Section 36 Application
Stakeholder Comment Clarifications

Llŷr Floating Wind Limited

Document Control: For Issue
P11-LYR-3.4.3-PAP-Rev 04 Marine Licence Application Clarifications 2

SIGNATURES					
A3	04/02/2026	For Issue	M Murray	D Keenlyside	M Murray
A2	12/12/2025	For Issue	M Murray		M Murray
A1	25/09/2025	For Issue	M Murray	D Keenlyside	M Murray
Rev	**Date**	**Purpose of issue**	**Prepared by**	**Checked By**	**Approved By**

Gap Analysis - CAS-01352-L3N2P8 - Llŷr 1 Floating Offshore Wind Demonstration Project
Version: A3 **NRW MLT**

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
1	**National Security**	Significant concerns still remain with the Ministry of Defence (MoD) who have objected to the project. This is due to the following: • air traffic control radar systems sited at MoD Hartland Point, and • the impact the export cable routes will have on Military Danger Areas D113A and D113B. As mentioned in the request for further information letter dated 14 February 2025, DEF_01 of the Welsh National Marine Plan (WNMP) states that a consent "will only be granted where the MoD is satisfied that the proposal will not cause unacceptable risk to defence and national security interests'. Whilst we acknowledge that the MoD are still carrying out their review to determine whether these risk are acceptable and can be mitigated, we strongly recommend you continue to discuss the comments made with them directly.	Noted. As confirmed in an email by the DIO, they are considering the use of a legal agreement that will be applied to the consent through a Cable Specification and Installation Plan condition.. Llŷr has provided a proposed an appropriate radar mitigation solution to overcome the Hartland Point radar objection (P10-LYR-4.2.3-PLA-004-Llŷr PSR Mitigation Proposal)..
2	**Offshore**		
2.1	General Comments	There are a number of instances where NRW A have advised that consideration should be given to the provision of an errata document to ensure the information and data associated with the project are clear. Some of the NRW A representation is based on in house assessments which would need to be incorporated into the ES of the project. Moreover, from the perspective of this being a test and demonstration project, and for the avoidance of doubt, we consider that an errata to the ES will be required. NRW A position on this matter is clear and considers this to be required to ensure that the public record is correct and for the benefit of this project and any future projects that might base their assessments on the project (including Llŷr 2 project). See NRW A response in full for further details on the request for an errata document to incorporate all changes to the original ES assessments.	Noted. The project will commit to providing a complete errata document to cover all aspects raised by NRW(A), that can be conditioned for and produced post-consent. This can be provided once the final turbine selection is made and the appropriate collision risk modelling can be undertaken. Similarly on Marine Mammals, following discussions with NRW(A) and the JNCC, we've now provided all the clarifications and updates that NRW(A) and JNCC have requested in relation to the assessment, as needed to inform the determination and including an updated MMMP. Should the project be consented, a complete errata document produced post consent will provide a comprehensive document that will provide the information necessary to feed into future projects.
2.2	Benthic Subtidal and Intertidal Ecology	Minor clarification requests relating to the use of concrete versus natural rock cable protection have been raised by NRW A. Please ensure these comments are reviewed and addressed in your response. JNCC have also raised comments which require additional clarification. Please ensure these comments are reviewed and addressed in your response	Noted and agree to consult in writing with the SNCB's on the use of natural rock protection over concrete matressing within the CSIP and CBRA ahead of commencement of works. All comments have been addressed in this response.

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2.3	Marine Ornithology	Following submission of further information, NRW A now agree with the conclusions of no significant effect at EIA and no AEoSI at HRA for the project alone, and cumulatively and in-combination with other plans and project. However, a number of additional comments and clarification requests, largely related to the turbine parameters that feed into the ornithological collision risk model, have been raised by NRW A. Please ensure these comments are reviewed and addressed in your response. It is worth noting that NRW A has stated that there are some outstanding areas where insufficient information has been provided. However, considering the stage of the consenting process the project is at, and in order to be enabling, NRW A has undertaken their own work to provide MLT with the information required to make an informed decision. JNCC have stated that there is lack of thorough in-combination assessment including all relevant projects for puffin and lesser black-backed gull. JNCC have also reviewed the advice provided by NRW A on this matter, and have stated that the calculated values by NRW A are indicative at this stage and that JNCC is not able to advise on that basis. I therefore ask that you review their response in full and address all comments raised.	Noted. The indvidual comments raised by the JNCC and NRW(A) are provided in this spreadsheet
2.4	Marine Mammals	NRW A consider that there remain some pending material issues that have not been fully addressed by the further information provided. Nonetheless, NRW A consider that with additional commitment with respect to key mitigation measures NRW A would be able to agree with the conclusions of no significant adverse effects at EIA scale and no AEoSI at HRA scale. Please review their responses in order to ensure you can comply with the requested conditions and address any comments they have raised. JNCC agree that mitigation measures for the impact pathways detailed in their response could be finalised post-consent, provided appropriate information is detailed within the outline Marine Mammal Management Plan (oMMMP). Please ensure you review their response in full and address the comments raised through the submission of an updated oMMMP. We therefore request you provide an updated oMMMP which should address JNCC and NRW A comments raised throughout their responses.	Noted - an updated MMMP has been provided and the response to the idnvidual comments raised by the JNCC and NRW(A) are provided in this spreadsheet
3	**Onshore**		

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
3.1	European Protected Species Terrestrial	NRW A cannot agree with a conclusion of no Likely Significant Effect for otters as a feature of the Pembrokeshire Marine SAC and Pembrokeshire Bat Sites and Bosherston Lakes SAC. As no specific otter surveys have been carried out, it is not possible to ascertain whether an otter natal holt is present in close proximity to the cabling landfall works. In the absence of such survey information, significant effects cannot be ruled out. If further surveys can rule out the likely presence of a natal holt within 200m of the works, NRW A would be content to agree with a conclusion of no likely significant effect on this feature of both SACs. Regarding your proposal to leave further protected species surveys to the post-consent pre-construction phase, NRW A have referred to their previous advice dated 28 March 2025 and continue to advise that this approach does not accord with planning policy or case law. With respect to the potential proposals for inclusion of new buffer (exclusion) zones within the application documents for bats, these will need to be formally submitted to MLT for consideration in consultation with NRW A. Any proposal would need to demonstrate that the proposed buffer zones would be sufficient to address any potential impacts on bats, including those from noise, vibration and construction lighting.	A Bat Mitigation Scheme that has been drawn up following consultation with the NRW Advisory Senior Species Officer. The scheme sets out the worst-case scenario assessed in the Llŷr Environment Statement ecology impact assessment and how the proposed mitigation is adequate to address the anticipated impacts of the scheme. An otter survey was undertaken across the onshore cable route between the 10 and 17 November. The survey report is provided.
3.2	Designated Landscapes	Whilst NRW A welcome the commitment to reduce the turbine blade tip height from 325.5m to 300m (above Highest Astronomical Tide), NRW A considers it would still be inside within the low magnitude of effect buffer identified for turbines of this height. As such, NRW A have advised that a reduction in blade tip height to 270m would reduce impacts within the Pembrokeshire Coastal National Park (PCNP) and likely to an acceptable level. Whilst it is noted that the Pembrokeshire Coastal National Park Authority (PCNPA) has removed their objection to the development as a result of further information, the PCNPA maintains concern regarding the outcomes of the Seascape, Landscape and Visual Impact Assessment. The PCNPA agrees with NRW A that reducing the blade tip height to 270m would reduce the landscape and visual impacts on the PCNP and would result in less significant effects for the PCNP. NRW A and the PCNPA have requested an updated Seascape and Landscape Visual Impact Assessment and photomontages to be able to conclude that the impacts on the PCNP would be reduced to an acceptable level. The PCNPA has also requested that a landscape and biodiversity enhancement scheme is implemented to secure compensation for the residual impact as a whole on the PCNP.	A technical note on the effect on the SLVIA by reducing the tip height from 325.5m to 300m, a technical report from Aecom has been provided. The project stands by its original technical assessment detailed within the Environment Statement that turbines with a tip height of 325.5m are acceptable and will not result in a significant impact. The technical note presents evidence in the form of additional Zone of Theoretical Visibility (ZTV) figures and wireline visualisations comparing 270m and 300m turbines for Llŷr Floating Wind Farm. The evidence supports the conclusions that due to distance and based on the ZTVs and the wirelines in Appendix A, there is no discernible difference in landscape and visual effects from Llŷr Floating Wind Farm turbines of 300m or 270m. It should also be noted that from a technical point of view, 300m is the minimum height achievable to ensure commercial scale turbine technology (up to 18 MW) whilst maintaining the necessary financial margins and turbine technical demonstration parameters needed to maintain the viability of the T&D project. A landscape enhancement scheme has been agreed with the PCNPA and NRW(A). This agreement is being drafted as a Section 106 agreement for signature.

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Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
	Castlemartin Range Danger Areas	In the MOD's response to the Marine Licence consultation dated 20th January 2025, the MOD objected to the proposed export cable route element of the proposed development. The reason for the objection was due to the proposed route of the export cable running through designated military Danger Areas D113A and D133B. These Danger Areas are in place to protect the military training activities undertaken at Castlemartin Range. A cable on the sea floor of a Danger Area would be at risk of damage from the live firing activities that take place at the range. In addition, the laying of the cable and pre-commencement activities such as surveys and UXO clearance would cause range activities to stop. It is for these reasons that the MOD lodged an objection to the export cable route. The applicant has contacted the DIO Safeguarding team about this objection, and they have also been discussing their proposal with a Range Safety Officer based at Castlemartin Range. The applicant has proffered a condition to be applied to the Marine Licence for an Access and Communications Protocol to be submitted and adhered to. In light of the applicant's engagement with Castlemartin Range's Range Safety Officer, the MOD is currently reviewing its objection position. The MOD is considering whether an export cable could be located in the Castlemartin Range Danger Area. Consideration is being given to the impacts of current and future weapons trialling on a cable within the Danger Areas. Until this review is completed, the MOD maintains its objection to the parts of the export cable route which run through Danger Areas D113A and D113B.	As confirmed in an email by the DIO, they are considering the use of a legal agreement that will be applied to the consent through a Cable Specification and Installation Plan condition.
	Hartland Point Air Traffic Control Radar	The Llŷr array area, as shown on drawing Figure 1.1 Site Location, falls outside of D113A and D113B. We therefore have no concerns with the array area with regards to the safeguarding of Castlemartin Range. However, the MOD does have concerns with the wind turbines within the array area due to the unacceptable impact they will cause to a military radar. The proposed turbines would be located approximately 72.6km from, detectable by, and will degrade aviation safety by causing unacceptable interference to the ATC radar sited/deployed at MOD Hartland Point. Wind turbines have been shown to have detrimental effects on the performance of Primary Surveillance Radars. These effects include the desensitisation of radar in the vicinity of the turbines, shadowing and the creation of "unwanted" aircraft returns which air traffic controllers must treat as aircraft returns. The desensitisation of radar could result in aircraft not being detected by the radar and therefore not presented to air traffic controllers. Controllers use the radar to separate and sequence both military and civilian aircraft, and in busy uncontrolled airspace radar is the only sureway to do this safely. Maintaining situational awareness of all aircraft movements within the airspace is crucial to achieving a safe and efficient air traffic service, and the integrity of radar data is central to this process. The creation of "unwanted" returns displayed on the radar leads to increased workload for both controllers and aircrews. Furthermore, real aircraft returns can be obscured by a turbine's radar return, making the tracking of both conflicting unknown aircraft and the controllers' own traffic much more difficult. Therefore, on the basis of the information provided, and until a suitable mitigation scheme has been submitted, assessed, and accepted, the MOD must object to this proposal due to the impact it will have on aviation safety by impacting on the operation and capability of the ATC radar sited at MOD Hartland Point. This objection was communicated to Planning and Environment Decisions Wales in the MOD's response to the Section 36 consultation dated 28th March 2025. The applicant is therefore already aware of the MOD's radar objection and has engaged with the MOD with a view to overcoming the objection. The applicant has submitted a mitigation proposal to address the unacceptable impacts of the development on the ATC radar sited at MOD Hartland Point. This proposal is currently being assessed by the MOD. Should the mitigation proposal be accepted by the MOD, then we would then be in a position to consider relacing the ATC radar objection with an appropriate technical solution agnostic suspensive planning condition for a radar mitigation scheme to be provided. Until the results of the mitigation proposal assessment are known, the MOD will continue to object to this proposal.	Llŷr has provided a proposed radar mitigation solution to overcome the Hartland Point radar objection (P10-LYR-4.2.3-PLA-004-Llŷr PSR Mitigation Proposal). The Hartland Point PSR was excluded from Project Marshall and, as per a Freedom of Information (FoI) response in 2015 , was previously intended to be decommissioned by 2018. The MoD subsequently reversed this decision, opting to maintain PSR coverage at Hartland Point. Consequently, this radar has not benefited from replacement by a Thales STAR-NG or the Watchman Enhancement (upgrades delivered to the remainder of the MoD Watchman fleet) under Project Marshall. The Llŷr project assumes that this policy reversal – the decision to retain rather than decommission the Hartland Point PSR - has prompted the MoD's objection to the permit application. Notably, the MoD did not object to the nearby Erebus or Whitecross floating offshore wind projects who equally impact the radar coverage. Given the policy direction established in Project Marshall, the MoD should logically assume responsibility for replacing this end-of-life PSR, having retained it for sovereign tactical purposes (regardless of windfarm development in the region). This position aligns with the recently adopted National Policy Statement (NPS) EN-1, especially sections 5.5.4, 5.5.27 and 5.5.28. Section 5.5.28 in particular stipulates that Communications, Navigation and Surveillance (CNS) owners and operators should deploy wind turbine tolerant replacement technologies when infrastructure reaches end-of-life, thereby futureproofing aviation safety against further wind development. The Llŷr project proposes replacing the Hartland Point PSR with a new Hensoldt ASR-NG system (or the MoD's preferred equivalent system), which will mitigate the impacts of the Llŷr Offshore Wind Farm whilst minimising radar coverage loss. Should the project be operational before the new radar is deployed, the Llŷr project is willing to implement a temporary radar blanking and TMZ solution. Both the Llŷr project and the technical equipment supplier believe this an appropriate long term solution to the direct project impact and the wider issues raised by offshore wind development in the Celtic Sea. The Llŷr project will contribute to the reasonably and demonstrably incurred costs of mitigation, recognising that the MoD retains ultimate responsibility for replacing this end-of-life sovereign tactical asset. Given the broader regional benefit of the proposed radar upgrade, implementation costs should be shared equitably across beneficiary sites.

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	Physical Obstruction	In this case the development falls within areas that may be used to conduct military low flying training designated Low Flying Areas 2 and 7 (LFA 2 and LFA 7). Within these areas fixed wing aircraft may operate as low as 250 feet or 76.2 metres above surface level to conduct low level flight training. The addition of turbines in this location would introduce a physical obstruction to low flying aircraft operating in the area. In the event that the applicant is able to overcome the objections listed above, the MOD would require that conditions are added to any consent issued requiring the submission, approval and implementation of an aviation lighting scheme, and that sufficient data is submitted to ensure that structures can be accurately charted to allow deconfliction. The applicant has acknowledged within Volume 3, Chapter 27, table 27-11 of the submitted Environmental Statement the requirement for MOD accredited aviation safety lighting. The MOD acknowledge that, as this development includes structures which exceed a height of 60m above Highest Astronomical Tide (HAT), it would be subject to the lighting requirements set out in the Air Navigation Order 2016. However, in addition to any CAA requirements, the MOD will require the submission, approval, and implementation of an aviation safety lighting specification that details the installation of appropriate MOD accredited aviation safety lighting.	Noted and agreed
	Onshore Safeguarding	The export cable route makes landfall at Freshwater West and the proposed grid connection is at Pembroke Power Station. The route between Freshwater West and Pembroke Power Station does not occupy any onshore MOD statutory safeguarding zones. The MOD therefore has no safeguarding concerns with the onshore route of the export cable.	Noted
	Conclusion	For the avoidance of any doubt, MOD objects to the proposal on the grounds of the unacceptable impact that the development would have on: • air traffic control radar systems sited at MOD Hartland Point; and • the impact the export cable routes will have on Military Danger Areas D113A and D113B.	As addressed above

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		We note that the new information submitted by the applicant is largely of an environmental/wildlife focus and as such does not directly come under our remit of shipping and navigation. The revised boundaries that have also been attached concern the landward area and as such also have a limited effect on the safety of shipping and navigation	Noted
		Having reviewed our recent response to NRW regarding the Environmental Statement and Navigation Risk Assessment that was submitted in January 2025 and after considering the additional information provided by the applicant, we remain content with our comments and have nothing further to add at this time.	Noted

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		We note that, in respect to safeguarding the historic environment (onshore), a revised Historic Assets consent boundary plan has been issued. This is a relatively minor amendment, and we advise that our initial response (13/12/2024) remains unchanged.	Noted

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Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
1	Objection withdrawal	As a result of further information submitted to the Authority by the applicants, the Pembrokeshire Coast National Park Authority wishes to withdraw the objection to the development. This information is appended to this letter and includes a commitment to reduce the height of the turbines to 300 metres and to adjust the navigational safety lighting to integrate a detection system to detect when visibility is greater than 5km and dim the aviation lights to 10% of the 2,000 candela maximum on these occasions.	Noted
2	Landscape impact	The Authority maintains concern regarding the outcomes of the Seascape, Landscape and Visual Impact Assessment and it remains the view of the Authority that adverse effects on the National Park seascape, landscape and special qualities would result from the proposed development that cannot be mitigated, and these should be balanced in determining the application against its benefits.	A technical note on the effect on the SLVIA by reducing the tip height from 325.5m to 300m, a technical report from Aecom has been provided. The project stands by its original technical assessment detailed within the Environment Statement that turbines with a tip height of 325.5m are acceptable and will not result in a significant impact. The technical note presents evidence in the form of additional Zone of Theoretical Visibility (ZTV) figures and wireline visualisations comparing 270m and 300m turbines for Llŷr Floating Wind Farm. The evidence supports the conclusions that due to distance and based on the ZTVs and the wirelines in Appendix A, there is no discernible difference in landscape and visual effects from Llŷr Floating Wind Farm turbines of 300m or 270m Further clarification and information in relation to the need for the Llŷr project has been submitted for consideration
3	Landscape enhancement scheme	The Authority requests that should the decision maker be minded to approve the application that they consider securing a landscape and biodiversity enhancement scheme to be approved and implemented by the Developer to secure compensation for the residual impact as a whole on the Pembrokeshire Coast National Park. It is accepted that this would not mitigate for the adverse effects but would provide other benefits and potentially enhance the identified receptors and their special qualities, in accordance with Policy SOC_06 of the Welsh National Marine Plan. Such a scheme could also enable consideration of any necessary compensation and enhancement scheme to address any impacts on the bird population of the Skomer, Skokholm and Seas off Pembrokeshire SPA. Members of the Pembrokeshire Coast National Park Authority have considered a need to condition post-operational review and mitigation.	A landscape enhancement scheme has been agreed with the PCNPA and NRW(A). This agreement is being drafted as a Section 106 agreement for signature.

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Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
1	Mitigation Agreement	I can confirm that we have identified a mitigation, involving modification to our radar infrastructure, that would ameliorate the impact of the proposed windfarm. At this stage we don't have any formal agreement in place to ensure delivery of the mitigation in advance of the turbines being erected so work is still required on both the commercial and planning side to ensure appropriate contracts and conditions are agreed.	A draft mitigation agreement has been drafted and submitted by NATS to the Llŷr project. This has been agreed by the project team and are progressing a formal agreement with NATS.

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Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
1	**Marine Ornithology Comments**		
1.1	**Llŷr Marine Ornithological Clarification Note 3 – Collated cumulative / in-combination figures for EIA and HRA**		
1.1.1	Presenting full results	The applicant should provide enough information for the consenting authority to make an assessment. As previously stated in our response direct to the Applicant on 21/05/2025, "…as a minimum the Llŷr Applicant could consider referring to these Population Viability Analyses (PVAs) and presenting information including the output metrics (counterfactuals of population size and growth rate, growth rates, final population size etc.) and reach conclusions based on these in any updated assessment". The results of the relevant in-combination PVAs (e.g. counterfactuals of population size and growth rate, growth rates, final population size etc.) carried out by Mona should ideally be provided in order to show that there are no significant population-level consequences predicted, rather than just stating that there were no significant population-level consequences.	An update to Llŷr Marine Ornithological Clarification Note 3 (18 September 2025) has been provided to address the JNCC request
1.1.2	Need for in-combination PVA assessment	We previously advised that "There may be site/species combinations relevant for the Llŷr assessment where the Mona Applicant has not presented an in-combination assessment (e.g. Skomer, Skokholm and the Seas off Pembrokeshire (SSSP) Special Protection Area (SPA) puffin and lesser black-backed gull)".	Noted
		Page 4 states that "Lesser black-backed gull and puffin did not require any cumulative PVA for the Mona application, as the apportioned estimates to SSSP SPA populations were < 0.05% of baseline mortality". To clarify, the position taken by Mona was that, where the impact of the Mona Offshore Wind (OWF) Project, alone on a feature of a designated site, was predicted to result in a <0.05% increase in baseline mortality then no in-combination assessment was presented, as the change predicted from the Mona OWF Project alone was considered to have a 'non-material' contribution to the in-combination risk. If the same logic is applied to the Llŷr OWF Project, then Llŷr OWF Project's impact mortalities alone and the associated increase in baseline mortality would need to be used to assess whether an in-combination assessment is needed, and then if a PVA is needed. That the Mona OWF Project did not require a PVA does not automatically rule out Llŷr OWF Project from requiring a PVA as this threshold was based on the relevant project's alone impact, not one	Noted
		Given the lack of thorough in-combination assessment including all relevant projects for puffin and lesser black-backed gull, we recommend the Applicant's assessment be updated to enable the NRW-L to fully assess the potential impacts. See our detailed comments below.	This information has previously provided for these two species (dated 21 May 2025 and this allowed NRW (A) to conclude their advice as confirmed in their final response on Llŷr, dated 29 July 2025. However this information is now support by the inclusion of Figure 1 (mapping the location of the developments considered under cumulative HRA as presented in Appendix 8E: HRA RIAA of the submitted Llŷr project application), and Figure 2 (providing a plot of the 'at sea' distance calculation between SSSP and Mona) and is now provided in the upddated clarification note 3 of 18 September 2025.
		Lesser black-backed gull Given the lack of thorough in-combination assessment including all relevant projects (those within foraging range during the breeding season and within the biologically defined minimum population scales (BDMPS) region during the non-breeding season), it was unclear from the documents submitted by the Applicant whether there would be a significant impact on lesser black-backed gull and that an Adverse Effect on Site Integrity (AEoSI) on the SSSP SPA could be ruled out. Tracking data from Skokholm Island indicates that lesser black-backed gulls tend to travel south from the colony on migration for winter (Thaxter et al., 2019), therefore there is unlikely to be connectivity with OWFs in the Irish Sea and Liverpool Bay regions in the non-breeding seasons. We note the limitation of this tracking which only covers one year with 25 birds tracked, but consider it best available evidence. The Irish Sea and Liverpool Bay regions are also outside of mean max plus 1Standard Deviation (SD) foraging range during the breeding season. We are minded to note that the population abundance of lesser black-backed gull at the SSSP SPA is in decline. The latest census indicates a 47% decline: Seabird 2000 (1998-2002) = 15,748 Active Occupied Nests (AON); Seabirds Count (2015-2021) = 8,347 AON (Burnell et al., 2023). The most recent population count from 2024 suggests a current population of 6,064 (BTO & JNCC, 2024), whilst the conservation objective is for the breeding population to be stable or increasing, aiming for at least 20,300 pairs (NRW, 2008).,A combination of further declines in population abundance and increased impact from future development may increase mortality to a level where more detailed assessment (such as through PVA) is required for those future projects. Consideration should therefore be given to the inclusion of measures to reduce collision mortality at future projects to allow the maximum realisation of renewable energy for the minimum environmental impact.	This has been discussed with the JNCC and addressed in the updated Llŷr Marine Ornithological Clarification Note 3 (18 September 2025)
		Atlantic puffin We note that Mona OWF Project's in-combination total at 60% displacement and 2% mortality (111 mortalities) is similar to Llŷr OWF Project's in-combination total at 70% displacement and 10% mortality (111.63). However, Mona OWF Project's in-combination total at 70% displacement and 10% mortality was 648 mortalities. These are clearly significantly different totals at the same displacement and mortality rates, and is due to the Mona OWF Project's values being Environmental Impact Assessment (EIA)-scale, not apportioned between colonies, and Llŷr OWF Project's values apportioned to SSSP SPA. Therefore, these are not comparative metrics. We have previously advised the Applicant on the methodology for in-combination assessment, including the use of mortality estimates presented by the Mona OWF project Environmental Statement (ES), and the consideration of need for PVA (e.g. letter to Applicant dated 21st May 2025). The PVA carried out by the Applicant assuming 111 mortalities in-combination (Table 22F-5 and Table 22F-9, Llŷr 1 Floating Offshore Wind Farm Environmental Statement Volume 6: Appendix 22F – Marine Ornithology Population Modelling) does not include all relevant projects (those within foraging range during the breeding season and within the BDMPS region during the non-breeding season) and may not therefore present the worst-case scenario. As with lesser black-backed gull, given the lack of thorough in-combination assessment including all relevant projects it was unclear from the documents submitted by the Applicant whether there would be a significant impact on puffin and that an AEoSI on the SSSP SPA could be ruled out. We recommend the Applicant's assessment be updated to enable the NRW-L to fully assess the potential impacts.	This has been discussed with the JNCC and addressed in the updated Llŷr Marine Ornithological Clarification Note 3 (18 September 2025)

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1.1.3	Conclusions on adverse effect for SSSP SPA	We were previously unable to make conclusions regarding AEoSI in combination with other plans and projects, for SSSP SPA. However, based on: • Section 2 of Llŷr Marine Ornithological Clarification Note 3: Collated cumulative / in-combination figures for EIA and HRA, • PVA outputs provided in Mona OWF project's Deadline 7 HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments Annex E1.3.1: Offshore ornithology ISAA supporting information (REP7-020), we conclude that AEoSI can be ruled out for Manx shearwater qualifying feature of SSSP SPA in combination with other plans and projects. These documents also provide information on guillemot, razorbill, Manx shearwater, and kittiwake components of the breeding assemblage feature, and we advise that an AEoSI on the breeding assemblage feature can also be ruled out. However, we consider that there is currently insufficient information provided by the Applicant for NRW (L) to make conclusions on AEoSI on the breeding lesser black-backed gull and puffin qualifying features of SSSP SPA in combination with other plans and projects. In conclusion, we advise that adverse effect cannot be ruled out for SSSP SPA.	This has been discussed with the JNCC and addressed in the updated Llŷr Marine Ornithological Clarification Note 3 (18 September 2025)
1.1.4	Conclusions on the significance of impacts at EIA	We were previously unable to make conclusions regarding the EIA of Llŷr on marine birds cumulatively with other plans or projects. However, based on: • Section 1 of Llŷr Marine Ornithological Clarification Note 3: Collated cumulative / in-combination figures for EIA and HRA, • PVA outputs provided in Mona OWF Project's Deadline 7 Environmental Statement Volume 2, Chapter 5: Offshore Ornithology (REP7-033) we are able to conclude no significant adverse impact on all relevant seabird species with the exception of great black-backed gull, for which we are unable to rule out a significant adverse effect cumulatively with other plans and projects.	This has been discussed with the JNCC and addressed in the updated Llŷr Marine Ornithological Clarification Note 3 (18 September 2025)
		Great black-backed gull moved to the Red list in UK Birds of Conservation Concern (BoCC) 5a owing to a severe breeding population decline of 56% since Operation Seafarer (1969–70). It was Green-listed in the first two BoCC assessments and Amber-listed in BoCC 3 and BoCC 4 (Stanbury et al. 2024). In the GB IUCN2a assessment it moved from 'Least Concern' in IUCN1 to 'Critically Endangered' (Stanbury et al. 2024). Seabirds Count (Burnell et al. 2023) reported a 43% decline since Seabird 2000. We agree with the Applicant (response to ExQ1 Q1.17.16, REP3-062) that the revised status does not affect the species' sensitivity, but we do consider that it provides context to the potential consequences of any impact. The revised status demonstrates a prolonged and severe decline in the species in the United Kingdom, supported by both the IUCN assessment and monitoring coordinated by JNCC. While they are unlikely to be the sole cause of the declines experienced, the cumulative impact from OWF has the potential to worsen that decline, or to inhibit to some extent any recovery effort and we therefore do not agree with the conclusion of a minor adverse effect at EIA scale. In our letter to the Applicant of 21st May 2025, we advised that '*Mona PVAs can be considered to represent best available evidence at this time, and hence as a minimum the Llŷr Applicant could consider referring to these PVAs and presenting information including the output metrics (counterfactuals of population size and growth rate, growth rates, final population size etc.) and reach conclusions based on these in any updated assessment. '* We note however that while the Applicant has referred to the PVA undertaken by the Mona OWF Project, the outputs of those assessments have not been presented in the application. PVA metrics presented in Appendix D "Great black-backed gull PVA inputs – cumulative impacts, starting population 17,742" of the Mona OWF project's Offshore Ornithology Cumulative Effects Assessment and In-combination Gap-filling Historical Projects Technical Note (REP3-044) demonstrates a reduced growth rate as a result of the cumulative impact of the multiple OWF projects, including Llŷr, than would be experienced by an unimpacted population. We are not aware of any evidence to suggest that the population is likely to increase during the lifetime of the project, therefore we consider that the Llŷr OWF, cumulatively with other OWF projects, is likely to have a Moderate significant adverse impact. Additionally, the uncertainties around demographic rates for the species, with juvenile and immature survival rates unknown (Horswill & Robinson 2015), require a more precautionary approach to interpreting modelling results. We are therefore unable to rule out a significant adverse impact on great black-backed gull from cumulative collision mortality at an EIA scale. In such circumstances, JNCC would ordinarily advise mitigation measures should be applied, such as increasing the air gap, in order to reduce great black-backed gull collision. However, in this case with project alone great black-backed gull collision mortalities estimated at 1.61 annually, increasing the air gap will likely make little difference and would be disproportionate. However, JNCC is concerned that the impact on great black-backed gull within the southwest and Channel population BDMPS is likely to increase as further OWF projects are developed, notably those that will form part of The Crown Estate's Round 5 leasing round within theCeltic Seas area. Without major project-level mitigation being applied to all relevant projects coming forward, there is a significant risk of large-scale impacts on seabird populations. JNCC therefore recommends that for all relevant future projects raising	These aspects have been discussed with the JNCC and the Mona OWF project PVA data is now provided in the updated Llŷr Marine Ornithological Clarification Note 3 (18 September 2025)
1.2	**Llŷr Marine Ornithological Clarification Note 4 – Further Clarification on HiDef's 'Non-ID Apportioning' Method**		
1.2.1	Comments on Adverse Effect on Site Integrity	We thank the Applicant for providing further clarifications on the apportioning of non-identified birds. There are still outstanding questions and unknowns regarding the method used (see below). However, we are of the opinion that this does not make a material difference to the overall outcomes of the assessment and can be picked up outside of this project. We have explored the potential worst-case scenario of assigning all relevant non-identified birds to Atlantic puffin to consider the impact on the assessment of Atlantic puffin, which is a named qualifying feature of Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA. There was a total of 55 'Auk / shearwater species', 'Auk / small gull species' and 'Auk species', which in theory could all be assigned as Atlantic puffin. Added to the 77 identified puffin would result in a total of 132 puffin. Whilst this change in relative terms is large, once displacement and mortality rates are applied and impacts apportioned to SPAs, this results in a very small difference in the impact on an SPA population. Therefore, we are content that, even in the worst-case scenario, our concerns regarding apportioning of un-identified birds would not materially change the assessment of displacement mortality of auk species or Manx shearwater.	Noted

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
1.2.2	Revised Turbine Parameters	We note that the Applicant has made a commitment to limit the turbine tip height to 300 meters above Highest Astronomical Tide (HAT) in recognition of the concerns raised by NRW and the Pembrokeshire Coast National Park Authority (PCNPA) (as described in cell G19 in the "NRW(A) SLVIA" tab within "ORML2465 P11-LYR-3.4.3-PAP-Rev01-Marine Licence Application Clarifications A2"). We note that this change in Project Design Envelope has not been communicated to JNCC, nor how this may have an impact on the assumptions within Collision Risk Models (CRM) previously carried out. The assumptions under the previous CRM were a rotor radius of 142.5m and an air gap of 22m, giving a maximum turbine tip height of 307m (Environmental Statement Volume 6: Appendix 22C – Marine Ornithology Collision Risk Modelling, Table 22C-1). In the commitment to reduce the turbine tip height no other changes to turbine parameters are mentioned, therefore we assume that the 22m air gap will remain, given that this is a navigational safety requirement, thereby reducing the rotor radius to 139m. As proportionally more birds fly closer to the sea surface than at higher elevations, the air gap height can have a considerable influence on collision mortality estimates and is a crucial input parameter to Collision Risk Modelling. Similarly, there is no indication as to whether the rotation speed will change, given this reduction in rotor radius (our working assumption is that a reduction in blade length generally results in an increase in rotation speed). The mechanics of the stochastic CRM means that a reduction in rotor radius may decrease estimates of seabird collisions while an increase in rotation speed may increase collisions. Whilst a potential increase in rotation speed at the Llŷr OWF project may not make a significant difference to the collision estimates, we recommend that the Applicant re-run CRMs using revised turbine parameters and provide updated assessments to the Licencing Authority. In addition to this information being available to the Licencing Authority for a decision on this application, application, it is vital that revised collision estimates are available for future projects and plans to include in cumulative and in-combination assessments.	We confirm that the indicative worst-case for SLVIA (max turbine height to upper blade tip), does not affect the ornithological CRM as it does not alter any of the worst-case parameters that are material in this modelling, i.e., air gap, rotor radius/rotor diameter, or number of turbines. The Llŷr project is not proposing to reduce the modelled air gap (22m), nor to increase the blade length (rotor radius), nor increase the number of turbines beyond the worst-case parameters already modelled under CRM. As requested by JNCC and NRW (A), we will undertake a further round of post-consent CRM, at the appropriate time, once we've confirmed the final turbine selection (which will fall within the worst-case, as assessed, for all receptors)
1.3	**NRW record of a Habitats Regulations Assessment of a project**		
1.3.1	Skomer, Skokholm and the Seas off Pembrokeshire/ Sgomer, Sgogwm a Moroedd Penfro Special Protection Area	We have the following comments on the NRW-Licencing (NRW-L) Draft Record of a Habitats Regulations Assessment (HRA) with respect to this protected site.	Noted
1.3.1.1	Use of SeabORD	Page 168 – the "Assessment in view of conservation objectives" column refers to SeabORD modelling being carried out to predict collision and displacement/barrier effects for lesser black-backed gull, Manx shearwater, kittiwake, and razorbill. However, SeabORD was only used, and can only be used, for estimating displacement of kittiwake, guillemot, razorbill, and puffin. As described in our original comments on this project, we have based our conclusions regarding displacement impacts on specific species/sites on displacement matrix outputs as provided by the Applicant, not on the outputs from SeabORD.	Noted
1.3.1.2	Mitigation measures – entanglement	Page 180 – the "Description of mitigation measures, and how they would be applied (e.g. contractual obligations, consent conditions)" column for SSSP SPA describes mitigation for entanglement with mooring lines and cables as "Regular inspection of the mooring lines to be implemented during operations and maintenance via the Project Environmental Management Plan". Whilst monitoring is a crucial first step in mitigation, monitoring does not by itself reduce the severity of an impact. Effective mitigation measures also require a mechanism to prevent or reduce an impact, such as that set out by the Applicant: "Any inspected or detected debris on the floating lines and cables will be recovered, based on a risk assessment which considers the impact on the environment, risk to asset integrity, and cost of intervention" (ID E232, Environmental Statement Volume 6: Appendix 32A – Mitigation Register). We therefore advise the wording of the HRA is modified to better reflect that removal of debris is included in the measure.	The draft MMMP has been updated to include a commitment to address entanglement risk and will monitor for, and remove, marine debris caught on cables as part of the regular surveys of subsea infrastructurein line with the JNCC recommendations.
		We advise that the Project Environmental Management Plan and the need to both inspect and remove debris is secured through a Marine Licence Condition, and that the Marine Licence also requires the Applicant to provide regular reports detailing inspection results, debris entangles and removals, and wildlife entanglements, to the Licencing Authority and relevant Statutory Nature Conservation Bodies (SNCBs), given that the project is a demonstration for floating offshore wind.	A draft Llŷr Outline Marine Mammal Mitigation Plan (P10-LLY-4.2.3-PLA-0003) has been submitted to include a commitment to address entanglement risk and will monitor for, and remove, marine debris caught on cables as part of the regular surveys of subsea infrastructurein line with the JNCC recommendations.
1.3.1.3	Incomplete in-combination assessments provided by the Applicant	Pages 165 to 169 and pages 198 to 200 – We highlight that despite SNCB advice throughout pre-and post-application, insufficient information has been provided by the Applicant on the in-combination impacts of qualifying features of the SPA, in particular: • Collision Risk Modelling with revised turbine parameters; • Full in-combination assessments for the breeding lesser black-backed gull and Atlantic puffin qualifying features of SSSP SPA; and • PVA where necessary.	We confirm that the indicative worst-case for SLVIA (max turbine height to upper blade tip), does not affect the ornithological CRM as it does not alter any of the worst-case parameters that are material in this modelling, i.e., air gap, rotor radius/rotor diameter, or number of turbines. The full PVA outputs relevatn to the IA and HRA have been provided in the updated clarification notes.
1.3.1.4	Conclusions on Adverse Effect on Integrity:	JNCC agrees that a conclusion of no AEoSI for the breeding Manx shearwater and breeding seabird assemblage features of the Skomer, Skokholm and the Seas off Pembrokeshire/ Sgomer, Sgogwm a Moroedd Penfro Special Protection Area can be reached, alone and in-combination. JNCC considers there to currently be insufficient information provided on the in-combination impacts on the breeding lesser black-backed gull and Atlantic puffin qualifying features of SSSP SPA on which to draw conclusions on AEoSI. Therefore, JNCC currently disagrees that an AEoSI can be ruled out for the Skomer, Skokholm and the Seas off Pembrokeshire/ Sgomer, Sgogwm a Moroedd Penfro Special Protection Area.	To confirm we agree with NRW (A)'s in-combination mortality calculations and the NRW (A) 's in combination mortality calculations are presented in the updated Llŷr Marine Ornithological Clarification Note 3 – dated 07 November 2026, as appendix 1
1.3.2	Irish Sea Front SPA	We agree that an adverse effect can be ruled out on the Irish Sea Front SPA alone and in-combination for all qualifying features.	Noted
2	**Marine mammal comments**		

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
2.1	**NRW record of a Habitats Regulations Assessment of a project**	In line with JNCCs offshore remit, our advice is restricted to Special Areas of Conservation (SACs) designated for harbour porpoise. We defer to NRW-A for inshore sites designated for seals. We do not agree with the conclusions of NRW-L's Appropriate Assessment that an AEoSI can be ruled out on West Wales Marine SAC and Bristol Channel Approaches SAC alone and in-combination. This is because we do not believe the information provided by the Applicant and subsequently used by NRW-L, is sufficient to support conclusions of no adverse effect on these sites. We recommend the applicants assessment be updated to enable the NRW-L to fully assess the potential impacts to these sites (see section 2.1.1).	To confirm the worst case scenario is 20 full days of piling over a 45 day period (the additional 25 days provides contingency in the construction scheduling to allow for periods of down-time due to poor weather potential, moving of piling equipment from one turbine location to another, etc). iPCoD is unable to accommodate piling durations of less than a day, so that the modelled 'worst case' for Llŷr (as submitted) assumed 10 days of continuous piling, i.e., 24 hours per turbine for the maximum ten turbine scenario. The iPCoD 10 day piling activity model output 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 20 days of full piling would represent a doubling of the impact assessed which would result in no more than 6 Harbour porpoise being impacted and even from an ultra-precautionary stance of quadrupling the impact (i.e. 4 x 10 days impact), this 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 of negligible significance. As a consequence, the worst-case scenario for disturbance from piling has been assessed for the Bristol Channel Approaches Special Area of Conservation (SAC) and the West Wales Marine SAC and has resulted in a negligible significance outcome. A mitigation zone will be determined through consultation with SNCBs and informed by relevant JNCC guidelines for mitigation of impact to marine mammals from piling, geophysical surveys and explosions, as well as relevant EDRs. For the purpose of the draft MMMP, standard JNCC mitigation zones have been used.
2.1.1	Section 3. Likely significant effect (LSE)	These sites are; - West Wales Marine SAC (0km) - Bristol Channel Approaches SAC (1.94km) - North Anglesey Marine SAC (174km) - North Channel SAC (279km). JNCC are aware of the NRW (2022) guidance regarding HRA and note all four sites have been identified as being subject to a significant effect from the proposed project (using the colour coded system detailed in Table 3.2.3).	Noted
2.1.2	Section 4. Appropriate Assessment alone	We agree with the approach to focus on the West Wales Marine and Bristol Channel Approaches SACs due to their distance from the proposed project. *Impact pathway 1 Effects of underwater noise (construction, operation and decommissioning)* JNCC disagree with the conclusion of this assessment, that an AEoSI can be ruled out once mitigation measures, conditions or restrictions are accounted for (Section 4.2). Conservation objective 1 **Site abundance** The variability of harbour porpoise distribution and abundance within any site is, in part, due to their mobility and wide-ranging nature as well as natural and anthropogenic changes in habitat and prey. Therefore, SNCB advice on operations (JNCC, 2019) highlights the need to contextualise any apparent deterioration of harbour porpoise presence in the site in terms of natural variability and the abundance and distribution patterns at the population level (i.e. management unit). The relevant harbour porpoise management unit (MU) in this case is the Celtic and Irish Seas MU. Abundance estimates for the cetacean MUs were updated in 2022 (JNCC, 2022). **Mortality** JNCC agree there is no need to have a separate analysis of cetacean mortality from underwater noise as mitigation for auditory injury will also mitigate the potential for mortality. This is because the range within which mortality could occur will be within the range that auditory injury could occur. We highlight, however, that without such mitigation there is a risk of mortality to animals within close range of some noise sources. This is because mortality does not necessarily occur as a direct result of the exposure e.g. as would expect if close to an explosive detonation. Underwater noise can result in physical injury aside from auditory, which can weaken the animal and result in death. **Auditory injury (Permanent Threshold Shift (PTS)-onset)** JNCC disagree with only considering the Sound Pressure Level peak (SPLpeak) metric when assessing impacts from auditory injury to cetaceans. JNCC stated this pre-application, at the fitness check stage and again when responding to the ES. JNCC require both metrics to be considered and the most precautionary used to determine mitigation requirements. Information is provided in the appendices which is sufficient to do this however the applicant chose (against JNCC advice) to only present the SPLpeak in the ES chapter. Without this, JNCC cannot confirm mitigation contained within the outline mitigation plan (Appendix 4A: outline Construction Environmental Management Plan (OCEMP)) is sufficient to reduce the risk of auditory injury to harbour porpoise (see below for further comment). **Disturbance** NRW-L have referenced the Applicant's use of Interim Population Consequences of Disturbance (iPCOD) in this assessment. We highlight two issues relating to the disturbance assessment in view of the conservation objectives. 1. 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 spent piling will be 20. However, the marine mammal disturbance assessment for impact piling in both the ES and the Report to Inform Appropriate Assessment (RIAA) has used a maximum of ten days for the piling duration as the worst-case scenario. The design envelope should not exceed that assessed. We advise that the disturbance assessment be re-visited to reflect the worst-case scenarios as outlined in the project design. 2. iPCOD is a useful tool for an assessment, however, the outputs, while informative, must be interpreted with caution. The input parameters are understood to be difficult to estimate with certainty and do not account for regional or temporal differences in vital rates. It is also understood that there are challenges around predicting a piling schedule within the model, which creates uncertainty during an in-combination assessment.	Noted An updated Llŷr Outline Marine Mammal Mitigation Plan (P10-LLY-4.2.3-PLA-0003) has been discussed with the JNCC to address the aspects they have raised and is submitted fr consideration. Noted Noted The updated Llŷr Outline Marine Mammal Mitigation Plan (P10-LLY-4.2.3-PLA-0003) includes a commitment to agree with the regulator the size of the Mitigation Zone prior to installation activities being carried out. This includes a commitment to consider the un-weighted peak Sound Pressure Level, the weighted Sound Exposure Level, along with operational feasibility. (1) To confirm the worst case scenario is 20 full days of piling over a 45 day period (the additional 25 days provides contingency in the construction scheduling to allow for periods of down-time due to poor weather potential, moving of piling equipment from one turbine location to another, etc). 20 days of full piling would represent a doubling of the impact assessed which would result in no more than 6 Harbour porpoise being impacted and even from an ultra-precautionary stance of quadrupling the impact (i.e. 4 x 10 days impact), this 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 of negligible significance. As a consequence, the worst-case scenario for disturbance from piling has been assessed for the Bristol Channel Approaches Special Area of Conservation (SAC) ant the West Wales Marine SAC and has resulted in a negligible significance outcome. (2) We acknowledge the JNCC concerns relating to the iPCOD limitations, however it remains a useful tool for assessing impacts. The results provided are being treated as pre-cautionary and this approach reflect the measures proposed within the revised Marine Mammal Mitigation Plan (P10-LLY-4.2.3-PLA-0003)

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
		Mitigation We disagree that the applicant has considered best practice mitigation measures as they have ruled out the use of noise abatement and acoustic deterrents based on SPLpeak predictions only. While the applicant has committed to employing a marine mammal mitigation plan (as stated in Appendix 04A: OCEMP), the measures contained within the draft provided only mitigate predicted injury ranges using the SPLpeak metric. As highlighted pre-application, and at the fitness check stage, JNCC do not agree with this approach and advise it is not current industry best practice. The applicant has assessed injury using both the peak pressure (SPLpeak) and cumulative exposure (Sound Exposure Level cumulative (SELcum)) metrics as agreed pre-application. However, they only presented the peak pressure results in the ES chapter and only used this metric when determining mitigation requirements. JNCC require both metrics to be considered and the most precautionary used to determine mitigation requirements. Appendix 21B – underwater noise impact study, Table 21B-16 (page 54) indicates that auditory injury (PTS) may occur in harbour porpoise within 5.8km of piling. This distance overlaps with both the West Wales Marine and Bristol Channel Approaches SACs and cannot be mitigated with marine mammal observers and/or acoustic monitoring alone. Additionally, the applicant choosing to only mitigate injury ranges using the SPLpeak metric has been used as justification to not consider the use of noise abatement or acoustic deterrents during piling. We highlight an announcement by Welsh Government (Decision Report, 6 March 2025) to publish a noise policy paper similar to that published by Defra in January 2025. The Defra policy requires renewable developments in English waters to undertake best endeavours to use noise abatement during piling from January 2025.	An updated Llŷr Outline Marine Mammal Mitigation Plan has been discussed with the JNCC to address the aspects they have raised and is submitted fr consideration.
		Conservation Objective 2 We are aware of NRW-As advice (NRW ref PS017) regarding the use of Effective Deterrent Ranges (EDRs) and the preference for noise modelling using fixed noise thresholds for disturbance in HRA. While using EDRs will not change the overall conclusion regarding the disturbance thresholds for these sites, we highlight that JNCC favours the use of fixed EDRs based on empirical evidence as noise modelling carries considerable uncertainty. In particular: • There are no agreed quantitative thresholds for disturbance as there are for auditory injury (see Southall et al, 2021 for discussion). • 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. JNCC requested the applicant present an assessment using EDRs in addition to that requested by NRW-A (email to NRW-L dated 4th August 2023) as the two harbour porpoise sites within the Bristol Channel are jointly managed by JNCC and NRW. JNCC highlighted at the fitness check (27 September 2024) this had not been applied as agreed. While the Applicant subsequently 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 were not applied correctly. We refer to our comment in response to Section 8.5.3, paragraph 388, page 129 of Volume 6 Appendix 8E: HRA RIAA in our advice dated 22nd January 2025 (OIA-10573).	Table 1 of the JNCC (2025) guidance on updated EDRs for harbour porpoise SACs gives the pin-pile EDR, no noise abatement, as 20 km. Within the HRA for Llŷr, we have based our assessment on the following pin-pile impact ranges (Table 8-22 of the Llŷr RIAA) to calculate the spatial overlaps with each SAC (Table 8-23): •Summer impact range for West Wales Marine SAC: 20 km •Winter impact range for Bristol Channel Approaches SAC: 39.2 km Although the impact ranges calculated for the Llŷr RIAA are based on NRW (A)'s advised noise threshold metric – Fixed (143dB re 1 mPa2.s) – the impact ranges thus derived are equivalent to the pin-piling EDR stated in the JNCC (2025) guidance, indeed the one we've used for the Bristol Channel Approaches SAC is more precautionary. Therefore, there is no material update required to the Llŷr assessment in regard to this matter. The additional new EDRs given in the JNCC guidance for geophysical surveys, UXOs and ADDs will be accounted for in the final MMMP at the appropriate stage post-consent (if required*), as agreed with JNCC at the meeting held on 17 September 2025. *i.e., depending on geophys activity and associated equipment; and/or if UXOs are confirmed present; and/or if ADDs are selected as a pre-piling mitigation. The mitigation zone will be determined through consultation with SNCBs and informed by relevant JNCC guidelines for mitigation of impact to marine mammals from piling, geophysical surveys and explosions, as well as relevant EDRs. For the purpose of the draft MMMP, standard JNCC mitigation zones have been used.
		Impact pathway 2: Accidental pollution or contamination (construction, operation and maintenance, and decommissioning) JNCC agree with the conclusion of this assessment, that an adverse effect on site integrity can be ruled out provided the applicant complies with relevant guidance and regulations relating to pollution prevention. JNCC recommend compliance with this is secured through a licence condition.	Noted
		Impact pathway 3: Collision with project vessels (construction, operation and maintenance, decommissioning) JNCC agree with the conclusion of this assessment, that an adverse effect on site integrity can be ruled out once mitigation is accounted for. We agree that without mitigation, there is the potential to compromise the sites conservation objectives. We agree such mitigation is available e.g. defined transit routes and limits to vessel speed. We recommend these are secured as conditions of consent.	Noted
		Impact pathway 4: Potential for indirect effects through impacts upon prey species (construction, operation and maintenance, and decommissioning) JNCC agree with the conclusion of this assessment, that an adverse effect on site integrity can be ruled out. However, we highlight that the potential for floating wind turbine generators (WTGs)s to function as artificial reefs and potentially increase foraging opportunities could result in an increased risk of entanglement with mooring lines and cables, or debris attached to the mooring lines. This adds greater importance to the need for a robust entanglement monitoring plan.	Noted, The draft MMMP has been updated to include a commitment to address entanglement risk and will monitor for, and remove, marine debris caught on cables as part of the regular surveys of subsea infrastructurein line with the JNCC recommendations.
		Impact pathway 5: Effects of Electromagnetic Field (EMF) emissions JNCC agree with the conclusion of this assessment, that an adverse effect on site integrity can be ruled out. However, we highlight that previous research relating to EMF from cables has focussed on cables buried underground or placed on the seabed. In the case of floating turbines, these cables will be suspended in the water column. The difference this will make is a current evidence gap.	Noted
		Impact pathway 6: Barrier effects from mooring lines and cables between platform and anchor (page 154) We acknowledge that the array area is located 13.65 km from the West Wales Marine SAC and 12.11 km from the Bristol Channel Approaches SAC. Therefore, we agree with the conclusion of this assessment, that an AEoSI can be ruled out as there is no risk of barrier effects within the SACs. However, as NRW-L correctly highlights, the presence of the structures may affect the movement of harbour porpoise to and/or from the SACs. JNCC note the lack of information specific to barrier effects resulting from floating WTGs but advise that caution should be taken when considering studies focused on this impact on marine mammals at fixed-turbine wind farms. Fixed-turbine wind farms do not have mooring lines and cabling infrastructure.	Noted

