to patterns of sediment transport resulting in morphological changes, therefore, any disturbed sediment resulting from sandwave levelling/clearance should be retained within the same sediment system. The Applicant states that it is assumed up to five cable repairs will be required over the lifetime of the proposed project which may include re-burial of cables and the installation of additional protection. It is unclear if the impact footprint of the cable re-burial and additional protection has been included in the worst-case scenario. Under the construction phase, the Applicant has noted temporary loss and physical disturbance to benthic habitats and species while under the operational phase, the Applicant has noted permanent direct loss and physical disturbance to benthic habitats and species. JNCC disagree with the Applicant's attribution of the placement of cable and scour protection under the operation and maintenance phase as a permanent impact, both in the OfECC and Array Area. We are of the opinion that this impact should be included as permanent impacts of the construction phase instead. JNCC would assume that permanent loss would occur during the construction phase with the installation of cable/scour protection and at the operational phase due to the potential installation of additional protection materials during cable repairs. The Applicant states that during decommissioning there would be temporary disturbance to benthic habitats and species, JNCC recommends this is changed to permanent loss due to the potential of requiring additional protection materials if any cables or infrastructure are cut and left in situ. It should be noted that we would also expect this approach to be applied to the cumulative effects assessment.	Volume 3, Chapter 19: Benthic Ecology - Table 19-10, page 58	The temporary and permanent impacts have not been divided into nearshore areas (within 12 NM) and offshore areas (outside 12 NM) as at the time of writing the intention was to minimise duplication in the assessment. However, we recognise that it is necessary for JNCC to consider the offshore elements but think it is possible to consider the offshore areas separately without this. Figure 19-11, and other key figures, in Chapter 19 Benthic Ecology, show the 12 NM limit boundary in relation to the project area. The entirety of the Array Area, and a 15 km section of the export cable corridor, are beyond TW. However, as the seabed habitats identified within the offshore area of the project boundary were highly homogenous, circalittoral fine sand, across the entirety of the project area in territorial waters enabling a straightforward assessment in this region as no consideration of other habitat types is needed. The footprint for the Array Area given is all offshore, the footprint for the export cable corridor within offshore waters is, considering the worst-case scenario of disturbance from installation (by plough or jet trenching) is swathe of 25 m wide, creating a total area of the export cable in the offshore area of 3.75 km2. The areas of sandwave levelling are shown in Figure 19-13 - Areas of the OfECC requiring cable protection and sand wave levelling plus seabed habitats in Chapter 19. This shows that most sandwave levelling occurs within territorial waters with only 1200 m taking place in offshore waters. The sandwave levelling here will take place on an area of seabed classified as EUNIS biotope A5.25 Circalittoral fine sand. To clarify, the project will retain any disturbed sediment within the same sediment system for all cable laying activities, including sandwave levelling, irrespective of whether the cable is being buried or being laid on the seabed. Areas identified for sandwave levelling are also provided in Figure 4.4, which also identifies the 12 NM limit. There isn't a fixed "typical" length of cable replaced in every repair scenario. The length of the new cable section inserted is primarily determined by: • The extent of the damage: The faulty section of the original cable needs to be completely removed. This length can vary significantly depending on what caused the fault (e.g., a single point impact vs. a longer section affected by scour or abrasion). • The requirements for jointing: Additional lengths of cable on either side of the damaged section are often cut back to ensure a clean, undamaged end for the splicing process. • The methodology of the repair vessel: The specific techniques and equipment used by the repair vessel can influence the required length of replacement cable, as sufficient overlap and slack are needed for handling and jointing operations on the surface of the water or on the vessel. • Spare cable availability: The repair is conducted using spare cable held in stock, which is typically manufactured in predetermined lengths. The closest available length of spare cable sufficient to cover the removed section and jointing requirements will be used. Therefore, while a repair might address a localised fault, the actual length of cable replaced is often longer than just the visibly damaged section to facilitate a robust and reliable splice. This could range from tens to hundreds of meters, depending on the factors above. European Subsea Cables Association (ESCA) "Guideline-15---Power-and-Renewable-Energy-Cable-Repair-Issue-4" provides guidance of recommendations. A worst-Case scenario for a cable repair in water depths of 75m could be in the order of 300-400m for the ROV reburial of a slightly longer cable length which would disturb the sediment. In this instance 500m would be allowed for as a worst-case assumption. On this basis, the area of seabed affected by any cable repairs needed during the operational phase will be highly localised and very small in extent. The cable will be buried wherever possible. The impact assessment remains as stated in 19.8.2 of the benthic chapter, with an impact magnitude of negligible resulting in a negligible significance rating.
109	Benthic Ecology	JNCC disagree with the Applicants attribution of temporary and permanent impacts throughout the project lifecycle as previously stated for Table 19-10. The same comments apply to Table 19-13. JNCC also disagree with the sensitivity of 'low' for Sublittoral Sands and Gravels. The Offshore Benthic Characterisation Survey indicates that circalittoral muddy sand was the dominant seabed habitat identified occupying the majority of the export cable route and the entirety of the Offshore Wind Farm (OWF) area. According to the Marine Evidence based Sensitivity Assessment (MarESA), the sensitivity is considered high for circalittoral muddy sand for both physical change to another seabed type and physical change to another sediment type. JNCC therefore advises that the sensitivity should be changed to 'high' to correspond with MarESA which would subsequently lead to 'minor' significance.	Volume 3, Chapter 19: Benthic Ecology - Table 19-13, page 69	The dominant habitat type, throughout the Array Area and for a large extent of the export cable corridor was found to be Circalittoral fine sand (A5.25), which is included in Sublittoral Sands and Gravels. This habitat has high sensitivity to physical change and physical removed. Since some areas of this habitat may be replaced with cable protection the sensitivity to this impact would be high and the significance of the effect would be minor significance, not negligible as previously assessed.

110	Benthic Ecology	"*The IAC cables associated with the floating WTG […] could result in the modification of habitat due to the introduction of hard 'substrate' in a largely sediment based habitat. This could lead to the development and establishment of new biological communities which can include positive impacts such as increasing biodiversity and heterogeneity of habitat* ". It should not be expected that increasing biodiversity and heterogeneity of the habitat will have a positive impact. Colonisation may not consist of entirely already present flora and fauna, and opportunistic colonisation may occur from flora and fauna that would not normally be recorded in the area due to clean artificial surfaces allowing for opportunistic settlement. This has the potential to alter subsequent settlement and recruitment that can lead to different final community composition.	Volume 3, Chapter 19: Benthic Ecology - Section 19.8.2, paragraph 210, page 84	Noted. We understand that new communities may be established which may not be similar to those in the region, such as found on natural rock, due to the different nature of the artificial substratum. Thus, modification of the seabed by infrastructure of the development may occur and result in a change in biodiversity but is definitely not an expectation in relation to the assessment of the impact of the project. It was briefly noted as a possibility not a specific project benefit.
111	Benthic Ecology	In paragraph 276, the Applicant states "the area of seabed impacted during decommissioning would be similar to the area impacted during construction". If this is the case, JNCC would advise including a footprint similar to that of construction. JNCC have concerns around the expected decommissioning of the infrastructure. JNCC welcome the proposal to remove all cabling from the Array Area and Cable Corridor, however, based on our experience, this is not always possible, especially when the cable is buried. Leaving buried cables in situ and removing un-buried sections would normally include protection of the cut ends with rock dump increasing the final footprint of the project. Although JNCC acknowledge future advancement of decommissioning technology may solve this issue, this scenario has not been considered. Wording in relation to cable decommissioning was found to be inconsistent between documents. JNCC assume all cables will be removed at decommissioning but this needs to be clarified by the applicant. JNCC would expect all mattresses and rock bags used for cable protection to also be removed at decommissioning.	Volume 3, Chapter 19: Benthic Ecology - Section 19.8.3, pages 92 and 93	To clarify the assumption is that the footprint for decommissioning is the same as construction, based on a worst-case scenario that decommissioning will result in the removal of all cables, matresses and rock bags, and therefore the impact the same or lower. Should areas of cable removal not be possible, and some rock protection is required, this would be limited in extent and the final footprint, and hence impact, will be small and localised and lower than the operational phase.
112	Benthic Ecology	The Applicant states that the preferred cable burying method is jet trenching burial due to the reduced environmental impact and its efficiency compared to ploughing. As ploughing would have a larger environmental impact, JNCC would expect the Applicant to use ploughing as the worst-case scenario when assessing the impacts.	Volume 6, Appendix 3A: Cable Route Assessment - Section 2.8.3, page 37	The project has stated a preferred installation method to be jet trenching, though some ploughing may be necessary. The disturbance swath for the plough would be 15 m. However, the assessment has used a precautionary disturbance swath of 25 m for all habitat disturbance, regardless of the installation method. Thus, the assessment for disturbance to seabed habitats has taken a worst-case scenario in all instances.
113	Benthic Ecology	We are unsure from the document, if used, what materials the fronded mattresses are constructed with. JNCC advise that the addition of plastic into the marine environment should be kept to a minimum. We also recommend the Applicant considers the likely challenges at decommissioning of removing fronded mattresses which have been buried.	Volume 6, Appendix 3A: Cable Route Assessment - Table 2-3, page 38	The fronded mattress identified in Table 2-3. Alternative Cable Protection Methods is proposed as a potential solution, the final cable protection methodology used for areas 12 NM out will be chosen to suit the surrounding nature of the seabed. Llŷrwill seek to minimise the use of plastics within the marine environment and due consideration will be given to the decommissioning of the material at the end of the operational life of the development.
114	Benthic Ecology	JNCC appreciate the inclusion of the assumptions log, however, many of the footprints have not been clearly separated out and it is hard to determine what activities have been combined and if everything has been taken into consideration. JNCC would advise that the Applicant clearly states what is included in each of the footprint values or individually presents each footprint. JNCC also notes that the document is not an exhaustive list of all footprints detailed in Volume 3, Chapter 19: Benthic Ecology, Table 19-10. JNCC would welcome a clearer separation of these impacts within the assumptions log.	Volume 6, Appendix 4D: Assumptions Log	The footprints detailed within the Benthic ecology chapter are specific to the impact pathways affecting benthic habitats specifically and may be different to those included in the assumptions log. However, the details needed to undertake the assessment of impacts are included in the relevant chapter.
115	Benthic Ecology	JNCC note inconsistencies regarding how seabed footprints are presented across the documentation. We highlight that consistency should be ensured to allow for an adequate assessment of the extent and seabed footprints of the planned operations. The maximum area of IAC cable protection is stated as 15,600m2. Conversely, Volume 3, Chapter 19: Benthic Ecology, Table 19-10 states that the worst-case value for the total area of IAC cable protection would be 17,100m2. The total seabed footprint of anchors and chains per WTG for the catenary spread mooring design is included as 700m2. In contrast, Chapter 19: Benthic Ecology, Table 19-10 states that '*as a worst-case scenario, the maximum mooring line disturbance would occupy a total seabed footprint area of up to 700m2 per WTG (wind turbine generator)* '. Clarity is needed whether the value of 700m2 only accounts for the footprint of the mooring lines or also the anchors. JNCC also highlight that the terms 'chains' and 'mooring lines' appear to be used interchangeably across documentation and a consistent use of terminology should either be applied to all documentation or the choice of terms adequately explained.	Volume 6, Appendix 4D: Assumptions Log - Table 4D-1, page 6	To clarify both statement are correct as the assumptions are slightly different. The benthic assessment was based on a worst-case scenario which considered the burial of the IAC plus a worst-case contingency of the potential movement of the cable on the seafloor (i.e.. at the connection point between the dynamic cable 'touch down' point and cable point at which the cable is buried). The contingency is 150 m length per cable (11 cables in total) - this is identified in Table 4D-1 Assumptions under "Maximum length of touchdown movement for each IAC". The cable protection figure does not consider the contingency in cable movement (hence, 15.660 m3 for cable protection disturbance from direct burial). The worst-case scenario was based on this total length of the IAC as 17.1 km. Of this 20% has been estimated to require cable protection giving a total of 17.1 km x 0.2 m = 3.42 km or 3,420 m of the cable route. The maximum width of the cable protection berm is 5 m which gives a total area lost of 3,420 m x 5 m = 17,100 m2. This same value of 17,100 m2 cable protection for the IAC is also stated in Table 4-12 of Chapter 4. Project Description. This is a slight overestimated and forms therefore a precautionary assessment and covers the lower value of 15,600 m2 based on not counting the touch down point to burial distance per cable of 150 m. To confirm, the 700 m2 value given covers both the anchors and the disturbance from the mooring lines/chains. To clarify the second comment on the total seabed footprint, the term "mooring line" can be used to refer to the whole system, which can be all synthetic rope or all chain but is often a combination of the two. The chain is normally the part that is in contact with the seabed. Therefore, mooring lines tend to be used when discussing the system in general or about multiple mooring lines. Chain is likely to be more specific when discussing contact areas.
116	Benthic Ecology	Given JNCC's remit covers aspects of the project relating solely to offshore Welsh waters, JNCC defers to NRW-A in respect to any Special Areas of Conservation (SACs) designated for benthic species and/or habitats in inshore waters. JNCC does not consider there to be any offshore SACs within the zone of influence for Project Llŷr.	Volume 6, Appendix 8D: HRA Screening and Volume 6, Appendix 8E: HRA RIAA	Noted. No SACs designated for benthic habitats that have not already been considered have been identified by any parties in relation to inshore (i.e. <12 NM) waters.
117	Benthic Ecology	Throughout the Ocean Ecology Limited Offshore Benthic Characterisation Survey, the document refers to the Export Cable Route (ECR) and the Offshore Windfarm Area (OWF) instead of the Offshore Export Cable Corridor (OfECC) and the Array Area. JNCC recommends using the same terminology across documents to ensure a clear understanding of the project areas.	Volume 6, Appendix 19B: 2023 OEL Offshore Benthic Characterisation Survey	Terms evolve during project development such that these terms are very slightly different in the early survey reports. However, whilst it would be clearer to have the names be exactly the same they are considered to be self-explanatory and easy to differentiate.
118	Benthic Ecology	Both EUSeaMap 2021 and EUSeaMap 2023 have been used across the Offshore Benthic Characterisation Survey and the 2024 Habitat Assessment Report. There are differences in the habitat classification between the two versions of EUSeaMap within the Export Cable Corridor, however, there is no indication that the Applicant has acknowledged this and have done a comparison between the different versions. JNCC recommend the Applicant compares the two versions and clearly states which version they are using to inform their assessment.	Volume 6, Appendix 19B: 2023 OEL Offshore Benthic Characterisation Survey - Section 3.1, page 16	The most up to date 2023 EUSeaMap data were used for the benthic ecology chapter, though previous versions (2021) were used at the beginning of the project, as an aid to survey preparation particularly. In the benthic ecology chapter, this broadscale predictive habitat mapping from EUSeaMap provides background and contextual information only, to set the regional scene for benthic habitat types around the project area. The impact assessments for impact pathways to benthic receptors were based on the habitat data collected during the project specific surveys, rather than EUSeaMap data.

Number / reference	Aspect	Response (Key concern, etc)	Chapter / Paragraph	NRW Para	Response from Llŷr Floating Wind
1	General Offshore Comments	NRW (A) welcomes the information provided by the Llŷr project. NRW (A) has reviewed the application and on balance, notwithstanding our key concerns and other issues raised herein, consider the submission to be satisfactory. We are pleased to note that many of our previous concerns, as raised during the pre-application process, have been appropriately addressed.	n/a	1	Noted
2	General Offshore Comments	NRW (A) agrees that the proposed works constitute a 'relevant project' as described within Schedule A1, under Paragraph 21, of the Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended). Overall NRW (A) are broadly content with the adequacy of the Environmental Statement (ES), although there are a number of instances where we advise that further information and/or clarification is required as outlined in the receptor specific sections below.	n/a	2	Noted
3	General Offshore Comments	With regard to the Conservation of Habitats and Species Regulations 2017 – Regulation 63; with the exception of Marine Mammals, NRW (A) does not consider that the proposed works are likely to have an adverse effect on European site(s) and/or on any European Protected Species relevant to NRWs remit, for the project alone. However, without provision of further information and/or clarification as detailed in the receptor specific sections below, NRW (A) are currently unable to conclude that there will be no significant effects in-combination with other plans and projects. Nonetheless, we consider that with further work and the provision of additional information, NRW (A)'s concerns could be resolved.	n/a	3	Noted - the project responses to NRW(A)'s advice relevant to sector specific sections is provided below
4	General Offshore Comments	NRW (A) does not consider the proposal will present significant risk to the Skomer Marine Conservation Zone (MCZ) under Section 126 of the Marine and Coastal Access Act (MACCA).	n/a	4	Noted
5	General Offshore Comments	For advice with respect to the potential of the proposed works to impact upon ecosystems under section 6 and section 7 of the Environment Wales Act (2016), please see receptor comments in sections 1.2-1.8 below.	n/a	5	Noted - the project responses to NRW(A)'s advice relevant to sector specific sections is provided below
6	General Offshore Comments	Advice regarding the implications of the proposed works on the achievement of the environmental objectives set for water bodies under the EU Water Framework Directive (Directive No.2000/60/EC) (WFD) can be found under section 1.5 below.	n/a	6	Noted
7	General Offshore Comments	We note that there are a number of inconsistencies across some of the application documents that require clarification and / or amendment. For example: inconsistencies with respect to the proposed location of the Horizontal Directional Drilling (HDD) exit pits in the project description and Chapter 17 (Physical Environment); and inconsistencies between the embedded mitigation measures as noted in Chapter 18 (Marine Water and Sediment Quality), and those embedded mitigation measures adopted as part of the proposed Project in the Report to Inform Appropriate Assessment (RIAA). Furthermore, we note a number of inconsistencies with respect to the Llŷr project's CEA. For example: projects are scoped in for some receptors and not others when there are similar impact pathways to consider, and inconsistencies with the use and clarification of the "Tiering" system applied across receptor cumulative and in-combination assessments. This latter point is particularly relevant to the consideration and 'tiering' of Mona, Morgan and Morecambe offshore wind projects. We advise that the Llŷr project should complete a comprehensive review of the projects scoped in to the CEA and in-combination assessments, and their respective Tiers, ensuring consistency of application across receptors. Such discrepancies potentially result in confusion as to the exact aspects that have been assessed and measures that are to be secured as part of the project mitigation/ monitoring. We advise that the Llŷr project undertakes a review of these documents so as to provide assurance that measures are appropriately captured. It is important that all relevant documents are consistent and contain accurate reference to all proposed mitigation, monitoring and plans as described in the application documents and intended to be secured.	n/a	7	Clarifications on the specific concerns on, the HDD Location, embedded mitigation, CEA/in-combination for Marine Ornithology and Marine Mammal are addressed in each specific response to the NRW (A) advice relevant to each receptor groups. To note, for CEA/in-combination for Marine Ornithology and Marine Mammals it is entirely appropriate to undertake a receptor-by-receptor consideration of cumulative and in-combination impacts. Other relevant development to consider will not be the same across receptor groups, and for the receptors that are addressed within the marine ornithology and marine mammal receptors, the specific developments to consider for cumulative / in-combination vary within the receptor group, i.e., it is a species specific consideration.
8	General Offshore Comments	Several of the issues raised throughout our comments below pertain to methodological and presentational aspects of the application. Whilst some of the points raised may not be of material impact for the project itself, they are nonetheless important to raise from the perspective of this being a test and demonstration project, and so that for the avoidance of doubt NRW (A)'s position on these matters is clear and demonstrated in the public record for the benefit of this project and to inform future projects.	n/a	8	Clarifications are addressed in each specific response
9	General Offshore Comments	At various points throughout the application, the Llŷr project states that they intend to investigate suitable monitoring and/or research to help understand floating offshore wind farm (FLOW) impacts on relevant receptors. As a FLOW test and demonstrator (accelerator) project with the explicit intention to pave the way for the commercial projects to harness the potential of the Round 5 leasing areas in the Celtic Sea, NRW (A) consider that post-consent monitoring will be vital to understand how offshore marine receptors react to floating wind turbines in comparison to 'traditional' fixed turbines. Therefore, NRW (A) welcomes and encourages discussions with the Llŷr project regarding the need / desire for post-consent monitoring across various marine receptors. Furthermore, we note that there is policy steer for monitoring across the lifecycle of offshore wind farms. For example, the National Policy Statement for Renewable Energy Infrastructure (EN-3) encourages such monitoring stating at Paragraph 2.8.295 that "Owing to the complex nature of offshore wind development, and the difficulty in establishing the evidence base for marine environmental recovery, the Secretary of State should, where appropriate, request the Llŷr project undertake environmental monitoring (e.g. ornithological surveys, geomorphological surveys, archaeological surveys) prior to and during construction and operation".	n/a	9	Noted. As stated in the application, Llŷr Floating Wind is happy to engage in monitoring discussions with NRW A and JNCC as the project progresses. It must, however, also be noted that it should not be expected that the Llŷr Project should shoulder the financial and administrative burden to solving / addressing issues for an entire industry. Whilst happy to engage in the development of an appropriate research programme, we would expect support from both the private and public sector to assist in answering key cross industry issues.
10	Physical Processes	Please note that the physical processes comments provided by NRW (A) consider proposed plans or works impacting the marine environment from Mean High Water Springs (MHWS) to 12 NM offshore only. We defer to JNCC comments for proposed plans or works beyond 12 NM offshore.	Volume 3: Chapter 17 – Physical Environment	10	Noted

11	Physical Processes	NRW (A) advise that the baseline characterisation of the physical environment in terms of hydrodynamics, bathymetry and geomorphology is sufficient to inform the assessment of potential environmental impacts to physical processes. NRW (A) does have some concerns and points of clarification regarding the methods or approaches to specific impact assessments and therefore, the associated conclusions, which are discussed below.	Volume 3: Chapter 17 – Physical Environment	11	Noted - specific points of clarification are addressed against the specific comments
12	Physical Processes - 1.2.1 Main Issues	Further information and assessment of the construction phase for the Horizontal Directional Drilling (HDD) exit pits are required. Clarification is sought regarding details of the construction methods that impact the assessment, such as the proposed material planned to be left on the seabed post-construction. NRW (A) also advise that potential impacts to waves and currents during the construction phase require assessment separate from the operation and maintenance assessment (Please see Paragraphs 18,19, and 21 below for further detail).	Volume 3: Chapter 17 – Physical Environment	12	The material excavated to create the HDD exit pits will be the material used for the backfilling of the HDD exit pits. If required, the preference in a similar fashion to onshore, the first 1m of seabed sediment/material will be stockpiled separately to the rest of the material and in the infilling, the material will be backfilled, with the 1m seabed 'top-sediment' filled in above it. The values provided are worst case maximums. The Llŷr Project may not need to construct an HDD exit pit, as the base case plan is to punch out to the seabed surface with HDD, and then carrying out a post lay burial on the HDPE duct/cable once installed. This would minimise the disturbance.
13	Physical Processes - 1.2.1 Main Issues	Further assessment is required to demonstrate that a 3 m depth is sufficient for HDD exit pits to remain buried without the requirement for additional cable protection throughout the operation and maintenance phase. The assessment requires consideration of potential erosional impacts of storm events over the lifetime of the project (Please see Paragraph 25 below for further detail).	Volume 3: Chapter 17 – Physical Environment	13	The HDD exit pits, if required, will be excavated and reinstated within 4 weeks, there will be not required for maintenance dredging, nor should there be any residual hydrodynamic process to mitigate.
14	Physical Processes - 1.2.1 Main Issues	Insufficient evidence has been provided with respect to the methodology of the empirical modelling approach applied. NRW (A) request that a methodology statement or technical note be provided, outlining the details of the proposed project-specific assumptions used in the empirical spreadsheet model for assessment of impacts from the generation of Suspended Sediment Concentration (SSC) plumes. Without an understanding of the hydrodynamic and sediment characteristics applied to the spreadsheet model, it is not possible for NRW (A) to appropriately assess the environmental impact assessments based on the modelled results. Please see Paragraph 20 below for further detail.	Volume 3: Chapter 17 – Physical Environment	14	During a clarification meeting (25/3/25), NRW (A) confirmed that there is no specific concern with the underlying basis of the spreadsheet modelling approach used to inform assessments of the potential impact of suspended sediment plumes. In Volume 3: Chapter 17 (Section 17.8.1, para 90), the methodology of the general spreadsheet modelling approach is referenced to the published Environmental Statement for Erebus Offshore Wind Farm (Blue Gem Wind Ltd, 2021), undertaken by the same author (ABPmer). The same modelling approach (with project specific inputs) has been used by ABPmer in numerous previous EIAs for offshore wind farms. A detailed methodology statement for the spreadsheet models can be found in Section 3.2 of the Erebus Floating Offshore Wind Farm Environmental Statement (Volume 3, Annex 6.1: Marine and Coastal Processes - Technical Annex). Available from [https://www.bluegemwind.com/wp-content/uploads/2020/07/Erebus-ES-Vol-3-Appendix-6.1-Marine-and-Coastal-Processes-.pdf] The project specific inputs to these models for the Llyr assessments are: a project setting specific representative current speed (0.5m/s), which was conservatively identified as occurring frequently (up to 8 times per day) and throughout the full range of spring and neap tidal conditions in this area (relatively lower speeds would result in a smaller extent of effect and higher speeds would result in more rapid dilution and dispersion); project setting specific sediment types (consideration of gravel, sand and mud/fine sediment types in varying proportions); rates of sediment disturbance/resuspension are calculated according to the project specific MDS trench dimensions, rates of trenching and cable burial tool types (set out in Volume 3: Chapter 17, Table 17-14) and a realistically conservative range of height of sediment ejection/initial resuspension (1, 5, or 10m above seabed).
15	Physical Processes - 1.2.1 Main Issues	NRW (A) notes that there are inconsistencies in the reporting of project design details between Volume 1: Chapter 4 Description of the Proposed Project and Volume 3: Chapter 17 Physical Environment. NRW (A) have concerns that the worst-case scenario may not have been assessed and therefore clarification is sought on this matter. Please see Paragraphs 23, 24 and 30 in the detailed comments for specific examples.	Volume 3: Chapter 17 – Physical Environment	15	Llŷr Floating Wind is confident that the MDS scenario has been assessed. See responses to NRW Response Paragraphs 23, 24 and 30, below.
16	Physical Processes - 1.2.1 Main Issues	Further assessment is required to support the conclusions of the cumulative impact assessment for the proposed project. Cumulative impact assessments of the SSC plume generation, and the potential secondary impacts to hydrodynamics and sediment transport processes as a result of cable protection measures and sand wave levelling activities during construction, maintenance and operation phases, require further assessment. Please see Paragraphs 28 and 29 for further detail.	Volume 3: Chapter 17 – Physical Environment	16	See responses to NRW Response Paragraphs 28 and 29, below.
17	Physical Processes -1.2.2 Detailed comments	Due to the uncertainty regarding the final detailed cable route and requirements for cable protection measures, NRW (A) welcomes the commitment of the Llŷr project to a post-consent licence condition associated with the Cable Burial Risk Assessment (CBRA) and Cable Specification and Installation Plan (CSIP). NRW (A) agrees that the condition should ensure 'assumptions used within the EIA regarding cable protection to confirm that the impact assessment remains valid'. NRW (A) advise that we are consulted in writing on the suitability of the CBRA / CSIP and pre-construction surveys via appropriate conditions prior to works commencing.	Volume 1: Chapter 04 – Description of the Proposed Project: Section 4.5.3, Paragraphs 110 and 113	17	Noted - we remain agreeable to a post-consent licence condition associated with the Cable Burial Risk Assessment (CBRA) and Cable Specification and Installation Plan (CSIP)
18	Physical Processes -1.2.2 Detailed comments	To enable proper consideration, NRW (A) request further detail regarding the construction methodology for the proposed excavation and backfilling of the HDD exit pits (up to 300 m3). NRW (A) request more detailed information on plans for backfilling the exit pits. We note plans to reinstate pre-construction seabed levels during the post-construction phase. However, we request clarification regarding the proposed material to be left on the surface of the seabed. For example, it is not clear if the natural bed roughness will be impacted by the potential exit pit protection measures, or if the exit pit will be backfilled with excavated sediment. Furthermore, it is not clear if the exit pits will be covered during the construction phase to reduce the requirement for maintenance dredging and mitigate for impacts to hydrodynamic processes.	Volume 1: Chapter 04, Section 4.8.2., Paragraph 223	18	The material excavated to create the HDD exit pits will be the material used for the backfilling of the HDD exit pits. If required, the preference in a similar fashion to onshore, the first 1m of seabed sediment/material will be stockpiled separately to the rest of the material and in the infilling, the material will be backfilled, with the 1m seabed 'top-sediment' filled in above it. The values provided are worst case maximums. The Llŷr Project may not need to construct an HDD exit pit, as the base case plan is to punch out to the seabed surface with HDD, and then carrying out a post lay burial on the HDPE duct/cable once installed. This would minimise the disturbance. The HDD exit pits, if required, will be excavated and reinstated within 4 weeks, there will be not required for maintenance dredging, nor should there be any residual hydrodynamic process to mitigate
19	Physical Processes -1.2.2 Detailed comments	NRW (A) advise that potential impacts to sediment transport via changes to wave and current climate during the construction phase of the HDD exit pits should be assessed. From the information presented, the HDD exit pits (up to 300 m3) could be exposed for up to 64 weeks, with a potential requirement for maintenance dredging. Due to the proximity to the shore and shallow water environment, we advise impacts to hydrodynamic processes (waves and currents) should be assessed specifically for the construction phase of the HDD exit pits, separate to the maintenance and operation phase.	Volume 3: Chapter 17 – Physical Environment - Table 17-14., Paragraphs 134 and 135	19	The HDD exit pits, if required, will be excavated and reinstated within 4 weeks, there will be no requirement for maintenance dredging, nor should there be any residual hydrodynamic process to mitigate. Potential impacts to sediment transport, both directly and indirectly via changes to wave and current climate during the construction phase of the HDD exit pits are assessed in Volume 3: Chapter 17 (Section 7.8.1, para 129-135).

20	Physical Processes -1.2.2 Detailed comments	We note that 'numerical spreadsheet models' have been used to assess the potential impacts of SSC plumes generated by activities undertaken during the construction phase of the proposed project. We acknowledge that the numerical spreadsheet model used for this ES was initially developed for the Erebus project (Blue Gem Wind Ltd, 2021). NRW (A) request that a methodology statement (or technical note) is provided, outlining the details of the proposed project-specific assumptions applied to the empirical spreadsheet model for assessment of impacts from the generation of SSC plumes. Without an understanding of the project-specific hydrodynamic and sediment characteristics applied to the spreadsheet model it is not possible for NRW (A) to fully agree with the environmental impact assessments for this project based on the modelled results presented. For example, for an adequate assessment of the potential impacts of SSC plumes generated by cable installation activities of the proposed project, the methods and assumptions applied to calculate the concentration and spatial extent of the potential SSC plumes must first be demonstrated.	Volume 3: Chapter 17 – Physical Environment - Section 17.8.1., Paragraph 90	20	During a clarification meeting (25/3/25), NRW (A) confirmed that there is no specific concern with the underlying basis of the spreadsheet modelling approach used to inform assessments of the potential impact of suspended sediment plumes. In Volume 3: Chapter 17 (Section 17.8.1, para 90), the methodology of the general spreadsheet modelling approach is referenced to the published Environmental Statement for Erebus Offshore Wind Farm (Blue Gem Wind Ltd, 2021), undertaken by the same author (ABPmer). The same modelling approach (with project specific inputs) has been used by ABPmer in numerous previous EIAs for offshore wind farms. A detailed methodology statement for the spreadsheet models can be found in Section 3.2 of the Erebus Floating Offshore Wind Farm Environmental Statement (Volume 3, Annex 6.1: Marine and Coastal Processes - Technical Annex). Available from [https://www.bluegemwind.com/wp-content/uploads/2020/07/Erebus-ES-Vol-3-Appendix-6.1-Marine-and-Coastal-Processes-.pdf] The project specific inputs to these models for the Llyr assessments are: a project setting specific representative current speed (0.5m/s), which was conservatively identified as occurring frequently (up to 8 times per day) and throughout the full range of spring and neap tidal conditions in this area (relatively lower speeds would result in a smaller extent of effect and higher speeds would result in more rapid dilution and dispersion); project setting specific sediment types (consideration of gravel, sand and mud/fine sediment types in varying proportions); rates of sediment disturbance/resuspension are calculated according to the project specific MDS trench dimensions, rates of trenching and cable burial tool types (set out in Volume 3: Chapter 17, Table 17-14) and a realistically conservative range of height of sediment ejection/initial resuspension (1, 5, or 10m above seabed).
21	Physical Processes -1.2.2 Detailed comments	With respect to HDD exit pit construction, NRW (A) does not agree with the statement that '*all changes to sediment transport systems due to modification of the wave and current climate will be no greater than that identified for the operational phase'*. NRW (A) advise that there is a greater potential for impacts to waves and currents during the construction phase of the HDD exit pits due to the length of the construction phase and the potential for maintenance dredging. Please also refer to Paragraph 19 above.	Volume 3: Chapter 17 – Physical Environment - Paragraph 103	21	Potential impacts of the HDD exit pits on sediment transport, both directly and indirectly via changes to wave and current climate during the construction phase are assessed in Volume 3: Chapter 17 (Section 7.8.1, para 129-135). Paragraph 103 (the source of the quoted statement) relates to Potential Changes to Sediment Transport Systems by Changes in Wave and Current Climate caused by other infrastructure. From para 102 - *The installation of offshore export cable protection, floating platform foundations with WTGs and/or the presence of anchoring structures all have the potential to result in a localised blockage of waves, tides and sediment transport. This blockage will commence when offshore construction begins, increasing incrementally up to the RWC, which is represented by the fully operational proposed Project.* Explicit assessments of the impact of this type of blockage for stages of partial construction of the project are not usually undertaken. Assessments for the full MDS blockage case during the operational phase are provided in Volume 3: Chapter 17 (Section 17.8.2).
22	Physical Processes -1.2.2 Detailed comments	NRW (A) have concerns regarding the uncertainty associated with bedform recovery rates following proposed sand wave levelling activities along the Offshore Export Cable Corridor (OfECC). The proposed total volume of sand wave clearance required is significant at 900,520 m3 (Table 17-14 Design Envelope Parameters Relevant to the Physical Environment Assessments. Due to a lack of quantitative evidence describing sediment transport processes driving sand wave migration rates within the study area, there is significant uncertainty in the assessment of recovery rates of bedforms with distance offshore. It is reported in Section 17.5 Baseline, Geomorphology, Offshore Geomorphology, Paragraph 63, that sand wave fields with heights of 5 m and negligible migration rates intersect the OfECC. Considering the uncertainty of recovery rates of sand waves presented in the ES (as well as strategic uncertainty), particularly relating to larger offshore sand waves, NRW (A) recommends that monitoring be considered to provide an analysis of seabed recovery rates to inform future projects (Department of Energy Security & Net Zero, 2023) as well as to substantiate the conclusions of the ES of the proposed project We note that National Policy Statement for Renewable Energy Infrastructure (EN-3) states at Paragraph 2.8.295 that "Owing to the complex nature of offshore wind development, and the difficulty in establishing the evidence base for marine environmental recovery, the Secretary of State should, where appropriate, request the Llŷr project undertake environmental monitoring (e.g. ornithological surveys, geomorphological surveys, archaeological surveys) prior to and during construction and operation". Given the uncertainty noted above, combined with strategic uncertainty, we would welcome further discussion with the Llŷr project with respect to post-consent monitoring.	Volume 3: Chapter 17 – Physical Environment - Paragraph 106 – 123	22	Llŷr Floating Wind agrees that there is inherent uncertainty when estimating the rate of sediment bedform recovery following localised pre-sweeping or other disturbance. It is acknowledged in the assessment that the recovery rate of bedforms in some areas may be relatively slow (potentially taking years to decades for 'full' recovery). Although the exact timescale may be uncertain, Llŷr Floating Wind is confident that recovery will naturally occur as an ongoing process in areas of active sediment transport (which have been identified with more certainty). Llŷr Floating Wind notes the NRW (A) recommendation for monitoring of seabed recovery rates, to inform future projects and to substantiate the conclusions of the ES . Llŷr Floating Wind will be undertaking relevant monitoring (e.g. targeted bathymetric surveys in parts of the cable route) as a routine part of construction and operation, and is willing to discuss sharing of that data for this purpose.
23	Physical Processes -1.2.2 Detailed comments	The proposed location for the HDD exit pits is reported as 3 – 8 m below Lowest Astronomical Tide (LAT). This is not consistent with 'between 5 m to 8 m' reported in Volume 1: Chapter 4 Description of the Proposed Project, Table 4-25 A summary of key parameters for the HDD duct installation and Paragraph 106. Clarification is sought and confirmation of the location that has been assessed within the ES.	Volume 3: Chapter 17 – Physical Environment - Paragraph 129	23	The HDD exit pits will be between depths of 5m to 8m below LAT. 3 was a typo.
24	Physical Processes -1.2.2 Detailed comments	The assessment of potential impacts to waves and currents due to cable protection measures refers to 'the direction of net sediment transport circulation around the western end of Turbot Bank' and the use of 'berms' as cable protection. NRW (A) seeks clarification on the plans for cable protection measures around Turbot Bank. The impact assessment outlined in Paragraph 148 is not consistent with the details presented in Volume 1: Chapter 4 Description of the Proposed Project, Paragraph 109 which notes that "*Burial will be the preferred option of protection, however where this is not possible, the export cables will continue to be surface laid within iron articulated pipe protection alongside Turbot Bank to KP38, up to 4 km of articulated pipe protection may be required in this section of the OfECC, per cable* ". NRW (A) seeks clarification that the correct worst-case scenario has been assessed for proposed cable protection measures for the section of the proposed OfECC alongside the eastern flank of Turbot Bank.	Volume 3: Chapter 17 – Physical Environment - Section 17.8.2, Paragraph 148	24	Llŷr Floating Wind confirms that the export cables will be routed around the eastern end of Turbot Bank. The reference to the western end was made in error.

25	Physical Processes -1.2.2 Detailed comments	NRW (A) advise further evidence, such as historical beach profiles, is required, to demonstrate that 3 m is sufficiently deep to ensure the HDD exit pits remain buried without the requirement of additional protection measures throughout the lifetime of the project (i.e. 3 m is below the envelope of change with respect to the beach profile). NRW (A) seeks clarification on the proposed plans or mitigation measures in place in the event that HDD exit pits and associated protection measures become exposed. For example, would the intention be to rebury and maintain the natural profile and elevation of the seabed or would external cable protection be installed? Currently, there is no assessment of potential impacts to waves or currents due to external protection measures for the HDD exit pits, if proposed plans do involve the use of additional protection measures during the lifetime of the project, there is a potential for impacts to hydrodynamic processes and associated sediment transport processes, which would require assessment.	Volume 3: Chapter 17 – Physical Environment - Section 17.8.2	25	Llŷr Floating Wind confirms that a thorough search was undertaken for relevant historical data in the landfall area to inform the ES. In addition to the project specific geophysical surveys, a small number of historical subtidal bathymetry and intertidal and beach hinterland topographic surveys were also identified and used - see Volume 3: Chapter 17 (Section 17.4.8 including Figure 17-2 and Table 17-10). Collectively, these data provided complete spatial coverage (at variable resolution), however, they provide limited spatial overlap of comparable historically repeated data sets in order to quantify historical variance in seabed or beach levels. The nature and scale of bedforms (e.g. nearshore subtidal berms) that are visible in the available data, or that would normally be expected in similar settings, have been used to infer the likely range of vertical seabed level change in the subtidal areas around the HDD exit pit (3 to 8mLAT) as a result of normal seasonal beach processes (cross-shore transport, winter/summer profiles). This type of information will be used to inform the cable burial design, including the final location and depth of the HDD exit pit, and the cable burial depth, to manage (by design) the risk of cable exposure due to natural processes. Potential impacts of the HDD exit pits on sediment transport, both directly and indirectly via changes to wave and current climate during the construction phase are assessed in Volume 3: Chapter 17 (Section 7.8.1, para 129-135). Following the re-instatement of the HDD exit pit to the natural seabed level, it is not anticipated that the HDD pit would subsequently be fully exposed. The seabed and the backfilled material to the HDD exit pit should settle to act as one homogeneous material with regard to long term seabed movement. However, should there be movement or removal of sediment at the HDD exit location it is not intended to provide additional cable protection measures .
26	Physical Processes -1.2.2 Detailed comments	Given that in Volume 1, Chapter 4, Description of the Proposed Project, Table 4-21, the iron articulated pipe cable protection diameter is reported as 500 mm there is potential for a reduction in water depth greater than 5% (referenced to Chart Datum) along the nearshore section of the OfECC where water depths decrease below 10 m. A reduction in water depth greater than 5% is deemed to be a navigation hazard by the Maritime Coastguard Agency (MCA) and has the potential to impact hydrodynamic and associated sediment transport processes. NRW (A) request clarification on plans for cable protection in shallow water. In the event the reduction in water depth exceeds 5%, NRW (A) advise that the potential impacts to hydrodynamic and associated sediment transport processes will require assessment.	Volume 3: Chapter 17 – Physical Environment - Section 17.8.3, Paragraph 151	26	500mm iron articulated pipe cable protection diameter represents 10% of a 5m water depth, the minimum water depth we are seeking to install the cable is 5m, so there should not be a reduction in water depth exceeding 5%. However, as per the agreed MCA post consent condition, 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". Should this issue arise, the project will also provide an assessment of the potential impacts to hydrodynamic and associated sediment transport process as part of the cable burial risk assessment (CBRA).
27	Physical Processes -1.2.2 Detailed comments	NRW (A) recommend further consideration with respect to the recovery time of the seabed following the removal of infrastructure such as cables and cable protection during the decommissioning phase. The ES reports *'depressions will become infilled and high points will be levelled out by ambient sediment transport over time'*. NRW (A) recommend further information is provided to give an indication of the timescale for recovery of the seabed. Please also refer to Section 1.9 below with respect to our current position on Decommissioning.	Volume 3: Chapter 17 – Physical Environment - Paragraph 203	27	Potential impacts relating to the decommissioning phase are assessed in Volume 3: Chapter 17 (Section 7.8.3). The requirements and design for decommissioning (e.g. if, where and how infrastructure will be removed completely or partially, or left in situ) are not presently clear. The MDS assumption is that infrastructure will be completely or largely removed, causing sediment disturbance and changes in the presence/absence of blockage that are similar to (or a reversal of) that assessed during construction of the same infrastructure. The timescale for recovery of the seabed following construction related activities is assessed in Volume 3: Chapter 17 (Section 7.8.1). The largest local dimensions/volumes of disturbance are associated with sandwave pre-sweeping (para 106-123), with an associated timescale for recovery in the order of years to decades (para 118) as a result of ongoing natural sediment transport processes. Lesser volumes of disturbance (e.g. locally disturbed seabed due to cable deburial) will recover proportionally (orders of magnitude) faster under the same processes. In all cases, a local disturbance to the shape of the seabed surface (especially where sediment volume is not actively removed) does not necessarily change the form or function of the seabed at all.
28	Physical Processes -1.2.2 Detailed comments	NRW (A) does not agree with the conclusion of the potential cumulative impact assessment of SSC plumes during the construction phase of Erebus and the proposed project. NRW (A) recognise, with a 1 NM vessel safety zone between cable installation vessels, that an overlap of coarse grained, higher concentration SSC plumes is unlikely due to the associated settling velocity rates of more coarse material (such as sand and gravel). However, we advise the potential cumulative impacts of SSC plumes of finer material requires assessment. NRW (A) advise a conclusion that the proposed project-alone assessment of fine grained SSC plumes is considered small, is not sufficient in terms of evidence to conclude a small potential cumulative impact of SSC plumes. NRW (A) advise further assessment, utilising the SSC plume modelling results from both projects to adequately assess the potential cumulative impacts to SSC in the event the construction phase of the two projects overlap.	Volume 3: Chapter 17 – Physical Environment - Section 17.11.3, Paragraph 240	28	Potential cumulative increases in SSC and associated changes in bed level during construction are assessed in Volume 3: Chapter 17 (Section 7.11.3, para 234-241). This section outlines the principles and (limited) circumstances in which two or more sediment plumes might combine to produce a cumulative effect (which may or may not be additive in terms of extent, duration or SSC magnitude, depending on the relative location and nature of the plume sources). During a clarification meeting (25/3/25), additional assessment was requested for the particular (very unlikely) case of two cable lay vessels working simultaneously in relatively close proximity (realistically not closer than 1 nautical mile or 1.85km) and at a similar time (realistically passing a similar point within 3.5-4.5 hours, based on a representative high cable lay rate of 400-500m/hr). The majority of the disturbed sediment volume, comprising sand and gravel sized sediment, will resettle to the seabed within relatively short distances (tens to a few hundred metres) and timescales (less than 30 to 60 minutes), depending on the height of ejection, current speed and grainsize. Due to the limited spatial extent and short duration of each plume, and the realistic minimum separation between the sources, there is highly unlikely to be any cumulative (spatially overlapping) effects in terms of seabed deposition or SSC. Finer sediments that remain in suspension for longer will be advected away from the moving source by tidal currents in a narrow plume. The SSC in the plume becomes rapidly diluted to lower concentrations with time and therefore with distance downstream. Due to the limited spatial extent of each plume, and the realistic minimum separation between the sources, there is highly unlikely to be any additive cumulative (spatially overlapping) effects leading to SSC higher than that assessed for single activities. The total area simultaneously affected by the multiple plumes will be proportionally larger. Sensitive receptors downstream of the cable route might experience a longer duration of elevated SSC as a result of two or more consecutive plumes being advected over a specific location. However, the absolute SSC in each of the (partially dispersed) plumes is expected to be relatively low in absolute terms (less than tens to hundreds of mg/l) and within the natural range of variability (e.g. similar to that naturally arising during a large storm event). Also, the duration of measurable effect on any particular receptor location will be limited (in the order of minutes) as the relatively narrow plume is advected past.

29	Physical Processes -1.2.2 Detailed comments	NRW (A) advise further assessment of potential cumulative impacts to waves and currents and associated sediment transport is required. A cumulative assessment of impacts to waves and currents should consider the potential for changes to the seabed morphology and therefore hydrodynamic processes as a result of this project and projects or plans within the ZoI for the cumulative assessment, for example, the potential cumulative impacts of sand wave levelling and cable protection along the OfECC where the Llŷr offshore project boundary and the Erebus export cable corridor overlap.	Volume 3: Chapter 17 – Physical Environment - Section 17.11.3, Paragraph 242	29	Potential Changes to the Sediment Transport System by Changes in Wave and Current Climate are assessed in Volume 3: Chapter 17 (Section 7.8.2, para 141-160), including the potential impacts of sand wave levelling and cable protection due to the Llyr project alone. The length of overlap or close proximity between the Llyr and Erebus cable routes is limited to an approximately 10km long section offshore (between KP13-23, as shown in Figure 17-25). Sandwaves are present in this area (Figure 17-9) and the seabed type is described as gravelly sand (Figure 17-11). As shown in Figure 17-23, whilst sand wave pre-sweeping by both projects is possibly required in this area, the use of cable protection is not required (adequate burial is likely to be possible). Potential cumulative changes in waves, tides and sediment transport during operation, resulting in impacts to designated areas of seabed and or the coast are assessed in Volume 3: Chapter 17 (Section 7.11.3, para 242-243). The cumulative assessment notes that the assessment of Llyr alone (above) concludes that only very localised effects are likely. Similar assessments were undertaken and similar conclusions were reached for Erebus (Blue Gem Wind 2021). Due to the localised nature of the potential impacts, it is therefore assessed that there is unlikely to be any interaction (positive or negative in nature) between the local impacts of the two projects.
30	Physical Processes -1.2.2 Detailed comments	This Paragraph refers to 1.5 m berms along the OfECC as it 'passes between Turbot Bank and St Gowan Shoals'. NRW (A) seeks clarification on the plans for cable protection measures around Turbot Bank. The reference to 1.5 m berms for cable protection alongside Turbot Bank is not consistent with Volume 1: Chapter 4 Description of the Proposed Project, Paragraph 109, which states: '*burial will be the preferred option of protection, where this is not possible, the export cables will continue to be surface laid within iron articulated pipe protection alongside Turbot Bank* '.	Volume 3: Chapter 17 – Physical Environment - Section 17.11.3, Paragraph 243	30	Llŷr Floating Wind confirms that, as stated in Volume 1 Chapter 4, 'burial will be the preferred option of protection, where this is not possible, the export cables will continue to be surface laid within iron articulated pipe protection alongside Turbot Bank'. In Volume 3 Chapter 17, reference to 1.5 m berms along the OfECC as it 'passes between Turbot Bank and St Gowan Shoals' is a typo from an earlier design stage and do not form part of the project proposition.
31	Physical Processes -1.2.2 Detailed comments	Please note, the comments provided based on Chapter 17 of the ES relating to further evidence, further assessment or clarifications required are also relevant to the Report to Inform Appropriate assessment (RIAA). Once the key issues relating to the ES have been addressed, we advise that the RIAA should be updated accordingly.	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment	31	The rationale of the approach to Export Cable Corridor routing, is a commitment to avoid all reef features. This commitment will be fulfilled using data from planned surveys. This is the basis for the HRA undertaken, as was discussed and agreed pre-submission. On this basis and that additional surveys will be undertaken and detail will be provided in an approved CBRA prior to works commencing, it is not considered that further assessment would contribute to / amend the conclusion of the assessment as the effects are considered to be not significant.
32	Benthic Subtidal and Intertidal Ecology - 1.3.1 Main Issues	NRW (A) notes that a potential impact pathway of the OfECC intersecting with the Pembrokeshire Marine Special Area of Conservation (SAC) Annex 1 Reef feature has not been included in the assessment presented by the Llŷr project. Due to a paucity of data for some areas of the OfECC (e.g. Kilometre Point (KP) 46-48), it is not possible to say with absolute certainty that areas of the Pembrokeshire Marine SAC Annex 1 Reef feature can be avoided by the OfECC. We therefore advise that the potential impact pathway of the OfECC intersecting with Pembrokeshire Marine SAC Reef Feature is included in the assessment. Nevertheless, NRW (A) considers that with the additional post-consent surveys due to be undertaken by the Llŷr project as part of the CSIP and CBRA, and the subsequent careful placement of the articulated cable in sensitive areas (such as Annex 1 reef), alongside sufficient evidence to demonstrate that the cable will not move or mitigation that is appropriate to ensure the cable remains in place, adverse effects on the integrity of the Pembrokeshire Marine SAC Annex 1 Reef feature can be avoided. Please see Paragraphs 36–39 below for further details.	Volume 3: Chapter 19: Benthic Ecology	32	The assessment has been based on the routing of the Offshore Cable Corridor through the Annex I reef. When in situ, the cable will be secured in place (either through the weight of the cable itself or through additional pins) and will be unable to result in scour to the surrounding Annex I habitat. On this basis and that additional surveys will be undertaken and detail will be provided in an approved CBRA prior to works commencing, it is not considered that further assessment would contribute to / amend the conclusion of the assessment as the effects are considered to be not significant.
33	Benthic Subtidal and Intertidal Ecology - 1.3.1 Main Issues	The development of clear criteria to identify and differentiate between mixed gravel and low resemblance stony reef habitat is required to ensure that the latter feature is not impacted by any boulder clearance activities. It is the view of NRW (A) that this element should be captured and addressed as part of the post-consent CSIP and CBRA. Please see Paragraph 42 below for further details.	Volume 3: Chapter 19: Benthic Ecology -	33	Llŷr will ensure that the post-consent CSIP and CBRA will develop a clear criterion, informed by current guidance (Irving, 2009 and Golding et al., 2020 and any other literature available at the time) to be agreed with NRW, to identify and differentiate between mixed gravel and low resemblance stony reef habitat to ensure that the latter feature is not impacted by any boulder clearance activities. In line with the proposed mitigation, as the proposed Project has oriented the OfECC to avoid reef and sandbanks, and other Annex I habitat types (Figure 8-4; Table 8-3), utilising this approach means that it is not anticipated that there will be any disturbance during planned maintenance works of the Annex I features of Pembrokeshire Marine SAC. This will be incorporated to the mitigation as stated in Table 8-1. "Summary of relevant embedded mitigation measures adopted as part of the proposed Project" in Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment, "The final proposed Project layout will be presented within the Design Project Array Layout Plan (PLP), which is anticipated to form conditions of the Section 36 and / or Marine Licence consent. As part of the pre-construction survey (which will be agreed upon with NRW) data will be analysed to ascertain the locations of the WTGs and cable routes, with the potential for micro-siting of the proposed Project infrastructure."
34	Benthic Subtidal and Intertidal Ecology - 1.3.2 Detailed comments	The Llŷr project should reference: The Merchant Shipping (Control and Management of Ships' Ballast Water and Sediments) Regulations 20221 with respect to the control of ballast and hopper water and in relation to construction, operation and decommissioning vessel activities.	Volume 3: Chapter 19: Benthic Ecology - Section 19.2.1	34	This is noted and will be considered in future assessments. Embedded mitigation for the project states that all project vessels shall adhere to the International Convention for the Control and Management of Ships' Ballast Water and Sediments (IMO, 2017) as part of the BMW Convention. These regulations implement this convention into UK law and therefore are considered to already be applicable to the project.
35	Benthic Subtidal and Intertidal Ecology - 1.3.2 Detailed comments	NRW (A) acknowledge that a number of dedicated offshore and nearshore benthic Multibeam Echosounder (MBES) and Drop Down Video (DDV) characterisation surveys were conducted between 2022–2024. Although these surveys represent substantial coverage of the Array and OfECC, as noted in pre-application engagement, these surveys do not allow for a complete assessment of habitat features of conservation importance particularly in relation to the OfECC, which includes potential impacts on sensitive habitat features such as SAC Annex 1 Reef features. NRW (A) acknowledge and welcome that further surveys will be undertaken as part of the CSIP and CBRA post-consent and please see Paragraph 36 below.	Volume 3: Chapter 19: Benthic Ecology - Section 19.4.4, Paragraphs 39 – 44	35	This is noted and NRW's position on this matter is appreciated.

36	Benthic Subtidal and Intertidal Ecology - 1.3.2 Detailed comments	NRW (A) welcome and advise collaboration on the scope of the post-consent geophysical and geotechnical surveys to microsite the proposed infrastructure within the OfECC. NRW (A) would need to be consulted in writing on the suitability of the surveys, as well as the interpretation of the results to determine the actual cable route. This should be a condition of the Marine Licence. Due to the paucity of data for some areas of the OfECC (e.g. KP46-48) it is currently not possible to say with absolute certainty that Pembrokeshire Marine SAC Annex 1 Reef habitat can be avoided. This is further reinforced in Figure 19.3 UKSeaMap Broadscale Predictive Habitat Mapping, which identifies substantial sections of the area between KP46-48 as 'high energy infralittoral rock'. Whilst we recognise this would be a worst-case scenario, in line with the 'Rochdale envelope' approach, we request that the potential impact pathway of the OfECC intersecting with the Pembrokeshire Marine SAC Reef feature is presented and included in the assessment in the ES and HRA.	Volume 3: Chapter 19: Benthic Ecology - Section 19.4.4, Paragraph 44	36	Noted - The Llŷr project is content to include the requirement to consult with NRW in writing on the suitability of the surveys, as well as the interpretation of the results to determine the actual cable route as a requirement of the licence condition. The project confirms that in the route from KP46 to KP48, avoiding the Annex I reef, the OfECC will be secured in place (either through the weight of the cable itself or through additional pins to ensure that the cable remains in place) and will be unable to result in scour to the surrounding Annex I habitat, avoiding any permanent loss of feature and therefore ruling out an AEoSI as a result of abrasion. The Llŷr project is content to include the requirement within the licence condition that if the Annex 1 Reef feature cannot be avoided, the Llŷr will provide sufficient evidence to demonstrate that the articulated cable will not move, or that appropriate additional mitigation is undertaken to ensure that the cable remains in place.
37	Benthic Subtidal and Intertidal Ecology - 1.3.2 Detailed comments	NRW (A) disagrees that the data collected to date provides enough information to make a robust assessment to ensure that all potential interactions with Pembrokeshire Marine SAC Annex 1 Reef feature are avoided. This potential impact pathway on Annex 1 Reef should therefore be included in Section 19.8 Assessment of Environmental Effects.	Volume 3: Chapter 19: Benthic Ecology - Sections 19.5.1 and 19.5.2, Paragraphs 51 and 99	37	As discussed in meeting with NRW on 25th March 2025, in the area of Annex I reef the OfECC will be secured in place (either through the weight of the cable itself or through additional pins) and will be unable to result in scour to the surrounding Annex I habitat. On this basis and that additional surveys will be undertaken, there will not be any further assessment at this stage as the effects are considered to be not significant.
38	Benthic Subtidal and Intertidal Ecology - 1.3.2 Detailed comments	As noted in Paragraph 36 above, NRW (A) advises that further information is presented as part of the post- consent surveys and NRW (A) are consulted in writing on the scope of the surveys and interpretation of the results, to confirm that a cable route avoiding Pembrokeshire Marine SAC Annex 1 Reef feature can be identified between KP46-48.	Volume 3: Chapter 19: Benthic Ecology - Section 19.5.2, Paragraph 100	38	Noted - The Llŷr project is content to include the requirement to consult with NRW in writing on the suitability of the surveys, as well as the interpretation of the results to determine the actual cable route as a requirement of the licence condition.
39	Benthic Subtidal and Intertidal Ecology - 1.3.2 Detailed comments	As noted in Paragraph 35 above, NRW (A) welcomes the proposal to develop a CSIP and CBRA and agrees that this process should be undertaken in collaboration, and in writing, with NRW (A). At this stage, however, it is not possible to say with absolute certainty that Annex 1 Reef habitat can be avoided. Whilst the Llŷr project has committed to the use of articulated cable between KP38–KP48, given that this is a novel and relatively untested technology, NRW (A) remain concerned that if interactions with Annex 1 Reef are found to be unavoidable following the post-consent surveys, potential movement of the articulated cable may result in a permanent deterioration of this habitat and associated flora and fauna through abrasion. Therefore, we advise that if the Annex 1 Reef feature cannot be avoided, the Llŷr project must provide either sufficient evidence to demonstrate that the articulated cable will not move, or that appropriate additional mitigation, for example pinning of the articulated cable, is undertaken to ensure that the cable remains in place, to avoid any permanent loss of feature and therefore rule out an AEoSI as a result of abrasion. This should be conditioned in the Marine Licence. NRW (A) acknowledge that this issue is complex and nuanced and we therefore strongly recommend detailed consideration on this issue between the Llŷr project, NRW MLT and NRW (A).	Volume 3: Chapter 19: Benthic Ecology - Table 19-10 and Table 19-12	39	The Llŷr project confirms that additional seabed surveys will be completed post consent to inform the cable route prior to installation. The survey scope will be consulted with NRW in writing on the suitability of the surveys, as well as the interpretation of the results to determine the actual cable route as a requirement of the licence condition. The project confirms that in the route from KP46 to KP48, avoiding the Annex I reef, the OfECC will be secured in place (either through the weight of the cable itself or through additional pins to ensure that the cable remains in place) and will be unable to result in scour to the surrounding Annex I habitat, avoiding any permanent loss of feature and therefore ruling out an AEoSI as a result of abrasion. The Llŷr project is content to include the requirement within the licence condition that if the Annex 1 Reef feature cannot be avoided, the Llŷr will provide sufficient evidence to demonstrate that the articulated cable will not move, or that appropriate additional mitigation is undertaken to ensure that the cable remains in place.
40	Benthic Subtidal and Intertidal Ecology - 1.3.2 Detailed comments	As previously stated in Paragraph 36 above, given the uncertainty around the presence of Pembrokeshire Marine SAC Annex 1 Reef feature in some of the unsurveyed areas of the OfECC (e.g. KP46-48), it is currently not possible to rule out interactions of this habitat feature with the OfECC infrastructure. Therefore, NRW (A) advise inclusion of 'Permanent direct loss and physical disturbance' of Annex 1 Reef feature within the assessment as a potential impact pathway, for the 'Construction' and / or 'Operational' Phases of the development. As outlined in Paragraph 39 above, NRW (A) take the view that with additional post-consent surveys, careful placement of the articulated cable, and appropriate evidence / mitigation, AEoSI can be avoided, nevertheless for completeness and transparency, this element should be included in the assessment.	Volume 3: Chapter 19: Benthic Ecology - 19.8 Assessment of Environmental Effects, Table 19-13	40	Noted, as per para 36 response - The Llŷr project is content to include the requirement to consult with NRW in writing on the suitability of the surveys, as well as the interpretation of the results to determine the actual cable route as a requirement of the licence condition. As discussed in meeting with NRW on 25th March 2025, in the area of Annex I reef the OfECC will be secured in place (either through the weight of the cable itself or through additional pins) and will be unable to result in scour to the surrounding Annex I habitat. On this basis and that additional surveys will be undertaken, there will not be any further assessment at this stage as the effects are considered to be not significant.
41	Benthic Subtidal and Intertidal Ecology - 1.3.2 Detailed comments	NRW (A) cannot currently agree with the statement that, '*…no sensitive or protected habitats, Annex 1 reefs and Annex 1 sandbanks in particular, will be subject to direct disturbance…*' for the reasons outlined in Paragraph 36 above. Until further post-consent surveys are completed, it is not possible to say that SAC Annex 1 Reef features can be avoided.	Volume 3: Chapter 19: Benthic Ecology - 19.8 Assessment of Environmental Effects, Section 19.8.1, Paragraph 121	41	As discussed in meeting with NRW on 25th March 2025, in the area of Annex I reef the OfECC will be secured in place (either through the weight of the cable itself or through additional pins) and will be unable to result in scour to the surrounding Annex I habitat. On this basis and that additional surveys will be undertaken, there will not be any further assessment at this stage as the effects are considered to be not significant.
42	Benthic Subtidal and Intertidal Ecology - 1.3.2 Detailed comments	Clarification of the criteria to be used to identify and differentiate between mixed gravel and low resemblance stony reef habitat is required to ensure that the latter feature is not impacted by boulder clearance activity. It is the view of NRW (A) that this element should be captured and addressed as part of the post-consent CSIP and CBRA. NRW (A) should be consulted in writing on the suitability of a CSIP and CBRA ahead of the commencement of works.	Volume 3: Chapter 19: Benthic Ecology - 19.8 Assessment of Environmental Effects, Section 19.8.1, Paragraph 126, OfECC	42	Noted - Llŷr will ensure that this aspect is addressed in the post-consent CSIP and CBRA.
43	Benthic Subtidal and Intertidal Ecology - 1.3.2 Detailed comments	NRW (A) strongly advise that where additional rock protection is required either as part of the HDD punch-out point, cable protection or cable crossing, that natural rock is used preferentially over concrete mattressing to encourage the colonisation of native flora and fauna and discourage the potential settlement of marine invasive non-native species (INNS) that have been shown to favour artificial substrates (including those associated with offshore renewable energy infrastructure) (Inger et al. 2009; Shields et al. 2011) due to the new introduced substrate. Additionally, we consider that the placement of natural rock would generally encourage biodiversity gain in comparison with artificial habitats (Environment Wales Act, 2016; Wales National Marine Plan, 2019). NRW (A) further advise that during the decommissioning phase, any rock protection that has been introduced as part of the current proposal should be assessed for the relative biodiversity contribution and colonisation by marine INNS to inform decision making for the best environmental outcome.	Volume 3: Chapter 19: Benthic Ecology - 19.8 Assessment of Environmental Effects, Section 19.8.2, Paragraph 183	43	Noted - Llŷr will ensure that this aspect is considered in the detailed design

44	Benthic Subtidal and Intertidal Ecology - 1.3.2 Detailed comments	Although NRW (A) agrees that the risks associated with the introduction and spread of marine INNS are low, if it does occur the consequences could be considerable and any infrastructure may result in a stepping stone effect, particularly given the project's proximity to the high vessel traffic area of the Milford Haven waterway which is a hotspot for marine INNS. NRW (A) therefore advise that the significance of the effect should be re-evaluated to low/medium (from the Llŷr project's assessment of low). Ideally, and in-line with reducing the spread and potential impacts of INNS in relation to the Pembrokeshire Marine SAC, as well as supporting achieving Good Environmental Status (UK Marine Strategy) and the Sustainable Management of Natural Resources (Environment Wales Act, 2016) outlined in the Welsh National Marine Plan (WNMP), NRW (A) recommend undertaking monitoring of cable protection infrastructure and potential presence of INNS to confirm the assumptions made in the ES. If any INNS are detected, the information should be used to inform future operational, maintenance and decommissioning biosecurity planning to minimise the risks associated with potential further spread.	Volume 3: Chapter 19: Benthic Ecology - 19.8 Assessment of Environmental Effects, Section 19.8.2, Paragraph 265	44	Noted - Llŷr will ensure that this aspect is brought forward in the project planning and that a risk based approach to the monitoring of cable protection infrastructure and potential presence of INNS to confirm the assumptions made in the ES. If any INNS are detected, the information should be used to inform future operational, maintenance and decommissioning biosecurity planning to minimise the risks associated with potential further spread.
45	Benthic Subtidal and Intertidal Ecology - 1.3.2 Detailed comments	NRW (A) advises that the potential impacts on Pembrokeshire Marine SAC Annex 1 Reef in relation to the OfECC should be included in the assessment of impacts in Section 19.8 Assessment of Environmental Effects. If this element is incorporated along with a commitment to provide appropriate evidence or mitigation should an interaction with Annex 1 reef occur, then we consider that adverse impacts on the site integrity of the Pembrokeshire Marine SAC can be avoided.	Volume 3: Chapter 19: Benthic Ecology - 19.8 Assessment of Environmental Effects, Section 19.9	45	As discussed in meeting with NRW on 25th March 2025, in the area of Annex I reef the OfECC will be secured in place (either through the weight of the cable itself or through additional pins) and will be unable to result in scour to the surrounding Annex I habitat. On this basis and that additional surveys will be undertaken, there will not be any further assessment at this stage as the effects are considered to be not significant.
46	Benthic Subtidal and Intertidal Ecology - 1.3.2 Detailed comments	NRW (A) suggests that, as well as the post-construction monitoring for INNS in relation to the articulated cable and cable protection outlined in Paragraph 44 above, these areas are also considered for general biodiversity and colonisation of native flora and fauna which would help to validate the assumptions reached as part of the ES, to better inform the decommissioning process. We welcome further discussion on this matter with NRW (A) as part of the discussions that will take place for the consideration of the CSIP, CBRA and/or the Project Environmental Management Plan (PEMP).	Volume 3: Chapter 19: Benthic Ecology - 19.8 Assessment of Environmental Effects, Section 19.10	46	Noted - Llŷr will ensure that further discussion on biodiversity and colonisation of native flora and fauna on the articulated cable and cable protection areas with NRW (A) as part of the discussions that will take place for the consideration of the CSIP, CBRA and/or the Project Environmental Management Plan (PEMP).
47	Benthic Subtidal and Intertidal Ecology - 1.3.2 Detailed comments	NRW (A) strongly advises that given the incomplete presentation of data to fully rule out the interaction between the OfECC infrastructure and potential Pembrokeshire Marine SAC Annex 1 Reef feature, this element needs to be scoped into the assessment of impact as part of the HRA. This should be covered under the section 'Permanent direct loss and physical disturbance to benthic habitats and species'. As per the comments for Chapter 19 of the ES (see Paragraph 39 above), it is NRW (A)'s view that these potential interactions can be mitigated so as not to cause AEoSI, nevertheless, the possibility should be included in the assessment.	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment:	47	As discussed in meeting with NRW on 25th March 2025, in the area of Annex I reef the OfECC will be secured in place (either through the weight of the cable itself or through additional pins) and thus will be securely fixed on the seabed and unable to cause scour to the surrounding Annex I habitat. On this basis and that additional surveys will be undertaken, there will not be any further assessment at this stage as any physical disturbance to benthic habitats and species from scour is not predicted to occur and so potential effects are considered to be not significant. The survey scope will be consulted with NRW, and agreed in writing prior to the surveys being undertaken, on the suitability of the surveys, as well as the interpretation of the results to determine the actual cable route as a requirement of the licence condition. This information will be contained within the CBRA and agreed with NRW in writing prior to the works commencing.
48	Benthic Subtidal and Intertidal Ecology - 1.3.2 Detailed comments	In relation to the MCZ Assessment and potential impacts on benthic ecology receptors, NRW (A) agrees with the conclusions presented	Volume 6: Appendix 20A – Marine Conservation Zone Assessment August 2024	48	This is noted and NRW's agreement on this assessment is appreciated.
49	Benthic Subtidal and Intertidal Ecology - 1.3.2 Detailed comments	We advise that Didemnum vexillum has recently been discovered in the Milford Haven waterway and therefore poses a potential risk in relation to possible introduction to the development site, in addition to the species listed in Table 4B-1 and particularly in relation to the OfECC and any introduced hard substratum. Table 4B-1 and relevant text (Section 4.4.2. INNS Already Present in the Region, Paragraphs 23-32) should reflect this introduction pathway in relation to development activities, particularly if vessels are to utilise the Milford Haven waterway for berthing as part of the project.	Volume 6: Appendix 4B, Invasive Non-Native Species (INNS) Management Plan August 2024, Table 4B-1	49	The potential presence of this species within the study area is noted. This species was provided within Table 4B-1, but is considered to have an unlikely presence. Despite this upgrade in presence to 'potential' within the study area, the conclusions of the INNS assessment remains the same. The Biosecurity Control Measures are considered to still prevent or mitigate the spread of this species during proposed Project activities.
50	Benthic Subtidal and Intertidal Ecology - 1.3.2 Detailed comments	NRW (A) agrees that the current INNS Management Plan forms a suitable initial assessment of the risks, mitigation and potential management actions for the proposed development. However, it is our view that a full Marine Invasive Non-Native Species Biosecurity Risk Assessment and Management Plan should be completed for all construction, operational and decommissioning activities when specific contractor and vessel details are known. This template can be found on the NRW Marine Licensing webpages, along with associated guidance on how to complete the form.	Volume 6: Appendix 4B, Invasive Non-Native Species (INNS) Management Plan August 2025, Section 4.10, Paragraph 45	50	Noted - Llŷr will ensure that a full Marine Invasive Non-Native Species Biosecurity Risk Assessment and Management Plan will be completed for all construction, operational and decommissioning activities when the contractor and vessel details are known.
51	Marine Water and Sediment Quality (MW&SQ) - 1.4.1 General Comments	NRW (A) considers the standard of the Llŷr project's assessment of the impacts to marine water and sediment quality (MW&SQ) to be generally good. We are satisfied that appropriate impact pathways have been accounted for and that the relevant aspects of the marine environment have been assessed for impact. We consider that the assessment of the impacts of disturbed sediment would have been stronger if sediment contaminant samples were undertaken from within the transmission cable corridor and the array area. This analysis would provide higher confidence to the baseline environmental assessment compared with extrapolating data from outside the study area, and would reduce the need to rely on mitigation practises. We welcome the proposal to monitor the water quality during the works to verify the efficacy of the mitigation measures proposed.	Volume 3, Chapter 18: Marine Water and Sediment Quality	51	This is noted and NRW's agreement on the approach is appreciated.
52	Marine Water and Sediment Quality (MW&SQ) - 1.4.2 Detailed Comments	NRW (A) agrees that the Outline Construction Environment Management Plan (OCEMP) forms a suitable initial assessment of the risks, mitigation and potential management actions for the proposed development for impacts to sediment and water quality, and that the CEMP must be supplemented by the Water Quality and Pollution Management Plan (WQPMP). NRW (A) further welcome the Llŷr project's commitment to water quality monitoring during the construction phase of the proposal and advise engagement with NRW (A) to finalise the WQPMP - specifically details of the locations of the monitoring sites, the proposed frequency of the monitoring and the determinants to be monitored. NRW (A) advise that the CEMP and WQPMP are conditioned as part of the Marine Licence and request to be consulted in writing on the suitability of the CEMP and WQPMP ahead of commencement of works.	Volume 3, Chapter 18: Marine Water and Sediment Quality, Section 18.7 and Table 18-14	52	This is noted and NRW's agreement on the approach is appreciated. Llŷr is content that the CEMP and WQPMP are conditioned as part of the Marine Licence and will consult with NRW(A) in writing on the suitability of the CEMP and WQPMP ahead of commencement of works

53	Marine Water and Sediment Quality (MW&SQ) - 1.4.2 Detailed Comments	NRW (A) welcomes the Llŷr project's proposed HDD methodology for cable installation through the intertidal zone and the proposed embedded mitigation, management and good practice outlined in Table 18-14. However, due to the potential for accidental releases of drilling mud associated with HDD, NRW (A) further advise that the effects of accidental bentonite release on Bathing Water Quality (e.g. bacteriological survival) should also be taken into consideration. Furthermore, the steps to be taken in the event of bentonite break-out should be included in the drilling plan. Please also refer to Paragraph 73 of our WFD comments below. NRW (A) advise that the HDD drilling plan is included with the CEMP and made available for review by NRW (A) to ensure both the mitigation of effects and proposed action to ameliorate adverse impacts are appropriate.	Volume 3, Chapter 18: Marine Water and Sediment Quality, Section 18.8, Paragraphs 118 – 122	53	Noted - Llŷr will ensure that consideration of the effects of accidental bentonite release on Bathing Water Quality, including the addressing the actions to be taken in the event of a bentonite breakout in the drilling plan and the PPEIRP, and will be discussed with NRW (A) during the consideration the Construction Environmental Management Plan.
54	Marine Water and Sediment Quality (MW&SQ) - 1.4.2 Detailed Comments	NRW (A) welcome the commitment of the Llŷr project to a Decommissioning Environmental Management Plan under Section 105 of the Energy Act 2004 (as amended) (UK Parliament, 2004) as outlined in Table 18-14 / Section 18.8.3. The ES asserts the decommissioning process will mirror the installation process during the construction phase in reverse. The worst-case scenario for this phase of the proposal would include the complete removal of all infrastructure. The Llŷr project proposes water quality monitoring to mitigate adverse effects during the construction phase and prove the efficacy of the mitigation during activities associated with the project construction. NRW (A) would welcome a similar approach during the decommissioning phase, whereby water quality monitoring is undertaken to mirror the construction methodology proposed. Further information on NRW's current position on Decommissioning can be found in Section 1.9 below.	Volume 3, Chapter 18: Marine Water and Sediment Quality, Table 18-14 and Section 18.8.3	54	This is noted and NRW's agreement on the approach is appreciated and consideration of a similar approach to water quality monitoring within the decommissioning phase will be undertaken at the appropriate time.
55	Marine Water and Sediment Quality (MW&SQ) - 1.4.2 Detailed Comments	With regard to the Habitats Regulations Assessment (HRA) Report to Inform RIAA, NRW (A) has no additional concerns relating to water quality with respect to the Welsh sites, features or pressures that have been considered for assessment. Once the issues identified through review of the ES have been addressed (please see above), we advise the required information should be used to update the RIAA if / where relevant.	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment	55	Noted - all other comments addressed
56	Marine Water and Sediment Quality (MW&SQ) - 1.4.2 Detailed Comments	NRW (A) welcomes the embedded mitigation proposed to minimise the impact of SSC on the intertidal zone by using HDD techniques. However, we note an inconsistency between the embedded mitigation measures as noted in Chapter 18 Marine Water and Sediment Quality, Table 18-14 Mitigation measures, management plans and best practice adopted as part of the proposed Project and Table 8-1 Summary of relevant embedded mitigation measures adopted as part of the proposed Project in the RIAA. The latter refers to a Pollution Prevention and Emergency Incident Response Plan (PPEIRP) but this does not appear to be considered or referenced in Chapter 18 as part of the embedded mitigation. Clarification should be provided in this regard. Nonetheless, we consider that the Llŷr project should ensure that action to be taken in the event of bentonite break out is included in the PPEIRP referred to in Table 8-1 and that the measures as noted in Paragraphs 52 and 53 above are also considered. NRW (A) request the opportunity to discuss and review the content of the PPEIRP with the Llŷr project to ensure that it is appropriate with respect to bentonite release.	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment, Table 8-1	56	Noted - a PPEIRP will form part of the environmental measures to be adopted during construction. As per the response above (para 53) Llŷr will ensure that consideration of the effects of accidental bentonite release on Bathing Water Quality, including the addressing the actions to be taken in the event of a bentonite breakout in the drilling plan and the PPEIRP, and will be discussed with NRW (A) during the consideration the Construction Environmental Management Plan.
57	Marine Water and Sediment Quality (MW&SQ) - 1.4.2 Detailed Comments	NRW (A) agrees with the Llŷr project's approach of using numerical modelling to identify the ZoI of the suspended sediment plume	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment, Section 8.5	57	This is noted and NRW's agreement on the approach is appreciated.
58	Marine Water and Sediment Quality (MW&SQ) - 1.4.2 Detailed Comments	NRW (A) agrees with the conclusions of the screening assessment for the proposed works i.e. that the designated sites (Pembrokeshire Marine / Sir Benfro Forol SAC; Limestone Coast of South West Wales / Arfordir Calchfaen de Orllewin Cymru SAC) included for consideration are appropriate for assessment of impact.	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment, Section 8.5, Table 8-2	58	This is noted and NRW's agreement on the approach is appreciated.
59	Marine Water and Sediment Quality (MW&SQ) - 1.4.2 Detailed Comments	With regard to SSC, the Llŷr project's assessment concluded that activities associated with the proposed project have the potential to temporarily increase SSC by creating sediment plumes in the water column during the construction phase (mirrored during decommissioning) and during operation and maintenance of cable repairs. NRW (A) agrees that the impacts of increased SSC are likely to be small, localised and temporary in nature and have no potential for AEoSI of the Pembrokeshire Marine / Sir Benfro Forol SAC or the Limestone Coast of South West Wales / Arfordir Calchfaen de Orllewin Cymru SAC	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment, Section 8.5, Table 8-3	59	Noted - pleased that NRW agrees with the conclusions of these assessments.
60	Marine Water and Sediment Quality (MW&SQ) - 1.4.2 Detailed Comments	NRW (A) agrees that there is no potential impact for in-combination effects on qualifying features of the Pembrokeshire Marine / Sir Benfro Forol SAC or the Limestone Coast of South West Wales / Arfordir Calchfaen de Orllewin Cymru SAC as a result of increased SSC generated by the proposed project	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment, Section 8.5, Table 8-5	60	Noted - pleased that NRW agrees with the conclusions of these assessments.
61	Marine Water and Sediment Quality (MW&SQ) - 1.4.2 Detailed Comments	With respect to remobilisation of sediment-bound contaminants, the Llŷr project's assessment concluded that activities associated with the proposed project have the potential to temporarily increase SSC that could lead to the remobilisation of previously bound contaminants during the construction phase (mirrored during decommissioning) and during operations and maintenance activities such as cable repairs. Particle size analysis of the sediment likely to be disturbed during the proposed project indicates the sediment is dominated by coarse (<63 µm) material. NRW (A) consider the likelihood of contamination of sediment that is characterised by coarse material to be low and therefore agrees with the conclusion that there is no potential for AEoSI of the Pembrokeshire Marine / Sir Benfro Forol SAC or the Limestone Coast of South West Wales / Arfordir Calchfaen de Orllewin Cymru SAC.	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment, Section 8.5, Table 8-5	61	Noted - pleased that NRW agrees with the conclusions of these assessments.
62	Marine Water and Sediment Quality (MW&SQ) - 1.4.2 Detailed Comments	NRW (A) agrees that there is no potential impact for in-combination effects on qualifying features of the Pembrokeshire Marine / Sir Benfro Forol SAC or the Limestone Coast of South West Wales / Arfordir Calchfaen de Orllewin Cymru SAC as a result of increased SSC generated by the proposed project.	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment, Section 8.5, Table 8-5	62	Noted - pleased that NRW agrees with the conclusions of these assessments.

63	Marine Water and Sediment Quality (MW&SQ) - 1.4.2 Detailed Comments	The Llŷr project's assessment concluded that activities associated with the proposed project have the potential to lead to the deterioration in water quality from breakout of drilling fluid during the construction phase of the works. NRW (A) agrees with the assessment and conclusion that any effects are likely to be minor and localised and so can be expected to disperse rapidly and be non-detectable at the sea cave designated features of the Limestone Coast of South West Wales / Arfordir Calchfaen de Orllewin Cymru SAC. Therefore, NRW (A) agrees with the conclusion that there is no potential for AEoSI of the Pembrokeshire Marine / Sir Benfro Forol SAC or the Limestone Coast of South West Wales / Arfordir Calchfaen de Orllewin Cymru SAC.	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment, Section 8.5, Table 8-5	63	Noted - pleased that NRW agrees with the conclusions of these assessments.
64	Marine Water and Sediment Quality (MW&SQ) - 1.4.2 Detailed Comments	NRW (A) agrees that there is no potential impact for in-combination effects on qualifying features of the Pembrokeshire Marine / Sir Benfro Forol SAC or the Limestone Coast of South West Wales / Arfordir Calchfaen de Orllewin Cymru SAC as a result of the use of HDD drilling fluids during the construction phase of the proposed project.	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment, Section 8.5, Table 8-5	64	Noted - pleased that NRW agrees with the conclusions of these assessments.
65	Marine Water and Sediment Quality (MW&SQ) - 1.4.2 Detailed Comments	The Llŷr project's assessment concluded that activities associated with the proposed project have the potential to lead to the deterioration in water quality from the accidental release of pollutants and wastewater from the vessels associated with the works during construction, operations and maintenance, and decommission.	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment, Section 8.5, Table 8-5	65	Noted
66	Marine Water and Sediment Quality (MW&SQ) - 1.4.2 Detailed Comments	NRW (A) welcome the embedded mitigation proposed to minimise the likelihood of an accidental pollution event from occurring (e.g. following pollution prevention guidance, spill response plan, adherence to MARPOL etc. Appendix 04A: Outline CEMP). In view of this, NRW (A) agrees that there will be no AEoSI, or potential impact from in-combination effects, on the qualifying features of the Pembrokeshire Marine / Sir Benfro Forol SAC or the Limestone Coast of South West Wales / Arfordir Calchfaen de Orllewin Cymru SAC due to changes to marine water quality from accidental leaks and spills from vessels, including loss of fuel oils from the works associated with the proposed project.	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment, Section 8.5, Table 8-5	66	This is noted and NRW's agreement on the approach is appreciated.
67	WFD: Coastal and Transitional Water Bodies – Offshore works	NRW (A) agrees with the water bodies screened into the Water Framework Directive (WFD) assessment: Pembrokeshire South and Milford Haven Outer. Whilst Milford Haven Inner is hydrologically connected, we agree with it being screened out of the Offshore WFD Assessment as being beyond the ZoI and screened out of Onshore WFD Assessment as not being directly impacted by the proposed project alongside adequate mitigation being in place. Pickleridge Lagoon should also be screened in as it is within the ZoI, however NRW (A) advise it can be screened out of further assessment.	Volume 6: Appendix 10D – Offshore Water Framework Directive Assessment, 10.7 Baseline Information and 10.9 Screening assessment	67	This is noted. Pickleridge Lagoon is at least 8km from the project area and so has not been screened into the WFD assessment. The only pathway with the potential to affect distant waterbodies is the transportation of suspended sediments from installation activities and HDD drilling fluids. However, not only is this WFD waterbody outside the screening distance the location within an inlet on the other side of the entrance to Milford Haven, and any effects are unlikely.
68	WFD: Coastal and Transitional Water Bodies – Offshore works	NRW (A) does not agree with the exclusion of the Lower Cleddau Shellfish Water Protected Area as it falls within the ZoI and should therefore be included in the WFD Compliance Assessment.	Volume 6: Appendix 10D – Offshore Water Framework Directive Assessment, 10.7 Baseline Information and 10.9 Screening assessment	68	The only Shellfish Protected Area on the NRW data portal is the Upper Cleddua Shellfish Water and as this is some considerable distance from the project area it has not been screened in. The bathing waters specified have not been included since they are outside the 2km required screening distance and are also beyond the zone of influence of all project impact pathways.
69	WFD: Coastal and Transitional Water Bodies – Offshore works	Dale is the only Bathing Water noted in Table 10D-11 WFD protected area within 2 km of the tidal excursion, although Freshwater West Bathing Water is depicted in Figure 10D-2 WFD water bodies identified within the Study Area. NRW (A) advise that Marloes Sands, Dale, Sandy Haven, West Angle and Freshwater West Bathing Waters are included in the assessment and considered accordingly. Furthermore, from Figure 10D-2 WFD water bodies identified within the Study Area, Broadhaven South and Barafundle Bathing Waters appear very close to the Spring Tidal Excursion Buffer, therefore confirmation of their inclusion or exclusion in the assessment is also required.	Volume 6: Appendix 10D – Offshore Water Framework Directive Assessment, 10.7 Baseline Information and 10.9 Screening assessment	69	The bathing waters specified have not been included since they are outside the 2km required screening distance and are also beyond the zone of influence of all project impact pathways.
70	WFD: Coastal and Transitional Water Bodies – Offshore works	With regards to Physical Processes, once the issues relating to the Environmental Statement (ES) outlined in Section 1.2 above have been addressed, most notably the issues relating to the HDD exit pit construction methodology and the associated impact assessment, the WFD compliance assessment should be updated accordingly. Providing the key issues relating to the ES are resolved, NRW (A) does not foresee major issues relating to the conclusions of the WFD compliance assessment with respect to hydromorphology.	Volume 6: Appendix 10D – Offshore Water Framework Directive Assessment, 10.10 Scoping assessment	70	The aspects identified in section 1.2. have been clarified and addressed . Based on the responses, it is thought that the WFD compliance assessment does not need to be updated.
71	WFD: Coastal and Transitional Water Bodies – Offshore works	NRW (A) broadly agrees with the conclusions reached as part of the WFD Assessment in relation to potential impacts on benthic receptors, provided all best practice, embedded mitigation and legislative requirements are met as outlined in Volume 6: Appendix 10D – Offshore Water Framework Directive Assessment.	Volume 6: Appendix 10D – Offshore Water Framework Directive Assessment, 10.10 Scoping assessment	71	Noted
72	WFD: Coastal and Transitional Water Bodies – Offshore works	NRW (A) agrees with the conclusions of the scoping assessment for the Pembrokeshire South waterbody that there will be no impacts at the scale of the waterbody and no potential to prevent the WFD water body from meeting its objectives with respect to water quality (and related) elements.	Volume 6: Appendix 10D – Offshore Water Framework Directive Assessment, 10.10 Scoping assessment, Section	72	Noted
73	WFD: Coastal and Transitional Water Bodies – Offshore works	NRW (A) agrees with the embedded mitigation for accidental spillage from vessels, but advise that further information is provided for mitigating the potential effects of accidental bentonite breakout on Bathing Waters during HDD operations, such as the steps to be taken to reduce the volume of bentonite released. Accidental bentonite release into the water column would increase turbidity. Bacteriological survival rates are higher in turbid water. HDD operations, the potential for bentonite breakout and the subsequent effects of enhanced bacteriological survival may impact the quality of the water sampled for assessment during the Bathing Waters monitoring season. We therefore advise the Llŷr project to include an assessment of bentonite release on Bathing Water quality if the proposed works coincide with the Bathing Waters season.	Volume 6: Appendix 10D – Offshore Water Framework Directive Assessment, 10.10 Scoping assessment, Section 10.10.32	73	Noted - As per previous comment (NRW 53), Llŷr will ensure that consideration of the effects of accidental bentonite release on Bathing Water Quality, including the addressing the actions to be taken in the event of a bentonite breakout in the drilling plan and the PPEIRP, and will be discussed with NRW (A) during the consideration the Construction Environmental Management Plan.

74	WFD: Coastal and Transitional Water Bodies – Offshore works	NRW (A) agrees with the conclusions of the scoping assessment that no impact on water quality (including the release of chemicals) would be expected at the scale of the Milford Haven Outer WFD waterbody and that there is no need for detailed assessment to comply with the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017.	Volume 6: Appendix 10D – Offshore Water Framework Directive Assessment, 10.10 Scoping assessment, Section	74	Noted
75	WFD: Coastal and Transitional Water Bodies – Offshore works	Whilst we do not foresee any particular concerns for the current proposal, NRW (A) note that ideally, an assessment of potential in-combination effects and impacts should be included in the WFD Compliance Assessment. The in-combination assessment should consider the impact on the marine water environment of the proposed development with other plans or projects that may have an active impact on the water bodies identified during the same period of time as the construction, operation and maintenance, and decommissioning phases of the proposal.	Volume 6: Appendix 10D – Offshore Water Framework Directive Assessment, 10.10 Scoping assessment, Section 10.10.34	75	This is acknowledged and will be stated more clearly in future assessments. The water quality impacts from the project are considered to be low-level and localised and therefore there was not considered to be any interaction in-combination with other projects.
76	WFD: Coastal and Transitional Water Bodies – Offshore works	NRW Guidance Note (GN78) on how to carry out a WFD assessment can be obtained by emailing wfdwales@cyfoethnaturiolcymru.gov.uk.	Volume 6: Appendix 10D – Offshore Water Framework Directive Assessment, 10.10 Scoping assessment, Section 10.10.35	76	Noted
77	WFD: Coastal and Transitional Water Bodies – Offshore works	NRW (A) have no comments to make with regard to the Fish and Shellfish elements of the WFD Assessment.	Volume 6: Appendix 10D – Offshore Water Framework Directive Assessment, 10.10 Scoping assessment	77	Noted
78	Fish and Shellfish - 1.6.1 Main Issues	Overall for the project alone, NRW (A) agrees that the proposed development will not cause significant adverse effects on fish receptors. Furthermore, we agree with the conclusion of the Habitats Regulations Assessment – Report to Inform Appropriate Assessment (Volume 6, Appendix 8E) for the all the sites and features screened in with respect to fish receptors.	Volume 3: Chapter 20 – Fish and Shellfish Ecology	78	Noted - pleased that NRW agrees with the conclusions of these assessments.
79	Fish and Shellfish - 1.6.1 Main Issues	Our conclusion in this regard is primarily based on two factors: the short duration (45 days maximum) of the impact piling, and the limited spatial scale of the development. Taking these factors into consideration, NRW (A) considers that the risk of significant impacts from the project development alone is low.	Volume 3: Chapter 20 – Fish and Shellfish Ecology	79	Noted - pleased that NRW agrees with the conclusions of these assessments.
80	Fish and Shellfish - 1.6.1 Main Issues	However, with respect to the potential impacts to sandeel and herring, NRW (A) does not agree with the approach and conclusion for the in-combination assessment and advise that additional work (detailed below) is completed to inform the assessment.	Volume 3: Chapter 20 – Fish and Shellfish Ecology	80	The clarification to the potential impacts to sandeel and herring are addressed in the detailed comments below.
81	Fish and Shellfish - 1.6.1 Main Issues	NRW (A) advise that the following additional work is undertaken (and please see below for further context and details): • Quantification of the impacted areas of sandeel habitat and herring spawning from construction impacts. • Impacts from impact piling should be submitted as cumulative Sound Exposure Levels (SELcum) for fish as static receptors using the thresholds in Popper et al. (2014).	Volume 3: Chapter 20 – Fish and Shellfish Ecology	81	The information provided by NRW is appreciated and acknowledged. The information requested has been detailed in response to the relevant NRW comments below.
82	Fish and Shellfish - 1.6.2 Detailed comments	NRW (A) note the three criteria used to define the magnitude of impact from the project. However, both 'Scale of change' and 'Duration of the change' include elements of temporal effects, which we consider leads to confusion. 'Scale of change' includes whether an impact is considered reversible and 'Duration of change' considers the temporal extent of the impact. NRW (A) suggest that the temporal effect, whether permanent or temporary (reversible/recoverable) should only be included in one criterion.	Volume 1; Chapter 05 – Environmental Impact Assessment (EIA) Approach and Methodology, Section 5.4.9	82	The information provided by NRW is appreciated and acknowledged. The information requested has been detailed in response to the relevant NRW comments below.
83	Fish and Shellfish - 1.6.2 Detailed comments	Summary of relevant fish and shellfish species protected by national and international legislation or policy. We advise that the basis for the selection of species is incorrect and not clear. Please note that: (a) European eel, are not a Feature of Conservation Interest (FOCI) species but are listed as critically endangered on the International Union for the Conservation of Nature (IUCN) Red List, and that (b) sandeel are listed in Section 7 of the Environment (Wales) Act 2016. In addition, we advise that the Llŷrproject clarifies on what basis sprat are included in the table, given that they are not protected, nor are they a species with high landings from the area, as referred to in Table 20-10 Top 10 most caught fish species in the Celtic Sea based on bottom-trawl surveys 2014 - 2023.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.5.2, Table 20-11:	83	The correct designations of these species has been noted and acknowledged. These inconsistencies in Table 20-11 are an error in the submission. However, these changes are not considered to result in a change in the level of importance assigned to these species or the impact assessment conclusions for these species. European eel and sandeel have been categorised as being of 'very high' and 'high' value in Table 20-24, respectively. Sprat were included within the table as they are an important food resource for a number of commercially important predatory fish, seabirds, and marine mammals. This species is therefore important for the ecological role that it plays. Furthermore, based on NRW scoping opinion comments, the Cefas PELTIC surveys in the Celtic Sea and Bristol Channel were considered in further detail. These studies indicated that sprat are the dominant pelagic fish species in inshore waters along the Welsh coastline and therefore were considered in more detail (van der Kooij et al., 2018; Cefas, 2020a). The table is a summary of protection afforded to these species, but only forms one part of the selection process for including particular species. The species considered were selected based on a species' particular sensitivity to different anthropogenic pressures and their importance as protected species, features of designated sites, and their importance to commercial fisheries. These species were then divided into key functional fish groupings based on species class, habitat preferences and life history.
84	Fish and Shellfish - 1.6.2 Detailed comments	Please note that Allis shad is also a feature of the rivers Usk and Wye Special Areas of Conservation (SACs). Please note that The Severn Estuary SAC/Ramsar in addition to the listed features, have a sub-feature of the fish assemblage, encompassing the following diadromous fish: Atlantic salmon, sea trout, allis shad and European eel.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.5.4, Table 20-13	84	Allis shad had been mistakenly missed off from the table as a qualifying feature for the Usk and Wye SAC. However, Allis shad was assessed within the impact assessment, including with consideration to designated sites closer to the proposed development such as the Pembroke Marine SAC, for which Allis shad is a primary feature. The species listed in Table 20-13 are those that are qualifying features. However, the species highlighted as being a sub-feature of the Severn Estuary are noted in the main baseline section as occurring within the Bristol Channel and using the Severn Estuary accordingly. Impacts to these species have been assessed within the main impact assessment.

85	Fish and Shellfish - 1.6.2 Detailed comments	Furthermore, it is unclear if Table 20-13 Designated sites within the Study Area and their protected species is intended to list features of the site or protected species recorded at the site. For instance, native oyster is not a feature of Milford Haven Waterway Site of Special Scientific Interest (SSSI), although it is a protected species and has been recorded in the Waterway, as are long-snouted seahorse, which is absent from the table. European smelt (Osmerus esperlanus) is a feature of Milford Haven Waterway SSSI, but likewise missing. We advise that the Llŷrproject corrects these matters and clarifies the rationale behind the tables presented.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.5.4, Table 20-14	85	Although mussels and native oysters are not listed as a feature for the SSSI as a species, the beds of these species and subsequent habitat are listed as features of the site, i.e. for the Milford Haven Waterways SSSI, this is 'Oyster beds on shallow subtidal muddy sediment'. This is the reasoning for including these species within Table 20-14. Long-snouted seahorse is not mentioned in either the citation or the management statement of the Milford Haven Waterways SSSI. This is also true of European smelt, which is not included as a feature in either of these documents. These documents were taken from the NRW protected sites website (https://naturalresources.wales/guidance-and-advice/environmental-topics/wildlife-and-biodiversity/protected-areas-of-land-and-seas/find-protected-areas-of-land-and-sea/?lang=en) , which was last updated on 6th May 2025.
86	Fish and Shellfish - 1.6.2 Detailed comments	NRW (A) advise that Cod should have been included in the assessment, in the group Demersal species. Cod are a commercially important species with spawning grounds in the Area, as identified in Table 20-15 Important spawning grounds which fall within the Study Area. Cod are furthermore susceptible to impacts from underwater sound and are protected both under Section 7 of Environment (Wales) Act 2016 and listed under OSPAR.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.5.6, Paragraph 59	86	Cod was highlighted within section 20.5.9, table 20-15 as having important spawning and nursery grounds within the study area. Cod was also highlighted as being sensitive to temporary direct loss and physical disturbance in section 20.8.1 (paragraphs 185 and 314), whilst also being highlighted within the underwater noise impact assessment. This species has therefore been assessed within these sections accordingly. It is acknowledged that cod was mis-categorised as a medium hearing sensitivity fish and is in fact a high hearing sensitivity fish. However, a detailed assessment of high hearing sensitivity fish was undertaken and concluded no significant effects to these species. This change in category in cod is not considered to result in a material change in the conclusions of the assessment for this species.
87	Fish and Shellfish - 1.6.2 Detailed comments	NRW (A) advise that for salmon the assessment should reference the latest summaries for the relevant rivers available on NRW's website: Salmon and sea trout catchment summaries.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.5.7, Paragraph 68	87	These catchment summaries are referenced within the Section 20.5.7 (Atlantic salmon, para 67, page 47 and Sea trout (Brown Trout), para 71, page 48) for the Cleddau rivers, the River Tywi, and River Taf (citation: NRW, 2018a. b, c). These rivers are the closest to the project and so were considered the most relevant. These summaries are from 2018 but are not included on the stated NRW website. On the stated NRW website there are only catchment summaries for the River Usk, River Wye, and River Severn, for 2019 - 2024. These are acknowledged, although these rivers are 98 km to 174 km from the project.
88	Fish and Shellfish - 1.6.2 Detailed comments	We note the reference to TraC survey data, but advise that due to the survey methodologies and timing of estuarine data collection, these surveys are not considered to sample migratory salmonids appropriately, and consequently the low numbers of fish caught are not representative. Whilst not of material impact in this instance, we wish to highlight that we do not recommend this approach as standard due to the misrepresentation of salmonid populations.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.5.7, Paragraph 69	88	This limitation is noted and will be adopted in future assessment (stating this limitation more clearly). However, alternative data sources in addition to the TraC survey data were used to highlight the importance of salmonids within the study area. This not considered to result a change in the conclusions of the impact assessment.
89	Fish and Shellfish - 1.6.2 Detailed comments	Please note that sea and river lamprey, and Allis and twaite shad are also features of the rivers Wye and Usk SACs.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.5.7, Paragraph 76 and 80	89	This is noted and is a mistake in the text. With the exception of Allis shad (which is acknowledged in the previous comment), these species were noted in the designated sites table 20-13.
90	Fish and Shellfish - 1.6.2 Detailed comments	NRW (A) advise that the lack of hotspots in shallow water may be an artifact of the lack of fisheries data from shallow water. Ellis et al. (2012) note that fish surveys were generally in waters >20 metres deep.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.5.9, Paragraph 134	90	The limitation in this data is acknowledged (as summarised within Campanella and van der Kooij, 2021). Alternative data sources and a detailed sandeel spawning assessment has been included to provide better information on sandeel spawning in shallower waters.
91	Fish and Shellfish - 1.6.2 Detailed comments	NRW (A) advise that in line with the guidance from CIEEM (2018) referred to in Section 20.4.2, Paragraph 24, the area of suitable sandeel habitat affected (and not affected) within the development area should be quantitatively assessed, rather than qualitatively, for instance as percentage of affected area within the development or wider study area. This information is required to inform the magnitude of effect and to contextualise any impacts.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.5.9, Paragraph 146	91	Areas of sandeel habitat disturbed and permanently removed have been provided within the main impact assessment, using the terminology: PIZ and SIZ assessment areas (based on the approach provided within the MarineSpace guidance for assessing impacts to spawning habitats). For sandeel habitat, the WCS areas effected by temporary disturbance (i.e. PIZ) totals 2.44 km2 for the OfECC and 0.43 km2 for the array area (combined area of 2.87 km2). The WCS area of sandeel habitat which could be affected by sediment deposition (from sediment disturbed and suspended by the project) is predicted to be 48.11 km2 for the OfECC and 61.12 km2 (combined area of 109.23). However, this estimate is highly precautionary as it is based on sediment being deposited across a 500 m from the cable corridor, when in reality this sediment will be deposited mostly within 50 m of the area of disturbance, reducing this area of potential effect by an order of magnitude. Permanent loss of sandeel habitat has been calculated as 0.086 km2. It is not considered appropriate to calculate potential areas of effect as a percentage of the total area of available habitat. Cefas advice on using quantified areas as a percentage to assess affects on herring and sandeel (as pers comm and which will be published in due course) states the following: Please note that Cefas fisheries advisors do not support the calculation of quantified areas fish habitat (e.g., herring and sandeel spawning habitat) because defining explicit areas of habitat is likely to over- or under-represent the area of suitable habitat available. They state that calculating defined, discrete areas of potential habitat in km², assumes that the total area of suitable habitat is explicitly known and uniformly used. This approach does not account for possible changes in sediment composition resulting from natural environmental fluctuations (e.g., increases mud or silt content) which would affect the suitability of the sediment for herring and sandeel. In addition, a quantified approach assumes that herring and sandeel populations will spawn across the same exact area every year. The relative importance of a particular area of seabed to the overall reproductive success of the population will vary slightly between years and therefore calculations of total area (or percentage area) of habitat should be treated with caution. Cefas consider that a qualitative approach is the most appropriate way to interpret and present the habitat suitability assessments. Despite this, the areas of predicted disturbance is considered small in the context of the wider study area. Sand is widespread within this area and represents the dominant habitat in this location and in the wider Celtic Sea too (see figure 20.9). Primary temporary physical disturbance of sandeel habitat from the project represents a total area of 2.87 km2, which is expected to recover over short timescales (i.e. prior to the following spawning season), particularly given the dynamic nature of sand. The potential areas of effect is considered to be very small in the context of the wide availability of habitat for sandeel to use within the study area.
92	Fish and Shellfish - 1.6.2 Detailed comments	Please see our comment in Paragraph 86 above with respect to cod needing to be included in the demersal fish species group	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.5.10, Table 20-24	92	This is acknowledged, as stated in response to NRW comment para 86, cod are considered to have been suitably assessed within the impact assessment for fish and shellfish.