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
		Impact pathway 7: Entanglement with mooring lines and cables (page 154) JNCC disagree with the conclusion of this assessment, that an adverse effect on site integrity can be ruled out. We agree that, without mitigation, secondary risk of entanglement for harbour porpoise could compromise the conservation objectives of these sites. A secondary entanglement risk is considered to exist should lost or discarded fishing gear ('ghost gear') become caught on the moorings or cables. We disagree that the applicant has considered best practice mitigation measures or provided sufficient detail regarding what will be adopted as part of the project. The information provided within the assessment, the outline Marine Mammal Management Plan (MMMP), and the embedded mitigation ID E232 in Volume 6: Appendix 32A is insufficient to provide confidence in how the risk of entanglement will be mitigated. Without such detail, we cannot agree there will be no adverse effect on these sites. We acknowledge that a commitment has been made to regularly inspect the moorings and cables and remove any ghost gear found. However, there has been no outline of regularity, nor any methods presented that demonstrate how inspections might take place. We advise NRW-L seek further information to ascertain the definition of 'regular' and suggest the maximum duration of intervals between inspections is sought as this will provide the worse-case scenario for which this risk can be assessed. This information should be included in the OCEMP, and compliance secured as a condition of consent. In addition, an assessment of the risk of tertiary entanglement has not been considered (by the applicant and in this HRA) which has been identified as a potential risk in a report for Natural England on the environmental impacts for floating offshore wind farms (Genesis, 2024). Tertiary entanglement is the risk of entanglement when derelict fishing gear already attached to an animal subsequently becomes attached to mooring lines and cables as the animal travels through the array area.	Noted, The draft MMMP has been updated to include a commitment to address entanglement risk and will monitor for, and remove, marine debris caught on cables as part of the regular surveys of subsea infrastructurein line with the JNCC recommendations.
2.1.3	Section 5. In-combination assessment	***Impact pathway 1: Effects of underwater noise (construction, operation and maintenance, decommissioning)*** Our comments from the project alone assessment are of relevance here. Until our concerns regarding the project alone assessment are addressed, we cannot agree with the conclusion of no likely significant effect in-combination for this impact pathway. JNCC highlight that two projects are missing from the other plans/projects in-combination assessment for marine mammals - Llŷr 2 and Valorous. We note that these have been assessed for benthic and ornithology receptors but not for marine mammals.	Noted - the comments raised by the JNCC are addressed here and in the JNCC2 tab
		Impact pathway 2: Collision with project vessels JNCC agree with the conclusion of no likely significant effect in-combination for this impact pathway, provided all projects adhere to vessel management plans. We recommend that when this project finalises their vessel management plan, they review those of the projects considered in this assessment for areas of overlap e.g. overlapping transit routes. If any are identified, we recommend these are discussed in the management plans and consideration given to whether any actions are required to reduce in-combination impacts.	Noted, the project is content to consider areas of overlap within the Vessel Management Plan to coniders areas of overlap with other transit routes, including whether any actions are required to reduce in-combination impacts.
		Impact pathway 3: Entanglement with mooring lines and cables Our comments from the project alone assessment are of relevance here. Until our concerns regarding the project alone assessment are addressed, we cannot agree with the conclusion of no likely significant effect in-combination for this impact pathway. We also note that while Llŷr, Erebus and White Cross as a combined scale of development will not cover a significant area in comparison to the Celtic and Irish Seas Marine Mammal Management Units, they are all to be located within proximity of one another and, in or next to harbour porpoise SACs. This should be considered as an increase in risk of entanglement.	Noted, The draft MMMP has been updated to include a commitment to address entanglement risk and will monitor for, and remove, marine debris caught on cables as part of the regular surveys of subsea infrastructurein line with the JNCC recommendations.
		Impact pathway 4: Accidental pollution or contamination JNCC agree with the conclusion of no likely significant effect in-combination for this impact pathway, as all projects will be required to comply with the same guidance and regulations relating to pollution prevention.	Noted
		Impact pathway 5: Potential for indirect effects through impacts on prey species JNCC agree with the conclusion of no likely significant effect in-combination for this impact pathway.	Noted
		Impact pathway 6: Effects of EMF JNCC agree with the conclusion of no likely significant effect in-combination for this impact pathway	Noted
		Impact pathway 7: Barrier effects from mooring lines and cables between platform and anchor JNCC do not agree with the conclusion of no likely significant in-combination effect, in view of the West Wales Marine SAC and Bristol Channel Approaches SAC conservation objectives. We do not feel that the risk of this impact has been adequately assessed in combination with other projects. The justification provided to rule out this impact in combination relies on studies of fixed-turbine wind farms but three of the projects being considered in this assessment are floating offshore wind (FLOW) farms. Fixed-turbine wind farms do not have mooring lines and cabling infrastructure. We advise a more robust and evidenced assessment is undertaken, which draws upon developments of a similar nature, for example, aquaculture, seaweed farms, and other FLOW sites. We also note that while Llŷr, Erebus and White Cross, when considered alone, may not occupy a significant space, they are all to be located within relatively close proximity of one another and, in or next to one of the two harbour porpoise SACs in the Bristol Channel.	Noted, The draft MMMP has been updated to include a commitment to address entanglement risk and will monitor for, and remove, marine debris caught on cables as part of the regular surveys of subsea infrastructurein line with the JNCC recommendations.

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
2.2	**P11-LYR-3.4.3-PAP-Rev 01 – Marine Licence Application Clarifications A2**	The Applicant has not provided any updated documents and no new information is provided in the clarification spreadsheet (ORML2465 P11-LYR-3.4.3-PAP-Rev01-Marine Licence Application Clarifications A2) to support responses to marine mammal comments. Justifications provided by the Applicant in response to our identified issues lack evidence and are not deemed robust enough to satisfy our concerns. In principle, we could potentially agree with several of the applicant's conclusions for marine mammals in the ES but the supporting evidence and information in its current form is not robust enough for JNCC to agree at this stage. As this a test and demonstration project, the ES submitted will likely set a precedent for future applications. We strongly advise the applicant is required to submit updated documents to the regulator rather than providing additional information in spreadsheets or addendum. Key outstanding issues for marine mammals are; - The impact assessment has not been based on the worse-case scenario due to piling duration being up to 45 days (presented in the project design envelope) and the assessment being based on 10 days. - The impact assessment has not used the most precautionary densities for common dolphins. - Insufficient detail is provided for entanglement mitigation (Volume 6: Appendix 32A – Mitigation Register: Entanglement - Embedded Mitigation ID E232). - Removal of impact pathways from the Cumulative Environmental Assessment due to conclusions being made at the project alone assessment. - The RIAA does not present the percentage of harbour porpoise SACs affected by noise disturbance i.e. inconsistent use of EDRs (JNCC et al, 2020), which have only been applied for geophysical surveys.	Noted - the comments raised by the JNCC are addressed here and in the JNCC2 tab
2.2.1	Comments 29, 34, 69, 71	***Report to Inform Habitat Regulations Appraisal (RIHRA)*** We maintain our position that the assessment of adverse effect due to noise disturbance within the West Wales Marine or Bristol Channel Approaches SACs has not been assessed correctly and the applicant has not provided sufficient justification to support their approach. JNCC previously advised that EDRs be used when assessing noise disturbance within harbour porpoise sites. However, the applicant has only used these when assessing impacts from geophysical surveys (Table 8-22). This approach has not been applied for any other noise source for which EDRs are available. The two harbour porpoise sites within the Bristol Channel that may be impacted by this project are jointly managed by JNCC and other SNCBs. Pre-application, JNCC advised that EDRs should be used for HRA purposes (email to NRW-L dated 4th August 2023) but agreed these could be presented alongside other methods required by NRW-A for comparison purposes. JNCC highlighted this again during the fitness check (OIA-10438, 27th September 2024) as the use of EDRs had not been applied as agreed. 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 still not been applied consistently. Our advice relating to HRA as outlined in our previous response dated 22nd January 2025 (OIA-10573) remains. We also highlight a statement throughout the latest document submitted by the Applicant (ORML2465 P11-LYR-3.4.3-PAP-Rev01-Marine Licence Application Clarifications A2) which relates to comments 29, 34, 63. *"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."* JNCC agrees there are knowledge gaps for marine mammals and acknowledge the challenges faced when determining impacts within environmental impact assessments (EIA). However, density estimates and evidence SNCBs request for projects are done so to provide some level of confidence in assessments. Our advice considers whether an application has used the best available evidence while considering the context of remaining evidence gaps. We do not feel that this has been demonstrated for Project Llŷr.	Table 1 of the JNCC (2025) guidance on updated EDRs for harbour porpoise SACs gives the pin-pile EDR, no noise abatement, as 20 km. Within the HRA for Llŷr, we have based our assessment on the following pin-pile impact ranges (Table 8-22 of the Llŷr RIAA) to calculate the spatial overlaps with each SAC (Table 8-23): •Summer impact range for West Wales Marine SAC: 20 km •Winter impact range for Bristol Channel Approaches SAC: 39.2 km Although the impact ranges calculated for the Llŷr RIAA are based on NRW (A)'s advised noise threshold metric – Fixed (143dB re 1 mPa2.s) – the impact ranges thus derived are equivalent to the pin-piling EDR stated in the JNCC (2025) guidance, indeed the one we've used for the Bristol Channel Approaches SAC is more precautionary. Therefore, there is no material update required to the Llŷr assessment in regard to this matter. The additional new EDRs given in the JNCC guidance for geophysical surveys, UXOs and ADDs will be accounted for in the final MMMP at the appropriate stage post-consent (if required*), as agreed with JNCC at the meeting held on 17 September 2025. *i.e., depending on geophys activity and associated equipment; and/or if UXOs are confirmed present; and/or if ADDs are selected as a pre-piling mitigation. An appropriate mitigation zone will be determined through consultation with SNCBs and informed by relevant JNCC guidelines for mitigation of impact to marine mammals from piling, geophysical surveys and explosions, as well as relevant EDRs. For the purpose of the draft MMMP, standard JNCC mitigation zones have been used.
2.2.2	Comments 30, 40	***Worse-Case Scenarios: Project Design Envelope*** The Applicant has confirmed that the project envelope identifies the minimum number of days piling to be 20 but the marine mammal disturbance assessment for impact piling in both the ES and the RIAA has used a maximum scenario of 10. The justification provided is that underwater modelling was carried out early in the assessment process, with the project envelope updated after the modelling had been completed. We also note that the Applicant states '20-45' days duration, meaning the 20-day scenario is not the worst-case. JNCC acknowledge the Applicant's explanation in relation to this matter however an assessment of the worst-case scenario is required. The applicant claims it is 'reasonable to state' that conclusions from iPCOD population modelling would not change i.e. the population impacts would remain negligible. However, no justification or evidence is provided to support this. Without this, we cannot agree with conclusions regarding impact piling operations. We also reiterate our previous advice (OIA-10573, 22nd January 2025) in relation to iPCOD. While iPCOD is a useful and informative tool for an assessment, the outputs must be interpreted with caution. The input parameters are understood to be difficult to estimate with certainty and do not account for regional or temporal differences in vital rates. It is also understood that the challenges around predicting a piling schedule within the model creates uncertainty during a cumulative assessment. JNCC advise that the Applicant updates the assessment in line with the maximum project design parameters. This is of particular importance as it is likely that the Project's ES will be used to inform future FLOW projects.	To confirm the worst case scenario is 20 full days of piling over a 45 day period (the additional 25 days provides contingency in the construction scheduling to allow for periods of down-time due to poor weather potential, moving of piling equipment from one turbine location to another, etc). iPCoD is unable to accommodate piling durations of less than a day, so that the modelled 'worst case' for Llŷr (as submitted) assumed 10 days of continuous piling, i.e., 24 hours per turbine for the maximum ten turbine scenario. The iPCoD 10 day piling activity model output 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 20 days of full piling would represent a doubling of the impact assessed which would result in no more than 6 Harbour porpoise being impacted and even from an ultra-precautionary stance of quadrupling the impact (i.e. 4 x 10 days impact), this 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 of negligible significance. As a consequence, the worst-case scenario for disturbance from piling has been assessed for the Bristol Channel Approaches Special Area of Conservation (SAC) ant the West Wales Marine SAC and has resulted in a negligible significance outcome.

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
2.2.3	Comments 31, 73, 77, 99	***Entanglement*** The key concern JNCC identified with regards to potential entanglement with mooring lines is tertiary entanglement (Genesis, 2024) however secondary entanglement is also a concern. We note that ID E232 embedded mitigation 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.* " However, examples of how this will work in practice are necessary to demonstrate the efficacy of methods being considered. To base conclusions of negligible significance on the assumption that mitigation will be employed but not demonstrate or discuss what types of mitigation could be effective makes any agreement with conclusions a challenge. We maintain our previous advice regarding the mitigation plan. The embedded mitigation as highlighted is not sufficient to support the Applicant's conclusions nor does it demonstrate any commitment to reducing this risk. We advise potential options need to be included in the outline MMMP to provide confidence in the efficacy of any proposed methods and support the conclusions of the impact assessment. JNCC recommend engagement with SNCBs about any proposed methods pre-submission of the MMMP. In addition, evidence shows that FLOW infrastructure has the potential to increase biodiversity in areas around the site which could lead to an increase in marine mammals (Section 21.9.2.291, volume 3 Llŷr ES Chapter 21_Marine Mammals). This further increases the risk of entanglement. We agree a monitoring plan and adaptive management plan is essential to understanding and reducing the risk of any entanglements that could occur. Monitoring and managing entanglement risks will then help to ensure that the environmental benefits of the project are not inadvertently detrimental to marine mammal populations. With regard the provided information in Volume 6: Appendix 32A – Mitigation Register: Entanglement - Embedded Mitigation ID E232, JNCC request a definition of 'regular' when determining frequency of inspection of the mooring lines, for secondary and tertiary risks to marine mammals. As a minimum we expect the Applicant to identify the maximum duration between inspections as this will provide a worst-case scenario. We would also like to see a description of the methods the Applicant is exploring to inform the final monitoring plan and how an adaptive plan will be implemented. Currently the embedded mitigation ID E232 is too high level to support the assessment conclusions. We note the Applicant has mentioned (comment 73) that project monitoring may include load cells attached to the mooring lines, ROV surveys and reporting entanglement incidents to the Regulator. JNCC recommend the Applicant reads publicly available documents of monitoring plans to inform their own, current examples that JNCC are aware of include; Seaweedology Macroalgae Farm, Hywind, CÂR-Y-MÔR and Erebus Finally, we advise that the Applicant should support any regional-scale strategic studies on the interactions between marine mammals and FLOW arrays, as project development in this area grows. The Erebus project has already committed to this. We believe this project provides a key opportunity, as a test and demonstration site, to help fill evidence gaps.	A draft MMMP (P10-LLY-4.2.3-PLA-0003) has been provided that includes a commitment to address entanglement risk and will monitor for, and remove, marine debris caught on cables as part of the regular surveys of subsea infrastructurein line with the JNCC recommendations.
2.2.4	Comment 33	***Cumulative Effects Assessment (CEA)*** We note the Applicant's justification for scoping out impact pathways for auditory injury, disturbance from unexploded ordnance (UXO) clearance, collision with vessels, barrier effects, and entanglement from this assessment is on the basis that the project alone assessment concluded that they were of negligible significance. We do not agree with this decision and advise insufficient evidence has been provided to support this. The Environmental Impact Assessment (EIA) Regulations 2017 require all characteristics of the project should be assessed cumulatively with other projects within the zone of influence. While it can be agreed some impact pathways do not need to be considered cumulative, we do not agree with the decision to scope out the impact pathways highlighted. It is widely understood that impacts alone may be of negligible significance but when combined with other projects can result in a significant impact to marine mammal receptors. Exposure to repeated disturbance and overlapping injury events could result in repeated recovery processes from multiple stressors. The Applicant refers to applying the same approach used by Erebus, we highlight our advice was also the same for that project (OIA-08510, 22nd April 2022).	Noted
2.2.5	Comments 35, 85, 87, 89	***Density estimates for common dolphin*** JNCC maintains our previous advice (OIA-10573, 22nd January 2025) that density estimates based on the site-specific surveys are used when assessing impacts to common dolphin as this is the more precautionary density. The Applicant has not based their assessment on the most precautionary density estimates for common dolphin and has not provided a robust justification outlining why this decision has been made.	Noted
2.2.6	Comment 36	***Outline Marine Mammal Mitigation Plan*** JNCC are unsure about the Applicant's reference to sonar in their response to our previous advice. Our advice relates to the Applicant's approach to only use instantaneous PTS (i.e. SPL) to determine mitigation requirements to reduce the risk of auditory injury to negligible levels. It is best practice to consider both the cumulative sound exposure levels (SELcum) in addition to the SPL and to mitigate the largest, most precautionary injury ranges predicted. We uphold our position in that we disagree with the decision to rule out noise abatement technology for piling, or the use of acoustic deterrents as stated in our previous advice (OIA-10438, 27th September 2024 and OIA-10573, 22nd January 2025).	A draft MMMP (P10-LLY-4.2.3-PLA-0003) has been provided that includes a commitment to address entanglement risk and will monitor for, and remove, marine debris caught on cables as part of the regular surveys of subsea infrastructurein line with the JNCC recommendations.
2.2.7	Comments 45, 94, 96, 97	JNCC are unclear why the Applicant is highlighting sonar and individual equipment spec sheets. Our comment relates specifically to the Applicant's decision to not present both peak pressure (SPLpeak) and cumulative exposure (SELcum) metrics in the ES even though both injury metrics have been assessed. JNCC maintains our position and strongly advises that both metrics are considered and presented within the main assessment, injury ranges were omitted from this section of the assessment. Then the most precautionary is used to determine mitigation requirements.	The draft MMMP has been updated to include a commitment to use the dual metrics for impusive noise assessments in line with the JNCC recommendations.
2.2.8	Comment 47	We request further explanation as to why the Applicant has decided to present only the stationary model for VHF Volume 3 Chapter 21: Marine Mammals - Section 21.9.1, paragraph 188, page 82. While the injury ranges here are precautionary, it is widely understood that this is an unrealistic metric and can result in over-precautionary results. We advise fleeing animal response ranges are more representative and request these are presented within the ES not the technical appendices.	The draft MMMP has been updated to include a commitment to use the dual metrics for impusive noise assessments in line with the JNCC recommendations.
2.2.9	Comment 49, 57	We thank the Applicant for clarifying that the 168 additional transits during operation and maintenance relates to the project lifetime. We question if this figure has included transits for entanglement monitoring (i.e. removal of debris from mooring lines and cables)? If not, we would request this figure is increased to account for monitoring and/or mitigation requirements against the risk of entanglement (i.e. site inspections and remedial operations if a marine mammal becomes entangled). However, separating out the different operations which contribute to the overall number is useful.	Entanglement monitoring is currently considered to part of the normal O&M activities and is included in the transit figures.
2.2.10	Comment 55	JNCC are disappointed with the Applicant's response regarding our concerns relating to entanglement as identified in Volume 3 Chapter 21: Marine Mammals - Section 21.9.2, paragraph 274, page 94. The Applicant has not indicated that they have understood our concerns relating to the risk of tertiary entanglement. Secondary entanglement is where an animal becomes entangled to the mooring lines and cables due to interaction with derelict fishing gear attached to the infrastructure. This is recognised as a significant risk to marine mammals. Tertiary risk relates to the risk of an animal with derelict fishing gear already attached becoming entangled with FLOW mooring lines or cables as it travels through the site. Tertiary, as well as secondary entanglement was identified in the Genesis, 2024 report referenced in our previous advice to the Regulator (OIA-10573, 22nd January 2025).	The draft MMMP has been updated to include a commitment to address entanglement risk and will monitor for, and remove, marine debris caught on cables as part of the regular surveys of subsea infrastructurein line with the JNCC recommendations.
2.2.11	Comment 61	JNCC welcome the Applicant's commitment to including the Defra noise policy and the joint JNCC, Natural England and Cefas position statement regarding the use of noise abatement systems during piling. The Applicant has committed to engagement with NRW-A regarding this and JNCC request we are included in discussions as the statutory advisor for Welsh offshore waters.	Noted and the project is content to include the JNCC as part of these discussions

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
2.2.12	Comment 62, 94, 96, 97	The applicant has assessed injury using both the peak pressure (SPLpeak) and SELcum metrics as agreed pre-application. However, they only presented the peak pressure results in the ES chapter and only used this metric when determining mitigation requirements. JNCC do not agree with this approach. The applicant has assessed injury using both the peak pressure (peak SPL) and cumulative exposure (SELcum) metrics as agreed pre-application. However, they only presented the peak pressure results in the ES chapter and only used this metric when determining mitigation requirements. JNCC require both metrics to be considered and the most precautionary used to determine mitigation requirements. Without this, JNCC cannot advise measures described in the OCEMP are sufficient to reduce the risk of auditory injury to marine mammals. Additionally, the applicant choosing to only mitigate injury ranges using the SPLpeak metric has been used as justification to not consider the use of noise abatement or acoustic deterrents during piling. We highlight an announcement by Welsh Government (Decision Report, 6 March 2025) to publish a noise policy paper similar to that published by Defra in January 2025. The Defra policy requires renewable developments in English waters to undertake best endeavours to use noise abatement during piling from January 2025.	The draft MMMP has been updated to include a commitment to use the dual metrics for impusive noise assessments in line with the JNCC recommendations.
2.2.13	Comment 63	The applicant states both Llŷr 2 and Valorous are at the pre-application stage and insufficient data is available to enable them to be considered in the marine mammal cumulative assessment. However, they have been included in benthic and ornithology assessments. We highlight the Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment states that "*where baseline data about other existing and, or approved development is incomplete, a precautionary but reasonable approach should be taken based on the best available evidence, with an explanation as to how the applicant has attempted to source data* ." Further justification is required to support not including these projects for marine mammals. We are satisfied with the statement referring to Rampion 2.	Noted
2.2.14	Comment 92	JNCC reiterates our advice from 22nd January 2025 (OIA-10573) that injury ranges for each functional hearing group should be presented within the ES to provide clear information to inform the 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. As all cetaceans are European Protected Species, we advise this information should be summarised in the ES and the appendix should reflect supplementary technical information to expand further on the details of how key information has been calculated.	As per the comments addressed within the JNCC 2 tab, the draft MMMP has been updated to include a commitment to use the dual metrics for impusive noise assessments in line with the JNCC recommendations.
2.2.15	Comment 93	If, as stated, Erebus has been used as a proxy for the piling parameters used to assess auditory injury and disturbance, because the same activities and methods will be used for Project Llŷr, the Applicant must outline the exact parameters that makes Erebus an appropriate project for this purpose. A clearer justification of the comparison is required. JNCC raised many concerns in relation to the Erebus application dated 22nd April 2023 which underpins our need for robust and clear evidence in support of using this project as a proxy.	Similar to the Llŷr Project, the Erebus is a 100MW Floating Wind T&D project comprising up to ten Wind Turbine Generators (WTGs) with each WTG is housed on a semi-submersible floating platform attached to the seabed by weighted mooring lines, up to 870 m in length, and an anchor. Seabed depth, conditions and environment are all very similar due to proximity.
3	**Benthic ecology (offshore) comments**		
3.1	**P11-LYR-3.4.3-PAP-Rev 01 – Marine Licence Application Clarifications A2**		
3.1.1	Comments 100, 111	JNCC are still of the opinion that decommissioning activities have not been fully considered. We believe that the Applicant has not taken a quantitative approach to the worst-case scenario for decommissioning and although the Applicant has stated that during the decommissioning stage the area of seabed impacted would be similar to the area assessed as impacted during construction, JNCC are of the opinion that without a quantitative approach to the assessment of decommissioning activities we are unable to assess the impact from the project as a whole. Given the potential recovery of the site over the course of the project lifespan, the impacts from decommissioning may therefore be 'new' impacts and should be accounted for. The Applicant has stated that upon commencement of decommissioning, assessments may indicate that the best environmental approach is to leave infrastructure in place, if this is the case, JNCC would expect to see robust evidence supporting this approach.	Noted, this will be addressed prior to decommissioning once a Best Practicable Environmental Option (BPEO) assessment has been undertaken considering the latest technologies at the time and the baseline environment. The BPEO will accompany the relevant Marine licence application requirement (or equivalent at that stage) submitted for approval prior to the activities being undertaken.
3.1.2	Comment 101	JNCC believe that although the benthic assessment was based on a worst-case scenario with regards to the burial and protection of the Inter Array Cables (IACs), the issue of contradicting statements has not been addressed as outline in our response of 22 January 2025 (JNCC Reference, OIA-10573). We would expect consistency across documentation to ensure no confusion now, or in situations where future windfarms may reflect on the Llyr project for reference.	Noted, any required updates/corrections will be addressed in an Errata document submitted post consent.
3.1.3	Comment 108	JNCC note the Applicant's comments with regards to dividing the temporary and permanent impacts into offshore and inshore areas and reiterates that this would be useful in any further applications. JNCC welcome the clarification of a worst-case scenarios for cable repairs and reburial however, it is still unclear if additional protection has also been included in the worst-case scenario. JNCC reiterate our original comment made regarding placement of permanent and temporary impacts in different stages of the project and recommend that this is addressed in further applications, as this is a test and demonstration project, the ES submitted will likely set a precedent for future applications.	Noted
3.1.4	Comment 114	JNCC acknowledges that the details needed to undertake the assessment of benthic impacts are included in the relevant chapter, however JNCC expects consistency across all documentation as previously stated to ensure no confusion. The applicant has stated that "*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* .", we would ask that it is made clear in all documents what impacts are included in each figure to avoid confusion.	Noted

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Version: A3 **JNCC 2**

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
1	Marine Ornithology Comments	**Presentation of Population Viability Analyses (PVA) outputs**	
		We thank the Applicant for providing full PVA outputs relevant to the Environmental Impact Assessment (EIA) and Habitats Regulations Assessment (HRA).	Noted
		In-combination assessment of lesser black-backed gull and Atlantic puffin features of Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro (SSSP) Special Protection Area (SPA) We maintain the need for in-combination assessments for lesser black-backed gull and Atlantic puffin features of SSSP SPA. Whilst the Llŷr alone contribution to mortality, as well as those from other projects, may individually be below a 1% of baseline mortality threshold set to determine whether a Population Viability Analysis (PVA) is required, this does not automatically exclude the need for an in-combination assessment. In-combination assessments are important for considering whether individual small impacts (e.g. those below 1% baseline mortality) may add up to be significant in-combination with other plans and projects. It could be that once in-combination mortality totals are calculated, this total passes the 1% baseline mortality threshold, and further consideration is required, for example through PVA.	This is addressed in the updated Llŷr Marine Ornithological Clarification Note 3 – dated 07 November 2025
		NRW (A) have concluded no Adverse Effect on Integrity (AEoI) in-combination for lesser black-backed gull and Atlantic puffin at SSSP SPA based on their own in-combination mortality calculations. We advise that the Applicant either provide their own calculation of in-combination mortality totals for these two species, or consider whether they agree with NRW (A)'s in-combination mortality calculations and if so present these in their own submission.	To confirm we agree with NRW (A)'s in-combination mortality calculations and the NRW (A) 's in combination mortality calculations are presented in the updated Llŷr Marine Ornithological Clarification Note 3 – dated 07 November 2026, as appendix 1
		We note that NRW-A's advice of the 29th July 2025 on Atlantic puffin appears to be misinterpreted. The Applicant states on page 9 "In providing their final response on Llŷr, dated 29 July 2025, NRW-A have agreed that the 111.63 puffin mortalities we have modelled in the Llŷr cumulative PVA against the SSSP SPA does represent a realistic 'worst-case' for the total impacts of all offshore wind projects within the wider Biologically Defined Minimum Population Scales (BDMPS), including those in Liverpool Bay.". However, in NRW-A's advice of the 29th July 2025 it states "…the in-combination PVA previously conducted by the Applicant - assuming 111 mortalities in-combination - may not necessarily present the worst-case scenario, particularly given that all relevant plans and projects have not been included in the in-combination assessment.". NRW-A do state that their full in-combination total calculations including all relevant plans and projects "…is a small increase compared to the 111 mortalities previously assessed via Llŷr's PVA…" and "…this would result in a negligible difference in the results of the PVA…". However, this is not the same as stating NRW-A's agreement with the 111 mortalities representing a realistic worst-case. We suggest the Applicant removes this sentence as it misrepresents NRW-A's advice.	This sentence has been removed from the the updated Llŷr Marine Ornithological Clarification Note 3 – dated 07 November 2025
		Statement on Collision Risk Modelling (CRM) and tip height We note our previous comments of 29th July 2025 regarding revised turbine parameters and whether this would make a significant difference to the outcome of CRM. We advise that clarity should be provided as to whether the worst-case scenario has still been modelled within the CRM, or whether the proposed revised turbine parameters would result in significantly different CRM results.	We confirm that the indicative worst-case for SLVIA (max turbine height to upper blade tip), does not affect the ornithological CRM as it does not alter any of the worst-case parameters that are material in this modelling, i.e., air gap, rotor radius/rotor diameter, or number of turbines. The Llŷr project is not proposing to reduce the modelled air gap (22m), nor to increase the blade length (rotor radius), nor increase the number of turbines beyond the worst-case parameters already modelled under CRM. As requested by JNCC and NRW (A), we will undertake a further round of post-consent CRM, at the appropriate time, once we've confirmed the final turbine selection (which will fall within the worst-case, as assessed, for all receptors)
	Marine Mammals	**Marine Mammals Mitigation Plan (MMMP)** We thank the Applicant for updating the Marine Mammal Mitigation Plan (MMMP) to reflect discussions during JNCC's meeting with the project team on the 17th September 2025. As discussed in the meeting, additional text has been added to Section 2 Mitigation Method (p.3) that outlines a commitment to align with the JNCC, NE, and Cefas joint position on the use of noise abatement during piling. We note, however, previous text within the preceding paragraph on p.3 has not been removed which contradicts the new text. We advise this section is reviewed and updated.	The necessary text has been updated in the Llŷr Marine Ornithological Clarification Note 3 – dated 07 November 2026, line with the JNCC observations
		We also take this opportunity to highlight outstanding comments we have provided on this mitigation plan. While not specifically discussed in the meeting due to time constraints, we still expect these to be addressed. These are provided below.	Our responses to the outstanding comments are addressed below
		Piling The injury range proposed to be mitigated for piling is the instantaneous (SPLpeak) range. As advised previously (OIA-10438, 27th September 2024, OIA-10573, dated 22 January 2025; OIA-10904, dated 29 July 2025, and OIA-11008, 15th August 2025) we strongly disagree with the use of this metric. It is Statutory Nature Conservation Body (SNCB) advice to present dual metrics for impulsive noise assessments (unweighted SPLpeak and frequency-weighted Sound Exposure Level (SEL)) and that the metric predicting the most precautionary injury range (PTS) should be mitigated. This is our standard regulatory advice for all Welsh and English waters for previous projects. We recommend a commitment to do this is included in the draft MMMP, therefore presenting the worst-case injury range for the SELcum metric that mitigation shall be based upon. It can be caveated with a statement to consider best practice at the time of finalising the mitigation plan, however at this time both the SPLpeak and cumulative SEL metrics need to be mitigated. We agree that the final plan can be agreed with regulators and SNCBs post-consent provided this agreement is again secured at consent.	The draft MMMP has been updated to include a commitment to use the dual metrics for impusive noise assessments in line with the JNCC recommendations.
		Unexploded Ordnance (UXO) clearance For UXO clearance, as discussed in previous response letters (OIA-10573, dated 22 January 2025; OIA-10904, dated 29 July 2025), we advise that the draft MMMP should clearly state a commitment to align with the DEFRA joint guidance, published in January 2025. This guidance has been adopted by Welsh Government, NRW (advisory and licencing) and JNCC.	The draft MMMP has been updated to include a commitment to align with the DEFRA joint guidance in line with the JNCC recommendations.
		Entanglement The draft MMMP still does not include any mitigation/monitoring methodology in relation to entanglement. We strongly advise the Applicant to re-visit JNCC and NRW-A's previous advice (OIA-10573, dated 22 January 2025; OIA-10904, dated 29 July 2025) in relation to mitigation proposals for entanglement risk to marine mammals as these contain recommendations, (including examples) on different potential entanglement mitigation methodologies.	The draft MMMP has been updated to include a commitment to address entanglement risk and will monitor for, and remove, marine debris caught on cables as part of the regular surveys of subsea infrastructurein line with the JNCC recommendations.
		JNCC agree that detailed requirements for entanglement monitoring could be discussed post-consent prior to the commencement of works (post-consent), through written consultation and written agreement with both JNCC and NRW-A. However, a commitment or outline of how the project will address this impact pathway should be included within this draft MMMP.	The draft MMMP has been updated to include a commitment to Design and frequency of this monitoring will be agreed with the Regulator and SNCBs post-consent once final design parameters – particularly number of turbines and number of mooring lines – are confirmed.
		Additional comments Our comments above seek to directly address the latest draft MMMP provided by the Applicant. We would also like to take this opportunity to highlight the following points regarding information provided to support the HRA process (see letter OIA-10573, dated 22 January 2025, for detailed responses). Our position on these items remains unchanged and our advice to NRW-L will reflect that if no further information is provided.	Noted
		Report to Inform Appropriate Assessment (RIAA)	

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
		Currently the worse-case scenario for disturbance from piling has not been assessed for the Bristol Channel Approaches Special Area of Conservation (SAC) or West Wales Marine SAC. Without this, JNCC will be advising the licensing authority that the Applicant has not provide sufficient information for them to undertake an appropriate assessment.	
			To confirm the worst case scenario is 20 full days of piling over a 45 day period (the additional 25 days provides contingency in the construction scheduling to allow for periods of down-time due to poor weather potential, moving of piling equipment from one turbine location to another, etc). iPCoD is unable to accommodate piling durations of less than a day, so that the modelled 'worst case' for Llŷr (as submitted) assumed 10 days of continuous piling, i.e., 24 hours per turbine for the maximum ten turbine scenario. The iPCoD 10 day piling activity model output 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 20 days of full piling would represent a doubling of the impact assessed which would result in no more than 6 Harbour porpoise being impacted and even from an ultra-precautionary stance of quadrupling the impact (i.e. 4 x 10 days impact), this 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 of negligible significance. As a consequence, the worst-case scenario for disturbance from piling has been assessed for the Bristol Channel Approaches Special Area of Conservation (SAC) ant the West Wales Marine SAC and has resulted in a negligible significance outcome.
		To provide context, in our response OIA-10904, dated 29 July 2025, we acknowledged that the Llŷr project confirmed that the project envelope identified the minimum number of days of piling to be 20 but the marine mammal disturbance assessment for impact piling in both the Environmental Statement and the RIAA has used a maximum scenario of 10 days. The justification provided was that the underwater modelling was carried out early in the assessment process, with the project envelope updated after the modelling had been completed. In the P11-LYR-3.4.3-PAP-Rev 01 – Marine Licence Application Clarifications A2 document it was stated that the piling duration was '20-45' days, meaning the 20-day scenario is not the worst-case.	As above
		Effective Deterrent Ranges (EDRs) JNCC advice will be that Effective deterrent Ranges (EDRs) should be used for HRA purposes when managing noise disturbance in the two harbour porpoise SACs. This is for both project alone and in-combination assessment. JNCC previously advised (email to NRW-L dated 4th August 2023, OIA-10438, 27th September 2024; and OIA-10573, dated 22 January 2025) that EDRs be used when assessing noise disturbance within harbour porpoise sites. This approach has been adopted by JNCC and Natural England, who along with NRW-A, manage the Bristol Channel Approaches SAC. The West Wales SAC is jointly managed by JNCC and NRW-A. Currently, the project has only applied EDRs when assessing impacts from geophysical surveys. This approach has not been applied for any other noise source for which EDRs are available. We also highlight that updated EDRs have now been published (JNCC, 2025). In addition to updating the existing EDRs, it includes new EDRs for additional noise sources including the use of ADDs. This will also have to be considered in the RIAA.	The mitigation zone will be determined through consultation with SNCBs and informed by relevant JNCC guidelines for mitigation of impact to marine mammals from piling, geophysical surveys and explosions, as well as relevant EDRs. For the purpose of the draft MMMP, standard JNCC mitigation zones have been used. As above As above

Gap Analysis - CAS-01352-L3N2P8 - Llŷr 1 Floating Offshore Wind Demonstration Project
Version: A3 NRW(A)

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
1	**Offshore**		
1.1	**General Offshore Comments**	1. NRW (A) welcomes the additional information and clarifications provided by the Applicant in their recent submissions. NRW (A) has reviewed this information and, notwithstanding the advice raised herein, consider the majority of the clarifications to be satisfactory.	Noted
		2. NRW (A) notes the Applicant's reliance on post-consent mitigation (via post-consent conditions) across a number of offshore receptors in order to allow a conclusion of no significant effect under Environmental Impact Assessments (EIA) and no adverse effect on site integrity (AEoSI) under Habitats Regulations Assessments (HRA). Whilst this approach may be acceptable, the risks associated with the extensive post-consent obligations required to discharge conditions - including any further assessment(s) under HRA and/or EIA that may be required - should be clearly acknowledged. On the basis of the information presented, NRW (A) agrees in principle that the proposed mitigation measures presented by the Applicant and relied on in HRA and/or EIA assessments are capable of avoiding adverse effects on site integrity and/or likely significant effects in line with the conclusions. The advice of NRW (A) is that the Competent Authority (CA) will need to be assured that conditioning of mitigation measures, relied on in support of conclusions of HRA and/or EIA, will provide a secure mechanism that ensures that those mitigation measures will be guaranteed and effective. NRW (A) advises and requests that the CA makes any relevant environmental condition requiring mitigation measures, to be subject to a requirement for the Applicant to consult and obtain the agreement in writing from NRW (A) before it may be discharged.	Noted
		3. There are a number of instances where we advise NRW MLT that consideration should be given to the provision of an errata document to ensure the information and data associated with the project are clear. In line with our advice in January, some of the points raised are important 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.	Noted
		4. For the avoidance of doubt, our advice on the CA's draft HRA is based on the updated Conservation Advice Packages published 25th June 2025: Natural Resources Wales / Conservation advice for European marine sites (Reg 37).	Noted
1.2	**Physical Processes**		
1.2.1	Overall Comments	5. NRW (A) welcomes the clarifications, additional information and further assessment provided by the Applicant in response to our comments made on 29 January 2025 relating to; methodologies associated with Horizontal Directional Drilling (HDD) and numerical modelling of Suspended Sediment Concentration (SSC) plumes, cumulative impact assessments, assessing impacts of decommissioning, seabed recovery and the potential for cable protection measures to reduce water depth. Following a review of the additional information provided, NRW (A) has no major concerns to raise with respect to physical processes - please see individual comments for further details.	Noted
1.2.2	Detailed Comments		
1.2.2.1	Clarifications Spreadsheet	6. NRW (A) welcomes the additional information, provided at Number / reference 12, 13, 18, 19, 21 & 25 of the Clarifications Spreadsheet, relating to the construction phase for the HDD exit pits, including confirmation that excavated material will be used for the backfilling of the HDD exit pits. NRW (A) has no further concerns to raise with respect to assessing changes in seabed roughness. NRW (A) also note that maintenance dredging is not required and therefore not assessed. We are content with the rationale provided and this is now resolved.	Noted
		7. Following confirmation of a four-week period of exit pit exposure, NRW (A) are content that no further assessment of the construction phase of the HDD exit pits, including potential modifications to the wave and current climate, is required.	Noted
		8. NRW (A) acknowledges and welcomes the additional clarification regarding the consideration of baseline data describing seasonal variability in the beach profile at the proposed HDD exit pit locations, and the additional justification for the 3m burial depth. There are no further concerns to raise regarding the burial depth of proposed HDD exit pits.	Noted
		9. NRW (A) acknowledges and welcomes the additional information, provided at Number / reference 14 & 20 of the Clarification Spreadsheet, regarding the project-specific inputs to the numerical spreadsheet models used to assess potential impacts of SSC plumes during the construction phase of the proposed project. In particular, we welcome the presentation and justification of representative current speed and sediment type used. NRW (A) has no further concerns to raise with respect to the methodology of the numerical spreadsheet modelling.	Noted
		10. NRW (A) acknowledges the clarifications provided at Number / reference 15, 23, 24 & 30 of the Clarification Spreadsheet, relating to inconsistencies in the reporting of project design details between Volume 1: Chapter 4 and Volume 3: Chapter 17. We have no further concerns to raise.	Noted
		11. NRW (A) acknowledges and welcomes the additional assessment (as noted at Number / reference 16, 28 & 29 of the Clarification Spreadsheet) of the potential cumulative impacts of SSC plumes, in particular the additional assessment with respect to finer sediments that remain in suspension for longer periods. NRW (A) agrees with the conclusion of the additional assessment and has no further concerns to raise with respect to the potential cumulative impacts of SSC plumes.	Noted
		12. NRW (A) also welcomes the further assessment and justification given to the potential cumulative impacts of sand-wave levelling and cable protection along the Offshore Export Cable Corridor (OfECC) where the Llŷr offshore project boundary and the Erebus export cable corridor overlap. NRW (A) are content with the conclusion that, given the localised nature of the potential impacts of sand-wave levelling along the 10km of cable corridor where the impacts of the two projects overlap, the potential for cumulative impacts between projects is unlikely.	Noted
		13. NRW (A) acknowledges the commitment to a post-consent licence condition related to the Cable Burial Risk Assessment (CBRA) and Cable Specification and Installation Plan (CSIP) (see Number / reference 17 of the Clarification Spreadsheet). Provided that NRW (A) is consulted in writing on the suitability of the CBRA, CSIP, and pre-construction surveys via appropriate conditions before works commence, we have no further concerns.	Noted
		14. NRW (A) acknowledges the commitment (Number / reference 22 of the Clarification Spreadsheet) to monitoring seabed recovery rates (e.g. targeted bathymetric surveys along parts of the cable route) as a routine part of construction and operation, and to discussing the sharing of monitoring data to inform future projects and substantiate the conclusions of the Environmental Statement (ES). We suggest that clarification is sought from the Applicant on the process by which seabed recovery monitoring plans can be assessed by NRW (A). For example, the commitment to monitoring seabed recovery rates and sharing data could be included in the CSIP. NRW (A) has no further concerns to raise on this matter.	The CSIP will be finalised with consultation with NRW(A) prior to works being undertaken. This will include the agreement on the appropriate seabed recovery monitoring process and how information is to be promulgated.
		15. NRW (A) acknowledges the commitment (Number / reference 26 of the Clarification Spreadsheet) to assess potential impacts on hydrodynamics and associated sediment transport processes as part of the CBRA, if any section of cable protection along the export cable corridor exceeds 5% of the navigable water depth referenced to chart datum. We welcome this commitment.	Noted
		16. NRW(A) acknowledges and welcomes the additional assessment and consideration of seabed recovery rates during decommissioning, as noted at Number / reference 27 of the Clarification Spreadsheet. We have no further concerns to raise with respect to decommissioning at this time.	Noted

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
1.2.2.2	ORML2465: Record of a Habitats Regulations Assessment of a project: Form 1	17. NRW (A) agrees with the overall conclusions of the HRA of no AEoSI for impact pathways related to physical processes.	Noted
		18. We note that potential 'blockage' impacts to bedload sediment transport processes via cable crossings requiring cable protection measures outlined in Volume 1, Chapter 4: Description of the Proposed Project (Section 4.5.3, para 104) are not identified as a potential impact pathway. We advise this potential impact pathway should be included in the screening assessment (Section 3.2.2) due to the potential for interruptions to sediment transport processes which support designated benthic habitat features within the Pembrokeshire Marine Special Area of Conservation (SAC). Due to the proximity of proposed cable crossings to the shore and designated features of the SAC, NRW (A) recognises that in this case, at the Appropriate Assessment (AA) stage of the HRA process, AEoSI could be ruled out and therefore, including this impact pathway would not make a material difference to the conclusion of the HRA.	Noted
1.2.2.3	ORML2465: Water Framework Directive Compliance Assessment	19. NRW (A) agrees with the overall conclusion of the Water Framework Directive (WFD) Compliance Assessment, that the proposed project has no potential to cause deterioration of the Pembrokeshire South Coastal (GB611008590003) or Milford Haven Outer Coastal (GB641008220000) waterbody with respect to hydromorphology.	Noted
1.3	**Benthic Subtidal and Intertidal Ecology**		
1.3.1	Overall Comments	20. We have reviewed the responses in the Clarifications Spreadsheet and on the whole agree with all of the outcomes. We consider that one minor clarification should be sought in relation to the use of concrete versus natural rock cable protection.	Noted and agree to consult in writing with the SNCB's on the use of natural rock protection over concrete matressing within the CSIP and CBRA ahead of commencement of works
1.3.2	Detailed Comments		
1.3.2.1	Clarifications Spreadsheet	21. NRW (A) acknowledges the Applicant's commitment to undertake additional post-consent surveys (see Number / reference 32, 39-41, 43-45 in the Clarifications Spreadsheet) and ensure that any potential impacts to Annex 1 reef as a result of intersection with the Offshore Export Cable Corridor (OfECC) will be mitigated through demonstrating that there is no cable movement - either as a result of the weight of the cable itself, or through additional pinning where necessary. We agree that the scope and interpretation of the surveys need to be agreed in writing, prior to commencement of works, with NRW (A) as part of the post-consent licence condition (please also see paragraph 22 and 24 below). NRW (A) have no further concerns on this matter.	Noted
		22. NRW (A) acknowledges the Applicant's commitment (Number / reference 33, 42 of the Clarifications Spreadsheet) to ensuring that the post-consent CSIP and CBRA will develop a clear criterion informed by current guidance, to identify and differentiate between mixed gravel and low resemblance story reef to ensure that impacts on reef habitat are avoided in relation to boulder clearance activities. Provided that NRW (A) is consulted in writing on the suitability of the CSIP and CBRA via appropriate conditions before works commence, then we have no further concerns on this matter.	Noted
		23. NRW (A) acknowledges the Applicant's commitment (Number / reference 34 of the Clarifications Spreadsheet) to ensuring that all project vessels shall adhere to the International Convention for the Control and Management of Ships' Ballast Water and Sediments (IMO, 2017). NRW (A) have no further concerns on this matter.	Noted
		24. NRW (A) acknowledges the Applicant's commitment (Number / reference 36 & 38 of the Clarifications Spreadsheet) to consult NRW (A) in writing in relation to the scope and interpretation of the post-consent geophysical and geotechnical surveys, via the CBRA. NRW (A) have no further concerns on this matter.	Noted
		25. Regarding the assessment to ensure all potential interactions with Pembrokeshire Marine SAC Annex 1 Reef feature are avoided (See Number / Reference 37 of the Clarifications Spreadsheet) - due to the Applicant's commitment to ensure the cable will be secured in place (either through the weight of the cable or through pinning), NRW (A) have no further concerns in relation to the assessment provided.	Noted
		26. NRW (A) acknowledges that the Applicant will consider the use of natural rock protection over concrete mattressing to reduce the potential impact of Invasive Non-Native Species (INNS) and encourage general biodiversity (see Number / reference 43 in the Clarifications Spreadsheet). NRW (A) recommend this element being included in the post-consent review of the CSIP and CBRA to provide further clarification as to how this element will be considered.	Noted and agree to consult in writing with the SNCB's on the use of natural rock protection over concrete matressing within the CSIP and CBRA ahead of commencement of works
		27. NRW (A) acknowledges the Applicant's commitment to ensuring a risk based approach to monitoring the cable protection infrastructure and potential presence of INNS, to confirm assumptions made in the ES is incorporated (see Number / reference 44 of the Clarifications Spreadsheet). NRW (A) have no further concerns on this matter.	Noted
		28. With regard to NRW (A)'s advice that the potential impacts on the Pembrokeshire Marine SAC Annex 1 reef in relation to the OfECC should be included in the assessment of impacts, we note the Applicant's response (Number / reference 45 & 47 of the Clarifications Spreadsheet) that no further assessment is necessary due to the mitigation measures presented in the form of weighted (articulated cable) and/or pinning where necessary. However, due to the nature of the Habitats Regulations Assessment (HRA), we reiterate the requirement to identify all potential impact pathways. As it stands in the Environmental Statement (ES) presented, this has not been undertaken. Nevertheless, NRW (A) note that the accompanying HRA undertaken by the NRW MLT has acknowledged and incorporated this potential impact pathway. Therefore, NRW (A) have no further concerns on this matter.	Noted
		29. With respect to the Applicants response at Number / reference 46 of the Clarifications Spreadsheet - NRW (A) acknowledges and welcomes the Applicants commitment to further discussion with NRW (A) relating to general biodiversity gain and colonisation of native flora and fauna on cable protection, as part of the CSIP, CBRA and Project Environmental Management Plan (PEMP). NRW (A) have no further concerns on this matter.	Noted
		30. NRW (A) acknowledges the Applicants commitment to ensuring that a full biosecurity risk assessment will be undertaken for all development phases (see Number / reference 49 & 50 of the Clarifications Spreadsheet). We advise particular diligence in relation to the presence of Didemnum vexillum in the Milford Haven waterway with all biosecurity management measures. The Biosecurity Risk Assessment and Management Plan should be agreed in writing with NRW (A) via appropriate condition. NRW (A) have no further concerns on this matter.	Noted
1.3.2.2	ORML2465: Record of a Habitats Regulations Assessment of a project: Form 1	31. NRW (A) agrees with the overall conclusions of the HRA of no AEoSI for impacts on benthic ecology receptors. This includes those measures indicated in the HRA that can be secured though a licence condition.	Noted
1.3.2.3	ORML2465: Water Framework Directive: Compliance Assessment	32. NRW (A) agrees with the conclusions of the WFD assessment in relation to impacts on benthic ecology receptors.	Noted
1.4	**Marine Water and Sediment Quality (MW&SQ)**		
1.4.1	Overall Comments	33. NRW (A) considers the standard of the Applicant's assessment of the impacts to marine water and sediment quality (MW&SQ) to be generally good. We remain satisfied that appropriate impact pathways have been accounted for and that the relevant aspects of the marine environment have been assessed for impact. We welcome the clarifications provided by the Applicant in the Clarifications Spreadsheet.	Noted
1.4.2	Detailed comments		
1.4.2.1	Clarifications Spreadsheet	34. The Project proposal states that any adverse effects may be mitigated through adherence to best practise and through methodology design considerations (e.g. ES Volume 3, Chapter 18: Marine Water and Sediment Quality 52.Section 18.7 Embedded Mitigation, Management Plans and Good Practice, Table 18-14: Mitigation measures, management plans and best practice adopted as part of the proposed Project).	Noted