93	Fish and Shellfish - 1.6.2 Detailed comments	In the second row the cable length for the Offshore Export Cable Corridor (OfECC) is given as 17.10 km, however in Volume 1, Chapter 04, Description of the Proposed Project the length of the OfECC is 49 km, or 42.5km2. Please clarify which figure has been used in the subsequent assessment and amend accordingly.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.6, Table 20-25	93	The Project Description is correct - 17.10 km is the cumulative length of the inter-array cables in contact with the seabed Each offshore export cable will have a maximum length of up to 49 km and the area of the export cable corridor is 42.5 km2. The reference in Table 20-25 to 17.10 km is an error within the text and should state length of 49 km. However, this has not followed through to the calculations used to assess areas of disturbance from SSC, which was taken directly from the GIS shapefiles. No change is required for the impact assessment as a whole.
94	Fish and Shellfish - 1.6.2 Detailed comments	We note the application of a low-level behavioural disturbance threshold and have commented on its use in subsequent sections. Please see Paragraphs below.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.8, Table 20-28	94	Noted - this has been responded to for each specific comment relating to low-level behavioural disturbance.
95	Fish and Shellfish - 1.6.2 Detailed comments	For temporary and permanent direct loss and physical disturbance to fish and shellfish including from SSC, we advise that other marine fish should be split so that benthic and epibenthic species, such as section 7 flatfish and elasmobranchs, are separated out from an all fish group and the sensitivity rated as medium, although we would agree that the impact will be low. We suggest that, for clarity, the group is split as it has been for Electromagnetic Fields (EMFs). This is because we do not consider grouping less sensitive and more sensitive species together is representative.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.8, Table 20-28	95	This approach has been noted and agreed with as being scientifically robust. This approach shall be adopted for the impact assessment in future projects. As noted by NRW, the potential impacts to benthic and epibenthic receptor groups from temporary physical disturbance and permanent loss of habitat is still considered to be negligible and not significant, despite a medium sensitivity rating.
96	Fish and Shellfish - 1.6.2 Detailed comments	Furthermore, with respect to EMF we advise that clarity and further justification should be provided to explain on what basis spawning, eggs, larvae and juvenile fish have been given a separate row and a lower sensitivity than adult fish. The available evidence suggests that larvae are more sensitive to EMF than adults (Gill & Desender, 2020). Grouping fish life stages of different sensitivity levels when assessing impacts could therefore produce results that are not representative of actual impact levels.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.8, Table 20-28	96	Spawning, eggs, larvae, and juvenile fish were separated to acknowledge potential differences in effect from EMF to these life stages, compared to adults. However, the main focus of this receptor was on herring and sandeel spawning, so that this was considered appropriately. Many of the studies referenced within Gill and Desender, 2020 were also used in the EMF impact assessment. These studies showed a mix of responses, with some species not showing any significant effects from high levels of EMF, including mortality, growth, or development (Fey et al. 2019). The levels of magnetic field strengths tested in these studies presented by Gill and Desender, 2020 ranged from 3,000 µT to 10,000 µT and are orders of magnitude higher than that predicted from the project (i.e. 70 µT). Although Gill and Desender (2020) have stated that EMF effects are strongest on larvae stages, this is not necessarily evident from the studies that they have presented, particularly as many of these studies focus on freshwater species. The journal that they have cited to support the statement that larval stages will feel the strongest effect from EMF (Nyqvist et al. 2020) states that larvae may change their orientation in response to changes in magnetic fields, however, the references to support this are not all from EMF specific studies. Nyqvist et al. (2020) do not state that larval life stages are more susceptible to EMF compared to adults and do not consider potential effects to larval stages, beyond orientation changes (many of the species considered being reef species). This conclusion is not disputed, rather the validity of these studies used in the context of an offshore export cable in the marine environment to upgrade the sensitivity of these life stages is raised. The sensitivity rating of low is considered appropriate in the context of the project, particularly when compared to elasmobranchs, which have been assigned a medium rating. If the spawning, eggs, and larvae receptor was provided a medium rating (to match adult elasmobranch responses to EMF), the conclusion would still remain as not significant, given the low predicted magnetic field for the project.
97	Fish and Shellfish - 1.6.2 Detailed comments	NRW(A) advise that pre-grapnel run should be included in the listed activities.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.8, Paragraph 185:	97	This text was meant to include cable clearance activities, including pre-grapnel run. However, disturbance from these activities was still included within the impact assessment and any quantitative calculations provided, as per the scope of assessment table 20-25.
98	Fish and Shellfish - 1.6.2 Detailed comments	NRW (A) advise that these spatial impacts should have been assessed quantitatively, as per our advice in Paragraph 91 above. This is because for sandeel, which have strong site fidelity (as mentioned in the ES in Paragraph 198), and therefore limited ability to re-locate or re-colonise areas, the spatial extent of the impact is particularly important. In addition, a quantitative assessment makes it more robust when considering the overall impacts to receptors from multiple impacts, i.e. compounding effects.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.8, Paragraph 190-191 and 218-219 (for herring) and Paragraphs 195-197 and 223-224 (for sandeel)	98	Please see detailed response to paragraph 91 above, providing reference to the quantitative values included within the impact assessment and the Cefas advice to equating this values as a percentage of the total wider availability of habitat for both herring and sandeel. The total WCS areas of herring spawning habitat effected by temporary disturbance (i.e. PIZ) totals 0.85 km2 for the OfECC (overlapping marginal, rather than preferred herring spawning habitat). The WCS area of herring spawning habitat which could be affected by sediment deposition (from sediment disturbed and suspended by the project) is predicted to be 16.67 km2 for the OfECC. However, as with sandeel this estimate for the SIZ is highly precautionary as it is based on sediment being deposited across a 500 m from the cable corridor, when in reality this sediment will be deposited mostly within 50 m of the area of disturbance. Permanent loss of herring spawning habitat has been calculated as 0.011 km2. The array area is not considered to overlap herring spawning habitat and so is not disturbed or lost from construction activities at these locations. Overall, the area of herring spawning habitat being potentially affected will be very small, particularly given the wider availability of preferred spawning habitat (as contextualised in Figure 20-26, which shows the PIZ and SIZ areas in this context).

99	Fish and Shellfish - 1.6.2 Detailed comments	As discussed by Popper at al. (2014) the origin of the 150 dB re 1 µPa value is highly uncertain. In the absence of a threshold, NRW (A) advise that a 135 dB SELss (Sound Exposure Level SEL single strike)2 impact range is modelled based on available evidence from Hawkins et al. (2014), and used on a precautionary basis, for assessing the sensitivity of hearing sensitive fish.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.8, Paragraph 271	99

Appendix 21B has modelled the low level behavioural disturbance distances from impact piling using the 135 dB SELss threshold stated. These distances ranged from 36.1 km (August min) and 97.0 km (February max), with averages of 72.3 km and 44.5 km for February and August, respectively. When comparing against the threshold for mackerel provided by Hawkins et al. (2014) of 142 dB SELss, these distances are reduced, with averages of 33.5 km and 27.3 km (February and August, respectively). The propagation of sound is shown in the isopaths provided in Figure 21B-27 and Figure 21B-28, showing that the maximum distances where these thresholds are met are further into the Celtic Sea, but propagation is limited into the Bristol Channel.

These thresholds represent low-level disturbance for 50% of the respective fish populations. These responses are unlikely to result in ecological changes or effects, but rather small changes in swimming direction, particularly as the threshold are very low.

The use of these thresholds is highly precautionary and not considered comparable to the project impact piling activities. The Hawkins et al. (2014) study was conducted in Lough Hyne, which is an enclosed environment (with the exception of a small and very shallow channel connecting the Lough to the sea) and is very small with a surface area of 0.5 km2 (approx. 0.8 km by 0.6 km). Although the maximum depth of the Lough is 49 m, much of the sampling was undertaken in shallow depths greater than 20 m / 10 m. This environment is likely to reverberate and amplify sound compared to the marine environment.

Furthermore, although the study aimed to simulate the impulsive sound from an impact piler, the sound was directed from an amplifier pointed towards the seabed, recording behavioural responses directly below the sound source. This will also influence the propagation of sound at this location, with greater reflection of sound from the seabed. Overall, this threshold should be used with caution as it is based on a scenario that is not directly comparable to the project activities, which will be in an open marine environment.

Despite this, the conclusions of the underwater sound assessment remain the same, even when taking this precautionary approach. This is based on the short-term and temporary nature of the proposed impact piling.

100	Fish and Shellfish - 1.6.2 Detailed comments	This paragraph mentions implementing soft-start as a measure to reduce the potential noise for impacts to fish and shellfish receptors. Soft-start is also mentioned as a mitigation measure throughout the remainder of the chapter. Whilst we recognise that soft-start procedures are standard practice in piling operations, we are unaware of any evidence to support soft-start procedures being effective in mitigating impulsive noise impact for fish or eliciting a fleeing behaviour. If this information is available from the Llŷrproject, we would welcome it being provided to NRW (A).	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.8, Paragraph 278:	100

A soft-start has been proposed, meaning that the sound intensity of the piling will be slowly ramped up over time (based on limiting potential effects to marine mammals specifically). Studies have shown that highly mobile species, such as salmonids demonstrate a startle response to sound and will change their direction of swimming to avoid areas of higher sound intensity (Oppedal et al., 2025). Swimming behaviour in cod in at sea experiments, have demonstrated behavioural responses in fish and avoidance of pile driving noise (Mueller-Blenkle et al., 2010). Anderson et al. (2017) noted that fish react to pile drive noise and a flight response to pile driving noise is expected. However, Anderson did note that other studies have shown that some fish exposed to high noise levels may remain within an area if it is important to the fish's survival or reproduction (cited in Anderson et al., 2017: Wadle et al., 2001, and Pena et al., 2013). In a review of studies looking at behavioural responses in fish from pile driving, it was highlighted that significant avoidance of pile driving sound was demonstrated by juvenile seabass, whilst seabream showed transient decreases in swimming speed and subsequent habituation in noise, whilst flounder did not respond to pile driving noise and appeared unaffected (Kim et al., 2024). This review highlights the difference in behaviour and avoidance of sound in different species of fish and levels of sound intensity.

Whilst a soft-start is not a measure designed specifically for fish species, the slow ramping up of sound intensity is expected to result in a behavioural response to impact piling and avoidance behaviour in some species. Although this may not occur in all individuals, some avoidance close to the pile sound where mortality and injury could occur, particularly from more mobile species such as salmonids and cod. A soft-start is not provided as additional mitigation and is not considered to change the conclusion of the underwater noise impact assessment, which is not-significant (with or without this measure).

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Kim, B., Jin, G., Byeon, Y., Park, S.Y., Lee, C., Lee, J., Noh, J. and Khim, J.S., 2024. Pile driving noise impacts behavioral patterns of important East Asian juvenile marine fishes. Marine Pollution Bulletin, 207, p.116893.
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Oppedal, F., Barrett, L.T., Fraser, T.W., Vågseth, T., Zhang, G., Andersen, O.G., Jacson, L., Dieng, M.A. and Vindas, M.A., 2025. The behavioral and neurobiological response to sound stress in salmon. Brain Behavior and Evolution, 100(1), pp.11-28.

101	Fish and Shellfish - 1.6.2 Detailed comments	NRW (A) advise adopting the guidelines by Popper et al. (2024) which state that, '*Since there is also concern for effects of multiple strikes where no single strike approaches the SPLpeak, the final step in the development of criteria is to define an SELcum which is based on the combination of SELss and number of strikes that would result in the onset of the lowest level of injury (RSI) that would be considered deleterious to the species of concern*.' Based on this, we consider that the most appropriate metric to use as a threshold is SELcum as it takes into account the cumulative effects of strikes over the piling operation.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.8, Paragraph 282	101

This approach is acknowledged and was presented within Appendix 21B (Table A 21B-5). The project description states that during of piling per day would be for a maximum of 3-hours per day. On this basis, the impact ranges using SELcum over a 3-hour period for piling noise is provided in the table below (this is based on a stationary fish receptor).

Impact	Group 1	Group 2	Group 3/4	Fish eggs & larvae
Mortality	84 m	627 m	1104 m	627 m
Recoverable injury	168 m	2208 m	2208 m	n/a
TTS	29.4 km	29.4 km	29.4 km	n/a

Using these results, potential mortality and recoverable injury is expected to occur close to the impact piling up to 2 km. TTS is estimated to occur up to within approximately 10 km of the mouth of Milford Haven and across part of the Celtic Sea and Bristol Channel. This area of TTS in not considered to overlap with important herring spawning grounds (a high hearing sensitivity fish), as identified by Coull et al. (1998), although there might be some minor overlap (2 5 km) with the area of BGS sediment identified as marginal potential herring spawning habitat.

These calculations were included within the original application and are not considered to result in a change in the conclusions of the underwater noise impact assessment, given the temporary and short-term duration of the piling operations.

102	Fish and Shellfish - 1.6.2 Detailed comments	NRW (A) request clarification of the number of piles installed per Wind Turbine Generator (WTG) using percussive piling and the total hours modelled as the worst case scenario for underwater sound. In Volume 1 Project Description, Paragraph 85, it states that each WTG will require 3 driven piles, with 6 piles being installed per day and no concurrent piling, and a maximum piling duration each day of 180 minutes. This is contradictory to the scenario described in Section 20.8 Magnitude of Impacts, of each pile taking four hours and 8 piles being installed per day. If 8 piles are being installed consecutively per day the cumulative duration of piling would be 16 hours, however in Appendix 21B Underwater Noise Report, Paragraph 208, it gives a 4 hour duration for piling noise. This would underestimate the total underwater noise impact to any marine fish receptors and consequently the severity of the impact could be higher than assessed. We advise that clarity is provided by the Llŷr project in this regard.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.8, Paragraph 283	102	For clarification, the timings provided in the project description are correct: i.e. It is estimated that the maximum number of days when piling may occur during construction would be 45 days with a minimum of 20 piling days over the construction period. This assumes up to six piles can be installed in one day. No more than 1 pile will be installed concurrently. The anticipated piling duration per day would range between 90 minutes and 180 minutes and piles of this nature would require a maximum hammer energy of 800 kJ. Up to three driven piles will be used per WTG for the proposed Project. On this basis, the piling would occur for a maximum of 3-hours per day. The SELcum impact ranges based on this scenario are provided in the response to NRW comment para 101.
103	Fish and Shellfish - 1.6.2 Detailed comments	We strongly advise that fish are modelled as stationary receptors, as we consider this to be more representative of fish behaviour. There is little evidence to support the assumption of fish fleeing directly away from a noise source, as fish display a variety of responses to underwater sounds. Furthermore, the fleeing speeds will differ between species of fish which have been grouped together in the assessment, for instance dab and bluefin tuna, which are both low hearing sensitivity fish, but have widely different swimming capabilities.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.8, Paragraph 284	103	The differences in behavioural response to underwater noise from fish species is noted, with more information on this matter provided in response to NRW comment para 100. The presentation of a fleeing response in paragraph 284 was discussed within the methodology in Appendix 21B to provide context but was not used in the final modelling results presented. The modelling results presented within Table 20-32 are based on a stationary receptor. This was not made clear within the text - further information on impact ranges for a stationary receptor using SELcum are provided in response to NRW comment para 101.
104	Fish and Shellfish - 1.6.2 Detailed comments	This does not correspond to the information provided in the Underwater Noise Modelling report (Volume 6; Appendix 21B), Table 21B-17, which gives the distances as <10m. Also as discussed above, for impulsive noises such as impact piling, the thresholds should be presented as SELcum for fish as static receptors and should include threshold for Temporary Threshold Shift (TTS). In addition, for key information, such as thresholds for death/injury, TTS and behavioural impacts, we advise that the area which is ensonified should be presented to inform the assessment of magnitude. Finally, please see our comment at paragraph 100 above regarding use of soft-start procedures.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.8, Table 20-32 and Paragraph 286	104	Table 20-32 had summarised the information provided in Table A 21-4, where the distances are presented as 0 m. However, we acknowledge that this is a limitation in the modelling itself and should be presented as <10m. The impact ranges presented as SELcum are included in response to NRW comment para 101. The unweighted SELss isopleths showing the area over which sound is estimated to propagate is presented in Figure 21B-27 and Figure 21B-28. This was summarised in response to NRW comment para 99. With regards to the use of a soft-start, please see response to NRW comment para 100 above.
105	Fish and Shellfish - 1.6.2 Detailed comments	See above regarding the use of a behavioural threshold. In Hawkins et al. (2014) the authors suggest that hearing specialists (sprat) would show changes in their behaviour at considerable distances, many kilometres, from a pile driving operation.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.8, Paragraphs 287 and 289	105	Noted, please see response to NRW comment para 99.
106	Fish and Shellfish - 1.6.2 Detailed comments	Confirmation is required that only assessing thermal emissions in sediment represents the worst-case scenario and that thermal impacts will not be greater in sections where the cable will either be encased in an articulated iron pipe, or covered by rock armour.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.8, Paragraph 345	106	Thermal emissions from exposed cables are not considered to represent the WCS (compared to the WCS assessed in chapter 20 which is for buried cables, particularly those closer to the sediment surface or at the minimum burial depth). The surrounding water has a high heat capacity and due to currents and the flow of water around the cable, heat would be rapidly transferred to the water column and dissipate quickly compared to when in direct contact with the sediment itself. In either scenario, thermal emissions will be small and due to the prominent sediment composition along the OfECC being sand, will experience lower temperature exchange compared to areas of fine sediment.
107	Fish and Shellfish - 1.6.2 Detailed comments	As for thermal impacts, confirmation is requested that impacts from EMF are not likely to be greater in sections of articulated iron pipe and areas of rock armour.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.8, Paragraph 357	107	An assessment of effects of EMF from areas of cable protection, cable crossings, and cables exposed in the water column is provided in paragraphs 360-361. In this assessment, these scenarios are stated as being the WCS for potential EMF effects. However, this concluded that in these scenarios the effect is considered not significant (negligible to minor), due to EMF emissions being low level and still returning to negligible over short distances, even in areas of exposed cable.
108	Fish and Shellfish - 1.6.2 Detailed comments	No reference is made to impact on lamprey species, although they are a feature of numerous SACs in the study area	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.8, Paragraphs 368 and 369:	108	This is acknowledged. A recent review of EMF effects on diadromous fish by Verhelst et al. (2025) stated that there is no evidence that lampreys have the ability to detect magnetic fields, and there is no in situ research into this species group. Hence, conducting studies to obtain knowledge on potential effects of SPC-related EMF on this species group is recommended. In the absence of detailed evidence of effects to lamprey, a precautionary approach is considered. On this basis, the sensitivity of lamprey to EMF is considered to be the same as that already assessed for diadromous fish species. The conclusions of the assessment for these species is considered to be the same, i.e. negligible and not significant. Verhelst, P., Pauwels, I., Pohl, L., Reubens, J., Schilt, B. and Hermans, A., 2024. Electromagnetic fields and diadromous fish spawning migration: An urgent call for knowledge. Marine Environmental Research, p.106857.
109	Fish and Shellfish - 1.6.2 Detailed comments	For key species, such as herring, the table should specify impacts, rather than grouping all fish together, so that compounding effects can be assessed.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.10 and Table 20-35	109	The layout of table 20-35 reflects the assessment approach for each fish receptor. For example, herring and sandeel have been reported separately for temporary physical disturbance, but not for changes in marine quality. However, where receptors have been grouped together, the assessment conclusions are considered the same and these can be applied to species such as herring as required. However, the approach stated by NRW will be taken for future assessments.
110	Fish and Shellfish - 1.6.2 Detailed comments	(A) advise that the cumulative assessment should not just consider significant effects. As described in Appendix 5A – Approach to Cumulative Effects Assessment, Section 5.4.4, NRW (A) advise that any effects of greater than negligible significance should be included in the cumulative assessment, as the overall effect of many minor impacts over several projects may add up (cumulatively) to a significant effect overall.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.11 and Table 20-36	110	This is the approach that has been taken for the cumulative effects assessment. The impact pathways which were assessed as greater than negligible (i.e. minor) were: underwater noise and vibration effects, temporary direct loss and physical disturbance, temporary disturbance from SSC and deposition, permanent loss of habitat, effects from EMF, and effects from maintenance activities. The information provided in Table 20-36 is taken from PINS advice. However, a more precautionary approach has been taken.
111	Fish and Shellfish - 1.6.2 Detailed comments	Please see comments above regarding behavioural thresholds for underwater sounds.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.11.2, Paragraph 467	111	Please see response to NRW comment para 99. These updates to the behavioural thresholds used are not considered to result in a change in the conclusions of the cumulative effects section.
112	Fish and Shellfish - 1.6.2 Detailed comments	In the absence of a quantitative assessment of impacts on herring and sandeel, we cannot currently conclude that cumulative effects from construction activities from concurrent or consecutive projects can be considered minor and not potentially significant. Quantification of the impacted areas of sandeel habitat and herring spawning from construction impacts should be provided.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.11.3, Paragraphs 477, 483 and 495	112	Whilst herring will return to a broad area to spawn annually, they will not spawn over the whole spawning ground each year and may not spawn in the exact same area.
113	Fish and Shellfish - 1.6.2 Detailed comments	Please see comments above in regarding use of a behavioural threshold and regarding soft-start.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.11.3, Paragraphs 489-492	113	Please see response to NRW comment para 100. The clarification provided on using a soft-start in this response is not considered to result in a change in the conclusions of the cumulative effects section.

114	Fish and Shellfish - 1.6.2 Detailed comments	We advise that the effects of consecutive construction should also be assessed to account for construction activities impacting several years of spawning.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.11.3, Paragraph 494:	114	A worst case scenario (WCS) has been provided in Section 20.11 (e.g. paragraph 496) to show what the effects would be if these projects were to occur concurrently. If in fact they took place consecutively these effects are considered to be reduced further or similar. Given the transient nature of cable installation activities there is considered to limited overlap of underwater sound from these activities, particularly as these vessels move along the length of the respective cables. The projects considered also have a limited number of WTG's and so the amount of impact piling required for these projects is small, meaning effects are short-term and temporary. If they were to occur consecutively, the period of effect would still be limited, particularly when compared to individual large-scale OWF developments. Given the predicted construction periods for Erebus, Llyr 1, and Llyr 2, it is likely that impact piling for these projects would be separated by a year to two years, allowing significant periods of downtime, for conditions to return to ambient.
115	Fish and Shellfish - 1.6.2 Detailed comments	In the absence of a quantitative assessment, it is not clear how some inter-related and compounding effects have been assessed. For instance, herring will be affected through several pathways such as direct and indirect temporary loss and disturbance of habitat and effects of increased SSC, as well as underwater sound. While all these impacts alone may be minor, taken together they may be moderate or higher.	Volume 3: Chapter 20 – Fish and Shellfish Ecology, Section 20.12	115	A quantitative assessment has been considered for the herring and sandeel spawning assessment. Further details on the values provided as part of this assessment is provided in response to NRW comment paras 91 and 98. The cumulative PIZ and the SIZ effect areas are 112.1 km2 and 17.52 km2 for sandeel and herring habitat, respectively. However, these areas of effect are dominated by the highly precautionary sediment deposition distances of 500 m (these are likely to much smaller, with most sediment predicted to fall within 50 m of the cable). Much of the sediment disturbed is sand and will recover over short-times scales given the dynamic nature of this sediment. When considering the compounding effects of the project, these are still considered to be small in the wider context of available habitat, with potential effects being short in duration and temporary. Any permanent removal of habitat is considered to be small and minor in effect overall. Further information for these species is discussed in response to NRW comment paras 91 and 98.
116	Fish and Shellfish - 1.6.2 Detailed comments	See comment above regarding receptor led inter-related effects and lack of quantitative assessment. However, NRW (A) agrees that the scope for Project lifetime effects are minor.	Volume 4: Chapter 31 – Inter-related Effects Assessment, Section 31.5.2, Table 31.3	116	Noted - please see response to NRW comment para 115.
117	Fish and Shellfish - 1.6.2 Detailed comments	Whilst NRW (A) agrees that for some impact pathways the screening distance of 14 km is appropriate, we advise that for underwater sound the screening distance should be based on the behavioural threshold for hearing sensitive fish, such as Allis and twaite shad, see Section 1.6.2.2 above. However, we note that the assessment has also adopted the wider regional approach for considering migration pathways, which is larger than the potential range for underwater construction noise, and we agree with the sites screened in for Likely Significant Effect (LSE).	Appendix 8D - Habitats Regulations Assessment Screening; Page 48 Fish, Paragraph 68	117	The wider regional approach was taken to screen in designated sites for the HRA. This is considered to encompass all project ZoI's. More detailed information on the project study area for fish and shellfish (and the approach to screening in designated sites) is provided in chapter 20, section 20.4.3. This states that: *The study area for the assessment of fish and shellfish (here after referred to as the "Study Area") is determined by the distance which encompasses all Zones of Influence (ZoI) for this receptor group (for all ZoI distance see Table 20 27). The maximum predicted ZoI for the Project is 30.7 km , based on potential low-level behavioural response to underwater noise effects (Figure 20 1). This distance was calculated as part of the Project specific underwater sound modelling for impact piling (Appendix 21B: Marine Mammals Noise Modelling).*
118	Fish and Shellfish - 1.6.2 Detailed comments	As per our comment above at Section 1.6.2.2, NRW (A) considers that the screening distance should be based on impact due to underwater sounds, and we note that this has been done in Table 8-8 of the RIAA.	Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment (RIAA), Page 70, Paragraph 195	118	Noted - please see response to NRW comment para 117.
119	Fish and Shellfish - 1.6.2 Detailed comments	Please see above comments at section 1.6.2.2 on Chapter 20 and Appendix 21B on underwater sounds, use of thresholds metrics and soft-start.	Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment (RIAA), Page 91, Paragraph 260 & 265, and 333, 337 & 341	119	Noted, further information has been considered in response to NRW comments paras 99-101. With regards to the use of a soft-start, please see response to NRW comment para 100.
120	Fish and Shellfish - 1.6.2 Detailed comments	NRW (A) agrees with the conclusion of no potential AEoSI on Pembrokeshire Marine SAC, Cleddau Rivers SAC, Carmarthen Bay and Estuaries SAC, Cardigan Bay SAC, Afon Teifi SAC, River Tywi SAC, River Usk SAC, Severn Estuary Ramsar, Severn Estuary SAC, or River Wye SAC due to the proposed Project, either alone or in-combination	Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment (RIAA), Page 119, Paragraph 378	120	Noted
121	Fish and Shellfish - 1.6.2 Detailed comments	Please note that we defer to comments from marine mammal specialists on matters relating to the methods and models used for assessing underwater sounds. Please see section 1.8 below.	Appendix 21B - Underwater Noise Impact Study	121	Noted
122	Fish and Shellfish - 1.6.2 Detailed comments	Please see comments above on the use of a behavioural threshold. Also, note that NRW advise the use of the SELcum thresholds for impulsive sounds such as pile driving	Appendix 21B - Underwater Noise Impact Study, Page 13, Paragraph 8	122	Noted - please see response to NRW comment 99 and 101
123	Fish and Shellfish - 1.6.2 Detailed comments	Due to the uncertainty regarding the metrics and origin of the 150dB re 1 µPa threshold for behavioural effects, NRW (A) advise that a 135 dB SELss (SEL single strike) impact range is modelled and used in assessing the sensitivity of hearing sensitive fish, based on available evidence from Hawkins et al. (2014).	Appendix 21B - Underwater Noise Impact Study, Page 40, Paragraph 110, Page 54, Table 21B-17	123	Noted - the threshold has been presented within Appendix 21B in Table A 21B-5. Further information on the use of this threshold and the results presented are provided in response to NRW comment para 99.
124	Fish and Shellfish - 1.6.2 Detailed comments	It is unclear whether the assumptions made here include consideration of fish. The range is wide - from a single strike to 24 hours - making it unclear if some animals are expected to have moved out of range within a single strike, which would not be a realistic assumption. Further clarification / explanation of the scenario is required to understand and agree how this represents a realistic scenario, including the timing of individual strikes in a 'single strike scenario', as well as evidence to support both fleeing speeds and fleeing behaviour. Please also see refer to advice provided in the Marine Mammal section 1.8 below.	Appendix 21B - Underwater Noise Impact Study, Page 53, Paragraph 162	124	The assumption made in paragraph 162 is also applicable to fish receptors. The exposure durations are dependent on the activity assessed and are presented as SELcum. For example, for impact piling, durations have been presented in Table A 21B-5 as 0.5 hours, 1hr, 2hr, 3hr, and 4hr. In this scenario, the project description states that a maximum of 3 hours of piling would occur per day and therefore this is the duration that should be considered in more detail. These modelling estimates do not assume that the fish receptor would move away and is based on a stationary receptor.
125	Fish and Shellfish - 1.6.2 Detailed comments	Please confirm that this is SELcum as per Popper et al. (2014) guidance for impact piling - see above comment.	Appendix 21B - Underwater Noise Impact Study, Page 53, Paragraph 163	125	This is as per the Popper et al. 2014 guidance. If an SEL has been presented over a duration (e.g. 4 hours), these impact ranges are based on SELcum.
126	Fish and Shellfish - 1.6.2 Detailed comments	Please confirm that this is SELcum as per Popper at al. (2014) guidance for impact piling - see above comment.	Appendix 21B - Underwater Noise Impact Study, Page 55, Table 21B-18	126	This is as per the Popper et al. 2014 guidance. If an SEL has been presented over a duration (e.g. 4 hours), these impact ranges are based on SELcum.

127	Fish and Shellfish - 1.6.2 Detailed comments	NRW (A) does not dispute that fish will exhibit changes in behavioural response to underwater noise, however the evidence to support the assumptions of fleeing directly away from a noise source and at a constant speed we do not consider realistic. Fish have been shown to exhibit a range of mostly short-term sporadic responses to sounds, from burying in the sediments, to erratic swimming or c-turns, none of which are approximated by the fleeing model. Consequently, we advise that fish are assessed as static receptors, while accepting that this represents a conservative assessment for some species.	Appendix 21B - Underwater Noise Impact Study, Page 57, Section 27.7.3	127	Although a moving receptor approach has been considered in Section 27.7.3 for fish, the modelling results have been presented for a stationary receptor only as a worst case scenario (WCS).
128	Fish and Shellfish - 1.6.2 Detailed comments	Clarity is required with respect to which criteria has been used for “aversion”. It is unclear what the Llŷr project means with respect to an Aversive Response in the context of underwater noise thresholds.	Appendix 21B - Underwater Noise Impact Study, Page 69, Section 21.9.2, Paragraph 207	128	This aversion threshold relates specifically to the modelling undertaken for sea turtles and is derived based on data derived from a review conducted by Finneran and Jenkins (2012). Finneran and Jenkins (2012) reviewed a number of studies reporting the responses of caged sea turtles when exposed to impulsive-type noises. They report that behavioural responses first become evident at received sound levels of 166 dBrms re 1 uPa. When sound levels are increased to lie in the range 175-179 dBrms re 1 uPa, the reactions are more erratic, and avoidance behaviour becomes apparent. Accordingly, for the current study, a threshold of 175 dBrms re 1 uPa is used to represent the onset of avoidance behaviour in sea turtles. The term aversion has been used to differentiate this threshold from that used for fish receptors.
129	Fish and Shellfish - 1.6.2 Detailed comments	This summary section (of thresholds and activities) would be more readable and better presented in a tabulated format with the relevant thresholds and activities for hearing groups 3 and 4, as stationary receptors, with accompanying text to clearly identify the worst case being assessed.	Appendix 21B - Underwater Noise Impact Study, Page 69, Section 21.9.2, Paragraph 210	129	This is noted and is an approach that will be taken for future underwater noise appendices. More detailed tables and result discussion is provided in Section 21.7.
130	Marine Ornithology - 1.7.1 Main Issues	Overall, for marine ornithology, NRW (A) are satisfied that the Llŷr project has largely followed advice provided by NRW (A) during pre-application discussions.	Volume 3: Chapter 22 - Marine Ornithology	130	Noted
131	Marine Ornithology - 1.7.1 Main Issues	NRW (A) agrees that the proposed development alone will not cause significant adverse effects at EIA scale or Adverse Effects on Site Integrity (AEoSI) at HRA scale.	Volume 3: Chapter 22 - Marine Ornithology	131	Noted
132	Marine Ornithology - 1.7.1 Main Issues	However, we are unable to assess the potential levels of significance of cumulative and in-combination impacts due to a lack of information provided. We consider that additional work is needed on the cumulative and in-combination assessments to fully understand the impact that the proposed development will have on marine ornithology receptors. Currently, the cumulative and in-combination assessment does not consider impacts from a number of other relevant projects that sit within the relevant non-seasonal regional Biologically Defined Minimum Population Scale (BDMPS) and / or within the foraging range of the respective colonies during the breeding season - this is required in order to adequately assess the impacts from the proposed development. NRW (A) advises using the figures in the Mona deadline 7 submission. Please see detailed comments in section 1.7.2.6 below for more information.	Volume 3: Chapter 22 - Marine Ornithology	132	Addressed in the accompanying clarification note: "*2025 03 28 - Llŷr - marine ornithology - clarification note 1 - cumulative and in-combination* "
133	Marine Ornithology - 1.7.2 Detailed comments	NRW (A) are content with the data sources used by the Llŷr project to inform their desk-based review.	Volume 3: Chapter 22 - Marine Ornithology, Section 22.4.4, Paragraph 38	133	Noted
134	Marine Ornithology - 1.7.2 Detailed comments	NRW (A) agrees with the key Welsh designated sites identified to address under HRA (Special Protection Areas (SPAs/Ramsars) and EIA (Sites of Special Scientific Interest (SSSIs)).	Volume 3: Chapter 22 - Marine Ornithology, Section 22.5.1, Paragraph 47	134	Noted
135	Marine Ornithology - 1.7.2 Detailed comments	We have no concerns regarding marine ornithology and the cable landfall site.	Volume 3: Chapter 22 - Marine Ornithology, Section 22.5, Paragraph 136 – 137	135	Noted
136	Marine Ornithology - 1.7.2 Detailed comments	NRW (A) agrees with the potential impact pathways that have been identified and scoped into the assessment. We welcome that the Llŷr project used the scoping opinion and pre-application advice given by NRW (A) to identify the impacts.	Volume 3: Chapter 22 - Marine Ornithology, Section 22.6, Paragraph 149	136	Noted
137	Marine Ornithology - 1.7.2 Detailed comments	The Llŷr project states that they intend to investigate suitable monitoring and/or research to help understand floating offshore wind (FLOW) farm impacts on marine ornithological receptors. As a FLOW test and demonstrator project, NRW (A) consider that post-construction monitoring will be vital to understand how marine birds react to floating wind turbines in comparison to fixed turbines and therefore NRW (A) welcome discussions with the Llŷr project regarding the need / desire for marine ornithological monitoring post-consent. Furthermore, we note that National Policy Statement for Renewable Energy Infrastructure (EN-3) encourages monitoring stating at Paragraph 2.8.295 that “Owing to the complex nature of offshore wind development, and the difficulty in establishing the evidence base for marine environmental recovery, the Secretary of State should, where appropriate, request the Llŷr project undertake environmental monitoring (e.g. ornithological surveys, geomorphological surveys, archaeological surveys) prior to and during construction and operation”.	Volume 3: Chapter 22 - Marine Ornithology, Section 22.9.1, Paragraph 262	137	Noted. As stated in the application, Llŷr Floating Wind is happy to engage in monitoring discussions with NRW A and JNCC.
138	Marine Ornithology - 1.7.2 Detailed comments	Project alone impacts for collision and displacement mortalities are generally low and fall below 1% baseline mortality for all species assessed with the exception of guillemot below in Paragraph 169. For more detail see section 1.7.2.4 and section 1.7.2.5. The Llŷr project ran a Population Viability Analysis (PVA) for the guillemot colonies (Skomer, Skokholm and the Seas off Pembrokeshire (SSSP) Special Protection Area (SPA) at HRA scale and Castlemartin Range Site of Special Scientific Interest (SSSI) at EIA scale) which showed a growth in population size despite the displacement mortalities (even for the predicted impacts at the worst case scenario of 70% displacement and 10% mortality). NRW (A) agrees with this assessment and therefore agrees that the impact of the project alone on marine ornithology receptors is low. We do not consider that the project will have a significant adverse effect on any relevant species or features of SSSI’s at EIA scale, nor will the project affect the integrity of SPA sites and features at HRA scale.	Volume 3: Chapter 22 - Marine Ornithology, App 22C and App 22D	138	Noted
139	Marine Ornithology - 1.7.2 Detailed comments	However, we advise that more work is required on the cumulative and in-combination effects assessment of the project before a full conclusion on the cumulative / in-combination level impacts can be made. Please see the detailed comments section 1.7.2.6 below.	Volume 3: Chapter 22 - Marine Ornithology, App 22C and App 22D	139	Addressed in the accompanying clarification note: "*2025 03 28 - Llŷr - marine ornithology - clarification note 1 - cumulative and in-combination* "

140	Marine Ornithology - 1.7.2 Detailed comments	During the pre-application engagement with the Llŷr project, NRW (A) advised that as EIA assessments consider the whole population (adults, immatures), we consider that mortality rates for the largest Biologically Defined Minimum Population Scales (BDMPSs) are based on the whole population. Hence, we advise that the approach taken by previous projects (e.g. Awel-y-Môr) of calculating baseline mortality rates based on a weighted average of survival rates based on all age classes could be used. Such approaches use the national demographic rates (survival and productivity) for each species and age-class from Horswill & Robinson (2015), and enter these into a matrix population model. These data are used to calculate the expected stable proportions in each age class for each species. Each age class survival rate is then multiplied by its stable age proportion and the total for all ages summed to give the weighted average survival rate converted to an average mortality rate. However, NRW (A) notes that the Llŷr project has not followed this approach and has instead used adult survival rates when calculating baseline mortality rates for EIA scale assessments. We note that the Llŷr project's approach is precautionary, as adult survival rates are typically higher than immatures rates and weighted mean rates calculated across all ages, and hence result in a lower mortality rate and lower associated 1% baseline mortality threshold. Therefore, as the Llŷr project's approach is precautionary, NRW (A) have accepted the figures provided in the current application for baseline mortality, however, we would recommend that future projects use the weighted mean approach for EIA scale assessments as advised, as this approach takes account of birds of all ages, which should be considered at EIA scale.	Volume 3: Chapter 22 - Marine Ornithology, App 22C and App 22D	140	Noted - the 1% adult mortality was adopted as a precautionary threshold as recognised by NRW(A).
141	Marine Ornithology - 1.7.2 Detailed comments	NRW (A) agrees with the baseline characterisation of the proposed Project. Surveys averaged at 12.5% coverage with only one month (January 2022) coverage reduced to 11.3% due to technical issues. NRW (A) are therefore satisfied that this level of coverage allows the baseline characterisation to be assessed with confidence.	Volume 6: Appendix 22A Marine Ornithology Baseline	141	Noted
142	Marine Ornithology - 1.7.2 Detailed comments	NRW (A) welcomes that records of birds 'unidentified' to species level (i.e. those only identified to species group level) have been apportioned to species based on their respective abundance ratios. However, clarity is required on how unidentified species that crossed multiple species/groups, or are more ambiguous, were apportioned. For example, if guillemots and razorbills occurred in a 4:1 ratio, then 80% of unidentified birds would be assigned to guillemot and 20% assigned to razorbill. As such, we consider further detail is required regarding which unidentified species groupings were included (for example, for razorbills and guillemots the groupings 'auk/shearwater species', 'auk/small gull species', 'auk species', and presumably 'large auk species' could all potentially include guillemots and razorbill (although further clarity as to which auk species are considered large is not provided). Therefore, the Llŷr project should clarify whether all these groupings were considered and apportioned to razorbill and to common guillemot to ensure the calculations presented in the assessments are correct. In addition, clarity should be provided on how species were apportioned should species level data not be available for a survey.	Volume 6: Appendix 22A Marine Ornithology Baseline, Section 22.2.2, Paragraph 29	142	Addressed in the accompanying clarification note: "*2025 03 28 - Llŷr - marine ornithology - clarification note 1 - cumulative and in-combination* "
143	Marine Ornithology - 1.7.2 Detailed comments	NRW (A) notes the Llŷr project's use of Inlabru modelling. The use of Inlabru in this case was discussed extensively between NRW (A), JNCC and the Llŷr project during the pre-application engagement. This was because the use of Inlabru for generating model-based abundance estimates/densities in offshore wind applications is considered a new/novel approach that is nonstandard for use in offshore wind applications in Welsh waters to date. Typically for offshore wind applications the model-based approach followed uses the MRSea package which was specifically designed for offshore renewables. Following discussions and further information provided by the Llŷr project, including a comparison of Inlabru model estimated estimates with those generated by traditional design-based methods, NRW (A) and JNCC were content to accept the use of Inlabru in this case. This was because there was not a statistical difference between the model and design – based estimates (most estimates fell within each other's error bars) and there did not appear to be a consistent under- or over-estimate in abundances relative to each other. Additionally, the scale of the Llŷr proposal is small enough that it's unlikely that hotspot identification would be required to identify turbines or portions of the array that potentially would need to be removed from the project to reduce impact, as has been the case at some larger proposals.	Volume 6: Appendix 22A Marine Ornithology Baseline, Section 22.2.2, Paragraph 31 and 32	143	Noted
144	Marine Ornithology - 1.7.2 Detailed comments	However, NRW (A) and JNCC were subsequently made aware by the Llŷr project that Inlabru produces abundance estimates and a mean, median, standard deviation and quantiles of these estimates. Therefore, it does not provide outputs, i.e. a distribution of densities, that can be entered into the stochastic Collision Risk Modelling (sCRM) following the approach previously recommended to the Llŷr project by NRW (A), and which the Llŷr project had previously confirmed would be the approach taken. There are three options in the sCRM tool (Caneco & Humphries 2022) for providing the bird density inputs with uncertainty measures in the sCRM: 1. Mean species densities with standard deviations 2. Maximum (max), minimum (min), and selected percentiles from a distribution of mean density estimates 3. 1,000 samples from a distribution of mean densities (e.g. from a bootstrapped sample)	Volume 6: Appendix 22A Marine Ornithology Baseline, Section 22.2.2, Paragraph 31 and 32	144	In the absence of published guidance, there was a misunderstanding between NRW(A) and the Llŷr project on the detail of CRM options. This matter was fully explored in **Llŷr ES_Appendix 22A_Annex B_Survey Data Analysis_ Technical Papers**
145	Marine Ornithology - 1.7.2 Detailed comments	NRW (A) advised the Llŷr project that we recommend option 3 be used. However, following the further discussion with Llŷr project on this issue, it became apparent that the densities produced from Inlabru could only be entered via option 1 of the above, which NRW (A) noted to the Llŷr project is not a recommended option. This advice was based on draft advice that would be included in a joint SNCB advice note on collision risk modelling that was being prepared, and has subsequently been published (JNCC et al. 2024).	Volume 6: Appendix 22A Marine Ornithology Baseline, Section 22.2.2, Paragraph 31 and 32	145	As above (response to NRW(A) para 144).

146	Marine Ornithology - 1.7.2 Detailed comments	To address these concerns, the Llŷr project has provided a comparison of resulting annual collision mortalities based on design-based bootstrap outputs (i.e. option 3 above) and on design-based mean and standard deviations (SD) (i.e. option 1 above) to allow consideration of the influence of the Inlabru density modelling process and the use of option 1 above within sCRM, on resulting mortality estimates. We consider this to be a proportionate response to NRW (A) and JNCC concerns, and note that it makes use of the observed baseline data without the need for the Llŷr project to undergo additional density modelling. Based on the information provided, we are content to base our conclusions around collision mortality for gannet and kittiwake on the sCRM as undertaken by the Llŷr project using Inlabru-derived mean and SD (option 1 from above) as inputs to sCRM, in this instance.	Volume 6: Appendix 22A Marine Ornithology Baseline, Section 22.2.2, Paragraph 31 and 32	146	As above (response to NRW(A) para 144).
147	Marine Ornithology - 1.7.2 Detailed comments	We do however note this acceptance of the use of Inlabru relates to the Llŷr project only and we strongly recommend that any future projects considering the use of Inlabru discuss this with NRW (A) in advance of any application so the appropriateness of its use in specific project scenarios can be considered.	Volume 6: Appendix 22A Marine Ornithology Baseline, Section 22.2.2, Paragraph 31 and 32	147	As above (response to NRW(A) para 144).
148	Marine Ornithology - 1.7.2 Detailed comments	NRW (A) agrees with the species identified for colony apportioning.	Volume 6: Appendix 22B Marine Ornithology Colony Apportioning, Section 22.1, Paragraph 3	148	Noted
149	Marine Ornithology - 1.7.2 Detailed comments	NRW (A) agrees with the colony apportioning calculations used for both the breeding and non-breeding seasons. The Llŷr project has used the recommended guidance from NatureScot to determine apportioning weightings for the breeding season, and the method previously agreed with NRW (A) and JNCC for the non-breeding season.	Volume 6: Appendix 22B Marine Ornithology Colony Apportioning, Section 22.2	149	Noted
150	Marine Ornithology - 1.7.2 Detailed comments	NRW (A) are content with the foraging ranges used to determine the SPA and SSSI breeding colonies that require species apportioning.	Volume 6: Appendix 22B Marine Ornithology Colony Apportioning, Section 22.2, Paragraph 1	150	Noted
151	Marine Ornithology - 1.7.2 Detailed comments	NRW (A) are satisfied with the worst case design scenario used by the Llŷr project in their assessment. NRW (A) welcomes the use of the sCRM (McGregor et al. 2018) and agrees with the Llŷr project's use of Option 2 figures (this is the basic band model that assumes a uniform distribution of birds and utilises generic flight heights) from the model in their assessment.	Volume 6: Appendix 22C: Marine Ornithology Collision Risk Modelling (CRM), Section 22.2.2, Paragraph 10	151	Noted
152	Marine Ornithology - 1.7.2 Detailed comments	NRW (A) are satisfied with the species scoped in for collision risk assessment. We agree with the input parameters (including flight speeds, nocturnal activity etc.) used for each species (Kittiwake, Lesser Black-Backed Gull (LBBG), Gannet, and Great Black-Backed Gull (GBBG)), which are those advised for use by NRW (A).	Volume 6: Appendix 22C: Marine Ornithology Collision Risk Modelling (CRM), Section 22.2.2, Paragraph 12	152	Noted
153	Marine Ornithology - 1.7.2 Detailed comments	NRW (A) welcomes that the avoidance rates used for each species are those advised by NRW (A). In addition, the densities of flying gannets were reduced by 70% before being input into the sCRM to account for macro avoidance, as advised by NRW (A).	Volume 6: Appendix 22C: Marine Ornithology Collision Risk Modelling (CRM), Section 22.2.2, Paragraph 16	153	Noted. **To highlight to NRW-MLT** - In their objection, the RSPB dispute the use of the 70% reduction for macro-avoidance, so this needs to be resolved by NRW.
154	Marine Ornithology - 1.7.2 Detailed comments	The Llŷr project has used the seasonal definitions, i.e. months in a year that each species spends breeding, non-breeding or in autumn and spring migration that were agreed with NRW (A) during the pre-application discussions. This is welcomed.	Volume 6: Appendix 22C: Marine Ornithology Collision Risk Modelling (CRM), Section 22.2.2, Paragraph 17	154	Noted
155	Marine Ornithology - 1.7.2 Detailed comments	The annual predicted collision mortalities from the project alone at EIA scale with the maximum design scenario of 10x 20MW turbines, equate to less than 1% baseline mortality of the respective largest BDMPS for kittiwake (23.9 annual mortalities which equated to 0.02% of baseline mortality), GBBG (1.6 annual mortalities), LBBG (1.9 annual mortalities which equates to <0.01% of baseline mortality) and gannet (3.7 annual mortalities which equates to <0.01% of baseline mortality). These predicted impacts are well below 1% of baseline mortality and hence can be considered to be undetectable against background mortality) and therefore we agree that collision impacts from the project would not result in a significant adverse effect (i.e. no greater than minor adverse effect) at EIA scale for these species.	Volume 6: Appendix 22C: Marine Ornithology Collision Risk Modelling (CRM), Section 22.3, Table 22C-5; Table 22C-7; and Table 22C-9	155	Noted
156	Marine Ornithology - 1.7.2 Detailed comments	For HRA scale CRM impacts from the project alone, for Kittiwake (note: named component of seabird assemblage qualifying feature) the predicted annual mortality from the maximum design scenario of 10x 20 MW turbines equates to well below 1% of baseline mortality (0.6 annual mortalities which equates to 0.18% of baseline mortality). This level of impact is considered to be undetectable against background mortality and the Conservation Objective target population for the seabird assemblage feature of 67,000 individuals3 would be achieved. On the basis of these figures, NRW (A) advises that an AEoSI of the assemblage feature of the SSSP SPA can be ruled out for predicted collision impacts from the project alone on the kittiwake component of the assemblage.	Volume 6: Appendix 22C: Marine Ornithology Collision Risk Modelling (CRM), Table 22C-6	156	Noted
157	Marine Ornithology - 1.7.2 Detailed comments	For HRA scale CRM impacts from the project alone, for LBBG. The predicted annual mortality from the maximum design scenario of 10x 20 MW turbines equates to well below 1% of baseline mortality (1.1 annual mortalities which equates to 0.06% of baseline mortality). This level of impact is considered to be undetectable against background mortality and the Conservation Objective target population of 40,600 individuals (20,300 pairs) would be achieved. On the basis of these figures, NRW (A) advises that an adverse effect on site integrity (AEoSI) can be ruled out for predicted collision impacts on the LBBG feature from the project alone for the SSSP SPA.	Volume 6: Appendix 22C: Marine Ornithology Collision Risk Modelling (CRM), Table 22C-8	157	Noted
158	Marine Ornithology - 1.7.2 Detailed comments	With respect to HRA scale CRM impacts from the project alone, the predicted annual mortality from the maximum design scenario of 10x 20 MW turbines equates to well below 1% of baseline mortality for the Grassholm gannet colony (3 annual mortalities which equates to 0.05% of baseline mortality). This level of impact is considered to be undetectable against background mortality and the Conservation Objective target population of 60,000 adults (30,000 pairs) would be achieved. On the basis of these figures, NRW (A) advises that an AEoSI can be ruled out for predicted collision impacts on the gannet feature from the project alone for the Grassholm SPA.	Volume 6: Appendix 22C: Marine Ornithology Collision Risk Modelling (CRM), Table 22C-10	158	Noted

159	Marine Ornithology - 1.7.2 Detailed comments	NRW (A) agrees with the species identified as at risk for displacement and the associated SPAs and SSSIs.	Volume 6: Appendix 22D Marine Ornithology Displacement Assessment, Section 22.1 Introduction, Paragraph 6 – 7	159	Noted
160	Marine Ornithology - 1.7.2 Detailed comments	NRW (A) agrees with the displacement matrix assessment carried out and welcomes that the Llŷr project has followed published SNCB guidance on displacement assessments (SNCBs, 20223). However, NRW (A) also notes the Llŷr project's use of SeabORD assessment in Annex C of Appendix 22D, and notes the approach used by the Llŷr project in terms of the data used within the SeabORD tool: • A distance decay function (as no GPS tracking data are available for the relevant species and colonies assessed by the Llŷr project; i.e. guillemot, razorbill, puffin and kittiwake for the SSSP SPA and Castlemartin Range SSSI colonies), which relies on the generic foraging range of species and the proportion of individuals within this range to determine foraging locations of individuals. The function creates a distribution where the greater the distance from the colony, the lower the density of foraging birds. • Flat (uniform) prey distribution.	Volume 6: Appendix 22D Marine Ornithology Displacement Assessment, Section 22.2	160	Noted
161	Marine Ornithology - 1.7.2 Detailed comments	Therefore, no site-specific (or regional specific) information is being utilised in the tool and this represents the most simplistic option that the SeabORD tool can be run with.	Volume 6: Appendix 22D Marine Ornithology Displacement Assessment, Section 22.2	161	Noted
162	Marine Ornithology - 1.7.2 Detailed comments	This was discussed during the pre-application engagement and NRW (A) raised concerns to the Llŷr project regarding the level of confidence we could have in the SeabORD outputs. This was because, whilst use of the SeabORD tool has the potential to explore/assess the risks of displacement and barrier effects in a more ecologically meaningful way than the displacement matrix approach for auks (and kittiwake) for the chick rearing period, we noted that the SeabORD developers have ranked the relative defensibility of the various potential data and methodologies for estimating bird density for use in SeabORD (see Table 5-1 of Searle et al. 2018). In this, using simple distance-decay methods where decay parameter is taken from species level published foraging ranges (as per the approach used by Llŷr) is ranked as the least defensible.	Volume 6: Appendix 22D Marine Ornithology Displacement Assessment, Section 22.2	162	Noted
163	Marine Ornithology - 1.7.2 Detailed comments	We also noted that Searle et al. (2018) considered the use of local GPS-derived inputs for bird and prey density within SeabORD to provide more reliable estimates of the impacts of Offshore Renewable Developments (ORDs), and that users should bear in mind that the 'real' impact of an ORD (assuming GPS-derived inputs capture the true bird foraging and prey distributions) may be considerably larger than that estimated under assumptions of distance-decay and uniform prey. Therefore, we considered there is potential for the estimates from the proposed Llŷr approach (using distance-decay and uniform prey) to be significantly underestimated.	Volume 6: Appendix 22D Marine Ornithology Displacement Assessment, Section 22.2	163	Noted
164	Marine Ornithology - 1.7.2 Detailed comments	As a result of the above considerations and the lack of GPS data for the sites and species in question to be assessed for Llŷr, NRW (A)'s concerns regarding the confidence that we can place in the outputs of the SeabORD approach remain.	Volume 6: Appendix 22D Marine Ornithology Displacement Assessment, Section 22.2	164	Noted
165	Marine Ornithology - 1.7.2 Detailed comments	Therefore, NRW (A) welcomes that the Llŷr project has also presented breeding season and annual assessments using the displacement matrix as advised. NRW (A) have based our advice on consideration of the displacement matrix assessment and predicted impacts and not SeabORD due to the lack of confidence we place on it.	Volume 6: Appendix 22D Marine Ornithology Displacement Assessment, Section 22.2	165	Noted
166	Marine Ornithology - 1.7.2 Detailed comments	NRW (A) agrees with the seasonal definitions used, which are those agreed with the Llŷr project during pre-application consultations.	Volume 6: Appendix 22D Marine Ornithology Displacement Assessment, Section 22.2, Paragraph 12	166	Noted
167	Marine Ornithology - 1.7.2 Detailed comments	Suggested rates of displacement and resulting mortality. NRW (A) largely agrees with the ranges of % displacement and % mortality rates used by the Llŷr project for each species in the assessment as set out in Table 22D-6. The Llŷr project states that they used rates advised by NRW (A) and JNCC, however NRW (A) has not advised the Llŷr project to use a range of 10–50% displacement for Manx shearwater as presented in the application. Our advice to the Llŷr project on this issue (sent via email on 17 February 2023) was that: 'At present as there is currently no evidence for any particular range of displacement rates (1-10%, 30-70% or any other) for this species from offshore wind farms we advise at this stage that once the full 24 months of data are available that the whole displacement matrices for the site plus 2km buffer are presented and that this can be further discussed once the data are available.' The Llŷr project raised no further queries on this matter in pre-application discussion or ahead of submission. We note however, that the Llŷr project has provided the full matrices of displacement rates so therefore, based on this information alone, we have been able to consider the predicted impacts across the appropriate ranges (in this case we have accepted 30-70% displacement and 1-10% mortality) for Manx shearwater. We advise that future projects discuss Manx shearwater displacement with NRW (A) during early engagement.	Volume 6: Appendix 22D Marine Ornithology Displacement Assessment, Section 22.2, Paragraph 20, Table 22D-6	167	Noted
168	Marine Ornithology - 1.7.2 Detailed comments	The annual predicted displacement mortalities from the project alone at EIA scale equate to considerably less than 1% baseline mortality of the respective largest BDMPS for razorbill (186.13 annual mortalities which equates to 0.29% of baseline mortality), puffin (52.08 annual mortalities which equates to 0.04% of baseline mortality), Manx shearwater (330.96 annual mortalities which equates to 0.14% of baseline mortality) and gannet (82.08 annual mortalities which equates to 0.15% of baseline mortality), even at the worst case scenarios of the NRW (A) advised % displacement and % mortality. This is therefore considered to be undetectable against background mortality and hence collision impacts from the project would not result in a significant adverse effect (i.e. no greater than minor adverse effect) at EIA scale for these species.	Volume 6: Appendix 22D Marine Ornithology Displacement Assessment, Table 22D-11; Table 22D-13; Table 22D-15; Table 22D-17; Table 22D-19	168	Noted