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
		35. Whilst we are satisfied that the Applicant's assessment is adequate, we consider that the project is dependent on using the outline Construction Environmental Management Plan (CEMP), the Water Quality and Pollution Management Plan (WQPMP) and Drilling Plan to avoid conclusions of significant impact for the project alone, cumulatively and in-combination.	Noted
		36. Nonetheless, we maintain our position that it is possible to adequately mitigate any negative effects and undesirable impacts to the quality of marine water and sediment.	Noted
		37. If the CEMP and WQPMP cannot be provided before a licence is granted, then, in order to ensure that the plans adequately mitigate the potential negative effects, NRW (A) advise that we are consulted in writing and agree the suitability of the CEMP and WQPMP ahead of commencement of works (see Number / reference 52 of the Clarifications Spreadsheet).	Noted and agree to consult in writing the suitability of the CEMP and WQPMP ahead of commencement of works
		38. In consideration of the reliance on these measures to conclude no significant effect, the Applicant should make explicit the links from the identified effect-pathways to the proposed mitigation in their CEMP. The mitigation should contain a clear description of how the proposed measures will be carried out to avoid or reduce the identified effects and/or ameliorate the impact of the effects. This description can be high-level, however, as a minimum it should include the full pathway through source, pressure and mitigation applied to reduce the impact.	Noted and agree to consult in writing the suitability of the CEMP and WQPMP ahead of commencement of works
		39. We continue to welcome the proposals to monitor the water quality during the works to verify the efficacy of the mitigation measures proposed. We continue to recommend that this commitment is captured as a condition of consent, and the detail of which should be agreed with NRW (A) in writing. We note that the monitoring must be adequate to detect change in the marine environment and must result in positive action to mitigate the effects of the change.	Noted and agree to consult in writing the suitability of the CEMP and WQPMP ahead of commencement of works
1.4.2.2	ORML2465: Record of a Habitats Regulations Assessment of a project: Form 1	40. Whilst NRW (A) agrees with a conclusion of no AEoSI when "… *taking into account any conditions or restrictions as applicable*… ", we disagree with aspects of the CA's assessment process to reach these conclusions. Further detail is provided below, alongside recommendations to the CA to improve the assessment. We welcome discussion with the CA on these aspects.	Noted
		Section 3.2, Likelihood of significant effects (LSE) test 41. NRW (A) agrees that the appropriate protected areas have been included for assessment by the CA and that the appropriate pressures and source-pathways have been included for the test of likely significant effects.	Noted
		Section 4.2, Assessment of the project taking into account additional mitigating measures, conditions or restrictions 42. NRW (A) can agree with the conclusion of the assessment of no AEoSI, subject to the inclusion of a post-consent condition to provide the requested mitigation as noted above, the detail and suitability of which is to be agreed in writing with NRW (A) – this should include detail of the mechanisms for reducing the identified effects, or reducing the impacts of those effects.	Noted and agree to consult in writing the suitability of the CEMP and WQPMP (including detail of the mitigation mechanisms for reducing the identified effects) ahead of commencement of works
1.4.2.2.1	Advice on the assessment	43. Although it is not necessary to provide all the details of the proposed mitigation at this stage of the HRA process, a high-level summary containing information about the effects to be mitigated, with information of how the mitigation will be put in to place, would increase the quality of the assessment presented by the CA.	Noted - an updated mitigation schedule/regster will be issued post consent. This will include the effects to be mitigated.
		44. To support a conclusion of no adverse effect, the links between the proposed mitigating activities and the mechanism for reducing adverse effects should be made explicit at AA, and it should be made clear that any conclusion of no AEoSI is dependent on the full development, implementation and adherence to any proposed mitigation. Further, any schemes (e.g. on-site monitoring) for determining the efficacy of the proposed mitigation must include details of how they will lead to controls on an activity that is found to be having an adverse or deleterious effect that may affect protected sites or designated features.	Noted - the project is commmiteent to implementation and adherance to the proposed mitigation.
1.4.2.3	ORML2465: Water Framework Directive: Compliance Assessment	45. NRW (A) agrees with a conclusion that the project has no potential to cause deterioration of any water body or WFD Protected Area from meeting its objectives when "… taking into account any conditions or restrictions as applicable…". However, we disagree with aspects of the CA's assessment process to reach these conclusions. Further detail is provided below, alongside recommendations to the CA to improve the assessment. We welcome discussion with the CA on these aspects.	Noted
	Stage 2 Scoping Assessment	46. The WFD compliance assessment notes that the mitigation proposals to be included in the CEMP (and associated documentation) will ameliorate any negative effects that would otherwise cause deterioration to a WFD waterbody, or an area protected under the WFD regulations.	Noted
		47. Ideally, and in order to increase the quality of the CA's compliance assessment, further detail of the proposed post-consent licence condition mitigation should be provided. These details would help determine the suitability of the proposed mitigation in the context of the identified effects and their impacts, and demonstrate that the proposals for embedded mitigation are sufficient to support the conclusions of no deterioration (allowing determination of their suitability in the context of the effects identified and the impacts of those effects). If the detail of the proposed mitigation cannot be provided at this stage, then we continue to advise that mitigation is secured via a post-consent condition, and that NRW (A) must be consulted in writing and agree the suitability of the plans ahead of commencement of works.	Noted and agree to consult in writing the suitability of the CEMP and WQPMP (including detail of the mitigation mechanisms for reducing the identified effects) ahead of commencement of works
1.4.2.3.1	Advice on the assessment	48. Ideally, detailed information outlining the proposed mitigating activities (to be included as post-consent licence conditions through a CEMP) should be included in the detailed assessment. Links between the mitigation activities and how they will ameliorate the impacts of the Project activities should be made clear.	Noted - an updated mitigation schedule/regster will be issued post consent. This will include the effects to be mitigated.
	Protected Areas and Critical sensitive habitats/species Stage 2, step 2: Page 32	49. The WFD compliance assessment includes consideration of five Bathing Waters sites, but does not assess the Broadhaven South and Barafundle Bathing Waters sites. No information is provided to show that these two sites are beyond the Zone of Influence (ZoI) delineated by the spring tidal excursion, and the additional 2km buffer to be applied beyond the ZoI.	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 scope of the assessement and identification of the Spring Tidal Excursion Buffer (The study area and ZoI for Marine Water and Sediment Quality) is presented in figure 18.1 (as stated in paragraph 10 of Volume 6: Appendix 10D – Offshore Water Framework Directive Assessment). This ZoI area extends as far as St Govans Head in the South West, but does not extend to the Broadhaven South and Barafundle Bathing Waters sites, so they are not considered.
1.4.2.3.2	Advice on the assessment	50. Protected areas such as bathing waters sites (as specified in the WFD regulations) up to 2km outside of the ZoI should also be considered for impact assessment.	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 scope of the assessement and identification of the Spring Tidal Excursion Buffer (The study area and ZoI for Marine Water and Sediment Quality) is presented in figure 18.1 (as stated in paragraph 10 of Volume 6: Appendix 10D – Offshore Water Framework Directive Assessment)
		51. A map/chart showing the extent of the ZoI of the project with an overlay of the bathing waters sites in the vicinity would illustrate which sites lie within the affected area, and those that lie beyond the ZoI extent, and those that should be considered for assessment that are outside the ZoI extent, but that fall within the additional 2km buffer stipulated by the WFD guidance.	The scope of the assessement and identification of the Spring Tidal Excursion Buffer (The study area and ZoI for Marine Water and Sediment Quality) is presented in figure 18.1 (as stated in paragraph 10 of Volume 6: Appendix 10D – Offshore Water Framework Directive Assessment)
		52. We refer to the Applicants Clarification Spreadsheet (Number / reference 69) and continue to advise that the numerically modelled ZoI should dictate the spatial bounds around which an assessment of adverse or deleterious effects should be assessed. 53. We refer to GN 078 Complying with the WFD Regulations 2017: screening (Step 2) for further information on identifying the relevant waterbodies (and protected areas) to include for assessment.	As stated in the clarification statement 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. As above
	Stage 2, step 1, Page 11	54. We recommend that an assessment of bentonite pollution is assessed for the Pembrokeshire South waterbody (as well as Milford Haven Outer). If referred to, the assessment must be explicit that the "no significant effects" conclusion stated in the EIA ES is only valid when appropriate mitigation is taken into account. This mitigation should form a post-consent condition of the licence, the details of which should be referred to in this assessment.	Noted and agree to consult in writing the suitability of the CEMP and WQPMP (including detail of the mitigation mechanisms for reducing the identified effects) ahead of commencement of works

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
	Protected Areas and Critical sensitive habitats/species Stage 2, step 2, Page 32	55. Shellfish waters: We agree that there are no shellfish waters that are within the vicinity of the proposed activity (within the ZoI or within 2km of the ZoI) and no further assessment is required.	Noted
		56. SACs/SPAs/RAMSAR: The appropriate European Protected Sites have been identified.	Noted
	Stage 3: Detailed Assessment	57. NRW (A) agrees with the conclusions of the WFD compliance assessment that the risk of the activity preventing the Milford Haven Outer waterbody from meeting its objectives and the risk of deterioration of the Milford Haven Outer waterbody can be ruled out.	Noted
		58. If the effects of pollution from a bentonite spill on the Pembrokeshire South waterbody are assessed / included in the compliance assessment, then NRW (A) can agree with the conclusion that the risk of the activity preventing the Pembrokeshire South waterbody from meeting its objectives and the risk of deterioration can be ruled out.	Noted and agree to consult in writing the suitability of the CEMP and WQPMP (including detail of the mitigation mechanisms for reducing the identified effects) ahead of commencement of works
1.5	**Fish and Shellfish Ecology**		
1.5.1	Overall Comments	59. NRW (A) acknowledges and welcomes the clarifications that the Applicant has provided in response to our advice on fish receptors. We have reviewed the responses in the Clarifications spreadsheet and although we do not entirely agree with the Applicant's responses on all matters, we consider our previous issues resolved.	Noted
1.5.2	Detailed Comments		
1.5.2.1	Clarification Spreadsheet	60. With respect to the area of suitable sandeel habitat affected within the development area (quantitative compared to qualitative assessment) (Number / Reference 91), we disagree with the Applicant that it is not considered appropriate to calculate the potential areas of effect as a percentage of the total area of available habitat. Nor do we agree with the reasons cited. This was communicated to the Applicant on 16 May 2025. We have clearly stated previously that this information is required to inform the magnitude of effect and to contextualise any impacts, especially relating to any potential cumulative effects. Nonetheless, using professional judgement, and considering the spatial scale of the development (with respect to impacts on fish) and the limited nature of piling, on this occasion we are satisfied that the Applicant need not undertake further quantitative work on this aspect. For future reference, we advise that a reference is provided for the information that has been cited with respect to CEFAS advice to support any further information being provided to decision-making authorities.	Noted
1.5.2.2	ORML2465: Record of a Habitats Regulations Assessment of a project: Form 1	61. We agree overall with the conclusions of no AEoSI for migratory fish features of Welsh sites.	Noted
		62. However, we note the following: • Tables 9 and 10, page 30-34 Severn Estuary Ramsar and Severn Estuary SAC The migratory fish assemblage feature of the Ramsar includes sea trout and European eel, and these should be included in the table. In addition, for the Severn Estuary SAC, the notable species sub-feature of the estuary feature includes: salmon, eel, sea trout and Allis shad, and the Assemblage of fish species (>100 species). These features should also have been taken forward for Appropriate Assessment in Section 4. • We note that soft-start procedures have been included as mitigation for impacts to migratory fish features from underwater noise from piling activities. We advise that there is no evidence to support the use of soft-start as mitigation for fish, however given the short duration of the activities and the limited spatial extent of the noise impact, we agree that adverse effects on site integrity can be ruled out.	Noted
1.5.2.3	ORML2465: Water Framework Directive: Compliance Assessment	63. We agree with the conclusions of the draft WFD compliance assessment.	Noted
1.6	**Marine Ornithology**		
1.6.1	Clarification Documents	64. We welcome the clarification documents submitted by the Applicant (Marine Ornithology Clarification Notes 1-4 and in the Clarifications spreadsheet) and post-submission discussions with the Applicant to try to resolve some of our previous concerns. Whilst these have addressed some of the previous issues raised by NRW (A) on the original submission consultation (please see NRW (A)'s response dated 29 January 2025), it is our view that there remain some outstanding areas where the Applicant still has not supplied sufficient information for NRW (A) to provide appropriate advice to NRW MLT to make an informed consent decision. These issues are detailed below in Section 1.6.1.1 – Section 1.6.1.4 below and a summary table is provided at Section 1.6.1.5. It remains our view that the Applicant should have supplied this information. However, given the stage of the consenting process the project is at, in order to be enabling and to expedite a consenting decision, NRW (A) has undertaken its own work to provide MLT with the information required to make an informed decision. The details of this work, together with our advice on the conclusions on significance of impact at EIA, and on impacts to site integrity for HRA, are detailed in Appendix 1 and Appendix 2 respectively. In addition, Appendix 3 details our comments on the Applicant's interim marine ornithology clarification notes, dated 28 March 2025.	The Llyr project team notes the NRW(A) response and appreciates the proactive actions undertaken to ensure that the application proceeds.
		65. We continue to agree with the conclusions of no significant effect at EIA and no AEoSI at HRA for the project alone. We also now agree with the conclusions of no significant impact at EIA scale, and no AEoSI at HRA scale, for the project cumulatively and in-combination with other plans and project. This conclusion has only been reached as a result of the additional cumulative / in-combination work undertaken by NRW (A). We strongly advise that the approach adopted by Llŷr for cumulative effects assessment / in-combination assessment should not be followed by other Applicants, and that future Applicants undertake thorough and comprehensive assessments.	Noted
1.6.1.1	Commitment to limit turbine tip height to 300 meters above Highest Astronomical Tide (HAT) within the Project Design Envelope	66. The Applicant notes, at Number / Reference 15, of the 'NRW(A) SLVIA' tab in the Clarifications spreadsheet, that: '….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.'	Noted

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
		67. We note this commitment. However, it is unclear from the statement provided what this means in terms of the turbine parameters that feed into the ornithological collision risk model (CRM), and, what this subsequently means for ornithological collision predictions from the project. For example: • It is unclear whether this commitment would mean that the hub height and lower blade tip (i.e. air gap above sea level) is also proportionately reduced, or not. We assume, however, that the lower tip height would not drop below the current modelled 22m clearance of the sea surface as we understand this is the minimum requirement for navigation purposes. Therefore, we also assume that this reduction in upper blade tip height will result in a reduction to the overall rotor swept area of the project and hence some reduction to the collision risk predictions. • It is also unclear whether this commitment would result in a reduction in rotor blade radius and hence a potential increase in rotor speed. However, in order to understand this further, together with JNCC, we have run different CRM scenarios for kittiwake with decreased tip height and increased rotor speed. Our analysis shows that given the relatively small number of predicted collisions from the Llŷr project alone, this would not materially alter the predicted alone impacts and conclusions for the project alone and hence cumulatively/in-combination. However, we advise that for a larger site with a greater number of predicted collisions this may not be the case, therefore in such cases, we would require further information on whether and how much the rotor radius and rotor speed could change. This should be noted for future project applications.	Noted - To clarify the commitment to limit the maximum turbine height to 300m, does not affect the ornithological CRM as it does not alter any of the worst-case parameter's material for the modelling,i.e., air gap, rotor radius/rotor diameter, or number of turbines. The Llŷr project is not proposing to reduce the modelled air gap (22m), nor to increase the blade length (rotor radius), nor increase the number of turbines beyond the worst-case parameters already modelled under CRM.
		68. Given that the Llŷr project alone collision predictions may now be overly precautionary, we recommend that NRW MLT request that the Applicant provides a clarification note (as an errata) that contains revised project alone collision predictions at EIA and HRA scale for the revised worst case scenario (WCS) turbine parameters. This information should include the project alone CRM predictions for the actual WCS for each species (by month/season) for EIA scale, and relevant HRA scale. We recommend that the information is provided either pre-consent as an errata document, or potentially as a condition of any license post-consent. This is in order to ensure the most appropriate project figures are made available for use by future projects that include the Llŷr project in their cumulative/in-combination assessments and to reduce precaution in any such future cumulative/in-combination assessments.	We are willing to commit (as requested by JNCC and NRW (A)) to undertake a further round of post-consent CRM at an appropriate time once the final turbine selection has been confirmed (which will fall within the worst-case, as assessed, for all receptors) to ensure that the appropriate Llŷr parameters are fed into future CRM modelling undertaken for other future projects.
1.6.1.2	Cumulative & In-Combination Issues		
1.6.1.2.1	Previous NRW (A) advice on original consultation	69. Following the original Llŷr application submission, NRW (A) were able to advise MLT, in January 2025, that the proposed development alone would not cause significant adverse effects at EIA scale, or AEoSI at HRA scale, for any seabird populations or Special Protection Area (SPAs) / Ramsars with seabird qualifying features with potential connectivity with the proposal. This advice remains the case.	Noted
		70. However, we were unable to assess and hence provide advice to NRW MLT regarding the potential levels of significance of cumulative and in-combination impacts due to a lack of information provided by the Applicant. We considered that additional work was needed on the cumulative and in-combination assessments to fully understand the impact that the proposed development will have on marine ornithology receptors. We also noted that, where applicable, the Llŷr project could utilise data from the Mona assessments to present and assess the required cumulative and in-combination impacts (please refer to our full initial response which can be accessed from the Public Register - paragraphs 178 – 180).	Noted
1.6.1.2.2	Applicant's Initial Response: 25 03 28 – Llŷr – marine ornithology – clarification note 1 – cumulative & in-combination	71. In response to the issues noted in Section Error! Reference source not found. above, the Applicant produced 'Llŷr Marine Ornithological Clarification Note 1', which provided a comparison of the Applicant's calculated Llŷr project alone EIA scale predicted impacts with those included for the Llŷr project by the Mona project in its cumulative assessments. No cumulative or in-combination totals were presented by the Applicant for Llŷr, nor were any cumulative or in-combination assessments presented. Hence NRW (A) advised the Applicant, during a call on 02 May 2025, that we considered that the information presented was not sufficient to address the concerns previously raised regarding the lack of provision of appropriate cumulative and in-combination assessments, and that further work was required. This advice was also provided in writing to the Applicant via email on 02 May 25, and a copy of the advice can be found in Appendix 3.	Noted
		72. During the call, we advised that the Applicant should be able to resolve the outstanding concerns regarding the current lack of appropriate cumulative and in-combination assessments relatively straightforwardly by, as a minimum: • For each EIA species and SPA site/feature combination - present the cumulative or in-combination collision or displacement predicted total calculated by Mona, with reference to the specific Mona document and table number this has been taken from. • For each EIA species and SPA site/feature combination - present an assessment of the % baseline mortality the predicted cumulative/in-combination total equates to of the relevant population. Where this equates to less than 1% of baseline mortality of the respective population, the cumulative/in-combination total can be considered undetectable against background mortality and hence a conclusion of no significant impact can be made for EIA scale, or that an AEoSI could be ruled out for HRA scale. • Where the predicted cumulative/in-combination totals exceed 1% of baseline mortality of the respective populations, then this will require further consideration through Population Viability Analysis (PVA). Again, in instances where this occurs and Mona have also undertaken a PVA, the Mona PVAs can be considered to represent best available evidence at this time, and hence as a minimum the Llŷr Applicant could consider referring to these PVAs and presenting information including the output metrics (counterfactuals of population size and growth rate, growth rates, final population size etc.) from these and reach conclusions based on these in any updated assessment. • As noted in our previous comments, there may be site/species combinations relevant for the Llŷr assessment where the Mona Applicant has not presented an in-combination assessment (e.g. Skomer, Skokholm and seas of Pembrokeshire (SSSP) SPA puffin and lesser black-backed gull (LBBG)). In such instances, the cumulative figures will be available from the Mona documents and hence the Llŷr Applicant should be able to undertake an apportionment exercise on the cumulative figures. In order to produce an indicative in-combination impact for such site features, we suggest that a similar approach to that used by Mona for other sites/species is used – so for breeding season apportionment, where there is no information available for relevant projects within foraging range from a colony, use the breeding season apportionment rate for the nearest project with information. For the non-breeding seasons take the approach used by Llŷr themselves in the apportioning for the project alone, e.g. for SSSP SPA puffin for the non-breeding season use an apportioning weighting of 0.029 for all projects and for SSSP SPA LBBG for autumn and spring use 0.083 and for winter use 0.094 for all projects.	Noted
1.6.1.2.3	Applicant's Subsequent Response: 25 05 21 – Llŷr – marine ornithology – clarification note 3: further info on cumulative & in-combination – final	73. In response to the discussion and advice provided by NRW (A) on 'Llŷr Marine Ornithological Clarification Note 1', the Applicant produced 'Llŷr Marine Ornithological Clarification Note 3'. In this document the Applicant addressed some further issues, namely: • In tables 1, 2 and 4 of 'Clarification Note 3' the Applicant has presented the cumulative or in-combination collision, or displacement predicted total, calculated by Mona for each species and site/feature - with reference to the specific Mona document and table number this has been taken from. However, we note that for guillemot, razorbill, puffin and gannet cumulative displacement assessments, the Applicant has not included the additional mortalities from underwater collisions from tidal energy sites that the Mona project did include. We have added these into our cumulative assessments in Appendix 1 below. • In tables 1, 2 and 4 of 'Clarification Note 3' the Applicant has, for each EIA species and SPA site/feature combination, presented the % of baseline mortality the predicted cumulative/in-combination total equates to of the relevant population. However, we note that the Applicant has not stated what the reference populations and mortality rates used are, meaning that the % baseline mortality the predicted impact equates to cannot be replicated – we believe these figures are a copy of those from the Mona documents and hence assume that the same populations and mortality rates as Mona used have been used by Llŷr (which we note are different to those used by the Llŷr Applicant in their original submission, especially for EIA). Therefore, in our detailed advice in Appendix 1 and Appendix 2, we have included information on the populations and mortality rates used by Mona, which we assume Llŷr have also used.	Noted

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
		74. However, the remaining issues that NRW (A) advised were provided have still not been presented by the Applicant. In summary, in 'Llŷr Marine Ornithological Clarification Note 3' the Applicant still has not provided the following: • Where indicative cumulative/in-combination impacts equate to greater than 1% of baseline mortality of the respective population, no PVA metrics from the Mona PVAs have been presented by the Applicant in Clarification Note 3 – all the Applicant has done is list the species (EIA) and site/feature combinations (HRA) where Mona ran PVAs and direct the reader to the relevant table numbers to find this information in the Mona documents. This information should have been provided in order to evidence/justify the statements in 'Clarification Note 3' that: 'PVA outputs showed no significant population-level consequences…..' and to provide context to the Llŷr assessments. • No suitable assessments / conclusions for cumulative or in-combination impacts have been presented, or made, by the Applicant themselves in 'Clarification Note 3'. All the Applicant has done is simply repeat NRW (A)'s advice provided during the Mona project examination. The Applicant should have presented their own assessment of what the predicted impacts, and any PVA outputs, mean in terms of impacts to relevant populations - including to Conservation Objectives for HRA. • The Applicant has not undertaken any updated in-combination assessments for SSSP SPA, LBBG, or puffin, and has made no attempt to apportion the EIA scale figures to the colony.	Noted
		75. Despite the information and assessments provided, we still consider the information provided to be insufficient for NRW MLT to undertake an appropriately informed HRA for the in-combination assessment. We do not consider it appropriate for the Applicant to direct the CA / decision maker(s) to extract information themselves from the Mona documents in order to make an assessment to inform the HRA. We consider it correct that the Applicant should provide this information (in the context of the proposed project) for the CA to review and evaluate in their decision-making. It is our view that the approach adopted by the Applicant therefore potentially results in a lack of confidence that the CA can place on the information provided by the Applicant to support the AA and its conclusions - and hence, critically, poses a consenting risk for the project.	Noted
		76. Given the stage the project is at and in order to be enabling and to expedite a consenting decision, NRW (A) has therefore conducted its own work to provide the required information, assessment and advice to assist NRW MLT in reaching an appropriately informed decision on the Llŷr project proposals. This has included: • Extracting and providing the relevant Mona PVA outputs; • Undertaking our own apportionment of impacts for in-combination SSSP SPA puffin and LBBG gull impacts; and, • Provision of assessments of both cumulative and in-combination impacts.	Noted
		77. For clarity and completeness, the detail of this work and assessments is set out in Appendix 1 for cumulative impacts and assessment and in Appendix 2 for in-combination impacts and assessment.	Noted
		78. A summary of our advice following this work is set out in Table 1 in Section 1.6.1.5 below.	Noted
		79. It is our firm view that this information should have been presented upfront by the Applicant in order to help the decision maker / CA reach consent conclusions expediently. It is not the role of the SNCBs (or any other interested party) to undertake this work on behalf of an Applicant, and we have only done so extraordinarily in order to expedite and enable this consenting decision. This is something that future Applicants should not come to rely on being undertaken by the SNCBs.	Noted
1.6.1.3	Auk non-ID Apportioning		
1.6.1.3.1	Previous NRW (A) advice on original consultation	80. Following the original Llŷr application submission, NRW (A) requested clarity from the Applicant on how unidentified species that crossed multiple species/groups, or are more ambiguous, were apportioned. For example, regarding which unidentified species groupings were included; e.g. 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. In addition, we advised that clarity be provided on how species were apportioned should species level data not be available for a survey. It will be important to fully understand the methods employed in apportioning records of such birds to species level, as the approaches taken could have implications for the appropriateness of overall abundance estimates of each species and hence on assessments and levels of predicted impacts.	Noted
1.6.1.3.2	Applicant's Initial Response: 25 03 28 – Llŷr – marine ornithology – clarification note 2 –auk non-ID apportioning 2	81. In response to the issues noted in Section Error! Reference source not found. above, the Applicant produced 'Llŷr Marine Ornithological Clarification Note 2'. However, following review of this note, NRW (A) advised the Applicant that we would welcome further discussion/information regarding the calculations presented in Table 2 of 'Clarification Note 2', as we considered the table confusing and could not follow or replicate the calculations and requested that further explanation be provided as to how the calculations were made. Following this advice a separate call was held with NRW (A) and the Applicant to discuss this issue on 06 May 2025.	Noted
		82. During this call it became apparent that the apportioning of birds not identified to species level actually used the ratios of birds recorded to each relevant species within the wider Llŷr survey area rather than just the Llŷr proposed array and 2km buffer footprint. It also appeared that the contractor employs a hierarchical approach to the apportionment of such birds. This was not made clear in 'Clarification Note 2' and NRW (A) requested that this information along with full worked examples be presented in order to make the approach undertaken clear and its appropriateness be considered.	Noted
1.6.1.3.3	Applicant's Subsequent Response: 25 05 21 – Llŷr – marine ornithology – clarification note 4 – auk non-ID apportioning – further info – vs3	83. Following the discussion on the call of 06 May 2025, the Applicant produced 'Llŷr Marine Ornithological Clarification Note 4', which provided further detail on the methods and calculations employed to apportion birds identified to group level to species level. It also provided more detail on the calculations involved in the worked examples (see Table 2 of 'Clarification Note 4'). We consider that the additional information provided in this clarification note is clearer and we have been able to follow the numbers through and replicate the calculations and are content that this issue is now resolved.	Noted
1.6.1.4	Gannet macro avoidance	84. The Applicant's response to Number / Reference 153 of the 'NRW(A)-Offshore' tab of the Clarification Spreadsheet, highlights a note to MLT with respect to Gannet macro avoidance. That note states: *'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. '*	Noted
		85. We note that during the Llŷr project pre-application engagement with NRW (A), advice was provided to the Applicant that there is a clear evidence base that gannets display macro-avoidance. Therefore, the collision assessment methodology requires the reduction of density of birds in flight by an agreed macro-avoidance rate as an input to the CRM, followed by using an 'all gulls' avoidance rate (AR) within the CRM. An evidence report has been commissioned by Natural England to inform this rate, until this is available, we suggest reducing density of gannet in flight going into the CRM by 70% to account for macro-avoidance. For clarity, this is NRW (A)'s current position on macro avoidance and has been clearly advised to the Applicant previously. This is also consistent with our advice given at Erebus and at Round 4 Irish Sea projects (this is also consistent with advice given by Natural England at the Round 4 projects).	Noted
		86. Whilst we acknowledge RSPB's comments at number / reference 153, we note that the Applicant has presented the Llŷr project alone and indicative in-combination impacts for (i) no application of macro avoidance, and (ii) with application of macro avoidance (see Table 4 of 'Clarification Note 3'). , Our advice below has been based on previous advice to the Applicant regarding approaches to accounting for gannet macro avoidance (see Table 1 below and detailed in Error! Reference source not found.). It is our view that no consideration of macro avoidance, is overly precautionary.	Noted
1.6.1.5	Summary of NRW (A) Advice	Table 1 Summary of conclusions for assessments of the Llŷr project alone and cumulatively at EIA scale and in-combination for HRA scale with other plans and projects for relevant species (see table 1 in original NRW reponse)	Noted
1.6.1.6	ORML2465: Record of a Habitats Regulations Assessment of a project: Form 1		

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
1.6.1.6.1	Main/Headline Comments	87. Please note that we have only provided comments/advice on SPAs that are located within Wales and are therefore within NRW's remit, namely: Skomer, Skokholm and Seas off Pembrokeshire (SSSP) SPA, Grassholm SPA and Aberdaron Coast and Bardsey Island SPA.	Noted
		88. Whilst we agree with the conclusions of no AEoSI for SSSP SPA and Grassholm SPA from the project alone and in-combination, we note that this is only because NRW (A) has had to undertake its own work on in-combination assessments (including extracting PVA metrics from the Mona project documents, apportioning of in-combination impacts to SSSP SPA Lesser Black-Backed Gull (LBBG) and puffin, and ultimately undertaking our own assessments based on these), as the assessments provided by the Applicant were insufficient. Please see Section 1.6.1.2 above and Appendices 1 and 2 below. We note that the draft HRA has not considered NRW (A)'s advice previously provided to MLT on 29 January 2025. Therefore, we suggest that the HRA is updated according to our advice of 29 January 2025 and as provided on the re-consultation (dated 29 July 2025).	Noted
		89. We note that in the draft HRA, the CA has not ruled out AEoSI pre-mitigation for entanglement with mooring lines and cables for the Manx shearwater and puffin features, and the guillemot and razorbill named components of the assemblage feature, of the SSSP SPA or the gannet feature of Grassholm SPA. However, with mitigation through 'regular inspection of the mooring lines', which would be implemented via the Project Environmental Management Plan, a conclusion of no AEoSI has been reached. For this to be considered mitigation, we suggest that this be updated to regular inspection of the mooring lines and removal of entangled debris and be secured through a licence condition and agreed in writing with NRW (A) and JNCC. Additionally, as part of the licence condition, we advise a requirement be included that the Applicant provide annual reports of the debris found entangled in the mooring lines, with the reports including frequency of entanglement, type of debris entangled and details of its removal. Given that the Llŷr project is a FLOW demonstrator project, providing this information will add to the evidence base for the frequency of entanglement of debris and of marine fauna with mooring lines and cables, which will aid with future FLOW impact assessments.	The draft MMMP has been updated to include a commitment by the Llŷr project to perform cable monitoring and report instances of marine debris caught on cables under a frequency and arrangement agreed with the Regulator and SNCBs.
1.6.1.6.2	Additional specific comments	90. Project details Table 1a of the draft HRA (page 2 of HRA): The information on the proposed activity states that: '*Up to 10 Wind Turbine Generators (WTGs), each with a maximum rotor diameter of 285m* ' Whilst we note that the maximum rotor diameter figure stated is correct based on the collision risk modelling information provided with the application, we note that the Applicant has since 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* – as stated in the 'NRW(A) SLVIA' tab of the '*Marine Licence Application Clarifications A2* ' spreadsheet. As noted in NRW (A)'s response to the clarification information provided by the Applicant, it is unclear what this commitment means in terms of the turbine parameters (rotor radius, rotor speed etc). We assume that it would result in a reduction to the maximum rotor radius. We advise that MLT seek clarification on this point from the Applicant if the HRA is to list the maximum rotor radius.	To clarify the commitment to limit the maximum turbine height to 300m, does not affect the ornithological CRM as it does not alter any of the worst-case parameter's material for the modelling,i.e., air gap, rotor radius/rotor diameter, or number of turbines. The Llŷr project is not proposing to reduce the modelled air gap (22m), nor to increase the blade length (rotor radius), nor increase the number of turbines beyond the worst-case parameters already modelled under CRM.
		91. Skomer, Skokholm and seas off Pembrokeshire (SSSP) SPA (throughout HRA): Please note that the Qualifying Features (QF) of the SSSP SPA are: • Lesser black-backed gull • Manx shearwater • Atlantic puffin • European storm petrel • Seabird Assemblage	Noted
		92. Guillemot, razorbill and kittiwake are not qualifying features of the site in their own right – they are named components of the seabird assemblage Qualifying Features. We advise that the draft HRA is updated to reflect this throughout.	Noted
		93. **SSSP SPA assessment (page 168 of HRA):** The assessment in view of conservation objectives makes reference to the Applicant's SeabORD outputs. In our advice to MLT dated 29 January 2025, NRW (A) raised concerns regarding the confidence that we can place in the outputs of the SeabORD approach undertaken by the Applicant, and hence we have based our advice on consideration of the displacement matrix assessment and predicted impacts and not SeabORD. (see paras 160-165 of our original consultation response to MLT). Therefore, we advise that the SeabORD modelling is not relied upon in the HRA and that the assessment is updated based on the displacement matrix approach results instead.	Noted
		94. We also note that the text in the draft HRA regarding SeabORD is not fully correct, as SeabORD modelling was not undertaken for lesser black-backed gull or Manx shearwater and the model can only be run for auks (guillemot, razorbill, puffin) and kittiwake - see Appendix 22D-Annex C SeabORD modelling report of submission.	Noted
1.7	**Marine Mammals**		
1.7.1	Overall Comments	95. NRW (A) acknowledges and welcomes the clarifications provided by the Applicant in the Clarifications Spreadsheet. In view of these additional clarifications, we consider that a number of issues with respect to Marine Mammals are now resolved, but advise that an errata document is provided (or application documents are updated) with the relevant agreed amendments such that they form a clear public record, particularly in view of informing future projects.	Noted - The project will commit to providing a complete errata document to cover all aspects raised by NRW(A), that can be conditioned for and produced post-consent.
		96. Whilst a number of issues have been resolved, NRW (A) consider that there remain some pending material issues that have not been fully addressed by the clarifications, which we have outlined below. Nonetheless, we consider that with additional commitment from the Applicant with respect to key mitigation measures (as advised below), we would be able to agree with the conclusions of no significant adverse effects at EIA scale / no AEoSI at HRA scale.	Noted
1.7.2	Detailed Comments		
1.7.2.1	Cumulative Effects Assessment (CEA) and In-Combination Assessment	97. In our original response, NRW (A) recommended that further justification was provided for the four-tier allocation process used for screening projects. The Applicant has now confirmed that the data from Tier 4 projects were included in the cumulative assessment and Interim Population Consequences of Disturbance (iPCoD) modelling (See Number / reference 189 of the Clarifications Spreadsheet), therefore we consider the issue concerning our request to update the cumulative assessment is now resolved. However, please see Paragraph 148 regarding the CA's HRA.	Noted
		98. Our concerns with the decision to scope out a number of impact pathways in the CEA and in-combination assessment remain. To justify scoping out an impact pathway on the basis that it will be mitigated, NRW (A) would expect the Applicant to provide sufficient detail on the proposed mitigation to allow us to arrive at the same conclusion. In Number / Reference 196 of the NRW (A) Offshore Tab of the Clarifications Spreadsheet, the Applicant has stated that these impact pathways have been scoped out because the impacts would be addressed by mitigation (and please see our comments below) or 'are qualitative impacts anyway'. As per our response to the original consultation we do not consider it is sufficient to state that 'the impact will be mitigated', or to dismiss the requirement for cumulative assessment on the basis of it being qualitative in nature.	Noted
1.7.2.1.1	Mitigation	99. NRW (A)'s concerns outlined in our initial response regarding mitigation measures remain. For a number of pathways (namely Unexploded Ordnance (UXO) clearance, entanglement and cumulative Permanent Threshold Shift (PTS) from piling) the specific mitigation measures that are being relied upon to conclude no AEoSI (at HRA scale) and no significant effect (at EIA scale) have not been indicated with sufficient detail. As such, we are unable to currently agree with the Applicant's conclusions. However, we consider that it is possible to mitigate any negative effects and undesirable impacts to marine mammals. With additional commitment from the Applicant, which must be secured via appropriate post-consent condition(s), and the detail and suitability of the proposals agreed in writing with NRW (A), we would be able to agree no significant effect / no AEoSI. Further details are provided below. This is in line with our previous advice for the Erebus application.	Noted

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
		100. With respect to entanglement our primary concern is secondary entanglement, for example, as a result of derelict fishing gears. We note the proposed mitigation E232 outlined in Volume 6: Appendix 32A – Mitigation Register, concerning removal of debris from floating lines and cables. Ideally, we would also expect to see further information regarding the frequency of checks (including criteria for increasing or decreasing frequency), how they will be conducted, as well as a plan of action in the event a mortality was detected. However, given that there are currently no fixed recommendations for entanglement monitoring specific to floating offshore wind farms, NRW (A) recognises the uncertainty and complexity surrounding these discussions. As such, we strongly advise further discussion on any requirements for entanglement monitoring post-consent prior to the commencement of works, through written consultation and written agreement with NRW (A), and that this should be a condition of the Marine Licence as part of the Marine Mammal Mitigation Plan (MMMP). In development of any entanglement monitoring, it may be useful for the Applicant to refer to relevant mitigation proposed for other similar projects. For example, proposed mitigation for the Erebus project includes using load cells attached to mooring lines or ROV surveys ORML2170 Project Erebus Draft Outline Environmental Monitoring Plan (1).pdf; whilst other projects (e.g. Car-y-Mor) have proposed surface and subsurface inspections using cameras and acoustic monitoring devices DEML2151 Marine mammal entanglement protocol.pdf. We also note that the final updated monitoring plans for Whitecross contains more detailed plans.	As stated in the updated Outline Marine Mammal Mitigation Plan (P10-LLY-4.2.3-PLA-0003) the project is committed to addressing entanglement risk and will monitor for, and remove, marine debris caught on cables as part of the regular surveys of subsea infrastructure. The design and frequency of this monitoring will be agreed with the Regulator and SNCBs post-consent once final design parameters – particularly number of turbines and number of mooring lines – are confirmed. Use of strain gauges will be considered as a possible monitoring option.
		101. For UXO, we advise that, in the MMMP, the Applicant notes their intention and commitment to align themselves with the relevant DEFRA guidance (adopted by both Welsh Government and NRW) published in January 2025.	This is now addressed in Section 2.1 of the updated Outline Marine Mammal Mitigation Plan (P10-LLY-4.2.3-PLA-0003)
		102. For piling, we refer to NRW (A)'s original consultation response dated 29 January 2025. 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 Sound Exposure Level (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. The metric predicting the largest range of impact should be used for the impact assessment (because it is the worst-case scenario), and any required mitigation of this pathway will be determined by the assessment. This has always been the default regulatory approach and advice given in Welsh and English waters for previous projects.	The Outline Marine Mammal Mitigation Plan (P10-LLY-4.2.3-PLA-0003) has been updated to include a commitment to use the dual metrics for impusive noise assessments in line with the NRW recommendations.
		103. As it currently stands, with respect to piling impacts, we cannot agree with the assessment conclusions for the project alone (EIA and HRA), the CEA (EIA) or the in-combination assessment (HRA). Therefore, and as noted above, we strongly advise that the Llŷr project should base their mitigation plans on both instantaneous and cumulative PTS and that the detail of this mitigation is incorporated into the MMMP post-consent, following further discussion and agreement in writing with NRW (A). With a firm commitment from the Applicant to mitigate Cumulative SEL in this manner, and which is secured via a condition, NRW (A) would be able to agree no significant effects at EIA scale, no AEoSI, and no harm or disturbance to European Protected Species.	The Outline Marine Mammal Mitigation Plan (P10-LLY-4.2.3-PLA-0003) has been updated to address both instantaneous and cumulative PTS and that the detail of this mitigation will be incorporated into the MMMP post-consent. This will done following further discussion and agreement in writing with the Regulator and Statutory Nature Conservation Bodies (SNCB) as part of the post-consent dialogue and discharge of conditions.
		104. We further advise that the Applicant notes in their mitigation documents their intention and commitment to align themselves with the relevant JNCC, NE, and CEFAS joint position on the use of noise abatement systems, as well as the decision report from Welsh Government published on 5 March 2025 indicating the intent to develop a policy position on managing Marine Noise in-line with the similar policy position in England. This will include a 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. Given the timing of publication of these policies, NRW (A) would be happy to advise the Applicant where appropriate and in due course, based on the Consenting Authority's response.	Noted
		105. For reference, we direct the Applicant to the Underwater Sound Noise Management Strategies (UWSMS) and Marine Mammal Management Plans (MMMPs) submitted by Mona, Morgan and Morecambe offshore wind farms as examples.	Noted
		106. With regard to reducing the impacts of Vessel Noise, we note the Applicant's commitment to use the WiSe Scheme. Given that this is currently the only viable way to mitigate vessel noise, NRW (A) are content that this should mitigate a sufficient proportion of the risks.	Noted
1.7.2.2	Additional comments that do not impact our ability to agree with the assessment:	107. The worst-case scenario for impact piling duration had originally 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 note and acknowledge the response provided by the Applicant at Number / reference 218 in the Clarifications Spreadsheet, however advise that the assessment is updated to include this information; application documents should be as updated as possible at the determination stage e.g. via an errata document, particularly to inform future projects using this ES to inform their own.	To confirm the worst case scenario is 20 full days of piling over a 45 day period (the additional 25 days provides contingency in the construction scheduling to allow for periods of down-time due to poor weather potential, moving of piling equipment from one turbine location to another, etc). 20 days of full piling would represent a doubling of the impact assessed which would result in no more than 6 Harbour porpoise being impacted and even from an ultra-precautionary stance of quadrupling the impact (i.e. 4 x 10 days impact), this 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 of negligible significance. As a consequence, the worst-case scenario for disturbance from piling has been assessed for the Bristol Channel Approaches Special Area of Conservation (SAC) ant the West Wales Marine SAC and has resulted in a negligible significance outcome. The project will commit to providing a complete errata document to cover all aspects raised by NRW(A), that can be conditioned for and produced post-consent.
		108. Bottlenose dolphin densities: NRW (A) previously raised the issue that the number of animals disturbed from piling should be based on the full dose response curve, rather than clipping the dose response curve to 25 m. Given that it is the offshore population / offshore Management Unit (MU) being assessed (as opposed to the inshore Cardigan Bay SAC population), our view is that there is no justification that the animals are limited to coastal areas.	Noted
		109. While the inshore ecotype / Cardigan Bay population does tend to be found closer to the shore, population modelling work carried out by NRW (A) has shown no evidence of the Irish sea population being linked to a specific depth contour / distance from the shore (in contrast with the Moray Firth population). As the methodology used is not supported by evidence for Welsh waters, we advise against future projects using this approach.	Noted

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
		110. We further advise that ensuring clarity, when presenting numbers disturbed, will be important for future floating offshore windfarm projects using the information presented by Llŷr for their respective cumulative assessments. Following the initial response provided by the Applicant with respect to this issue, and our meeting in March 2025 where the Applicant clarified that the numbers from the full dose response curve were used to inform conclusions, NRW (A) anticipate being able to agree with the conclusions of the assessment for bottlenose dolphins, provided the assessment is updated or an errata document provided to remove references to the clipped dose response curve and the numbers presented (for information) which were derived from the clipped dose response curve.	The project will commit to providing a complete errata document to cover all aspects raised by NRW(A), that can be conditioned for and produced post-consent.
		111. Ideally, re-assessment of the impacts of piling on bottlenose dolphin using iPCoD should be undertaken. However, given the stage the project is at, NRW (A) are content, in this instance, to base the assessment on expert judgement (and that the Applicant state this in errata). This can be done by comparing the % of the population affected versus the Management Unit (MU) population while specifying whether the assessment was carried out over a single disturbance event or all events. If a conclusion is based on numbers disturbed by a single disturbance event, sufficient justification needs to be provided to back the conclusion that subsequent disturbance events would not lead to additional effects. NRW (A) does not consider only referring to the 'temporary nature' of the impact or 'recoverability' to be adequate justification as we posit that in the process of repeated recovery from repeated disturbance events, the animals sustain some cost (e.g. energetic).	The Outline Marine Mammal Mitigation Plan (P10-LLY-4.2.3-PLA-0003) has been updated to address both instantaneous and cumulative PTS and that the detail of this mitigation will be incorporated into the MMMP post-consent. This will done following further discussion and agreement in writing with the Regulator and Statutory Nature Conservation Bodies (SNCB) as part of the post-consent dialogue and discharge of conditions. The project will commit to providing a complete errata document to cover all aspects raised by NRW(A), that can be conditioned for and produced post-consent.
		112. In response to the Applicant's comments in Number / reference 239 of the Clarifications Spreadsheet, NRW (A) note, for clarification purposes, that whereas the Applicant's response has focused on bottlenose dolphin modelling, the main aspect of the issue raised focuses on the use of the 1% threshold of the reference population as a trigger for requiring iPCoD modelling in any population. We reiterate that the 1% threshold used for this purpose was not recommended in any NRW (A) advice given to the Applicant, nor can it be found in any of our published advice. While NRW (A) have previously advised a 1% threshold, this is strictly to review the modelling outputs from iPCoD to 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 the 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. We therefore request that reference to NRW (A) in this matter should be corrected to ensure our advice has been recorded correctly.	The Outline Marine Mammal Mitigation Plan (P10-LLY-4.2.3-PLA-0003) has been updated to address both instantaneous and cumulative PTS and that the detail of this mitigation will be incorporated into the MMMP post-consent. This will done following further discussion and agreement in writing with the Regulator and Statutory Nature Conservation Bodies (SNCB) as part of the post-consent dialogue and discharge of conditions. The project will commit to providing a complete errata document to cover all aspects raised by NRW(A), that can be conditioned for and produced post-consent.
		113. *Use of 143 dB SELss fixed noise threshold to crop the dose response curve:* As per our meeting on 25 March 2025 and further to our email sent on 15 May 2025, NRW (A) confirm that this is no longer a material issue. We would like to clarify that for the reasons explained in prior discussions, we do not advise use of this method for any purposes (including to inform the assessment). However, given that the overall conclusions were based on the full dose response curve, we consider that no further action is required by the Applicant.	Noted
		114. For completeness and future reference, we have provided our original explanation discussed during the meeting of 25 March 2025 below: *In our original consultation response (Paragraphs 216 – 224) NRW (A) explained why we had significant concerns about the method proposed and that as currently proposed, the method has applied a fixed noise threshold onto a dose response curve, which we do not consider to be a standard accepted use of either method.* *Fixed noise thresholds are a type of behavioural noise criterion that function as a step-function (i.e. all or none) and assume that no animals exposed below that threshold are disturbed and that 100% of animals exposed at or above this threshold are disturbed. While, given our knowledge of observed animal responses in the wild this is not a realistic assumption to make, we assume that there is a balance between the animals that do not react within the calculated impact area and those that are affected outside the range. This set of assumptions allows us to use a single number to estimate the impact in a simple manner. A fixed noise threshold functions within this all or none assumption, and we would caution against interpreting it to be absolutely outside of it.* *Dose response curves for harbour porpoise are based on empirical studies of animal responses through acoustic detections, where it is suggested that displacement is the main driver of such observed decreases in echolocation detections. While a decrease in acoustic detections may be due to ceasing vocalisation (while remaining in the area), it is considered unlikely that they would cease vocalising for several hours. At any rate, such prolonged cessation of vocalisation (at the expense of feeding) would be as much a response as displacement and would be considered to be of similar severity to displacement from the area. Although the probability of these responses at lower sound levels / greater distances decreases, these are still of the same severity, and there are many more animals at these larger distances since the area covered becomes increasingly larger.* *We would thus caution against interpreting a fixed noise threshold (of 140 dB or 143 dB) as a generalised threshold for "significant disturbance" and applying this as a cut-off for a dose response curve. By doing so, this would mean that: (1) the assumption of 100% disturbance of animals exposed above the threshold has been dropped, and (2) animals disturbed below this threshold (detected through empirical studies) are no longer considered.* *The risks of such an approach (clipping a dose response curve) have already been highlighted in the literature by Tyack and Thomas (2019), with further discussion in Southall et al (2021). Tyack and Thomas (2019) demonstrated that the approach of selecting the threshold at which half of the animals respond (RLp50) underestimates the number of animals affected. While the example used to illustrate their point focuses on the RLp50, the effect would be similar were a dose response curve to be clipped at 140 dB or 143 dB.* We have included this comment for the purpose of logging our advice publicly for the sake of creating precedent for future applications. Our concern is that future projects drawing information from the present project may repeat the approach, contributing to delays in consenting.	Noted
		115. *Use of logarithmic model for piling:* Based on the information provided verbally during our meeting on 25 March 2025 (where reference was made to a data validation exercise which would provide quantified validation that the results obtained compared well with other modelling methods) and the response provided in the Clarifications Spreadsheet (Number / reference 190 and 274), NRW (A) anticipate being able to agree to the use of this method, provided the assessment is updated or an errata document provided.	The Outline Marine Mammal Mitigation Plan (P10-LLY-4.2.3-PLA-0003) has been updated to address both instantaneous and cumulative PTS and that the detail of this mitigation will be incorporated into the MMMP post-consent. This will done following further discussion and agreement in writing with the Regulator and Statutory Nature Conservation Bodies (SNCB) as part of the post-consent dialogue and discharge of conditions.
		116. *Vessel noise:* In response to the Applicant's comments in Number / reference 298 – 303, we agree that a common approach when assessing impact pathways such as vessel noise is to base the estimate of the number of animals disturbed on a fixed radius (snapshot) for a single point in time, which is then used to inform a conclusion. However, we note that this is not a formally agreed 'standard', rather a commonly used approach.	Noted
		117. As noted in our original response, the scientific community already 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, hence the work being done to develop methods to quantify these impacts.	Noted
		118. We fully agree with the Applicant that these methods are still largely conceptual in nature, and while these are being developed it is not possible to quantify the effects of repeated disturbance events on a population from non-piling sources. However we advise it is also important to recognise that the total number of animals disturbed by the impact pathway would be larger than the estimate based on a snapshot. Therefore NRW have tended to advise the importance of stating that the number of animals disturbed was obtained at a single point in time and to consider any potential impacts from repeated disturbance events, otherwise it would not be accurate to only state e.g. 0.02% of the harbour porpoise MU will be disturbed.	Noted

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
		119. This was the approach we advised for a number of recent application consultations. The recommended qualitative assessment could consist of a simple brief, explanatory statement acknowledging repeated disturbance events, but arriving at a conclusion based on expert judgement.	Noted
		120. That said, we acknowledge the Applicant has stated that this aspect of the assessment has been considered and given the low number of vessel trips over the lifetime of the project, we consider this issue to be resolved.	Noted
1.7.2.3	ORML2465: Record of a Habitats Regulations Assessment of a project: Form 1	121. NRW (A) does not currently agree with the conclusions of the HRA. Nonetheless, we would be able to agree with the conclusions of no AEoSI, if 1) the Applicant commits to key mitigation measures as advised in section 1.7.2 above and below - the suitability of which is to be agreed in writing with NRW (A) and secured through a post-consent condition; 2) clarification is provided regarding the duration of piling and 3) the CA considers the remaining assessment discrepancies outlined below.	The Llyr project team have (a) committed to the nessary mitigation in the updated Outline Marine Mammal Mitigation Plan (P10-LLY-4.2.3-PLA-0003) as advised in section 1.7.2 and below, along with agreeing the final measures with NRW(A) in writing post consent. (b) The project has confirmed above that the worst case scenario is 20 full days of piling over a 45 day period.
		122. We welcome the approach taken to group the AA for harbour porpoise and grey seal SACs into a single section, which facilitated easier review. For larger HRA documents (e.g. Band 3) it could be beneficial to include a contents page.	Noted
		123. We note that NRW's position statement (PS) on the use of Management Units in HRA (NRW, 2022) has since been updated and any references to this PS should be changed to (NRW, 2025) although no further changes are necessary to the HRA since the advice on the use of iterative assessment has not changed.	Noted
		124. In view of the newly published Revised Reg 37 Conservation Advice Packages, we recommend that any reference to the superseded condition assessments made below are updated and information used to inform conclusions revised to ensure these are up to date.	Noted
	Likelihood of significant effects (LSE) test, 3.2.1 – Which Natura 2000 sites might be affected by the proposal – page 10	125. We agree with the list of SACs that have been screened in, and also agree with the decision to screen out harbour seal (page 12).	Noted
	Screening Assessment	126. For grey seal and harbour porpoise, the collision with project vessels impact pathway currently only covers the construction and decommissioning phases in the table. The operational phase should be included, following which the assessments may need revision.	The relevant information required to inform the determination and including an updated MMMP. The assessment will be updated to include operational activities (which are less than construction noise) in a complete errata document, that can be conditioned for, and produced post-consent.
		127. For grey seal, the impact pathway "Potential effects to supporting habitats and species" was included for Pembrokeshire Marine but not other grey seal SACs. Clarification would be welcomed.	The marine mammal impact pathway is listed in the screening report for "*Potential for indirect effects through impacts to prey species* " is listed, where indirect effects are changes in habitat. This pathway is considered against all grey seal SACs.
		128. We confirm agreement over the decision to screen out the inshore population of bottlenose dolphin, as per our original advice to the Applicant.	Noted
	Appropriate Assessment of the Project when Considered Alone, 4. Harbour porpoise SACs, page 148 – page 155.	*<u>Effects of underwater noise (construction, operation and decommissioning):</u>* *"For harbour porpoise and grey seals, noise impacts during the operational and decommissioning phases are of lower magnitude than the potential impacts during construction."*	Noted
		129. We agree that noise impacts during the operational phase would be expected to be of lower magnitude than the construction phase, and that it is likely that noise impacts during the decommissioning phase will be of lower magnitude than the construction phase. While no action is required, we note that when considering impacts for each phase alone, this statement is sufficient to help inform a conclusion. However, for an in-combination assessment, the total effects across all phases need to be considered over the lifetime of the project.	
		"Noise effects from the decommissioning phase will be much less than for construction, particularly as this is a floating offshore wind project."	This statement is based on the expert judgment of the technical author from HiDef
		130. This statement could be made more robust if evidence, or a rationale supporting it, were provided. Alternatively it can be sufficient to say that it was based on "expert judgement / knowledge".	
		<u>Effects of underwater noise (construction, operation and decommissioning):</u>	
		131. For Conservation Objective 1, the assessment of disturbance appears to have only considered piling noise. We advise that the assessment should be updated to include all other activities that may cause disturbance.	The relevant information required to inform the determination and including an updated MMMP. The assessment will be updated to include all activities in a complete errata document, that can be conditioned for, and produced post-consent.
		132. For Conservation Objective 2, the maximum daily spatial overlap of 16.83% given is for a UXO clearance event (which is not considered in this HRA). We recommend that for completeness, it would be beneficial to also include a statement on the worst spatial overlap that could occur as a result of an impact pathway that is considered in this HRA (e.g. piling).	The relevant information required to inform the determination and including an updated MMMP. The assessment will be updated to include all activities in a complete errata document, that can be conditioned for, and produced post-consent.
		133. For Conservation Objective 2, we recommend that the seasonal percentage overlap section should specify the impact pathway and the percentage overlap.	The relevant information required to inform the determination and including an updated MMMP. The assessment will be updated to include all activities in a complete errata document, that can be conditioned for, and produced post-consent.
		<u>Collision with Project vessels (construction, operation and decommissioning):</u>	Noted
		134. While we agree with the conclusions of the assessment on collision with vessels, the assessment could be made more robust by referring to any published avoidance / collision rates with construction / maintenance vessels.	
		<u>Entanglement with mooring lines and cables:</u>	
		135. In NRW (A)'s view, the statement "the cables and mooring lines are often taut and of a diameter large enough to preclude entanglement" (note: bold and underlining of text is our own) is not sufficiently robust to allow a conclusion of the risk being small, particularly considered within the context of NRW's mortality limits (NRW, 2022b).	Noted
		136. We posit that in the absence of data on avoidance and entanglement rates with mooring lines and fishing gear, conclusions on the risk of entanglement remain a judgement call, which should be stated in the assessment. This leads to the focus needing to be on mitigation to lower the risk.	Noted
		137. While we agree with the overall conclusions that "In the absence of any mitigation measures, however, there is a potential to compromise the site's conservation objectives.", as highlighted in our comments for the previous consultation and our comments above , we do not agree with the statement that "The applicant's assessment of effects takes account of best practice mitigation measures that will be adopted as part of the project."	Noted
		138. However, with a firm commitment from the Applicant to provide the requested mitigation, the suitability of which is to be agreed in discussion and written agreement with NRW (A) prior to any works commencing, and secured via post-consent condition (see Paragraphs 100), then we would be able to agree no AEoSI.	As stated in the updated Outline Marine Mammal Mitigation Plan (P10-LLY-4.2.3-PLA-0003) the project is committed to addressing entanglement risk and will monitor for, and remove, marine debris caught on cables as part of the regular surveys of subsea infrastructure. The design and frequency of this monitoring will be agreed with the Regulator and SNCBs post-consent once final design parameters – particularly number of turbines and number of mooring lines – are confirmed.

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
	Appropriate Assessment of the Project when Considered Alone, 5. Grey seal SACs, page 156 – page 165.	*Effects of underwater noise (construction, operation and decommissioning):* 139. Similarly to above, we agree that noise impacts during the operational phase would be expected to be of lower magnitude than the construction phase, and that it is likely that noise impacts during the decommissioning phase will be of lower magnitude than the construction phase. While no action is required, we note that when considering impacts for each phase alone, this statement is sufficient to help inform a conclusion. However, for an in-combination assessment, the total effects across all phases need to be considered over the lifetime of the project. *Effects of underwater noise (construction, operation and decommissioning):* "*Noise effects from the decommissioning phase will be much less than for construction, particularly as this is a floating offshore wind project* ."	Noted This statement is based on the expert judgment of the technical author from HiDef
		140. This statement could be made more robust if evidence or a rationale supporting it were provided. Alternatively it can be sufficient to say that it was based on "expert judgement / knowledge". 141. For conservation objective 1, the assessment of disturbance appears to have only considered piling noise. We advise that the Assessment should be updated to include all other activities that may cause disturbance. 142. For conservation objective 2, we note that the numbers disturbed as a proportion of the MU population are based on a single disturbance event at a single point in time (e.g. 91 individuals for the cable laying activity) and are not equivalent to the number of animals disturbed by that activity over the entire phase of the project / lifetime of the project through repeated disturbance events (and / or a moving noise source). If a conclusion is based on numbers disturbed by a single disturbance event, sufficient justification needs to be provided to back the conclusion that subsequent disturbance events would not lead to additional effects. It may be sufficient to use expert judgement to arrive at this conclusion. *"Furthermore, any disturbance that occurs as a result of construction (or decommissioning) activity will be short term and reversible."* 143. We do not consider referring to the 'short term' nature of the impact or 'recoverability' to be adequate justification to inform a conclusion as we posit that in the process of repeated recovery from repeated disturbance events, the animals sustain some cost (e.g. energetic). If a conclusion is based on numbers disturbed by a single disturbance event, sufficient justification needs to be provided to back the conclusion that subsequent disturbance events would not lead to additional effects. Furthermore, a definition of "short term" (and other temporal terminology) would need to be provided. *Entanglement with mooring lines and cables:* 144. The same comments made for harbour porpoise in paragraphs 135-138 above also apply to grey seal.	The relevant information required to inform the determination and including an updated MMMP. The assessment will be updated to include the other activities (which are less than piling noise) in a complete errata document, that can be conditioned for, and produced post-consent. The relevant information required to inform the determination and to confirm that the. This includies confirmation that this determination was based on the expert judgement of the technical author from HdDef, and an updated MMMP has been provided. The relevant information required to inform the determination and including an updated MMMP. The assessment will be updated to include the other activities (which are less than piling noise) in a complete errata document, that can be conditioned for, and produced post-consent. As stated in the updated Outline Marine Mammal Mitigation Plan (P10-LLY-4.2.3-PLA-0003) the project is committed to addressing entanglement risk and will monitor for, and remove, marine debris caught on cables as part of the regular surveys of subsea infrastructure. The design and frequency of this monitoring will be agreed with the Regulator and SNCBs post-consent once final design parameters – particularly number of turbines and number of mooring lines – are confirmed.
		145. With reference to Section 4.2 Assessment of the project taking into account additional mitigating measures, conditions or restrictions, page 173 – 181 of the HRA Form 1, • For grey seal SACs and harbour porpoise SACs - Entanglement with mooring lines and cables • For grey seal SACs and harbour porpoise SACs - Effects of underwater noise (specifically from piling) 146. Alongside reference to our comments in our initial response and Paragraphs 102 of the current response, we cannot currently agree that impacts from PTS will be mitigated as the Applicant has indicated that mitigation measures have only been considered for auditory injury from instantaneous PTS from piling (and not cumulative auditory injury). 147. That said, with additional commitment from the Applicant to mitigate cumulative SEL as outlined in Paragraph 103 above, NRW (A) would be able to agree no AEoSI.	noted noted The Outline Marine Mammal Mitigation Plan (P10-LLY-4.2.3-PLA-0003) has been updated to address both instantaneous and cumulative PTS and that the detail of this mitigation will be incorporated into the MMMP post-consent. This will done following further discussion and agreement in writing with the Regulator and Statutory Nature Conservation Bodies (SNCB) as part of the post-consent dialogue and discharge of conditions.
	In-combination assessment, 2. Annex II Marine Mammals, page 189 – 197	148. With reference to Annex II Marine Mammals, page 189: We advise that a number of additional projects may have a cumulative effect on the MU populations (including Mona, Morgan, and Morecambe) and that these should be included in the assessment, and the HRA revised. *Effects of underwater noise (construction, operation and decommissioning), Harbour porpoise SACs:* 149. We note that the assessment for disturbance for Conservation Objective 1, appears to have only considered piling noise. The combined total impact of all underwater noise pathways across the lifetime of the project should be assessed. 150. We understand that Conservation Objective 2 was assessed by only considering plans and projects that could have a noise overlap with the project. However it is possible that other projects may overlap with SACs within the same MU, without overlapping with the Llŷr project. We recommend that the assessment should be updated to consider this. *Collision with Project vessels (construction, operation and decommissioning), Harbour porpoise SACs:* 151. We understand that although the Applicant presented a table with total numbers of animals disturbed in combination with other projects, the population model run for the assessment (iPCoD) only modelled the combined population effects from pile driving – iPCoD can currently only assess impacts of piling on a population. Therefore, as the model predictions did not include the additional risk of collision, further information should be included to justify a conclusion of no in-combination effect, and ideally the current reasoning should be revised. *Entanglement with mooring lines and cables, Harbour porpoise and Grey Seal SACs:* 152. We agree that the scale of this development, in combination with other floating wind farm projects will not cover a significant area in comparison to the Celtic and Irish Seas MU. However, we advise that when considering the risk of entanglement for harbour porpoise, the possibility of an entanglement occurring needs to take into consideration our mortality limits (NRW, 2022b), as well as density distribution of the population. 153. Furthermore, the conclusion of no in-combination effect has been based on it being "…likely that all floating offshore wind developments will deploy monitoring of the cables and moorings and will commit to removal of any ghost gear present". We do not consider that this is sufficiently robust to justify a conclusion of no in-combination effect particularly in the context of a lack of evidence of the risk of secondary entanglement and rate of subsequent mortality as a result. However, please also see paragraph 99 above with respect to mitigation for entanglement. *Effects of underwater noise (construction, operation and decommissioning), Grey seal SACs*	The Llyr project team have (a) committed to the nessary mitigation in the updated Outline Marine Mammal Mitigation Plan (P10-LLY-4.2.3-PLA-0003) as advised in section 1.7.2 and below, along with agreeing the final measures with NRW(A) in writing post consent. (b) The project has confirmed above that the worst case scenario is 20 full days of piling over a 45 day period. The Llyr project team have (a) committed to the nessary mitigation in the updated Outline Marine Mammal Mitigation Plan (P10-LLY-4.2.3-PLA-0003) as advised in section 1.7.2 and below, along with agreeing the final measures with NRW(A) in writing post consent. (b) The project has confirmed above that the worst case scenario is 20 full days of piling over a 45 day period. The Llyr project team have (a) committed to the nessary mitigation in the updated Outline Marine Mammal Mitigation Plan (P10-LLY-4.2.3-PLA-0003) as advised in section 1.7.2 and below, along with agreeing the final measures with NRW(A) in writing post consent. (b) The project has confirmed above that the worst case scenario is 20 full days of piling over a 45 day period. The Llyr project team have (a) committed to the nessary mitigation in the updated Outline Marine Mammal Mitigation Plan (P10-LLY-4.2.3-PLA-0003) as advised in section 1.7.2 and below, along with agreeing the final measures with NRW(A) in writing post consent. (b) The project has confirmed above that the worst case scenario is 20 full days of piling over a 45 day period. The Llyr project team have (a) committed to the nessary mitigation in the updated Outline Marine Mammal Mitigation Plan (P10-LLY-4.2.3-PLA-0003) as advised in section 1.7.2 and below, along with agreeing the final measures with NRW(A) in writing post consent. (b) The project has confirmed above that the worst case scenario is 20 full days of piling over a 45 day period.

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
		154. While we acknowledge that the ES Chapter 21: Marine Mammals presented the cumulative total number of animals at risk of disturbance for each activity, the total was calculated by summing the number of animals at risk of disturbance from one disturbance event for each activity – it does not consider repeated disturbance events (across the lifetime of the project).	The Llyr project team have (a) committed to the nessary mitigation in the updated Outline Marine Mammal Mitigation Plan (P10-LLY-4.2.3-PLA-0003) as advised in section 1.7.2 and below, along with agreeing the final measures with NRW(A) in writing post consent. (b) The project has confirmed above that the worst case scenario is 20 full days of piling over a 45 day period.
		155. If a conclusion is based on numbers disturbed by single disturbance events, sufficient justification needs to be provided to back the conclusion that subsequent disturbance events would not lead to additional effects. We do not consider the points currently presented referring to the 'short term' nature of the impact or 'recoverability' to be adequate justification to inform a conclusion as we posit that in the process of repeated recovery from repeated disturbance events, the animals sustain some cost (e.g. energetic). However, in the absence of supporting empirical evidence, we consider it sufficient to use expert judgement to reach this conclusion, should these points be taken into account and included in the consideration of the impacts in a revised HRA.	The Llyr project team have (a) committed to the nessary mitigation in the updated Outline Marine Mammal Mitigation Plan (P10-LLY-4.2.3-PLA-0003) as advised in section 1.7.2 and below, along with agreeing the final measures with NRW(A) in writing post consent. (b) The project has confirmed above that the worst case scenario is 20 full days of piling over a 45 day period.
		Collision with Project vessels (construction, operation and decommissioning), Grey seal SACs: 156. The HRA would benefit from evidence that "*grey seals are accustomed to vessel movement.* "	
		157. Similar to Paragraph 107 above, the worst-case scenario for impact piling duration had originally 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 note and acknowledge the response provided by the Applicant at *Number / reference 218* in the Clarifications Spreadsheet, however we advise the assessment is updated to include this information; application documents should be as updated as possible at the determination stage e.g. via an errata document, particularly to inform future projects using this ES to inform their own.	To confirm the worst case scenario is 20 full days of piling over a 45 day period (the additional 25 days provides contingency in the construction scheduling to allow for periods of down-time due to poor weather potential, moving of piling equipment from one turbine location to another, etc). 20 days of full piling would represent a doubling of the impact assessed which would result in no more than 6 Harbour porpoise being impacted and even from an ultra-precautionary stance of quadrupling the impact (i.e. 4 x 10 days impact), this 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 of negligible significance. As a consequence, the worst-case scenario for disturbance from piling has been assessed for the Bristol Channel Approaches Special Area of Conservation (SAC) ant the West Wales Marine SAC and has resulted in a negligible significance outcome. The project will commit to providing a complete errata document to cover all aspects raised by NRW(A), that can be conditioned for and produced post-consent.
2	**ONSHORE**		
2.1	**General Onshore Comments**	158. We continue to 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), Protected Sites, Landscape and Seascape.	Following discussions with NRW(A): - a bat mitigation scheme has been drafted and submitted. - an otter survey has been undertaken and the report submitted to NRW; and - an SLVIA technical note on the effect on the SLVIA by reducing the tip height from 325.5m to 300m and providing additional Zone of Theoretical Visibility (ZTV) figures and wireline visualisations comparing 270m and 300m turbines for Llŷr Floating Wind Farm.
		159. We also advise that based on the information submitted to date, conditions regarding: A Construction and Operational Lighting Plan to include aviation lighting, a Construction Environmental Management Plan (CEMP) and a Bathing Water Quality Mitigation Plan, should be attached to any permission granted.	Noted and agreed
2.2	**European Protected Species and Protected Sites**	160. We cannot agree with a conclusion of no Likely Significant Effect for otters as a feature of the Pembrokeshire Marine SAC and Pembrokeshire Bat Sites and Bosherston Lakes SAC. We are unable to assess the proposals in the context of the Favourable Conservation Status test.	Following discussions with NRW(A) an otter survey has been undertaken and the report submitted to NRW
		161. This consultation is in relation to the marine licence only, the jurisdiction for which we understand runs to the mean high water level. Therefore, our comments are in regards to those terrestrial protected species which may also utilise the coastal habitats; greater and lesser horseshoe bats and otters principally.	Noted
		162. Otters are a feature of Pembrokeshire Marine SAC and Pembrokeshire Bat Sites and Bosherston Lakes SAC, and the application site is well within the range of otters from both SACs. The HRA form indicates that noise and visual disturbance could arise from the works with disturbance anticipated up to approximately 600m from source. This could encompass some of the terrestrial coastal habitat suitable for the species.	Following discussions with NRW(A) an otter survey has been undertaken and the report submitted to NRW
		163. The Applicant's response confirms that no specific otter surveys have been carried out and, as such, it is not possible to ascertain whether an otter natal holt is present in close proximity to the shore where the cabling works will make landfall. In the absence of such survey information, significant effects cannot be ruled out. If further surveys can rule out the likely presence of a natal holt within 200m of the works, we would be content to agree with a conclusion of no likely significant effect on this feature of both SACs.	Following discussions with NRW(A) an otter survey has been undertaken and the report submitted to NRW on 12 December 2025
		164. Horseshoe bats are a feature of both the Pembrokeshire Bat Sites SAC and Limestone Cliffs of SW Wales SAC, and the greater horseshoe bats in particular are known to use the sea caves along the Castlemartin Coast. We refer to our previous advice in which we confirmed that the works are unlikely to affect any of the sea caves used by the bats and encompassed by SAC designation. We are content to agree a conclusion of no likely significant effect for the horseshoe bat features of these two SAC sites.	Noted
		165. Regarding the proposals to leave further protected species surveys to the post-consent pre-construction phase, we refer you to our previous advice dated 28 March 2025 and continue to advise that this approach does not accord with planning policy or case law.	Noted
		166. For awareness, NRW (A) received correspondence from the Applicant on 18 July 2025 with respect to the potential proposals for inclusion of new buffer (exclusion) zones within the application documents, for the purposes of bat ecology. We have advised the Applicant that the proposals would need to be formally submitted to the decision-maker(s) for a decision to be made as to whether to accept the proposed changes as part of the application. We have also advised, for the Applicants awareness, that they would need to demonstrate that the proposed buffer zones would be sufficient to address any potential impacts on bats, including from noise, vibration and construction lighting.	Following discussions with NRW(A) a bat mitigation scheme has been drafted and submitted. This document includes the buffer zone proposal and the mitigation measures undertaken to avoid impacts from construction and operational actvities (with the inclusion of bat habitat enhancement measures).
2.3	**Designated Landscapes**	167. We have reviewed 'AppP11-LYR-3.4.3-PAP-Rev01-Marine Licence Application Clarifications A2' which is the spreadsheet containing the Applicant's response to our comments on the Application.	Noted
		168. Our comments below address new information / changes to the proposal. The majority of the Applicant's comments do not relate to new information and do not change our previous advice. Where we have provided a response, we have used the reference number from the SLVIA tab of the spreadsheet.	Noted
		169. See Clarification Spreadsheet Number / reference 15. We welcome the proposal to reduce the turbine blade tip height from 325.5m to 300m (above Highest Astronomical Tide (HAT)). This change is proposed in response to the SLVIA concerns raised by NRW and PCNPA.	Noted
		170. It is not clear whether this change would require a corresponding reduction in the rotor diameter (currently 285m). Please can the applicant clarify this.	From a visual impact perspective it is confirmed that the rotor diameter is likely to reduce slightly, with the final dimension subject to a procurement exercise post consent

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
		171. We advise that turbines with a maximum blade tip height of 300m would still be inside - rather than 'beyond' - the low magnitude of effect buffer identified for turbines of this height1 in the Offshore Wind Sensitivity Guidance, 20192. Consequently, turbines with a tip height of 300m in this location would still be contrary to siting principles outlined in the Offshore Wind Sensitivity Guidance3. For example: • The Array would not be located 'beyond the limit of negligible visual effects, particularly for the highest sensitivity area National Parks overlaid with Heritage Coasts'. (Principle 3) • The Array would not be 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 41.6km for turbines between 226-300m). At the closest point the Array is 35km from the PCNP. (Principle 4) • The Array would not be 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 would not be located in 'areas identified as lower sensitivity in the Stage 3 report' (it is located in one of the higher sensitivity areas, Zone 13 which has high/medium sensitivity4) (Principle 6). • The Array would not be located in 'areas offshore from local seascape character areas identified as having lower inherent sensitivity' (Principle 7). • The Array would not be located 'off already industrialised or developed coastlines' (Principle 8). • The Array would not be located to 'avoid locations offshore from remote headlands/peninsulas' (Principle 17). • The Array would not be 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).	The technical SLVI author confirms the project view, the reduction of turbine height from 325.5m to 300m does not change any of the SLVIA outcomes relating to Project Llŷr. The primary reason for the conclusion is that the SLVIA assessed a "worst case" and although the reduction in height results in a theoretical reduction in visibility and magnitude of effect, at the distances concerned (typically over 35 km) there is no justifiable reduction in magnitude to a lower category, noting that effects at all viewpoints are small or negligible magnitude. We consider that this is evident from the ZTV (Figure 1) and wirelines comparing the 325,5 and 300m tip heights (Figures 3.1, 4.1, 5.1, 6.1 and 7.1) in Appendix A, showing the difference in height, which is barely perceptible at 35 km. The use of the Offshore Wind Sensitivity Guidance, 2019 is as acknowledged in the Stage 1 report, an approximation of potential effects rather than an assessment of a specific project as submitted in a detailed SLVIA within the ES. The concerns raised by NRW apply to an equal or greater extent in relation to the consented Erebus wind farm which is closer to the PCNP albeit with turbine heights which are 270m as opposed to 300m for Project Llŷr. Our analysis, using wirelines and a calculation of the angle subtended in a view using the two turbine heights and distances based on VP2, is that the taller height of the Project Llŷr turbines does not translate into perceived increased height due to a reduction in size over distance. In simple terms, from the closest point in the PCNP (VP2) the closest Erebus turbines will appear larger than Project Llŷr turbines. In relation to the points raised by NRW we assess that a comparison with Erebus is relevant given that it is a consented scheme, closer to the coast, not raising unacceptable effects on SLVIA receptors. Our conclusion is that at the distances concerned, typically over 35 km the significance of effects of turbines at 300m height remains well below any significant threshold and the difference with the 270m suggested by NRW and the proposed 300m is imperceptible in real terms. We consider that this is illustrated by Figure 2 showing the comparative ZTV and the range of wirelines for five of the assessment viewpoints provided in Appendix A of the technical note. Further detailed assessment to support the statements above are contained in Project Llŷr Landscape & Visual Technical Note that supports this submission.
		172. For further information on the Offshore Wind Sensitivity Guidance 2019, see paragraph 290 onwards in our previous comments on the marine licence application.	As above and detailed in the supplementary SLVIA technical note that accompanies this submission
		173. Based on the specific details of the scheme, the 'ready reckoner' provided in the Stage 1 Report of the Offshore Wind Sensitivity Guidance, and the guidance within the Stage 2 and 3 Reports (including that on the specific sensitivities of the PCNP), we advise that a reduction in blade tip height to 270m (the same height as the consented Erebus turbines) would be expected to reduce impacts within the PCNP; and likely to an acceptable level. Notwithstanding this, the impact of any revised scheme should be illustrated and confirmed through updated visualisations.	As above and detailed in the supplementary SLVIA technical note that accompanies this submission
		174. See Clarification Spreadsheet *Number / reference 54. We note the Applicant states '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'.* We welcome this mitigation measure and advise that approval should be sought so the mitigation can be secured via a condition.	Noted, the project is content to have this requirement to be secured via a condition
		175. In addition to the above, the LEMP should include the following: • The existing surrounding landscape context / vegetation so we can see how the proposals would relate to existing landscape. • Existing contours and an indication of the proposed contours (not only bunds). • Indication of the height of the bunds. • Indication of plant species • More detailed reasoning for planting / measures linked to the findings of the LVIA.	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 final details on layout and how the planting would be established and maintained will be developed further at the detailed design stage and subject to consultation and agreement with the Regulator and SNCBs post-consent once final design parameters are confirmed. The project is in agreement that the aspects highlighted will be contained withi the LEMP and can be secured via a condition.
2.4	Groundwater and Contaminated Land	176. We have reviewed the submitted information and note that the Applicant intends to avoid the Private Water Supply (PWS) by including a 50 m buffer around it and if the source is lost, to supply the owner with a new source of supply and test for the water quality. We support this approach. We advise that the Applicant contacts the owner of the PWS to inform them of the potential risk and to discuss the mitigation measures if there PWS is lost or polluted.	Noted
2.5	Pollution Prevention	177. We refer you to our previous advice and request that an updated Construction Environmental Management Plan (CEMP) and Bathing Water Quality Mitigation Plan are conditioned as part of any permission granted.	Noted
2.6	Water Framework Directive: Onshore	178. We have no comments to make with regard to onshore WFD.	Noted

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
4	APPENDIX 1: NRW (A) detailed comments/conclusions on the Llŷr project EIA scale cumulative assessments following the Applicant's further information in 'Offshore Ornithology Clarification Notes 1 and 3', and; NRW (A)'s further work to extract the relevant information from the Mona project submission documents in order to produce advice for NRW MLT	Please refer to orignal NRW(A) Response	Noted
5	APPENDIX 2: NRW (A) detailed comments/conclusions on the Llŷr project HRA scale in-combination assessments following the Applicant's further information in 'Offshore Ornithology Clarification Notes 1 and 3', and; NRW (A)'s further work to extract the relevant information from the Mona project submission documents in order to produce advice for NRW MLT	Please refer to orignal NRW(A) Response	Noted
6	APPENDIX 3: NRW (A) comments on the Llŷr Applicant's interim marine ornithology - clarification notes (dated 28 March 2025)	Note 1 - cumulative and in-combination	The project agrees with the cumulative / in combination assessment that NRW (A) undertook for the birds, based on the submitted Mona information already used in the determination process. We also agree with Appendix 2 (EIA) and Appendix 3 (HRA) from the NRW (A) response. Updated mortality estimates for Llŷr will be provided, based on new collision risk modelling for the final turbine selection, in an errata document that will be submitted post-consent.
		Whilst we welcome the Applicant's provision of the cumulative and in-combination clarification note, on review of this we consider that the information presented is not sufficient to address the concerns raised regarding the lack of provision of appropriate cumulative and in-combination assessments. The '2025 03 28 - Llŷr - marine ornithology - clarification note 1 - cumulative and in-combination' document' does not contain any presentation of the cumulative and in-combination totals calculated by the Mona applicant for any species at EIA scale or site/feature for HRA. It purely contains a comparison of the Llŷr project EIA scale alone abundance estimates/collision predictions with those included by the Mona applicant for Llŷr. The Applicant needs to provide their own cumulative and in-combination assessments that consider the impacts across all the relevant plans and projects. This should include the predicted cumulative and in-combination totals for all the relevant EIA scale species and SPA site/feature combinations. As we have noted in our previous advice, the Mona applicant has already filled the gaps for the historic projects that should be included in the cumulative/in-combination assessments, and has included appropriate figures for the Llŷr project in these totals (as shown by the Llŷr applicant's clarification note). The approach taken by Mona meant that NRW were content that conclusions could be reached. Therefore, the Mona calculated totals can be seen as best available evidence for the Llŷr Applicant to quote and make reference to in their assessment. The same is true for the PVAs. The Llŷr Applicant should present the cumulative and in-combination totals reached by Mona for each relevant species and site/feature combination and then make their own assessment of what these totals mean in terms of baseline mortality and consider any need for further consideration through PVA, and reach any conclusions as to the level of significance or on impacts to site integrity. It will not be acceptable to simply suggest that NRW (or the decision maker) refer to the Mona assessment documents.	The project have had ongoing discussions with NRW(A) on the calculations and approach undertaken in the assessment and are content to continue dialogue to clarify any aspect should it be required.

Number / reference	Aspect	Response (Key concern, etc)	Response from Llŷr Floating Wind
		NRW consider that the Applicant should be able to resolve the outstanding concerns regarding the current lack of appropriate cumulative and in-combination assessments relatively straightforwardly by, as a minimum: • For each EIA species and SPA site/feature combination present the cumulative or in-combination collision or displacement predicted total calculated by Mona, with reference to the specific Mona document and table number this has been taken from. • For each EIA species and SPA site/feature combination present an assessment of the % baseline mortality the predicted cumulative/in-combination total equates to of the relevant population. Where this equates to less than 1% of baseline mortality of the respective population, the cumulative/in-combination total can be considered undetectable against background mortality and hence a conclusion of no significant impact can be made for EIA scale, or an AEoSI could be ruled out for HRA scale. • Where the predicted cumulative/in-combination totals exceed 1% of baseline mortality of the respective populations, then this will require further consideration through PVA. Again, in instances where this occurs and Mona have also undertaken a PVA, the Mona PVAs can be considered to represent best available evidence at this time, and hence as a minimum the Llŷr Applicant could consider referring to these PVAs and presenting information including the output metrics (counterfactuals of population size and growth rate, growth rates, final population size etc.) and reach conclusions based on these in any updated assessment. • As noted in our previous comments, there may be site/species combinations relevant for the Llŷr assessment where the Mona Applicant has not presented an in-combination assessment (e.g. Skomer, Skokholm and seas of Pembrokeshire, SSSP SPA puffin and lesser black-backed gull). In such instances, the cumulative figures will be available from the Mona documents and hence the Llŷr Applicant should be able to undertake an apportionment exercise on the cumulative figures. NRW (A) suggest that a similar approach to that used by Mona for other species is used – so for breeding season apportionment, where there is no information available for relevant projects within foraging range from a colony, use the breeding season apportionment rate for the nearest project with information. For the non-breeding seasons take the approach used by Llŷr themselves in the apportioning for the project alone, e.g. for SSSP SPA puffin for the non-breeding season use an apportioning weighting of 0.029 for all projects and for SSSP SPA LBBG for autumn and spring use 0.083 and for winter use 0.094 for all projects.	
	Note 2 – auk non-ID apportioning	We welcome the information provided in the clarification note. However, we would welcome further discussion/information from the Applicant regarding the calculations presented in Table 2 of the document, as we consider the table confusing and cannot follow the calculations. Further explanation as to how the calculations have been made is required.	

Llŷr Offshore Wind Farm

Hartland Point PSR Mitigation Proposal

January 2026

Document:

P10-LLY-4.2.3-PLA-0004

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1. PURPOSE OF THIS PROPOSAL

This document provides a proposal that would mitigate the identified impacts to the Ministry of Defence's (MoD's) Primary Surveillance Radar (PSR) at Hartland Point from the Llŷr Offshore Wind Farm. The proposal seeks to ensure continued effective radar coverage, acknowledging operational requirements of the MoD and the policy environment informing the interaction between wind energy development and aviation infrastructure.

This proposal specifically puts forward the replacement of an existing end-of-life Watchman PSR with a new, wind farm tolerant radar.

2. POLICY AND BACKGROUND

The Hartland Point PSR was excluded from Project Marshall and, as per a Freedom of Information (FoI) response in 2015[1], was previously intended to be decommissioned by 2018. The MoD subsequently reversed this decision, opting to maintain PSR coverage at Hartland Point. Consequently, this radar has not benefited from replacement by a Thales STAR-NG or the Watchman Enhancement (upgrades delivered to the remainder of the MoD Watchman fleet) under Project Marshall.

The Llŷr project assumes that this policy reversal – the decision to retain rather than decommission the Hartland Point PSR - has prompted the MoD's objection to the permit application. Notably, the MoD did not object to the nearby Erebus or Whitecross floating offshore wind projects who equally impact the radar coverage.

Given the policy direction established in Project Marshall, the MoD should logically assume responsibility for replacing this end-of-life PSR, having retained it for sovereign tactical purposes (regardless of windfarm development in the region). This position aligns with the recently adopted National Policy Statement (NPS) EN-1, especially sections 5.5.4, 5.5.27 and 5.5.28. Section 5.5.28 in particular stipulates that Communications, Navigation and Surveillance (CNS) owners and operators should deploy wind turbine tolerant replacement technologies when infrastructure reaches end-of-life, thereby futureproofing aviation safety against further wind development.

3. THE LLŶR PROJECT COMMITMENT

The Llŷr project is prepared to pay the MoD's reasonably and demonstrably incurred costs of mitigating the impacts of the Llŷr project on the Hartland Point PSR. It is, however, acknowledged that wind turbines are now part of the UK's established built environment and energy baseline, a fact explicitly acknowledged by the MoD in NPS EN-1 section 5.5.27 and that any Radar Mitigation Scheme (RMS), applicable to the Llŷr project will require detailed provisions on mitigation deployment and cost sharing between beneficiary developments and the MoD (given the MoD's evolving baseline requirement).

The Llŷr project should therefore contribute, rather than provide sole funding, to the capital costs of replacing the sovereign surveillance infrastructure. Where mitigation results in broader regional benefit beyond the Llŷr Floating Wind project, implementation costs should be shared equitably amongst all beneficiary sites and the MoD (as per National Policy Statement EN-1).

4. MITIGATION PROPOSAL AND RADAR REPLACEMENT OPTIONS

It is recommended that the current Hartland Point PSR, which is at end of life, is replaced by a new PSR with windfarm tolerance capabilities. We have considered a number of PSR system options (presented below) that have previously been deployed by the MoD and/or have been tested or evaluated as part

[1] FOI 2015/07745

of the Project Marshall or other similar applications. The replacement options considered are as follows:

- Hensoldt ASR-NG – a 3D S-band PSR with a 120 NM range;;
- Thales STAR-NG – a 2D S-band PSR with a 60 NM plus range - and activation of its Wind Farm Filter;
- BAE Watchman Enhancement – a 2D S-band PSR with a 60 NM plus range - and activation its of inbuilt windfarm tolerance;
- Terma Scanter 4002 – a 2D X-band PSR with an instrument range of either 42 NM or 60 NM and which has been widely deployed as a windfarm tolerant approach PSR at numerous UK civil airports.

The above replacement radar options can be incorporated into the MoD's existing operational aerial picture with existing communications infrastructure, and the ASTERIX feed would be directly interoperable with the Thales TOP-SKY Tracker, which it is understood is already in use under Project Marshall. Based on the interface requirements, the feed could also be accessible to No. 78 Squadron at Swanwick by way of integration into NATS En-Route Multi-Radar Tracker (MRT).

As confirmed by the MoD, the Hartland Point location is being retained. Replacement of the radar at this location ensures that the land is already available to the MoD, and will not require new installation security, or access to new power and communications services.

Alternatively, Manorbier is a possible site for deployment of a replacement PSR with windfarm tolerance capabilities, if Manorbier remains an operational MoD site. It is noted that Manorbier PSR was not included in Project Marshall . A Terma Scanter 4002with an instrumented range of 42 NM, could be viably deployed at Manorbier (28 NM from the Llŷr Wind Farm).

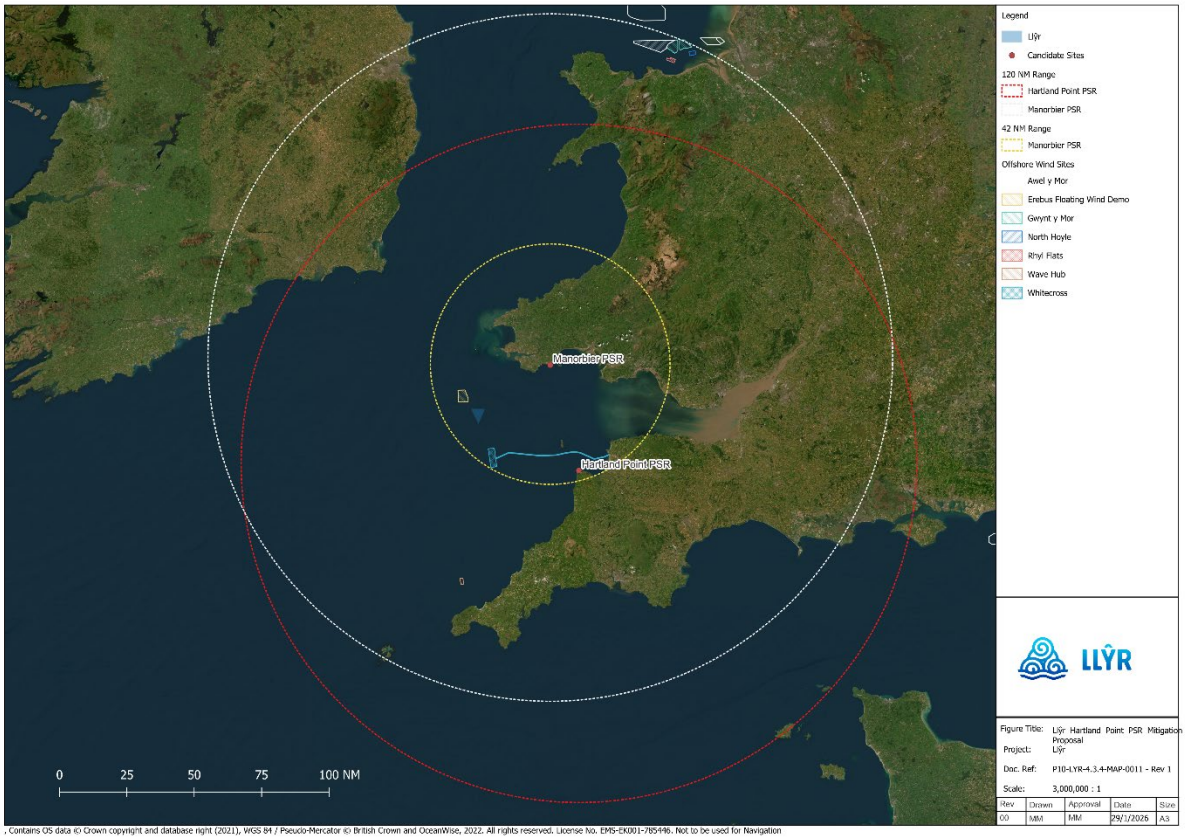


Figure 1 - 120 and 42 NM range options

The 120 NM and 42 NM ranges from the Hartland Point PSR and Manorbier locations are shown in Figure 1. The Llŷr Project Array Area is shown as the blue triangle.

The Llŷr projects proposed system, based on our understanding of the MoD's requirements is outlined in the following section. However, the MoD has knowledge of all four potential systems and may reasonably select another system.

5. PROPOSED MITIGATION SOLUTION – DEPLOYMENT OF A HENSOLDT ASR-NG

The Llŷr project proposes that the MoD deploy a Hensoldt ASR-NG as the replacement for the end-of-life Hartland Point Watchman PSR.

The ASR-NG is a 3D S-band PSR with up to 120 NM of range, which would significantly improve the surveillance capabilities for the MoD in the Celtic Sea and the southwest of the UK. Radar line-of-sight analysis also indicates that the radar will have coverage down to approximately 1,800ft amsl at 120NM in on the radial of the Llŷr Array.

A key benefit of the ASR-NG is its provision of 3D coverage, which allows optimisation of the air picture while limiting any necessary reduction in low-level coverage in the immediate vicinity of turbines. The 3D capability distinguishes the Hensoldt ASR-NG from the other candidate S-band replacement PSR. While the Scanter 4002 is also a 2D PSR, it has the advantage of a 6m range cell but on balance, the Applicant considers the ASR-NG to be more likely to fulfil the MoD's operational requirements .

The Hensoldt ASR-NG has also been shown to exhibit good windfarm mitigation capacity in the turbine rich operational environment around Vienna Airport.

It is understood that the MoD has also evaluated these abilities in Marshall deployable models of the ASR-NG. The ASR-NG would offer adequate ranges for regional mitigation, not only for the Llŷr project, but for future Crown Estate Round 5 sites (as would the Thales STAR-NG and Watchman Enhancement).

The ASR-NG features and benefits, taken from the Hensoldt website, are shown in Figure 2 and are also provided in the attached Hensoldt ASR-NG specification.

Figure 2 - ASR-NG features and benefits

6. INTERIM MEASURES

It is expected that a windfarm-tolerant PSR can be selected and installed before the first turbine is commissioned. However, should operation start before the implementation of the new radar and an interim solution is needed, the approach proposed by the Llŷr project is to use a radar blanking and Transponder Mandatory Zone (TMZ) solution, as successfully adopted across UK offshore wind development to date.