169	Marine Ornithology - 1.7.2 Detailed comments	The annual predicted displacement mortalities for project alone at EIA scale for guillemot exceeds 1% baseline mortality at the upper end of the potential impact range (50%:10%, 60%:10%, and 70%:10% Displacement percentage to mortality percentage) with annual mortalities of 1052.45 (1.5% of baseline mortality) at worst case scenario. Due to the potential significant adverse effect to guillemot at EIA scale from the displacement mortalities, NRW (A) requires the Llŷr project to run a PVA assessment on the guillemot population at EIA scale to determine the long-term impact of the project on guillemot population growth. However, if a weighted mean survival rate approach (please see Paragraph 140 above) as advised by NRW (A) was used instead of the more precautionary Llŷr project's approach of using adult survival rates for calculating baseline mortality, we consider it likely that the displacement mortalities calculated would not exceed 1% of baseline mortality for the project alone EIA displacement impacts even at the worst case scenario of 70% displacement and 10% mortality.	Volume 6: Appendix 22D Marine Ornithology Displacement Assessment, Table 22D-8	169	The Llŷr project do not consider that a further (regional) PVA for guillemot is necessary, as two PVAs have already been run for the key guillemot populations in Pembrokeshire. It is not considered that a further regional PVA would add value to the decision-making process. There is much less certainty in the demographic information for input into a regional PVA compared to the colony-specific ones, and therefore little confidence can be placed in the associated outputs. If NRW (A) need to refer to regional PVA for guillemot, then this has been done by Mona - as set out in Table 5-86 of their Deadline 7 report - ES Cumulative Assessments, REP7-033. As checked for Llŷr clarification note 1, Mona have adopted the correct figures for Llŷr (across all species, including guillemot) in assessment.
170	Marine Ornithology - 1.7.2 Detailed comments	The predicted annual displacement mortality equates to above 1% of baseline mortality for the guillemot Castlemartin Range SSSI colony for several scenarios across the range of advised % displacement and % mortality (from 50%: 3% to 70%: 10% Displacement percentage to mortality percentage) with displacement mortalities of 67.45 (4.8% of annual mortality) at worst case scenario (70%:10%) . This level of impact will be detectable against background mortality. As such, the Llŷr project has run a PVA on the guillemot population at Castlemartin Range SSSI, which showed a continued growth of the population even at the worst case scenarios of the NRW (A) advised % displacement and % mortality (i.e. at 70% displacement and 10% mortality). On the basis of the PVA output, NRW (A) agrees that a significant adverse effect can be ruled out for predicted displacement impacts on the guillemot feature from the project alone for the Castlemartin Range SSSI. Please refer to comments at 187 for more detail on the PVA.	Volume 6: Appendix 22D Marine Ornithology Displacement Assessment, Table 22D-10	170	Noted
171	Marine Ornithology - 1.7.2 Detailed comments	With regard to HRA scale impacts from the project alone, the predicted annual displacement mortality equates to below 1% of baseline mortality for the razorbill (note: named component of seabird assemblage qualifying feature) SSSP SPA colony across the full range of scenarios of the NRW (A) advised % displacement and % mortality with 4.14 annual mortalities (0.23% of baseline mortality) calculated at worst-case scenario (70%:10%). This level of impact can be considered to be undetectable against background mortality and the Conservation Objective target population for the seabird assemblage feature of 67,000 individuals3 would be achieved. On the basis of these figures, NRW (A) agrees that an AEoSI of the assemblage feature of the SSSP SPA can be ruled out for predicted displacement impacts from the project alone on the razorbill component of the assemblage.	Volume 6: Appendix 22D Marine Ornithology Displacement Assessment, Table 22D-12	171	Noted
172	Marine Ornithology - 1.7.2 Detailed comments	With regard to HRA scale impacts from the project alone, the predicted annual displacement mortality equates to below 1% of baseline mortality for the puffin SSSP SPA colony across the full range of scenarios of the NRW (A) advised % displacement and % mortality with 11.63 annual mortalities (0.36% of baseline mortality) calculated at worst case scenario (70%:10%). This level of impact can be considered to be undetectable against background mortality and the Conservation Objective target population for the puffin feature of 9,500 individuals would be achieved. On the basis of these figures, NRW (A) agrees that an adverse effect on site integrity (AEoSI) can be ruled out for predicted displacement impacts on the puffin feature from the project alone for the SSSP SPA.	Volume 6: Appendix 22D Marine Ornithology Displacement Assessment, Table 22D-14	172	Noted
173	Marine Ornithology - 1.7.2 Detailed comments	With regard to HRA scale impacts from the project alone, the predicted annual displacement mortality equates to below 1% of baseline mortality for the Manx shearwater SSSP SPA colony across the full range of scenarios of the NRW (A) advised % displacement and % mortality with 330.96 annual mortalities (0.14% of baseline mortality) calculated at worst case scenario (70%:10%). This level of impact can be considered to be undetectable against background mortality and the Conservation Objective target population for the Manx shearwater feature of 150,000 individuals3 would be achieved. On the basis of these figures, NRW (A) agrees that AEoSI can be ruled out for predicted displacement impacts on the Manx shearwater feature from the project alone for the SSSP SPA.	Volume 6: Appendix 22D Marine Ornithology Displacement Assessment, Table 22D-16	173	Noted
174	Marine Ornithology - 1.7.2 Detailed comments	NRW (A) does not recommend assessing kittiwake (note: named component of seabird assemblage qualifying feature) displacement as we consider the evidence base to be insufficient and therefore no comment is made for kittiwake displacement outputs.	Volume 6: Appendix 22D Marine Ornithology Displacement Assessment, Table 22D-19	174	Noted
175	Marine Ornithology - 1.7.2 Detailed comments	With regard to HRA scale impacts from the project alone, the predicted annual displacement mortality for several scenarios across the range of advised % displacement and % mortality equates to above 1% of baseline mortality for the guillemot (note: named component of seabird assemblage qualifying feature) SSSP SPA colony with 92.74 mortalities (3.4% of baseline mortality) calculated at worst case scenario (70%:10%). This level of impact will be detectable against background mortality. As such, the Llŷr project has run a PVA on the guillemot population at SSSP SPA, which showed a continued growth of the population even at the worst case scenarios of the NRW (A) advised % displacement and % mortality (i.e. at 70% displacement and 10% mortality). On the basis of the PVA output, NRW (A) agrees that an adverse effect on site integrity (AEoSI) can be ruled out for predicted displacement impacts on the guillemot feature from the project alone for the SSSP SPA. Please see Paragraphs 187 for more detail on the PVA.	Volume 6: Appendix 22D Marine Ornithology Displacement Assessment, Table 22D-9	175	Noted
176	Marine Ornithology - 1.7.2 Detailed comments	The predicted annual displacement mortality equates to below 1% of baseline mortality for the Grassholm gannet colony across the full range of scenarios of the NRW (A) advised % displacement and % mortality with 27.93 annual mortalities (0.48% of baseline mortality) calculated at worst case scenario (80%:10%). This level of impact is considered to be undetectable against background mortality and the Conservation Objective target population of 60,000 adults (30,000 pairs) would be achieved. On the basis of these figures, NRW (A) agrees that an AEoSI can be ruled out for predicted displacement impacts on the gannet feature from the project alone for the Grassholm SPA.	Volume 6: Appendix 22D Marine Ornithology Displacement Assessment, Table 22D-18	176	Noted

177	Marine Ornithology - 1.7.2 Detailed comments	NRW (A) advises the Llŷr project to provide a table summarising and assessing the combined mortality for both collision and displacement on gannet for both EIA scale and HRA scale. Based on NRW (A)'s summed calculations of combined mortality, the predicted mortalities for both displacement and collision, NRW (A) advises that significant adverse effect can be ruled out for EIA as can AEoSI for Grassholm SPA for the project alone from combined impacts from collision plus displacement.	Volume 6: Appendix 22D Marine Ornithology Displacement Assessment,	177	Please see the gannet impact scenarios provided in *Llŷr ES_Appendix 22E_Marine Ornithology Impact Scenarios. Table 22 13* of this appendix provides the summed figures for the four sets of CRM + displacement impact scenarios modelled under PVA.
178	Marine Ornithology - 1.7.2 Detailed comments	Despite Llŷr's relatively small size compared to commercial windfarms, the cumulative and in-combination assessments do not factor in impacts from a number of other projects due to a lack of data. As was advised by NRW (A) to the Llŷr project during a pre-application call on 16 August 2023, EIA cumulative assessments and the non-breeding season(s) of HRA in-combination assessments should include all projects located within the respective species BDMPS as defined in Furness (2015). In-combination assessments for the breeding season need to include all relevant projects within foraging range of the colony in question. If data are not available for projects, then they will have to be considered qualitatively. However, the Llŷr project has not included data for a number of relevant projects within the BDMPS regions where data are available (e.g. Awel-y-Môr) or undertaken qualitative assessment for projects without data. Therefore, impacts from all projects with the exception of Erebus and Whitecross have been essentially treated as zero, which will inevitably underestimate impacts, potentially significantly. Some estimate of impact must be attributed to all projects screened in to cumulative and in-combination assessments to reduce or eliminate this risk. As has been advised for the Round 4 Irish Sea projects, an informative cumulative and in-combination assessment is required to fully understand the impacts the project will have and how it will interact with other key wind developments. Therefore, at this stage we consider it inappropriate to comment on the potential significance of cumulative or in-combination impacts until further consideration of these matters is provided by the Llŷr project.	Volume 6: Appendix 22E Marine Ornithology Project Alone and Cumulative Impact Scenarios	178	Addressed in the accompanying clarification note: "*2025 03 28 - Llŷr - marine ornithology - clarification note 1 - cumulative and in-combination* "
179	Marine Ornithology - 1.7.2 Detailed comments	A suggested approach to filling the gaps was sent to the Llŷr project by NRW (A) on 14 November 2023, but we note this has not been incorporated into the submitted assessment. However, a gap filling approach has been recently completed by Round 4 Irish Sea projects enabling NRW (A) to reach conclusions on levels of significance of impacts at the cumulative (EIA) and in-combination (HRA) stage in our recent advice submitted during the Mona examination (please see our Deadline 6 [REP6-137] and Deadline 7 [REP7-146] responses to the Mona examination and Mona's Deadline 7 Representations in the examination library: ES Cumulative Assessments that include all the gap filled projects etc – see Section 5.9 of REP7-033 and SPA in-combination assessments that include all the gap filled projects etc – see Section 1.4.3 of REP7-020.	Volume 6: Appendix 22E Marine Ornithology Project Alone and Cumulative Impact Scenarios	179	Addressed in the accompanying clarification note: "*2025 03 28 - Llŷr - marine ornithology - clarification note 1 - cumulative and in-combination* "
180	Marine Ornithology - 1.7.2 Detailed comments	As the Llŷr project sits within the same relevant BDMPS species regions as the Mona project and the same SPAs assessed by Llŷr have also been screened in and assessed for in-combination assessment for the Mona Project, we consider that the Llŷr project could utilise the data from the Mona assessments to present and assess the required cumulative and in-combination impacts.	Volume 6: Appendix 22E Marine Ornithology Project Alone and Cumulative Impact Scenarios	180	Addressed in the accompanying clarification note: "*2025 03 28 - Llŷr - marine ornithology - clarification note 1 - cumulative and in-combination* "
181	Marine Ornithology - 1.7.2 Detailed comments	The only species assessed in the current application for cumulative and in-combination assessments are guillemot, puffin, and gannet as they are being taken forward to PVA. NRW (A) requests that cumulative and in-combination assessments are also included for Manx shearwater, great black-backed gull, lesser black-backed gull and razorbill for cumulative and SSSP SPA in-combination.	Volume 6: Appendix 22E Marine Ornithology Project Alone and Cumulative Impact Scenarios	181	Addressed in the accompanying clarification note: "*2025 03 28 - Llŷr - marine ornithology - clarification note 1 - cumulative and in-combination* "
182	Marine Ornithology - 1.7.2 Detailed comments	For ease of reference, the Mona cumulative totals can be found in sections 5.9 REP7-033 (linked above), and the in-combination totals for Welsh SPAs can be found in Section 1.4.3 of REP7-020 (linked above). NRW (A) advises using the tables found here, checking the Llŷr data used is correct and then presenting the totals. If it is found that there is some discrepancy in the Llŷr data, NRW (A) advise that the figures are corrected and the totals recalculated. The Llŷr project will need to apportion the impacts on puffin displacement and LBBG collision for the SSSP SPA. NRW (A) does not foresee a significant impact to any populations as a result of cumulative or in-combination effects, however, a thorough assessment is required before we can definitively confirm this. NRW (A) has been able to conclude no AEoSI for all features of SSSP SPA and Grassholm SPA for the Mona submission at HRA.	Volume 6: Appendix 22E Marine Ornithology Project Alone and Cumulative Impact Scenarios	182	Addressed in the accompanying clarification note: "*2025 03 28 - Llŷr - marine ornithology - clarification note 1 - cumulative and in-combination* "
183	Marine Ornithology - 1.7.2 Detailed comments	However, the Llŷr project should note that a conclusion of 'significant adverse effect cannot be ruled out' was made by NRW (A) for the Mona offshore wind farm cumulative assessment for GBBG collisions at EIA scale. We also note that Natural England reached the same conclusion regarding this issue for Rampion II offshore wind farm. Both of these wind farm projects are located within the same GBBG regional BDMPS as the Llŷr proposal.	Volume 6: Appendix 22E Marine Ornithology Project Alone and Cumulative Impact Scenarios	183	Addressed in the accompanying clarification note: "*2025 03 28 - Llŷr - marine ornithology - clarification note 1 - cumulative and in-combination* "
184	Marine Ornithology - 1.7.2 Detailed comments	However, despite not being able to agree with the conclusion reached at Mona, NRW (A) recognised the commitment made by the Mona Llŷr project to raise the turbine draught height to 30m above Mean Sea Level and we were therefore content that the Mona Llŷr project had provided proportionate mitigation for GBBG collisions for their project.	Volume 6: Appendix 22E Marine Ornithology Project Alone and Cumulative Impact Scenarios	184	Noted
185	Marine Ornithology - 1.7.2 Detailed comments	We note that currently the Llŷr project's assessment is based on a minimum clearance height of 22m above Mean Sea Level. Because of the matters raised above, we recommend that further consideration be given by the Llŷr project to increasing draught height to minimise contributions to cumulative GBBG collision. We advise further dialogue between the Llŷr project and NRW (A) with respect to potential mitigation measures, such as increase in draught height.	Volume 6: Appendix 22E Marine Ornithology Project Alone and Cumulative Impact Scenarios	185	The Llŷr project is content to engage with NRW on potential mitigation measures post consent. However, at this stage, as the GBBG collision estimates are minimal, the cost/benefit impact is considered minimal and has significant cost implications. We are open to dialogue as we go through the detailed design.
186	Marine Ornithology - 1.7.2 Detailed comments	NRW (A) agrees with the method for population modelling and the input parameters selected by the Llŷr project. NRW (A) further agrees with the use of the 2015 population count for Grassholm gannets, as this is the most contemporaneous colony count with the Llŷr site-specific survey data and hence both were undertaken before the Highly Pathogenic Avian Influenza (HPAI) virus outbreak. NRW (A) are satisfied that the PVA shows for the project alone, that populations of puffin and guillemot at SSSP SPA and guillemot at Castlemartin Range SSSI will have a continued steady growth rate increasing the population size when modelled at the worst case scenarios of the NRW (A) advised % displacement and % mortality. Therefore, NRW (A) agrees that the project alone shows no impact to site integrity for guillemot at SSSP SPA and puffin at SSSP SPA (at HRA scale), and no significant adverse effect on Castlemartin Range SSSI (at EIA scale).	Volume 6: Appendix 22F Marine Ornithology Population Modelling	186	Noted

187	Marine Ornithology - 1.7.2 Detailed comments	Cumulative and in combination PVA models will need to be reconsidered following presentation of more thorough cumulative and in-combination assessments. We note advice previously provided to the Llŷr project that PVAs should be run where predicted impacts exceed 1% of baseline mortality of the relevant populations. For best practice, NRW (A) requests that the log files of the input parameters generated by the PVA tool should be presented alongside the assessment.	Volume 6: Appendix 22F Marine Ornithology Population Modelling	187	Addressed in the accompanying clarification note: "*2025 03 28 - Llŷr - marine ornithology - clarification note 1 - cumulative and in-combination* "
188	Marine Mammals - 1.8.1 Main Issues	We consider that the Llŷr project is overly reliant on using the outline CEMP / Marine Mammal Mitigation Plan (MMMP) to avoid conclusions of significant impact for the project alone, cumulatively and in-combination both from an EIA and HRA perspective. In both the ES and RIAA the Llŷr project has maintained that any effects may be suitably mitigated through further design refinement and other embedded mitigation. However for a number of pathways (including Unexploded Ordnance (UXO) clearance, entanglement, vessel noise and other construction noise) the Llŷr project has not stated the mitigation measures that are being relied upon to conclude no adverse effect (at HRA scale) and no significant effect (at EIA scale). The current outline MMMP only provides an overview for mitigation of the effects of piling. As such, NRW (A) are unable to agree with the overall conclusions of the assessments until more information on the mitigation measures are provided.	Volume 3: Chapter 21 – Marine Mammals	188	The requirement for an agreed MMMP secured post consent and prior to any offshore activities as per a standard Marine Licence consent condition(s). To date all the UK MMMPs (of which the Llŷr project is aware) have focused on piling. Therefore, it was reasonable to adopt this same focus for Llŷr. However, contrary to the NRW(A) comment, in addition to piling (which includes addressing construction noise) both entanglement and potential disturbance from vessel activity are addressed in the register of (embedded) mitigation measures - Volume 6: Appendix 32A – Mitigation Register: UXO Clearance - Embedded Mitigation **ID E152** and **ID E230** Entanglement - Embedded Mitigation **ID E232** Vessel Noise (including construction) - Embedded Mitigation I**D E154**
189	Marine Mammals - 1.8.1 Main Issues	We note a number of inconsistencies with respect to the Llŷr project's CEA. For example: projects are scoped in for some receptors and not others when there are similar impact pathways to consider, and inconsistencies with the use and clarification of the "Tiering" system applied across receptor cumulative and in-combination assessments. This latter point is particularly relevant to the consideration and 'tiering' of Mona, Morgan and Morecambe offshore wind projects. We advise that the Llŷr project should complete a comprehensive review of the projects scoped into the CEA and in-combination assessments, and their respective Tiers, ensuring consistency of application across receptors. We refer the Llŷr project to pre-application correspondence in July 2023 and Jan 2024 for further detail.	Volume 3: Chapter 21 – Marine Mammals	189	These aspects are addressed in the specific concerns on CEA/in-combination for marine ornithology and Marine Mammals raised by the NRW (A) advice relevant to these receptor groups. The Llŷr project team have clarified all the relevant and appropriate issues raised and conclude that no further information is required to be provided, nor is any review necessary, as the relevant information has already been presented in the application.
190	Marine Mammals - 1.8.1 Main Issues	We disagree that a logarithmic spreading model would be appropriate for use in the context of determining the energy source level of a pile. The Llŷr project is requested to clarify their reasons for using a logarithmic spreading model, and the extent to which it was applied, and why the approach was chosen over widely accepted methods such as Von Pein et al. (2021). We consider that this could represent a material issue and that there is a risk that the source levels used to calculate the piling noise are inaccurate. Clarity is requested from the Llŷr project.	Volume 3: Chapter 21 – Marine Mammals	190	Data suitable for this type of modelling was not available. The only information available was a hammer energy of 800 kJ. Published data on noise levels recorded at various distances from the piling sites for different pile diameters, as published by Bellman and Rumes (references in report) were plotted and source level estimated using 15 log[R] along with 95% confidence intervals (Figure 21B-5). This was additionally verified using a second method of energy conversion model given by de Jong & Ainslie (ref in noise modelling report), which gave an estimated source level of 227 dB re 1 uPa at 1 m. Selecting a source level of 235 dB re 1 uPa at 1 m SPLpeak allows additional conservatism and incorporates any uncertainty from assumptions made during the back-propagation process. We have also checked the source levels calculated here against those presented for a 800 kJ hammer in the Erebus noise modelling report using a different modelling approach and found they are very similar (236.9 dB re 1 µPa @ 1 m SPLpeak at Erebus)
191	Marine Mammals - 1.8.1 Main Issues	We require clarification on whether the Llŷr project has used M-weightings from Southall et al. (2007) instead of the most recent weightings in Southall et al. (2019) during the assessment. If this is the case, the decision to use M-weightings from Southall et al. (2007) may have substantially impacted the results which will need re-analysis. Please see Paragraphs 267 and 274 below for further details.	Volume 3: Chapter 21 – Marine Mammals	191	The Underwater Noise Impact Study states that the Southall et al (2019) M-weightings were used in the analysis (para 94). Any reference in the Underwater Noise Impact Study to Southall et al (2007) either forms part of the discussion that leads up to the point that the 2019 data were used OR with reference to behavioural studies - which is only discussed in the 2007 report.
192	Marine Mammals - 1.8.1 Main Issues	The 143 dB SS SEL method recommended by NRW (A) for area-assessment in HRA (NRW 2023) has been used to clip the dose response curve from Graham et al. (2017) which as a result significantly underestimates the numbers affected. Effective Deterrent Ranges (EDRs) have also not been presented correctly in the context of the HRA assessment; the Llŷr project provided a table of EDRs, but these reflect the % of the Mammal Unit (MU) population impacted and not the % of the site(s) unavailable to harbour porpoise. Please see Paragraphs 216-222 and 250 / 275–277 below for further details.	Volume 3: Chapter 21 – Marine Mammals	192	This comparison was made for illustrative purposes only. Number of animals impacted using uncropped dose response curve are provided in table 21-32 and have been taken through for later assessment (i.e. iPCoD).
193	Marine Mammals - 1.8.1 Main Issues	It is unclear for piling noise whether: (1) the anticipated piling duration per day of 90 minutes to 180 minutes refers to each pile (out of an upper limit of six per day), or: (2) the 90 minutes to 180 minutes include all six piles. Noting that the Llŷr project has based their assessment on a maximum exposure of four hours, we would have expected that the assessment is based on the total time taken to install all piles required for a particular platform / all piles that can be installed in one day. Clarity is requested on this matter.	Volume 3: Chapter 21 – Marine Mammals	193	The Llŷr project are unsure of NRW(A)'s point on this and need clarification from NRW(A) on this comment. The text says "A static animal scenario was modelled over a range of time periods (single strike, 0.5 hrs, 1 hr, 2 hrs, 3 hrs, and 4 hrs)"
194	Marine Mammals - 1.8.1 Main Issues	We consider the impact from individually smaller disturbance events (e.g. vessel noise) is being overlooked and underestimated due to a lack of consideration of the potential effects of repeated disturbance events over a long period on the same population. The assessment conclusions appear to have been based on numbers disturbed from fixed points in time only.	Volume 3: Chapter 21 – Marine Mammals	194	As detailed within the ES and clarified above, any concerns about individual smaller vessel disturbance are appropriately addressed via the Vessel Management Plan as a post consent requirement (and to which Llŷr project team has committed to as a mitigation measure - as detailed in Volume 6: Appendix 32A – Mitigation Register). It is also important to consider the smaller scale and nature of the T&D project in comparison to the requirements of a commercial project (i.e. 7 to 10 turbines as opposed to >100). To the contrary assertion within the feedback, the construction period is relatively short and presented in Table 4-24 (page 51) in Volume 1: Chapter 3 – Project Description) and operational activities relatively minor (between 2 to 12 vessel visits per year to the WTG (section 4.9.1, paragraph 297) - this also needs to be put into context of the current vessel disturbance from existing fishing and commercial transport. To clarify the issue of individual smaller disturbance events have not been overlooked, it is the opinion of the technical consultants that the level of risk from this impact pathway is very low, and will not be noticeable against the baseline of non-wind farm vessel activity in the area. The Llŷr project team have provided sufficient information to understand the potential impact from vessel disturbance from project activities.
195	Marine Mammals - 1.8.1 Main Issues	The magnitude criteria for marine mammal receptors does not appear to include criteria relating to the number of animals impacted. It is unclear whether the temporal extent is based on the duration of the impact at its source, or the time taken for the population to recover from the effects of a given impact from the project.	Volume 3: Chapter 21 – Marine Mammals	195	The Llŷr project considers that the state of knowledge around most impact pathways for marine mammal interests, is too uncertain to be able to make any meaningful judgement in terms of numbers of animals impacted, certainly for the qualitative impact pathways. As density of animals at any project site will also vary over time, the Llŷr project gave consideration to the status of the species, and whether it occurs consistently or irregularly on-site, as more informative criteria rather than using an arbitrary number. (As per the response given for NRW para 200 comment)

196	Marine Mammals - 1.8.1 Main Issues	We disagree with the decision to scope out impact pathways for auditory injury, disturbance from UXO clearance, collision with vessels, barrier effects and entanglement in the CEA and in-combination assessment	Volume 3: Chapter 21 – Marine Mammals	196	These impact pathways were scoped out on the basis that the project alone assessment concluded that they were of negligible significance. This approach aligns with other Celtic Sea demonstrator projects i.e Erebus, also WhiteCross. There is no guide on how cumulative assessment would be undertaken for such impacts when they are all to be addressed by project level mitigation and are qualitative impacts anyway, or mitigated to an assumed zero in the case of instantaneous injury.
197	Marine Mammals - 1.8.1 Main Issues	The Interim Population Consequences of Disturbance (iPCoD) modelling has not been carried out for the bottlenose dolphin population to assess whether the predicted levels of disturbance would be sufficient to result in a population level effect.	Volume 3: Chapter 21 – Marine Mammals	197	iPCoD was used to model the cumulative impacts for bottlenose dolphin, and concluded that impacts were negligible and not significant under EIA Regulations - refer to Page 121, Chapter 21 - Marine Mammals. Table 21C-32 Summary of the worst case (February) number of animals at risk of disturbance using Dose-response curves (Graham et al. (2017) for all cetaceans and Whyte et al. (2020) for grey seal) compares the % if the population affected versus the management unit population based on a single disturbance event. For Bottlenose dolphin this is 0.32% which is negligible (as stated in paragraph 174 "*the use of 1% of a reference population is used in conservation assessment to infer significance (NRW 2022) and there has been used here to trigger the use of iPCoD* ") and as a consequence it is concluded that subsequent disturbance events will not lead to additional effect. In addition, it is unclear what further value would be derived in running a project-alone iPCoD, especially as no bottlenose dolphins were recorded during the 2 year digital aerial survey work.
198	Marine Mammals - 1.8.2 General Comments on the Marine Mammal Assessments	Please note the following with respect to the assessment of Marine Mammals:	Volume 3: Chapter 21 – Marine Mammals	198	Noted
199	Marine Mammals - 1.8.2 General Comments on the Marine Mammal Assessments	(i) We acknowledge the Llŷr project's efforts to adopt NRW's (2023) approach to assessing disturbance.	Volume 3: Chapter 21 – Marine Mammals	198	Noted
200	Marine Mammals - 1.8.2 General Comments on the Marine Mammal Assessments	(ii) We welcome the fact that the Llŷr project made it clear when / where the number of animals disturbed were estimated using a static source at any one time. We also fully agree that the 5 km EDR used to assess disturbance from geophysical surveys is very precautionary. We also agree that with regard to geophysical surveys: "It is therefore highly unlikely that any individual will be within these ranges for any extended period" and that therefore PTS risk is minimal.	Volume 3: Chapter 21 – Marine Mammals	198	Noted
201	Marine Mammals - 1.8.2 General Comments on the Marine Mammal Assessments	(iii) We agree with the Llŷr project's decision to assess the sensitivity of the Low Frequency (LF) hearing group (e.g. minke whales) (as per Southall et al. (2019) groupings), as high, due to their the LF hearing group's greater hearing sensitivity at lower frequencies.	Volume 3: Chapter 21 – Marine Mammals	198	Noted
202	Marine Mammals - 1.8.2 General Comments on the Marine Mammal Assessments	(iv) We agree with the Llŷr project's statement that the Level B threshold for continuous noise is very precautionary and likely assesses audibility rather than potential behavioural disturbance.	Volume 3: Chapter 21 – Marine Mammals	198	Noted
203	Marine Mammals - 1.8.2 General Comments on the Marine Mammal Assessments	(v) NRW (A) are content that a Vessel Management Plan (VMP) which incorporates one or more of the listed protocols would act to reduce the risk of collision and disturbance from vessels. For completeness, the Llŷr project may wish to consider additional options when selecting the most appropriate vessel handling protocol to apply, such as the local Pembrokeshire Marine Code, but any of the listed codes would likely be sufficient.	Volume 3: Chapter 21 – Marine Mammals	198	Noted - the provision of a VMP will be issued post-consent which will be compliant with relevant local marine code(s). As a VMP will be provided, this should close out all concerns raised by NRW A on this matter, i.e., address their comments under rows 192 and 198.
204	Marine Mammals - 1.8.2 General Comments on the Marine Mammal Assessments	(vi) NRW (A) agrees with the list of species and designated sites for marine mammal features that have been screened in.	Volume 3: Chapter 21 – Marine Mammals	198	Noted
205	Marine Mammals - 1.8.2 General Comments on the Marine Mammal Assessments	(Vii) NRW (A) agrees that the Llŷr project has followed the iterative assessment process for the Appropriate Assessment stage and acknowledges and welcomes the decision to also consider Bristol Channel Approaches SAC due to its proximity.	Volume 3: Chapter 21 – Marine Mammals	198	Noted - the provision of an MMMP to be secured by consent condition, and this will be compliant with the most recent version of any updated Joint Position Statement on UXO clearance.
206	Marine Mammals - 1.8.2 General Comments on the Marine Mammal Assessments	(viii) We advise that at the time the Llŷr application was submitted, NRW was a signatory to the 2022 Joint Interim Position Statement (PS) on UXO Clearance. This was the regime under which UXO clearance was regulated and therefore at the time of application submission, the hierarchical approach taken by the Llŷr project for UXO clearance was sufficient. However, on 21 January 2025 an updated Joint Position Statement was published which has been adopted by NRW and Welsh Government. The new PS supersedes the Joint Interim PS. The updated Joint PS is more stringent about what can and cannot be included in a Marine Licence to clear UXO, and specifically states that low-order clearance should be the default method. It states that a high-order clearance method should only be included as a contingency option in a Marine Licence application and that "it is not acceptable to expect a high order contingency for every confirmed UXO required to be cleared." If there are extraordinary circumstances which mean low noise clearance cannot be undertaken, Llŷr projects should engage with the appropriate licensing authority and statutory nature conservation bodies (SNCBs) at the earliest opportunity to discuss. Extraordinary circumstances include situations where high order clearance is the only viable option and it is clear that low noise methods cannot be attempted. Such circumstances might include those where the factors of the UXO, or of its location (such as depth, level of degradation or shell thickness), far exceed the expected or demonstrated capabilities of any known low noise clearance tools such that any attempt to use low noise tools would not be feasible. Finally, the updated Joint PS also states the information that needs to be provided when applying for a Marine Licence. Such information includes (but is not limited to): the total number of UXOs to be cleared; ideally the location and type of each UXO; the brand of clearance tool to be used, and; the operator which will conduct the clearance and a detailed methodology for deploying the chosen tool, demonstrating its suitability for the UXOs to be cleared. Please note that this list is not exhaustive, and that applications will be dealt with on a case-by-case basis. We advise that the Llŷr project will need to consider the updated PS and we expect that the requirements of the updated Position Statement can be covered via appropriate updates of the draft MMMP.	Volume 3: Chapter 21 – Marine Mammals	198	Separate Marine Licences will be applied for should UXO clearance be required, which by its very nature will take into account the existing policies and requirements that are relevant at the time. This will be included in an updated MMMP and should address any concerns NRW have about this aspect
207	Marine Mammals - 1.8.2 General Comments on the Marine Mammal Assessments	ix. Finally, we welcome the opportunity to engage with the Llŷr project on further developing the CEMP / MMMP.	Volume 3: Chapter 21 – Marine Mammals	198	Noted
208	Marine Mammals - 1.8.2 General Comments on the Marine Mammal Assessments	Notwithstanding the issues raised below with respect to the assessment, we consider that with further work (as detailed below) and the provision of additional information, for example with respect to mitigation, NRW (A)'s concerns could be resolved.	Volume 3: Chapter 21 – Marine Mammals	198	Noted

209	Marine Mammals - 1.8.3 Detailed Comments	NRW (A) advise amendment of the statement 'There are no SSSIs with marine mammal interests relevant to the proposed Project', as there are a number of SSSIs with marine mammal features: • Aberarth – Carreg Wylan; • Afon Teifi; • Afordir Abereiddi; • Castlemartin Range; • Dale and South Marloes Coast; • De Porth Sain Ffraidd / St Bride's Bay South; • Grassholm / Ynys Gwales; • Offshore Islets of Pembrokeshire / Ynysoedd Glannau Penfro; • Ramsey / Ynys Dewi; • Skokholm; Skomer Island and Middleholm; and • St David's Peninsula Coast.	Volume 3: Chapter 21 – Marine Mammals, Table 21 – 1, page 13	199	
210	Marine Mammals - 1.8.3 Detailed Comments	The magnitude criteria for marine mammal receptors includes considerations on conservation status / integrity of the baseline conditions; incidence; geographical extent; and temporal extent, but does not appear to include criteria related to the number of animals impacted by a given pathway or explain how the number of animals impacted will be considered when making conclusions with regard to the magnitude.	Volume 3: Chapter 21 – Marine Mammals, Table 21-6; Table 21-7	200	The Llŷr project considers that the state of knowledge around most impact pathways for marine mammal interests, is too uncertain to be able to make any meaningful judgement in terms of numbers of animals impacted, certainly for the qualitative impact pathways. As density of animals at any project site will also vary over time, the Llŷr project gave consideration to the status of the species, and whether it occurs consistently or irregularly on-site, as more informative criteria rather than using an arbitrary number.
211	Marine Mammals - 1.8.3 Detailed Comments	Furthermore, it is unclear whether: the temporal extent is based on the duration of the impact at its source; whether the duration is equivalent to a single event or all such events during the project; and / or whether it considers the time taken for the population to recover from the effects of a given impact from the project.	Volume 3: Chapter 21 – Marine Mammals, Table 21-6; Table 21-7		As per comment above (NRW Para 200), the Llŷr project considers that the state of knowledge around most impact pathways for marine mammal interests, is too uncertain to be able to make any meaningful judgement in terms of numbers of animals impacted, certainly for the qualitative impact pathways. As density of animals at any project site will also vary over time, the Llŷr project gave consideration to the status of the species, and whether it occurs consistently or irregularly on-site, as more informative criteria rather than using an arbitrary number.
212	Marine Mammals - 1.8.3 Detailed Comments	Finally, it is unclear whether sensitivity criteria are based on a single event of a given impact pathway or all such events during the project.	Volume 3: Chapter 21 – Marine Mammals, Table 21-6; Table 21-7		As per comment above (NRW Para 200), the Llŷr project considers that the state of knowledge around most impact pathways for marine mammal interests, is too uncertain to be able to make any meaningful judgement in terms of numbers of animals impacted, certainly for the qualitative impact pathways. As density of animals at any project site will also vary over time, the Llŷr project gave consideration to the status of the species, and whether it occurs consistently or irregularly on-site, as more informative criteria rather than using an arbitrary number.
213	Marine Mammals - 1.8.3 Detailed Comments	We advise that clarity is provided by the Llŷr project on these matters so as to ensure that the assessment is robust.	Volume 3: Chapter 21 – Marine Mammals, Table 21-6; Table 21-7		As per comment above (NRW Para 200), the Llŷr project considers that the state of knowledge around most impact pathways for marine mammal interests, is too uncertain to be able to make any meaningful judgement in terms of numbers of animals impacted, certainly for the qualitative impact pathways. As density of animals at any project site will also vary over time, the Llŷr project gave consideration to the status of the species, and whether it occurs consistently or irregularly on-site, as more informative criteria rather than using an arbitrary number.
214	Marine Mammals - 1.8.3 Detailed Comments	Regarding the use of single point densities for harbour porpoise, NRW (A) wish to clarify that data from Evans and Waggitt (2023) can be queried as a density surface in GIS. This was the intended manner of use in which this data source was suggested by NRW (A) and JNCC to the Llŷr project.	Volume 3: Chapter 21 – Marine Mammals, Section 21.5, Paragraph 46	201	Noted
215	Marine Mammals - 1.8.3 Detailed Comments	In line with our comments for Volume 6: Appendix 21A – Marine Mammal and Megafauna Baseline (see Paragraph 255 below) and with respect to the following: "*However, it is not appropriate to assume that the resultant density estimates will be consistent beyond the Llŷr marine megafauna survey area (unless there are other data to support this as the chosen density estimate)"*, we suggest this may be true of any Digital Aerial Survey (DAS) densities based on sightings data within a specific survey area, but does not fully justify the decision to adopt the SCANS IV density (0.841 n/km2) versus the uncorrected DAS average model-based density (1.06 m/km2). Although we note SCANS III and IV data was not originally intended for use as baseline densities, we accept their use in this case solely because these are absolute densities (as opposed to a relative density) and higher than the values from Evans and Waggitt (2023).	Volume 3: Chapter 21 – Marine Mammals, Section 21.5, Paragraphs 54 and 56	202	Noted
216	Marine Mammals - 1.8.3 Detailed Comments	While we acknowledge the Llŷr project's efforts to adopt NRW's (2023) approach to assessing disturbance, we recommend that the Llŷr project clarifies that the 143 dB single strike Sound Exposure Level (SEL)5 fixed threshold is primarily intended for area-based assessment in an HRA and is not our preferred option in an EIA to calculate numbers disturbed. For EIA purposes, we prioritise the use of Dose Response (D/R) curves where these exist (as explained in NRW, 2023).	Volume 3: Chapter 21 – Marine Mammals, Table 21-15	203	To clarify, the Llŷr ES has used Dose Response curves for the assessment and only presented the various other disturbance thresholds (including 143 dB SEL) for comparison.
217	Marine Mammals - 1.8.3 Detailed Comments	Please see Point viii in Section 1.8.2 General Comments on the Marine Mammal Assessments above with respect to the Joint Position Statement on UXO clearance.	Volume 3: Chapter 21 – Marine Mammals, Table 21-16	204	Separate Marine Licences will be applied for should UXO clearance be required, which by its very nature will take into account the existing policies and requirements that are relevant at the time. This will be included in an updated MMMP post consent and should address any concerns NRW have about this aspect
218	Marine Mammals - 1.8.3 Detailed Comments	The worst-case scenario for impact piling duration has been specified as 20 days in the project description (Volume 1: Chapter 4 – Description of the Proposed Project), however, this is not consistent with the impact assessment, where the worst-case scenario for piling duration is stated as 10 days. We advise this is corrected, and that documentation is cross-referenced across the Application and discrepancies amended.	Volume 3: Chapter 21 – Marine Mammals, Table 21-16	205	It is correct that the project envelope identifies the minimum number of days piling will be 20 and that the marine mammal disturbance assessment for impact piling in both the Environmental Statement (ES) and the RIAA has used for the piling duration a maximum 10 days as the worst-case scenario. The underwater modelling was carried out relatively early in the assessment process and the project envelope was updated after the modelling had been carried out. This was missed by the internal review process. However, regarding the nature, magnitude and extent of extending the maximum number of days piling to 20 - 45, the iPCoD model output based on 10 days of piling activity identifies the number of Harbour porpoise impacted population as being less than 3 animals (99.99 % of un-impacted population after 12 years) and 0 animals (100% of un-impacted population after 12 years) for Grey Seal - source Llŷr 1 Floating Offshore Wind Farm, Environmental Statement, Volume 3 : Chapter 21 – Marine Mammals - "Table 21-36 Harbour porpoise iPCOD modelling results" and "Table 21-38 Grey seal iPCOD modelling results". It would be a reasonable to state that if the number of days piling were times 4 to 40 it would result in no more than 12 Harbour porpoise and even fewer Grey seals being impacted, which is less than 1% of the total population of both species, which is negligible significance.
219	Marine Mammals - 1.8.3 Detailed Comments	Please refer to Paragraphs 228 and 247 and 285 - 290 below regarding repeat disturbance events.	Volume 3: Chapter 21 – Marine Mammals, Section 21.9, Paragraph 115:	206	As per response in NRW paras 285 to 290 below.

220	Marine Mammals - 1.8.3 Detailed Comments	Conclusions on the magnitude of the impact from auditory injury Permanent Threshold Shift (PTS) appear to have been made (at least in part) based on the percentage of the reference population predicted to be affected. However, magnitude criteria for marine mammal receptors does not appear to include information / definitions regarding the number of animals impacted. Whilst we agree with the conclusion of negligible for this impact pathway, the Llŷr project needs to explicitly explain how the number of animals impacted as a proportion of the reference population was used to arrive at the conclusions of magnitude.	Volume 3: Chapter 21 – Marine Mammals, Section 21.9, Paragraph 126	207	Both number impacted and % of MU are provided for each species for high order (table 21-22) and low order (21-23) detonation.
221	Marine Mammals - 1.8.3 Detailed Comments	Given the information provided in Volume 1: Chapter 4 – Description of the Proposed Project, it is unclear whether for piling noise: (1) the anticipated piling duration per day of 90 to 180 minutes refers to each pile (out of an upper limit of six per day), or (2) the 90 minutes to 180 minutes includes all six piles. Noting that the Llŷr project has based their assessment on a maximum exposure of four hours, we would have expected that the assessment is based on the total time taken to install all piles required for that platform / all piles that can be installed in one day. NRW (A) request the Llŷr project's clarification on this matter.	Volume 3: Chapter 21 – Marine Mammals, Section 21.9, Paragraph 142	208	The Llŷr project are unsure of NRW(A)'s point on this and need clarification from NRW(A) on this comment. The text says "*A static animal scenario was modelled over a range of time periods (single strike, 0.5 hrs, 1 hr, 2 hrs, 3 hrs, and 4 hrs*)"
222	Marine Mammals - 1.8.3 Detailed Comments	We further note that in Volume 6: Appendix 21B – Underwater Noise Impact Study 21.7.2. Stationary receptor scenario: Physiological and behavioural impacts, Paragraph 162, the Llŷr project described an approach taken where: "The range of time exposures considered take into account the various periods over which an animal may be exposed to the impactful noise. The shorter exposure durations are appropriate for animals transiting rapidly through the Offshore Development Area while the longer periods are deemed more appropriate for slower moving animals and for those species which are habitat-constrained." NRW (A) request confirmation from the Llŷr project that it is made clear where each approach was used in the assessment, and that the Llŷr project clarifies the cut-offs for "rapid transit" and "slower moving animals". Please also refer to Paragraph 273 below.	Volume 3: Chapter 21 – Marine Mammals, Section 21.9, Paragraph 142	209	The swim speeds used in assessment are stated in table 21-28 and 21B-21. Only one swim speed was used for modelling for each hearing group.
223	Marine Mammals - 1.8.3 Detailed Comments	It is unclear why sensitivity of PTS-onset from piling has been considered to be medium for minke whale (LF hearing group), whereas for PTS-onset from UXO clearance activities, sensitivity for the same hearing group was assigned as high, due to the LF hearing group's greater hearing sensitivity at lower frequencies. Given the predominantly low frequency noise from piling, further justification should be provided for assigning a different sensitivity for that activity. Alternatively, the PTS-onset sensitivity rating of medium from piling should also be raised to high for the LF hearing group.	Volume 3: Chapter 21 – Marine Mammals, Section 21.9, Paragraph 154	210	Appendix 21B, Figures 21B-6 (piling) and 21B-11 (UXO) show the third octave band frequencies for each source. Energy in lower frequencies is higher for UXO than for piling; therefore, LF mammals were given a higher sensitivity for UXO than for piling.
224	Marine Mammals - 1.8.3 Detailed Comments	As per NRW's Position on assessing behavioural disturbance of Harbour Porpoise from underwater noise (NRW, 2023) the 143 dB threshold is strictly an area-based assessment technique and should not be used to assess number of animals disturbed for EIA purposes. Therefore, NRW (A) advise that determination of the numbers disturbed should be based on a dose response assessment using an appropriate dose response curve.	Volume 3: Chapter 21 – Marine Mammals, Section 21.9, Paragraph 160	211	This comparison was made for illustrative purposes only. Number of animals impacted using dose response curve are provided in table 21-32 and have been taken through for later assessment (i.e. iPCoD).
225	Marine Mammals - 1.8.3 Detailed Comments	For bottlenose dolphin, the Llŷr project has clipped the dose response at the 25 m depth contour. Given that this assessment most likely considers the offshore ecotype population of bottlenose dolphin, as opposed to the Irish Sea (inshore ecotype) MU, we disagree with this method as well as the statement that "bottlenose dolphins are considered a coastal species" given that the statement in Evans and Waggitt (2023) was made with reference to inshore ecotype (the Irish Sea MU population).	Volume 3: Chapter 21 – Marine Mammals, Section 21.9, Paragraph 161	212	The % of reference population predicted to be disturbed using dose response curve is also presented in Table 21-34, which shows both clipped and unclipped. Checking this information against Table 21C-32 in Appendix 21C Marine Mammal Underwater Noise Assessment also shows that it is the unclipped values used in assessment, so the referencing to clipping in the header of Table21-32 in the main chapter should simply be deleted. It is the unclipped dose response curve which results in 0.32% of the population being disturbed.
226	Marine Mammals - 1.8.3 Detailed Comments	The Llŷr project states that "as bottlenose tend to be found within shallower waters (20-25 m depth) therefore the dose-response area has been clipped to the 25 m depth contour". Through examinations of densities in NE Scotland (Moray Firth SAC and southwards) where density and sightings have been linked to a 20 m depth, NRW (A) explored this notion against existing bottlenose dolphin monitoring data in Wales and from the Marine Mammal Atlas Project and can confirm the lack of a clear division across this contour. Thus, we do not recommend that water depth alone is used to predict density distributions since further factors may also influence density distributions (Waggitt, pers comm.).	Volume 3: Chapter 21 – Marine Mammals, Section 21.9, Paragraph 161	213	(As per NRW para 212 response) The % of reference population predicted to be disturbed using dose response curve is also presented in table 21-34, which shows both clipped and unclipped. Using an unclipped dose response curve results in 0.32% of the population being disturbed.
227	Marine Mammals - 1.8.3 Detailed Comments	While drawing attention to prior publicly available discussions on this issue from previous offshore windfarm applications for Awel-y-Môr and Mona, we point out that clipping the dose response curve and hence the impact to the 25m contour leads to a smaller impact area. Given there is no strong evidence for doing this in Welsh waters, and that clipping the D/R to 25m introduces a significant change to the standard application of this method, we consider that this proposal should have been discussed during the pre-application phase. The dose response assessment for bottlenose dolphin should therefore be updated.	Volume 3: Chapter 21 – Marine Mammals, Section 21.9, Paragraph 161	214	(As per NRW(A) para 212 response) The % of reference population predicted to be disturbed using dose response curve is also presented in table 21-34, which shows both clipped and unclipped. Using an unclipped dose response curve results in 0.32% of the population being disturbed.
228	Marine Mammals - 1.8.3 Detailed Comments	Whilst we agree with the Llŷr project that dose response (D/R) curves include noise contours that relate to the 120-125 dB re 1µPa2s are likely close to background, ambient noise level, when applying D/R curves with received levels as dose it is considered a standard approach to take the background noise levels at the site into consideration when deciding on the lowest isopleth / contour to be included in the analysis (see Sinclair et al. 2023). Therefore, if the Llŷr project has access to background noise levels for the project area, any 5 dB isopleths/contours that overlap with or are lower than background noise levels can be excluded. We note that at such isopleths, the probability of a response within that isopleth is very low.	Volume 3: Chapter 21 – Marine Mammals, Section 21.9, Paragraph 162	215	Background noise data were not available for this assessment.
229	Marine Mammals - 1.8.3 Detailed Comments	The 143 dB single strike SEL fixed noise threshold (which in our position statement we advise should be used for area assessment), has been used to clip the D/R curve from Graham et al. (2017) with no justification. NRW (A) strongly advise against this approach – the reasons for which are outlined below.	Volume 3: Chapter 21 – Marine Mammals, Section 21.9, Paragraph 167	216	This comparison was made for illustrative purposes only. Number of animals impacted using dose response curve are provided in table 21-32 and have been taken through for later assessment (i.e. iPCoD).
230	Marine Mammals - 1.8.3 Detailed Comments	Fixed noise thresholds and D/R curves are two different methods which can be used to estimate numbers of animals disturbed by underwater noise.	Volume 3: Chapter 21 – Marine Mammals, Section 21.9, Paragraph 167	217	(As per NRW(A) para 216 response) This comparison was made for illustrative purposes only. Number of animals impacted using dose response curve are provided in table 21-32 and have been taken through for later assessment (i.e. iPCoD).
231	Marine Mammals - 1.8.3 Detailed Comments	Fixed noise thresholds are sound level-based thresholds, where it is assumed that all animals that receive sound above a certain level are disturbed – i.e. that above a certain noise level there is 100% disturbance. While this is not a very realistic assumption to make, there is a balance between the animals that do not react within the calculated impact area and those that are affected outside the range.	Volume 3: Chapter 21 – Marine Mammals, Section 21.9, Paragraph 167	218	(As per NRW(A) para 216 response) This comparison was made for illustrative purposes only. Number of animals impacted using dose response curve are provided in table 21-32 and have been taken through for later assessment (i.e. iPCoD).