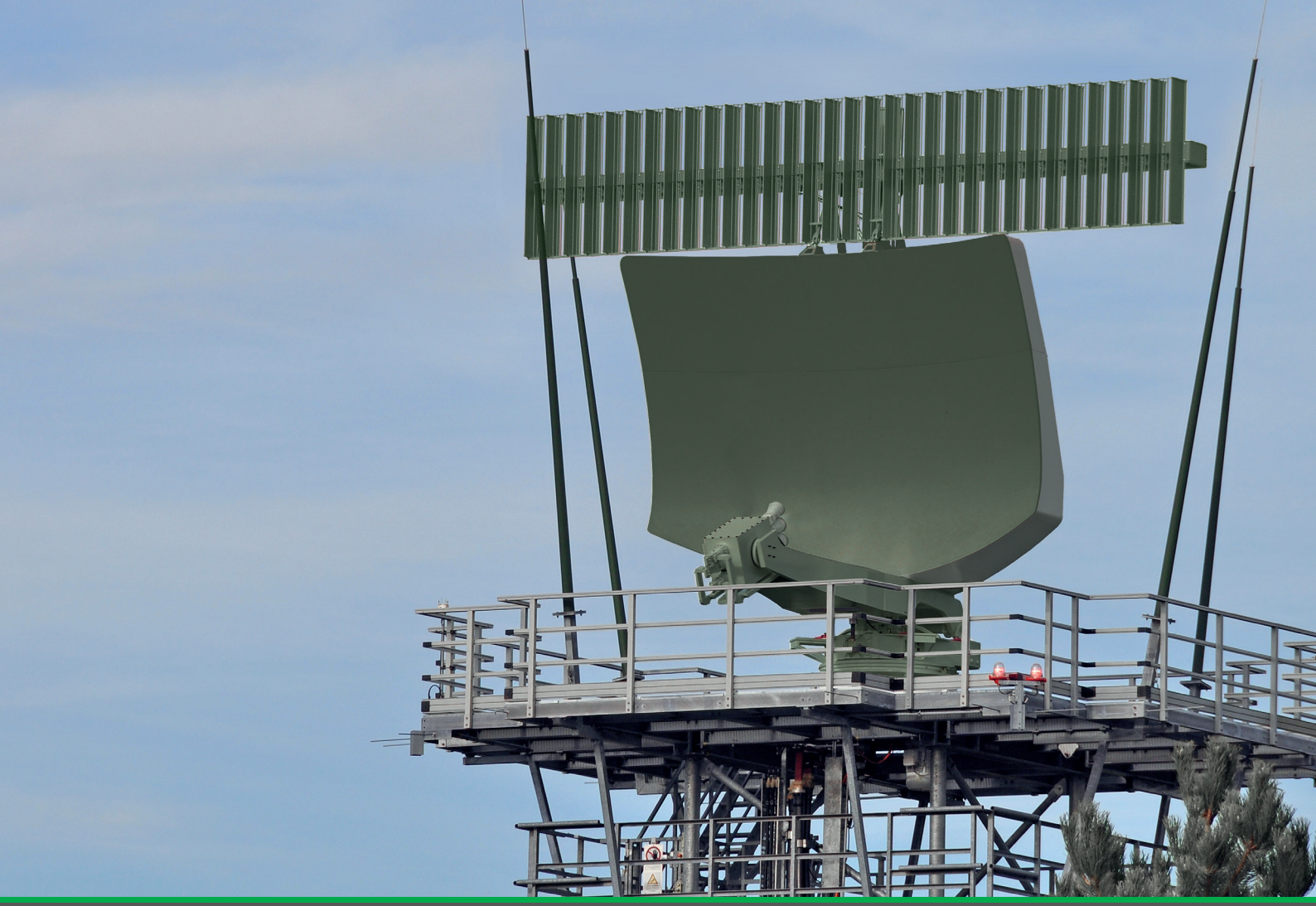
7. CONCLUSION

The Llŷr project proposes replacing the Hartland Point PSR with a new Hensoldt ASR-NG system (or the MoD's preferred equivalent system), which will mitigate the impacts of the Llŷr Offshore Wind Farm whilst minimising radar coverage loss. Should the project be operational before the new radar is deployed, the Llŷr project is willing to implement a temporary radar blanking and TMZ solution.

The Llŷr project will contribute to the reasonably and demonstrably incurred costs of mitigation, recognising that the MoD retains ultimate responsibility for replacing this end-of-life sovereign tactical asset. Given the broader regional benefit of the proposed radar upgrade, implementation costs should be shared equitably across beneficiary sites.

The Llŷr project remains committed to constructive engagement with the MoD in order to reach a suitable and equitable mitigation strategy.

8. APPENDIX 1 - HENSOLDT ASR-NG SPECIFICATION



HENSOLDT **ASR-NG**

Military Airport Surveillance Radar

The airspace is shared between civil and military users and between operational and general air traffic. To provide safe air traffic management for all users and to avoid safety-crucial situations, the state-of-the-art ASR-NG® delivers excellent detection performance covering different aircraft sizes. Modern radars also have to be capable of differentiating between slow-moving rotary-wing aircraft and fast-moving military supersonic fighters without any significant blind speed gaps. The awareness of non-cooperative air traffic, especially in airspace used by the military, reduces the risk of near-miss incidents and increases flight safety for all aircraft under control.

Increase your flight safety

- Detection range up to 120 NM and 50,000 ft
- 3D height information of non-cooperative targets
- Dynamic clutter cancellation
- Proven wind farm mitigation
- NATO IFF Mode 5

www.hensoldt.net

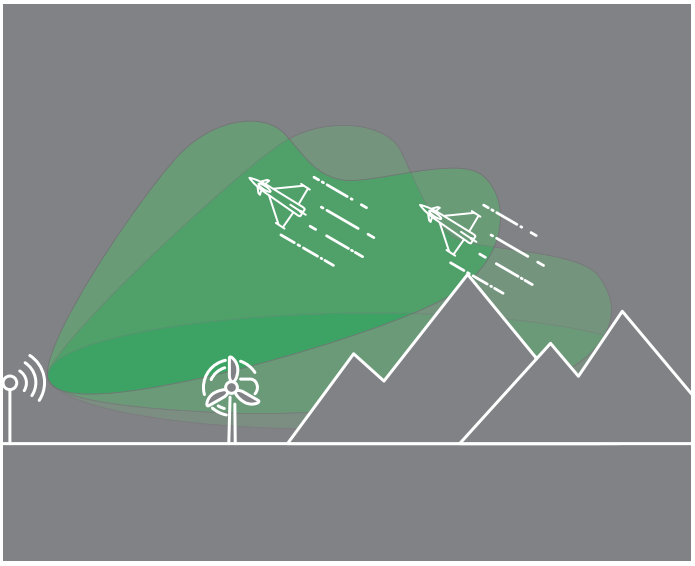
HENSOLDT
Detect and Protect.

Future-proven 3D technology

Given the rapidly growing presence of disturbing factors such as wind farms or telecommunication influences, it is of utmost importance for air traffic control radars to be able to cope with highly dynamic clutter environments and to resist 4G/LTE impacts.

Using a three-horn antenna feed, ASR-NG also provides the unique feature of 3D target detection. This third beam allows the measurement and calculation of altitudes of non-cooperative targets, for example aircraft without Identification Friend-or-Foe (IFF) signals or a transponder.

The three-horn antenna solution



Triple beam

Situational awareness

- Dynamic clutter cancellation
- Proven automatic wind farm mitigation
- 3D height information

Surveillance

- S-band primary surveillance radar
- Dual redundant monopulse secondary surveillance radar
- IFF Mode 5

Reliability

- Remote monitoring and control
- Reduced preventive maintenance
- Service life extension programme

Type	Data
Operational frequency range	2.7-2.9 GHz (PSR); 1030 MHz and 1090 MHz (SSR)
Transmitter	Solid-state GaN
Coverage volume	0.2 NM … 120 NM / up to 50,000 ft
Scan rate	12 rpm / 15 rpm
Antenna beams	3 beams – 2 $Cosec^2$ high beams and 1 pencil low beam
Number of operational frequencies	4 selectable frequencies
Plot accuracy – Range / Azimuth	< 60 m / < 0.1°
Resolution – Range / Azimuth	< 150 m / < 2.9°
Subclutter visibility	≥ 60 dB
Processing channels	Three-channel architecture with coherent processing
Weather detection	Six-level intensity classification according to US NWS – ASTERIX CAT008
Number of tracks	Up to 1,200
Secondary radar	Modes 1, 2, 3 A/C, 4, 5, S
Application layer protocols	ASTERIX (categories 007, 008, 017, 021, 034, 048, 253), NTP

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Llŷr Floating Wind Project Landscape Enhancement Scheme Principles

1. Introduction

The Llŷr Floating Wind Project is a Test and Demonstration offshore wind project being developed in the Celtic Sea to provide a facility to demonstrate the next generation Floating Wind technology concept on a small-scale pre-industrialisation project. The project has applied for a Marine Licence and Section 36 consent from Natural Resources Wales (NRW) and the Planning Environment Decisions Wales (PEDW) respectively to construct, operate and decommission the Llŷr Floating Wind Farm.

During the licence and consent determination period, Pembrokeshire Coast National Park Authority (PCNPA) and NRW Advisory have highlighted potential perceived impacts on the landscapes of the Pembrokeshire Coast National Park as a result of the Llŷr Floating Wind Project. As a consequence, they are seeking a compensatory landscape enhancement scheme for perceived residual impacts of the proposed development to be agreed and implemented by the Llŷr Floating Wind project to provide a net benefit on the affected designated landscapes.

Llŷr Floating Wind Limited stand by its original technical assessment detailed within the Environment Statement that turbines with a tip height of 325.5m are acceptable and will not result in a significant impact. However, in recognition of the concerns raised by the members of the PCNPA during the Members meeting, and in the spirit of working together with the National Park as a good neighbour, we have committed to maintaining a tip height of no more than 300m and offer the implementation of this proposed Landscape Enhancement Scheme.

2. Landscape Enhancement Scheme Key Principles

This document sets out a proposed set of principles of the Landscape Enhancement Scheme which will be secured as a potential consent condition to the Section 36 consent.

Llŷr Floating Wind request that the PCNPA and NRW consider the proposed principles set out below and invite both organisations to either provide comment/amendment on the appropriateness of the principles and/or to suggest further principles to be included.

Key Principles

Principle	Detail
Mechanism for delivery	Delivered as a Section 106 planning obligation legal agreement. The agreement will be between Pembrokeshire Coast National Park Authority as the host local authority and Llŷr Floating Wind Limited, but provides for the involvement of other relevant parties in steering group.
Spatial Scope	Focused on the Pembrokeshire Coast National Park.
Project Scope	To be based on long-list of projects to be determined by the Steering Group (indicatively set out in section 3). Llŷr Floating Wind Limited is supportive of the principle of projects being in the control of the group, provided they support the goal of landscape enhancement.
Fund Timing	Single payment – deposited in an Escrow account prior to the wind farm commissioning.
Fund Size	£250,000 • An inflationary annual increase from date of signature of the scheme agreement equivalent to CPI until the funds are deposited into the Escrow account. • Funds not spent within ten years are to be returned to Llŷr Floating Wind Limited
Steering Group	The Steering group will consist of: • Llŷr Floating Wind Limited • PCNPA

Principle	Detail
	• NRW Terms of Reference (ToR) are to be developed to define how the Steering Group assigns the funds. It is acknowledged that the Pembrokeshire Coast National Park Authority is best placed to determine where landscape enhancement should be carried out related to the proposed development.

3. Project Long List

The final project long-list, supporting the goal of landscape enhancement, is to be agreed by the Steering Group. Consideration will be given to the Pembrokeshire Coast National Park Partnership Plan, with funding being awarded with due recognition on the impact on delivering the priorities of that plan. However, as an initial list of projects to consider, the following have been identified by Llŷr Floating Wind Limited for consideration:

- Improving accessibility to and promotion of the Pembrokeshire Coast Path.
- Measures in relation to public rights of way, conservation areas, historic buildings, archaeology, ancient monuments within the Pembrokeshire National Park.
- Installing information/interpretation board(s) on or near the Pembrokeshire Coast Path which give information about the local area including its archaeology, history and ecology.
- Manage car parks and points of access to conserve tranquillity and avoid visual intrusion.
- Manage people access to spread the load over a wider geographical area to limit pressure on overstretched sites.
- Support for Rural Skills Programmes including events, recreational activities and environmental improvement measures.
- Promotion of The Dark Skies Initiative within Pembrokeshire National Park.
- Proposals to screen or improve the appearance of existing structures e.g. electricity substations, visitor centres.
- Improving traditional boundaries, surveys, mapping and implementation.
- Proposals for tree and woodland planting, growing, planting and aftercare. Particular attention should be given to the emergent Supplementary Planning Guidance from Pembrokeshire Coast National Park Authority on Tree and Woodland (For-Cons-SPG-Appendix-B-Tree-Woodland-Guidance.pdf)
- Conservation and management of wildflower meadows, survey, mapping and implementation.
- Support collaborative programmes of work with farmers and landowners to create positive environmental change to support conservation and management of land to work across the Pembrokeshire National Park.
- Developing and updating the Pembrokeshire Coast National Park Partnership Plan; and
- Responding to Climate Change and Coastal Erosion.

Llŷr 1 Floating Offshore Wind Farm

Bat Mitigation Plan

November 2025

Document:

P10-LLY-4.2.3-PLA-0002

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1. INTRODUCTION

On 28 August 2024, Llŷr Floating Wind Limited submitted a Marine Licence and a Section 36 (with deemed planning) applications to Natural Resources Wales (NRW) Marine Licensing Team and the Planning Environment Decisions Wales (PEDW) respectively for the Llŷr 1 Test and Demonstration that aims to provide a facility to demonstrate the next generation Floating Wind technology concept on a small-scale pre-industrialisation project.

The proposed facility involves the installation of an onshore electricity cable and substation to connect the offshore wind array to the National Grid connection point at Pembroke Power station. The substation will occupy a maximum area of 126 m x 109 m (excluding the SuDS and laydown area) – proposed layout is shown in Figure 7.8 Indicative Landscape Mitigation Plan in appendix 1). The onshore export cable route area within which the electrical export cables will be located is circa 2 km^2. The onshore export cables are connected to the offshore export cables at Transition Joint Bays located at the Horizontal Directional Drill (HDD) landfall site next to Freshwater West.

The application details a project design envelope, which sets out a series of realistic design assumptions from which worst-case parameters are identified and allows specific reasoned maximum extents for key assessment parameters to be assessed on a 'realistic worst-case' basis. The final design of the proposed Project will fall within the maximum extents of the parameters defined. The footprint of the onshore infrastructure and associated temporary works, comprised of the Onshore Export Cable Corridor and the Onshore Substation, as defined, and including new access routes, that forms the onshore boundary for the planning application.

Figure 1 - Llŷr Onshore Development Envelope

Following the granting of consent for the development, the project will advance the design details based on procurement and supply chain feedback and further site investigation to arrive at the final detailed design of the project. This Bat Mitigation Plan will be updated based on the outcome of those

finalised design details and will be consulted and agreed with NRW, Pembrokeshire County Council and Pembrokeshire Coast National Park Authority prior to onshore works being undertaken.

The Bat Mitigation Plan proposes measures to minimise impacts on bat populations and their roosting sites from the construction activities and operation of the onshore substation. The plan forms part of the Llŷr Project Biodiversity Management Plan (BMP) to ensure compliance with wildlife protection legislation and maintains local bat population integrity.

2. PRE-APPLICATION BAT SURVEY AND CONCLUSIONS

The licence and permit applications were supported by a comprehensive Environmental Impact Assessment that undertook the ecology impact assessment (including bats) on a worst-case scenario upon a baseline established by desktop, project specific bat surveys (Llŷr Floating Offshore Wind Farm Environmental Statement Volume 6: Appendix 8C – Bat Survey Report - August 2024)and other surveys undertaken by project in the area (including a Preliminary Ecological Appraisal (PEA) and bat survey report (Greenlink, 2019a; Greenlink 2019b).

2.1 Baseline

The 2023 surveys identify that the onshore development area supports at least ten bat species. Taken together with the results of surveys undertaken in 2018 this species assemblage includes twelve species and is of National value (Greenlink, 2019b). The onshore development area is known to support species listed on Annex II of the EC Habitats Directive, including the lesser horseshoe bat, greater horseshoe bat and barbastelle. Greater horseshoe bats are also the primary designation feature of two SACs within 3 km of the onshore development area: Limestone Coast of South Wales SAC and Pembrokeshire Bat Sites and Bosherton Lakes SAC. Greater horseshoe bats also feature within the citation of eight SSSIs within 10 km of the onshore development area. Lesser horseshoe bats have been recorded within several of these SACs and SSSIs, though are not a primary reason for their designation. Given that lesser and greater horseshoe bats have a core sustenance zone of 3 and 2 km, respectively, there is potential for these species to rely on habitats present throughout the onshore development area for connectivity to important foraging areas (BCT, 2020). The population of greater horseshoe bats within these designations, and likely utilising habitat features within the onshore development area, is of international importance.

In summary, based on the desk study, project specific surveys and surveys undertaken by Erebus and Greenlink projects, the presence of the following species of bats were identified:

- barbastelle (*Barbastelle barbastellus*)
- brown long-eared (*Plecotus auritus*)
- common pipistrelle (*Pipistrellus pipistrellus*)
- Daubenton's bat (*Myotis daubentonii*)
- greater horseshoe (*Rhinolophus ferrumequinum*)
- leisler's bat (*Nyctalus leisleri*)
- lesser horseshoe (*Rhinolophus hipposideros*)
- long-eared (*Plecotus sp.)*
- nathusius' pipistrelle (*Pipistrellus nathusii*)
- natterer's bat (*Myotis nattereri*)
- noctule (*Nyctalus noctula*)
- serotine (*Eptesicus serotinus*)
- soprano pipistrelle (*Pipistrellus pygmaeus*)
- whiskered/Brandt's (*Myotis mystacinus/ brandtii*)

A preliminary roost assessment (PRA) conducted by AECOM in 2023 identified three PRF-I trees with minimal opportunity for roosting bats and two PRF-M trees with large cavities and potential to support multiple roosting bats. Also, adjacent to the onshore development area, four buildings were classified as having Low suitability for roosting bats.

In addition, during roost surveys carried out in 2018 for the Greenlink project, the war memorial (gun emplacement/gun battery) located on the B4319, north of Freshwater West Beach was identified as a frequently used roost for greater horseshoe bats and more infrequently used by lesser horseshoe bats. This is directly adjacent to the onshore development area, including the landfall area.

None of these roosts are within the red line boundary identified but some are within the 30 m buffer area. No further roosting sites were identified from either the site specific surveys nor the desk studies or other projects in or within proximity to the within the red line boundary, however acknowledging the limitations of the project specific surveys a full season of bat surveys along the cable route, around the HDD and substation locations to inform and update this mitigation plan. The mitigation plan will then be consulted and agreed with NRW, Pembrokeshire County Council and Pembrokeshire Coast National Park Authority in advance of the commencement of works.

The onshore development area is within the Core Sustenance Zone (CSZ) of known roosts for brown long-eared bat, common pipistrelle, greater horseshoe bat, lesser horseshoe bat, Natterer's bat and serotine and offers suitable foraging, commuting and roosting habitat for these species. The CSZ refers to the area around bat roosts in which the availability of habitat of suitable quality is likely to have a significant influence on the status of the roost. Developments within this area may impact bats commuting and foraging from the identified roost.

The survey results do 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 is assumed that all hedgerows, woodland and scrub are important for bats. Further bat surveys will be conducted along the confirmed cable route to further inform this Mitigation Plan and agreed with the regulators prior construction activities commence on site.

2.2 Bat Ecological Features Affected by the Project

The following internationally designated sites are within the onshore development area: Castlemartin Coast SPA and Limestone Coast of South West Wales SAC. The Pembrokeshire Marine SAC is situated directly adjacent to the onshore development area. These internationally designated sites are situated at the south-western boundary of the onshore development area in close proximity to the coast and designated in part for their marine interest but also their associated terrestrial habitats, protected flora and bat and bird assemblages in which this report will consider potential impacts on. These protected sites are of international importance and therefore the proposed Project proposes to directionally drill the cable beneath the area in which these designated sites are located, avoiding any direct impacts to the SPA and SACs within the onshore development area. Potential indirect impacts include pollution from run-off and disturbance impacts from noise, movement/visual and light pollution.

The onshore development area lies within the Core Sustenance Zone (CSZ) of the lesser and greater horseshoe bats (2 and 3 km CSZ respectively) cited within the Castlemartin Coast SAC and Limestone Coast of South West Wales SAC, the Milford Haven Waterways SSSI and the Castlemartin Range SSSI. The onshore development area is also within the CSZ of the following species cited within the Orielton Stable Block and Cellars SSSI (part of the Pembrokeshire Bat Sites and Bosherton Lakes SAC) located within 2.8 km of the onshore development area: greater horseshoe bat, brown long-eared bat, soprano pipistrelle (all 3 km) and noctule (4 km).

The onshore development area does not lie within the CSZ for greater horseshoe and lesser horseshoe bats, noctule, Natterer's bat, whiskered bat, Daubenton's bat, common pipistrelle and brown long-eared bat cited in the following designated sites: Scoveston Fort SSSI, Stackpole SSSI, Stackpole Courtyard Flats and Walled Garden SSSI and Park House Outbuildings, Stackpole SSSI. It is anticipated that the removal of hedgerows will be no more than 10 m at any one location, so connectivity for commuting bats will be retained. It is therefore not considered a significant loss of foraging habitat for bat populations associated with these SSSIs.

2.3 Applicable Legislation

International Legislation

The UK is a contracting party to the 1979 Convention on the Conservation of European Wildlife and Natural Habitats (commonly referred to as the Bern Convention). Within England and Wales its provisions with regards to bats are transposed into law through the Conservation of Habitats and Species Regulations 2017 (as amended) (the England and Wales Habitats Regulations) and the Wildlife and Countryside Act 1981 (as amended) (the W&CA).

Legislation in Wales

All bat species native to the UK are protected under Regulation 43 of the Conservation of Habitats and Species Regulations 2017 (as amended). This makes it an offence to

- deliberately capture, injure or kill a bat.
- deliberately, intentionally or recklessly disturb a bat.
- damage or destroy a breeding site or resting place of a bat; or
- posses, control, transport, sell or exchange or offer for sale or exchange, any live or dead bat or part of a bat or anything derived from a bat or any other part of a bat.

Disturbance of bats is defined as any activity which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young; to hibernate or migrate; or to affect significantly the local distribution or abundance of the species of bat.

Where development works are at risk of causing one or more of the offences listed above, a European Protected Species Mitigation Licence (EPSML) from Natural Resources Wales (NRW) may be obtained to facilitate the works that would otherwise be illegal.

Bats are also protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Lower levels of disturbance not covered by the Conservation of Habitats and Species Regulations 2017 (as amended) remain an offence under the Wildlife and Countryside Act 1981, although a defence is available where such actions are the incidental result of a lawful activity that could not reasonably be avoided.

Under Section 9 of the W&CA (s.9(4)(b), 9(4)(c) and 9(5) only), it is an offence (in relation to bats) to:

- intentionally or recklessly disturb a bat while it is occupying a structure or place of shelter or protection;
- intentionally or recklessly obstruct access to any structure or place used by a bat for shelter or protection; or
- sell, offer or expose for sale, or have in their possession or transports for the purpose of sale, any live or dead bat or any part of, or anything derived from a bat

Given the above legislation the potential presence of bats at a site represents a material consideration in the planning process. Even where planning permission is not required, there is still a legal

responsibility placed on the developer to ensure that an EPSML licence is obtained to cover any works that have the potential to result in an offence under the above legislation.

Seven of the UK bat species are listed as species of principal importance within Section 7 of the Environment (Wales) Act 2016, all of which have a recorded presence within the development area:

- barbastelle (*Barbastella barbastellus*) (area).
- Bechstein's (*Myotis bechsteinii*).
- brown long-eared (*Plecotus auritus*).
- common pipistrelle (*Pipistrellus pipistrellus*).
- greater horseshoe (*Rhinolophus ferrumequinum*).
- lesser horseshoe (*Rhinolophus hipposideros*).
- noctule (*Nyctalus noctula*); and
- soprano pipistrelle (*Pipistrellus pygmaeus*).

Although the law provides strict protection to bats, it also allows this protection to be set aside (derogated) under Regulation 53 of the Habitats Regulations through the issuing of an EPSML, for the purpose of preserving public health; public safety; other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment. However, in accordance with the requirements of the Habitats Regulations, a licence can only be issued where the following requirements are satisfied:

- 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 their natural range.

In Wales, EPSML applications are currently determined by NRW. NRW will normally only accept applications for schemes where planning consent has been granted, and all ecology relevant conditions have been discharged.

Currently it is not anticipated that an European Protected Species Mitigation Licences (EPSMLs) is required to undertake the construction works, however should the planned surveys identify the need for an EPSML, an application with the appropriate information will be submitted to NRW for determination. Should the project be successful in obtaining a required EPSML, this bat mitigation plan will be updated to incorporate the necessary information, management and mitigation measures necessary to achieve compliance.

3. KEY PROJECT ACTIVITIES WITH POTENTIAL FOR BAT INTERACTIONS

This section briefly outlines the project activities that have potential for bat interactions. This mitigation plan will be updated with further detail on the activities and impacts following site specific geotechnical, archaeological and ecology (including bat) surveys, finalisation of the details of the cable route, HDD installation location and substation design and location. The mitigation plan will then be consulted and agreed with NRW, Pembrokeshire County Council and Pembrokeshire Coast National Park Authority in advance of the commencement of works.

3.1 Construction Activities

Construction activities include the establishment of a temporary compound for the HDD drilling behind the Freshwater West dune system, the HDD installation, the phased rolling installation of the 2 buried

cables between the HDD compound and the project substation, and phased installation of a single buried cable from the project substation to the National Grid connection point at Pembroke Power Station.

The following construction activities of the project likely to give rise to impacts on bats, as identified within the Environmental Statement are:

- Vegetation clearance - clearance of hedgerows and other vegetation to facilitate the construction of the substation, associated access roads and, in some cases along the onshore cable route.
- Establishment of temporary compounds and access tracks.
- Installation of onshore cables – open trench cutting
- Installation of onshore cables - trenchless installation (HDD).
- Establishment of onshore substations.
- Operation and movement of construction plant / vehicles.
- Employment and movement of construction workforce (human activity).
- Construction lighting

Pre-Construction Surveys and Site Preparation Works

Detailed pre-commencement surveys (such as geophysical, geotechnical, ecological, bat, otter and archaeological surveys) will be conducted before works commence at the landfall, the cable corridor and substation work areas. The precise route within the cable corridor will be informed by the results of these surveys - micrositing within the cable corridor may take place to make minor adjustments to accommodate constraints and any unexpected on-site conditions identified ahead of installation. This mitigation plan will be updated with the actual routes and detailed mitigation measures per each section of the cable route, HDD location and substation location. The following activities will be undertaken prior to the commencement of construction:

- **Soil strip**: prior to cable installation, topsoil will be removed, set aside and handled in accordance with the project Soil Handling and Storage Plan.
- **Vegetation clearance**: clearance of hedgerows and other vegetation to facilitate the construction of the substation, associated access roads and, in some cases along the onshore cable route. This will be undertaken only where completely necessary and will be kept to a minimum.

Construction will commence with the installation of fencing, temporary access roads, laydown areas and Temporary Construction Compounds (TCCs), where required, for each construction works location (e.g. the landfall, along the cable route and at the substation location).

Any necessary preparatory work will be undertaken to existing infrastructure, utilities and services (where required) to enable access and construction activities. Laydown areas will be established to allow the onshore infrastructure for the landfall, the cable corridor and substation to commence construction. The preparatory works will include the establishment of temporary construction compounds, offices, welfare facilities, security, wheel wash, lighting, and signage.

Preparation of laydown areas will typically involve the removal and appropriate storage of topsoil (for later reinstatement) and, where required, the creation of TCCs and temporary access roads typically using crushed stone potentially overlain on a reinforcing geotextile membrane. This is further detailed in the sections below.

Where no direct access is available to the laydown areas from the local highway network, a temporary haul road for the cable corridor route and construction access arrangements for laydown areas will be required. If needed, temporary access tracks and haul roads will be constructed and will typically be up to 15 m wide, including verges and drainage channels, the width will depend upon topography and

access requirements. The method of construction will also depend on ground conditions and topography.

The removal (or height reduction) of trees, hedgerows and ground vegetation will be kept to a minimum but where necessary will be completed in accordance with best practice methods and with the necessary licences are in place. Hedgerows will be replaced wherever possible although trees cannot be planted within 3 m of any sections of underground cable that have been installed.

Cable Installation at Landfall (HDD Site)

The cable ducts at the landfall will be installed by HDD from the onshore site at the landfall with an exit point below the extreme low water mark offshore. At the landfall site each offshore cable will be connected to the onshore cable in an underground transition joint bay (TJB). There will be up to two TJBs and each will be up to 12 m long, 6 m wide and 2.25 m deep.

Horizontal Directional Drilling (HDD) Construction Process

Horizontal Directional Drilling is a trenchless construction method used to install underground utilities like pipelines, fibre optic cables, and conduits with minimal surface disruption. Following the pre-construction site surveys, geotechnical investigations, and identification of utilities or services within the site, a bore path profile will be designed to calculate the entry and exit angles, depths, and the pilot hole trajectory to avoid existing utilities and geological obstacles. The HDD operation will require a drilling rig, a mud mixing and recycling system, drill pipe, various reamers and cutting tools, and tracking equipment. The HDD drilling will follow a three-phase process:

Phase 1: Pilot Hole Drilling

The drill rig is positioned at the entry point, and a steerable drill head with a locating beacon is launched at a shallow angle into the ground. The drill operator advances the drill string while continuously monitoring the beacon's position using a walkover locating system. By controlling the drill head's orientation and adjusting the angle, the operator steers the pilot hole along the designed path. Drilling fluid (bentonite mud) is pumped through the drill string to cool the bit, stabilize the borehole, and carry cuttings back to the surface. The pilot hole emerges at the predetermined exit point.

Phase 2: Reaming

Once the pilot hole reaches the exit point, the drill bit is removed and replaced with a reamer—a larger cutting tool. The reamer is pulled back through the pilot hole toward the entry point, enlarging the borehole to the required diameter. This may involve multiple passes with progressively larger reamers, depending on the size of the product to be installed. Drilling fluid continues to flow, maintaining borehole stability and removing cuttings.

Phase 3: Product Pullback

After the borehole is reamed to the proper size, the final reamer is attached to a swivel, which connects to the product pipe or conduit at the exit point. The drill rig then pulls the reamer and product back through the borehole to the entry point. The swivel prevents torque from transferring to the product. Drilling fluid lubricates the process and helps reduce friction as the product is installed.

HDD Construction Site Layout

A 100 m x 50 m temporary works area (5,000 m^2) along with a 40 m x 50 m (2,000 m^2) construction compound will be required at each TJB during installation and be contained within the Onshore HDD Site (see figure 3). Access to the temporary works area and construction compound will be via the

previously used Greenlink access track, which is also visible in figure 3. The HDD construction compound will consist of:

Drilling Rig - The HDD rig is positioned at the entry point with adequate space for the drill string to be launched at the designed entry angle (typically 8-20 degrees). The rig needs firm, level ground and must be oriented precisely along the bore alignment. Behind the rig, there's a staging area for drill pipe sections that will be progressively added as the pilot hole advances.

Mud System Area - Adjacent to the rig sits the drilling fluid system, which includes mud mixing tanks, pumps, and storage for bentonite and additives. This area needs water supply access and enough space for bulk material delivery. The mud is pumped from here through hoses to the drill string.

Mud Recycling and Settling Pits - Drilling fluid that returns to the surface (carrying drill cuttings) flows into containment pits or tanks near the entry point. These settling pits allow cuttings to separate from the fluid so the mud can be reconditioned and reused. The pits must be properly lined to prevent environmental contamination and sized to handle the expected fluid volumes.

Spoil Management Area - Space is needed for disposing of or stockpiling drill cuttings and spent drilling fluid. This typically includes roll-off bins, vacuum trucks, or designated containment areas. The material may require testing and proper disposal depending on soil conditions.

Pipeline Staging Area - The conduit to be installed is laid out in a straight line leading from the entry pit, positioned along the bore path alignment. For long installations, the product may be pre-assembled and supported on rollers or skids to reduce friction during pullback. The staging area must be long enough to accommodate the entire product string.

Equipment and Materials Storage - Space is allocated for reamers, swivels, pullback equipment, pipe fusion equipment (if needed), and other tools. There may also be welding or joining stations if pipe sections need to be connected on-site.

Safety and Welfare Facilities - The site will include an area for safety equipment, first aid, sanitation facilities, and temporary offices for site personnel.

Utilities, Services and Security - The HDD site will need temporary power (generators), water supply for mud mixing, and potentially compressed air. All these utilities must be safely routed and protected. The site will have temporary fencing around the site and temporary lighting rigs required for personal safety and safe operations. The management details of the lighting is provided in the mitigation section 4.3.

Installation of Onshore Cables

The onshore export cable will be 7.1 km long within the red line boundary (predominantly within agricultural fields) and is up to 900 m wide; although the actual cable disturbance area will be no more than 35 m wide (and most typically up to 25 m wide). The minimum burial depth is 0.9 m, except for agricultural lands where the minimum burial depth is 1.1m, and this may be increased in certain locations for example across some arable fields to allow for ploughing. The maximum trench width will be 1.2 m. It should be noted that this will also vary with depth of cover (the deeper the cables are buried the wider the trench may become).

The primary cable installation method will be open-cut trenching through agricultural fields unless crossings are required. The cable installation will likely proceed sequentially along the cable route, starting from either the landfall or the onshore substation. If time constraints demand, concurrent installation may be carried out. As a conservative estimate, the cable installation rate for a single cable in a single trench through greenfield is around 50 m to 60 m per day (for works within agricultural fields

meeting the typical working corridor requirements). Considering the approximately 7.1 km length of the onshore cable route, the installation is estimated to take up to 72 weeks, disregarding any sensitivity constraints.

The onshore cable trenches will be excavated, typically utilising tracked excavators. The trench will typically be made by digging up ground along the route with a large excavator. A 5 m wide corridor will be required for heavy vehicle access (earth digging equipment and lifting equipment for the cable drums) along the side of the trench, and a further 5 m will be required for lay down of equipment, topsoil, and spoil from the trenching. Another 1.5 m (depending on method of trench shoring) is required from the edge of the trench on each side for safety and to prevent trench collapse under load, and a final 3 m to 5 m should be provided on the far side of the trench for access, storage or working as required. The overall working corridor width will be 35 m.

Following duct installation, the native material removed during construction (providing it is thermally suitable) will be replaced on top of the protective cover (marked with tiles/hazard warning tape) and any large and sharp stones removed. Finally, the trench will be covered with a minimum of 300 millimetres topsoil, using the native topsoil, up to the surface level, and the temporary access land is restored as close as possible to its original conditions.

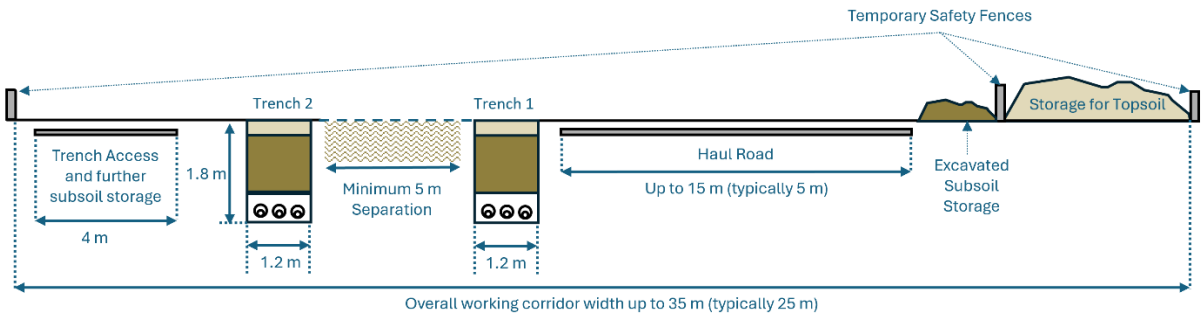

Figure 2 - Cable Route Installation working corridor (WCS)

Following installation of the ducts along the cable route, the cabling itself will be installed. The cable pulling operations are performed from the CJBs, with the cable drums situated at the next CJB along the route (a distance of approximately 1000 m).

Following completion of cable installation, all work areas will be reinstated to pre-construction conditions. Each CJB requires approximately 10 days for completion, starting from the delivery of the jointing tent until its removal and reinstatement. This timeframe encompasses joint creation, cable jointing, and ground reinstatement.

The onshore cable route crosses ecological obstacles such as watercourses, Trees and Hedgerows and environmentally sensitive areas; however, it will avoid areas of woodland/wooded copses.

Onshore Substation Construction

The construction of the onshore substation will require a number of construction facilities including:

- Cable drum laydown area.
- Site and administration offices.
- SuDS.
- Secure material storage; and
- Areas for storage of plant and other construction machinery.

Transportation of equipment will use local roads including the B4319 and B4320 to access the substation access road. Generally, work is expected to occur between 7am and 7pm, Monday to Saturday. However, certain operations such as oil filling and power transformer testing may require 24-hour working.

Under a conservative scenario, the construction of the onshore substation is estimated to take 1.5 years of continuous work. A further three to six months may be required at a later stage, following construction, for the final assembly and commissioning of the substation.

Overall Construction Programme

A detailed construction programme is being developed as design and procurement activities progress and this mitigation plan will be updated with full details of the construction programme, sequencing and installation methodologies and will be consulted and approved by NRW, Pembrokeshire County Council and Pembrokeshire Coast National Park Authority prior to the commencement of construction and as a condition of consent. The installation of onshore components is likely to be completed over 18 to 24 months.

Generally, work will be undertaken 7am to 7pm Monday to Saturday, however some works may require 24 hour working (e.g. HDD at the landfall, road and river crossings). Any works requiring 24 hour working will be agreed in advance with the local authority.

Installation	Anticipated Duration
Landfall HDD works	24 – 64 weeks
Onshore cable route installation	38 – 72 weeks
Substation	78 weeks

3.2 Operation and Maintenance Activities

The project will be operational for a period of 30 years from final commissioning. The key O&M tasks envisaged during the operation of the are as follows:

Cable Operation and Maintenance

Cable systems are highly reliable and typically do not require intrusive maintenance. Maintenance of onshore export cables primarily involves annual visual inspections along the cable route to check for any potential impact from external factors such as heavy loads. Access to the main onshore export cable lengths outside of the Transition Joint Bays is limited, so specific maintenance on the onshore export cable would only be conducted on the section where a problem is identified. In such cases, a section (usually tens of meters long) would be removed, a new section (cable spare) would be spliced in with field joints, and the cable would be reinstalled. The impacts associated with cable operation and maintenance are essentially the same as the construction activities, although at a smaller scale.

Substation Operation and Maintenance

In the initial five to ten years of operation, the maintenance needs of the substation will be relatively low compared to later stages of its lifespan. This will be taken into account for future work planning on the onshore substation.

As the substation ages but remains within its working life, more extensive maintenance may be required. This proactive maintenance approach addresses potential issues before they occur, as opposed to a corrective maintenance program that responds to problems after they have happened, potentially resulting in revenue loss in the worst-case scenario. Some major overhaul procedures may necessitate the shutdown of specific substation equipment.

The substation will also be complemented with security infrastructure such as 2.4 m high, galvanised steel panelised fencing, CCTV, motion sensor lighting as well as security alarms. Different lighting will be used throughout the substation site. This will include 10 lux along access paths and electrical paths and further 2.2 lux lighting around the security fencing. In a worst case scenario this lighting will be operated for 24 hours although ideally these will only be used when required.

The substation has the potential to emit low levels of noise. Indicative operational noise relating to the onshore substation are:

Substation Equipment	Sound power level at Source dB(A)
Grid Transformer main tank	72
Grid Transformer coolers	76
Auxiliary Transformer	60
Harmonic Filter	85
Shunt reactor main tank	76
Shunt reactor coolers	75
STATCOM/ SVC switched reactor	80
STATCOM heat exchanger cooling	76
Voltage Source Converter (VSC) air cooled reactor	76
STATCOM cooling plant pumps	85

During the operational phase (for any repair works at the substation), there will be a minimum of two persons on site at any one time (24 hours per day, seven days per week). The project has an anticipated lifetime of 30 years, following which the infrastructure will be decommissioned which is expected to be complete within 12 months.

4. BAT MITIGATION PLAN

The purpose of this bat mitigation plan is to minimise, or at least compensate, for negative impacts on the bat populations around the development site and their habitat. It also aims, where possible, to maximise the benefits for biodiversity from the development of the Llŷr project. The plan is being developed by the Llŷr project to ensure legal compliance and maintain the local bat conservation goals and local ecosystem services.

This plan takes the 'mitigation hierarchy' approach to bat mitigation, where avoidance is the first step, then considering mitigation of any impacts that cannot be avoided and where it cannot be avoided, using compensation measure to offset any residual impact.

4.1 Pre-Construction Survey

The project will undertake a full season of pre-construction bat survey along the cable route, around the HDD and substation locations to inform and ensure that no 'new' roosts are established prior to construction (as bats are a highly mobile species). The surveys will be used to inform and update this mitigation plan, which will then be consulted and agreed with NRW, Pembrokeshire County Council and Pembrokeshire Coast National Park Authority in advance of the commencement of works.

4.2 Mitigation Measures - Avoidance

The footprint of the onshore cable route including the HDD location, associated temporary works, new access routes, and the onshore substation, will be carried out within the defined 'red line boundary' forms the onshore boundary for the section 36 consent and will be within the maximum extents of the worst-case parameters defined.

The Llŷr project HDD location and substation sites will be developed in open agricultural fields which will ensure that the activities will avoid accidental destruction of bat roosts from the direct construction and cable installation activities within these areas.

Detailed Design and Route Selection

Following the granting of consent for the development, the project will advance the design details based on procurement and supply chain feedback and further site investigation to arrive at the final detailed design of the final cable HDD location, cable route and substation design.

Prior to construction a full season of bat surveys along the cable route, around the HDD and substation locations. The surveys will be designed and undertaken by a suitably qualified and experienced (minimum qualified BCT Level 3 (CIEEM Accomplished) or NRW protected species licenced) ecologist to inform the final cable route including:

- Confirming / identifying bat species that could be affected by the cable installation activities.
- Identification / confirmation of locations with potential to support roosting bats and assessment of the importance and use (e.g. mating, raising young and overwintering) of these locations.
- Bat commuting routes and relative importance of those routes
- Identifying foraging habitat within the cable route and the relative importance of this habitat and use by foraging bats.
- Location of habitat loss relative to known roosts.

The results of the survey will inform the updated bat mitigation scheme by considering:

- Avoidance of previously unidentified active bat roosts, breeding sites or resting places for bats.
- The relative importance of foraging habitats, assemblage and flight-paths with the aim to avoid fragmentation of bat habitat resulting from removal, obstruction or disturbance of commuting routes

In addition, in order to reduce the impacts on habitat connectivity for bats and to reduce the time for mature vegetation to develop following the works the final cable route will ensure that:

- existing gaps in hedgerows (e.g. farm gateways) will be used wherever possible. A scaled plan will be included within the updated bat mitigation plan to show where existing gateways/gaps in hedges are used.
- the construction works will avoid areas of woodland/wooded copses.

This Bat Mitigation Plan will be updated based on the outcome of pre-construction survey and will be consulted and agreed with NRW, Pembrokeshire County Council and Pembrokeshire Coast National Park Authority prior to onshore works being undertaken.

Onshore Site Preparation Works

In accordance with standard practice, pre-construction surveys will be conducted over the finalised agreed cable route before construction starts. The pre-construction survey will cover:

- Habitats with the potential to support protected or notable species where the baseline surveys did not find evidence of species, but where protected or other notable species could establish prior to commencement.
- Habitats with the potential to support protected or notable species where the baseline surveys found evidence of species, but where the time elapsed since the baseline surveys the updated survey information will ensure the potential impacts are fully addressed in the final Bat Mitigation Plan and through NRW protected species licensing.

The results of the pre-construction surveys will be used to identify whether any changes to the measures are required prior to the finalisation of this Bat Mitigation Plan and whether additional licensing submission may be required should a change in bat presence be observed. All surveys will be undertaken by suitably experienced/ licensed ecologists.

The surveys will be undertaken to the latest industry best practice guidance between April and September; outside the hibernation season and prior to construction commencing. The surveys will cover all trees identified as having the potential to support roosting bats

Bats in Building Structures

There is no requirement for the Llŷr project to remove or undertake partial demolition of any buildings or structures along the cable route or within the HDD site or substation location.

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.

There are no buildings located within the 'red-line boundary' nor are there any further buildings within the 30m buffer zone with potential to support roosting bats. As a consequence, a 100 meter exclusion zone will be placed around the buildings BN1, BN2 and BN3, ad a 50 meter exclusion zone around BN6, where no construction activity will occur (see figures 3 and 4).

Bats in Trees

The surveys undertaken to date identified three trees present within the 'red-line boundary' that have potential to support roosting bats; two of which were classified as PRF-M. To ensure that there is no physical disturbance to these potential PRF-M roosts, a 50 m exclusion zone will be place around these two trees – identified as T3 and T6 in figures 4 and 5.

Figure 3 - Llŷr - Onshore HDD Site

Figure 4 - Llŷr Onshore Substation Site

Figure 5 - Llŷr Onshore cable route approach to Pembroke Power Station

4.3 Mitigation Measures - Minimisation of Potential Impacts

4.3.1. General Management Arrangements

The Llŷr project Principal Contractor and its sub-contractors will have a duty to familiarise themselves with the site environmental policy, procedures and arrangements and maintain compliance with the site environmental requirements (including legal).

The Principal Contractor, and their sub-contractors, shall ensure the protection of the environment is assured through the duration of the Works through the commitment to the implementation of an Environmental Management System and this Bat Mitigation Plan, as appropriate, to the level of work to be undertaken.

The Llŷr project will also encourage the Principal Contractor to apply best available techniques at the site to minimise the environmental impact of the construction activities on the environment.

Where applicable, work activities, including those of sub-contractors, shall not commence unless the necessary consents and licenses have been obtained.

The Principal Contractor, and its sub-contractors, must also comply with any future relevant legislation, or guidance, as developed by the UK and Welsh Governments, NRW, local planning authorities and other bodies as appropriate.

The Principal Contractor, once appointed, will be responsible for adhering to all requirements of the relevant legislation throughout the construction phase of the project.

It is anticipated that the Principal Contractor will provide a schedule of relevant legislation, consent conditions and other requirements (commitments), and identify the compliance arrangements and responsibilities for compliance with each identified condition/requirement. The schedule and the compliance arrangements will be agreed with the Llŷr project prior to construction commencing.

4.3.2. Communication, Training and Awareness

The Principal Contractor will formulate a site induction training programme, to be agreed with the ECoW and Llŷr project, to ensure all personnel on site are aware of the site environmental sensitivities, key legislative obligations with regards to bat disturbance, identification of key bat sites and flight paths for the relevant work area, and their personal responsibilities to protect the environment.

All personnel arriving on site will receive the agreed site induction when they arrive. It will cover, amongst other issues, personnel environmental roles, responsibilities and the management arrangements in place to protect the environment during the construction project.

The Principal Contractor will ensure that Toolbox talks with all site operatives will be carried out on a weekly basis. Site Operatives will also be trained in the environmental emergency control procedure, which will include the location and use of spill kits.

Where works are within an area of sensitive bat flight paths or identified bat roost, the toolbox talk will be delivered prior to work commencing in the area to inform personnel of the presence of bats, familiarise themselves with the key bat mitigation requirements and identify nay roost locations and any potential access points. This talk will be delivered by the ECoW, who will be present during works within 10 meters of a sensitive bat location.

4.3.3. Working Hours

In general, working hours for construction will be from 07.00 to 19.00 Monday to Saturday. No working is proposed on Sundays and public holidays.

The exception to the proposed working hours will be for certain operations such as oil filling, power transformer testing, and HDD installation activities where there may be an operational need for 24-hour working.

Night-time working will be avoided as far as possible to limit the impact of disturbance on bats present within the onshore development area. Where night working and associated lighting cannot be avoided, screening must be provided to direct bats to intact flyways (retained woodland and hedgerows).

4.3.4. Unintentional / Unplanned encountering of bat roosts or Injured bats

In the event of an unplanned encounter with a bat or bat roost, work shall stop immediately within the affected area and the ECoW informed. The ECoW will notify and liaise with NRW as the Statutory Nature Conservations Body (SCNB) for further advice on how to proceed. No further work within the location will be undertaken until the SCNB has given advice as to whether the activity should be carried out and, if so, the method to be used. The Principle contractor must give the SCNB reasonable time to provide a response.

In the event where works come across an injured bat, work shall stop immediately within the affected area and the ECoW informed. The area shall be isolated and temporary protection measures implemented. No personnel shall handle the injured bat unless licenced to do so.

The ECoW will inform the project bat expert who will implement the necessary measures to protect the injured bat (such as provision of dark, quiet temporary housing). The bat expert will liaise with the local bat rehabilitation centre and arrange the appropriate measures to remove the bat to safety.

4.3.5. Overview of General Duties and Responsibilities

As the manager of the construction site, the Principal Contractor will be responsible for the environmental management and performance of the construction site. The Principal Contractor will be responsible for minimising the environmental impact of construction activities and ensuring the appropriate resources are made available, as required, to ensure environmental compliance, on a day to day basis.

Table 1 provides a high level overview of the responsibilities of Llŷr Floating Wind Limited, the Principal Contractor and Sub-contractors in the implementation of this bat mitigation plan during the construction phase of the Llŷr project:

Table 1 – Roles and Responsibilities

Duty Holder	Responsibilities during the Construction Phase

Llŷr Floating Wind Limited	• Provide pre-construction information to the construction contractors.
	• Ensure that sufficient time and resources for all stages of the project to be constructed.
	• Check the competence and resources of all contractors.
	• Ensure there suitable management arrangements are in place to comply with the environmental and planning conditions for the project.
	• Appoint a competent Principal Contractor
	• Appoint a company Ecological Clerk of Works (ECoW) to oversee the implementation of the Bat Mitigation Plan.
	• Appoint a company Llŷr project bat expert, who will be a qualified bat consultant on call for expert advice. The bat expert will be as a minimum qualified BCT Level 3 (CIEEM Accomplished) or NRW protected species licenced ecologist.
	• Make sure that the construction phase does not start unless there are suitable:
	  ○ An agreed Construction Environmental Management Plan in place and
	  ○ All appropriate environmental consents, authorisations and licenses are in place before relevant work commences.

Duty Holder	Responsibilities during the Construction Phase
Principal Contractor	• Check that Llŷr Floating Wind Limited is aware of their duties. • Plan, manage and monitor construction phase in liaison with client, the ECoW and sub-contractors. • Prepare, develop and implement a written plan and site rules that comply with this bat mitigation agreement. • Provide site contractors with relevant parts of the plan. • Check competence of all appointees. • Ensure all workers have site inductions and any further information and training needed for the work. • Secure the site.
All Contractors	• Plan, manage and monitor own work and environmental performance • Provide information to the workforce and appointees • Co-operate with the Principal Contractor in planning, managing work and implementing site rules • Provide details to the Principal Contractor of any contractors who may be sub contracted in connection with the works • Provide information needed for the bat mitigation plan. • Inform the Principal Contractor of any problems with the plan • Inform the Principal Contractor of any accidents, incidents and near misses

The specific roles and responsibilities of individual appointees within the construction project will be identified and agreed within the final agreed bat mitigation plan prior to construction activities; however, it is anticipated that the following roles will be defined:

- Llŷr Construction Project Manager
- Principal Contractor Site Manager
- Ecological Clerk of Works
- Llŷr project bat expert
- Site Operatives

4.3.6. Stakeholder Management

The Llŷr project will engage with the statutory consultees and local bat groups in the planning of future bat surveys and formulation of the final mitigation plan to insure that local knowledge is incorporated into the plan.

4.3.7. Tree and Hedgerow Management

It is not anticipated that it will be necessary to fell trees that are suitable to support bats. However, it is recognised that bat roosting sites can change depending on a variety of factors and therefore the presence of bats should never be ruled out completely. As a consequence, a pre-construction bat survey will be undertaken to identify if these trees are present (and where they are). The survey will assess the cable route for bat roosting sites, foraging habitats, and flight corridors. Where possible the survey will identify which bat species are present to enable the tailoring of protective measures specific to the species present.

Should the cable route be unable to avoid trees that support bat roosting sites, appropriate soft felling procedures will be identified by the Principle contractor, agreed and updated within this bat mitigation plan. In such situations a bat ecologist will be on-hand during felling operations to inspect felled trees for bats. If bats are seen or heard in a tree that has been felled, work will cease and NRW will be contacted for advice.

Felled trees will not be mulched immediately. Such trees will be left lying several hours and preferably overnight before any further sawing or mulching. This is a precautionary measure to allow for instances

where a bat is present within the tree, but has not been identified in the pre-construction survey, to emerge and avoid accidental death.

The felling of trees with no potential for roosting bats (features such as tree holes, crevices, loose bark, spilt limbs and dead wood are absent) does not require a bat specialist to be present.

Where possible tree and hedgerow clearance work will be scheduled to avoid sensitive periods; specifically, the maternity season (May through July when females raise young) and hibernation season (November through March). The route design will ensure that suitable alternative commuting routes are available for bats once they arise from hibernation in the spring (April).

Where works are still required, or replanting is not yet fully established, this may include temporary measures such as the use of heras fencing and barrels mounted with vegetation to be placed into any gaps overnight.

Where hedgerow must be removed to facilitate the cabling works, that hedgerow translocation will be used in preference to replanting for post-works habitat re-instatement. Replanting will only be used to gap up areas where translocation fails. All planting will be maintained and monitored, with replacement provided where this does not establish.

If construction works resulting in the severing of hedgerows occurs during the summer months, it will be necessary to provide linear connection of hedges overnight to maintain bat flight. This will be installed at the height of the hedge canopy so that bats flying along the hedgerow do not need to deviate in either the horizontal or vertical plane. This will be achieved through mounting cut stems or branches from the cleared hedgerow on barrels which can the moved on to the alignment of the hedgerow at the end of the working day.

Any inadvertent damage to treelines outside the proposed development area but adjacent to it and thus at risk, will be clearly marked by the supervising ECoW.

Appropriate care of vegetation shall apply to translocated and newly planted habitat. Further detail of the planned hedgerow management will be provided within this bat mitigation plan following the determination of the final cable route. This will include a scaled plan showing where hedges will be removed.

4.3.8. Lighting Strategy

Night-time working will be avoided as far as possible to limit the impact of disturbance on bats present within the onshore development area. Where night working and associated lighting cannot be avoided, screening/shielding will be provided to direct bats to intact flyways (retained woodland and hedgerows). Task lighting will be the minimum intensity required for safety purposes and the extent of the lit area will be limited to avoid light spill onto adjacent habitats. Where lighting is required, it will not be directed on any potential bat roosts. Further bat roost emergence surveys and/or endoscopic inspections are required on trees and buildings if they will be unavoidably impacted by lighting and/or other indirect impacts by the proposed Project.

It is anticipated that lighting will be required within the HDD and Substation construction compounds. The following measures will be adopted in these areas:

- The project will adopt a low-impact lighting strategy during construction and post development.
- Where possible, the lighting will be timed to be used only when required (except for instances of safety and security where it will likely be required 24 hours).
- The design of all temporary works lighting will maintain the light spill and intensity to a minimum needed to facilitate health and safety and will be focused on the working area only.

- The construction site, equipment and compounds will require lighting to the brightness of 10 lux. Construction works lighting on site will be avoided during non-working hours to ensure that the construction works remain as dark as possible after hours.
- Security fencing will require 2.2 lux and brightness of 110 lux will be used for entry points. Where possible this lighting will be timed to be used only when required (except for instances of safety and security, where it will likely be required 24 hours).
- Lighting will not illuminate the tree and hedgerow boundaries around the HDD or substation site to ensure provision of a dark commute route and foraging grounds.
- Floodlights will be cowled and angled downwards to minimise spillage.
- Lighting will be positioned and directed as not to unnecessarily impact on sites or woodland habitats. Particular consideration will be given to avoiding lighting impacts on the war memorial (gun emplacement/gun battery) to the west of the site.

Following completion of the detailed HDD layout, cable route and substation design, a detailed lighting plan for the construction and operational phases of the development will be developed to control light spill onto adjacent habitats (including compensatory habitats provided as part of the scheme). The lighting plan will be agreed with the statutory bodies including NRW, Pembrokeshire County Council and Pembrokeshire Coast National Park Authority and incorporated into this bat mitigation plan.

Operational lighting required for the substation will also include the following measures within the lighting plan:

- Lighting of the substation and surrounding areas will be kept to a minimum (but maintaining safety and security requirements), with low level downward-facing lighting only.
- Native woodland planting and earthwork bunds around the substation will be utilised to screen the adjacent retained habitats from permanent lighting.

4.3.9. Noise and Vibration Management

The Principle contractor, supported by the ECoW, will ensure that noise levels are kept to a minimum in accordance with best practice as defined by the Control of Pollution Act 1974 to avoid unacceptable levels of noise and vibration.

Applicable measures include using the quietest equipment and plant available, shutting down equipment when not in use and completing deliveries during working hours only.

4.3.10. Construction Methods

Where large areas of works are required, such as during the construction of the onshore substation, the HDD construction compound and TJB, temporary screening will be implemented to direct foraging and commuting bats away from the works area. This will include the use of fencing and screens with green mesh or willow screens attached. Where possible, dead or temporary hedging will be implemented to reinforce the flight line and encourage bats to use them. Dead hedging may be incorporated to this, by stacking removed vegetation, including woody material where appropriate, into sections a similar height and width to the removed hedgerow.

4.4 Compensatory and Enhancement Measures

Llŷr Floating Wind provided a Green Infrastructure Statement to support the Section 36 application (Llŷr 1 Floating Offshore Wind Farm, Environmental Statement, Volume 6: Appendix 8F – Green Infrastructure Statement; August 2024). The Green Infrastructure Statement provides details of habitat enhancements on compensatory measures for the permanent loss within the onshore substation and temporary loss of habitats along the cable route.

4.4.11. Post Construction Monitoring

The Llŷr project acknowledge that post construction monitoring is an essential part of the mitigation process and is important in determining whether the mitigation measures are effective and if not where interventions are needed to adjust the mitigation measures.

The post construction monitoring programme will be designed and undertaken by a suitably qualified and experienced (minimum qualified BCT Level 3 (CIEEM Accomplished) or NRW protected species licenced) ecologist to inform the effectiveness of the mitigation measures. A set of appropriate qualitative indicators and quantitative metrics will be identified to assess the effectiveness of the key mitigation, compensatory and enhancements measures. This data will be reported until it has been established that the mitigation measures have been effective.

4.4.12. Vegetation, Soft Landscaping and Biodiversity Gain

Native woodland planting will compensate in part for the loss of the hedgerow near the onshore substation by being a distinct linear feature close to where the hedgerow will be lost. The substation compound will see the creation of new and improved habitats will contribute to environmental net gains.

The Llŷr Green Infrastructure Statement provides an indicative Landscape Mitigation Plan (replicated in figure 6) for the onshore substation. The plan includes the creation of:

- Native woodland planting around most of the substation providing multifunctional benefits including diversifying the habitat, acting as a visual and noise screening and acting as a carbon sink.
- Proposed earthwork bunds to enhance visual and noise screening.
- Replacement of sections of improved grassland with species rich grassland to improve species diversity and habitat condition on site.
- A sustainable drainage system (SuDS) to increase the diversity of habitats on site. This will include the introduction of scrub planting to integrate the SuDS, increase the diversity of habitats on site and increase the SuDS's wildlife value.
- Long term maintenance plan; including rotational hedgerow cutting every three years, annual tree health checks and pruning as required and meadow management (including annual late September cut)

When the detailed design of the substation is finalised, this bat mitigation plan will be updated with the details will be consulted and approved by NRW, Pembrokeshire County Council and Pembrokeshire Coast National Park Authority prior to the commencement of construction activities.

4.4.13. Bat Boxes

The installation and maintenance of bat boxes around the substation site will be considered as part of the Green Infrastructure Statement to provide a comprehensive approach to maintaining bat populations during and after the proposed development and ensure that there is no net loss of bat roost provision. The bat boxes will be:

- Unlit by artificial light at all times.
- Made of long lasting woodcrete.
- Installed between 3 to 5 m in height and facing a southerly direction where possible.
- Trees chosen for supporting boxes will have a straight trunk and be free of branches and foliage that may cause flight obstruction.
- Retained in perpetuity (any boxes that fall will be replaced and monitored by the substation employees) with active management (including annual inspection, structural integrity assessment,

debris removal, etc). Bat box maintenance will only be done by a suitably qualified and experienced NRW bat licenced person.

- Include active monitoring and adaptive management procedures that addresses monitoring colonisation and occupancy rates, identifying key adaptive management trigger metrics, modification of provision or installation at an alternative site if necessary.

Opportunities for the integration of bat boxes around 4 to 7 metres above ground into the substation design will be considered, as this would ensure enhancement measures for a broader range of bat species.

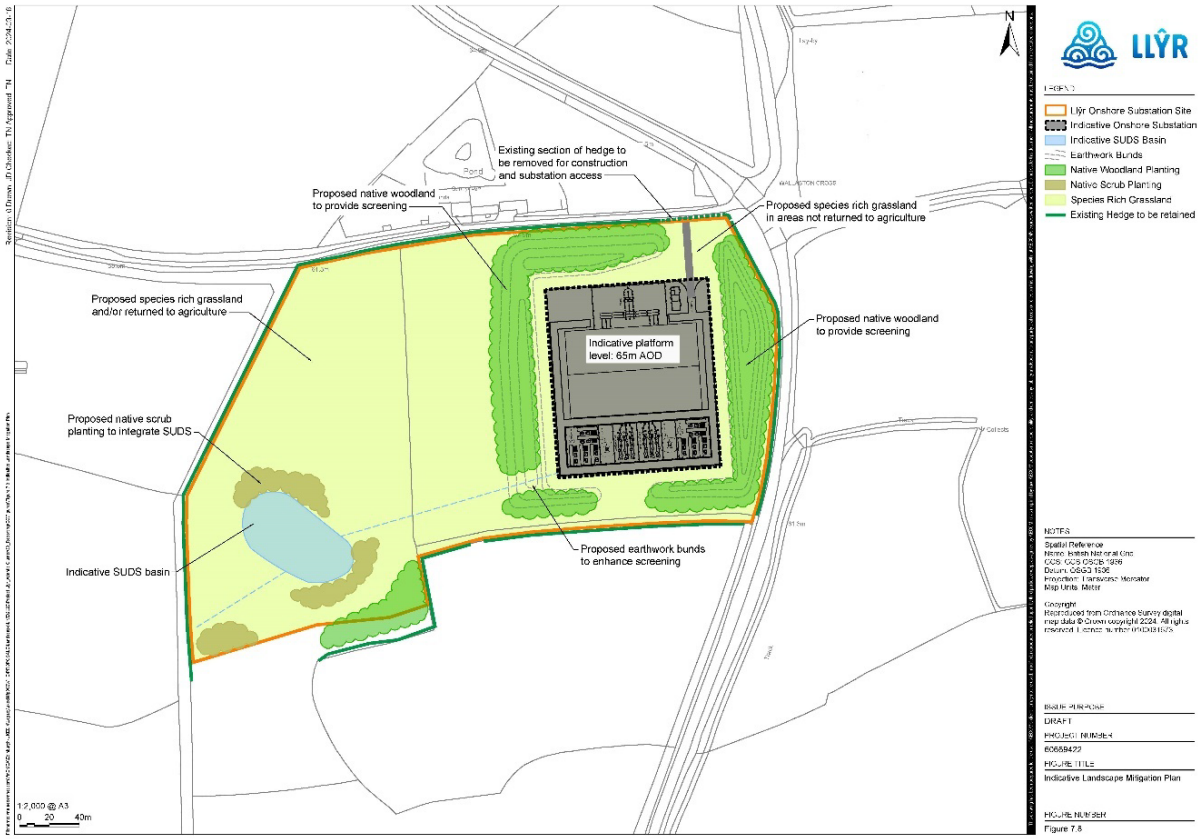

Figure 6 - Indicative Substation Landscape Mitigation Plan

Figure 7 – Indicative Llŷr Substation

APPENDIX 1 – SCHEDULE OF MITIGATION

Description of Effect	Potential Worst Case Scenario Impact	Significance of Potential Effect		Additional Mitigation Measures	Significance of Residual Effect	
		Significance of Effect	Beneficial / Adverse		Significance	Beneficial / Adverse
Construction						
Limestone Coast of South West Wales / Arfordir Calchfaen De Orllewin Cymru SAC	• Habitat loss, severance and fragmentation • Disturbance to foraging and commuting bats • Impacts avoided through the utilisation of HDD techniques	Negligible	n/a	• Pollution control measures • Avoidance of works within the SAC	Negligible	n/a
Pembrokeshire Marine / Sir Benfro Forol SAC	• Habitat loss, severance and fragmentation • Disturbance to foraging and commuting bats	Minor	Adverse	• Implementation of the Bat Mitigation Plan (BMP). • Directional lighting • Screening where required • Maintenance of dark corridors. • Habitat enhancement	Minor	Adverse
Pembrokeshire Bat Sites and Bosherston Lakes SAC / The Orielton Stable Block and Cellars SSSI:	Greater and lesser horseshoe bats – Disturbance to foraging and commuting bats	Minor	Adverse	• Implementation of the BMP. • Maintenance of linear connection of hedgerows overnight in areas where hedges are severed. • No night time working in areas where severance of hedgerows cannot be avoided. • Overall enhancement of the hedgerow network along the onshore cable corridor.	Minor	Adverse
Milford Haven Waterway SSSI	Greater and lesser horseshoe bats –	Negligible	n/a	• Implementation of the BMP.	Negligible	Adverse

Description of Effect	Potential Worst Case Scenario Impact	Significance of Potential Effect		Additional Mitigation Measures	Significance of Residual Effect	
		Significance of Effect	Beneficial / Adverse		Significance	Beneficial / Adverse
	Disturbance to foraging and commuting bats			• Maintenance of linear connection of hedgerows overnight in areas where hedges are severed. • No night time working in areas where severance of hedgerows cannot be avoided. • Overall enhancement of the hedgerow network along the onshore cable corridor. • Habitat enhancement and generation in and around the substation building.		
Castlemartin Range SSSI	Greater and lesser horseshoe bats – Disturbance to foraging and commuting bats	Negligible	n/a	• Implementation of the BMP. • Maintenance of linear connection of hedgerows overnight in areas where hedges are severed. • No night time working in areas where severance of hedgerows cannot be avoided. • Overall enhancement of the hedgerow network along the onshore cable corridor. • Habitat enhancement and generation in and around the substation building.	Negligible	n/a
Stackpole SSSI	Habitat loss, severance and fragmentation Disturbance to foraging and commuting bats	Negligible	n/a	• Implementation of the BMP. • Maintenance of linear connection of hedgerows overnight in areas where hedges are severed. • Directional lighting, screening where required and maintenance of dark corridors.	Negligible	n/a

Description of Effect	Potential Worst Case Scenario Impact	Significance of Potential Effect		Additional Mitigation Measures	Significance of Residual Effect	
		Significance of Effect	Beneficial / Adverse		Significance	Beneficial / Adverse
				• No night time working in areas where severance of hedgerows cannot be avoided. • Overall enhancement of the hedgerow network along the onshore cable corridor.		
Park House Outbuildings, Stackpole SSSI	Habitat loss, severance and fragmentation Disturbance to foraging and commuting bats	Negligible	n/a	• Implementation of the BMP. • Maintenance of linear connection of hedgerows overnight in areas where hedges are severed. • Directional lighting, screening where required and maintenance of dark corridors. • No night time working in areas where severance of hedgerows cannot be avoided. • Overall enhancement of the hedgerow network along the onshore cable corridor.	Negligible	n/a
Bats (general assemblage): Loss of commuting features and foraging habitats:	Habitat loss, severance and fragmentation Disturbance to foraging and commuting bats Temporary and permanent loss of foraging and commuting habitat through the removal and illumination of hedgerows. Disturbance to bats potentially roosting in structures and trees	Minor	Adverse	• Implementation of the BMP. • Maintenance of linear connection of hedgerows overnight in areas where hedges are severed. • No night time working in areas where severance of hedgerows cannot be avoided. • Use of sensitive lighting in and around the substation building. • Overall enhancement of the hedgerow network along the onshore cable corridor.	Minor	Adverse

Description of Effect	Potential Worst Case Scenario Impact	Significance of Potential Effect		Additional Mitigation Measures	Significance of Residual Effect	
		Significance of Effect	Beneficial / Adverse		Significance	Beneficial / Adverse
	within and adjacent to the onshore development area			• Habitat enhancement and generation in and around the substation building (including bat boxes). • Implementation of the BMP to maintain a dark corridor to encourage foraging and commuting bats away from construction zones. • Temporary structures to be utilised to maintain connectivity of commuting features.		
Operation						
Pembrokeshire Marine / Sir Benfro Forol SAC	• Habitat loss, severance and fragmentation • Disturbance to foraging and commuting bats	Minor	Adverse	• Implementation of the Bat Mitigation Plan (BMP), • Directional lighting • Screening where required • Maintenance of dark corridors. • Habitat enhancement	Minor	Adverse
Pembrokeshire Bat Sites and Bosherston Lakes SAC / The Orielton Stable Block and Cellars SSSI;	Greater and lesser horseshoe bats – Fragmentation and disturbance to foraging and commuting bats	Negligible	n/a	• Bat Mitigation Plan (BMP), maintaining linear connection of hedgerows overnight in areas where hedges are severed. • No night time working in areas where severance of hedgerows cannot be avoided. • Overall enhancement of the hedgerow network along the onshore cable corridor.	Negligible	n/a
Milford Haven Waterway SSSI	Greater and lesser horseshoe bats – Fragmentation and disturbance to foraging and commuting bats	Negligible	n/a	• BMP, maintaining linear connection of hedgerows overnight in areas where hedges are severed.	Negligible	n/a

Description of Effect	Potential Worst Case Scenario Impact	Significance of Potential Effect		Additional Mitigation Measures	Significance of Residual Effect	
		Significance of Effect	Beneficial / Adverse		Significance	Beneficial / Adverse
				• No night time working in areas where severance of hedgerows cannot be avoided. • Overall enhancement of the hedgerow network along the onshore cable corridor. • Habitat enhancement and generation in and around the substation building.		
Castlemartin Range SSSI	Greater and lesser horseshoe bats – Fragmentation and disturbance to foraging and commuting bats	Negligible	n/a	• BMP, maintaining linear connection of hedgerows overnight in areas where hedges are severed. • No night time working in areas where severance of hedgerows cannot be avoided. • Overall enhancement of the hedgerow network along the onshore cable corridor. • Habitat enhancement and generation in and around the substation building.	Negligible	n/a
Bats (general assemblage)	Loss of commuting features and foraging habitats	Minor	Adverse	• BMP, maintaining linear connection of hedgerows overnight in areas where hedges are severed. • No night time working in areas where severance of hedgerows cannot be avoided. • Use of sensitive lighting in and around the substation building. • Overall enhancement of the hedgerow network along the onshore cable corridor.	Minor	Adverse

Description of Effect	Potential Worst Case Scenario Impact	Significance of Potential Effect		Additional Mitigation Measures	Significance of Residual Effect	
		Significance of Effect	Beneficial / Adverse		Significance	Beneficial / Adverse
				• Habitat enhancement and generation in and around the substation building. • Landscaping to provide buffering from noise, light and human presence within the onshore substation during operation. • Implementation of the BMP to maintain a dark corridor to encourage foraging and commuting bats away from construction zones. • Temporary structures to be utilised to maintain connectivity of commuting features.		
Decommissioning						
Demolition / Removal of transition joint bays, cables and substation building	Fragmentation and disturbance to foraging and commuting bats	Negligible	n/a	• BMP including pre-works surveys for protected species. • No night time working but if unavoidable then the use of sensitive lighting in and around the substation building and surrounding habitats	Negligible	n/a

APPENDIX 2 – BASELINE BAT SPECIES IDENTIFIED

Species	Foraging/Commuting Records and Location[1]	Roosting Records and Location[19]	Species Core Sustenance Zone (CSZ)[2] radius
Whiskered bat/ Brandt's bat (*Myotis mystacinus/ brandtii*)	Two records 1.6 km southeast of the onshore development area with connectivity via farmland and hedgerows.	N/A	1 km
Common pipistrelle (*Pipistrellus pipistrellus*)	Two records, the closest is 0.2 km north of the onshore development area – within a field directly adjacent to it	Two records, the closest is 1.2 km south east of the onshore development area with connectivity via farmland and hedgerows	2 km
Daubenton's bat (*Myotis daubentonii*)	One record 0.2 km north of the onshore development area – within a field directly adjacent to it	N/A	2 km
Lesser horseshoe bat (*Rhinolophus hipposideros*)	One record 1.7 km southeast of the onshore development area with connectivity via farmland and hedgerows.	One record 1.6 km south of the onshore development area connected via farmland and hedges	2 km
Pipistrelle species (*Pipistrellus sp.*)	Two records, the closest is 1.6 km south of the onshore development area connected by farmland and hedges	N/A	2-3 km
Brown long-eared bat (*Plecotus auritus*)	One record, 1.2 km southeast of the onshore development area with connectivity via farmland and hedgerows	One record 1.6 km south of the onshore development area with connectivity via farmland and hedgerows.	3 km
Greater horseshoe bat (*Rhinolophus ferrumequinum)*	Two records, the closest is 0.2 km north of the onshore development area – within a field directly adjacent to it	One record 0.6 km southeast of the onshore development area connected via farmland hedgerows and woodland	3 km
Soprano pipistrelle (*Pipistrellus pygmaeus*)	Two records, the closest is 0.2 km north of the onshore development area – within a field directly adjacent to it	N/A	3 km
Natterer's bat (*Myotis nattereri*)	One record 0.5 km southeast of the onshore development area with connectivity via farmland and hedgerows, and woodland	One record 1.6 km south of the onshore development area connected via farmland and hedges	4 km
Noctule (*Nyctalus noctula*)	Three records, the closest is 0.2 km north of the onshore development area – within a field directly adjacent to it	N/A	4 km
Serotine (*Eptesicus serotinus*)	N/A	One record, 1.2 km south east of the onshore development area with connectivity via farmland and hedgerows	4 km

[1] Where records are situated outside of the onshore development area, the distance and direction is given at the closest point of the feature from the onshore development area.

[2] Bat Conservation Trust (2016). Core Sustenance Zones. Available at: https://www.bats.org.uk/our-work/landscapes-for-bats/core-sustenance-zones (Accessed: 30/09/21)

Species	Foraging/Commuting Records and Location[1]	Roosting Records and Location[19]	Species Core Sustenance Zone (CSZ)[2] radius
Long-eared bat species (*Plecotus sp.*)	One record 1.7 km east of the onshore development area with connectivity via farmland woodland and hedgerows.	N/A	3 km
Unknown species (*Chiroptera sp.*)	Two records, the closest is 0.2 km north of the onshore development area – within a field directly adjacent to it	N/A	Unknown

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Llŷr 1 Floating Offshore Wind Farm

Outline Marine Mammal Mitigation Plan

November 2025

Document:

P10-LLY-4.2.3-PLA-0003

Rev	Date	Purpose of Issue	Prepared by	Checked By	Approved By
01	*10/10/25*	*Draft for Consultation*	*L Williamson*	*C Gall*	*M Murray*
02	11/11/25	For Consultation	L Williamson	C Gall	M Murray

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1. INTRODUCTION

The primary aim of this draft Marine Mammal Mitigation Plan (MMMP) is to provide an overview of what will be included within the outline MMMP, including the planned measures to reduce the risk of Permanent Threshold Shift (PTS) auditory injury to any marine mammal species from pile driving of mooring anchors or any UXO clearance to negligible levels, along with reduction of entanglement risk.

The MMMP establishes the principles which will be implemented during construction. Following the granting of the Section 36 Consent and Marine Licence for the proposed Project and once the final project design has been confirmed, a final MMMP will be prepared.

The final MMMP will be agreed with the Regulator and Statutory Nature Conservation Bodies (SNCB) as part of the post-consent dialogue and discharge of conditions. The Applicant will ensure that the final MMMP is implemented in practice during wind farm construction[1] and operation; all agreed mitigation measures, monitoring and reporting requirements.

2. MITIGATION METHODOLOGY

In order to minimise the risk of any auditory injury to marine mammals from underwater noise during anchor pile driving, there are standard mitigation measures that the Project could implement for piling. These mitigation measures include the following measures:

- Marine Mammal Observers (MMO);
- Passive Acoustic Monitoring (PAM);
- Acoustic Deterrent Devices (ADD); and
- Piling soft-start procedure.

The following sections provide a high-level methodology for each of these elements. A final MMMP will be produced prior to the relevant works commencing for approval by NRW and JNCC.

In addition to MMO/PAM/ADD, use of noise mitigation (e.g. bubble curtains) or abatement (e.g. alternative hammer technologies) will be considered as part of the final MMMP for piling; however, some methods may not be feasible given physical or operational constraints at the site.

2.1 Mitigation Zone

Discussion will be held with the regulator regarding the size of Mitigation Zone (MZ) deemed appropriate. This discussion will consider the un-weighted peak Sound Pressure Level, the weighted Sound Exposure Level, along with operational feasibility. For the purpose of this draft MMMP, a 500 m (MZ) is assumed, as per the recommendations of the JNCC guidelines on mitigating effects of impact piling. The mitigation zone will be determined through consultation with SNCBs and informed by relevant JNCC guidelines for mitigation of impact to marine mammals from piling, geophysical surveys and explosions, as well as relevant EDRs.

For any UXO detonations, a minimum 1-km mitigation zone would be maintained, as per relevant JNCC guidelines, and the project would aim to use low-order detonation techniques in compliance with the latest government guidance. If UXO clearance is required, it will be undertaken in compliance with the latest DEFRA guidance.

[1] Including any relevant pre-construction surveys,

2.2 Marine Mammal Observers (MMOs)

The pre-piling watch for marine mammals will be conducted for a minimum of 30 minutes prior to the commencement of the soft-start procedure. The MMO will undertake visual monitoring for marine mammals within the MZ around the piling location from a suitable elevated platform. The MMO will record all periods of marine mammal observations, including start and end times. Details of environmental conditions (sea state, weather, visibility, etc.) and any sightings of marine mammals around the piling vessel will also be recorded as per JNCC marine mammal recording forms and guidelines.

In the event of an observation within the MZ during the MMO pre-piling watch, the soft start will be delayed for 20 minutes after the last detection within the MZ to ensure any marine mammals have left the area.

It is expected that one dedicated and experienced MMO will be on watch, unless they do not have access to a location that provides a good all-round view of the mitigation zone (in which case multiple MMOs may be required).

MMO operations prior to any UXO activities will be largely similar as for piling; however, a 60-minute pre-clearance search will be maintained. Should any marine mammal be observed, they must be seen to exit the mitigation zone, or a minimum of twenty minutes must have passed since their last sighting before any detonation can progress. The pre-clearance search must be completed during good visibility conditions.

2.3 Passive Acoustic Monitoring (PAM)

A Passive Acoustic Monitoring System (PAMS) may be used to allow a trained PAMS operative to conduct acoustic monitoring. This may be utilised in conjunction with visual monitoring during daylight operations and/or as an alternative method of monitoring the mitigation zone during periods of reduced visibility. If a PAMS is not available for monitoring, then piling will be unable to commence during such periods of restricted visibility that are not conductive to visual monitoring as there is a greater risk of failing to detect the presence of marine mammals.

2.4 Acoustic Deterrent Device (ADD)

ADDs emit loud aversive sounds into the water to deter marine mammals from approaching, or encourage them to move away from, a potentially harmful location. Discussions will be held with the regulator to determine if an ADD is necessary, and if so, which type is most appropriate.

If deemed necessary, an ADD will be activated prior to piling or UXO activities. For piling, it will be active during the soft-start period, and for UXO prior to detonation – this may require the pre-clearance watch to be extended.

2.5 Soft-Start Procedure

Following the completion of the pre-piling search, a soft-start procedure will commence. This is where the piling hammer energy will gradually increase over a period of 30 minutes so that if any marine mammals are still present in the vicinity of the piling location, they are encouraged to leave by the initial low levels of underwater noise prior to the noise reaching levels which could cause PTS-onset. The MMO will continue to note detections and observations on animal behaviour during the soft-start period.

If a marine mammal enters the MZ during the soft start then the piling operation should either stop (if technically feasible), or the hammer energy should not be further increased until the marine mammal exits the MZ, and there is no further detection for 20 minutes. Once the soft start has been completed, there is no requirement to stop piling or reduce the hammer energy if a marine mammal is detected in the MZ.

2.6 Breaks in Piling

Breaks in the piling process could provide the potential for marine mammals to re-enter the mitigation zone. The guidance provided in JNCC states that "*If there is a pause in the piling operations for a period of greater than 10 minutes, then the pre-piling search and soft-start procedure should be repeated before piling recommences*".

2.7 Entanglement Risk

The Applicant is committed to addressing entanglement risk and will monitor for, and remove, marine debris caught on cables as part of the regular surveys of subsea infrastructure.

Design and frequency of this monitoring will be agreed with the Regulator and SNCBs post-consent once final design parameters – particularly number of turbines and number of mooring lines – are confirmed. Use of strain gauges will be considered as a possible monitoring option.

3. COMMUNICATIONS

This communications protocol will include, but not be limited to:

- Procedure to notify the MMO and/or PAMS operative to begin the 30-minute pre-piling search prior to soft-start commencing;
- Procedure for the MMO and/or PAMS operative to notify the installation manager that soft start can commence;
- Procedure for the MMO and/or PAMS operative to notify installation manager that a marine mammal has been detected in the MZ; and
- Procedure to notify MMO and/or PAMS operative that the piling operations have been successfully completed.

4. REPORTING

A record of all piling operations, marine mammal observations and PAM detections will be maintained.:

- Outline of the marine mammal monitoring methodology and procedures employed;
- Record of piling operations detailing date, soft-start duration, piling duration, hammer energy during soft-start and piling and any operational issues for each pile;
- Record of UXO operations, if applicable;
- Record of ADD start and stop times, if applicable;
- Record of marine mammal observations and PAM detections including duration of the pre-piling watch, environmental conditions during the pre-piling search, description of any marine mammal sightings and any mitigating actions taken, and a record of any incidental sightings made during the pre-piling search.
- Details of any problems encountered during the piling process including instances of noncompliance with the agreed piling protocol; and

- Reports will be collated and provided to NRW and JNCC on a weekly basis. In addition, a final report will be provided which will be submitted to NRW and JNCC. The final report will include any data collected during piling operations, details of MMO watch periods and observations, a detailed description of any technical problems encountered and what, if any, actions were taken. The report will also discuss the protocols followed and put forward recommendations based on project experience that could benefit future construction projects.
- In addition following installation, the Llŷr project will continue to perform cable monitoring and any instances of marine debris caught on cables will be reported under the arrangements agreed with the Regulator and SNCBs.

Llŷr Offshore Wind Farm

Onshore Cable Route Otter Survey

Freshwater West to Pembroke Power Station

December 2025

Document:

P10-LLY-4.2.3-REP-0003

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1. EXECUTIVE SUMMARY

An otter survey has been undertaken on land between Freshwater West and Pembroke Power Station in Pembrokeshire at the request off Llŷr Floating Wind Limited. The proposed development is for the installation of a terrestrial electric cable and a substation to connect off-shore wind turbines with the Pembroke Power station with the cable coming ashore at Freshwater West and, from there, through to the power station.

A desk-top survey was undertaken and evidence for the presence of otters was searched for along the proposed cable route with particular emphasis on searching for natal dens in response to consultation comments made by Natural Resources Wales (NRW).

Evidence for otter activity was found at several places along the cable route with desk-top data, including data from previous survey reports for other similar projects in the locality, giving an overall picture of otter activity in the cable route area.

There was no evidence, from the field surveys or desk-top, of natal dens within 200m of the cable route. However, several areas were identified as having the potential to be used by otters as breeding sites. These included areas of dense, impenetrable scrub (willow, blackthorn and bramble) that could not be assessed thoroughly during the survey. The presence of a natal dens cannot be ruled out from these areas.

The overall assessment is that the proposed development will have a short-term impact on otters during the Construction Phase (but impacts can be reduced), and that in the long-term the development should not prevent otter use of the ponds, streams and scrub habitats along and close to the cable route if otter protection & mitigation measures are included in the scheme design & future site management.

Otter protection & mitigation measures are described.

During the course of the survey incidental notes were made of signs of badger activity. Two additional badger setts were found that had not been identified in the original that are potentially impacted by the proposed works.

2. INTRODUCTION, LOCATION, SITE DESCRIPTION AND CONTEXT

Timing- Otter survey: 10/11/2025, 13/11/2025, 15-17/11/2025

Surveyor – Leander Wolstenholme

2.1 Site Location and Brief

The proposed terrestrial electric cable route site that runs from Freshwater West through to Pembroke Power Station broadly along the route shown by the red line in Figure 1.

2.2 Background to the activity/development

The proposal is to construct an offshore wind Farm located approximately 35 km off the coast of Pembrokeshire in the Celtic Sea. This Project is a test and demonstration wind farm development, comprising up to 10 wind turbine generators (WTGs). The electric cable from the wind turbines will make landfall at Freshwater West before connecting into Pembroke Dock power station and the national grid network. The onshore development area consists of a proposed cable route that runs from Freshwater West eastward to Pembroke Power Station and a potential substation.

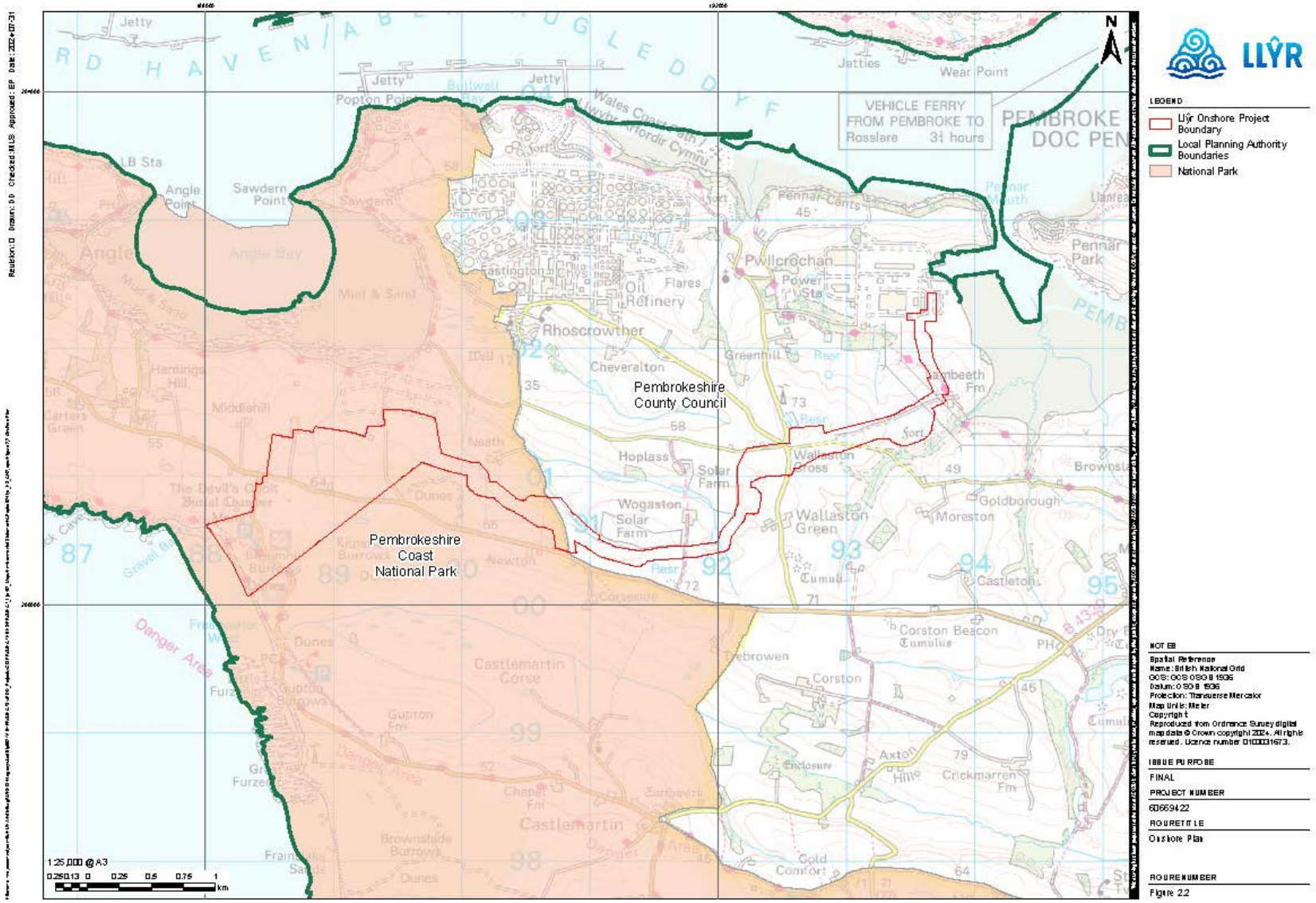

Figure 1 - Llŷr Onshore Cable Route

Figure 2 - Otter Survey Boundary

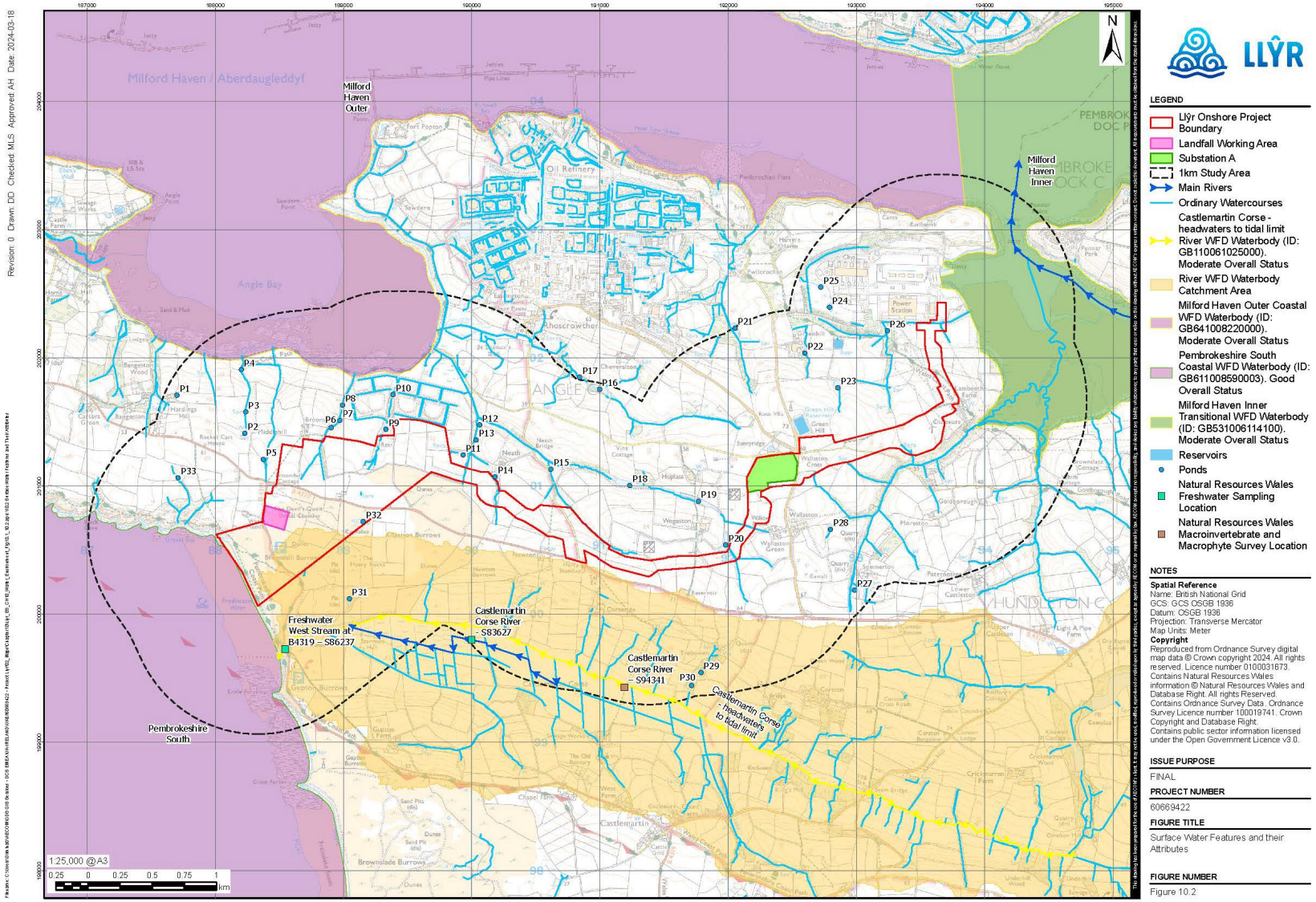

Figure 3 - Surface Water Features close to the proposed cable route

Two consultation letters in 2025 from Natural Resources Wales (NRW) provided advisories in relation to otters. These letters have informed the focus of the current otter survey. The first letter is dated the 20th of February 2025 and the second the 27th of July 2025.

Paragraphs 325 and 326 of the February letter states that, in relation to otters:

"*325…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.*

326. 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)."

In relation to otters, Paragraph 163 of the July letter says:

"*163. The Applicant's response confirms that no specific otter surveys have been carried out and, as such, it is not possible to ascertain whether an otter natal holt is present in close proximity to the shore where the cabling works will make landfall. In the absence of such survey information, significant effects cannot be ruled out. If further surveys can rule out the likely presence of a natal holt within 200m of the works, we would be content to agree with a conclusion of no likely significant effect on this feature of both SACs."*

The objective of the current survey is to provide the level of detail required to meet these requirements.

Construction details are given in the Llyr 1 Floating Offshore Wind Farm Bat Mitigation Plan, November 2025. They key aspects of this are:

- Vegetation clearance - clearance of hedgerows and other vegetation to facilitate the construction of the substation, associated access roads and, in some cases along the onshore cable route.
- Establishment of temporary compounds and access tracks.
- Installation of onshore cables – open trench cutting
- Installation of onshore cables - trenchless installation (HDD).
- Establishment of onshore substations.
- Operation and movement of construction plant / vehicles.
- Employment and movement of construction workforce (human activity).
- Construction lighting

The following activities will be undertaken prior to the commencement of construction:

- **Soil strip**: prior to cable installation, topsoil will be removed, set aside and handled in accordance with the project Soil Handling and Storage Plan.
- **Vegetation clearance**: clearance of hedgerows and other vegetation to facilitate the construction of the substation, associated access roads and, in some cases along the onshore cable route. This will be undertaken only where completely necessary and will be kept to a minimum.

The onshore export cable will be 7.1km long. The maximum trench width for the cable will be up to 1.2m wide, and the ground disturbance will be typically 25m wide (and no more than 35m wide) and

this will include space for the creation of haul roads if required (as shown in Figure 4) The minimum burial depth is 0.9m, except for agricultural lands where the minimum burial depth is 1.1m.

The cable installation trench excavations will proceed sequentially along the cable route and will progress at around 50 m to 60 m per day. It will be a process where if the cable trench is excavated and a duct is laid, then it is likely to be covered daily.

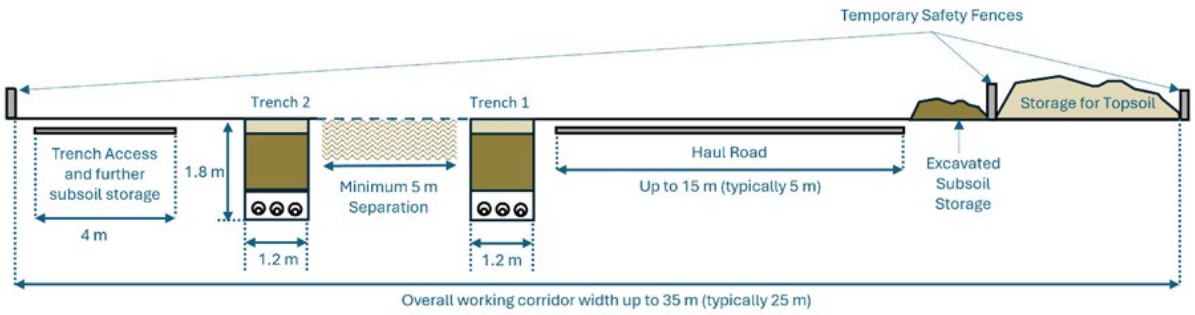

Figure 4 - Cable Route Installation Working Corridor

Following completion of cable installation, all work areas will be reinstated to pre-construction conditions. Each CJB requires approximately 10 days for completion, starting from the delivery of the jointing tent until its removal and reinstatement. This timeframe encompasses joint creation, cable jointing, and ground reinstatement.

2.3 Survey Requirements:

The aims of the otter survey are to:

- Determine otter presence / use of ponds, waterways & associated areas of scrub and woodlands
- Locate key sites for otters (i.e. potential breeding, resting, feeding sites);
- Identify likely / actual otter travel routes;
- Identify likely impacts of the proposal on otters;
- Recommend protection / mitigation measures and/or further surveys for otters where applicable.

The survey involved the investigation of all watercourses & ditches within the proposed Llŷr Offshore Wind cable route boundary (shown by the green line in Figure 2); incl. 30m outside the boundary (shown by the orange line in Figure 2) and up to 200m upstream and downstream of watercourses and ditches (the red line in Figure 2 shows the distance 200m from the green line cable route boundary.

2.4 Survey Limitations

The survey was undertaken in early to mid-November 2025. The weather prior to the survey dates had been poor with heavy rain which may have removed some otter signs, such as spraints and footprints. The weather in the weeks following the survey was much worse and the survey was undertaken during the most amenable weather conditions in that month.

The steep gradient of the banksides and density of scrub prevented access to some sections of the survey area. In these locations, adjoining the fields were comprehensively inspected for mammal paths entering inaccessible areas.

2.5 Surveyor's experience and qualifications

The survey was undertaken by Leander Wolstenholme. Leander is an ecologist with over twenty-five years' experience in field survey work. He has a degree and PhD in botany and plant genetics from the University of Aberystwyth and formerly worked as an ecological consultant with The Environment

Partnership (TEP) based in Warrington. Following this he spent some 10 years working as the Head of Botany at the World Museum Liverpool and the Curator of Botany at the Manchester Museum during which time he conducted surveys as a freelance ecologist for TEP and other clients. He is now based in southwest Wales working as a freelance ecologist, often in association with other ecologists in the area. Whilst specialising principally in botany he has also undertaken a wide range of professional surveys for other species too including bird, bat, great crested newt, water vole and otter surveys.

3. LEGISLATION

Otters are classed as a European Protected Species (EPS) under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). It is therefore an offence to deliberately or recklessly:

- kill, injure, capture or harass an otter;
- disturb an otter whilst it is occupying a holt (underground den) or other place it uses for shelter or protection, or while it is rearing or otherwise caring for its young, or in any way that impairs its ability to survive or breed, or significantly affects the local distribution or abundance of otters;
- obstruct access to an otter breeding site or resting place, or otherwise prevent their use.

and whether or not deliberate or reckless:

- to damage or destroy an otter breeding site or resting place.

This means that if otters could be affected in these ways by a development, and no action is taken to prevent it, an offence may be committed.

In addition, otters are a feature of both the Pembrokeshire Marine SAC and the Limestone Coast of South West Wales SAC (and also the Pembrokeshire Bat Sites & Bosherston Lakes SAC). As a feature of these SACs, impacts on otters would be considered an impact on the respective SACs as well as on the species itself.