232	Marine Mammals - 1.8.3 Detailed Comments	D/R curves build on the fixed noise threshold approach by assuming (more realistically and more in line with observed behaviour in the wild) that not all animals in an impact zone will respond to disturbance, and that the response will gradually decrease with increasing distance (and therefore decreasing sound levels) from the noise source. Therefore, the probability of a response, and the proportion of animals experiencing behavioural disturbance, will depend on the "dose" (i.e. the amount of noise) received. D/R curves allow for more realistic assumptions about how the numbers of harbour porpoise that respond vary with dose; there is good evidence that behavioural responses diminish with decreasing received sound level. For example, the harbour porpoise D/R curve for pile driving for Graham et al. (2017) predicts >90% response at received levels of 160 dB re 1 µPa2s SELss; ~70% response at 150 dB re 1 µPa2s SELss; ~50% response at 145 dB re 1 µPa2s SELss; ~40% response at 140 dB re 1 µPa2s SELss; and ~10% response at 130 dB re 1 µPa2s SELss.	Volume 3: Chapter 21 – Marine Mammals, Section 21.9, Paragraph 167	219	(As per NRW(A) para 216 response) This comparison was made for illustrative purposes only. Number of animals impacted using dose response curve are provided in table 21-32 and have been taken through for later assessment (i.e. iPCoD).
233	Marine Mammals - 1.8.3 Detailed Comments	D/R curves are intended to be applied to impact assessments by modelling multiple sound contours for one sound source, usually presented at 5 dB intervals. The total number of animals disturbed can then be estimated by multiplying: (1) the probability of a behavioural response for each 5 dB contour by: (2) the area of that contour by: (3) the baseline density. The number of animals disturbed for each contour can then be summed together to obtain the total number of animals disturbed.	Volume 3: Chapter 21 – Marine Mammals, Section 21.9, Paragraph 167	220	(As per NRW(A) para 216 response) This comparison was made for illustrative purposes only. Number of animals impacted using dose response curve are provided in table 21-32 and have been taken through for later assessment (i.e. iPCoD).
234	Marine Mammals - 1.8.3 Detailed Comments	While the 143 dB fixed noise threshold can be used to estimate the numbers disturbed from piling, the Llŷr project has used this fixed threshold to crop the dose response from Graham et al. (2017) at a sound level at which ~40% of animals still show a response (and ~60% do not). In doing so, the numbers reported are missing all the animals that do respond at distances beyond the threshold. Furthermore, the fixed noise threshold is not being used in the standard accepted way of assuming 100% disturbance above that noise threshold. Instead, the predicted response from the D/R curve has been used incorrectly.	Volume 3: Chapter 21 – Marine Mammals, Section 21.9, Paragraph 167	221	(As per NRW(A) para 216 response) This comparison was made for illustrative purposes only. Number of animals impacted using dose response curve are provided in table 21-32 and have been taken through for later assessment (i.e. iPCoD).
235	Marine Mammals - 1.8.3 Detailed Comments	This is therefore an incorrect use of both techniques, which as a result, significantly underestimates the numbers affected such that if the results of this exercise were used to inform any conclusions, we cannot agree with them for the project alone or in the CEA / in-combination assessment. NRW (A) strongly advise that the conclusions are updated to only consider the full D/R results.	Volume 3: Chapter 21 – Marine Mammals, Section 21.9, Paragraph 167	222	(As per NRW(A) para 216 response) This comparison was made for illustrative purposes only. Number of animals impacted using dose response curve are provided in table 21-32 and have been taken through for later assessment (i.e. iPCoD).
236	Marine Mammals - 1.8.3 Detailed Comments	Bottlenose dolphin area based on density response curve overlap with the 25 m contour: The Llŷr project appears to have presented the numbers of animals at risk of disturbance using a D/R curve clipped to exclude dB bins below 140 dB re 1 mPa2.s for cetaceans and grey seal, with bottlenose densities based on dose response overlap with the 25 m contour.	Volume 3: Chapter 21 – Marine Mammals, Table 21-33	223	The % of reference population predicted to be disturbed using dose response curve is also presented in table 21-34, which shows both clipped and unclipped. Using an unclipped dose response curve results in 0.32% of the population being disturbed.
237	Marine Mammals - 1.8.3 Detailed Comments	As per Paragraphs 216–222 above, we disagree with this approach and if the results of this exercise were used to inform any conclusions (including numbers used for iPCoD modelling), these will need to be updated.	Volume 3: Chapter 21 – Marine Mammals, Table 21-33	224	(As per NRW(A) para 216 response) This comparison was made for illustrative purposes only. Number of animals impacted using dose response curve are provided in table 21-32 and have been taken through for later assessment (i.e. iPCoD). Therefore there is no requirement for updating.
238	Marine Mammals - 1.8.3 Detailed Comments	iPCoD modelling has not been carried out for the bottlenose dolphin population to assess whether the predicted levels of disturbance would be sufficient to result in a population level effect.	Volume 3: Chapter 21 – Marine Mammals, Section 21.9, Paragraphs 173 and 174, Pages 74 and 79	225	iPCoD was used to model the cumulative impacts for bottlenose dolphin, and concluded that impacts were negligible and not significant under EIA Regulations - refer to Page 121, Chapter 21 - Marine Mammals. It is unclear what further value would be derived in running a project-alone iPCoD, especially as no bottlenose dolphins were recorded during the 2 year digital aerial survey work.
239	Marine Mammals - 1.8.3 Detailed Comments	We disagree with the Llŷr project's approach of using a disturbance threshold of 1% of the reference population as a trigger for requiring iPCoD modelling for a given population. While NRW (A) have previously advised a 1% threshold for use with iPCoD modelling, this is strictly to review the modelling outputs and determine the level of change equivalent to an adverse or significant effect within the context of other methods, which also informs the decision. In this case, the impacted population (piling) is compared against unimpacted population (no piling), and a decline in the impacted population of 1% or more per year (over a 5 or 6 year period) is considered significant/adverse. NRW (A) advise that the Llŷr project should either submit significant justification for this approach, or carry out iPCoD modelling for bottlenose dolphin, using the outputs to inform the magnitude of the impact.	Volume 3: Chapter 21 – Marine Mammals, Section 21.9, Paragraphs 173 and 174, Pages 74 and 79	226	iPCoD was used to model the cumulative impacts for bottlenose dolphin, and concluded that impacts were negligible and not significant under EIA Regulations - refer to Page 121, Chapter 21 - Marine Mammals. It is unclear what further value would be derived in running a project-alone iPCoD, especially as no bottlenose dolphins were recorded during the 2 year digital aerial survey work.
240	Marine Mammals - 1.8.3 Detailed Comments	Furthermore, the Llŷr project appears to have based their conclusions on the magnitude of disturbance from piling without considering the outputs from iPCoD modelling.	Volume 3: Chapter 21 – Marine Mammals, Section 21.9, Paragraphs 173 and 174, Pages 74 and 79	227	iPCoD modelling was performed for the species for which impacts were predicted to be greatest (with the exception of common dolphin for which iPCoD is not applicable). The results showed negligible impact for harbour porpoise and grey seal, so considering % of MU impacted was even less for minke whale and bottlenose dolphin, results are expected to also be negligible.
241	Marine Mammals - 1.8.3 Detailed Comments	We consider the total impact from individually smaller disturbance events (e.g. vessel noise or other construction activities) is being overlooked and underestimated due to a lack of consideration of the potential effects of repeated disturbance events over a long period on the same population. The assessment conclusions appear to have been based on numbers disturbed based on single fixed points in time only. This issue is examined in further detail in Section 1.8.4 Other Comments, Paragraphs 285–290 below.	Volume 3: Chapter 21 – Marine Mammals, Section 21.9	228	As per response in NRW paras 285 to 290 below.

242	Marine Mammals - 1.8.3 Detailed Comments	No details or overarching approaches have been provided with respect to the mitigation methods to avoid entanglement other than stating (in the ES) that “the proposed Project has committed to regular monitoring to identify any snagged fishing gear or other marine litter, which can then be removed”. While reference is made to in-service inspection, maintenance, and monitoring of the Wind Turbine Generator’s (WTGs) in Volume 1: Chapter 4, Section 4.9 Operation and Maintenance of Offshore Infrastructure, there are no specific references to monitoring entanglement with mooring lines.	Volume 3: Chapter 21 – Marine Mammals, Section 21.9; Paragraph 275 Section 21.10, pages 97-98; and Section 4.4.5; page 55	229	The key aspect of entanglement, as identified by NRW, is secondary entanglement (mainly as a result of derelict fishing gear). As stated in the Environment Statement, the Embedded Mitigation identified in **ID E232** stated - "*Mooring lines and floating inter-array cables will be inspected during the operation and maintenance phase using a risk-based adaptive management approach. Mooring line and cable inspections are expected to occur at a higher frequency initially and then reduce in frequency over a number of years, with changes to inspection periods based on evidence of risk garnered from the inspections* ." As the floating wind technology has not been selected, the number of mooring lines, type of mooring line (tension or catenary) or number and spacing of floating platforms are still to be defined; all of which has an influence on the frequency and methodology employed for monitoring. In addition, as identified by NRW(A), there are currently no fixed recommendations for entanglement monitoring specific to floating wind farms (and thus the reason for the need of scaled test and demonstration projects prior to the roll out of commercial scale floating wind farms).The Llŷr project is committed to engaging with NRW(A) to discuss further the requirements for entanglement monitoring post consent (once the selection and detailed design of the floating technology is completed), and agreeing in writing the content and approach to the monitoring prior to the commencement of any offshore works. In the absence of any specific guidance from the SNCB's for entanglement monitoring, the project monitoring arrangements will include as a minimum to report any entanglement or mortality events to NRW and the detail of the monitoring methods (which may be via load cells attached to mooring lines or via ROV surveys across the offshore array) will be agreed with NRW, in consultation with the SNCB's. Llŷr Floating Wind is content to have the requirement for written consultation and agreement of the MMMP prior to the commencement of offshore works as a post consent condition.
243	Marine Mammals - 1.8.3 Detailed Comments	Until further details are provided (e.g. how these checks are expected to be carried out, how regularly, what will take place if an entanglement is noticed), NRW (A) cannot agree with the Llŷr project’s assessment conclusions for the project alone or the CEA, as no methods have been presented for us to determine their appropriateness / efficacy.	Volume 3: Chapter 21 – Marine Mammals, Section 21.9; Paragraph 275 Section 21.10, pages 97-98; and Section 4.4.5; page 55	230	As per NRW(A) para 229 response, entanglement monitoring will utilise a risk based adaptive management approach. The frequency and appropriateness of the monitoring will be determined after the detailed design of the floating platform and mooring arrangements have been completed. This is sufficient for NRW(A) to make a determination (as was the case for other previous applications in Wales and elsewhere across the UK). The Llŷr project team is unaware of any other examples where such information was provided in advance of knowing the final project design (principally, the number of turbines and number of mooring cables).
244	Marine Mammals - 1.8.3 Detailed Comments	NRW (A) does not agree with the conclusions of the CEA (and in-combination) as we disagree with the decision to scope out impact pathways for auditory injury, disturbance from UXO clearance, collision with vessels, barrier effects and entanglement in the CEA (and in-combination).	Volume 3: Chapter 21 – Marine Mammals, Section 21.10, pages 97-98; Section 21.12.2 and Table 21-56	231	Impact pathways assessed as negligible significance in the project-alone assessment have been scoped out from CEA/in-combination assessment. These are the same impact pathways also scoped out of Erebus for marine mammals.
245	Marine Mammals - 1.8.3 Detailed Comments	Given the indicative nature of the oCEMP (and MMMP) and in the absence of specific measures for a number of impact pathways, we consider that the Llŷr project is overly reliant on the oCEMP to avoid conclusions of significant impact for the project alone, cumulatively and in-combination. In both the ES and RIAA, the Llŷr project has maintained that any effects may be suitably mitigated through further design refinement and other embedded mitigation, however, the precise mitigation measures that are being relied upon to conclude no adverse or significant effect have not been stated in the MMMP for a number of pathways. These pathways include cumulative PTS from piling noise, UXO clearance, entanglement, and other construction noise. The current outline MMMP only provides an overview for mitigation of the effects of piling to reduce the risk of instantaneous PTS onset.	Volume 3: Chapter 21 – Marine Mammals, Section 21.10, pages 97-98; Section 21.12.2 and Table 21-56	232	All mitigation measures to be adopted for all impact pathways listed will either follow the SNCB guidance and/or industry good practice that is current at the point (post-consent) that these measures are to be agreed, which is consistent with other Marine Licence consent decisions within Wales and the wider UK. The Llŷr project ES has provided sufficient information within a design envelope to allow a conclusion to be made, otherwise previous consent decisions for similar offshore wind developments would be under question. The NRW(A) assessment may be assisted by reviewing Volume 6: Appendix 32A – Mitigation Register, which also addresses piling noise, UXO clearance, entanglement, and other construction noise. We note NRW(A) advice on the new / upcoming underwater noise policies from the JNCC, Natural England, and CEFAS joint position on the use of noise abatement systems as well as the decision report from Welsh Government published on 5th March 2025 indicating the intent to develop a policy position on managing Marine Noise in-line with the similar policy position in England; including the requirement for Applicants to demonstrate that they have employed ‘best endeavours’ to deliver noise reductions through the use of primary and/or secondary noise reduction methods. The Llŷr project is aware that quieter piling methods and noise abatement will be expected moving forward and we look forward to continuing our dialogue with NRW(A) post consent to ensure that their advice (based on this new guidance) can be incorporated into the development in due course, based on the Consenting Authority’s response.
246	Marine Mammals - 1.8.3 Detailed Comments	Therefore, we are unable to agree with the overall conclusions of the assessment for the project alone or the CEA until more information on the mitigation measures for all pathways are provided. These include provision of further details on UXO mitigation, a commitment to mitigate both instantaneous and cumulative PTS, and further details on the monitoring and mitigation plan for entanglement.	Volume 3: Chapter 21 – Marine Mammals, Section 21.10, pages 97-98; Section 21.12.2 and Table 21-56	233	All mitigation measures to be adopted for all impact pathways listed will either follow the SNCB guidance and/or industry good practice that is current at the point (post-consent) that these measures are to be agreed, which is consistent with other Marine Licence consent decisions within Wales and the wider UK. The Llŷr project ES has provided sufficient information within a design envelope to allow a conclusion to be made, otherwise previous consent decisions for similar offshore wind developments would be under question. The NRW(A) assessment may be assisted by reviewing Volume 6: Appendix 32A – Mitigation Register, which also addresses piling noise, UXO clearance, entanglement, and other construction noise.
247	Marine Mammals - 1.8.3 Detailed Comments	NRW (A) are content that a VMP which incorporates one or more of the listed protocols would act to reduce the risk of collision and disturbance from vessels. For completeness, the Llŷr project may wish to consider additional options when selecting the most appropriate vessel handling protocol to apply, such as the local Pembrokeshire Marine Code, but any of the listed codes would likely be sufficient.	Volume 3: Chapter 21 – Marine Mammals, Section 21.10, pages 97-98; Section 21.12.2 and Table 21-56	234	A finalised version of the VMP will be issued post-consent which will be compliant with relevant local marine code(s) and will consider the Pembrokeshire Marine Code. Ref rows 198 and 207.

248	Marine Mammals - 1.8.3 Detailed Comments	Therefore, we further advise a stronger commitment should be made to the mitigation options outlined above, including the option of deploying noise abatement technology if required and please refer to our comments in Paragraph 229 above regarding monitoring for entanglement with mooring lines. Furthermore, NRW (A) advise that the MMMP and VMP are conditioned as part of the Marine Licence and request to be consulted in writing on their suitability ahead of commencement of works.	Volume 3: Chapter 21 – Marine Mammals, Section 21.10, pages 97-98; Section 21.12.2 and Table 21-56	235	Volume 6: Appendix 32A – Mitigation Register and Volume 6: Appendix 4A – Outline Construction Environmental Management Plan (OCEMP), addresses piling noise, UXO clearance, entanglement, and other construction noise. The OCEMP commits to the provision of a Noise Monitoring Plan, which will be consulted upon and agreed with the Statutory Advisors. Mitigation measures include the use of MMO's, PAM Buoys and soft-start procedures. The OCEMP also includes the statement on page 56, para 269 "*the use of Acoustic Deterrent Devices (ADDs) and at-source noise abatements methods (such as bubble curtains) were considered but given the very small instantaneous PTS-onset impact ranges that require mitigation (max 280 m), these were deemed to be unnecessary* ." As stated within the Mitigation register, the MMMP will be submitted as part of licence application for UXO works, should it be needed (as stated within the mitigation plan, the preference will be to avoid UXO through design) and once further information is available. It is anticipated that low-order detonation will be used; however, should high-order be required, the final MMMP will include options for mitigation and noise abatement. The MMMP will adhere to JNCC (2010b) guidelines for minimising the risk of disturbance and injury to marine mammals whilst using explosives, and the BEIS Marine Environment: unexploded ordnance clearance joint interim position statement (2021) We note NRW(A) advice on the new / upcoming underwater noise policies from the JNCC, Natural England, and CEFAS joint position on the use of noise abatement systems as well as the decision report from Welsh Government published on 5th March 2025 indicating the intent to develop a policy position on managing Marine Noise in-line with the similar policy position in England; including the requirement for Applicants to demonstrate that they have employed 'best endeavours' to deliver noise reductions through the use of primary and/or secondary noise reduction methods. The Llŷr project is aware that quieter piling methods and noise abatement will be expected moving forward and we look forward to continuing our dialogue with NRW(A) post consent to ensure that their advice (based on this new guidance) can be incorporated into the development in due course, based on the Consenting Authority's response.
249	Marine Mammals - 1.8.3 Detailed Comments	We suggest that the development of a VMP, should be included as a mitigation method in Table 21-53 under the "Additional Mitigation" column.	Volume 3: Chapter 21 – Marine Mammals, Table 21-53, page 99	236	Noted
250	Marine Mammals - 1.8.3 Detailed Comments	We note a number of inconsistencies with respect to the Llŷr project's CEA – please see our comments in Paragraph 189 above. Furthermore, we disagree with the decision to list Mona, Morgan, and Morecambe OWF's as Tier 4 projects. We advise that their status and all related information in the CEA cumulative and in-combination assessments are updated. At the time of submission of the Llŷr application the examination process for all three projects had commenced (Mona: 22nd March 2024; Morgan: 17th May 2024; Morecambe: 31st May 2024). The section 42 / PEIR consultations for these projects commenced in April / May 2023. Therefore, we do not agree with the statement that: "timing of construction is particularly uncertain. The in-combination assessment is therefore unable to predict the potential impact of the project with any certainty" and advise that the tiering criteria for all three projects should be updated and the CEA and in-combination assessments revised.	Volume 3: Chapter 21 – Marine Mammals, Table 21-58; and Volume 6: Appendix 8D – Habitats Regulations Assessment Screening, Table 8D-25	237	It is appropriate to undertake a receptor-by-receptor consideration of cumulative and in-combination impacts. Other relevant developments to consider will not all be the same across receptor groups, and for the receptor's marine ornithology and marine mammals' receptors the specific developments to consider for cumulative / in-combination also vary within the receptor group, i.e., it is a species-specific consideration. Specifically in relation to Mona, Morgan and Morecambe OWF's being classified as Tier 4; as stated in the **Volume 3 : Chapter 21 – Marine Mammals, paragraph 339** the key aspect of Tier 4 is that "*those projects in Tier 4 the timing of construction is particularly uncertain* ". Outside of the construction timing uncertainty, there is limited, to no, difference between a Tier 3 project (*a project where an application is submitted but not yet determined*) and Tier 4 project (*a project expected to be submitted for application but still at the development stage*), as identified in **Table 21-57 Tier allocation process used for screening in projects**. For clarification, both Tier 3 and Tier 4 projects were included in the cumulative assessment and in the iPCoD for relevant species, (as detailed in **paragraph 344**) as per **Table 21-62 for cumulative number of porpoise** (and subsequent tables for the other species). The detail provided for the Mona, Morgan and Morecambe OWF projects is provided in **Table 21-60 Summary of offshore wind projects assessed in CEA**, together with key parameters. None of these parameters will have changed (this includes the years of installation) should the any of these OWF projects be re-classified from Tier 4 to Tier 3. The only values that would change are the cumulative values presented in Tables 21-63, 66, 68, 72, 74, as these present the sum of impact for projects in Tiers 1-3 (i.e. excluding Tier 4, so changing classification from Tier 4 to Tier 3 for some projects would alter the sums slightly). However, the preceding **Tables 21-62, 65, 67, 71 and 73** show the cumulative impact of all Tier 1-4 projects, which, as the worst case scenario, is taken forward for assessment. These aspects are addressed in the specific concerns on CEA/in-combination for marine ornithology and Marine Mammals raised by the NRW (A) advice relevant to these receptor groups. It is unnecessary to 'update' the CEA cumulative and in-combination assessment, however the Llŷr project team is content should NRW(A) want to reclassify Mona, Morgan and Morecambe OWF's as Tier 3 instead of Tier 4, as it makes no difference to the content or outcome of the assessment. The Llŷr project team have clarified all the relevant and appropriate issues raised and conclude that no further information is required to be provided, nor is any review necessary, as the relevant information has already been presented in the application.
251	Marine Mammals - 1.8.3 Detailed Comments	It is not clear why the approach and assumptions explained here (with respect to the use of project alone density estimates cf SCANS-IV estimates) has been chosen. We suggest that clarification is provided.	Volume 3: Chapter 21 – Marine Mammals, Section 21.12.3, Paragraph 335	238	This was done to use the most relevant site-specific data for locations near Llyr for which we had survey data.
252	Marine Mammals - 1.8.3 Detailed Comments	While NRW (A) agrees with the approach / assumptions made with respect to Impact Piling, in order to comprehensively understand the Llŷr project's modelling approaches, we recommend that further detail is provided on how the piling days were distributed for modelling purposes. This will also be beneficial for use by future projects using the Llŷr ES for their cumulative / in-combination assessments.	Volume 3: Chapter 21 – Marine Mammals, Section 21.12.3, Paragraph 337	239	The spreadsheet used in modelling is provided for clarification.
253	Marine Mammals - 1.8.3 Detailed Comments	Please can the Llŷr project clarify whether overall conclusions in the CEA were informed solely by the "snapshot" numbers, and whether the sum total number of animals disturbed via repeated disturbance events was given consideration. Please see Section 1.8.4 Other Comments, Paragraphs 285–290 below for further information.	Volume 3: Chapter 21 – Marine Mammals, Tables 21-62 and 21-63	240	As per the response given to NRW(A) para 285 - 290

254	Marine Mammals - 1.8.3 Detailed Comments	The Llŷr project is overly reliant on the oCEMP to avoid conclusions of significant impact for the project alone, cumulatively and in-combination. In both the ES and RIAA the Llŷr project has maintained that any effects may be suitably mitigated through further design refinement and other embedded mitigation - however, the precise mitigation measures that are being relied upon to conclude no adverse effect or no significant effect have not been stated for a number of pathways. Therefore, we are unable to agree with the overall conclusions of the assessment for the project alone, cumulatively or in-combination until more information on the mitigation measures for all pathways are provided. Please see Paragraphs 232–235 above for further details and Paragraph 242 below with regard to the outline MMMP.	Volume 6: Appendix 4A – Outline Construction Environmental Management Plan (oCEMP), Section 4.1, Paragraph 6	241	The NRW(A) assessment may be assisted by reviewing **Volume 6: Appendix 32A – Mitigation Register and Volume 6: Appendix 4A – Outline Construction Environmental Management Plan (OCEMP)**, which addresses piling noise, UXO clearance, entanglement, and other construction noise. The OCEMP commits to the provision of a Noise Monitoring Plan, which will be consulted upon and agreed with the Statutory Advisors. Mitigation measures include the use of MMO's, PAM Buoys and soft-start procedures. The OCEMP also includes the statement on **page 56, para 269** "*the use of Acoustic Deterrent Devices (ADDs) and at-source noise abatements methods (such as bubble curtains) were considered but given the very small instantaneous PTS-onset impact ranges that require mitigation (max 280 m), these were deemed to be unnecessary* ." As stated within the Mitigation register, the MMMP will be submitted as part of licence application for UXO works, should it be needed (as stated within the mitigation plan, the preference will be to avoid UXO through design) and once further information is available. It is anticipated that low-order detonation will be used; however, should high-order be required, the final MMMP will include options for mitigation and noise abatement. The MMMP will adhere to JNCC (2010b) guidelines for minimising the risk of disturbance and injury to marine mammals whilst using explosives, and the BEIS Marine Environment: unexploded ordnance clearance joint interim position statement (2021) We note NRW(A) advice on the new / upcoming underwater noise policies from the JNCC, Natural England, and CEFAS joint position on the use of noise abatement systems as well as the decision report from Welsh Government published on 5th March 2025 indicating the intent to develop a policy position on managing Marine Noise in-line with the similar policy position in England; including the requirement for Applicants to demonstrate that they have employed 'best endeavours' to deliver noise reductions through the use of primary and/or secondary noise reduction methods. The Llŷr project is aware that quieter piling methods and noise abatement will be expected moving forward and we look forward to continuing our dialogue with NRW(A) post consent to ensure that their advice (based on this new guidance) can be incorporated into the development in due course, based on the Consenting Authority's response.
255	Marine Mammals - 1.8.3 Detailed Comments	The Llŷr project has indicated that mitigation measures have only been considered for auditory injury from instantaneous PTS from piling. As outlined in NRW's position on Assessing the effects of Hearing Injury from Underwater Noise on Marine Mammals (NRW, 2023) and in line with Southall et al. (2019) we advise the use of dual metrics for impulsive noise: unweighted SPLpeak and frequency-weighted SEL. These metrics are needed to account for the different aspects of sound exposure and duration. SPLpeak is a measure of absolute maximum exposure at any one time, whereas SEL is a measure of the sound energy of exposure accumulated over time. These two metrics are applied under the condition that exceeding either threshold by the specified level is sufficient to result in Temporary Threshold Shift (TTS) or PTS onset.	Volume 6: Appendix 4A – Outline Construction Environmental Management Plan (oCEMP), Section 4.4.5, Paragraphs 269 and 271	242	The largest modelled impact zone is unrealistic for the activities identified within the ES (i.e., the impact zone for LF mammals based on SPL is <10 m, and SEL with a static receptor is >29 km). It is unreasonable to request mitigation on a metric which quite clearly does not reflect reality.
256	Marine Mammals - 1.8.3 Detailed Comments	The metric predicting the largest range of impact should be used for the impact assessment, and whether mitigation of this pathway is required will be determined by the assessment. Thus, we require the Llŷr project to mitigate for both instantaneous and cumulative PTS. Until this is done, we cannot agree with the Llŷr project's assessment conclusions for the project alone (EIA and HRA), the CEA (EIA), or the in-combination assessment (HRA).	Volume 6: Appendix 4A – Outline Construction Environmental Management Plan (oCEMP), Section 4.4.5, Paragraphs 269 and 271	243	The largest modelled impact zone is unrealistic for the activities identified within the ES (i.e., the impact zone for LF mammals based on SPL is <10 m, and SEL with a static receptor is >29 km). It is unreasonable to request mitigation on a metric which quite clearly does not reflect reality.
257	Marine Mammals - 1.8.3 Detailed Comments	NRW (A) disagrees that the negligible risk that the proposed project poses implies that it can be scoped out for further assessment on a project alone and in-combination basis. We advise that (1) the number of floating offshore wind projects proposed in the area highlight the need for closer examination of potential barrier effects; (2) a risk of barrier to movement from a single project being negligible does not mean that the risk is zero nor that this risk scales linearly when considered with other projects; (3) there is an absence of evidence of the potential barrier effects of large numbers of projects in the same area.	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment, Paragraph 438	244	The ES has given consideration to the other demonstration projects in vicinity, Erebus and WhiteCross, all of which conclude negligible (not significant) effects. It is not reasonable, appropriate or proportionate to request that Llŷr assesses the barrier effects of future offshore wind projects that fall in the lower Tiers for CEA (i.e., proposals which are pre-application, and/or pre-scoping).
258	Marine Mammals - 1.8.3 Detailed Comments	NRW (A) disagrees with the decision to scope out entanglement from further assessment on a project alone and in-combination basis. Please refer to our comments in Paragraph 229 above.	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment, Paragraphs 440 – 441; Paragraph 443	245	In addition to our responses given to NRW(A) para 229, the risk of (secondary) entanglement is low, as concluded by all available studies researching the matter, e.g. https://doi.org/10.1016/j.ijome.2015.04.001 NRW (A) needs to provide a stronger justification for why further assessment is required for Llyr, when it wasn't for Erebus or WhiteCross, and all three projects will be adopting the mitigation measures classed as industry good practice, and recommended by the relevant research. As previously stated it is not reasonable, appropriate or proportionate to request that Llŷr assesses the cumulative risk of future projects that have not been scoped into the CEA.
259	Marine Mammals - 1.8.3 Detailed Comments	We recommend the Llŷr project adds clarification that the iPCoD modelling presents the results of whether the predicted levels of disturbance from piling alone will be sufficient to result in an adverse effect (and does not include other impact pathways). NRW (A) recommends provision of full numerical results rather than the population trajectories alone.	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment, Figure 8-9, page 148; and Figure 8-11	246	Noted
260	Marine Mammals - 1.8.3 Detailed Comments	The Llŷr project should clarify whether for certain pathways such as vessel noise and other construction noise where disturbance events are individually small but repeated, the number of animals disturbed was based on a snapshot estimate for a single fixed point in time. We consider that the impact from individually smaller disturbance events (e.g. vessel noise) is being overlooked through not considering the potential effects of repeated disturbance events over a long period on the same population, citing "short term", "reversibility" and "recoverability" which ignores potential costs incurred by the animals over the recovery time (Frankish et al. 2023).	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment, Section 8.5 HRA Stage 2	247	As per response given to NRW(A) para 194. As detailed within the ES and clarified above, any concerns about individual smaller vessel disturbance are appropriately addressed via the Vessel Management Plan as a post consent requirement (and to which Llŷr project team has committed to as a mitigation measure - as detailed in Volume 6: Appendix 32A – Mitigation Register). It is also important to consider the smaller scale and nature of the T&D project in comparison to the requirements of a commercial project (i.e. 7 to 10 turbines as opposed to >100). The construction period is comparatively short and presented in Table 4-24 (page 51) in Volume 1: Chapter 3 – Project Description) and operational activities relatively minor (between 2 to 12 vessel visits per year to the WTG (section 4.9.1, paragraph 297) - this also needs to be put into context of the current vessel disturbance from existing fishing and commercial transport. To clarify the issue of individual smaller disturbance events have not been overlooked, it is the opinion of the technical consultants that the level of risk from this impact pathway is very low, and will not be noticeable against the baseline of non-wind farm vessel activity in the area. The Llŷr project team have provided sufficient information to understand the potential impact from vessel disturbance from project activities.

261	Marine Mammals - 1.8.3 Detailed Comments	We disagree with the conclusion that "Provided appropriate mitigation is employed as developed and agreed with the Regulator (Appendix 04A: Outline CEMP), there is no potential for an AEoSI during any phase of the proposed Project, on the West Wales Marine SAC, or the Bristol Channel Approaches SAC in response to." Please refer to Paragraphs 232–235 above for further information.	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment, Paragraph 470	248	As per response given to NRW(A) para 232 - 235. All mitigation measures to be adopted for all impact pathways listed will either follow the SNCB guidance and/or industry good practice that is current at the point (post-consent) that these measures are to be agreed. It is unclear what further information NRW(A) expect can be provided at application stage.
262	Marine Mammals - 1.8.3 Detailed Comments	The 143 dB single strike SEL threshold (intended primarily for area assessment), has been used to clip the dose response curve from Graham et al. (2017). This is an incorrect use of both techniques, and the quality of the assessment would be improved by removing this error. Please see further details provided in response to Volume 3: Chapter 21 Marine Mammals, in Paragraphs 216–222 above.	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment, Table 8-26	249	As stated previously, this comparison was made for illustrative purposes only. The number of animals impacted using dose response curve are provided in table 21-32 and have been taken through for later assessment (i.e. iPCoD).
263	Marine Mammals - 1.8.3 Detailed Comments	The EDRs have also not been presented correctly in the context of the HRA assessment. The Llŷr project provided a table of EDRs in their Addendum to the Environmental Statement, but these reflect the % of the MU population impacted and not the % of the site(s) unavailable to harbour porpoise. We advise that the Llŷr project calculates and presents the % of the site(s) unavailable to harbour porpoise due to ensonification, and to compare these against the 20% / 10% criteria as per JNCC (2020); NRW (2023); and the conservation objectives of the relevant SAC's.	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment, Section 8.5 HRA Stage 2	250	As shown in Volume 6: Appendix 8E, Table 8-22, EDR is used for area-based assessment of impacts from geophysical surveys. For porpoise, for example, Volume 6: Appendix 8E, Table 8-23, page 152, shows the area-based worst-case percentage daily footprint overlap with the Harbour porpoise SACs. For both SACs, it is less than the daily limit.
264	Marine Mammals - 1.8.3 Detailed Comments	Please refer to Paragraph 237 above regarding our advice on the decision to list Mona, Morgan and Morecambe OWF's as Tier 4 Projects.	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment, Paragraph 500	251	
265	Marine Mammals - 1.8.3 Detailed Comments	We disagree that "The risk of PTS-onset for all projects will be required via consent conditions to be minimised to negligible". Please refer to our comments in Paragraphs 232 – 235 regarding the lack of detail provided for mitigating certain impact pathways including cumulative PTS.	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment, Paragraph 503	252	This is a standard assumption when undertaking piling assessments, based on the best practice developed in Scotland for the Moray Firth wind farms (commercial-scale, fixed-foundation projects). Please also see our responses to NRW(A) paras 232 - 235
266	Marine Mammals - 1.8.3 Detailed Comments	West Wales Marine / Gorllewin Cymru Forol SAC has been repeated twice in Table 8-28. We consider one of these two should read Bristol Channel Approaches SAC.	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment, Table 8-28	253	
267	Marine Mammals - 1.8.3 Detailed Comments	Whilst we can agree that the cumulative impact on harbour porpoise SAC's is not above 10% seasonally (i.e. currently, pending the requested update of the CEA and in-combination assessments), given the multiple projects occurring in the same timeframe within the same MU and impacting different sites, these impacts will affect the same population due to functional linkage. As such, we stress the importance of reducing or mitigating these impacts. Therefore, more information on the mitigation measures for all pathways should be provided. The Llŷr project should also make a stronger commitment to several mitigation options, including the option of deploying noise abatement technology if required – please see Paragraphs 232-235 for further details.	Volume 6: Appendix 8E, Habitats Regulations Assessment – Report to Inform Appropriate Assessment, Table 8-29	254	NRW (A) need to elaborate/clarify why they consider it proportionate to be suggesting noise abatement technology (without an evidence base) for small-scale FLOW projects with such low hammer energies. While large MMMUs are defined for marine mammals, it is only Erebus and WhiteCross that are in relatively close vicinity to Llŷr, and it would not be anticipated there would be any population consequences to marine mammals, either project alone or from the three projects together. Much larger commercial-scale and fixed-foundation projects were built in the Moray Firth, adopting pre-piling use of ADDs as the chosen mitigation measure which was developed through SNCB, academic and industry joint-working. It is reasonable and proportionate to learn from this evidence base and agreed good practice, whereas the suggested NRW(A) mitigation techniques that are not proportionate to the level of risk.
268	Marine Mammals - 1.8.3 Detailed Comments	As per our advice during pre-application engagement, while we recommend the use of the Welsh Marine Mammal Atlas density data (Evans and Waggitt 2023) due to its greater robustness, and note that the SCANS III and IV data was not originally intended for use as baseline densities, we accept their use in this instance as these are higher than the values from Evans and Waggitt (2023). For future projects, NRW (A) recommends inclusion of appropriately detailed information on Risso's dolphin based on the specific ecology of the species.	Volume 6: Appendix 21A – Marine Mammal and Megafauna Baseline	255	Noted
269	Marine Mammals - 1.8.3 Detailed Comments	Although we recognise that 10% is a commonly used approach adopted by industry, it has not been independently verified. Furthermore, the NRW (2022) survey guidance and Webb and Nehls (2019) both refer to ornithological surveys, therefore it should not be used to justify the suitability of the 10% or 12.5% coverage for marine mammal surveys, particularly given the insufficient number of sightings for the compilation of a density value for various marine mammals species. Justification should be provided for the use of 12.5% coverage for marine mammals.	Volume 6: Appendix 21A – Marine Mammal and Megafauna Baseline, Section 21.2.1	256	This matter is part of a wider technical industry discussion and not specific to the Llŷr project. From a project perspective, as NRW(A) acknowledge, the approach is a common accepted approach, meaning that the result of the assessment is acceptable. It is suggested that the technical differences are resolved outside of this project specific application.
270	Marine Mammals - 1.8.3 Detailed Comments	With direct reference to Paragraph 6, we wish to clarify that at the Stakeholder Meeting on 07 March 2023, • NRW (A) and JNCC agreed to the use of Inlabru for the purpose of the Llŷr project only (please see Paragraphs 143 and 147 above), but we did not agree that: "employing this approach proved to be computationally efficient, demonstrating approximately three times faster processing speed compared to MRSea (Keogan et al., 2022). Moreover, based on practical experience, it is more adept at handling smaller sample sizes compared to its counterpart." • Furthermore, NRW (A) and JNCC highlighted our concerns in a Joint Advice Note sent on 08 December 2023, regarding our confidence in the density estimates used in the baseline for harbour porpoise, particularly in view of the significant concerns that our ornithology colleagues had with the modelling.	Volume 6: Appendix 21A – Marine Mammal and Megafauna Baseline, Paragraph 6, page 28	257	Our technical consultants have offered to meet to discuss DAS and associated data analysis (which still stands). HiDef have run both inlabru and MRSea: there are issues with either method, both have their pros and cons, and MRSea is not inherently better.
271	Marine Mammals - 1.8.3 Detailed Comments	The paragraph states: "*However, it is not appropriate to assume that the resultant density estimates will be consistent beyond the Llŷr marine megafauna survey area (unless there are other data to support this as the chosen density estimate*)". As per our comments in Paragraph 202, we suggest this may be true of any DAS densities based on sightings data within a specific survey area, but does not fully justify the decision to adopt the SCANS IV density (0.841 n/km2) versus the uncorrected DAS average model-based density (1.06 m/km2). Although we note SCANS III and IV data was not originally intended for use as baseline densities, we accept their use because these are absolute densities (as opposed to a relative density) and higher than the values from Evans and Waggitt (2023).	Volume 6: Appendix 21A – Marine Mammal and Megafauna Baseline, Paragraph 114, Page 110 Paragraph 114	258	As previously stated, this matter is part of a wider technical industry discussion and not specific to the Llŷr project. From a project perspective, as NRW(A) acknowledge, the approach is a common accepted approach, meaning that the result of the assessment is acceptable. It is suggested that the technical differences are resolved outside of this project specific application.
272	Marine Mammals - 1.8.3 Detailed Comments	Clarity is requested with respect to how the acoustic source levels and frequencies were sourced. Whilst we do not consider that it will change the results of the assessment, for completeness, it would be useful to clarify whether they were sourced from the equipment specification sheets or from Genesis (2011). Presenting this information clearly will be of benefit to other projects using the Llŷr assessments to inform their own.	Volume 6: Appendix 21B - Underwater Noise Impact Study, Table 21B-1, page 20	259	Advice as to which sonar to use for which geophysical activity came from the Genesis (2011) report as stated in the legend for Table 21b-1. The data for each specific geophysical sonar came from individual Equipment Spec sheets.

273	Marine Mammals - 1.8.3 Detailed Comments	Clarification is required as to whether the energy source level for pile driving used in the ES and RIAA was obtained using the De Jong and Ainslie (2008) method of damped cylindrical spreading, which we agree would be an appropriate method. Given that estimating piling noise is considered particularly complex in underwater acoustics we also signpost additional relevant research (e.g. Reinhall & Dahl 2011, Ainslie et al. 2012; Dahl et al. 2015; Lippert et al. 2018; Von Pein et al. 2021 etc).	Volume 6: Appendix 21B - Underwater Noise Impact Study, page 23, Paragraph 61	260	Source levels for piling were taken from data generated by Bellman (2014) and Rumes et al. (2015) (para 63). The data were verified using the methodology developed by De Jong and Ainslie (2008) (para 66).
274	Marine Mammals - 1.8.3 Detailed Comments	In Footnote 1, it states that "Given the range of water depths in the North Sea and Baltic Sea, a propagation constant of 15, midway between spherical (20) and cylindrical (10), is deemed appropriate." We disagree that a logarithmic spreading model would be appropriate for use in the context of piling noise, for a number of reasons: • The pile is inaccurately represented as a point source, whereas a pile is a sound source of some complexity, because it is connected to the water surface and the sea bottom. When a pile is struck, noise is generated by a deformation of the pile wall (a bulge) which then travels down the pile (Dahl et al. 2015). Reinhall and Dahl, (2011) showed that sound propagates away from a pile as a cone with an angle of ~17° to the horizontal which has been referred to as a "mach cone". This means that a pile cannot be accurately represented as a point source. • The logarithmic spreading calculation has been used by the Llŷrproject in the acoustic near-field to determine the energy source level of the pile, which goes against the assumptions of such a calculation. • In the case of pile driving, where interactions with the sea bottom are significant, the method overestimates how far sound can propagate (and generally underestimates the sound levels close to the source). This error can become significant at long ranges (i.e. approximately > 1 km) (e.g. Farcas et al. 2016).	Volume 6: Appendix 21B - Underwater Noise Impact Study, page 23, Paragraph 63	261	There were insufficient environmental data given in the individual reports referenced by Bellman (2014) and Rumes et al (2015) that would permit using an acoustic propagation model more complex than 15logR. The geometrical spreading equation used to backpropagate noise levels at a specific distance in order to estimate a source level, do not permit explicitly for seabed interaction. Regarding the "logarithmic spreading", see points above. Logarithmic spreading was not used to propagate sound going out from the piling source. See the discussions in para 116 and 117.
275	Marine Mammals - 1.8.3 Detailed Comments	The Llŷr project is requested to clarify their reasons for using a logarithmic spreading model, the extent to which it was applied, and why the approach was chosen over widely accepted methods such as Von Pein et al. (2021). We consider that this could represent a material issue as there is a risk that the source levels used to calculate the piling noise are inaccurate. Clarity is requested from the Llŷr project.	Volume 6: Appendix 21B - Underwater Noise Impact Study, page 23, Paragraph 63	262	As per response to NRW(A) para 190 comment - Data suitable for this type of modelling were not available. The only information available was a hammer energy of 800 kJ. Published data on noise levels recorded at various distances from the piling sites for different pile diameters, as published by Bellman and Rumes (references in report) were plotted and source level estimated using 15 log[R] along with 95% confidence intervals (Figure 21B-5). This was additionally verified using a second method of energy conversion model given by de Jong & Ainslie (ref in noise modelling report), which gave an estimated source level of 227 dB re 1 uPa at 1 m. Selecting a source level of 235 dB re 1 uPa at 1 m SPLpeak allows additional conservatism and incorporates any uncertainty from assumptions made during the back-propagation process. We have also checked the source levels calculated here against those presented for a 800 kJ hammer in the Erebus noise modelling report using a different modelling approach and found they are very similar (236.9 dB re 1 µPa @ 1 m SPLpeak at Erebus)
276	Marine Mammals - 1.8.3 Detailed Comments	We disagree with the statement that: "there is relatively little data on the spectral content of the noise generated during piling activity." Recent studies include Matei et al. (2024); Verfuss et al. (2023); Von Pein et al. (2021).	Volume 6: Appendix 21B - Underwater Noise Impact Study, page 25, Paragraph 68	263	Note that the Underwater Noise Impact Study was submitted mid-2023 so the papers by Matei et al. (2024) and Verfuss et al. (2023) were not available. The paper by Von Pein et al (2021) provides additional data that may be useful going forward. Note that the shape of the piling noise spectrum in the Von Pein et al data is not vastly different to that used in the Underwater Noise Impact Study. Both show peak energy levels around 100 Hz with a second peak around 400 Hz. Note also that the Von Pein et al data are in SEL units at given distances from the piling source. Taking these into account, the band levels used in the Underwater Noise Impact Study are close to those indicated by Von pein et al. Any differences thus arising between the data used in the Underwater Noise Impact Study and those given by the Von pein et al work are unlikely to be significant. Finally, the Von Pein et al work used a Finite Element Model (FEM) to model the seabed interaction during piling. The approach requires very detailed seabed stratigraphic data, a FEM, and detailed geophysical data that would permit use of an advanced modelling technique, all of which are disproportionally expensive to obtain considering the nature of the issue and scale of the proposed development).
277	Marine Mammals - 1.8.3 Detailed Comments	With reference to "*No spectral data are available for this artefact hence it is not possible to include this feature in the noise analysis conducted herein.*" We signpost Risch et al. (2023), which was published as part of the FORTUNE project.	Volume 6: Appendix 21B - Underwater Noise Impact Study, Section 21.3.6., Paragraph 76	264	Reference noted for future work. This report was not available at the time of writing the Underwater Noise Impact Study.
278	Marine Mammals - 1.8.3 Detailed Comments	In view of the interim unexploded ordnance clearance joint interim position statement (Defra, 2022),upon which this matter is based, and which prioritises low order clearance, clarification is required from the Llŷr project on what is meant by: "These need to be rendered harmless before any construction work continues and the safest option is through detonation (note: bold, underlined text is our own addition) at the site of discovery".	Volume 6: Appendix 21B - Underwater Noise Impact Study, Section 21.3.7, page 28, Paragraph 77:	265	Agree that the word "detonation" is probably slightly confusing given that the rest of the paragraph also discusses deflagration. The key point was that the explosive must be made harmless at or close to the discovery site. For clarification, the sentence should have read "These need to be rendered harmless before any construction work continues".
279	Marine Mammals - 1.8.3 Detailed Comments	Please see Point viii in Section 1.8.2 General Comments on the Marine Mammal Assessments above with respect to the updated DEFRA Joint Position Statement on UXO clearance.	Volume 6: Appendix 21B - Underwater Noise Impact Study, Section 21.3.7, page 28, Paragraph 77:	266	Noted
280	Marine Mammals - 1.8.3 Detailed Comments	NRW (A) note reference to the use of M-weightings (as per Southall et al. 2007), which have since been superseded by the Southall et al. (2019) weightings. NRW (A) request clarification on which weightings were used – if the Southall et al. (2007) (i.e. M-weightings) were used, we advise that the data is re-analysed. Please see Paragraphs 191 and 274 for further details.	Volume 6: Appendix 21B - Underwater Noise Impact Study, Section 21.4.2, Paragraph 95 and 96; Table 21B-7; Section 21.4.5 Paragraph 112; and Section 21.7.2, Paragraph 164	267	The Underwater Noise Impact Study states that the Southall et al (2019) M-weightings were used in the analysis (para 94). Any reference in the Underwater Noise Impact Study to Southall et al (2007) either forms part of the discussion that leads up to the point that the 2019 data were used OR with reference to behavioural studies - which is only discussed in the 2007 report.
281	Marine Mammals - 1.8.3 Detailed Comments	We recommend the provision of further information on the thresholds from Southall et al. (2019), which are the current accepted and widely-used criteria. Currently the discussion focuses almost exclusively on the Southall et al. (2007) criteria, which have been superseded. We further note that the National Marine Fisheries Service (NMFS) have published an updated set of acoustic injury criteria in the fourth quarter of 2024 (NMFS, 2024), however we acknowledge that this was published too late to be included in this application.	Volume 6: Appendix 21B - Underwater Noise Impact Study, Section 21.4.2, page 33, Paragraph 96	268	The discussion in the Study references the 2007 paper purely to provide a historical context to impact studies undertaken by Southall et al. Para 94 clearly states that the 2019 thresholds were used in the Study. Note that the NMFS 2024 report was not available when the Study was written in mid 2023.

282	Marine Mammals - 1.8.3 Detailed Comments	As previously advised, the approach to assessing disturbance recommended by NRW in our Position Statement (NRW 2023) is neither a "further development" [sic], nor an alternative approach. NRW (A) recommend a combination of dose response, fixed noise thresholds, and EDR's – all of which are existing and widely-used standard methods. For the purpose of scientific integrity, the text should be amended to avoid misrepresentation, given that the methods recommended are based on material published by others.	Volume 6: Appendix 21B - Underwater Noise Impact Study, Section 21.4.3, Paragraph 103	269	The first sentence of para 103 could be rephrased to "*Natural Resources Wales (NRW) (2023) recommend a combination of dose response, fixed noise thresholds, and effective deterrence ranges (EDR) towards quantifying the impact of impulsive noise on marine animals.* ", although this is should not constitute the need to re-publish or re-advertise as an addendum
283	Marine Mammals - 1.8.3 Detailed Comments	We note further that there have been a number of approaches taken to assess disturbance in the past, which have been reviewed in some depth by e.g. Sinclair et al. (2023), and Tougaard (2021).	Volume 6: Appendix 21B - Underwater Noise Impact Study, Section 21.4.3, Paragraph 103	270	Noted
284	Marine Mammals - 1.8.3 Detailed Comments	The 143 dB fixed threshold is intended solely as an area-based assessment for use in HRA – it is not intended for use in an EIA for which NRW recommend the use of D/R curves (NRW 2023). Therefore, we recommend that the text in Paragraphs 103 and 104 is altered to better reflect NRW's advice. This will help avoid similar errors if future applications consult the present application.	Volume 6: Appendix 21B - Underwater Noise Impact Study, Table 21B-7, Paragraphs 103 and 104	271	This comparison was made for illustrative purposes only. Number of animals impacted using dose response curve are provided in table 21-32 and have been taken through for later assessment (i.e. iPCoD).
285	Marine Mammals - 1.8.3 Detailed Comments	Clarification is welcomed with respect to whether the Rogers (1977) or Urick (1971) models were used, and why the Soloway and Dahl (2014) model (more recently used in OSW assessments), was not used.	Volume 6: Appendix 21B - Underwater Noise Impact Study, Section 21.5.3., pages 41-42:	272	Richardson et al (1995) summarises the techniques described by Urick (3rd Edn, 1983) which was developed originally by Cole (1948), Arons (1954), Rogers (1977) and Gaspin (1979). The Soloway and Dahl (2014) model is based on the work described by both Rogers and Urick. The only difference is that Soloway and Dahl introduce an empirical expression to fit SEL data to peak noise levels.
286	Marine Mammals - 1.8.3 Detailed Comments	With respect to the approach taken where: "The range of time exposures considered take into account the various periods over which an animal may be exposed to the impactful noise. The shorter exposure durations are appropriate for animals transiting rapidly through the Offshore Development Area while the longer periods are deemed more appropriate for slower moving animals and for those species which are habitat-constrained." In order to aid future applications, and to provide transparency with regard to the methods used, we advise the Llŷrproject confirms that they have indicated clearly where each approach was used in the assessment, and clarifies the cut-offs for "rapid transit" and "slower moving animals".	Volume 6: Appendix 21B - Underwater Noise Impact Study, Section 21.7.2., Paragraph 162	273	There is no hard and fast cut-off between "rapid transit" and "slower moving animals" - which is why a range of exposure durations were implemented in the acoustic impact modelling.
287	Marine Mammals - 1.8.3 Detailed Comments	With reference to Paragraphs 191 and 267 above regarding the potential use of M-weightings (as per Southall et al. 2007) , Table 21B-22 presents the Southall et al. (2019) thresholds, which makes it unclear which set of auditory weightings have been used and whether the Southall et al. (2019) thresholds are being applied to noise levels with M-weightings. Tougaard and Dahne (2017) have drawn attention to the importance of selecting the right auditory weighting to the correct thresholds, and that a mismatch between auditory weighting and threshold could lead to the risk of significant underestimates of impacts.	Volume 6: Appendix 21B - Underwater Noise Impact Study, Table 21B-22	274	The Underwater Noise Impact Study states that the Southall et al (2019) M-weightings were used in the analysis (para 94). Any reference in the Underwater Noise Impact Study to Southall et al (2007) either forms part of the discussion that leads up to the point that the 2019 data were used OR with reference to behavioural studies - which is only discussed in the 2007 report.
288	Marine Mammals - 1.8.3 Detailed Comments	NRW (A) does not agree with the statement that: "*An alternative methodology acknowledges the uncertainty in assigning a threshold level corresponding to a given behavioural response by, instead, applying a dose-response function range over which 50% of a group of animals are expected to show a given response to the disturbing noise* ." There is good evidence that behavioural responses diminish with decreasing received level and therefore D/R curves are more representative of actual animal response compared to EDRs and fixed noise thresholds (see discussion in Southall et al. 2021 for further information). For example, the harbour porpoise D/R curve for pile driving for Graham et al. (2017) predicts >90% response at received levels of 160 dB re 1 µPa2s SELss, ~70% response at 150 dB re 1 µPa2s SELss, ~50% response at 145 dB re 1 µPa2s SELss, and ~10% response at 130 dB re 1 µPa2s SELss.	Volume 6: Appendix 21B - Underwater Noise Impact Study, Section 21.7.4, Paragraph 182	275	Noted
289	Marine Mammals - 1.8.3 Detailed Comments	D/R curves are applied to impact assessments by modelling multiple sound contours for one sound source, usually presented at 5 dB intervals. The total number of animals disturbed can then be estimated by multiplying (1) the probability of a behavioural response for each 5 dB contour by (2) the area of that contour by (3) the baseline density. The number of animals disturbed for each contour are then summed up together to obtain the total number of animals disturbed. When applying D/R curves with received levels as dose, it is sensible to take the background noise levels at the site into consideration when deciding on the lowest isopleth / contour to be included into the analysis.	Volume 6: Appendix 21B - Underwater Noise Impact Study, Section 21.7.4, Paragraph 182	276	Noted
290	Marine Mammals - 1.8.3 Detailed Comments	Tyack and Thomas (2019) focuses particularly on the fact that the approach of selecting the threshold at which half of the animals respond (RLp50) grossly underestimates the number of animals affected. Therefore, we advise that this statement is amended, and confirmation is provided that the assessment was not based on the range at which 50% of animals show a response.	Volume 6: Appendix 21B - Underwater Noise Impact Study, Section 21.7.4, Paragraph 182	277	This comparison was made for illustrative purposes only. Number of animals impacted using dose response curve are provided in table 21-32 and have been taken through for later assessment (i.e. iPCoD).
291	Marine Mammals - 1.8.3 Detailed Comments	With reference to "Southall et al. (2019) are currently developing guidance on estimating the distance over which the transition from impulsive to non-impulsive noise takes place." We note that such work was carried out by the Range Dependent nature of Impulsive Noise (RaDIN) project (a consortium between the Sea Mammal Research Unit (SMRU) and Institute of Technical and Applied Physics (ITAP)) which commenced November 2022, with an interim update session held in June 2023 (and its findings published in a final report in May 2024) (Matei et al. 2024).	Volume 6: Appendix 21B - Underwater Noise Impact Study, Section 21.8.4., Paragraph 196	278	Noted
292	Marine Mammals - 1.8.3 Detailed Comments	As outlined in Paragraphs 193 and 208 above, it is unclear for piling noise whether: (1) the anticipated piling duration per day of 90 to 180 minutes refers to each pile (out of an upper limit of six per day), or (2) the 90 to 180 minutes include all six piles. Noting that the assessment has been based on a maximum exposure of four hours, we would expect that the assessment is based on the total time taken to install all piles required for that platform / all piles that can be installed in one day.	Volume 6: Appendix 21B - Underwater Noise Impact Study, Section 21.8.5, Paragraph 197	279	At the time of acoustic impact modelling, it was unclear as to how long it would take to drive one pile to the design depth. Similarly, it was uncertain whether more than one pile would be driven each day. For that reason, a range of data for operational periods were generated (taking into account the piling hammer strike rate) ranging from 4 hours to 24 hours. Shorter operational periods (e.g. the 3-hour operational period given in Table A 21B-2 et seq.) account for the fact that animals may be moving relatively quickly past the piling site. At the time of the modelling, it was indicated that concurrent piling would not take place. With regards to the SEL-based impact model, the 24 hour operational period can be made up of 1 continuous period of piling lasting 24 hours OR 6 individual piling events each lasting 4 hours.
293	Marine Mammals - 1.8.3 Detailed Comments	We acknowledge and agree with the approach to assessing PTS-onset under the dual exposure criteria, noting however, that in the draft MMMP measures mitigation has only been considered for instantaneous PTS.	Volume 6: Appendix 21C – Marine Mammal Underwater Noise Assessment - Section 21.3.2, Paragraph 21	280	Noted
294	Marine Mammals - 1.8.3 Detailed Comments	For the benefit of future applications, we recommend the Llŷrproject include further details of the approach taken to incorporate directivity (particularly the beamwidths) into the assessment.	Volume 6: Appendix 21C – Marine Mammal Underwater Noise Assessment - Section 21.4 Paragraph 36	281	Noted

295	Marine Mammals - 1.8.3 Detailed Comments	Clarification is required around the reasoning for presenting PTS-onset from UXO detonation. We assume this is because in general, for UXO detonations, the SPLpeak will tend to have a larger impact range than the SEL due to the initial shockwave peaks being much larger than the subsequent bubble collapses that occur afterwards, however advise the Llŷr project confirms this. We fully agree with the Llŷr project's approach to use TTS as a proxy for disturbance from UXO detonation.	Volume 6: Appendix 21C – Marine Mammal Underwater Noise Assessment - Section 21.4.2., Paragraph 57	282	Yes, NRW (A)'s understanding is correct.
296	Marine Mammals - 1.8.3 Detailed Comments	The Llŷr project has stated that disturbance from the piling process will be temporary due to return times ranging from two to six hours after piling, to one to three days. We draw attention to the fact that there will be multiple subsequent piling events therefore recovery and the temporary (i.e. a few hours or days) nature of the impact does not mean that the animal(s)have not incurred some sort of cost (e.g. energetic costs) during the recovery process. Indeed, this is the reason why iPCoD modelling is recommended as one of the tools to be used in an assessment.	Volume 6: Appendix 21C – Marine Mammal Underwater Noise Assessment - Paragraph 94	283	Noted
297	Marine Mammals - 1.8.3 Detailed Comments	We agree with the statement that the Level B threshold for continuous noise is very precautionary and likely assesses audibility rather than potential behavioural disturbance. NRW (A) are aware that NMFS are in the process of updating this threshold (in part, since it has limited the development of vibroseis survey methods as quieter alternatives to seismic survey methods), however it remains the only widely known threshold for continuous noise available. We refer the Llŷr project to the point made below in Section 1.8.4 Other Comments, regarding conclusions on the magnitude of impact for noise sources that fall under geophysical surveys, other construction activities, and disturbance from vessels categories.	Volume 6: Appendix 21C – Marine Mammal Underwater Noise Assessment - Section 21.5.2, page 38, Paragraph 111	284	Noted
298	Marine Mammals - 1.8.4 Other Comments	NRW (A) note that for several noise sources (geophysical surveys, other construction activities, vessel noise) for which activities are carried out over consecutive days from a moving source, conclusions were based on the numbers disturbed at any one time.	Volume 3: Chapter 21 – Marine Mammals	285	Related to the way the noise modelling was done and its associated outputs.
299	Marine Mammals - 1.8.4 Other Comments	We consider that this does not adequately capture the overall additional disturbance introduced by repeated disturbance events over the different phases of the project. While we understand that disturbance from vessel noise is relatively short lived, the fact that an animal recovers sometime after a disturbance event, does not mean the event should no longer be counted as disturbance. If the intent is to calculate the number of animals disturbed, basing the assessment for both the project alone, and/or the CEA on a snapshot estimate, invites the risk of significant underestimates.	Volume 3: Chapter 21 – Marine Mammals	286	The Llŷr project is following standard industry good practice in providing a Vessel Management Plan, Environmental Management Plan and Construction Method Statements. This is the usual means for addressing and closing out short-lived disturbance events. These are acknowledged and not overlooked, but it needs to be recognised that these aspects cannot currently be assessed quantitatively. The key points are that is it unreasonable to expect that this aspect would actually change the outcome of the assessment and that NRW(A) are seeking information from a small T&D project that is not being asked by regulatory authority elsewhere in Wales, England or Scotland for considerably much larger commercial developments.
300	Marine Mammals - 1.8.4 Other Comments	There is a risk that impact pathways, which consist of chronic but individually relatively small (in terms of effect) disturbance events, are overlooked on account of these individual disturbance events being short-lived. We consider it is important to consider the overall additional stressor load introduced when making a conclusion on the magnitude of an impact pathway.	Volume 3: Chapter 21 – Marine Mammals	287	As above (response to NRW(A) para 286).
301	Marine Mammals - 1.8.4 Other Comments	We draw attention to the fact that the most recent version of the DEPONS model for simulating population effects of noise for harbour porpoises (V3.0) now makes it possible to simulate the population impact of noise from ships through the SATURN Project (Developing Solutions for Underwater Radiated Noise), and work on this project is ongoing (e.g. Schnitzler et. al., 2024). Similarly work is being done to further develop Dynamic Energy Budget (DEB) models for their eventual inclusion into the iPCoD framework (Harwood et al. 2022), noting that King et al. (2015) suggested that other impact pathways (such as noise from seismic surveys and / or vessels) can be included into iPCoD by using estimates of the number of animals predicted to be disturbed by these activities and their extent in time and space. The suggestion in King et al. (2015) was chiefly conceptual in nature, suggesting that iPCoD could be used to model population effects from other sources given adequate parameterisation. The key point is that the scientific community recognises that for noise events where the effect may be individually small (e.g. passage of one vessel), it is plausible that the cumulative impact of repeated but individually small disturbances may be greater than the impact from a single disturbance event. Thus, it may not be sufficient to assume that an impact is "reversible / recoverable" or "short lived / temporary", as in the process of recovering from the disturbance event the animal may have incurred some cost.	Volume 3: Chapter 21 – Marine Mammals	288	Noted
302	Marine Mammals - 1.8.4 Other Comments	Furthermore, this appears to be underpinned by evidence, which shows that harbour porpoise respond to vessel noise by increasing swimming effort, making deeper dives, and ceasing echolocation and foraging for several minutes (Dyndo et al. 2015; Wisniewska et al. 2018) and potentially reducing their daily net energy gain (Rojano-Doñate et al. 2023). Wisniewska et al. (2018) further noted that "*although these individuals lived in highly trafficked coastal waters, they did not seem to have habituated to vessel noise"*. Within acoustically degraded habitats, it is possible that animals need to make trade-offs between the benefits of remaining and taking advantage of important resources while tolerating disturbance, and the physiological and energetic costs of relocation (e.g. Hastie et al. 2021; Findlay et al. 2024).	Volume 3: Chapter 21 – Marine Mammals	289	Noted
303	Marine Mammals - 1.8.4 Other Comments	While we agree that it could be challenging to quantify and model the total impact of repeated instances of disturbance on the same population, we request that as a minimum the Llŷr project should qualitatively consider the overall additional stressor load introduced when making a conclusion on the magnitude of an impact pathway. Evidence, and / or a detailed justification, should be provided to back up any statements that the total impact from repeated disturbance events is not greater than a single event. Statements which refer to "reversibility / recoverability" and "temporary nature" of the source alone will not be sufficient.	Volume 3: Chapter 21 – Marine Mammals	290	NRW (A) suggestion requires a change to standard practice without guidance on how such an assessment could be carried out. This is considered unreasonable and disproportionate to the scale and nature of the application.
304	Decommissioning - Offshore	We acknowledge the commitment by the Llŷr project to produce a Written Decommissioning Programme under section 105 of the Energy Act 2004 to be approved by the Secretary of State for the Department of Energy Security and Net Zero (DESNZ). We welcome that the Decommissioning Programme will be shared with NRW (A) at the appropriate time.	Volume 3: Chapter 21 – Marine Mammals, Table 21-16 and Volume 3: Chapter 22 – Marine Ornithology, Table 22-16	291	Noted

305	Decommissioning - Offshore	NRW (A)'s position for offshore renewable projects is that projects should produce a decommissioning plan that retains all decommissioning options (maintain, full removal and partial removal); the options for which can be assessed and refined closer to the time of decommissioning itself in consultation with NRW (A). Each of these options will have different environmental and socio-economic consequences which would be very difficult to assess in a robust manner so far in advance of actual decommissioning. Consideration of the implications of decommissioning should also include cabling, offshore substations and land-based infrastructure.	Volume 3: Chapter 21 – Marine Mammals, Table 21-16 and Volume 3: Chapter 22 – Marine Ornithology, Table 22-17	292	Noted
306	Decommissioning - Offshore	NRW (A) reserves its position until a draft plan is submitted at which point we will provide further advice.	Volume 3: Chapter 21 – Marine Mammals, Table 21-16 and	293	Noted
307	Decommissioning - Offshore	Decommissioning activities will also need to comply with all relevant UK legislation at the time that they are undertaken, and, will also need to comply with international legislation such as that relating to the prevention of marine pollution.	Volume 3: Chapter 21 – Marine Mammals, Table 21-16 and Volume 3: Chapter 22 – Marine Ornithology, Table 22-19	294	Noted

Number / reference	Aspect	Response (Key concern, etc)	Chapter / Paragraph	NRW Para	Response from Llŷr Floating Wind
1		Our landscape planning advice relates to the potential impacts of the proposed development on the landscape character and visual amenity of the Pembrokeshire Coast National Park (PCNP), and the statutory purpose of the designation to conserve and enhance its natural beauty	n/a	380	Noted
2		Our advice is based on a review of the application, including: • Environmental Statement (ES) Chapter 4 Project Description. • ES Chapter 7 Landscape and Visual Impact Assessment (LVIA). • ES Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA). • LVIA Appendices 7A – 7C. • SLVIA Appendices 23A – 23E. • LVIA Figures 7.1 – 7.10. • SLVIA Figures 23.1 – 23.18. • Visualisations for LVIA Viewpoints A – I. • Visualisations for SLVIA Viewpoints 01 – 15. • Night time visualisations for SLVIA VPs N1 – N3.	n/a	381	Noted
3		The area in which the wind turbines would be located (the Array) is located 35km from the PCNP at its closest point (Linney Head). The onshore substation is located 950m from the PCNP boundary on the B4320. The Landfall and Transition Joint Bay (TJB) would be located within the PCNP near Freshwater West, and approximately 2.75km of the onshore cable route would be located within the PCNP.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	382	Noted
4	1.1. Landscape Context - Pembrokeshire Coast National Park	The PCNP is an irreplaceable asset to Wales. The Local Development Plan provides a suitable introduction to the PCNP, where it states: '*The Pembrokeshire Coast National Park is widely recognised as Britain's only predominantly coastal National Park. The splendour of its coastline, the influence of the seascape, its spectacular scenery, and rugged, unspoilt beauty, provide a scenic quality which was recognised in its designation as a National Park along with the spectacle of the islands off the Pembrokeshire coast* .'	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	383	Noted
5	1.1. Landscape Context - Pembrokeshire Coast National Park	The statutory purposes of the PCNP are: 1. To conserve and enhance natural beauty, wildlife and cultural heritage; and 2. To promote opportunities for understanding and enjoyment of their special qualities by the public.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	384	Noted
6	1.1. Landscape Context - Pembrokeshire Coast National Park	The special qualities of the National Park are outlined in the Pembrokeshire Coast National Park Management Plan 2020-2024. These qualities highlight particular aspects of the area's natural beauty that make it worthy of national protection.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	385	Noted
7	1.1. Landscape Context - Pembrokeshire Coast National Park	Some relate directly to the character of the landscape as an environmental resource in its own right, while others relate to landscape in a broader sense, e.g. its ecology and cultural heritage. Special qualities directly related to landscape/seascape character are: • Coastal splendour. • Diverse geology. • Diversity of landscape. • Islands. • Remoteness, tranquillity and wildness. • Space to breathe. • The diversity of experiences and combination of individual qualities.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	386	Noted
8	1.1. Landscape Context - Pembrokeshire Coast National Park	The qualities identified in the Management Plan are only headlines and any assessment of the impacts on these qualities must be informed by a consideration of detailed supporting evidence. Relevant evidence includes the supporting text within the Management Plan11, and other published landscape character information, for example: • PCNP Authority Landscape Character Supplementary Planning Guidance (SPG), adopted as interim guidance, 2020 (Landscape Character SPG, 2020). • PCNP Authority Seascape Character SPG, adopted 2023 (Seascape Character SPG, 2023). • LANDMAP, including nationally consistent data on dark skies and tranquillity	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	387	Noted
9	1.1. Landscape Context - Pembrokeshire Coast National Park	The Seascape Character SPG, 2023, summarises the experience of the PCNP, where is states: • '*The overriding experience of the Pembrokeshire seascape is open and wild sea meeting diverse and sometimes remote indented coasts of rocky cliffs and shores interspersed with sweeping sandy bays and dunes and intimate little coves and harbours* '.14 • *'A key feature of the Pembrokeshire seascape is the feeling of remoteness, wildness and tranquillity in many parts of the coast. This is particularly apparent on … the Castlemartin peninsula. These locations are mostly accessible via the coast path along the cliff tops although the rocky shores are often inaccessible.'*	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	388	Noted

10	1.1. Landscape Context - Pembrokeshire Coast National Park	Specific aspects of the Park highlighted for their susceptibility to change include: • 'Open views to an unspoilt sea horizon reinforcing a sense of escape and space to breathe' • 'Open sea and offshore islands and islets with limited, if any, signs of man'. • 'Tranquil seascapes where there is little disturbance and signs of development and dark skies'. • 'Remote undeveloped seascapes with wild, highly natural, elemental character such as the islands, north coast south west of Strumble Head and the Castlemartin peninsula'.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	389	Noted
11	1.1. Landscape Context - Pembrokeshire Coast National Park	In light of the above, it is clear the PCNP was primarily designated on account of its spectacular coastal scenery and coastal character. Almost all of its coastline is defined as Heritage Coast, which applies to '*stretches of outstanding, unspoilt coastlines'*. Views offshore and the emptiness of the horizon are integral to the experience of the Park's seascape character and special qualities, including its highly valued sense of remoteness, tranquillity and wildness	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	390	Noted
12	1.1. Landscape Context - Pembrokeshire Coast National Park	The Pembrokeshire Coast Path National Trail18 (Coast Path) is the thread connecting the National Park's coastline and provides opportunities for people to understand and enjoy its special qualities. It is a key attraction, both for visitors and local residents, and, along with the quality of its seascape, has contributed to the Park's recognition as a world class visitor destination.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	391	Noted
13	1.2 Review of Guidance - Seascape and Visual Sensitivity to Offshore Wind Farms in Wales	Seascape and Visual Sensitivity To Offshore Wind Farms In Wales: Strategic Assessment and Guidance, 2019, is an independent Evidence Report prepared by White Consultants on behalf of NRW (Offshore Wind Sensitivity Guidance, 2019). It provides evidence on the likely impacts of offshore wind turbines in order to understand - for different heights of turbines - the likely distances they would need to be located offshore to avoid significant adverse effects on high sensitivity coastal receptors, including the PCNP.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	392	Noted - The report itself on page 1 states " *the views and recommendations presented in this report are not necessarily those of NRW and should, therefore, not be attributed to NRW."*
14	1.2 Review of Guidance - Seascape and Visual Sensitivity to Offshore Wind Farms in Wales	The Offshore Wind Sensitivity Guidance, 2019 consists of three reports, listed below. These provide guidance based on a digest of evidence related to past cases for UK offshore wind turbines, in large arrays, at different heights, and distances offshore. These reports were commissioned specifically in order to address the issues the present application raises. In response to NRW's request for these reports to be considered at the Scoping Stage, the SLVIA states that these reports '*have been reviewed and considered as part of the SLVIA process'*. We advise it is not clear from the SLVIA how these reports have shaped the development proposals. • Stage 1 Report - Ready Reckoner of Visual Effects Related to Turbine Size, Report No 315. • Stage 2 Report - Guidance on Siting Offshore Windfarms, Report No 330. • Stage 3 Report - Seascape and Visual Sensitivity Assessment for Offshore Wind Farms, Report No 331	Chapter 03 Site Selection and Alternatives, Section 3.5.3 Detailed Alternatives - Identifying the Agreement for Lease (AfL) Area, Table 3-3	393	As advised in the **Llyr ES Volume 1, Chapter 03 Site Selection and Alternatives, Section 3.5.3 Detailed Alternatives - Identifying the Agreement for Lease (AfL) Area, Table 3-3**, these reports were used in the visual constraints section of the site selection process to identify the AfL area which became subject to the scoping application and eventual Marine Licence application. (this process was also outline in section 3 of the Llyr Scoping Report). Similar to the Erebus offshore wind farm, the array is outside of the 'medium' level of effect and just within the 'low' level of effect, which when considering the factors in force at the time of the AfL application to the Crown Estate (2019), was a reasonable approach to avoid undue impacts..
15	1.2 Review of Guidance - Seascape and Visual Sensitivity to Offshore Wind Farms in Wales	The Stage 1 Report provides an analytical approach to identifying the anticipated levels of impact of different heights of offshore wind turbines at different distances from the shore. So far as it is relevant to the present application, the key findings of the report are: • Turbines between 301-350m in height typically have a low magnitude of effect, resulting in a moderate and potentially significant effect on high sensitivity receptors who are up to on average 44km in distance from the turbines; • Turbines between 301-350m in height typically have a medium magnitude of effect, resulting in a moderate/major and therefore significant effect on high sensitivity receptors who are up to on average 33km in distance from the turbines.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	394	Llŷr Floating Wind stands behinds the technical assessment detailed within the ES. However, in recognition of the concerns raised by NRW and the Pembrokeshire Coast National Park Authority (PCNPA), the project team has reevaluated the Project Design Envelope and will commit to limit the turbine tip height to 300 meters above Highest Astronomical Tide (HAT) within the Project Design Envelope.
16	1.2 Review of Guidance - Seascape and Visual Sensitivity to Offshore Wind Farms in Wales	These numbers are only a guide, and they do not provide an upper limit for the distance at which moderate or major effects may occur. But they illustrate the distances where significant effects may be anticipated.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	395	As per NRW para 394 above
17	1.2 Review of Guidance - Seascape and Visual Sensitivity to Offshore Wind Farms in Wales	Based on these findings, 'buffers' were mapped for different heights of turbines up to 350m. These buffers were intended to avoid significant adverse effects on high sensitivity coastal receptors, such as those within the PCNP. Based on the coordinates for the Array, we advise that almost the entire Array would be located inside the 44km buffer distance, and therefore the guidance indicates it is unlikely to avoid significant adverse effects on high sensitivity receptors.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	396	As per NRW para 394 above
18	1.2 Review of Guidance - Seascape and Visual Sensitivity to Offshore Wind Farms in Wales	In relation to situations where offshore windfarms would be located directly out to sea from designations, off western peninsulas and islands, and visible from many viewpoints – as would be the case with the Llŷr Array - the Offshore Wind Sensitivity Guidance, 2019 advises 'avoiding intervisibility and any adverse visual effects above negligible may be the preferred approach	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	397	As per NRW para 394 above

19	1.2 Review of Guidance - Seascape and Visual Sensitivity to Offshore Wind Farms in Wales	The Stage 2 Report provides guidance on siting offshore windfarms, and Table 4.1 identifies 'principles' to avoid or minimise seascape and visual effects. While we have provided further details regarding the impacts of the Array in our comments below, we advise that the proposals for the Array are contrary to a number of the principles within the Stage 2 Report because: • The Array is not located 'beyond the limit of negligible visual effects, particularly for the highest sensitivity area National Parks overlaid with Heritage Coasts'. (Principle 3) • The Array is not located 'beyond the Stage I report low magnitude buffer distances for the highest potential turbine proposed from National Parks' which is requested when Principle 3 is not achievable (beyond 44km for turbines between 301-350m). At the closest point the Array is 35km from the PCNP. (Principle 4) • The Array is not located 'as far away from Heritage Coasts … as possible' using the low magnitude of effect buffer distances for the highest potential turbine proposed (Principle 5). • The Array is not located in 'areas identified as lower sensitivity in the Stage 3 report' (it is located in one of the higher sensitivity areas (Principle 6). • The Array is not located in 'areas offshore from local seascape character areas identified as having lower inherent sensitivity' (Principle 7). • The Array is not located '*off already industrialised or developed coastlines* ' • The Array is not located 'so as not to cause undue combined cumulative impact on existing landscape and visual receptors'. (Principle 9) • The Array is not located to 'avoid locations offshore from remote headlands/peninsulas' (Principle 17). • The Array is not located to 'avoid potential cumulative impacts by extending the width of arrays visible through extensions or additional wind farms' when considered in the context of the consented Erebus development. (Principle 19).	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	398	As per NRW para 394 above
20	1.2 Review of Guidance - Seascape and Visual Sensitivity to Offshore Wind Farms in Wales	Within the Stage 3 Report, the aforementioned buffer distances were used to delineate individual Seascape Sensitivity Zones (SSZ). Based on the coordinates for the Array24, we advise that almost the entire Array would be located inside SSZ 13 (Pembrokeshire Coast Offshore). The north eastern coordinate is located 9km inside SSZ 13, the north western coordinate is 6km inside, and the southernmost coordinate is 1.6km outside.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	399	As per NRW para 394 above
21	1.2 Review of Guidance - Seascape and Visual Sensitivity to Offshore Wind Farms in Wales	Regarding the 44km buffer and SSZ 13, the Offshore Wind Sensitivity Guidance, 2019, concludes that: '***In some areas, such as off the Pembrokeshire and Llŷn Coasts*** *, it is considered harmful to have development in these zones (7, 10 and 13) as development would be visible and would a* ***dversely affect the special qualities, including setting, tranquillity and apparent wildness of these remote western coasts*** '. (our emphasis)	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	400	As per NRW para 394 above
22	1.2 Review of Guidance - Seascape and Visual Sensitivity to Offshore Wind Farms in Wales	Regarding the sensitivity of Zone 13 (high/medium26), the Offshore Wind Sensitivity Guidance, 2019 concluded: '***The area's susceptibility lies in the remote and unspoilt character of the sea directly west of the highly indented rocky coast*** *. This coast frames views across the bays,* ***beyond the islands and iconic headlands and out to zone 13 and beyond. Views are numerous from the Wales Coast Path, and are from a context of generally undeveloped rural character, to remote and tranquil seascapes*** *. Some views west from the coast at sunset may be impacted by any development.* ***Many locations are key visitor attractions and the area is very well used for leisure and recreation by people who wish to experience the natural beauty of the area. The area's value lies in its proximity to, and overlooking by the Pembrokeshire Coast National Park, and its Heritage Coast*** *, and the many scheduled monuments and historic features overlooking the area, albeit at some distance from zone 13'* . (Our emphasis).	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	401	As per NRW para 394 above
23	1.2 Review of Guidance - Seascape and Visual Sensitivity to Offshore Wind Farms in Wales	Regarding the seascape within SSZ 13 in which the proposed Array would primarily be located: '*The seascape provides an essential wild and generally unspoilt setting for the varied coastline of Pembrokeshire and its islands. It adds to its sense of remoteness and tranquillity. It also forms part of the special qualities of the designation'* .	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	402	As per NRW para 394 above
24	1.2 Review of Guidance - Seascape and Visual Sensitivity to Offshore Wind Farms in Wales	The study found that, if located within SSZ 13, turbines 301-350m would be likely to exceed a low magnitude of effect29. It follows that the recommendations for SSZ 13 are: *'* ***The zone has very limited ability to accommodate wind turbines without likely significant effects on the natural beauty of views from the coast*** *. That limited ability is most likely to be found in the far south of the zone if using smaller turbines as there is slightly more marine activity and coastal settlement on the south coast and this area does not interfere with views to sunsets. However, it is subject to considering the impact on Lundy Island, which is beyond the scope of this study'* . (Our emphasis)	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	403	As per NRW para 394 above
25	1.2 Review of Guidance - Seascape and Visual Sensitivity to Offshore Wind Farms in Wales	Even within SSZ 14 - which relates to the seascape further offshore compared to the location of the majority of the proposed Array - the Offshore Wind Sensitivity Guidance, 2019 concludes: '*Development in the majority of Zone 14 would be likely to be possible* ***although larger turbines in the areas closest to the Pembrokeshire coast and its islands may cause harm, again due to visibility in certain light and weather conditions*** *'*.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	404	As per NRW para 394 above
26	1.2 Review of Guidance - Seascape and Visual Sensitivity to Offshore Wind Farms in Wales	When considering the sensitivity of the entire Welsh coastline, the Pembrokeshire Coast is repeatedly and specifically highlighted for its sensitivity to offshore wind turbine development	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	405	As per NRW para 394 above

27	1.2 Review of Guidance - Seascape and Visual Sensitivity to Offshore Wind Farms in Wales	Within the context of the evidence provided in the Offshore Wind Sensitivity Guidance, 2019, we advise that the proposed development: • Is located within an area deemed to be sensitive to offshore wind turbine development because of its proximity to the PCNP. • Is located within an area where evidence indicates that significant effects on PCNP receptors should be anticipated. Within this area it is advised it would be harmful to have development because it would adversely affect the special qualities, including setting, tranquillity and apparent wildness of the remote western coasts of the PCNP. • Is located within an area where the proposed Array would be contrary to a number of principles intended to avoid or minimise seascape and visual effects. Consequently, the proposed Array would not avoid and has not satisfactorily minimised adverse effects on the PCNP, as discussed below.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	406	As per NRW para 394 above
28	1.3. Impacts of the Array on the Views and Visual Amenity of People within the PCNP	Out of the 15 viewpoints included in the SLVIA, 13 are located within the PCNP, and 1 is located offshore (VP 3). The only viewpoint not relevant to our comments is VP15, because it is taken from Lundy Island.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	407	Noted
29	1.3. Impacts of the Array on the Views and Visual Amenity of People within the PCNP	The viewpoints are used to represent and assess the impacts of the Array on the views and visual amenity of receptors (people) within the National Park. These viewpoints – and the visualisations prepared from them - have also informed our understanding of the impacts on the character and qualities of the landscape/seascape as an environmental resource in its own right (see impacts on seascape/landscape character below).	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	408	As per NRW para 394 above
30	1.3. Impacts of the Array on the Views and Visual Amenity of People within the PCNP	The following SLVIA viewpoints (VP) are located within the PCNP or offshore from it. The distances quoted represent the distance between the viewpoint and the closest turbine as derived from the information on the visualisations. The figure references correspond to the visualisations (photography, wirelines, and photomontages). • VP 1: Skomer Island (40.65km) (Figures VP01.1 to VP01.5) • VP 2: Skokholm Island (36km) (Figures VP02.1 to VP02.5) • VP 3: Pembroke to Rosslare Ferry (34.5km) (Figures VP03.1 to VP03.3) • VP 4: Marloes Beacon (41.5km) (Figures VP04.1 to VP04.5) • VP 5: Hooper's Point (39.7km) (Figures VP05.1 to VP05.5) • VP 6: St Ann's Head (37.3km) (Figures VP06.1 to VP06.5) • VP 7: Lindsway Bay (42.4km) (Figures VP07.1 to VP07.5) • VP 8: Castles Bay/ Sheep Island (38.8km) (Figures VP08.1 to VP08.5) • VP 9: Freshwater West Beach (36.4km) (Figures VP09.1 to VP09.5) • VP 10: Castlemartin Range Trail (40.6km) (Figures VP10.1 to VP10.5) • VP 11: Elegug Stacks (38.2km) (Figures VP11.1 to VP11.5) • VP 12: St Govan's Head (41km) (Figures VP12.1 to VP12.5) • VP 13: Manorbier Beach (51km) (Figures VP13.1 to VP13.5) • VP 14: Caldey Island (57.5km) (Figures VP14.1 to VP14.5)	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	409	As per NRW para 394 above
31	1.3. Impacts of the Array on the Views and Visual Amenity of People within the PCNP	The SLVIA assesses the sensitivity of receptors at the viewpoints above as Very High (VPs 4, 9, 12), High (VPs 1-3, 5-8, 11-14), and Medium (VP 10). The magnitude of change is assessed as small or negligible resulting in minor adverse or negligible adverse effects at all viewpoints. These effects are considered to be not significant within the SLVIA.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA)	410	Noted
32	Impacts of the Array on the Views and Visual Amenity of People within the PCNP	We disagree with the findings of the SLVIA. We consider the sensitivity of people at the viewpoints above is typically at the highest level (very high). When combined with a small magnitude of change, this typically results in a moderate and potentially significant effect. We note moderate effects are considered significant within the SLVIA.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	411	Llŷr Floating Wind stands behinds the technical assessment detailed within the ES. The SLVIA has been undertaken by experienced chartered landscape architects and in accordance with the principles set out in Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA). A detailed independent assessment has been undertaken for each of the receptors identified in the for inclusion in the SLVIA. The SLVIA sets out the factors that have been considered and have informed judgements of value of the view, susceptibility and the resulting sensitivity for each of the assessment viewpoints. In the majority of cases the SLVIA concludes a high or very high sensitivity. The SLVIA also sets out the factors which have informed judgements relating to magnitude of impact and how these are analysed and combined with the those which have informed sensitivity to reach a final judgement on the significance of effect. In accordance with good practice, this process involves detailed analysis and application of professional judgement and avoids the use of a simplified matrix or formula approach which GLVIA warns against. In reaching the conclusions relating to visual effects in the SLVIA, the distance from receptors and small part of the views potentially affected have often been key factors. In all cases introduction of the proposed Project would not be prominent and would not result in a noticeable change to the visual amenity experienced by receptors and therefore an overall judgement of minor or negligible adverse is considered appropriate.

33	Impacts of the Array on the Views and Visual Amenity of People within the PCNP	For example, at VPs 1 and 2 (Skomer and Skokholm Islands) the SLVIA considers the sensitivity of people on these islands to be diminished at 'high' rather than 'very high'. Although the SLVIA acknowledges these receptors have 'very high susceptibility', they consider the value of views is diminished because views out to sea are less important than the observation of wildlife. This has led to the conclusion of high rather than very high overall sensitivity, and, consequentially, the conclusion that the effect would be minor rather than moderate adverse.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	412	LlŷrFloating Wind stands behinds the findings of the SLVIA in relation to visual effects for the reasons set out above. It is important to note the reason for the receptor being at the location (i.e. observation of wildlife) is a matter of susceptibility and does not influence our judgement of value as suggested by NRW. As outlined above the factors which contribute to value, susceptibility and sensitivity have been clearly set out in the SLVIA. In the examples given (VP 1 and VP 2, an increase in sensitivity from high to very high would not in our opinion lead to a change in the overall conclusion of a minor effect on visual receptors at these locations.
34	Impacts of the Array on the Views and Visual Amenity of People within the PCNP	Concerning the specific example of VPs 1 and 2, we disagree with the SLVIA's judgment of high value and advise the SLVIA approach does not follow best practice guidance. Further, the assumption within the SLVIA that views offshore are not of very high value is flawed. It is flawed because views offshore are of particular importance on Skomer and Skokholm. This is supported by the 'outstanding' (the highest value) LANDMAP evaluation of the Visual and Sensory Aspect of Skomer and Skokholm. The supporting justification explains that '*The islands of Skomer and Stockholm are highly attractive and well protected coastal wilderness areas rich in wildlife and enjoying unspoilt views within and out to the surrounding cliffs and sea* '. Other examples citing the importance of these views are plentiful within the supporting landscape character studies, referred to above.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	413	LlŷrFloating Wind strongly refute the claim that the SLVIA approach does not follow best practice guidance. As highlighted above the methodology and approach of the SLVIA is consistent with the principles set out in GLVIA. In relation to value of the view the factors considered in the reaching judgements are based on those set out in GLVIA. The judgements in the LVIA in relation to the value of the view at VPs 1 and 2 have considered a range of factors, including scenic quality, and take account of all available views, including those out to sea. As per good practice (GLVIA), it is important to ensure impacts on landscape character are considered separately from impacts on visual amenity. While LANDMAP and landscape character analysis can give a sense of scenic quality and availability of views, they relate primarily to landscape character aspects and therefore are not directly applicable to judgements of the value of the view.
35	Impacts of the Array on the Views and Visual Amenity of People within the PCNP	A similar approach is taken to the assessment of value at other SLVIA viewpoints. For example, the SLVIA considers the value of views at VP 5: Hooper's Point to be diminished. Views from the Coast Path at Hooper's Point feature some of the finest coastal scenery in the UK, with views characterised by the broad sweep of Marloes Sands and the cliffs behind, and the islands of Skokholm, Gatesholm, and Skomer, all set within a wide expanse of open, undeveloped sea. Views of the 'surrounding seascape' and 'ocean' are listed as contributing to the area's outstanding visual and sensory evaluation in LANDMAP. There is no reason why such views – which are from a National Trail, within a National Park, and Heritage Coast - should be assessed as having diminished value.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	414	As set out above and detailed in the SLVIA, judgement relating to value of the view consider a range of factors in line with good practice. These judgements have been reached through a combination of desktop research and observations in the field. The section of Coast Path around Hooper's Point was surveyed and key observations are set out in the SLVIA. A conclusion of high value, very high susceptibility and high sensitivity has been concluded.
36	Impacts of the Array on the Views and Visual Amenity of People within the PCNP	As above, the approach within the SLVIA has distorted the assessment of sensitivity and led to an underestimation of the effects at this location.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	415	LlŷrFloating Wind stands behinds the judgements made and conclusions reached in the SLVIA in relation to sensitivity, magnitude of impact and significance of effect at each of the assessment viewpoint locations for the reasons outlined above.
37	Impacts of the Array on the Views and Visual Amenity of People within the PCNP	We advise that introducing large scale wind turbines onto an otherwise empty horizon, within a seascape integral to the value and enjoyment of the UK's only coastal National Park, will inevitably attract attention. Even though the turbines will be seen at a distance, we advise that introducing any tall structure onto an empty horizon naturally draws the eye, and this attraction is increased by the rotation of turbine blades. At the majority of the SLVIA viewpoints (VPs 1-12) the Array would result in at least a small magnitude of change to views, and this is primarily based on the scale of the change to views, i.e. the incongruity of seeing major development directly offshore from the remote western coastline of Pembrokeshire, and the long term duration over which this change would be experienced. As these receptors are considered to have the highest sensitivity to the changes proposed, the effects on the views and visual amenity experienced by people at these locations would typically be moderate adverse, which is significant.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	416	We are in agreement that the magnitude of impact experienced at VPs 1-12 would be small. However, we disagree with NRW's conclusion that a small magnitude would typically result in a moderate adverse and significant effect. As set out above the SLVIA provides a detailed assessment of potential effects on receptors represented be a range of representative viewpoints. This includes consideration of the baseline views and potential change anticipated to be experienced at each location/ by each receptor. The judgements made are on a case by case basis, informed by desktop analysis, observations in the field and professional experience. Key factors in determining the magnitude of impact and conclusions reached in the SLVIA in relation to potential visual effects were the considerable separation distance to the proposed Project and the very small part of the view potentially affected. In most cases receptors represented by the viewpoints experience expansive panoramic views along the coast, out to sea and often also inland, with potential change limited to a very small part of the view in one direction. It is important to note that the assessment of potential visual effects presented in the SLVIA is undertaken on a worst case basis which assumes perfectly clear atmospheric conditions. As highlighted in the SLVIA (Appendix 23C, para 109), for the majority of the time atmospheric conditions would limit visibility to 35km or less. Potential influence of the proposed Project on visual amenity would therefore be less than stated in the SLVIA for the majority of the time.

38	Impacts of the Array on the Views and Visual Amenity of People within the PCNP	These impacts would not be confined to disparate viewpoints, but would be experienced throughout the southern parts of the National Park. Sequential visibility is especially relevant to people walking on the Coast Path, who would repeatedly see the Array over the course of hours or potentially multiple days of walking. As shown in the ZTV analysis (Figures 23.8b.1 - 23.8b.3), up to all of the turbines would be visible from virtually the entire section of Coast Path: • Between Wooltack Point on Marloes Peninsula and St Ann's Head on Dale Peninsula. • Between West Angle and St Govan's Head (the Castlemartin Peninsula). • Alongside Lindsway Bay and Sandy Haven within the Milford Waterway / Aberdaugleddyf.	SLVIA Appendices 23A – 23E	417	The SLVIA includes an assessment of potential visual effects experienced from several sections of the Pembrokeshire Coast Path, noting that much of the route would gain no visibility of the proposed Project and/ or is greater than 45km from the proposed WTGs. While the ZTV indicates relatively widespread visibility along the certain sections of the Coast Path, it is important to understand the experience of users of the path to get a full understanding of potential effects. The path takes a winding route, frequently changing direction and elevation, passing through dips and higher points. The nature, orientation and focus of views therefore constantly changes as one moves along the path. While not considered in the judgement of the SLVIA, the uneven nature of the path also requires a degree of concentration and focus to the path itself. The direction of travel along the path would also have an influence on the views experienced and the potential for effects. The ZTV also does not take account of vegetation or buildings which would locally reduce visibility from sections of the path, particularly around Castlemartin. The route and nature of views between Castlemartin and Bosherton is also dependant on availability of access dictated by activity on the adjacent firing range. It is also important to acknowledge that there are a range of views experienced along different parts of the coastal path, ranging from open views across the broad seascape in multiple directions, to more enclosed views and/ or views heavily influenced by settlement and largescale industrial development.
39	Impacts of the Array on the Views and Visual Amenity of People within the PCNP	The SLVIA applies the same reasoning to users of the Coast Path, as that applied to receptors at the aforementioned viewpoints, for whom it deems views offshore are of diminished value. It considers the value of views to be high rather than very high, and this has resulted in high rather than very high sensitivity. Concluding that the magnitude of change would also be small along the Coast Path, the SLVIA reaches the same conclusion to that reached at e.g. VPs 1-3, 5-8, 11 and 12, that effects would be minor adverse and not significant.	Visualisations for SLVIA Viewpoints 01 – 15.	418	LlŷrFloating Wind stands behinds the technical assessment detailed within the ES and the conclusions reached in relation to visual effects experienced from the Coast Path.
40	Impacts of the Array on the Views and Visual Amenity of People within the PCNP	We disagree the value and overall sensitivity of people using the Coast Path is diminished, and consider the SLVIA has underestimated the importance of offshore views to people using the National Trail, and the importance of the changes to views from it. The combined impact on people walking the Coast Path, along the aforementioned sections, would inevitably be greater than at a single location. These people would experience repetitive harm to a number and variety of highly valued views. In almost all conceivable cases, views of the coast and sea will be the reason why these people are choosing to walk the Coast Path. Accounting for the geographical extent of the impacts that would be experienced along its course, the magnitude of change would be small/medium and the effect on this most highly sensitive receptor would be moderate/major adverse.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	419	LlŷrFloating Wind stands behinds the technical assessment detailed within the ES and the conclusions reached in relation to visual effects experienced from the Coast Path.
41	Impacts of the Array on the Views and Visual Amenity of People within the PCNP	Locating the turbines further offshore or reducing their height would make a meaningful difference to the effects on receptors within the PCNP, and in the case of re-location further offshore, it would eventually lead to negligible effects.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	420	For the reasons detailed above, LlŷrFloating Wind stands behinds the technical assessment detailed within the ES. However, in recognition of the concerns raised by NRW and the PCNPA, the project team has reevaluated the Project Design Envelope and will commit to limit the turbine tip height to 300 meters above Highest Astronomical Tide (HAT) within the Project Design Envelope.
42	Impacts of the Array on Seascape/Landscape Character and Special Qualities of the PCNP	The SLVIA reports no significant effects on seascape character or landscape character within the PCNP. The reporting units for the assessment are the individual character areas described in the Landscape Character SPG, 2020, and the Seascape Character SPG, 2023. The SLVIA considers all have high, rather than very high, sensitivity to the changes proposed.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	421	This correctly summarises the findings of the SLVIA in relation to sensitivity of the seascape character areas and landscape character areas included in the assessment.
43	Impacts of the Array on Seascape/Landscape Character and Special Qualities of the PCNP	For all seascape and landscape receptors, including the special qualities of the PCNP35, the SLVIA concludes the magnitude of change resulting from the Array would be small. Combined with its assessment of high sensitivity for these receptors, results in what the SLVIA classifies as a minor adverse effect, which is not significant.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	422	This correctly summarises the findings of the SLVIA in relation to seascape and landscape character.
44	Impacts of the Array on Seascape/Landscape Character and Special Qualities of the PCNP	As per our comments above, we advise that a small magnitude of change to a receptor with the highest levels of sensitivity typically results in a moderate and potentially significant effect. In our experience, where moderate adverse effects relate to the special qualities of a National Park, they are usually considered to be significant. As above, we note moderate adverse effects are considered to be significant in the SLVIA.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	423	The SLVIA includes a detailed assessment of each seascape and landscape character unit and relevant special qualities of the PCNP. The conclusions reached for each receptor or special quality are informed by desktop analysis, observations in the field and professional experience and judgement, in line with good practice guidance. Although the SLVIA recognises the potential for localised effects on aspects of a small number of special qualities it is not considered that this would not be sufficient to fundamentally alter the overall impression or experience of the special qualities or the PCNP as a whole, and as such there is no potential for significant effects. It is also considered that the identified effects would not compromise the purposes of the PCNP designation, which will remain an area of high natural beauty with opportunities for understanding and enjoyment of its special qualities. In reaching these conclusions the SLVIA has considered the sensitivity of the PCNP and relevant special qualities, along with the extent of potential effects (limited and localised within the study area and the wider PCNP) and the considerable separation distance of the Proposed Development from the PCNP.

45	Impacts of the Array on Seascape/Landscape Character and Special Qualities of the PCNP	We consider the SLVIA has underestimated the importance of the impacts on the characteristics of seascape and landscape receptors within the PCNP, including those relating to its special qualities. Considering those seascape characteristics, highlighted above, for their susceptibility to change, we advise at various locations on the Marloes Peninsula, Dale Peninsula, Castlemartin Peninsula, and within the Milford Waterway, the development would: • Disrupt the currently 'unspoilt sea horizon', which is likely to erode the existing 'sense of escape and space to breathe' derived from being in a landscape where the prevailing character is of an undeveloped, wild coast. • Be visible within views of the open sea and offshore islands, changing the existing context from one in which there is limited, if any, 'signs of man', to one in which there is an obvious human influence. • Erode the tranquillity associated with the seascape by adding disturbance and an obvious sign of development. • Reduce the availability of remote undeveloped seascapes by introducing development on the seascape horizon, eroding the 'sense of wild, highly natural character' including at locations which are specifically highlighted for these qualities i.e. 'the Castlemartin Peninsula'.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	424	For the reasons set out above, Llŷr Floating Wind stands behinds the technical assessment detailed within the ES, including the detailed assessment of potential effects on seascape character and relevant special qualities of the PCNP. It is important to note there are a wide range of physical and perceptual aspects that contribute to the special qualities highlighted that would be unaffected by the proposed Project. While the potential visibility of a very distant feature separated from the PCNP by an expansive are of open sea may have a limited and localised influence on one aspect of perceptual attributes it would not fundamentally change the experience or impression of the PCNP or it's identified special qualities. In relation to views out to sea, although fixed structures and development within the sea is generally limited to navigation markers, large ships at anchor and/or travelling to and from Milford Haven are also a common feature within the baseline.
46	Impacts of the Array on Seascape/Landscape Character and Special Qualities of the PCNP	Many of these aspects reinforce the importance of tranquillity to the PCNP. The Tranquillity & Place - Visually Tranquil Areas study prepared by LUC on behalf of NRW, provides a suitable explanation for why tranquillity is important: '*Tranquillity is associated with the degree to which places and ecosystems deliver a state of quiet, calm, peace and well-being. This can be described as a relative abundance, perception or experience of nature, natural landscapes and features (e.g. birdsong, natural sounds, moving water, stars and perceived wildness) and/or a relative freedom from unwanted visual disturbance, signs of human influence and artificial noise (e.g. from people, transport, development, light pollution, power lines).* *Tranquillity, as a landscape asset and important cultural service, is highly valued and contributes to landscape value and identity. Tranquillity also contributes to health, well-being, spiritual benefit and quality of life. This in turn can bring economic benefits from tourists and visitors to tranquil areas. Tranquillity has limited resilience in that subtle changes in noise, visual intrusion and light pollution may have marked effects on natural settings and tranquillity'*	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	425	The sense and impression of tranquillity is influenced by a wide range of factors, including both physical and perceptual attributes. The nature of views and visibility of man-made structures is one of these numerous factors. Desktop review and site survey undertaken as part of the SLVIA indicated very few locations with no visibility of nearby or more distant man-made structures or elements. Nonetheless varying degrees of tranquillity are experienced within the study area, as recognised in the SLVIA baseline descriptions. Where considered relevant and a characteristic of the baseline, the SLVIA has recognised and taken into account the sense of tranquillity as part of the evaluation of seascape or landscape value, magnitude of impact and therefore significance of effects.
47	Impacts of the Array on Seascape/Landscape Character and Special Qualities of the PCNP	Locations which are specifically highlighted for the lack of human influence and high levels of tranquillity, such as Marloes Sands and Freshwater West (Castlemartin Peninsula), are also the locations which would be amongst the most impacted by the proposed Array.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	426	As highlighted in the SLVIA, a variable sense of tranquillity was experienced at Freshwater West, with some influence from roads, car parks and movement of vehicles, views of oil refinery stacks, navigation markers and movement of ships to and from Milford Haven. A greater sense of tranquillity was evident from isolated sections of the Marloes Peninsula, including Marloes Beach. As set out above, the sense of tranquillity and its contribution to seascape and landscape character was considered with the SLVIA and taken into account in reaching judgements on the significance of effects.
48	Impacts of the Array on Seascape/Landscape Character and Special Qualities of the PCNP	For example, the description of Landscape Character Area (LCA) 8 Freshwater West / Brownslade Burrows in the Landscape Character SPG, 2020, highlights: • 'There is a highly exposed feel to this landscape with a constant awareness of the wind and the sea, sharpened by the sound of crashing of waves along the beach when the prevailing south-westerly winds reach sufficient strength'. • 'The high level of exposure, together with its relative isolation and lack of settlement, contribute strongly to a pervading sense of remoteness and wilderness here, evoked by the wind-swept undulating sand dune landscape. This in spite of the proximity of the Castlemartin firing ranges and the tops of high stacks at the Texaco oil refinery which intrude above the horizon to the north-east'38. • The 'Management Guidance' is to retain and conserve the sense of remoteness.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	427	A detailed assessment of potential effects on the character of the Freshwater West/Brownslade Burrows LCA is provided within the SLVIA. This takes account of a range of characteristics including those highlighted by NRW. In relation to the magnitude of effect, the SLVIA recognises that the Introduction of the proposed Project has the potential to influence the local sense of remoteness experienced in parts of this LCA when the firing ranges are not active. However, the separation distance and expansive intervening seascape is considered to limit the impression of change on these attributes.
49	Impacts of the Array on Seascape/Landscape Character and Special Qualities of the PCNP	Visualisations have been prepared from Freshwater West (SLVIA VP 9, Figures VP09.1 to VP09.5) which show how the development would disrupt the otherwise 'unspoilt sea horizon', eroding the sense of tranquillity, remoteness and wildness. These changes would not be isolated to one viewpoint, but would occur across the surrounding coast (refer ZTV, Figure 23.8b.2). Compared with the view from the beach, more of the turbine structures would be visible from the Coast Path which rises in elevation above Freshwater West to the north.	Visualisations for SLVIA Viewpoints 01 – 15.	428	A detailed assessment of potential visual impacts from Freshwater West is provided in the SLVIA (Appendix 23C, Section 23.5.9). This highlights that the proposed WTGs would be located at a distance of approximately 39.5 km and concludes that the significance of effect would be minor adverse (not significant).
50	Impacts of the Array on Seascape/Landscape Character and Special Qualities of the PCNP	We consider that visibility of the Array on the horizon would result in at least a small magnitude of change to sensory/perceptual characteristics and qualities along the coast of the PCNP. Namely the sense of tranquillity, remoteness, and wildness. This change, to a landscape of the highest sensitivity, would result in up to a moderate adverse, and significant effect. Impacts on the sense of tranquillity, remoteness, and wildness within LCA 8 would be exacerbated by the onshore works, addressed below.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	429	The SLVIA reaches similar conclusions in relation to the magnitude of impact, with a small change to specific perceptual attributes. This change would be localised and limited and would not result in a noticeable or fundamental change to the impression of the PCNP or its special qualities. For this reason the SLVIA reaches a conclusion of a minor adverse (not significant) effect on the PCNP.
51	Impacts of the Array on Seascape/Landscape Character and Special Qualities of the PCNP	For the avoidance of doubt, it is not only the sense of tranquillity at Freshwater West that would be impacted, nor is this the only characteristic or special quality that would be significantly impacted. For example, we consider that the proposed changes would also detract from the Park's coastal splendour by (inter alia) interfering and detracting from views towards coastal features and islands, such as the view towards Skokholm from the Coast Path. The closest visual representation of this impact is that which is provided in the night time visualisations from Martin's Haven Car Park (VP N1). From here, and sections of the Coast Path nearby, people would see the turbines within the setting / context of Skokholm.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	430	As highlighted above the SLVIA includes a detailed assessment of potential impacts on the PCNP, including relevant perceptual attributes and special qualities. The potential for localised change to a limited number of special qualities is recognised in the findings. However, this change is not considered the be sufficient to alter the overall impression of the landscape character or experience of the PCNP and as such effects would not be significant.