4. METHODOLOGY

The survey undertaken comprised of two parts: a desk top study and a field-based habitat survey.

4.1 Desk Top Study

The objectives of the desk study were to review the existing information available in the public domain concerning otters.

Several otter surveys have been conducted within and close to the current survey area for similar projects i.e. the Greenlink undersea cable, the Blue Gem Erebus off-shore wind project and the BESS battery storage plant, all of which have or will run electric cables to the Pembroke Power Station. The following reports were studied:

- BlueGem, Erebus: Onshore Cable Route, Technical Appendix 20.4: Protected Species Report, August 2021
- Greenlink Environmental Statement – Onshore Wales, Appendix 6.5 Riparian Mammals Survey Report, March 2019
- Otter Survey Report, Goldborough Road BESS, September 2024

The Otter Project on-line map of otter casualties was consulted for records of otter road casualties in the vicinity of the cable route (https://www.cardiff.ac.uk/otter-project/research/map).

Other otter reports e.g. Otter (Lutra lutra) activity on the open coast & islands within the Pembrokeshire Marine Special Area of Conservation, G. Liles, 2009) were studied and relevant records extracted.

4.2 Limitations to Desk Top Study

Biological records can be received from a wide variety of sources and may or may not be comprehensive and accurate. However, if assessed in conjunction with an in-the-field otter survey, they can contribute to a robust ecological assessment of a site.

4.3 Field Survey

During surveys a search was made for:

- signs of otters – spraints (droppings), footprints, rolling places;
- resting sites - actual, possible or potential sites where otters are or can lie up during the day;
- breeding sites – in particular, for paths through vegetation from the areas of water to suitable cover that could lead to a natal den;
- feeding areas – in particular, sites with abundant amphibians;
- travelling routes – mammal paths along the bank, and short cuts.

Sites are identified as being resting sites if they are typical of the places known to be used by otters for lying up, and show evidence of use. Two categories are used to describe resting sites, depending on the strength of evidence available.

- *Actual Resting Site* – signs that the site is well used by otters are present, including a well trampled entrance, otter spraints or footprints.
- *Possible Resting site* - the site is typical of an otter resting site, with obvious evidence that it is being used by a mammal, but no signs are present that otters use the site.

A third category is used (Potential Resting site) to record the existence of cover or sites which could be used as resting sites by otters, but where no signs of past mammal use are present.

Otter Breeding Sites are typically large areas of undisturbed cover free from flooding and within easy reach of a good food supply (Liles, 2003). Information collected during the survey was marked on a large scale map of the site and described in notes. Key sites were located using a hand-held GPS giving a ten figure grid reference, and photographs were taken using a digital camera.

Breeding Sites require:

- Security from disturbance.
- One or more potential natal den sites.
- Play areas for cubs.
- No risk of flooding.
- Access to a good food supply.

5. RESULTS

5.1 Desk Study Results

The network of waterways associated with the proposed cable route can broadly be divided into three categories/areas:

1. Those flowing out to Angle Bay
2. Those flowing out to Pembroke River

3. Those flowing out to Milford Haven (via Pwllcrochan)

There are also the network of streams flowing out to Freshwater West from Castlemartin, although this network is outside of the cable route area.

Previous surveys of electric cable routes have found evidence of otter activity along all these networks of streams, rivers and waterbodies.

The records of otters recorded from other electric cable surveys that are within and close to the proposed cable route are summarised in Figure 6 on the following page.

Figure 5 below shows records of otter casualties from the Cardiff University Otter Project.

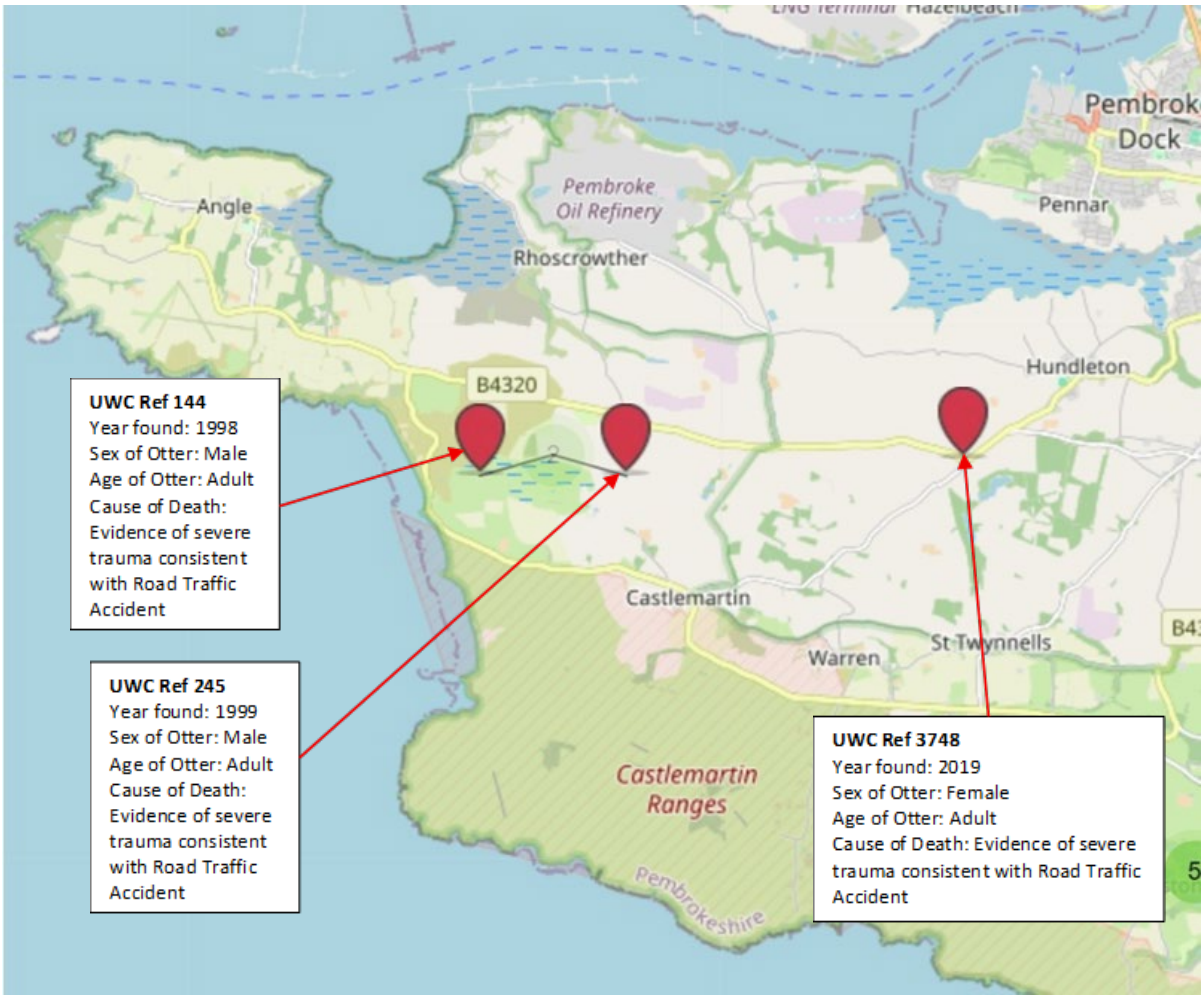

Figure 5 Otter Casualty records held at the Cardiff University Otter Project

5.2 Other Records

Two otter sighting records gleaned from Liles (2009):

- Freshwater West 31/05/2008 - Otter seen at 8.30pm to the left of Rabbit Island when tide was coming in. Otter ran along the shore then went into the sea in the middle of the bay.
- Frainslake Beach Winter 2007/2008 – otter seen eating fish on Frainslake beach.

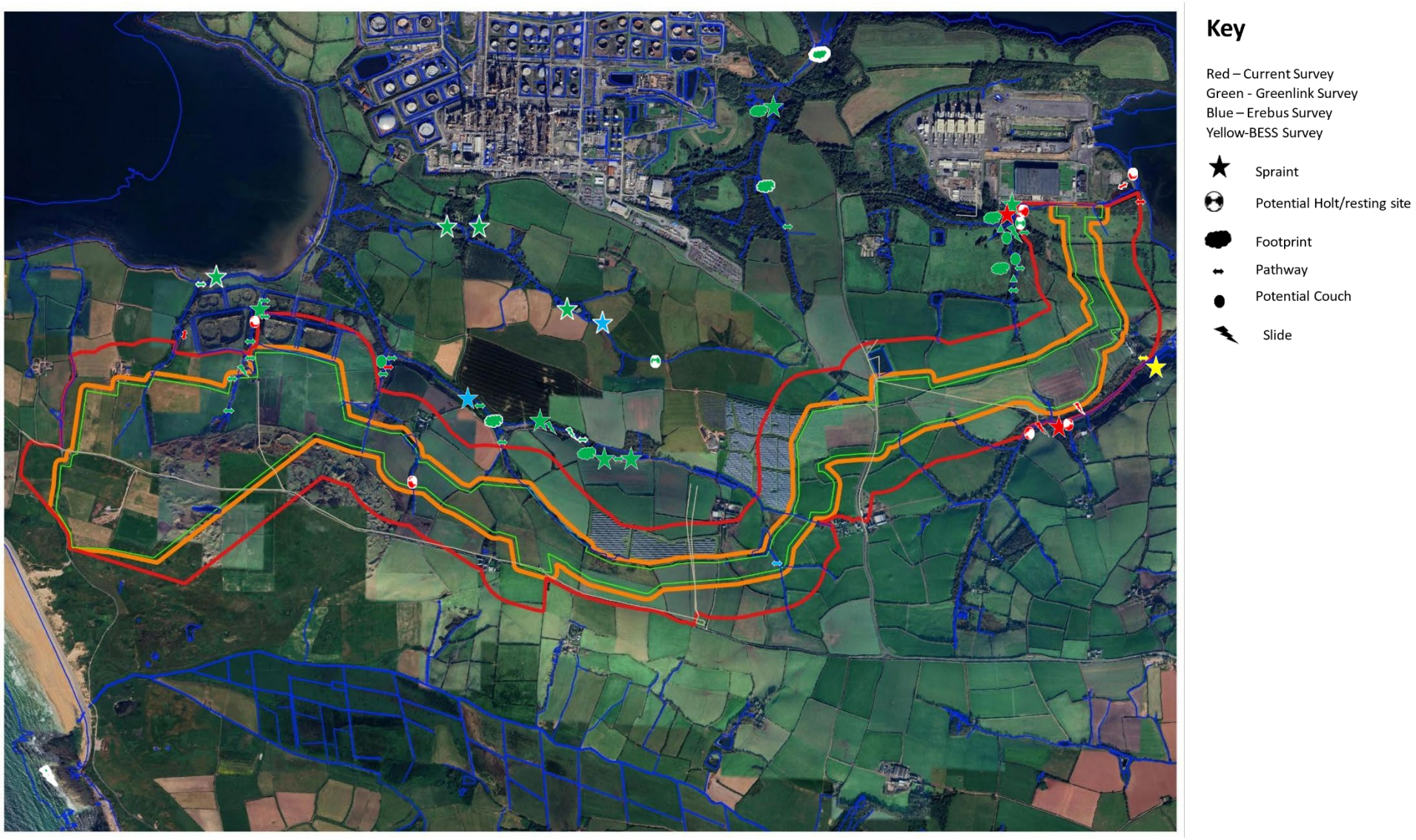

Figure 6 - Otter findings from current and previous surveys

Greenlink Survey data search records:

- Gupton Farm (2014), within a fen meadow drainage channel approximately 1.8km south east of the landfall site.
- Otter were also recorded at Somerton Farm (2010) alongside the B4320.
- Spraint was found approximately 1.2km south of Pembroke Power Station (2013).
- Seven spraints and crab remains were found at Freshwater West (2009). Within the same record, a spraint was found at the side of the road at the road bridge over the stream; indicating that otters cross the road because the bridge is too low, especially when flooded.
- 1.6km southeast of Pembroke Power Station, six spraints and tracks were found by a culvert, in addition to a well-used run. This area is a suspected lying up site (2009).

BESS data search:

The desk study undertaken as part of the PEA identified records of otter from 10 different areas within 2km of the site:

- Four of these areas are located to the south of the site. The closest of these is 0.53 km south of the proposed BESS, where there are three records of otter close to a wooded corridor which connects to the wooded valley south of the site.
- A further four areas where otters have been recorded are to the south-east of the site, in close proximity to a further wooded corridor which connects to the Pembroke River. The closest of these records is 0.97 km south-east of the proposed cable route.
- Otters have also been recorded at two locations close to the coastline, 1.72 km to the north and 2.44 km to the west of the site.

5.3 Field Survey Results

The field survey results are summarised in Figure 6. A table of field notes and photographs are given in Appendices A and B.

6. CONCLUSIONS AND DISCUSSION

6.1 Otter Signs and Habitats

The desk top survey shows that all networks of waterways within and close to the survey area are being or have been used by otters. The current survey showed definite signs of otter activity at the eastern end of the survey area. However, there were several areas of dense impenetrable scrub that could not be searched because access was not possible.

It is likely that otters will use these features throughout the year, at any point in the year.

Several Areas have been identified as having good potential within 200m of the cable route boundary (the green line) to be used as a breeding site by otters. These are shown in Figure 7. Potential breeding sites have been identified if they show the following features:

- Undisturbed
- Scrub/long grass habitat
- At least 0.5ha
- Close to a food source
- No/little risk of flooding

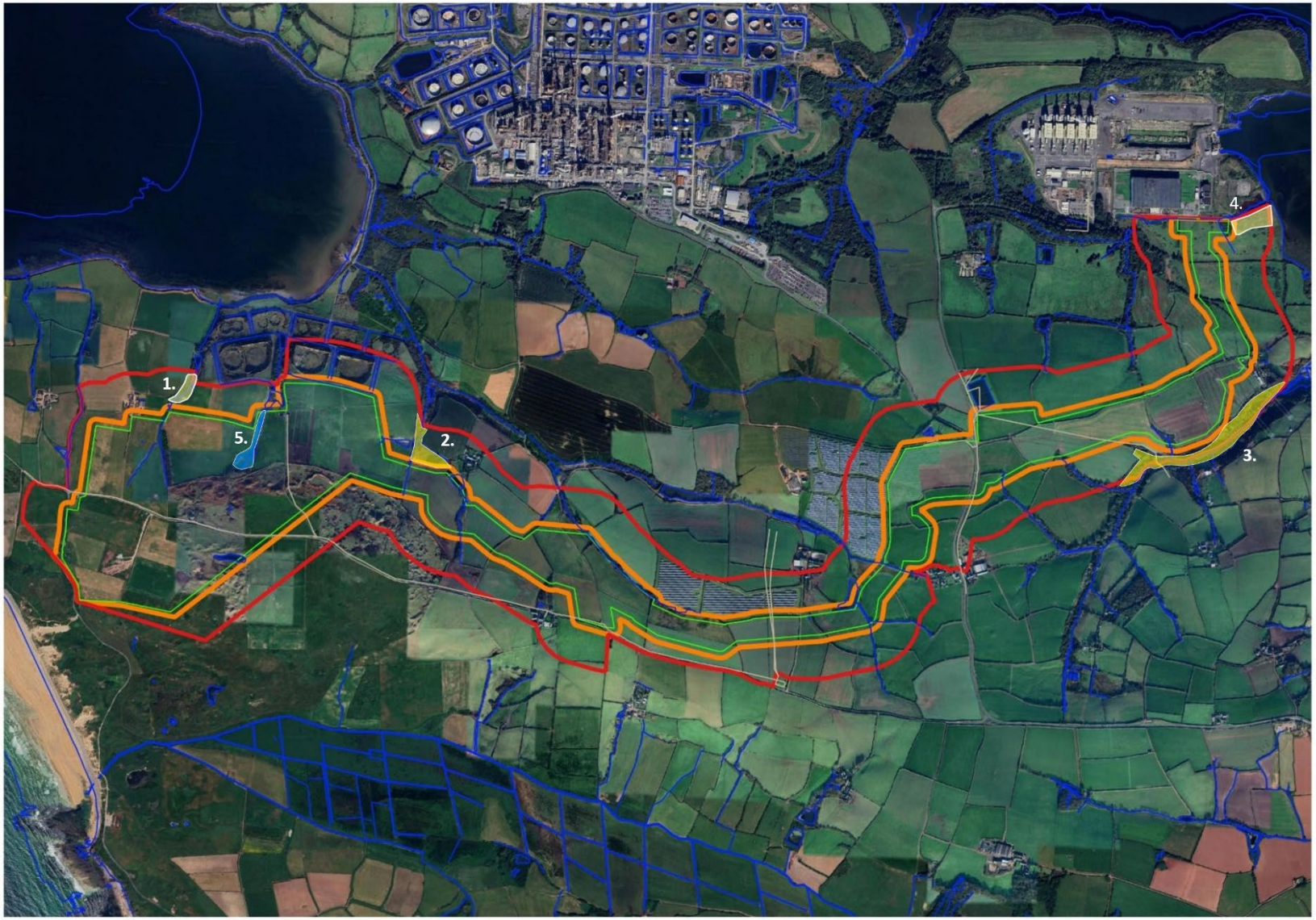

Figure 7 - Areas that offer good habitat for potential otter breeding sites

Site 1:

Habitat: Willow and bramble scrub with ponds with stream leading down to Angle Bay.

Food source: Likely good - Angle Bay plus ponds

Disturbance: undisturbed.

Flooding Risk: Steep sided valley slopes provide opportunity to escape flooding.

Risk of cub predation: possibly from badgers – signs of badger activity in the vicinity

Site 2:

Habitat: Willow and bramble scrub adjacent to stream leading to ponds -

Food source: Good connectivity to Angle Bay via networks of streams and ponds – food source likely good

Disturbance: Mostly undisturbed but farming activity in adjacent fields.

Flooding Risk: Steep sided valley slopes provide opportunity to escape flooding.

Risk of cub predation: possibly from badgers – signs of badger activity in the vicinity

Site 3:

Habitat: Woodland, blackthorn, gorse and extensive bramble scrub on both sides of stream

Food source: Good connectivity to Goldborough Pill food source likely good

Disturbance: Largely undisturbed although clay pigeon shooting range will result in sudden loud noises when active.

Flooding Risk: Steep sided valley slopes provide opportunity to escape flooding.

Risk of cub predation: possibly from badgers

Site 4:

Habitat: Blackthorn/gorse/bramble scrub adjacent large brackish pool and the coast (Pembroke River) to the east

Food source: Pembroke River – likely good.

Disturbance: Undisturbed – scrub dense and impenetrable.

Flooding Risk: Steep sided slopes of the brackish pool provide opportunity to escape flooding.

Risk of cub predation: possibly from badgers - a lot of signs of badger activity in this area (latrines, snuffle holes and pathways)

Site 5:

Habitat: Bramble, blackthorn and willow scrub associated with the headwaters. The area of scrub thinning out downstream and being replaced by areas of tall herb (great willowherb, soft rush, fool's watercress, yellow flag etc.).

Food source: Ponds 6 & 7 for amphibians (and possibly also fish) – connectivity down to Angle not continuous

Disturbance: Scrub dense and impenetrable in places although potentially close to cattle and other farming activities. Areas of none dense scrub present along the stream made up of tall herbs

Flooding Risk: Steep sided slopes of the stream banks missing but flood risk likely low.

Risk of cub predation: possibly from badgers - a lot of signs of badger activity in this area (latrines, snuffle holes and pathways)

Sites 1-4 show good potential to be used as otter breeding sites. Site 5 shows less good potential because the area of dense scrub is less and it is closer to farming activities than the other sites. Ponds 6 & 7 may not provide a reliable food source. Historic Google Earth images show that pond 6 dries out periodically. There is not a continuous scrub and waterway corridor downstream to Angle Bay (which will provide a reliable food source.

The travel route(s) of otters throughout the area is not known but they are likely using the various watercourses as commuting routes but will also, on occasion, be crossing open land.

6.2 Natal Dens

It is important to note that a distinction is made between the breeding site and the natal den. The term breeding site is used to describe an area of land, whereas the natal den is taken to be the small space occupied by the female when she gives birth and where the cubs stay for up to three months. Different natal dens within a single breeding site may be used from year to year or even within the same year.

Several areas have been identified as potential breeding sites (i.e. sites 1-4 in Figure 7 with site 5 showing less good potential). The presence of natal dens in these areas cannot be ruled out.

6.3 Potential Impacts of Development on Otters

Operational Phase.

All impacts will be temporary during the period of construction and will be confined to the section of cable-run that is being worked on at that particular time. So, no long-term impact on otter habitat and commuting routes is envisaged as a result of the works.

Otters learn to cope with low-level disturbance, and are more able to do so in areas where dense bank-side cover provides a screen from disturbance and a refuge in which they can hide. The geography and scrub structure of sites 1-4 is such that if a natal is disturbed at the onset of works (noise and vibration etc.) there is scope there is scope for the mother to move the natal further away from the works i.e. the avenues of scrub/waterway will not be severed by the works. There is potential for site 5 for the continuity of scrub habitat to be severed by the works.

Construction Phase.

Construction works are likely to create disturbance (mainly noise and vibration). Disturbance from cable laying works are likely to be significant if:

a) Works are carried out at a time when otter activity is high, e.g. if a female with cubs is using a pond/watercourse, or if the pond is providing an important seasonal food resource;
b) Key areas of scrub are removed or reduced;
c) There is encroachment by contractors (& machinery and materials) into pond, watercourses or side habitats (e.g. scrub).

Overall Assessment.

The laying of the cable will have a short-term impact on otters during the Construction Phase (but impacts can be reduced). In the long-term the cable and restoring the cable route landscape to its original form will not prevent otter use of the ponds, stream and scrub habitats if otter protection & mitigation measures are included in the scheme design, construction phase & future site management.

6.4 Otter Protection & Mitigation Measures

Mitigation measures to ensure that impacts on otters are not significant proposed for the project are:

- Two months before site clearance & construction works are due to start, trail cameras should be set up at key areas of scrub and checked by the ecologist 2 weeks before start of works, and on the day before start of works. If a female with cubs is recorded during this period it may be necessary to delay the start of works until the family group has left that area of scrub.
- Key areas of scrub must be retained intact (i.e untrimmed) and should be protected from accidental damage and disturbance.
- The cable route should be adjusted to be as far from potential breeding sites as possible. With regard to site 5, positioning the cable route to the south of the linear band of scrub would avoid severing a corridor of habitat and allow any otter present to move northwards away from the works.
- Night-time working is to be avoided
- Key scrub habitats close to the main development area should be protected from damage & disturbance by erecting barrier fencing (e.g. Heras fencing).

6.5 Badgers

During the course of the survey incidental notes were made of badger activity. Two setts that are potentially impacted by the proposed works were found that had not previously been identified by the badger survey. These setts were both active at the time of the otter survey (i.e. fresh spoil was evident outside of burrows) and found at grid references SM91457 00314 and SM92295 00978.

7. APPENDIX A – FIELD SURVEY NOTES

NGR	Photo No.	Otter Spraint	Otter Trail	Otter Potential Resting Site	Otter Potential Holt	Otter Potential Breeding Site	Notes
SM93260 02198	1 & 2	✓					On tree route – appears to be the same tree where an otter was photographed by a trail camera for the Greenlink Survey in 2018.
SM93252 02215	3						Swan Mussel Shells – likely otter feeding remains
SM93254 02215	4				✓		Potential holt – also identified as holt for the Greenlink Survey in 2018
SM93376 02275	5		✓				A mammal path running parallel with concrete fence of the power station – potentially an otter path linking pond 26 and associated habitat with saline lagoon and coastal habitat but unclear as many badger pathways also in the vicinity.
SM93819 02344	8, 9 & 17					✓	Brackish lagoon with dense scrub banks – undisturbed.
SM93836 02419	10						Strong mammal pathway adjacent to brackish lagoon fence
SM93911 02314	13						Mammal path running parallel with shore
SM93883 02352 SM93889 02334	14, 15 & 16		✓				Mammal paths running from shore into scrub adjacent to brackish lagoon
SM93870 02378	18			✓			Shoreline concrete slab with gap underneath
SM93416 01159	19						Stream running eastwards towards Goldborough Pill
SM93452 01159	20					✓	Dense impenetrable scrub on both sides of Goldborough Pill River
SM93462 01167	21	✓					Fresh spraint on log adjacent to fallen tree – south side of river
SM93462 01167	22			✓	✓		Holes under fallen tree adjacent to otter spraint – potential holt/resting site – south side of river.
SM93469 01152	23			✓	✓		Mammal slide on south side of river near spraint site
SM93507 01148	24						Clay pigeon targets from nearby shooting range – periodic bouts of loud noises may discourage otters from setting up a natal den in this area.
SM9331 01144	25 & 26			✓	✓		Potential holt/resting site under fallen tree with associated mammal slides – although no spraint present.

NGR	Photo No.	Otter Spraint	Otter Trail	Otter Potential Resting Site	Otter Potential Holt	Otter Potential Breeding Site	Notes
SM90185 00756	27 & 28						Woodland strip with stream running northwards to Neath Farm. Ground cover too sparse for Natal Holt and area prone to disturbance by cattle.
SM90186 00786	29			✓	✓		Hole in streamside bank – potential holt/resting site
SM90182 01079	30						Garden pond (Pond 14) at Neath Farm – no signs of the presence of otters
SM90013 01385	31					✓	Undisturbed, impenetrable scrub adjacent to stream provides potential breeding site.
SM90030 01344	32		✓				Well-worn mammal path through reeds and bramble scrub connecting to stream.
SM89943 01243	33 & 34						Pond 11. Dead toad noted in this pond – likely food source for otters.
SM89168 01105	35,36 & 37						Stream running down to ponds 9 & 10. Dense scrub covering head waters and downstream, together with tall herbs and grass. Does hold some potential to be used as a breeding site but somewhat distant from good source of food at Angle Bay.
SM89346 01456	38						Pond 9
SM89380 01722	39						Pond 10
SM89374 01663	40						Woodland to the south of Pond 10 – ground cover too sparse to be used as breeding site – although the site is very undisturbed. Close to Angle Bay as food source but otters will need to cross open ground to get there.
SM89365 01645	41			✓	✓		Potential holt/resting site under fallen tree in woodland to south of Pond 10.
SM88862 01135	42 & 43						Strip of woodland to the south of Broomhill Farm running alongside small stream. Ground cover somewhat sparse. Limited potential as a breeding site – much better potential further downstream.
SM88901 01449	44						Pond 6
SM88964 01511	45 & 46					✓	Pond 7 – and associated undisturbed, impregenable, dense scrub. These stream valley with a series of 3 ponds and

NGR	Photo No.	Otter Spraint	Otter Trail	Otter Potential Resting Site	Otter Potential Holt	Otter Potential Breeding Site	Notes
							associated scrub habitat linking the watercourse with Angle Bay offers very favourable potential for an otter breeding site
SM88973 01509	47 & 48		✓				Mammal path connecting Ponds 6 and 7. Likely badger but could be used by otters. Photograph 7 shows possible entry point into Pond 7 from mammal pathway.
SM89147 00724	49						Pond 32
SM88369 00696	50						Very well worn mammal path leading to proposed landfall area – likely badger
SM88403 0072	51 &52						Bramble and gorse scrub at the proposed landfall area.
SM88399 00603	53						Scrub habitat – west side of road near landfall area – leading down to Freshwater West beach.

8. APPENDIX B – SITE PHOTOGRAPHS

1. Pond 26 – Otter Spraint

2. Pond 26 – Otter sprainting tree in context

3. Swam mussel shells adjacent to Pond 26 – likely otter feeding remains

4. Pond 26 – possible former holt adjacent to Pond 26 – also identified as holt for Greenlink survey

5. Mammal path alongside power station concrete fence

6. Freshwater flowing into brackish lagoon

7. Mammal paths close to brackish lagoon

8. Brackish lagoon with thick scrub on sloping banks

9. Brackish lagoon

10. Mammal path adjacent to brackish lagoon

11. Mammal path under chainlink fence – towards brackish lagoon.

12. Scrub adjacent to Pond 26.

13. Mammal path running parallel with the shoreline

14. Mammal paths running from shore towards bramble scrub

15. Mammal path entering bramble scrub close to shore

16. Mammal path from shore to saline lagoon close to chainlink fence

17. Saline lagoon as viewed from the shoreline

18. Potential shoreline holt/resting site

19. Stream/river flowing towards Goldborough Pill

20. Scrub adjacent to Goldborough Pill River

21. Otter spraint on log – Goldborough Pill River

22. Potential holt site adjacent to otter spraint

23. Mammal slide into river

24.Clay pigeon targets from nearby shooting range

25. Potential otter holt

26. Potential otter slide

27. Woodland strip to the south of Neath Farm

28. Ground cover of this woodland strip to open for natal dens

29. Potential holt/resting site inwoodland strip to the south of Neath Farm

30. Pond 14 – Neath Farm

31. Scrub area west Neath Farm with natal den potential

32. Mammal path through scrub area

33. Pond 11

34. Dead toad in Pond 11 – food source for otters

35. Stream running northwards to Pond 9

36. Woodland strip to the south of Neath Farm

37. Scrub - headwaters of stream running to

38. Pond 9

39. Pond 10

40. Woodland to the south of Pond 10 – ground cover too sparse for natal den.

41. Potential holt in woodland to south of Pond 10

42. Strip of woodland near, and to the south of, Broomhill Farm

43. Ground cover – Broomhill woodland

44. Pond 6

45. Pond 7 and associated scrub

46. Scrub habitat from Pond 7 down to Angle Bay

47. Mammal path between Ponds 6 and 7

48. Possible entry point into Pond 7

49. Pond 32

50. Well worn mammal path near Freshwater West

51. Bramble scrub – landfall area

52. Bramble scrub – landfall area

53. Scrub habitat down to the shore at Freshwater West

9. APPENDIX C - BACKGROUND TO OTTER ECOLOGY

Otters are nomadic, and each animal inhabits a large home range (up to 40 km of waterway for an adult male). Otters use every type of water habitat, including rivers and streams; ditches; wetlands; lakes, ponds and reservoirs; estuaries & the coast. They live at all altitudes in the UK, and utilize even the smallest watercourses. Although mainly nocturnal, otters will travel and hunt during the day.

Within the home range many different daytime resting sites will normally be available to the otter. Each resting site may be used only infrequently, with otters sleeping in a different place almost every day. The level of security provided by a particular resting site required by an otter is partly dependent on the general level of disturbance in the area. In undisturbed rural areas, otters will sleep in relatively exposed places (e.g. within grass tussocks). Where disturbance is high (close to a footpath, or near towns and villages for example), otters need to be well hidden and choose secure resting sites such as tunnels or cavities under tree root systems and man-made structures, and large areas of dense scrub.

Typical resting sites include: tree root systems (especially oak, ash and sycamore); dense scrub thickets; piles of timber or rocks; earth tunnels and ledges; and couches in rough grassland and reedbeds. Otter resting sites are protected from damage and destruction, & disturbance, under the Wildlife & Countryside Act 1981 and the EC Habitats Directive 1992.

Breeding can take place at any time of year, but most births occur during the autumn & winter. Otter breeding sites are usually very large areas (> 0.5ha) of undisturbed cover such as woodland, scrub, reed beds and wetlands. Cub rearing is carried out by the female alone – an arduous job because cubs remain with, and are dependent on their mother for almost a year.

Otters feed mainly on fish (both fresh water and marine species) choosing those species (such as eels) that are abundant and easily caught. The diet also includes amphibians (particularly important in the late winter / early spring), birds and some small mammals.

Otters will travel for several kilometres during a night. Although much of their travel is along watercourses they regularly take short-cuts across land (e.g. across river meanders), sometimes travelling long distances away from water.

The level of otter activity in an area, and whether otters have been present in the recent past, can usually be determined by searching for otter spraints (droppings) left by otters as territory markers at prominent sites. In habitats with soft substrates (mud or sand) otter footprints can also be used. An absence of otter signs on the day of the survey does not indicate that a site or area is not used by otters. Otters are widespread throughout much of the UK: it should be assumed that otters are using all water & wetland habitats.

We are not yet able to count individual animals in an area to get an idea of population size. However, because otters are solitary and each animal needs a large home range, it is likely that the number of otters living on a river system will be low.

Whilst single, ‘one-off’ surveys provide an initial overview of habitats & sites available to otters (e.g. for breeding, lying up and feeding) and the likely key issues, some habitats and areas are used by otters on a seasonal basis (e.g. for feeding or breeding) and a proper assessment of otter use, and identification of important features such as breeding, resting & feeding sites, and travel routes, can be made only through detailed surveys carried out in each season over a 12 month period. For example, otter breeding can take place at any time throughout the year. An otter breeding site will be used intensively for the three months during which the cubs are at the natal den. Once the cubs begin to travel away from the breeding site with their mother, the site where they were born may be visited only infrequently for the rest of the year. Where potential breeding sites, and other habitats likely to

be used / visited by otters seasonally, are identified during one-off surveys, further investigations may be recommended in order to properly evaluate the importance of the site & how best to protect it.

Geoff Liles

10. APPENDIX D - REFERENCES

All UK and legislation for countries within the UK can be viewed at: http://www.hmso.gov.uk/legis.htm

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Technical Note

Client	Subject	Date	Document ref
Llŷr Floating Wind Ltd	Llŷr Floating Wind Farm Landscape & Visual Note in Response to NRW Comments.	04 November 2025	60669422

Prepared by	Checked by	Approved by
Nigel Weir: Associate Landscape Architect	John Devenny	Tim Newton

Project Llŷr Landscape & Visual Technical Note.

Executive Summary of Key Points

This technical note has been prepared in relation to points raised by Planning & Environment Decisions Wales (PEDW) and Natural Resources Wales (NRW) in relation to potential landscape and visual effects relating to Llŷr Floating Wind Farm.

It presents evidence in the form of additional Zone of Theoretical Visibility (ZTV) figures and wireline visualisations comparing 270m and 300m turbines for Llŷr Floating Wind Farm and a side-by-side comparison of Llŷr Floating Wind Farm and Erebus (Refer to Appendix A).

The conclusions are that:

a. The reduction in turbines from 325.5m assessed in the LVIA to 300m does not change the outcomes of the LVIA. Due to distance, any lesser impact from the reduced turbine height is not readily perceptible and does not lower the magnitude category from low to negligible. It therefore results in no change in the significance of effects. The LVIA and associated visualisations are therefore “worst case” and remain valid as the basis for decision making.
b. Due to distance and based on the ZTVs and the wirelines in Appendix A, there is no discernible difference in landscape and visual effects from Llŷr Floating Wind Farm turbines of 300m or 270m.
c. At 300m the Llŷr Floating Wind Farm turbines are not perceived as larger than the Erebus turbines from key locations, including the PCNP. This is due to distance and relative proximity of the two schemes to the onshore viewpoints.
d. The Offshore Wind Sensitivity Guidance, 2019 is an approximation of potential effects based on subjective judgements and a limited number of case studies from SLVIAs and offshore projects, generally with a considerably greater number of turbines than is proposed for Llŷr Floating Wind Farm.
e. The Erebus array does not comply with the Offshore Wind Sensitivity Guidance, 2019 and from several viewpoint locations, including the closest within the PCNP (VP2) is closer to the coast than the Project Llŷr array and appears larger, noting that it is a consented scheme.
f. The guidance itself notes that it is an approximation, and each case must be judged on its merits, the ready reckoner of turbine height is a rule of thumb only, rather than a fixed requirement, noting that the evidence in Appendix A does allow a measured and accurate understanding of the likely effects of Llŷr Floating Wind Farm turbines of 300m or 270m and we conclude there is no discernible benefit in a reduction in height.

1. Introduction

1.1 This document is a technical note intended to respond to comments from Planning & Environment Decisions Wales (PEDW) and Natural Resources Wales (NRW) in relation to potential landscape and visual effects relating to Llŷr Floating Wind Farm.

1.2 The technical note is intended to respond to the comments received from PEDW on 30/07/2025 (CAS-01352-L3N2P8) and NRW on 29 July 2025 (AOS-24286-0004-ORML2465) and provide additional information including relevant additional wirelines and ZTV analysis (attached as Appendix A).

1.3 The PEDW comments in response to the LVIA, may be summarised as relating to the following matters relevant to landscape and visual considerations:

- Following the applicant's commitment to limit turbine tip height to 300m above Highest Astronomical Tide (HAT) PEDW have asked how this impacts the LVIA and the reliability of the vantage point wireframes and photomontages.
- Comment on NRW's view that to avoid adverse impact, tip height should be reduced to 270m.

1.4 The NRW comments in response to the LVIA, may be summarised as relating to the turbine height and impacts on the Pembrokeshire Coast National Park (PCNP), based on the content of *"Seascape and visual sensitivity to offshore wind farms in Wales: Strategic assessment and guidance Stage 1- Ready reckoner of visual effects related to turbine size"* (Simon White, Simon Michaels and Helen King, White Consultants) Report No 315, hereafter referred to as The Offshore Wind Sensitivity Guidance, 2019.

1.5 The Offshore Wind Sensitivity Guidance, 2019 provides recommended distances from National Parks and Areas of Outstanding Natural Beauty (AONB) now referred to as National Landscapes, based on *"A very approximate ratio between turbine height and distance for average low magnitude of effect is 1:133 and 1:100 for average medium magnitude of effect (so an array of 200m high turbines is likely to have a significant visual effect up to 20 km distance)"*. Using this formula NRW reach the view that the maximum height of turbines advisable to reduce or mitigate effects on the Pembrokeshire National Park is 270m above HAT.

2. Effects on the Landscape and Visual Assessment of reducing tip height from 325.5 to 300m.

2.1 This section of the technical note sets out a response to comments provided by PEDW in CAS-01352-L3N2P8 (dated 30/07/2025) as summarised in the introduction.

2.2 As set out in paragraph 23.6.57 of the ES Chapter Volume 6, the LVIA considered the design parameters of the proposed Project which are predicted to result in the greatest environmental impact, known as the 'realistic worst-case scenario'. The realistic worst-case scenario represents, for any given receptor and potential impact on that receptor, various options in the Design Envelope that will result in the greatest potential for change to the receptor in question. Given that the realistic worst-case scenario is based on the design option (or combination of options) that represents the greatest potential for change, confidence can be held that the development of any alternative options within the design parameters will give rise to effects no greater or worse than those included in this impact assessment.

2.3 On this basis turbine heights of up to 325.5m above HAT formed the "worst case" as often adopted within the Rochdale Envelope Approach to EIA, including landscape and visual matters.

2.4 Similarly, the assessment is undertaken based on perfectly clear atmospheric conditions to present a worst-case approach. A review of average visibility data for the Milford Haven weather station suggests that frequency of visibility >35 km would be less than 33%, frequency of excellent visibility (>40 km) would be less than 24%, and frequency of visibility >50 km less than 10.5%. It is therefore likely that visibility of the proposed turbines would be more limited, and the resulting magnitude of impact would be lower that stated in the SLVIA, for the majority of the time.

2.5 All SLVIA judgments are subjective to a greater or lesser extent and rely on placing magnitude of effects into categories, in the case of Project Llŷr, these ranged from High/Medium/Small/Negligible. A reduction in tip height could theoretically reduce the magnitude of effects in terms of a reduction in the size/scale of change in views and/or the geographical extent of visibility of the lower height turbines. However, the duration and reversibility of effect would remain as described in the ES LVIA.

2.6 We have considered whether the change in size/scale or geographical extent have any consequence in reducing the magnitude outcomes for any of the 15 representative viewpoint locations assessed in the SLVIA, noting that these viewpoints are all at distances of between 34 and 57 km from the Proposed Development. The majority of viewers (12 out of 15 viewpoint locations) are assessed as experiencing a small adverse change in visual amenity, resulting in effects of minor significance. At the remaining three viewpoint location viewers are assessed as experiencing a negligible adverse change in visual amenity, resulting in effects of negligible significance.

2.7 The evidence to illustrate the differences in scale/size and geographical extent of the 325.5m and 300m turbines is provided by looking at Zone of Theoretical Visibility mapping and wireline visualisations provided in Appendix A.

2.8 In response to the NRW question at para 170 relating to rotor width we can confirm that the rotor diameter is likely to reduce slightly, with the final dimension subject to a procurement exercise post consent.

2.9 Reference to Figure 1: Comparison of ZTV of Project Llŷr at 325.5 and 300m tip heights shows areas shaded blue in which 300m turbines would theoretically be visible, the red shaded areas show the additional geographical extent of theoretical visibility of the 325.5m turbines. A simple visual comparison indicates that the differences in geographical extent are extremely limited such that although there is a reduced impact it would not translate into a reduction in magnitude and hence significance of effect.

2.10 Similarly, in considering what is visible from the land and sea, we have prepared wirelines from the following five viewpoints (locations shown on Figures 1 and 2):

- VP2: Skokholm Island, which is the closest viewpoint within PCNP;
- VP6: St Ann's Head, which is the closest mainland viewpoint within PCNP;
- VP8: Castle Bay / Sheep Island, location on coast where Project Llŷr and Erebus are at same distance (both 38.8 km);
- VP9: Freshwater West Beach, location on coast at lower elevation; and
- VP11: Elegug Stacks, location on coast where Project Llŷr is approximately 5 km closer than Erebus.

2.11 These indicate that that the reduction in height of 25.5m is barely perceptible, largely as a result of the distance offshore.

2.12 Overall, based on this analysis it is not assessed that the conclusions of the LVIA would change as a result of adopting turbines at 300m rather than 325.5m. Similarly, any difference in the visualisations submitted with the application would be barely perceptible, and since those provided are worst case, any change in effects would only result in a reduced magnitude of effect, noting that it would not be sufficient to place magnitude in a lower category (e.g. from small to negligible).

3. Effects of reducing tip height from 300m to 270m.

3.1 NRW has raised multiple points regarding potential effects on landscape character and visual amenity which are based on the concern

"*that turbines with a maximum blade tip height of 300m would still be inside - rather than 'beyond' - the low magnitude of effect buffer identified for turbines of this height1 in the Offshore Wind Sensitivity Guidance, 2019. Consequently, turbines with a tip height of 300m in this location would still be contrary to siting principles outlined in the Offshore Wind Sensitivity Guidance.*

For example:

- *The Array would not be located 'beyond the limit of negligible visual effects, particularly for the highest sensitivity area National Parks overlaid with Heritage Coasts'. (Principle 3)*
- *The Array would not be 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 41.6 km for turbines between 226- 300m). At the closest point the Array is 35km from the PCNP. (Principle 4)*
- *The Array would not be 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 would not be located in 'areas identified as lower sensitivity in the Stage 3 report' (it is located in one of the higher sensitivity areas, Zone 13 which has high/medium sensitivity4) (Principle 6).*
- *The Array would not be located in 'areas offshore from local seascape character areas identified as having lower inherent sensitivity' (Principle 7).*
- *The Array would not be located 'off already industrialised or developed coastlines' (Principle 8).*
- *The Array would not be located to 'avoid locations offshore from remote headlands/peninsulas' (Principle 17).*

- *The Array would not be 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).*

3.2 Our response is based on three main points of principle and specific comments on the points of detail:

1. The Offshore Wind Sensitivity Guidance, 2019 is an approximation of potential effects based on subjective judgements and a limited number of case studies from SLVIAs and offshore projects, generally with a considerably greater number of turbines than is Proposed. The guidance itself notes that it is an approximation, and each case must be judged on its merits, the ready reckoner is a rule of thumb only, rather than a fixed requirement.
2. Our specific analysis of the ZTV and wirelines indicates that at the distances involved there is no perceptible difference between 300m and 270m in terms of perceived impact and effects. At 35km from the coast there are no scale parameters to allow judgement of relative heights. Neither do adjacent turbines, for example the consented Erebus scheme, provide any meaningful comparison as they will not be in the same plane or proximity to allow direct comparison and being closer to the coast will appear relatively taller or at least not comparable with the more distant array of Project Llŷr.
3. The Erebus array does not comply with the Offshore Wind Sensitivity Guidance, 2019 and from several viewpoint locations, including the closest within the PCNP (VP2) is closer to the coast than the Project Llŷr array, noting that it is a consented scheme and any SLVIA effects are therefore outweighed by other benefits. It is therefore difficult to understand the definitive stance that Project Llŷr turbines would be unacceptable at 300m whereas Erebus turbines at 270m, but closer to the coast, are consented.

3.3 In order to illustrate these points, we have prepared four versions of comparative wirelines from selected viewpoints as follows:

- VP2: Skokholm Island, which is the closest viewpoint within PCNP (36.0 km to Project Llŷr and 31.0 km to Erebus);
- VP6: St Ann's Head, which is the closest mainland viewpoint within PCNP (37.3 km to Project Llŷr and 35.9 km to Erebus);
- VP8: Castle Bay / Sheep Island, location on coast where Project Llŷr and Erebus are at same distance (both 38.8 km);
- VP9: Freshwater West Beach, location on coast at lower elevation (39.4 km to Project Llŷr and 41.2 km to Erebus); and
- VP11: Elegug Stacks, location on coast where Project Llŷr (at 38.2 km) is 5 km closer than Erebus (at 43.1 km).

3.4 The comparative wirelines cover several scenarios:

- 90° Horizontal Field of View (HFOV) showing Project Llŷr at 325.5 and 300m tip heights (and Erebus at 270m);
- 90° HFOV showing Project Llŷr at 300 and 270m tip heights (and Erebus at 270m);
- 53.5° HFOV showing Project Llŷr at 300m tip height (and Erebus at 270m); and
- 53.5° HFOV showing Project Llŷr at 270m tip height (and Erebus at 270m).

3.5 Our conclusion, supported by this exercise and the wirelines in Appendix A, is that due to distance the reduction in height is likely to be barely perceptible and without the side-by-side comparison and no comparable scale parameters (including Erebus for the reasons identified) there is no logical reason to apply an approximate rule of thumb when more detailed evidence is provided.

3.6 This in turn informs our response to the specific points raised by NRW:

i. *The Array would not be located 'beyond the limit of negligible visual effects, particularly for the highest sensitivity area National Parks overlaid with Heritage Coasts'. (Principle 3)*:

Response: The Offshore Wind Sensitivity Guidance does not identify what it considers to be the limit of negligible visual effects. Standard SLVIA practice is that the only category beyond negligible effects is no change (i.e. no development), and therefore no proposed development would be able to comply with this principle. The threshold for significant effects in SLVIA is typically moderate and above (some assessments also consider that moderate effects could be not significant) and therefore these is no

requirement for a development to be beyond the limit of negligible visual effects to be considered acceptable.

Erebus is closer to the PCNP than Project Llŷr (VP2) by some 5 km. The angle subtended (i.e. perceived height) by the Project Llŷr turbine closest to the PCNP is 0.477 degrees (to 3 decimal places) at 36 km as opposed to an angle subtended by the 270m turbine of Erebus at 31 km of 0.499 degrees. The angles have been calculated by drawing the real-world scale in AutoCAD and measuring the angles between the viewpoint and the top of the turbine. The Erebus turbines therefore appear larger in comparison but noting that the angle subtend/perceived height is vanishingly small at less than 0.5 degree in both cases and the curvature of the earth is not included in this calculation but would, in itself, further reduce the perceived height of the furthest turbines (i.e. Project Llŷr). A second factor is that from much of the PCNP the viewpoints towards Project Llŷr or Erebus, are elevated and hence the relative perspective of height will be distorted, with turbines appearing shorter than if viewed in a horizontal plane at the same level.

ii. *The Array would not be 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 41.6 km for turbines between 226-300m). At the closest point the Array is 35 km from the PCNP. (Principle 4)*.

Response: Erebus is closer to the PCNP than Project Llŷr (VP2) by some 5 km and as illustrated by the wirelines in Appendix A and the comparison with Erebus, as a consented scheme, closer to the PCNP, we contend that this is a meaningless comparison and arbitrary yardstick.

iii. *The Array would not be 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)*.

Response: Erebus does not comply with this principle and the actual differences in perceived effects between 270m and 300m at the distances involved is not readily perceptible with no scale comparators. We are not aware of any consented wind farm on land or offshore were effects on visual amenity or landscape character are significant at over 30 km, therefore the differences causing concern for NRW are of immaterial magnitude.

iv. The Array would not be located in 'areas identified as lower sensitivity in the Stage 3 report' (it is located in one of the higher sensitivity areas, Zone 13 which has high/medium sensitivity4) (Principle 6).

Response: Noted but sensitivity is one component of significance and as assessed in the SLVIA and set out in this technical note by reference to wirelines/ZTVs and the angles subtended by the adjacent consented scheme, the magnitude of effect is small or negligible due to distance, hence effects at 270m or 300m are both minor or negligible significance.

v. The Array would not be located in 'areas offshore from local seascape character areas identified as having lower inherent sensitivity' (Principle 7).

Response: as per item iv).

vi. The Array would not be located 'off already industrialised or developed coastlines' (Principle 8).

Response: as per item iv).

vii. The Array would not be located to 'avoid locations offshore from remote headlands/peninsulas' (Principle 17).

Response: as per item iv).

viii. The Array would not be 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).

Response: as per item iv) and noting that the two wind farms would appear as distant but similar elements in a coherent layout which avoids effects of scale, spatial conflicts or compounding of effects due to compatible array design and spatial extents.

3.7 In the Offshore Wind Sensitivity Guidance the above principles apply equally to turbines of 270m and 300m heights. NRW consider that turbines at a height of 270m are acceptable in relation to SLVIA impacts. This therefore demonstrates that a wind farm does not require to meet the above principles in order to be consented.