52	Impacts of the Array on Seascape/Landscape Character and Special Qualities of the PCNP	Our findings indicate that the proposed development would harm valued characteristics of the landscape, including those which relate directly to the special qualities of the PCNP. Notably, the qualities of coastal splendour and the sense of tranquillity, remoteness, and wildness, which the proposed development would erode in locations where those qualities are specifically highlighted for their importance. It follows that the proposals would neither conserve nor enhance the natural beauty of the National Park.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	431	For the reasons set out above, Llŷr Floating Wind stands behinds the technical assessment detailed within the ES, including the landscape and seascape character and special qualities of the PCNP.
53	Impacts of the Array on Seascape/Landscape Character and Special Qualities of the PCNP	Summarising aspects of particular importance to the PCNP, we advise the Management Plan states 'It is not only the existence of these special qualities, but also the perception of their permanence – and that the protection afforded by the National Park designation will provide reassurance of that permanence'. Harming the character of the seascape directly offshore from the National Park, such that it also harms the qualities for which that designation exists, will have the opposite outcome to that highlighted in the Management Plan. In other words, visibility of the Array will not provide reassurance of the permanence of the Park's protection, but would undermine confidence in the perception of the permanence of its special qualities and the protection afforded to these.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	432	For the reasons set out above, Llŷr Floating Wind stands behinds the technical assessment detailed within the ES, including the landscape and seascape character and special qualities of the PCNP. While it is recognised that the proposed Project may have a localised and limited influence on a small number of perceptual attributes in clear conditions, the separation distance is such that it would not alter the overall impression or experience of the PCNP.
54	Impacts of Aviation Warning Lighting	Medium intensity 2000 candela (cd) red aviation warning lights would be positioned on the nacelle of each turbine, but these would be operated at the lowest permissible intensity level (200 cd) in visibility exceeding 5km. If this mitigation measure is secured as a condition, we advise it is expected to reduce the impact of the aviation warning lighting on dark skies within the PCNP to a negligible level.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	433	The Llŷr project is content to provide for NRW approval a Lighting and Marking Plant (or Aviation Lighting Scheme Plan) to confirm lighting requirements necessary for both civil and military aviation safety and detail how they will be implemented for the lifetime of the Project prior to the commencement of the licenced activity. The navigational lights will be designed to be legally compliant with CAA SARG Policy Statement (g) "*If the horizontal meteorological visibility in all directions from every wind WTG generator in a group is more than 5 km, the intensity for the light positioned as close as practicable to the top of the fixed structure required to be fitted to any generator in the windfarm and displayed may be reduced to not less than 10% of the minimum peak intensity specified for a light of this type.*" Subject to the MCA, CAA/NATS and DOD approval the project will integrate a detection system to detect when visibility is greater than 5 km. When this is the case, the aviation lights will be dimmed to 10% of the 2,000 candela (cd) maximum so that the intensity of the light emitted would be 200 cd.
55	Impacts of Aviation Warning Lighting	There is the potential for warning lights to be viewed at 2000 cd in clear weather, even where automatic dimming mitigation is included. For example, where patchy cloud on one side of the wind farm results in the maximum intensity being triggered, even though the other side of the wind farm is in clear conditions. It is not known how often this might occur, but this is the basis on which the Applicant's night time assessment has been prepared (ES Appendix 23D).	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	434	Noted
56	Impacts of Aviation Warning Lighting	ES Appendix 23D includes an assessment of the potential impacts on dark skies, based on three night time viewpoints located at: • Martin's Haven car park (VP N1). • Kete car park (VP N2). • Freshwater West Beach (VP N3).	SLVIA Appendice 23D	435	Noted. Scope and approach to night-time assessment and location of viewpoints was agreed in consultation with NRW.
57	Impacts of Aviation Warning Lighting	VPs N2 and N3 are recognised Dark Skies Discovery Sites. The assessment is based on a worst case scenario of viewing 2000 cd lighting in clear weather. It reaches the same conclusion as that reached for all other receptors aforementioned: that the magnitude of change would be small and the overall effect minor adverse.	SLVIA Appendice 23D	436	Noted
58	Impacts of Aviation Warning Lighting	Based on the supporting visualisations prepared from VPs N1 – N3, we agree the magnitude of change is likely to be small, but the overall effect may be deemed greater than minor adverse, particularly given that it would be experienced at sites which are advertised for the experience of dark skies. Impacts on dark skies would also detract from the same qualities of tranquillity and remoteness which would be impacted by visibility of the Array during the day.	SLVIA Appendice 23D	437	As set out in the SLVIA, although the proposed Project would introduce additional light sources into views in certain conditions, the intervening distance, location low on the horizon and very small part of the night sky and views affected would limit the sense of change, supporting a conclusion of minor adverse (not significant) effects. Although not considered within the SLVIA, atmospheric conditions are likely to have a strong influence on the potential visibility and perception of the aviation lighting, even in the relatively unlikely scenario of lights being visible when operating at 2000cd in clear conditions. It is important to note that 2000cd refers to the intensity of the lighting at source and not the intensity that would be experienced at the viewpoints which are approximately 38km or greater. However, as noted in NRW para 433, subject to the CAA/NATS and DOD approval the project will integrate a detection system to detect when visibility is greater than 5 km. When this is the case, the aviation lights will be dimmed to 10% of the 2,000 candela (cd) maximum so that the intensity of the light emitted would be 200 cd.

59	Cumulative Effects - Llŷr and Erebus Arrays	Within the current application, the cumulative effects of the Llŷr and Erebus Arrays are assessed in the SLVIA under Cumulative Assessment Scenario 1. The SLVIA considers the magnitude of change to the PCNP resulting from Scenario 1 (i.e. both the Erebus and Llŷr Arrays in combination), to be small and the effect minor adverse. This is the same magnitude of change and effect reported for the Llŷr Array on its own. NRW consider this to be an example of where the SLVIA has underestimated the impacts of offshore wind turbine development on the PCNP.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	438	Llŷr Floating Wind stands behinds the technical assessment detailed within the ES. It is important to note that the baseline for the cumulative assessment differs from that of the non-cumulative assessment as it assumes that the identified cumulative wind farms (e.g. Erebus in Scenario 1) have been constructed and are an existing feature in the seascape and views. For example Scenario 1 is considered on the basis that Erebus Wind Farm is present within the cumulative baseline and as such would have some influence on perceptual attributes and/or views from the PCNP. Scenarios 2 and 3 include additional offshore wind farms and therefore a greater influence on the cumulative baseline. When considering the merits of the proposed Project and its contribution to cumulative effects it is only the additional change resulting from the proposed Project that should be evaluated rather than the total combined change resulting from all cumulative schemes taken together. As set out in the SLVIA, the proposed Project would not add a new type of development not already present in the cumulative baseline but may slightly increase the impression of offshore development within the broad seascape, at considerable distance from the PCNP and to a limited part of the PCNP and the identified viewpoints/visual receptors. The addition of the proposed Project to each of the cumulative baseline scenarios would not result in a fundamental change to the seascape, landscape or views experienced from the PCNP and therefore would not meet the threshold of a significant cumulative effect.
60	Cumulative Effects - Llŷr and Erebus Arrays	We advise that offshore wind turbine development would have a significant influence on the character and qualities of the PCNP as a result of the Llŷr Array and the consented Erebus Array seen in combination. As depicted in the cumulative wirelines for each of the viewpoints aforementioned, turbines within these different Arrays would appear to be of a similar height on the horizon. Although the wind turbines within Llŷr would typically be located further offshore than those within Erebus, they would be 55.5m taller.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	439	As highlighted above it is the additional change resulting from the proposed Project relative to the cumulative baseline that is relevant to evaluation of the proposed Project and not the combined change to the existing baseline resulting from introduction of both projects. We are in agreement that the proposed Project would appear broadly similar to that of Erebus, with the distance from the coast a key factor in minimising potential impacts on the PCNP. It should be noted that due to their nature and graphic style wireline images tend to overstate potential visibility, particularly for very distant features such as the proposed Project. In reality there is likely to be greater awareness of the difference in distance between the projects. As highlighted above, atmospheric conditions will have a considerable influence on actual visibility of the proposed project. For the reasons detailed above, Llŷr Floating Wind stands behinds the technical assessment detailed within the ES. However, in recognition of the concerns raised by NRW and the PCNPA, the project team has reevaluated the Project Design Envelope and are proposing a commitment within the Project Design Envelope to limit the turbine tip height to 300 meters above Highest Astronomical Tide (HAT).
61	Cumulative Effects - Llŷr and Erebus Arrays	Along the stretches of coastline aforementioned, the Llŷr Array and the consented Erebus Array would be seen within the same field of view. There would be a gap between the Arrays, but each development would increase the extent to which wind turbine development was visible on the horizon.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	440	The SLVIA cumulative assessment highlights the additional horizontal extent of the view potentially affected as a result of the addition of the proposed Project and takes this into account in the judgements of magnitude of impact and in the conclusions reached as to the significance of effect.
62	Cumulative Effects - Llŷr and Erebus Arrays	For example, at VP5: Hooper's Point, and at other locations, the Llŷr Array would effectively double the extent of the horizon which features wind turbines. The gap between these separate developments, means that the horizontal field of view affected by wind turbine development will be even greater, approximating 30 degrees.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	441	In relation to VP5: Hooper's Point, the SLVIA cumulative assessment for scenario 1 recognises that the proposed Development would slightly extend the influence of wind farms to an additional part of the extensive open seascape. However, at a distance of approximately 39.5 km the proposed Development would appear as a relatively minor feature within the expansive views available, limiting the sense of additional cumulative change.
63	Cumulative Effects - Llŷr and Erebus Arrays	In the context of the consented Erebus development, the Llŷr Array would also add incrementally to impacts on the PCNP, being visible at locations where the Erebus Array would not be. For example, on the Coast Path and beach at Lindsway Bay. Here the Llŷr Array would be seen within the dramatic mouth of the Milford Waterway, whereas the Erebus Array would be hidden (VP 7: Lindsway Bay, Figures VP07.1 to VP07.5).	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	442	As indicated by the cumulative ZTV (Figure 23.13) areas of potential additional visibility of wind farms resulting from the proposed Project are extremely limited. In the case of Lindsway bay it is important to recognise the existing context of views from this section of the Coast Path which include a range of existing notable developments along the coast and frequent movement of large vessels within Milford Haven in the foreground. While the proposed Project may add to this context it would be experienced as a very minor and very distant feature at approximately 42.5km. Therefore, although theoretically visible the proposed Project would have little influence on views from this section of the Coast Path.

64	Cumulative Effects - Llŷr and Erebus Arrays	In combination, Llŷr and Erebus Arrays would result in combined cumulative visual effects, and combined cumulative effects on scenic and perceptual characteristics and qualities of the PCNP, that would be greater than the effects of either the Llŷr Array or Erebus Array in isolation. The Llŷr Array would affect the same special qualities of the PCNP affected by Erebus, and would exacerbate these impacts. For those receptors where we have identified moderate adverse effects above, caused by the Llŷr Array individually, we consider the combined magnitude of change caused by the Llŷr and Erebus Arrays would be small/medium. This level of change to receptors with the highest sensitivity would result in moderate/major adverse cumulative effects, which are significant.	Chapter 23 Seascape and Landscape and Visual Impact Assessment (SLVIA).	443	For the reasons detailed above, Llŷr Floating Wind stands behinds the technical assessment detailed within the ES. NRW acknowledges that the consented Erebus scheme would have an influence on the special qualities of the PCNP and as such the cumulative baseline would differ from the existing conditions. In this scenario the proposed Project would not add a new type of development not already present in the cumulative baseline and would not result in a fundamental change to the seascape, landscape or views experienced from the PCNP and therefore would not meet the threshold of a significant cumulative effect.
68	Impacts of Onshore Development – Landfall and Cable Route	The Landfall export cables will be installed by HDD to traverse the intertidal zone at Freshwater West. However this work will require one 100 m x 75 m temporary compound which is proposed to be located along the B4319 directly opposite the war memorial and next to the Devil's Quoit Scheduled Monument (Figure 4.2). This is a sensitive location for a construction compound. It is elevated and overlooks Freshwater West, and is passed by people driving to the Freshwater West car park, approximately 200m to the south. Construction activity at the Landfall compound, which would include construction of the TJB, is anticipated to take 24 to 64 weeks. Due to the location and incongruity of the construction activities within the setting of Freshwater West, we advise the Landfall works would result in significant effects on visual amenity, scenic and perceptual characteristics of the National Park, and related special qualities. However, these effects would be temporary, and the only remaining above ground feature would be a 'link pillar' up to 1m x 1m x 0.6m. We have been unable to find details of the appearance of the link pillar, and in the absence of a draft Landscape and Ecological Management Plan (LEMP), it is not clear what the site will look like post construction or whether any mitigation planting would be provided.	Chapter 7 Landscape and Visual Impact Assessment (LVIA)	444	In relation to construction of the Landfall and Onshore Export Cable, the SLVIA recognises the potential for temporary direct and indirect change to landscape character of the PCNP. This change would be very localised in nature, of a short duration and with little or no influence on the majority of the identified special qualities and landscape characteristics. A minor adverse (not significant) effect on the character of the PCNP is assessed. The SLVIA includes assessment of potential visual effects resulting from construction of the Landfall and Onshore Export Cable, with those receptors in closest proximity (as represented by Viewpoint A) anticipated to be subject to moderate adverse (significant) effects. These effects would be both temporary in nature and of a short duration. In relation to the Onshore Export Cable and associated construction compounds the SLVIA (Chapter 7, Table 7-7) confirms a commitment to reinstate existing vegetation as part of the construction process. The site has been previously used for the HDD drilling of the Greenlink interconnector. The site will be restored to it former appearance with the same success that the Greenlink HDD works has achieved.
66	Impacts of Onshore Development – Landfall and Cable Route	Construction of the onshore export cable is anticipated to take 72 weeks, and will include 2.75km of cable within the National Park. Construction will primarily be via open cut trenching and would include crossing Footpath Ref SP37/7. The Cable route is broadly similar to the consented Erebus Onshore Cable.	Chapter 7 Landscape and Visual Impact Assessment (LVIA)	445	Noted
67	Impacts of Onshore Development – Landfall and Cable Route	It is not clear whether any opportunities for sharing, or collaboration of construction have been explored. If constructed concurrently, the duration of works affecting this landscape would be reduced. Also, if it were possible to share the same cable route, this may minimise impacts on landscape features, such as hedgerow removals.	Chapter 7 Landscape and Visual Impact Assessment (LVIA)	446	Opportunities for collaboration with other projects have been discussed at a high level. However until each project has secured their required permits and authorisations, completed the detailed design and achieved financial close to proceed, the final timings and construction schedule cannot be ascertained. Currently neither the Erebus or Llyr projects have achieved all necessary milestones to be in the position to have an agreement, whilst the Greenlink interconnector has been completed and is under operation. However, when finalising the scheme for hedgerow planting for dormouse and bats, the enhancement schemes for Greenlink substation and Erebus, will be considered by the project to increase habitat connectivity and decrease landscape fragmentation. in addition, the Llŷr project team is committed to continue dialogue with other developers to seek to share access and timing of works.
68	Impacts of Onshore Development – Landfall and Cable Route	In combination, the onshore construction works would temporarily impact on views and the experience of special qualities, particularly the sense of tranquillity, in a location which is highlighted for its wild, highly natural character. Cumulative impacts would also occur in combination with Erebus, by extending the area of works, and the duration over which works would be seen to occur.	Chapter 7 Landscape and Visual Impact Assessment (LVIA)	447	As highlighted above the LVIA includes an assessment of potential impacts of the Landfall and Onshore Export Cable, identifying potential for localised adverse effects which would be both temporary in nature and of a short duration. The LVIA indicates that the majority of effects would be minor or negligible (not significant), although with potential for localised moderate (significant) effects on a small number of visual receptors (Viewpoint A). The LVIA also includes consideration of potential cumulative effects resulting from construction of the proposed Project in addition to construction of Erebus and other identified projects. Although construction of the Landfall and Onshore Export Cable would add locally to the impression of change it would be temporary in nature and of a short duration, with effects anticipated to be minor adverse or negligible, and therefore not significant. There is no certainty on timing of construction of Erebus and the proposed Project and therefore no certainty whether a cumulative effect would occur.
69	Impacts of Onshore Development – Substation	The substation is proposed to be located at Wallaston Cross, approximately 950m from the PCNP boundary on the B4320. The site is located on the upper, open, south west facing slopes of Green Hill. Regarding the location of the proposed substation we note: • Unlike the Erebus substation which was co-located alongside the Greenlink substation, the proposed substation for Llŷr has not been co-located alongside an existing substation (Figure 7.10). • Unlike Erebus and Greenlink, the proposed substation for Llŷr is located on an elevated site, towards the summit of a local high point, where it is expected to be visually prominent.	Chapter 7 Landscape and Visual Impact Assessment (LVIA)	448	As highlighted in the LVIA (Chapter 7, Section 7.6.2 and Appendix 7A), the precise location of the Onshore Substation within the Onshore Substation Site is not yet known. The LVIA has therefore been undertaken based on a realistic worst case scenario with the Onshore Substation positioned on more elevated parts of the identified Onshore Substation Site. The potential to position the proposed structures at lower elevation within the identified Onshore Substation Site will be considered as part of the detailed design stage.

70	Impacts of Onshore Development – Substation	The Applicant's ZTV indicates the substation would potentially be visible within the PCNP along the B4320 and on land north west of Harry Standup (Figure 7.7). Relating to viewpoints within the PCNP, the LVIA concludes the visual effects of the substation during operation would be negligible at VP A (B4320), and minor adverse at VP B (Minor Road, south of Rhoscrowther) and VP D (B4320, Wogaston). The conclusions for VPs B and D are reliant on the successful establishment of mitigation planting, which, given the site's exposed nature will require extended maintenance to ensure successful establishment. Whilst an outline mitigation plan for the substation has been submitted (Figure 7.8), it provides inadequate detail and does not overcome the need for a draft LEMP to be provided. We advise the materials and colour treatments of the building will also influence the level of impact on the surrounding landscape, but we have been unable to find details of what treatments are proposed. We note muted colours are shown in the visualisations (Figures VP A – VP I). It is likely that, with similar colours and mitigation planting, the effects of the substation on the PCNP would not be significant. However, this is dependent on the details aforementioned.	Chapter 7 Landscape and Visual Impact Assessment (LVIA)	449	Figure 7.8 of the ES provides an indicative landscape mitigation plan, including woodland and scrub planting and grassland seeding within the Onshore Substation Site. These types of planting are typical of this area with examples of both in close proximity, indicating that they can be successfully established in this are despite the relative exposure. The details on how the planting would be established and maintained would be developed further at the detailed design stage and subject to consultation and agreement with the LPA. Similarly, the details of the materials and colour treatments of the structures would be determined at the detailed design stage and subject to agreement with the LPA. For the purposes of the visualisations the materials and colours applied were informed by those used on the recently constructed Greenlink substation and as proposed for the Erebus substation.
71	Impacts of Onshore Development – Substation	All of the above works would result in impacts on the landscape, and rely on some form of reinstatement and/or mitigation by way of planting. Whilst the Applicant intends to provide a LEMP, post consent, we advise that a draft or outline LEMP should be provided now. This is required in order to determine whether the proposals will secure successful establishment of any replacement and/or new planting, and whether the works are appropriate for the location.	Chapter 7 Landscape and Visual Impact Assessment (LVIA)	450	As above, existing examples of similar types of planting are present within the area, indicating that they can be successfully established. The precise details on how this would be achieved for the proposed Project will be developed and agreed as part of the detailed design stage. As stated previously, when finalising the scheme for hedgerow planting for dormouse and bats, the enhancement schemes for Greenlink substation and Erebus, will be considered by the project to increase habitat connectivity and decrease landscape fragmentation. In addition, the Llŷr project team is committed to continue dialogue with other developers to seek to share access and timing of works.
72	Impacts of Onshore Development – Substation	The outline LEMP should indicate the extent of landscape features to be removed, and the detailed mitigation, management and monitoring measures proposed in relation to the landfall, cable route, and substation.	Chapter 7 Landscape and Visual Impact Assessment (LVIA)	451	As highlighted above, the SLVIA identifies a range of mitigation measures including reinstatement of existing vegetation along the Onshore Export Cable and provision of additional planting adjacent to the Onshore Substation. A LEMP providing details on the approach to reinstatement and planting and subsequent maintenance and management will be provided at the detailed design stage.
73	Issues with SLVIA Viewpoint Selection and Photography	Having received the final viewpoints, crucially in combination with a copy of the baseline photographs, NRW are concerned about the lack of representation within the SLVIA viewpoint photographs of relevant contextual aspects of the PCNP. For example, there is no photographic representation of Marloes Sands, which is a key omission given the value derived from a lack of human structures visible from this beach, and the fact the turbines would be visible from it.	Chapter 7 Landscape and Visual Impact Assessment (LVIA)	452	Llŷr Floating Wind consulted with NRW on the LVIA and SLVIA scope and viewpoint locations throughout the assessment process. An initial list of proposed viewpoints was set out in the scoping report. A revised list of locations, taking account of feedback in the Scoping Opinion, was consulted on in April 2023 and NRW suggested consideration of a small number of additional viewpoints. These locations were reviewed and NRW were invited to comment on the further revised list of viewpoints in June 2023. While a response was provided by NRW this did not include suggestion of any additional or alternative viewpoint locations. A list of the final proposed viewpoints was provided to consultees in February 2024 but no further feedback on the locations was received from NRW. A response was received from PNCP Authority confirming their agreement of the final viewpoint locations. The SLVIA includes a series of 15 representative viewpoint locations, 13 of which are located within the PCNP, with an additional viewpoint located within the sea adjacent to the PCNP. These viewpoints cover a range of receptor types and locations both along the coast, within the sea and inland. While the SLVIA does not include a viewpoint on Marloes Sands beach, a viewpoint at Hoopers Point (located on the coast approximately 350m south of the beach) is provided. As is the case with all visual assessments, viewpoints are selected to provide a representative cross section of receptor types and location but cannot be provided from all locations.

74	Issues with SLVIA Viewpoint Selection and Photography	Other locations, and contextual photos, highlight existing built structures in the landscape but omit relevant seascape views in other directions e.g. Viewpoint 6: St Ann's Head. Coastal features experienced at this location, and nearby sections of the Coast Path, are omitted from the contextual photography, in place of inland views. This also occurs at, for example, VP 11: Elegug Stacks, where the Applicant has provided two contextual photographs (accompanying the cumulative wirelines), but no photograph is provided of the setting immediately to the east of the viewpoint which features the iconic natural rock arch (the Green Bridge of Wales) deemed to be amongst the finest examples in the UK. The impression conveyed by the contextual photography is not the impression when visiting this location in person.	Chapter 7 Landscape and Visual Impact Assessment (LVIA)	453	The purpose of the baseline panoramas is to show the existing view towards the proposed Project. Where required additional baseline panoramas have been provided to capture views towards the proposed cumulative developments to aid understanding of the cumulative baseline. The baseline panoramas should be viewed in combination with the baseline description provided in the assessment text (Appendix 23C) which provides a description of baseline views and key features in all directions from each of the viewpoints. In relation to VP 6: St Ann's Head the baseline description highlights the wide panoramic views available, including over the foreground rocky coast and across the sea to Skokholm and Skomer islands to the west and northwest. Views of the coast and to the islands beyond to the west and northwest would not be affected by the proposed Project which would be located approximately 37.5 km to the southwest. In the case of VP 11: Elegug Stacks views east towards the Green Bridge of Wales would not be affected by the proposed Project which would be located approximately 38.5 km to the southwest. It is important to note that visualisations should not be used in isolation as the basis of assessment or evaluation of the impacts of a proposed development. This is consistent with good practice guidance and is set out in the SLVIA which highlights that visualisations should be viewed at the viewpoint location to form the best impression of the impacts of the proposed Project.
75	Issues with SLVIA Viewpoint Selection and Photography	Evidently, the extent to which the turbines would be seen to interact with coastal features, depends on where you are positioned in relation to these features. But in some instances, the specific viewpoint location selected by the Authors of the SLVIA, means that the visualisations fail to capture crucial interactions. For example, VP8 provides the view from 'Castles Bay / Sheep Island' but the photograph has been taken from a location where the island is off to one side. From other nearby sections of the Coast Path, the turbines would be seen at a similar distance and height, but the turbines would be seen directly in the context of Sheep Island and the nearby coastal promontory. Although not depicted in the visualisation because of the choice of viewpoint, the turbines would detract from the natural character derived from these features, and distract attention away from people's experience of them.	Chapter 7 Landscape and Visual Impact Assessment (LVIA)	454	The consultation process to identify and agree viewpoint locations included details on the reason for selection of each location. In relation to VP 8 the viewpoint was selected to be representative of the views experienced from the section of the Coast Path south of Angle. The viewpoint photography was captured from an elevated location alongside the Coast Path representing a location with open views towards the proposed Project, while also including Sheep Island. While repositioning the viewpoint would alter the foreground of the view and a location where the proposed Project is visible beyond Sheep Island may be possible from the majority of this section of coast views towards Sheep Island would not be affected. Even where the proposed Project would be visible beyond Sheep island the very distant nature of the proposed WTG (approximately 39 km) would limit the sense of change and as such the overall judgement of the significance of effects (minor adverse) would remain unchanged.
76	Issues with SLVIA Viewpoint Selection and Photography	The only way to accurately experience the quality of the National Park, and to understand how the turbines would interact and impact upon its qualities, is to visit in person and to walk the affected sections of Coast Path, and the affected beaches.	Chapter 7 Landscape and Visual Impact Assessment (LVIA)	455	Agreed. As highlighted in the SLVIA, visualisations are best viewed at the viewpoint location to form the best impression of the impacts of the proposed Project.

Number / reference	Aspect	Response (Key concern, etc)	Chapter / Paragraph	NRW Para	Response from LlŷrFloating Wind
1	General Onshore Comments	We have concerns with the application as submitted because inadequate information has been provided in support of the proposal. To overcome these concerns, we advise that further information should be sought from the Applicant regarding European Protected Species (EPS) - bats, otters and dormice, HRA, Landscape and Seascape, and potential impacts to a public water supply.	n/a	295	NRW(A) stated on a call with the Llŷr project team on 26/01/2023 that their terrestrial species team are tied up for a significant period of time and will not be able to support or provide feedback in the timescales required for the project. They could not identify any solutions to the lack of their internal resource and as a result, they advised the project to engage with the local authority pre-application to seek feedback from their species specialists (ecologist) and to copy NRW in correspondence to keep them informed. The approach to the onshore ecological assessment was agreed with the Pembrokeshire County Council's Planning Ecologist & Conservation Team Leader addressing the approach, survey data to be utilised; including the current status of terrestrial ecology surveys, where the Llŷr ecology consultants (Aecom) used a Public Right Of Way (PROW) to obtain bat activity data from the two substation areas and a Preliminary Ecological Appraisal throughout the corridor. In addition to survey data collected by the Llŷr project, the assessment also used the information provided by the Erebus ES and Greenlink ES (surveys undertaken in 2018 and 2021), which has received consent for construction through essentially the same corridor for the same activity. As detailed by Pembrokeshire County Council in their response to the applications "*The confirmation of further survey works is welcome, including those for bats, dormice and badgers. Comments are mindful of pre-existing consultations with the PCC and PCNP planning ecologist, particularly those conversations around the acceptability of surveys and proposing 'worst case scenario' mitigation in light of these gaps. The LPA is in agreement with what has been suggested and put forward for the worst-case scenarios planning.*" It is considered that the forward survey plans and commitments proposed by the project, including agreement on the various plans with the relevant local authorities to be undertaken post consent but before commencement adequately address the issues raised by NRW(A).
2	General Onshore Comments	We also advise that based on the information submitted to date, conditions regarding: A Construction and Operational Lighting Plan to include aviation lighting, a Landscape and Ecological Management Plan (LEMP), a CEMP and a Bathing Water Quality Mitigation Plan, should be attached to any permission granted.	n/a	296	Noted and content to include these plans for approval by Pembroke County Council prior to commencement of works as a post consent permit condition, as detailed in the response to the PCC
3	European Protected Species (EPS) Terrestrial	We consider that there is insufficient information within the ES to confirm the likely impacts of the proposals on bats, otters and dormice and/or confirm that the proposals are unlikely to result in a detrimental impact to the maintenance of the favourable conservation status of the population(s) of these species.	Volume 2: Chapter 8 – Ecology and Biodiversity	297	We refer to the previous comment and the responses provided below. In addition to survey data collected by the Llŷr project, we also used the information provided by the Erebus ES and Greenlink ES (surveys undertaken in 2018 and 2021), which has received consent for construction through the same corridor for the same activity.
4	European Protected Species (EPS) Terrestrial	We note that the grid connection for the Llŷr offshore wind farm is proposed to make landfall via HDD at Freshwater West and thereafter via underground cable to the onshore substation and ultimately to the national grid at Pembroke Power Station.	Volume 2: Chapter 8 – Ecology and Biodiversity	298	Noted
5	European Protected Species (EPS) Terrestrial	Our advice below relates to the protected species within our remit; these mostly relate to the onshore parts of the development, but there may be relevance to the offshore part of the development where this makes landfall and concerns coastal habitats that may be used by these species.	Volume 2: Chapter 8 – Ecology and Biodiversity	299	Noted
6	European Protected Species (EPS) Terrestrial	Dormice, otters, and all species of British bats and their breeding sites and resting places are protected under the Conservation of Habitats and Species Regulations 2017. Where bats are present and a development proposal is likely to contravene the legal protection these species are afforded, the development may only proceed under licence issued by Natural Resources Wales, having satisfied the three requirements set out in the legislation. A licence may only be authorised if: • The development works to be authorised are for the purpose of preserving public health or safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment; • There is no satisfactory alternative; and • The action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in its natural range.	Volume 2: Chapter 8 – Ecology and Biodiversity	300	Noted

7	European Protected Species (EPS) Terrestrial	Paragraph 6.3.7 of Technical Advice Note 5: Nature Conservation and Planning (TAN5) states that the determining Authority should not grant permission without having satisfied itself that the proposed development either would not impact adversely on any of these species if present on the site or that, in its opinion, all three conditions for the eventual grant of a licence are likely to be satisfied.	Volume 2: Chapter 8 – Ecology and Biodiversity	301	The outline CEMP will be updated and finalised post consent in line with any relevant planning and/or marine licence conditions and approved by Natural Resources Wales (NRW), Pembrokeshire County Council (PCC) and the Pembrokeshire Coast National Park Authority (PCNPA). Surveys will inform the CEMP. The results of the pre-construction surveys will determine the need for licences and the need for, and extent of, habitat and protected species management plans. Following completion of the surveys, the LPA will be informed of the survey results and recommendations for any associated licenses or species-specific management plans. The design of the proposed Project includes embedded mitigation that will be produced as conditions of consent, and which will mitigate potential impacts. This approach has been employed in order to demonstrate commitment to mitigation measures by including them in the design of the proposed Project, as detailed in ES Table 814. In addition to embedded mitigation outlined in ES Chapter 8 Section 8.7 the additional mitigation measures outlined in Section 9.5 will be incorporated into the proposed Project to demonstrate commitment to mitigation measures and commitment to maintaining favourable conservation status. In addition, Llŷr Floating Wind wishes to add to the list of potential mitigation solutions the option to HDD at linear features where potential impacts on favourable conservation status cannot be otherwise be mitigated.
8	European Protected Species (EPS) Terrestrial	The application is situated in an area that supports a wealth of bat species, which is reflected in several designated sites notified for the populations of bats that they support, including two SAC sites (the Pembrokeshire Bat Sites and Bosherston Lakes SAC and Limestone Cliffs of SW Wales SAC) and the SSSIs that underpin them.	Appendix 8B Preliminary Ecological Appraisal Report	302	Noted
9	European Protected Species (EPS) Terrestrial	Accordingly, we advise that the impact on bats is considered both in the context of them being European Protected Species as well as features of designated sites, including under Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended).	Appendix 8B Preliminary Ecological Appraisal Report	303	Impact on bats have been considered as features of designated sites, under Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended) - Documented in the 08D HRA Screening and 08E Appropriate Assessment. Impacts on bats as a protected species outside of the context of the SAC has been considered in the ES Chapter (though the assessment aims to avoid double counting of impacts on bats) and will be considered in the CEMP Pre-Construction.
10	European Protected Species (EPS) Terrestrial	The greater horseshoe bats comprising the notified feature of the Limestone Cliffs of SW Wales SAC utilise the sea caves along the Castlemartin peninsula for hibernation purposes. However, we note that the HDD at Freshwater West makes landfall remote from the caves and is therefore unlikely to affect any of the sea caves used by the bats and encompassed by the SAC designation.	Appendix 8B Preliminary Ecological Appraisal Report	304	Noted
11	European Protected Species (EPS) Terrestrial	The Preliminary Environmental Assessment (PEA) report identified four built structures located just beyond the site/red line boundary (but within the 30m survey buffer) which were assessed to have low potential to support roosting bats: • BN1 – Flat roofed farm structure at Broomhill in the survey buffer in the western part of the onshore development area; • BN2 – open sided metal cattle shelter at Broomhill in the survey buffer in the western part of the onshore development area; • BN3 – metal structure with corrugated metal roof used as cattle shelter at Broomhill in the survey buffer in the western part of the onshore development; • BN6 – Corrugated roofed building with gaps under flashing located in survey buffer west of Wollaston Cross.	Appendix 8B Preliminary Ecological Appraisal Report	305	Noted
12	European Protected Species (EPS) Terrestrial	We advise that any buildings or structures as having potential to support roosting bats that will be impacted by the proposed development works are subject to comprehensive surveys in accordance with published best practice survey guidance, and the survey results and full details of any mitigation that is required submitted in support of this application.	Appendix 8B Preliminary Ecological Appraisal Report	306	Buildings and structures with the potential to be affected by the proposed development will be subject to roost surveys prior to construction, in order to inform the final Construction Environmental Management Plan (CEMP). The CEMP will be finalised post-consent and submitted for approval to Natural Resources Wales (NRW) and the Local Planning Authority (LPA), in accordance with the Outline CEMP submitted as part of the planning application. All identified structures have been assessed as having 'Low Suitability' for bat roosting. This is defined as: "A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of year, but which do not offer sufficient space, shelter, protection, appropriate conditions, and/or suitable surrounding habitat for regular use or for use by large numbers of bats (i.e., unlikely to support maternity colonies or act as typical hibernation sites, though individual bats may hibernate sporadically)." These structures are not considered capable of supporting roosts of high conservation significance, and as they are not being demolished, there will be no direct loss of bat roost habitat
13	European Protected Species (EPS) Terrestrial	We note that the structures above have not been further assessed to date, due to safety reasons or access limitations, although further details are not provided.	Appendix 8B Preliminary Ecological Appraisal Report	307	See response above

14	European Protected Species (EPS) Terrestrial	To advise on the need for further surveys we require additional information on the likely direct and indirect impacts of the proposed development on these structures above, including noise, lighting and vibration associated with the development works.	Appendix 8B Preliminary Ecological Appraisal Report	308	The indicative HDD site is located nearest to BN6 (Precautionary Low). As per the ES - as a worst-case scenario, if the structures were to be destroyed to facilitate works associated with the proposed Project, it would lead to the loss of a roost location for a small number of bats. Species could be those of international importance. Overall, this would be considered a moderate adverse and significant effect. As the destruction or damage of any roost requires the provision of an EPSML from NRW, and prior survey, it is assumed that the methodology accepted and controlled through such a EPSML would require sufficient mitigation and compensation, in the form of precautionary methods and creation of alternative roost features, that this effect would be concluded to be temporary. Overall, after mitigation and compensation this would be considered a minor adverse and non-significant effect. However, to conclude, building BN6 will not be demolished as the project has committed to use the site access from the B4320 and the construction compound used previously by Greenlink.
15	European Protected Species (EPS) Terrestrial	If the buildings are likely to be affected, we would advise that surveys are carried out in support of the application, rather than as post-consent, pre-construction surveys as indicated in ES.	Volume 2: Chapter 8 – Ecology and Biodiversity	309	Llŷr Floating Wind proposes that relevant surveys be undertaken following the grant of consent. Prior to the commencement of construction, any buildings or structures with the potential to be affected by the proposed development will be subject to bat roost surveys. The results of these surveys will inform the final Construction Environmental Management Plan (CEMP). The CEMP will be finalised post-consent and submitted for approval to both Natural Resources Wales (NRW) and the Local Planning Authority (LPA), in accordance with the Outline CEMP submitted with the application. This process will ensure that NRW has the opportunity to review and confirm that appropriate mitigation measures are in place before any construction activity begins
16	European Protected Species (EPS) Terrestrial	With reference to paras 98-99 in the supporting PEA report, we note that six trees are present within the application site which have potential to support roosting bats (PRF-I, PRF-M).	Appendix 8B Preliminary Ecological Appraisal Report	310	comment acknowledged
17	European Protected Species (EPS) Terrestrial	Two trees (identified as T3 and T6 in the PEA report) were classified as PRF-M but we note in relation to T6 that Table 8B-5 also indicates that it was not assessed as having the potential to support a maternity roost, although it is not clear what further surveys have been carried out to come to this conclusion.	Appendix 8B Preliminary Ecological Appraisal Report	311	T3 and T6 should be changed to PRF - A tree with at least one PRF present. Error in interpretation of the new Sept 2023 BCT guidance. The trees were assessed under the BCT 3rd Edition Guidance which applied at the time, and the Trees were equivalent of the previous 'Moderate category' "A tree with one or more potential roost sites that could be used by bats due to size, shelter, protection , condition and surrounding habitat but unlikely to support a roost of high conservation concern". Roost features were identified so they should be classed as PRF, but additional survey will be required to confirm if they are PRF-I or PRF-M. No Surveys have been completed. PRF-M is defined in BCT Guidance as PRF is suitable for multiple bats and may therefore be used as a maternity colony. PRF-I is defined as only suitable for individual bats or very small numbers of bats due to size of lack of suitable surrounding habitat. Based on the field information and previous BCT guidelines assessment of Moderate, there is confidence that the trees are unlikely to support a roost of high conservation concern. Surveys pre-construction to inform the CEMP and the requirement of any license is proposed by Llŷr Floating Wind.
18	European Protected Species (EPS) Terrestrial	therefore, we advise the following: • Clarification to whether T3 and T6 are likely to be affected by the proposed development works and, if so, • The results of further close inspection surveys in accordance with published best practice guidance; and, • If following those surveys the roosting resources is still considered PRF-M; • Details of all the mitigation that will be put in place.	Appendix 8B Preliminary Ecological Appraisal Report	312	As per the comment above (NRW para 311)
19	European Protected Species (EPS) Terrestrial	As above, we advise that surveys are carried out prior to determination rather than in the post-consent pre-construction period.	Volume 2: Chapter 8 – Ecology and Biodiversity	313	Llŷr Floating Wind proposes that surveys are completed post consent, as outlined in the response above. This is in line with agreement with the PCC and PCNPA that further surveys would be completed post-planning submission, and the appropriate mitigation plans will be agreed in writing with the relevant LPA before works commencing.
20	European Protected Species (EPS) Terrestrial	With regards to those considered suitable to support individual bats (PRF-I) we advise that appropriate soft felling procedures are included in any CEMP agreed for the scheme. We consider this matter can be dealt with through an appropriately worded condition.	Volume 2: Chapter 8 – Ecology and Biodiversity	314	Noted and content to include this requirement as a post consent licence condition
21	European Protected Species (EPS) Terrestrial	We note some discrepancy between the ES, the supporting bat survey report and the supporting PEA report, regarding the assessment of the value of habitats within the application site to foraging and commuting bats. We further note that bat activity surveys were broadly planned according to the 'moderate' assessment referenced in the ES and bat survey report and the 3rd Edition BCT's Bat Surveys for Professional Ecologists which applied at the time.	Volume 2: Chapter 8 – Ecology and Biodiversity Appendix 8B Preliminary Ecological Appraisal Report	315	The Preliminary Ecological Appraisal (PEA) identified the site as having high suitability for bats, whereas both the Bat Survey Report and the Environmental Statement (ES) classify it as having moderate suitability. This assessment aligns with the conclusion of the Greenlink cable corridor ES, which also determined the site to be of moderate suitability. Under the 2023 Bat Conservation Trust guidelines, the required survey effort for sites of high and moderate suitability is the same. As such, this discrepancy has no material effect on the adequacy of the survey effort undertaken. Going forward, the site will be treated as having moderate suitability for bats.
22	European Protected Species (EPS) Terrestrial	Whilst we welcome that bat activity surveys have been carried out to inform the submission, we note that the late commencement of surveys in the survey season and other survey limitations have given rise to temporal and spatial issues regarding survey coverage. The August and October transects appear to have better covered the application site than the rest. We also note that the static detector surveys were limited to October and further compromised by technological failures.	Appendix 8B Preliminary Ecological Appraisal Report	316	As outlined above, pre-construction surveys (including bat activity surveys) will be undertaken and the results will determine the need for licences and the need for, and extent of, habitat and protected species management plans. Following completion of the surveys, the LPA [and NRW] will be informed of the survey results and recommendations for any associated licenses or species-specific management plans.

23	European Protected Species (EPS) Terrestrial	The survey results confirm that habitat features within the application site are used by bats, including greater and lesser horseshoe bats associated with the nearby SACs, although the survey results are not adequate to determine if any particular habitats or flightlines are more important than others. therefore, it should be assumed that all hedgerows, woodland and scrub are important for bats.	Appendix 8B Preliminary Ecological Appraisal Report	317	Worst-case scenarios have been adopted in the ES Chapter. As outlined above, pre-construction surveys will be undertaken to determine the need for licences and the need for, and extent of, habitat and protected species management plans. Following completion of the surveys, the LPA [and NRW] will be informed of the survey results and recommendations for any associated licenses or species-specific management plans. The design of the proposed Project includes embedded mitigation that will be produced as conditions of consent, and which will mitigate potential impacts. This approach has been employed in order to demonstrate commitment to mitigation measures by including them in the design of the proposed Project, as detailed in ES Table 8-14. In addition to embedded mitigation outlined in ES Chapter 8 Section 8.7 the additional mitigation measures outlined in Section 9.5 will be incorporated into the proposed Project to demonstrate commitment to mitigation measures and commitment to maintaining favourable conservation status. In addition Llŷr Floating Wind wishes to add to the list of potential mitigation solutions the option to HDD at linear features where potential impacts on favourable conservation status cannot be otherwise be mitigated.
24	European Protected Species (EPS) Terrestrial	The mitigation measures set out in ES paras 72-75 are broadly welcomed and should be secured by the planning conditions of any consent granted for the scheme. However, in order to reduce the impacts on habitat connectivity for bats and to reduce the time for mature vegetation to develop following the works, we seek the following further information and commitments from Llŷr Floating Wind: • That existing gaps in hedgerows (E.g. farm gateways) will be used wherever possible as part of the working corridor illustrated in Figure 4-26; • Where hedgerow must be removed to facilitate the cabling works, that hedgerow translocation is used in preference to replanting for post-works habitat re-instatement, with replanting only utilised to gap up where translocation fails. Appropriate care of vegetation shall apply to translocated and newly planted habitat. • Development works shall avoid areas of woodland/wooded copses. • Fencing re-instated hedges.	Volume 2: Chapter 8 – Ecology and Biodiversity	318	Noted and content to include these requirements within our works.
25	European Protected Species (EPS) Terrestrial	With regards to (i) above, we advise that a scaled plan is included in any CEMP agreed for the scheme to show where existing gateways/gaps in hedges shall be used.	Volume 2: Chapter 8 – Ecology and Biodiversity	319	Noted and content to commit to providing a scaled plan as part of the approved CEMP to show where existing gateways and gaps will be used.
26	European Protected Species (EPS) Terrestrial	Additionally, we advise that any consent given for the scheme includes the requirement to submit a detailed lighting plan for the construction and operational phases of the development. This is necessary to control light spill onto adjacent habitats, including compensatory habitats provided as part of the scheme, and potentially used by light averse species such as Horseshoe bats.	Volume 2: Chapter 8 – Ecology and Biodiversity	320	Noted - the Llŷr project commits to implementing the operational lighting requirements as detailed in an approved Onshore Lighting Plan (addressing both construction and operation) as agreed in writing with the Pembrokeshire County Council planning department prior to any onshore substation works starting.
27	European Protected Species (EPS) Terrestrial	Otters are known to be present on the Castlemartin peninsula and are a feature of the Pembrokeshire Marine SAC which envelopes the peninsula.	Appendix 8B Preliminary Ecological Appraisal Report	321	Noted
28	European Protected Species (EPS) Terrestrial	As above for bats, we advise that the impact on otters is considered both in the context of them being European Protected Species as well as features of designated sites, including under Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended).	Appendix 8B Preliminary Ecological Appraisal Report	322	Impact on otter have been considered as features of designated sites, under Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended) - Documneted in the 08D HRA Screening and 08E Appropriate Assessment. Impacts on otter as a protected species outside of the context of the SAC has been considered in the ES Chapter (though the assessment aims to avoid double counting of impacts on bats) and will be considered in the CEMP pre-construction.
29	European Protected Species (EPS) Terrestrial	The ES confirms that the application site plus 30m buffer was assessed for its potential to support otters. It further confirms that the application site supports habitat suitable for otters (including ponds and watercourses) but that no evidence of otters was found.	Appendix 8B Preliminary Ecological Appraisal Report	323	Noted
30	European Protected Species (EPS) Terrestrial	This contrasts with previous surveys for other developments in the area where spraints, couches, feeding evidence, trails and a potential holt have been recorded.	Appendix 8B Preliminary Ecological Appraisal Report	324	A habitat suitability assessment was undertaken by Llŷr Floating Wind. An otter presence/abscence survey (to search for signs of otter or bredding/resting sites) was not completed. The ES assumes presence of otter within the onshore development area based on desk based information from previous third-party assessments.

31	European Protected Species (EPS) Terrestrial	The PEA report (paras 154-156) recommends further specific surveys for otter. Notwithstanding that, updated pre-construction surveys may be required to ascertain any changes in the circumstances on the ground since the pre-app phase. We advise that these surveys are carried out in support of the application, rather than as post-consent, pre-construction surveys. We advise that otter surveys are required to assess the extent to which otters utilise the application site and in particular to assess whether the works are likely to cause disturbance to any natal holts which may be present within 200m. In the absence of this information, we consider that the determining authority has insufficient information with which to assess the likely impacts of the proposals on otters.	Appendix 8B Preliminary Ecological Appraisal Report	325	Llŷr Floating Wind proposes that surveys are completed post consent. The outline CEMP will be updated and finalised post consent in line with any relevant planning and/or marine licence conditions and approved by Natural Resources Wales (NRW), Pembrokeshire County Council (PCC) and the Pembrokeshire Coast National Park Authority (PCNPA). Surveys will inform the CEMP. The results of the pre-construction surveys will be used to determine the need for licences and the need for, and extent of, habitat and protected species management plans. Following completion of the surveys, the LPA [and NRW] will be informed of the survey results and recommendations for any associated licenses or species-specific management plans. Pre-construction surveys for otter within 200 m will be completed. The design of the proposed Project includes embedded mitigation that will be produced as conditions of consent, and which will mitigate potential impacts. This approach has been employed in order to demonstrate commitment to mitigation measures by including them in the design of the proposed Project, as detailed in ES Table 814. In addition to embedded mitigation outlined in ES Chapter 8 Section 8.7 the additional mitigation measures outlined in Section 9.5 will be incorporated into the proposed Project to demonstrate commitment to mitigation measures and commitment to maintaining favourable conservation status. In addition Llŷr Floating Wind wishes to add to the list of potential mitigation solutions the option to HDD at linear features where potential impacts on favourable conservation status cannot be otherwise be mitigated.
32	European Protected Species (EPS) Terrestrial	If further surveys can rule out the likely presence of a natal holt within this distance of the works, we are content that the arising impacts can be managed with the inclusion of appropriate pre-construction checks, contingencies, and good practice working measures in any CEMP agreed for the scheme, and a lighting condition on any consent issued for the scheme (as indicated above).	Appendix 8B Preliminary Ecological Appraisal Report	326	Noted
33	European Protected Species (EPS) Terrestrial	Dormice are known to be present in the area (having been recorded during the 2018 Greenlink dormouse surveys) and accordingly we note that PCC advised that the presence of dormice may be assumed within the application site. Accordingly, we observe that surveys carried out to inform this application comprise an assessment of the quality of dormouse habitat within the application site, with relevant habitat survey results presented in: • Appendix 8B Preliminary Ecological Appraisal Report; • ES Volume 5, Figure 8-6 Phase 1 Habitat Plan; and • ES Volume 5, Figure 8-7 Dormouse Habitat Suitability Plan	Appendix 8B Preliminary Ecological Appraisal Report; ES Volume 5, Figure 8-6 Phase 1 Habitat Plan; and ES Volume 5, Figure 8-7 Dormouse Habitat Suitability Plan	327	Noted
34	European Protected Species (EPS) Terrestrial	We note the confirmation in Table 8-11 that the application is progressed assuming dormouse presence in all areas of suitable habitat including hedgerows, scrub and woodland. This area supports extensive lengths of mature and established hedgerows, Figure 8-7 confirms that the majority of dormouse habitat within the application site is considered to have moderate or high suitability for dormice.	Volume 2: Chapter 8 – Ecology and Biodiversity	328	Noted
35	European Protected Species (EPS) Terrestrial	We observe the detail of Figure 4-26 the indicative cross-section of the cable trench corridor and note that it could be as wide as 35m, potentially presenting habitat severance issues for this species.	Volume 1: Chapter 04 – Description of the Proposed Project	329	Where important hedgerows are identified along the Llyr project route, Llŷr Floating Wind confirms a commitment to reducing the working width of the construction corridor to 12 metres at these locations. In addition to the embedded mitigation measures outlined in Chapter 8, Section 8.7 of the Environmental Statement (ES), the additional mitigation set out in Section 9.5 will also be implemented. These measures reflect Llŷr Floating Wind's ongoing commitment to avoiding and minimising ecological impacts, and to maintaining the favourable conservation status of relevant ecological features. Should any residual risk to favourable conservation status remain following implementation of the proposed mitigation, Llŷr Floating Wind would seek to avoid such impacts through the use of Horizontal Directional Drilling (HDD) to route beneath the sensitive features.
36	European Protected Species (EPS) Terrestrial	We broadly welcome the commitment for habitat reinstatement but advise that a commitment is sought to the preferential use of hedgerow translocation across the scheme as this will ensure that mature habitat is re-established in the shortest possible timeframe.	Volume 2: Chapter 8 – Ecology and Biodiversity	330	Noted and the Llŷr project will commit to seeking the preferential use of hedgerow translocation across the scheme.
37	European Protected Species (EPS) Terrestrial	Translocation will need to be carried out at the appropriate time of year (having regard to potential impacts on dormice) and with appropriate precautions and care in place during and after translocation to ensure that successful re-establishment occurs.	Volume 2: Chapter 8 – Ecology and Biodiversity	331	Noted and the Llŷr project will commit to undertaking the translocation at an appropriate time of year (having regard to the potential impact on dormice) and providing the appropriate precautions to ensure a successful re-establishment.
38	European Protected Species (EPS) Terrestrial	We therefore seek the following further information/commitments from Llŷr Floating Wind: • That existing gaps in hedgerows (E.g. Farm gateways) will be used wherever possible and the working corridor illustrated in Figure 4-26 kept to the minimum necessary; • Where hedgerow must be removed to facilitate the cabling works, that hedgerow translocation is used in preference to replanting for post-works habitat re-instatement, with replanting only utilised to gap up where translocation fails. Appropriate care of vegetation shall apply to translocated and newly planted habitat. • Development works shall avoid areas of woodland/wooded copses; • Clarification of the duration of habitat losses considered 'temporary' where these are applicable across the scheme;	Volume 1: Chapter 04 – Description of the Proposed Project Volume 2: Chapter 8 – Ecology and Biodiversity	332	Noted, the Llŷr project agrees to this commitment and will provide Clarification of the duration of habitat losses considered 'temporary' where these are applicable across the scheme

39	European Protected Species (EPS) Terrestrial	The text in ES Chapter 8 Paragraphs 127-128, 187 and 190 appears unclear. There is in reference to a survey being carried out to assess the suitability of dormouse habitat across the site, however this has already been done and the results presented in Volume 5 Figure 8.7. It also says that if dormice are identified within the site, an EPS (dormouse) licence from NRW will be required. We refer to the confirmation in in Table 8-11 that the application is progressed assuming dormouse presence in all areas of suitable habitat including hedgerows, scrub and woodland. therefore, we advise that Applicant apply for an EPS (dormouse) licence for the works.	ES Chapter 8 Paragraphs 127-128, 187 and 190	333	Perhaps confusion on the phrasing, better phrasing of 128 might be: As dormouse are assumed to be present within the onshore development area, a dormouse presence/ likely absence survey of suitable habitats (Volume 5: Figure 8.7) will be undertaken. The Llŷr project proposes that surveys are completed post-planning submission, and that licenses are sought pre-construction.
40	European Protected Species (EPS) Terrestrial	Regarding new planting, we advise that a condition is attached to any consent issued for the scheme requiring the details of the planting specification to be agreed, prior to works commencing on site.	Volume 6: Appendix 4C - Post Consent Environmental Management Plan Log	334	Noted, the Llŷr project is content to include this requirement as a condition
41	European Protected Species (EPS) Terrestrial	As indicated above, a sensitive lighting scheme will be required for both the construction and operational phases to avoid compromising new and retained habitat used by nocturnal and light sensitive species. We consider that this matter can be addressed by a suitably worded condition.	Volume 6: Appendix 4A – Outline Construction Environmental Management Plan (OCEMP)	335	Noted - as stated previously the Llŷr project commits to implementing the operational lighting requirements as detailed in an approved Onshore Lighting Plan (addressing both construction and operation) as agreed in writing with the Pembrokeshire County Council planning department prior to any onshore substation works starting.
42	European Protected Species (EPS) Terrestrial	We note that an outline CEMP has been produced in support of the application (Appendix 4A). We advise that a suitably worded condition is attached to any consent granted for the scheme, prior to any works commencing on site. We advise that it includes: • appropriate pre-construction checks for bats, dormice and otters; • contingencies if any of these species are found in advance of works commencing or during the works; • appropriate buffers between works and identified otter natal holts; • protected species mitigation measures including good practice working measures for otters and appropriate, specified otter-proof fencing around HDD pits; • reference to the agreed lighting plan, for construction lighting; • INNS control measures relevant to the species present; • Pollution prevention measures.	Volume 6: Appendix 4A – Outline Construction Environmental Management Plan (OCEMP)	336	Noted, the Llŷr project is content to include the requirement for a CEMP as a condition to include the details specified.
43	European Protected Species (EPS) Terrestrial	We advise that any consent issued for the scheme includes a condition requiring the submission of a LEMP, prior to works commencing on site. The LEMP should set out the nature, location and timing of long-term habitat management and maintenance works for new and retained habitat within the application site. We request that it also includes details of the maintenance Works around the substation.	Volume 6: Appendix 4C - Post Consent Environmental Management Plan Log	337	Noted and content to adopt the requirements within the Landscape Ecological Management Plan (LEMP) for approval by Pembroke County Council as a post consent permit condition
44	European Protected Species (EPS) Terrestrial	As indicated above, given the proximity of nearby Special Areas of Conservation/SAC to the works and potential impacts of the proposed works on features for which they are notified, we advise that the application is considered under Regulation 63 of the conservation of Habitats and Species Regulations 2017 (as amended).		338	The Llŷr project agrees
45	European Protected Species (EPS) Terrestrial	We welcome the submission of the following reports: • Habitats Regulations Assessment Screening (Volume 6, Appendix 8D) • Report to Inform an Appropriate Assessment (Volume 6, Appendix 8E)	Habitats Regulations Assessment Screening (Volume 6, Appendix 8D) Report to Inform an Appropriate Assessment	339	Noted
46	European Protected Species (EPS) Terrestrial	With reference to Table 8D-22 we note that the following are screened in for Appropriate Assessment: • Limestone Cliffs of SW Wales SAC – Greater horseshoe bat • Pembrokeshire Bat Sites and Bosherston Lakes SAC – Greater and Lesser Horseshoe bats	Habitats Regulations Assessment Screening (Volume 6, Appendix 8D)	340	Noted
47	European Protected Species (EPS) Terrestrial	We advise that the otter feature of the Pembrokeshire Bat Sites and Bosherston Lakes SAC is screened into the assessment along with that for the Pembrokeshire Marine SAC. The development site is within the range of otters from both SAC sites.	Habitats Regulations Assessment Screening (Volume 6, Appendix 8D)	341	Otter are screened into Appendix 8D and Appendix 8E. It is considered that the impact pathways associated with the proposed Project will not hinder the conservation objectives of the Annex II terrestrial mammal features. therefore, there is no potential for an AEoSI
48	European Protected Species (EPS) Terrestrial	We advise that the documents above are revised to consider the otter feature of these SACs in light of the additional survey information recommended. In the absence of this information, the competent authority cannot complete the HRA.	Habitats Regulations Assessment Screening (Volume 6, Appendix 8D)	342	Otter are screened into Appendix 8D and Appendix 8E. It is considered that the impact pathways associated with the proposed Project will not hinder the conservation objectives of the Annex II terrestrial mammal features. therefore, there is no potential for an AEoSI
49	European Protected Species (EPS) Terrestrial	In regards to the bat features of the above SACs, subject to the detail of the additional information advised for 'bats in structures' and the above commitments and planning conditions for bats, lighting, CEMP and a LEMP being secured by any consent issued for the scheme, then it may be possible to agree with the assessment of no likely significant effect on the horseshoe bat features of the Pembrokeshire Bat Sites and Bosherston Lakes SAC and Limestone Cliffs of SW Wales SAC.	Volume 6: Appendix 4C - Post Consent Environmental Management Plan Log	343	Noted

28 March 2025

Llŷr Marine Ornithological Clarification Note 1
Checking the Llŷr figures adopted by Mona for cumulative / in-combination assessment

As requested by NRW (A) and JNCC, the figures adopted for Llŷr in the Mona cumulative / in-combination assessments have been checked and confirmed to be correct.

NRW (A) and JNCC are content with the gap-filling exercise undertaken by Mona, and they accept that applicant's impact estimates (collision risk and displacement mortalities) for the Liverpool Bay projects with no available data. The modelling, methodologies and overall approach adopted by Mona for their cumulative and in-combination assessments have been accepted by NRW (A) and JNCC and use the correct input figures for Llŷr. Therefore, this matter should now be closed out with the provision of this clarification note.

1. Displacement

As presented in **Table 1**, HiDef have checked that the correct mean seasonal peak (MSP) figures for Llŷr have been taken forward by Mona for their cumulative / in-combination displacement assessments. The information is taken from the following sources, to which the table numbering and page references (viewer mode) apply:

- **Mona -** Deadline 7 ES Cumulative Assessments, REP7-033, Section 5.9
- **Llŷr** - ES_Appendix 22D_Marine Ornithology Displacement Assessment

Table 1 – Confirmation that correct seasonal abundances for Llŷr have been adopted in the Mona cumulative / in-combination assessments

Species for displacement assessment	Llŷr Breeding season abundance	Breeding season abundance for Llŷr given in Mona	Llŷr Non-breeding season abundance	Mona Non-breeding season abundance for Llŷr given in Mona	Llŷr ref	Mona ref
Guillemot	2,026	2,026	13,009	13,009	Table 22-2	Table 5-52, p142
Razorbill	21	21	493	493	Table 22-2	Table 5-56, p146
Puffin	152	152	592	592	Table 22-2	Table 5-62, p150
Gannet	246	246	715 / 65	715 / 65	Table 22-2	Table 5-66, p153
Manx shearwater	3,434	3,434	27 / 1,267	27 / 1,267	Table 22-2	Table 5-76, p160

2. Collision Risk

As presented in **Table 2**, HiDef have checked that the correct seasonal mortality estimates for Llŷr have been taken forward by Mona in their cumulative / in-combination collision risk assessments. The information is taken from the following sources, to which the table numbering applies:

- **Mona -** Deadline 7 ES Cumulative Assessments, REP7-033, Section 5.9
- **Llŷr** - ES_Appendix 22C_Marine Ornithology Collision Risk

As these collision mortality estimates are a seasonal summary, there are slight differences related to the number of decimal points applied for presentational purposes, as well as in relation to the seasonal definitions adopted. These slight differences are not material nor statistically significant in relation to the standard deviations provided as the agreed measure of uncertainty in sCRM outputs.

The figures presented below are also the 'worst case' in terms of the Llŷr turbine scenario selected for modelling (the maximum 10 turbine scenario), and CRM avoidance rates applied.

Table 2 – Confirmation that correct collision mortality estimates for Llŷr have been adopted in the Mona cumulative / in-combination assessments

Collision mortality estimates	Breeding season	Autumn migration	Non-breeding	Spring migration	Annual Total
Kittiwake					
Llŷr - Table 22-5, 10 turbine scenario	**Mar - Aug**	**Sep - Dec**	**N/A**	**Jan - Feb**	-
Seasonal mortality	1.1	20.6	-	2.1	23.9
SD	*0.3*	*2.8*	-	*0.4*	*3.8*
Mona - Table 5-116, figures for Llŷr	**May - Jul**	**Aug - Dec**	-	**Jan - Apr**	-
Seasonal mortality	1.13	21.19	-	2.16	24.48
Lesser black-backed gull					
Llŷr - Table 22-7, 10 turbine scenario	**Apr - Aug**	**Sep - Oct**	**Nov-Feb**	**Mar**	-
Seasonal mortality	1.1	0.2	0.2	0.4	1.9
SD	*0.2*	*0.1*	*0.1*	*0.2*	*0.6*
Mona - Table 5-123, figures for Llŷr	**May - Jul**	**Aug - Oct**	**Nov-Feb**	**Mar - Apr**	-
Seasonal mortality	1.12	0.20	0.20	0.41	1.93

Collision mortality estimates	Breeding season	Autumn migration	Non-breeding	Spring migration	Annual Total
Gannet					
Llŷr – Table 22-8, 10 turbine scenario	**Mar - Sep**	**Oct - Nov**	**N/A**	**Dec - Feb**	-
Seasonal mortality	3.0	0.5	-	0.3	3.7
SD	*0.6*	*0.3*	-	*0.1*	*1.5*
Mona - Table 5-127, figures for Llŷr	**Apr - Aug**	**Sep - Nov**	**N/A**	**Dec - Mar**	-
Seasonal mortality	3.09	0.51	-	0.31	3.91
Great black-backed gull					
Llŷr - Table 22A8*, 10 turbine scenario	**Mar - Aug**	**N/A**	**Sep - Feb**	**N/A**	-
Seasonal mortality	0.653	-	0.960		1.613
Mona - Table 5-117, figures for Llŷr	**Mar - Aug**	**N/A**	**Sep - Feb**	**N/A**	-
Seasonal mortality	0.65	-	0.96	-	1.61

***Table 22A8 in Annex A of Llŷr ES Appendix 22C** provides monthly CRM outputs for great black-backed gull as agreed by NRW (A) and JNCC.
The monthly estimates for all species were given to three decimal places (DPs) in this Annex and were only summarised to a single DP for presentation of the seasonal summaries.

28 March 2025

Llŷr Marine Ornithological Clarification Note 2
HiDef Method to Apportion Unidentified Birds - 'Non-ID Apportioning'

As requested by NRW (A) and JNCC, HiDef provide this clarification of the approach we take to apportion those bird records it has not been possible to identify to the species level, a practice we term 'non-ID apportioning'. This supporting detail is given with reference to paragraph 29 of **Appendix 22A Marine Ornithology Baseline - Section 22.2.2 Data Analysis**, where NRW (A) and JNCC have requested further explanation of the methodology (responses as appended in Annex A).

We first set out the taxonomic groupings we use for non-ID apportioning (Section 1) and then how the method works in practice (Section 2).

1. Taxonomic groupings used by HiDef

Table 1 presents the taxonomic groupings used by HiDef for records where it has not been possible to ID the bird to species level. Where possible, identification is undertaken to the species level, but where the record is less certain it is assigned to the taxonomic grouping that is the 'best fit'. These groupings encompass three levels of certainty as shown in **Table 1**, from grouping level 1 where there's reasonable certainty on the type of bird through to level 3, the broadest category.

Table 1: Taxonomic groupings used for birds with no species identification

Species	Grouping Level 1	Grouping Level 2	Grouping Level 3
Kittiwake	Small gull species (**SGS**)	Auk / small gull species (**ASG**)	Gull species
Great black-backed gull	Black-backed gull species	Large gull species (**LGS**)	
Lesser black-backed gull			
Herring gull	N/A		
Fulmar	Fulmar or gull species	N/A	N/A
Gannet	Gannet species	N/A	N/A
Puffin	N/A	Auk species (**AUK**)	Auk / shearwater species Auk / small gull species
Guillemot	Large auk (**LGA**)		
Razorbill			
Manx shearwater	Shearwater species	Auk / shearwater species (**AUS**)	N/A
Balearic shearwater		N/A	N/A
European storm petrel	Storm petrel species	N/A	N/A

In **Table 1,** the non-ID species codes are noted in **bold**, as referenced in the worked examples given in the next section, **Table 2.**

2. HiDef Method for Non-ID Apportioning

All unidentified birds, as compiled from the taxonomic groupings in **Table 1**, are assigned to species-level using a weighting that correlates to the overall proportions of birds recorded for each species per survey month. Depending on the numbers encountered this weighting will vary month-to-month.

Table 2 provides three worked examples in relation to the Llŷr survey records presented in **Appendix 22A Marine Ornithology Baseline**. The original counts are to be found in **Table A1**, **Annex A** of **Appendix 22A**, with the unidentified bird records presented in **Table A3**.

Table 2: Non-ID apportioning – worked examples for Llŷr

Species	Original count	No ID species group	Unidentified count	Apportioning proportion	Count added	Total apportioned count
June 2020 (S01-20)						
Puffin	12	AUK	1	1	1	13.2069
		AUS	9	0.022989	0.2069	
Manx shearwater	1069	AUS	9	0.977010	8.7931	1077.7931
Guillemot	100	LGA (sitting)	2	1	2	102
September 2020						
Puffin	9	AUK	18	1	18	27
Manx shearwater	9	AUS	13	0.5	6.5	15.5000
Razorbill	59	AUS	13	0.5	6.5	66.6940
		LGA (sitting)	43	0.027768	1.1940	
Guillemot	1961	LGA (sitting)	43	0.972230	41.8059	2003.8059
		LGA (flying)	1	1	1	
January 2021 (S02-21)						
Guillemot	1831	ASG	3	0.25	0.75	1866.4556
		LGA	37	0.937990	34.7056	
Kittiwake	254	ASG	3	0.75	2.25	257.2403
		SGS	1	0.990290	0.9903	
Razorbill	115	AUK	5	1	5	122.2943
		LGA	37	0.062007	2.2943	

As NRW (A) and JNCC should be aware, non-ID apportioning cannot be a completely accurate process, on occasion a small number of unidentified birds will be incorrectly allocated. As HiDef's apportioning calculations are survey-specific, they are based on the presence of birds identified to species-level during that specific survey. For example, if there were to be zero confirmed puffin IDs recorded during a survey, then any puffin that might be amongst the unidentified birds would not be addressed in the non-ID apportioning. However, this risk is considered to be slight and would only ever involve a very small number of birds, with negligible impact to estimates of abundance and their associated levels of uncertainty.

Overall, the method is considered robust, and it allows for the inclusion of non-ID birds in the project impact assessments, as recommended by the statutory nature conservation bodies.

Annex A

NRW (A) and JNCC requests for clarification of HiDef's non-ID apportioning method

Llŷr Appendix 22A Marine Ornithology Baseline - Section 22.2.2 Data Analysis, Paragraph 29:
Apportioning of 'unidentified' birds to species level was undertaken on all data for the purposes of calculating density and population estimates. The number of unidentified birds in each species group were assigned to species where appropriate, based on their respective abundance ratios. For example, if identified guillemots and razorbills occurred in a 4:1 ratio, then 80% of unidentified birds would be assigned to guillemot and 20% assigned to razorbill. Apportioning of unidentified birds was undertaken prior to calculation of design-based and model-based estimates.

NRW (A) advice on Llŷr – 29 January 2025
NRW (A) welcomes that records of birds 'unidentified' to species level (i.e. those only identified to species group level) have been apportioned to species based on their respective abundance ratios. However, clarity is required on how unidentified species that crossed multiple species/groups, or are more ambiguous, were apportioned. For example, if guillemots and razorbills occurred in a 4:1 ratio, then 80% of unidentified birds would be assigned to guillemot and 20% assigned to razorbill. As such, we consider further detail is required regarding which unidentified species groupings were included (for example, for razorbills and guillemots the groupings 'auk/shearwater species', 'auk/small gull species', 'auk species', and presumably 'large auk species' could all potentially include guillemots and razorbill (although further clarity as to which auk species are considered large is not provided). Therefore, the Applicant should clarify whether all these groupings were considered and apportioned to razorbill and to common guillemot to ensure the calculations presented in the assessments are correct. In addition, clarity should be provided on how species were apportioned should species level data not be available for a survey.

JNCC advice on Llŷr – 22 January 2025
The paragraph states that apportioning of unidentified birds to species level has been undertaken based on ratio of abundances. An example is provided for guillemots and razorbills whereby if they occurred in a 4:1 ratio, then 80% of unidentified birds would be assigned to guillemot and 20% assigned to razorbill. Further detail is required regarding which unidentified species groupings were included. For example, for razorbills and guillemots the groupings 'auk/shearwater species', 'auk/small gull species', 'auk species', and presumably 'large auk species' could all potentially include guillemots and razorbill (although clarity as to which auk species are considered large is not provided, but as the two largest species of auk which occur in the UK we assume that this would include razorbill and common guillemot). Are all of these groupings considered and apportioned to razorbill and to common guillemot?

21 May 2025

Llŷr Marine Ornithological Clarification Note 3
Collated cumulative / in-combination figures for EIA and HRA

As requested by NRW (A) on the call held on Friday 2nd May, cumulative / in-combination figures for EIA and HRA have been collated from the Mona deadline 7, REP7-033 report (for EIA) and the Mona deadline 7, REP7-020 (for HRA). These are the figures which include the long-standing Liverpool Bay projects for which there are no available data. For these, Mona has carried out a 'gap-filling exercise' in collaboration with Morecambe.

1. EIA cumulative / in-combination assessment

The modelling, methodologies and overall approach adopted here by Mona have been accepted by NRW (A). The figures in **Table 1** and **Table 2** are all taken from **Mona deadline 7 ES Cumulative Assessments, REP7-033, Section 5.9** except for the Llŷr displacement estimates in **Table 1**, which are from the relevant tables (EIA annual estimates) in **Llŷr ES Appendix 22D, Marine Ornithology Displacement Assessment**.

Table 1 – EIA (regional) displacement mortality estimates agreed by NRW(A)

Species for displacement assessment	Estimated mortality (no. of birds)		% increase in baseline mortality from cumulative impact	Mona ref
	Llŷr	Cumulative total		
Guillemot	75.18 (*45.11 – 1,052.45*)	558 (*335 – 7,814*)	0.40 (*0.26 – 5.16*)	Table 5-85
Razorbill	13.3 (*7.98 – 186.13*)	98 (*59 – 1,372*)	0.12 (*0.08 – 1.34*)	Table 5-93
Puffin	3.72 (*2.23 – 52.08*)	46 (*28 – 648*)	0.02 (*0.01 – 0.25*)	Table 5-99
Gannet	7.18 (*6.16 – 82.08*)	60 (*51 – 683*)	0.05 (*0.04 - 0.54*)	Table 5-104
Manx shearwater	23.64 (*4.73 – 236.40*)	178 (*107 – 2,492*)	0.08 (*0.05 - 1.05*)	Table 5-114

Table 2 – EIA (regional) collision mortality estimates agreed by NRW(A)

Species for collision assessment	'Worst case' avoidance rate from Mona ES	Estimated mortality (no. of birds)		% increase in baseline mortality from cumulative impact	Mona ref
		Llŷr	Cumulative total		
Kittiwake	99.28	24.48	641.13	0.45	Table 5-116
Lesser black-backed gull	99.39	1.93	299.28	1.03	Table 5-123
Gannet	99.28	3.91	182.58	0.14	Table 5-127
Great black-backed gull	99.39	1.61	167.41	9.93	Table 5-117

The species **highlighted in bold** are those where Mona undertook PVA to investigate population consequence of the estimated cumulative impacts. The PVA outputs are presented in the following tables included in Section 5.9 of the Mona deadline 7 ES report:

- guillemot - Table 5-87
- razorbill - Table 5-95
- lesser black-backed gull - Table 5-126
- great black-backed gull - Table 5-120

For **gannet** the summed collision and displacement figures (project alone and cumulative) are still below the 1% baseline mortality threshold advised by NRW (A), so that no PVA was required under EIA for this species.

PVA outputs showed no significant population-level consequences for any species, excepting great black-backed gull, and for this only under the most conservative 'worst case' scenario.

Table 3 provides a summary of NRW (A) advice on the significance of Llŷr project alone and cumulative / in-combination EIA impacts, referencing their response to the Mona deadline 7 ES Cumulative Assessments, as set out in Tables 1 and 2 above.

NRW (A)'s conclusions on **herring gull** are included in **Table 3** for completeness, although Llŷr project alone impacts are zero for this species. No individuals were recorded within the project area during the two-year programme of baseline digital aerial survey work.

Table 3 – NRW advice on marine ornithological EIA conclusions

Species and impact pathway	NRW advice on marine ornithological EIA conclusions	
	Llŷr project alone[1]	Cumulative impacts from all plans & projects incl. Llŷr [2]
Gannet, collision	No significant adverse impact	No significant adverse impact
Gannet, displacement	No significant adverse impact	No significant adverse impact
Gannet, collision + displacement	No significant adverse impact	No significant adverse impact
Kittiwake, collision	No significant adverse impact	No significant adverse impact
Lesser black-backed gull, collision	No significant adverse impact	No significant adverse impact
Herring gull, collision	*No significant adverse impact*	*No significant adverse impact*
Great black-backed gull, collision	No significant adverse impact	Unable to rule out significant adverse impact
Guillemot, displacement	No significant adverse impact	No significant adverse impact
Razorbill, displacement	No significant adverse impact	No significant adverse impact
Puffin, displacement	No significant adverse impact	No significant adverse impact
Manx shearwater, displacement	No significant adverse impact	No significant adverse impact

[1] Summarised from the NRW (A) advisory response on Llŷr, as sent to the Marine Licensing Team on 29 January 2025

[2] Summarised from NRW's deadline 7 submission and closing statement on Mona, dated 14 January 2025 - with the cumulative impact estimates including correct Llŷr figures, as previously checked and presented in clarification note 1

2. HRA cumulative / in-combination assessment

The modelling, methodologies and overall approach adopted here by Mona have been accepted by NRW (A). The figures presented in **Table 4** are taken from **Mona deadline 7**, **Offshore Ornithology Information to Support an Appropriate Assessment, Annex E1.3.1, REP7-020, Section 1.4.3**.

Table 4 – HRA mortality estimates agreed by NRW(A)

Species and Impact type C = collision D = displacement C&D = sum of these impact types	Estimated mortality (no. of birds)		% increase in baseline mortality from cumulative impact	Mona ref
	Llŷr	Cumulative total		
Grassholm SPA				
Gannet (C&D)	4.93 – 30.05	75 (*73 – 231*)	1.29 (*1.25 – 3.96*)	Tables 1.96, 1.97, 1.98
Gannet (C&D) accounting for macro-avoidance	2.59 – 27.70	70.71 (*68.58– 226.47*)	0.61 (*1.21 – 3.88*)	Tables 1.160 1.161, 1.162 1.163, 1.164 1.165
Skomer, Skokholm and Seas off Pembrokeshire (SSSP) SPA				
Guillemot (D)	16.84 – 92.51	54 (*32 – 754*)	1.99 (*1.19 – 27.83*)	Tables 1.81, 1.82, 1.83
Razorbill (D)	0.18 – 4.21	3 (*2 – 35*)	0.20 (*0.12 – 2.81*)	Tables 1.120, 1.121, 1.122
Manx shearwater (D)	11.85 – 276.40	110 (*66 – 1,547*)	0.09 (*0.06 – 1.31*)	Tables 1.90, 1.91, 1.92
Kittiwake (C&D)	0.71 – 3.83	11.3 (*10.89 – 19.08*)	2.42 (*2.37 – 4.16*)	Tables 1.42, 1.43, 1.44

Mona undertook PVA to investigate population consequence of these estimated cumulative impacts, against each relevant SPA breeding seabird colony population. These PVA outputs are presented as follows in **REP7-020**:

- guillemot - Table 1.143
- razorbill - Table 1.158
- Manx shearwater - Table 1.151
- kittiwake – Table 1.132
- gannet – Table 1.147

PVA outputs showed no significant population-level consequences for any species from these cumulative impacts. **Table 5** records NRW's conclusions on whether there would be adverse effect on site integrity (AEoSI) for any of the SPA populations of seabirds assessed for Llŷr project alone and in combination with other plans and projects.

Table 5 – NRW advice on marine ornithological HRA conclusions

Species	NRW advice on marine ornithological HRA conclusions	
	Llŷr project alone[1]	Cumulative impacts from all plans & projects incl. Llŷr [2]
Gannet, collision	No AEoSI	No AEoSI
Gannet, displacement	No AEoSI	No AEoSI
Gannet, collision + displacement	No AEoSI	No AEoSI
Kittiwake, collision	No AEoSI	No AEoSI
Lesser black-backed gull, collision	No AEoSI	No AEoSI
Herring gull, collision	*No AEoSI*	*No AEoSI*
Great black-backed gull, collision	*No AEoSI*	*No AEoSI*
Guillemot, displacement	No AEoSI	No AEoSI
Razorbill, displacement	No AEoSI	No AEoSI
Puffin, displacement	No AEoSI	No AEoSI
Manx shearwater, displacement	No AEoSI	No AEoSI

[1] Summarised from the NRW (A) advisory response on Llŷr, as sent to the Marine Licensing Team on 29 January 2025

[2] Summarised from NRW's deadline 7 submission and closing statement on Mona, dated 14 January 2025 - with the cumulative impact estimates including correct Llŷr figures, as previously checked and presented in clarification note 1

Herring gull and great black-backed gull are included in Table 5 for completeness, although neither species required assessment at Llŷr under HRA. **Lesser black-backed gull** and **puffin** did not require any cumulative PVA for the Mona application, as the apportioned estimates to Skomer, Skokholm and Seas off Pembrokeshire (SSSP) SPA populations were < 0.05% of baseline mortality:

- 0.00 – 0.01 Mona LBBG mortalities = 0.00 – 0.01% change in baseline mortality
- 0.00 – 0.7 Mona puffin mortalities = 0.00 – 0.01% change in baseline mortality

Table 1.16 (LBBG) and Table 1.7 (puffin) of **Mona deadline 7**, **Offshore Ornithology Information to Support an Appropriate Assessment, Annex E1.3.1, REP7-020, Section 1.4.3**.

NRW (A) have requested that Llŷr also further consider the potential cumulative impacts arising from Mona and other more distant projects, against the populations of these two species at SSSP.

Our consideration is supported by two maps. **Figure 1** presents the developments considered in the cumulative HRA assessment, as submitted, and **Figure 2** provides a plot of the 'at sea' distance calculation between SSSP and Mona. Mona is located on the western edge of the Liverpool Bay cluster of projects, so that the apportioning weightings calculated by Mona in respect of SSSP SPA, can be considered broadly representative of the Liverpool Bay cluster as a whole.

- **Lesser black-backed gull (LBBG)**

Under EIA, the estimate of LBBG collision mortality is **1.93 for Llŷr project-alone** and **1.92 for Mona project alone.** Review of the SPA apportioning weightings (breeding season) for Mona* indicates that only ~1.95% of project impacts from the Liverpool Bay cluster are to be apportioned against SSSP, with the majority, 76.71%, split between the Ribble and Alt Estuaries SPA (26.78%), Morecambe Bay and Duddon Estuary SPA (12.72%), and Bowland Fells SPA (37.21%).

*As presented in Table 1.16 of **Mona deadline 7**, **Offshore Ornithology Information to Support an Appropriate Assessment, Annex E1.3.1, REP7-020, Section 1.4.3**.

The mean max foraging range for LBBG = 127.0km, and mean max + 1SD = 236.0km, whereas Mona is located ~237 km from the SPA (**Figure 2** providing the plot of this 'at sea' distance measurement). None of this indicates any great risk, nor requirement for PVA, from cumulative offshore wind impacts against the LBBG population of SSSP SPA.

As **Table 5** sets out, NRW have already concluded **no adverse effect on site integrity** from cumulative offshore wind development, including Llŷr as well as Mona, against the LBBG population of SSSP SPA.

- **Puffin**

For puffin, the project-alone mortality estimate for puffin at SSSP SPA is between 0.50 – 11.36 birds based on displacement matrix outputs: Table 22-9 of **Llŷr ES Appendix 22E, Marine Ornithology Project Alone and Cumulative Impact Scenarios**.

Under PVA, Llŷr modelled a 'worst-case' annual cumulative impact of 111.63 puffin mortalities against the SSSP SPA population. This worst case is based on total annual puffin mortalities from Llŷr and Erebus together, using a displacement rate of 70% and an unrealistic mortality rate of 10%.

Checking Mona, this figure of 111 puffin is equivalent to that for total annual mortalities of this species from all offshore wind projects in the BDMPS; based on matrix outputs with a displacement rate of 60% and a more realistic mortality rate of 2% – Table 5-99 of **Mona deadline 7 ES Cumulative Assessments, REP7-033, Section 5.9**.

Therefore, the 'worst-case' cumulative impact scenario already modelled by Llŷr for puffin at SSSP SPA can be considered as sufficiently precautionary. As **Table 5** sets out, NRW have already concluded **no adverse effect on site integrity** from cumulative offshore wind development, including Llŷr and Mona, against the puffin population of SSSP SPA.

Figure 1 – Cumulative offshore wind development considerd in the Llŷr RIAA, as submitted

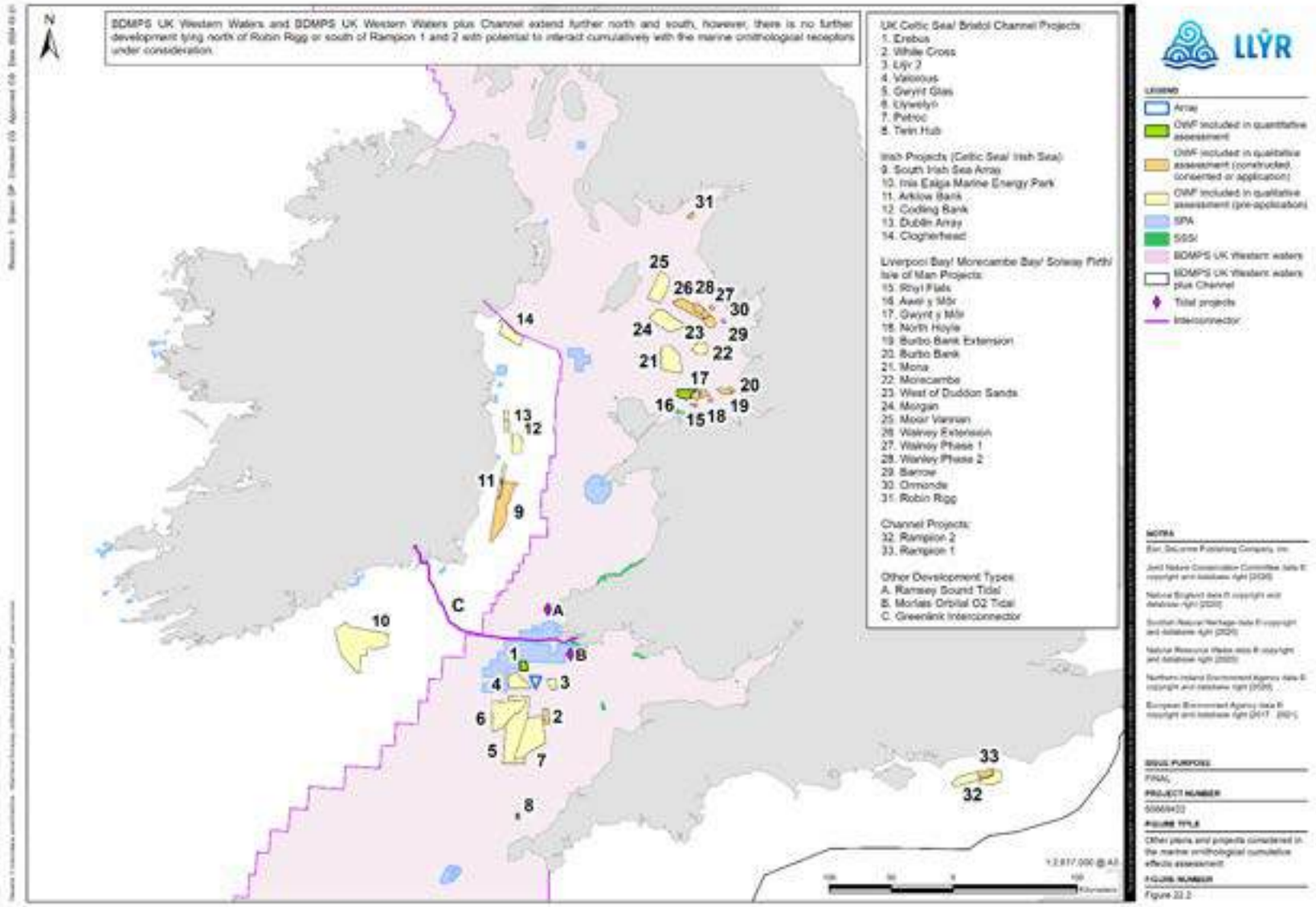
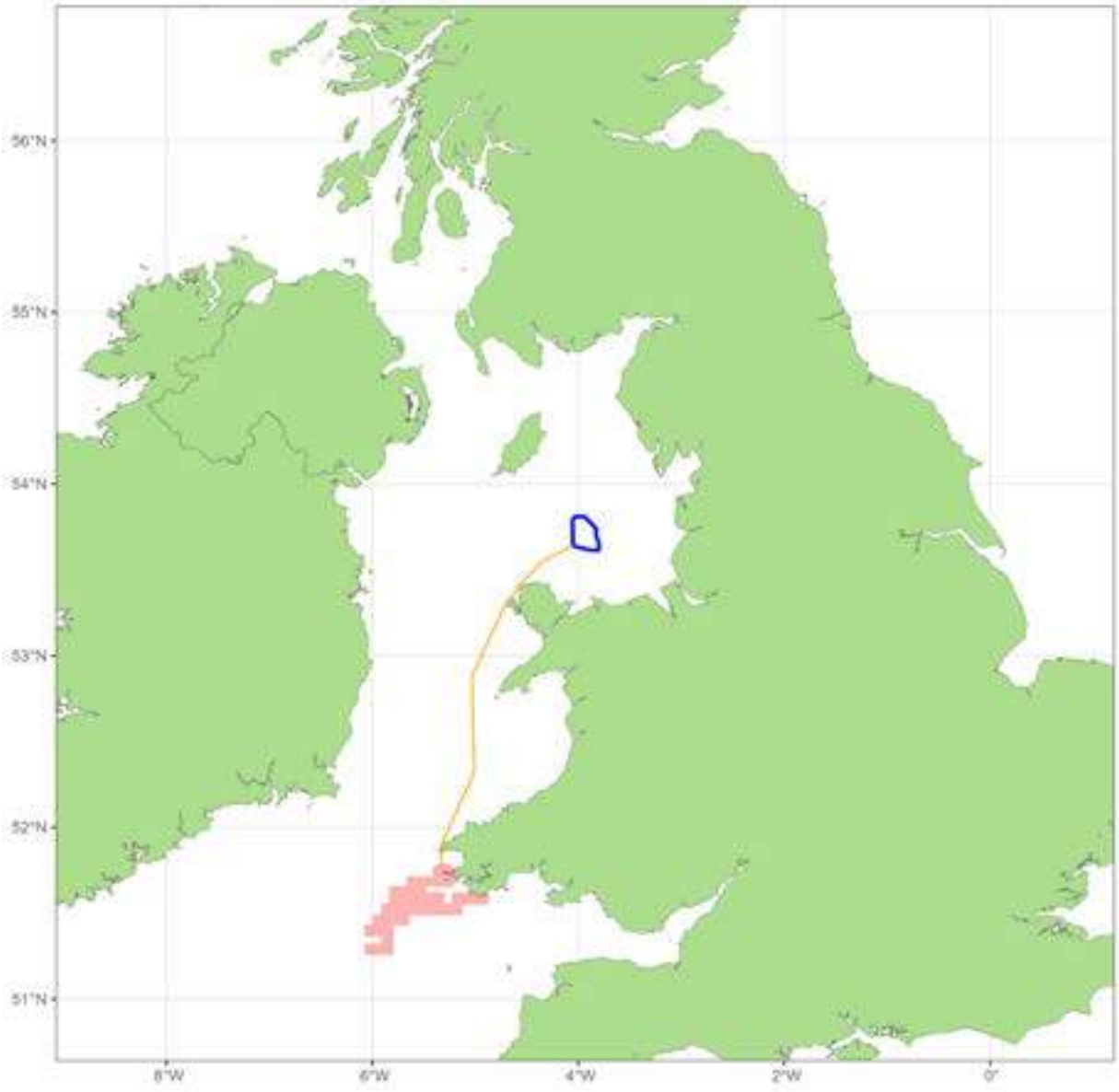


Figure 2 – Plot of the 'at sea' distance measurement, closest edge to closest edge, between SSSP SPA and the Mona offshore wind project located in Liverpool Bay, a distance of ~237km



22 May 2025

Llŷr Marine Ornithological Clarification Note 4
Further Clarification of HiDef's 'Non-ID Apportioning' Method

As requested by NRW (A) at the meeting on 9 May, HiDef provides this further clarification on the approach taken to apportion birds that could not be identified to species level. This note is provided in addition to the previous clarification note (note 2) in order to more clearly explain the taxonomic groupings we use for non-ID apportioning (Section 1) and how the method works in practice (Section 2).

1. Non-ID species groupings used by HiDef

Table 1 has been updated to present further detail on the species groupings used by HiDef and the species which may potentially be contained in each, although please note that this varies survey-by-survey (i.e. month by month) and that not all species presented in each group were recorded during the two-year survey programme undertaken for Llŷr.

Figure 1 presents these species groupings in a diagrammatic matrix which provides insight on how they are used by HiDef's specialist ornithologists during the review and ID process, and then subsequently used to inform the non-ID apportioning in the case of those observations not identified to species level.

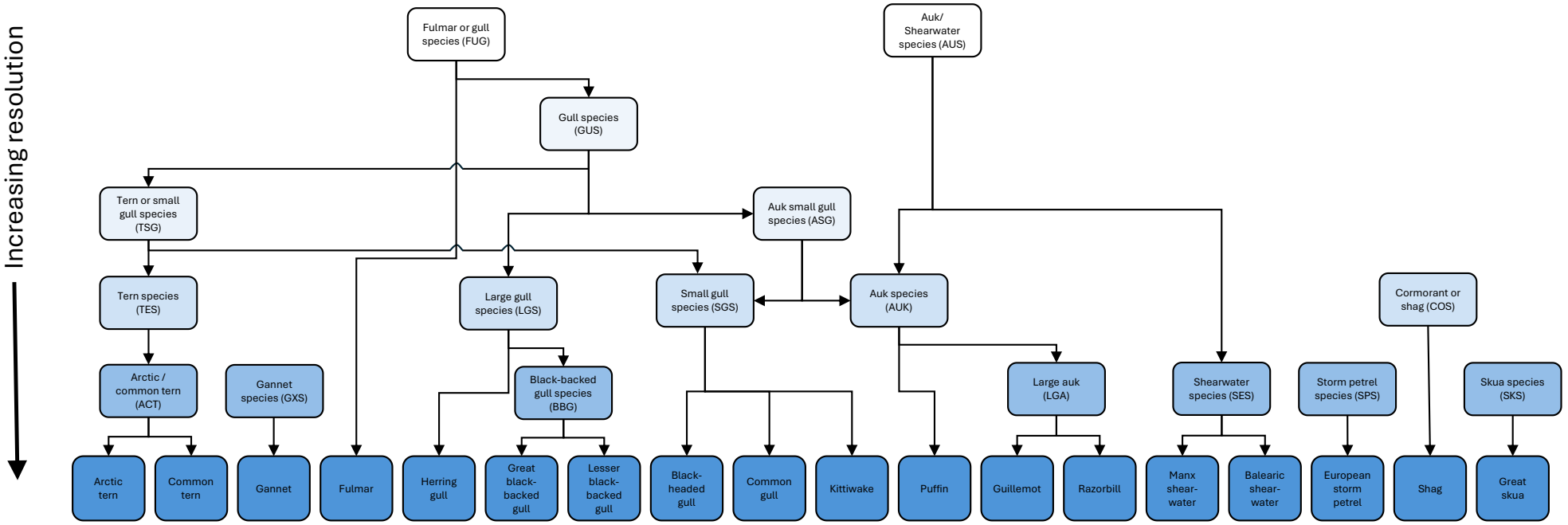
As carried out by HiDef, non-ID apportioning is a computational process applied to the 'observation sheets' of survey data for each transect in each survey month using code written in the R programming language. It is not easy to describe this computation in text; however, the illustrative examples set out in **Table 2** and the supporting explanations aim to enhance transparency of the methodology. These examples in **Section 2** are the same as those provided in the original clarification note.

Table 1: Groupings used for birds with no species identification – 'no-ID birds' and potential species they could be apportioned to

Species group	Code	Potential species included in the group
Large auk	LGA	Guillemot, razorbill
Auk species	AUK	Guillemot, razorbill, Atlantic puffin
Small gull species	SGS	Kittiwake, common gull, black-headed gull
Auk / shearwater species	AUS	Guillemot, razorbill, Atlantic puffin, Manx shearwater
Shearwater species	SES	Manx shearwater, Balearic shearwater
Auk / small gull species	ASG	Kittiwake, common gull, black-headed gull, guillemot, razorbill, Atlantic puffin
Large gull species	LGS	Great black-backed gull, lesser black-backed gull, herring gull
Black-backed gull species	BBG	Great black-backed gull, lesser black-backed gull
Gull species	GUS	Kittiwake, common gull, black-headed gull, great black-backed gull, lesser black-backed gull, herring gull
Fulmar / gull species	FUG	Fulmar, kittiwake, common gull, black-headed gull, great black-backed gull, lesser black-backed gull, herring gull
Arctic / common tern species	ACT	Arctic tern, common tern
Tern species	TES	Sandwich tern, Arctic tern, common tern
Tern / small gull species	TSG	Sandwich tern, Arctic tern, common tern, kittiwake, common gull, black-headed gull
Skua species	SKS	Arctic skua, great skua, pomarine skua, long-tailed skua
Storm petrel species	SPS	Storm petrel, leach's petrel
Cormorant / shag	COS	Cormorant, shag
Gannet species	GXS	Gannet

During the review and ID process, it may seem counterintuitive that a positively identified species, such as a razorbill, would be assigned to a broader, less certain group like 'auk species' or 'auk / shearwater species', rather than the more specific 'large auk'. This can happen when the observer is confident enough to assign a species (e.g. razorbill), but not confident enough to entirely rule out similar species such as puffin or Manx shearwater. In these instances, assigning the sighting to a species group with an indication of the likely species reflects the observer's judgement and the associated uncertainty. This approach works for apportioning purposes, as it means the unidentified observations are interpreted in the context of the species group composition and the specific uncertainties present within each survey.

Figure 1: Groupings used for birds with no species identification – 'no-ID birds' and potential species they could be apportioned to; colours denote hierarchical level from lowest (white) to highest (blue) granularity



2. HiDef Method for Non-ID Apportioning

Table 2 has been updated to include records from the Survey Area (i.e. untrimmed data) from which the non-ID apportioning weightings are calculated (Column E). These are from the full Llŷr survey area and not the sub-sample for the Array Area, as explained during the meeting with NRW (A) held on 9 May. This supporting information is now presented in **column E** of **Table 2** and is the key information missing from the original note. We hope **Table 2** aids understanding by providing a clearer representation of no-ID apportioning. We have also included equations for how these values are calculated below.

All unidentified birds, as compiled from the taxonomic groupings in **Table 1 / Figure 1**, are assigned to species-level using a weighting that correlates to the overall proportions of birds recorded for each species per survey month but does not always include each species within each species group listed above. Depending on the numbers of each species encountered in a particular survey, this weighting varies month-to-month. The total number of unidentified birds recorded during two years of Llŷr surveys was between two and four per cent of the total number of birds recorded. Therefore, the number of unidentified birds that required apportioning is relatively small.

We provide detailed description of three representative examples recorded during the Llŷr surveys:

- **June 2020 (S01-20)**
  In this survey, 9 unidentified 'Auk species' were recorded. Because there were instances in that survey where puffin and Manx shearwater had been assigned to the group category 'Auk species', these 9 individuals were apportioned between these two species, using ratios of occurrence from the wider Survey Area. Of those 9 unidentified 'Auk species', 0.2 and 8.8 birds were apportioned to the unapportioned 12 puffin and 1,069 Manx shearwater respectively, giving apportioned totals of 13.2 and 1,077.8 birds.

- **September 2020**
  In this survey, 18 unidentified 'Auk species' were recorded. Because no other identified species were labelled by the reviewer as 'Auk species' beside puffin (based on observations from the total survey area for that month), all 18 records were apportioned solely to the existing 9 records of puffin, providing a total apportioned count of 27 birds.

- **January 2021 (S02-21)**
  In this survey there were three Auk / small gull species (ASG) all of which were assigned through the non-ID apportioning process to guillemot and kittiwake but not razorbill. This is because the lower resolution 'Auk / small gull species' was selected for the identification of guillemot and kittiwake versus the higher resolution 'auk species' for razorbill.

In Table 2, the column names are defined as follows:

- **A – Species:** the name of the species.
- **B – Array area - unapportioned count:** the total number of each species within the array area before apportioning.
- **C – No ID species group:** the species group assigned to each species by the person identifying the birds, based on confidence of the identification.
- **D – No ID count:** the total number of non-identified birds within the species group.
- **Ei – Unapportioned count** within species group: the total number of each species within the species group, over the whole survey area before apportioning.

- **Eii – Total count in species group:** the total number of birds within the whole survey area for a given species group.
- **Eiii – Apportioning proportion:** this is the unapportioned number within the species group divided by the total count in species group within the whole survey area. It is calculated so that it can be used to determine the proportion of birds apportioned to each species out of the total no ID number.
- **F – Array area - count added:** the apportioning proportion multiplied by the no ID number for each species.
- **G – Array area – total apportioned count:** the unapportioned count for each species plus the number added, based on the species groups and apportioning proportions.

To reiterate the process, the apportioning proportion (**Table 2 Column Eiii**; i.e. weighting) is calculated from the unapportioned count of a said species in said group (**Column Ei**) divided by the total count of all birds of all species in said group (**Column Eii**) over the entire survey area – first equation. This is then multiplied by the no-ID count within the Array Area (**Column D**) to generate the count of apportioned birds that should be added (**Column F**) – second equation. This number is then added to the unapportioned count of a given species (**Column B**) to generate the total count including apportioned birds (**Column G**) – third equation.

$$\frac{Ei}{Eii} = Eiii$$

$$(Eiii \times D) = F$$

$$F + B = G$$

Table 2: Non-ID apportioning – worked examples for Llŷr

A	B	C	D	E			F	G
Species	Array Area – unapportioned count	No ID species group	No ID count	*Survey Area (untrimmed data)*			Array area - count added	Array Area – total apportioned count
				(i) Unapportioned count within species group	***(ii) Total count in species group***	***(iii) Apportioning proportion***		
June 2020 (S01-20)								
Puffin	12	AUK	1	*9*	*9*	*1*	1	13.2069
		AUS	9	*2*	*87*	*0.022989*	0.2069	
Manx shearwater	1,069	AUS	9	*85*	*87*	*0.977010*	8.7931	1,077.7931
Guillemot	100	LGA	2	*113*	*113*	*1*	2	102
September 2020								
Puffin	9	AUK	18	*12*	*12*	*1*	18	27
Manx shearwater	9	AUS	13	*4*	*8*	*0.5*	6.5	15.5000
Razorbill	59	AUS	13	*4*	*8*	*0.5*	6.5	66.6940
		LGA	43	*76*	*2,737*	*0.027768*	1.1940	
Guillemot	1961	LGA	43	*2,661*	*2,737*	*0.972230*	41.8059	2,003.8059
		LGA	1	*4*	*4*	*1*	1	
January 2021 (S02-21)								
Guillemot	1831	ASG	3	*1*	*4*	*0.25*	0.75	1,866.4556
		LGA	37	*1,785*	*1903*	*0.937990*	34.7056	
Kittiwake	254	ASG	3	*3*	*4*	*0.75*	2.25	257.2403
		SGS	1	*102*	*103*	*0.990290*	0.9903	
Razorbill	115	AUK	5	*1*	*1*	*1*	5	122.2943
		LGA	37	*118*	*1903*	*0.062007*	2.2943	

Note that the 'flying' and 'sitting' behavioural categories previously included for the large auk (LGA) species grouping have now been removed from the table. This was contextual information that gets recorded but does not actually influence the way the apportioning is done.

Apportioning of unidentified birds may theoretically introduce bias towards species which are more readily identifiable, i.e. if a large proportion of birds of one species are difficult to identify while another similar-looking species is easier to distinguish, there is a risk that the unidentified birds will be disproportionately attributed to the more easily identified species. However, due to the very small percentages of non-ID observations involved (between two and four per cent of the total number of birds recorded) this is determined to be a very small and acceptable risk, and preferable to the alternative, i.e. not undertaking any apportioning of the non-ID birds .

6740000.000

0 0.5 1 1.5 km

Legend

- Devils Quoit Consent Exclusion Boundary
- Revised Onshore Consent Line Boundary
- Orginal Llyr Onshore Consent Boundary

Non-Designated Historic Assets

- Broomhill Cottages (PRN 7591 - removed prostrate monlith)
- Devils Quoit newton Cromlech (PRN 3071)
- Freshwater West (PRN 125588 - Possible early medieval beach market)
- Kilpaison Burrows (PRN 3079 and PRN 3080 - Excavated early medieval burial site)
- Devils Quoit CADW Scheduled Monument

LLŶR

Figure Title:	Historic Assets - Revised Consent Boundary
Project:	LlŷR
Doc. Ref:	P10-LYR-4.3.4-MAP-0017 - Rev 1
Scale:	1 : 8,000

Rev	Drawn	Approval	Date	Size
00	MM	DK	25/4/2025	A3