3.8 The only difference between turbines of 270m and 300m in relation to the Offshore Wind Sensitivity Guidance is application of the very approximate 1:133 ratio of turbine height to distance, which as highlighted above is based on a limited dataset. If this approximate ratio were to be applied to the consented Erebus scheme which is at a distance of 31km from the PCNP at its nearest point, it would indicate that turbines should be limited to 233m in height (31,000m / 133 = 233m) and not the consented 270m.

3.9 If Erebus, as a consented scheme, was used as the basis for defining a height to distance ratio, the result would be 1:115 (31,000m / 270). Application of this ratio to Project Llŷr at 36 km from PCNP would indicate that turbines of 313m in height at the increased distance would be comparable to the consented turbines of Erebus.

4. Summary

4.1 AECOM confirm that in our view, the reduction of turbine height from 325.5m to 300m does not change any of the SLVIA outcomes relating to Project Llŷr. The primary reason for the conclusion is that the SLVIA assessed a "worst case" and although the reduction in height results in a theoretical reduction in visibility and magnitude of effect, at the distances concerned (typically over 35 km) there is no justifiable reduction in magnitude to a lower category, noting that effects at all viewpoints are small or negligible magnitude. We consider that this is evident from the ZTV (Figure 1) and wirelines comparing the 325,5 and 300m tip heights (Figures 3.1, 4.1, 5.1, 6.1 and 7.1) in Appendix A, showing the difference in height, which is barely perceptible at 35 km.

4.2 The use of the Offshore Wind Sensitivity Guidance, 2019 is as acknowledged in the Stage 1 report, an approximation of potential effects rather than an assessment of a specific project as submitted in a detailed SLVIA within the ES. The concerns raised by NRW apply to an equal or greater extent in relation to the consented Erebus wind farm which is closer to the PCNP albeit with turbine heights which are 270m as opposed to 300m for Project Llŷr.

4.3 Our analysis, using wirelines and a calculation of the angle subtended in a view using the two turbine heights and distances based on VP2, is that the taller height of the Project Llŷr turbines does not translate into perceived increased height due to a reduction in size over distance. In simple terms, from the closest point in the PCNP (VP2) the closest Erebus turbines will appear larger than Project Llŷr turbines.

4.4 In relation to the points raised by NRW we assess that a comparison with Erebus is relevant given that it is a consented scheme, closer to the coast, not raising unacceptable effects on SLVIA receptors.

4.5 Our conclusion is that at the distances concerned, typically over 35 km the significance of effects of turbines at 300m height remains well below any significant threshold and the difference with the 270m suggested by NRW and the proposed 300m is imperceptible in real terms.

4.6 We consider that this is illustrated by Figure 2 showing the comparative ZTV and the range of wirelines for five of the assessment viewpoints provided in Appendix A of this technical note.

Appendix A:

Figure 1: Comparison of ZTV of Project Llŷr at 325.5 and 300m tip heights

Figure 2: Comparison of ZTV of Project Llŷr at 300 and 270m tip heights

Figure 3.1: VP 2 Skokholm Island - 90° wirelines showing Project Llŷr at 325.5 and 300m tip heights

Figure 3.2: VP 2 Skokholm Island - 90° wirelines showing Project Llŷr at 300 and 270m tip heights

Figure 3.3: VP 2 Skokholm Island - 53.5° wireline showing Project Llŷr at 300m tip height

Figure 3.4: VP 2 Skokholm Island - 53.5° wireline showing Project Llŷr at 270m tip height

Figure 4.1: VP 6 St Ann's Head - 90° wirelines showing Project Llŷr at 325.5 and 300m tip heights

Figure 4.2: VP 6 St Ann's Head - 90° wirelines showing Project Llŷr at 300 and 270m tip heights

Figure 4.3: VP 6 St Ann's Head - 53.5° wireline showing Project Llŷr at 300m tip height

Figure 4.4: VP 6 St Ann's Head - 53.5° wireline showing Project Llŷr at 270m tip height

Figure 5.1: VP 8 Castles Bay / Sheep Island - 90° wirelines showing Project Llŷr at 325.5 and 300m tip heights

Figure 5.2: VP 8 Castles Bay / Sheep Island - 90° wirelines showing Project Llŷr at 300 and 270m tip heights
Figure 5.3: VP 8 Castles Bay / Sheep Island - 53.5° wireline showing Project Llŷr at 300m tip height
Figure 5.4: VP 8 Castles Bay / Sheep Island - 53.5° wireline showing Project Llŷr at 270m tip height
Figure 6.1: VP 9 Freshwater West Beach - 90° wirelines showing Project Llŷr at 325.5 and 300m tip heights
Figure 6.2: VP 9 Freshwater West Beach - 90° wirelines showing Project Llŷr at 300 and 270m tip heights
Figure 6.3: VP 9 Freshwater West Beach - 53.5° wireline showing Project Llŷr at 300m tip height
Figure 6.4: VP 9 Freshwater West Beach - 53.5° wireline showing Project Llŷr at 270m tip height
Figure 7.1: VP 11 Freshwater West Beach - 90° wirelines showing Project Llŷr at 325.5 and 300m tip heights
Figure 7.2: VP 11 Freshwater West Beach - 90° wirelines showing Project Llŷr at 300 and 270m tip heights
Figure 7.3: VP 11 Freshwater West Beach - 53.5° wireline showing Project Llŷr at 300m tip height
Figure 7.4: VP 11 Freshwater West Beach - 53.5° wireline showing Project Llŷr at 270m tip height

Appendix A - Figures

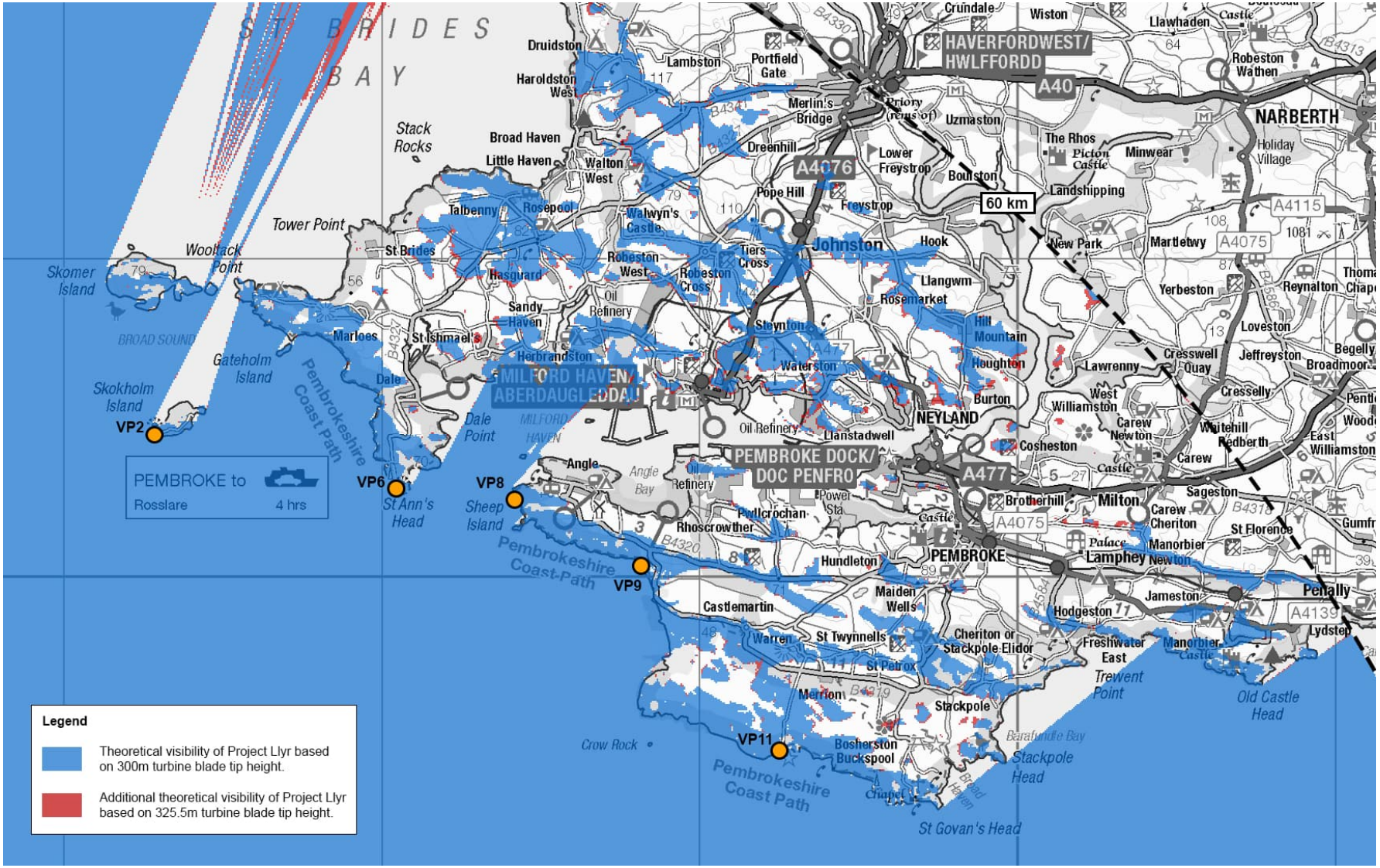


Figure 1: Comparison of ZTV of Project Llŷr at 325.5m and 300m tip heights

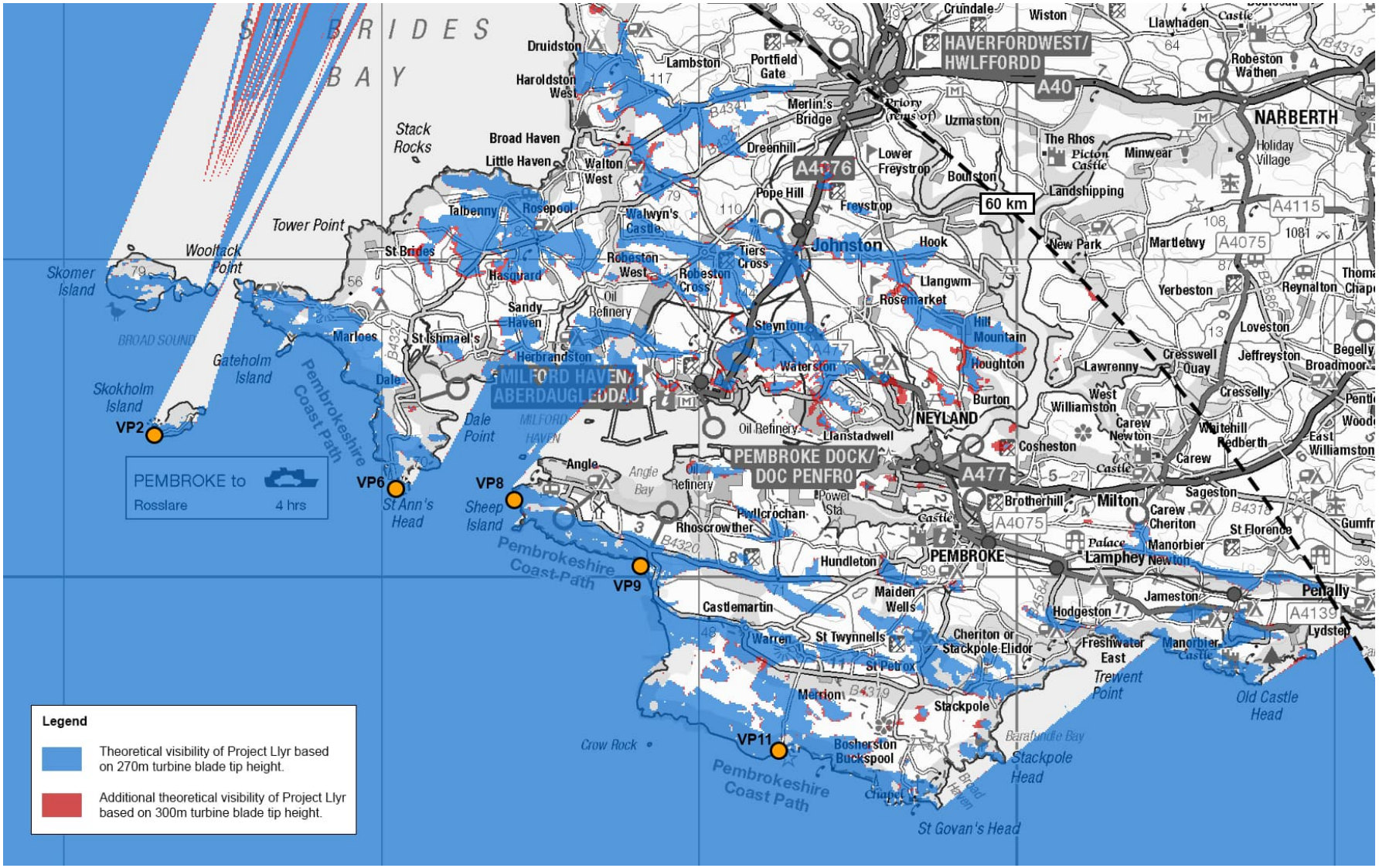
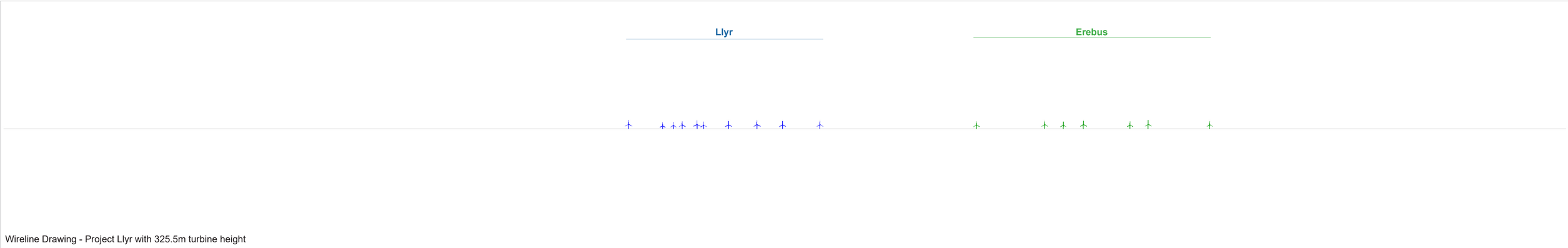
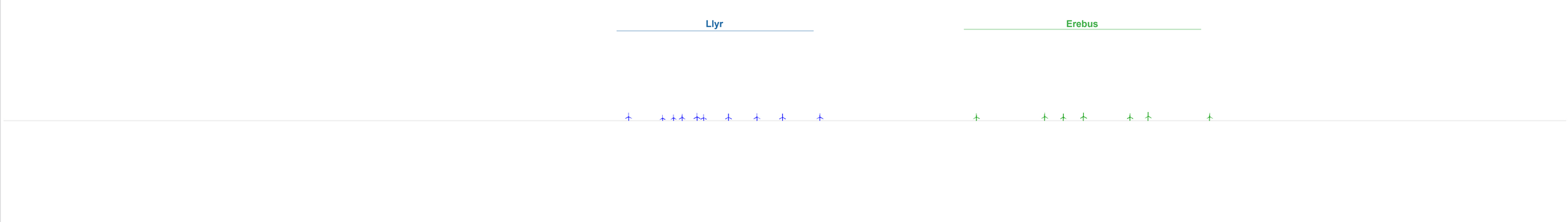


Figure 2: Comparison of ZTV of Project Llŷr at 300m and 270m tip heights



Wireline Drawing - Project Llyr with 325.5m turbine height

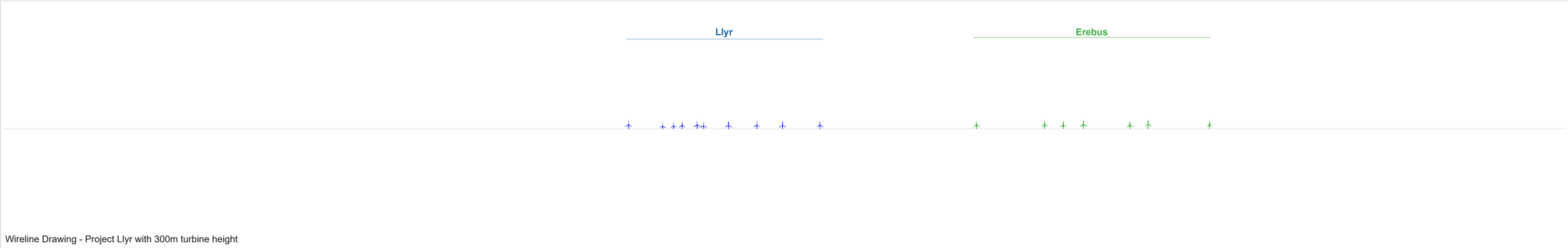


Wireline Drawing - Project Llyr with 300m turbine height

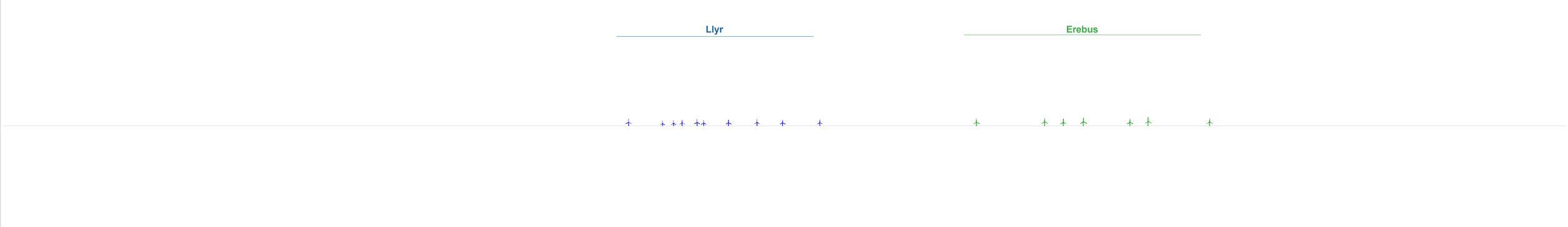
View flat at comfortable arm's length

Figure 3.1 - Comparative Wireline (325.5m and 300m tip heights)
Viewpoint 2: Skokholm Island

OS reference:	172922 E 204555 N	Horizontal field of view:	90° (cylindrical projection)
Eye Level:	37.5m AOD	Principal distance:	522 mm
Direction of view (Llyr):	200°	Paper size:	841 x 297 mm (half A1)
Nearest turbine:	36.0 km	Correct printed image size:	820 x 130mm



Wireline Drawing - Project Llyr with 300m turbine height

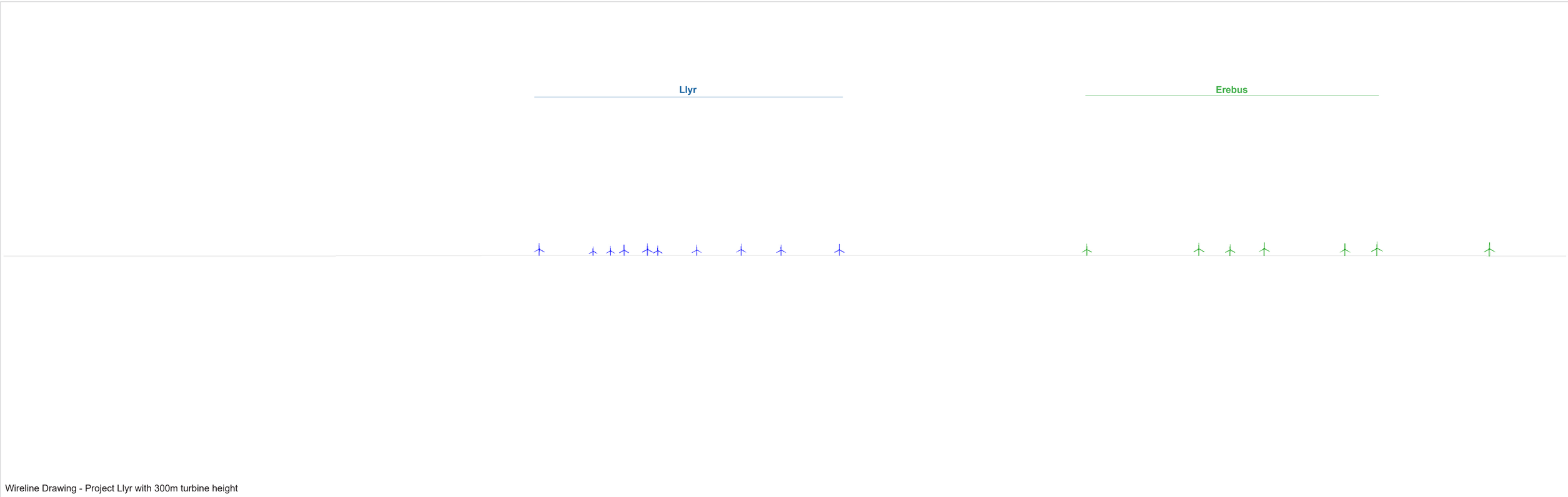


Wireline Drawing - Project Llyr with 270m turbine height

View flat at comfortable arm's length

Figure 3.2 - Comparative Wireline (300m and 270m tip heights)
Viewpoint 2: Skokholm Island

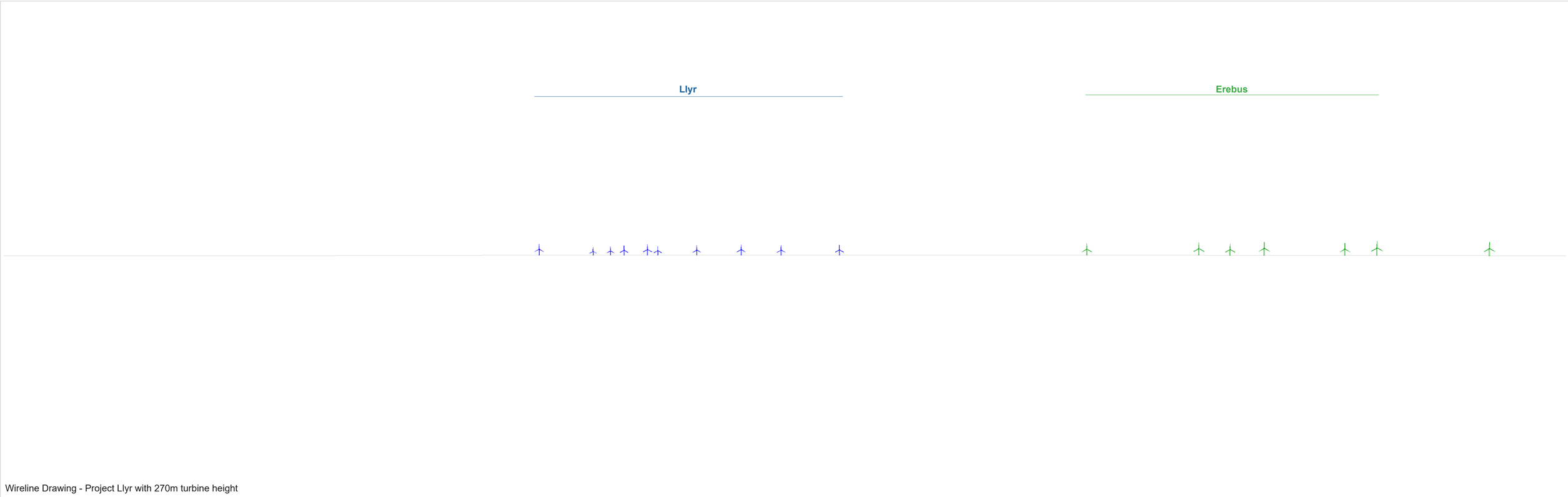
OS reference:	172922 E 204555 N	Horizontal field of view:	90° (cylindrical projection)
Eye Level:	37.5m AOD	Principal distance:	522 mm
Direction of view (Llyr):	200°	Paper size:	841 x 297 mm (half A1)
Nearest turbine:	36.0 km	Correct printed image size:	820 x 130mm



Wireline Drawing - Project Llyr with 300m turbine height

Figure 3.3 - Wireline Drawing
Viewpoint 2: Skokholm Island

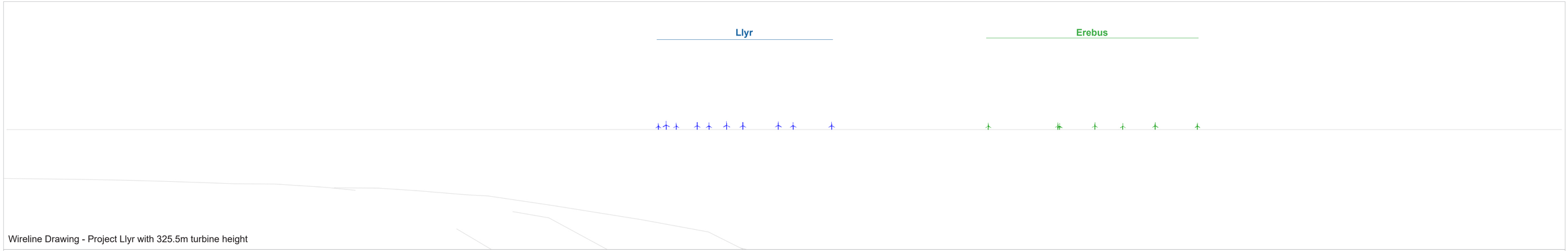
OS reference:	172922 E 204555 N	Horizontal field of view:	53.5° (planar projection)
Eye Level:	37.5m AOD	Principal distance:	812.5 mm
Direction of view (Llyr):	200°	Paper size:	841 x 297 mm (half A1)
Nearest turbine:	36.0 km	Correct printed image size:	820 x 260mm



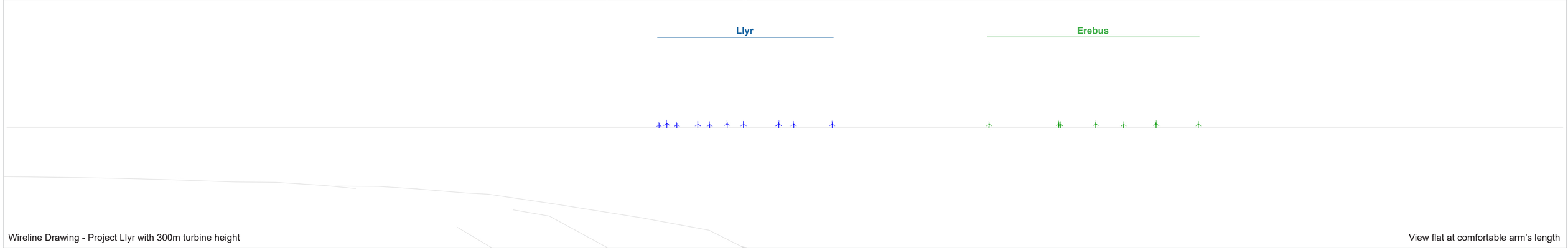
Wireline Drawing - Project Llyr with 270m turbine height

Figure 3.4 - Wireline Drawing
Viewpoint 2: Skokholm Island

OS reference:	172922 E 204555 N	Horizontal field of view:	53.5° (planar projection)
Eye Level:	37.5m AOD	Principal distance:	812.5 mm
Direction of view (Llyr):	200°	Paper size:	841 x 297 mm (half A1)
Nearest turbine:	36.0 km	Correct printed image size:	820 x 260mm



Wireline Drawing - Project Llyr with 325.5m turbine height

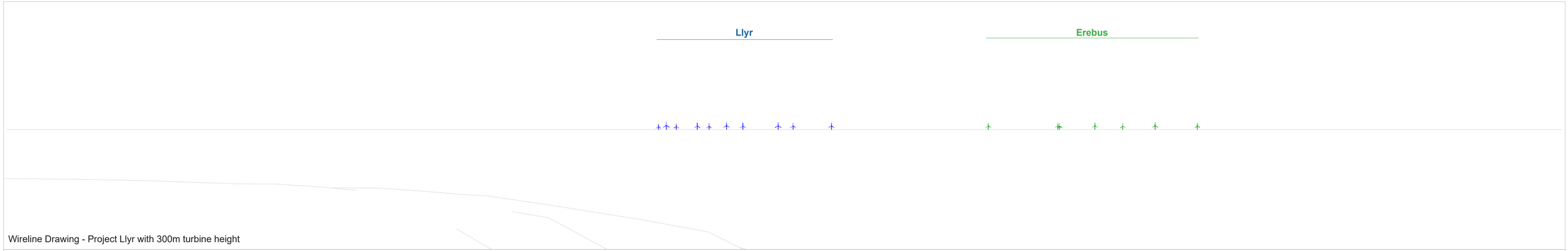


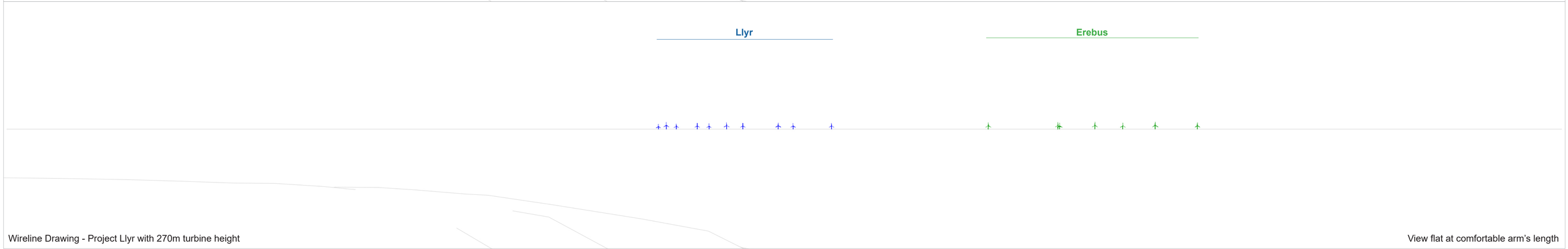
Wireline Drawing - Project Llyr with 300m turbine height

View flat at comfortable arm's length

Figure 4.1 - Comparative Wireline (325.5m and 300m tip heights)
Viewpoint 6: St Ann's Head

OS reference:	180606 E 202868 N	Horizontal field of view:	90° (cylindrical projection)
Eye Level:	46.3m AOD	Principal distance:	522 mm
Direction of view (Llyr):	210°	Paper size:	841 x 297 mm (half A1)
Nearest turbine:	37.3 km	Correct printed image size:	820 x 130mm





View flat at comfortable arm's length

Figure 4.2 - Comparative Wireline (300m and 270m tip heights)
Viewpoint 6: St Ann's Head

OS reference:	180606 E 202868 N	Horizontal field of view:	90° (cylindrical projection)
Eye Level:	46.3m AOD	Principal distance:	522 mm
Direction of view (Llyr):	210°	Paper size:	841 x 297 mm (half A1)
Nearest turbine:	37.3 km	Correct printed image size:	820 x 130mm

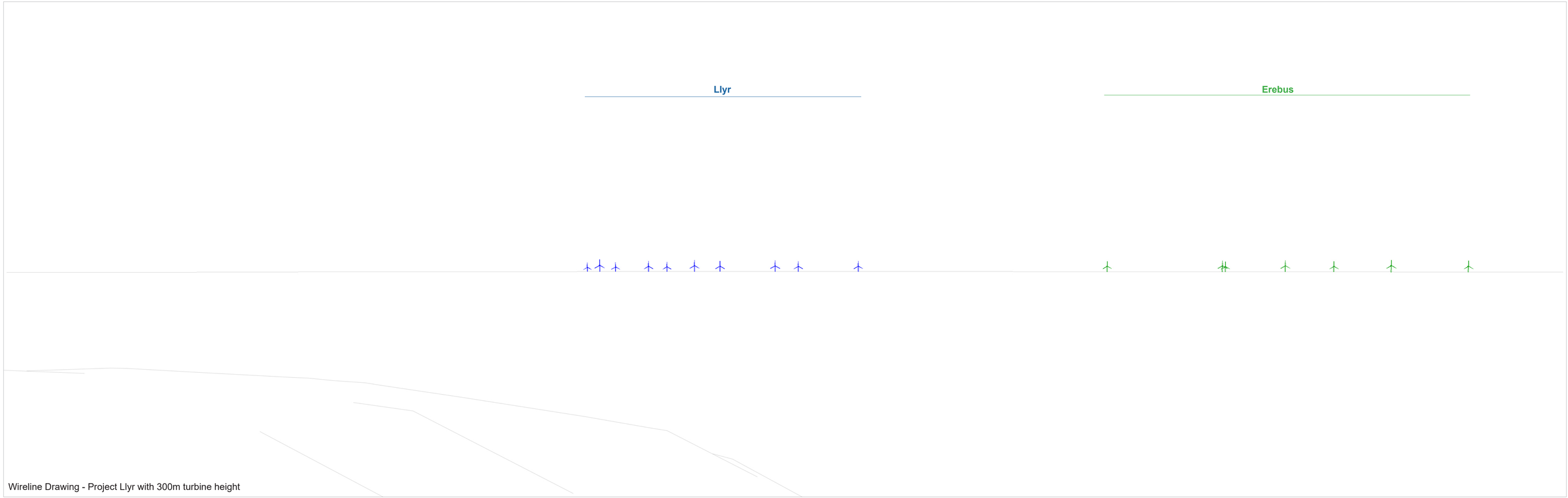


Figure 4.3 - Wireline Drawing
Viewpoint 6: St Ann's Head

OS reference:	180606 E 202868 N	Horizontal field of view:	53.5° (planar projection)
Eye Level:	46.3m AOD	Principal distance:	812.5 mm
Direction of view (Llyr):	210°	Paper size:	841 x 297 mm (half A1)
Nearest turbine:	37.3 km	Correct printed image size:	820 x 260mm

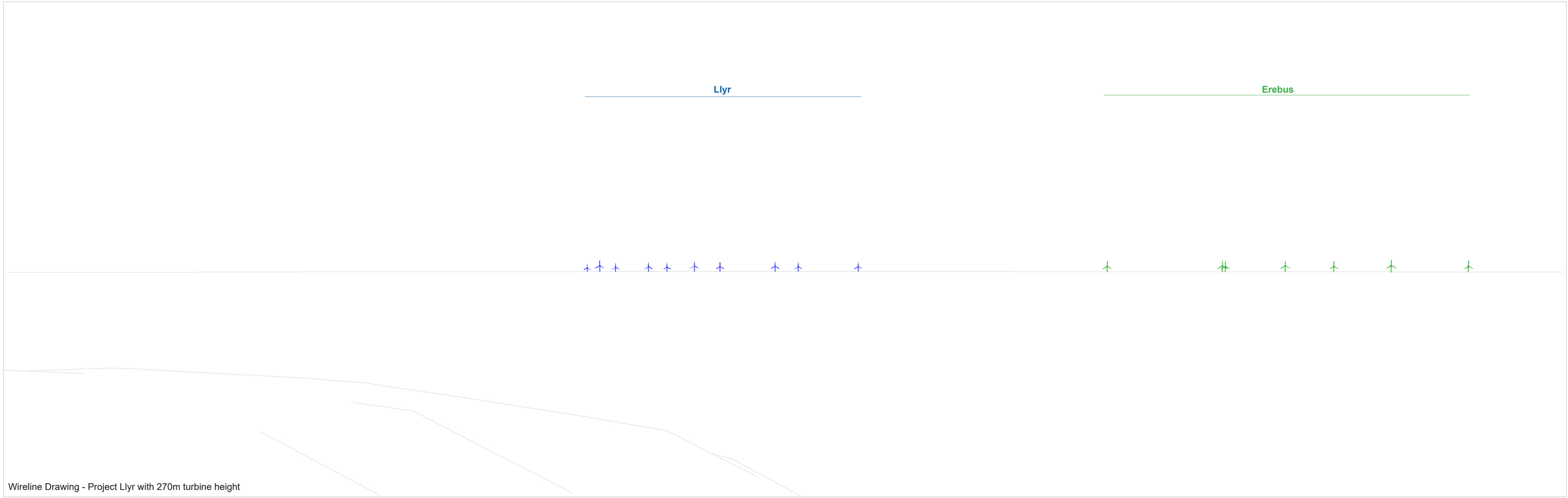
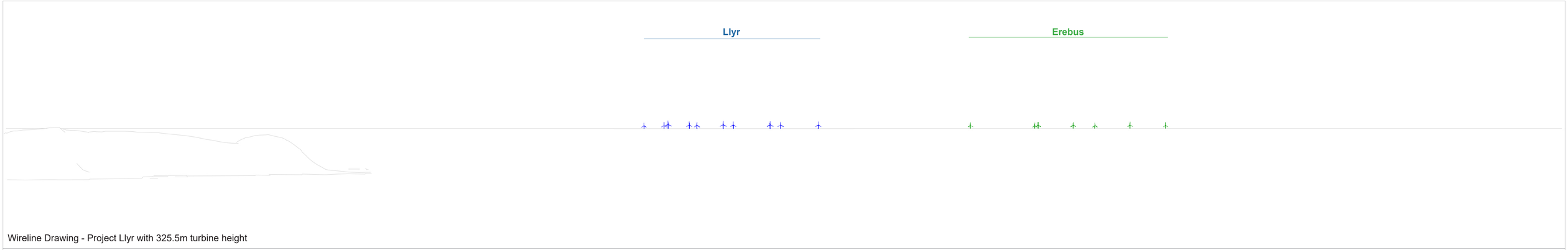
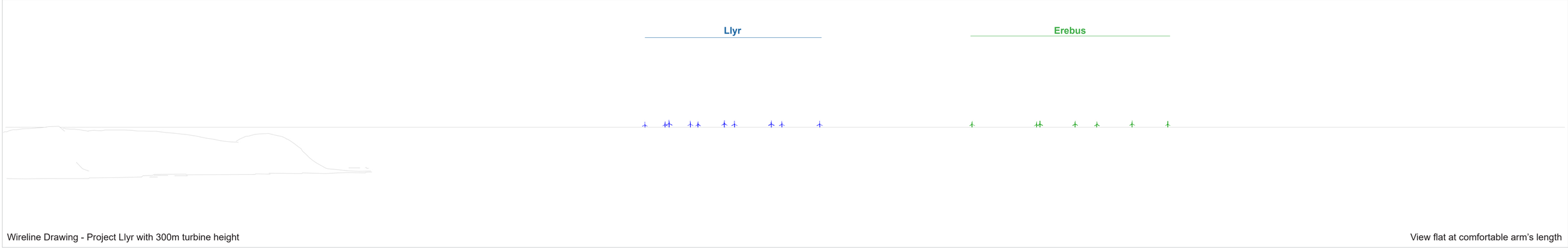


Figure 4.4 - Wireline Drawing
Viewpoint 6: St Ann's Head

OS reference:	180606 E 202868 N	Horizontal field of view:	53.5° (planar projection)
Eye Level:	46.3m AOD	Principal distance:	812.5 mm
Direction of view (Llyr):	210°	Paper size:	841 x 297 mm (half A1)
Nearest turbine:	37.3 km	Correct printed image size:	820 x 260mm



Wireline Drawing - Project Llyr with 325.5m turbine height

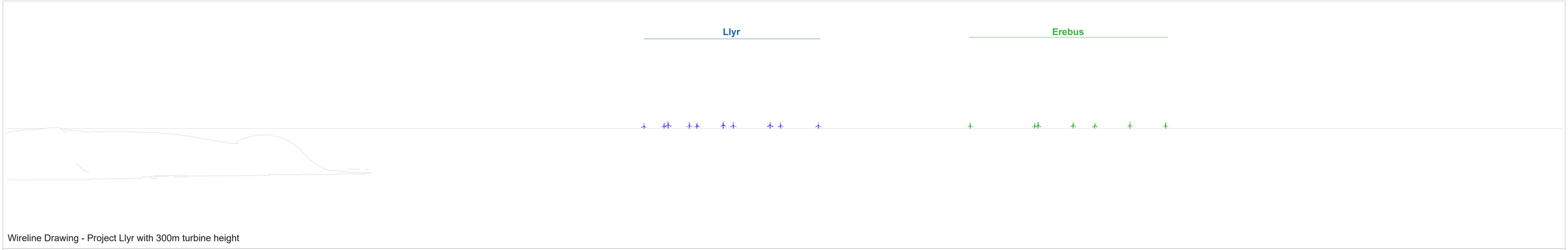


Wireline Drawing - Project Llyr with 300m turbine height

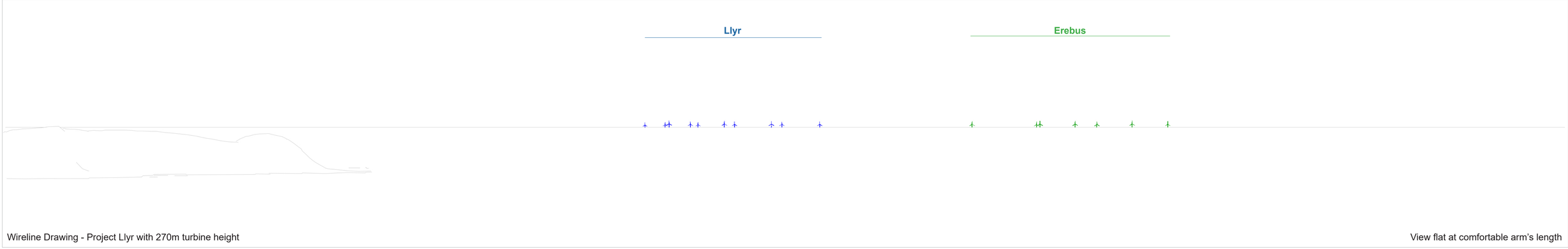
View flat at comfortable arm's length

Figure 5.1 - Comparative Wireline (325.5m and 300m tip heights)
Viewpoint 8: Castles Bay / Sheep Island

OS reference:	184315 E 202434 N	Horizontal field of view:	90° (cylindrical projection)
Eye Level:	40.7m AOD	Principal distance:	522 mm
Direction of view (Llyr):	215°	Paper size:	841 x 297 mm (half A1)
Nearest turbine:	38.8 km	Correct printed image size:	820 x 130mm



Wireline Drawing - Project Llyr with 300m turbine height

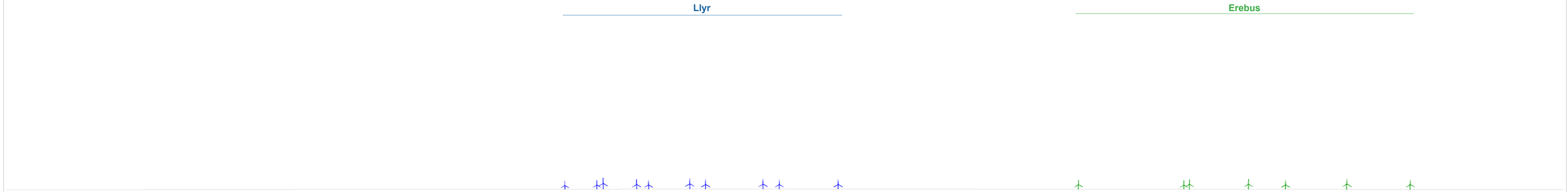


Wireline Drawing - Project Llyr with 270m turbine height

View flat at comfortable arm's length

Figure 5.2 - Comparative Wireline (300m and 270m tip heights)
Viewpoint 8: Castles Bay / Sheep Island

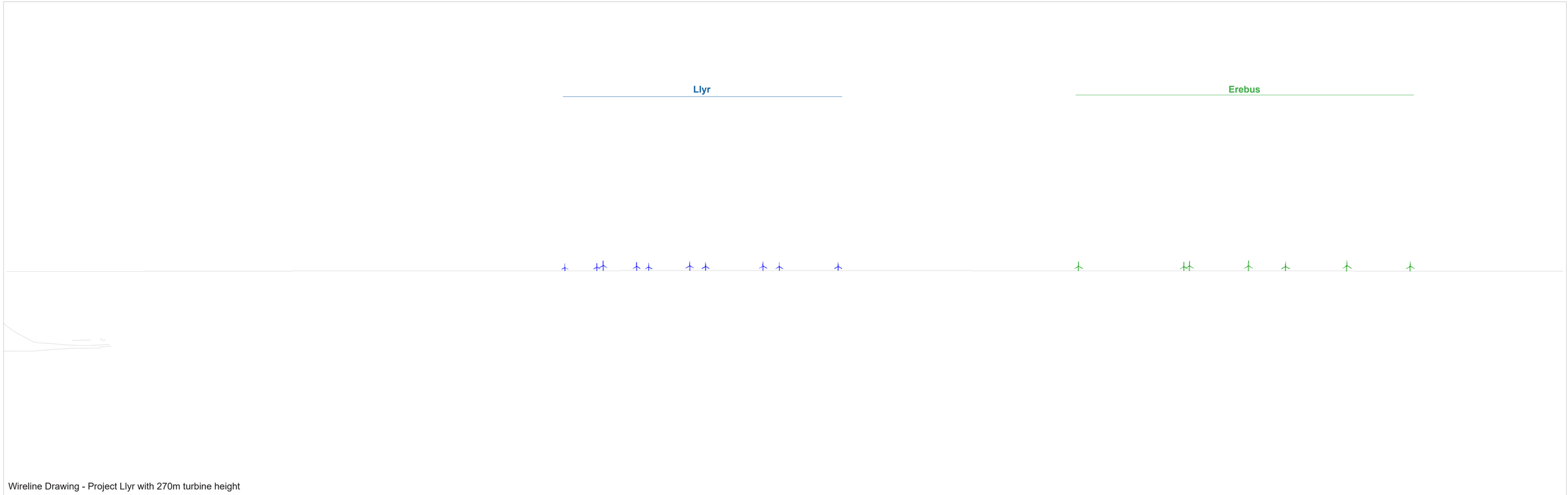
OS reference:	184315 E 202434 N	Horizontal field of view:	90° (cylindrical projection)
Eye Level:	40.7m AOD	Principal distance:	522 mm
Direction of view (Llyr):	215°	Paper size:	841 x 297 mm (half A1)
Nearest turbine:	38.8 km	Correct printed image size:	820 x 130mm



Wireline Drawing - Project Llyr with 300m turbine height

Figure 5.3 - Wireline Drawing
Viewpoint 8: Castles Bay / Sheep Island

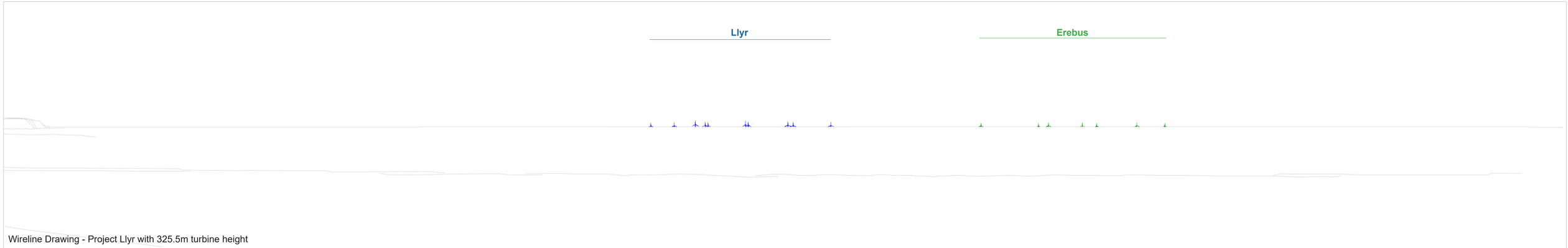
OS reference:	184315 E 202434 N	Horizontal field of view:	53.5° (planar projection)
Eye Level:	40.7m AOD	Principal distance:	812.5 mm
Direction of view (Llyr):	215°	Paper size:	841 x 297 mm (half A1)
Nearest turbine:	38.8 km	Correct printed image size:	820 x 260mm



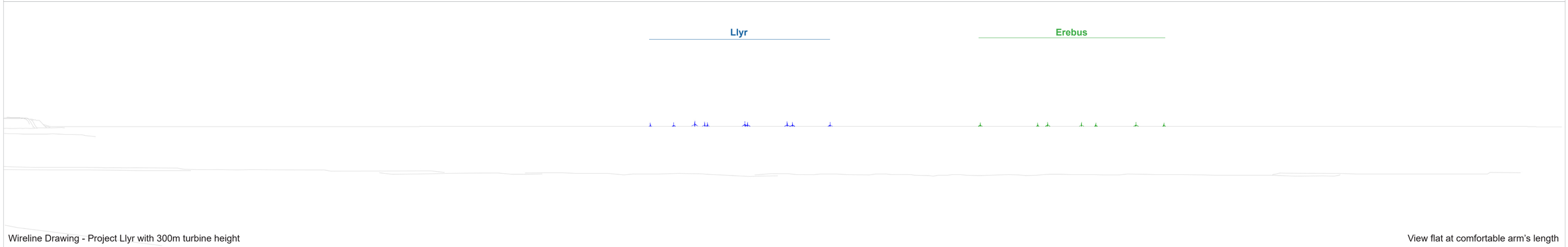
Wireline Drawing - Project Llyr with 270m turbine height

Figure 5.4 - Wireline Drawing
Viewpoint 8: Castles Bay / Sheep Island

OS reference:	184315 E 202434 N	Horizontal field of view:	53.5° (planar projection)
Eye Level:	40.7m AOD	Principal distance:	812.5 mm
Direction of view (Llyr):	215°	Paper size:	841 x 297 mm (half A1)
Nearest turbine:	38.8 km	Correct printed image size:	820 x 260mm



Wireline Drawing - Project Llyr with 325.5m turbine height

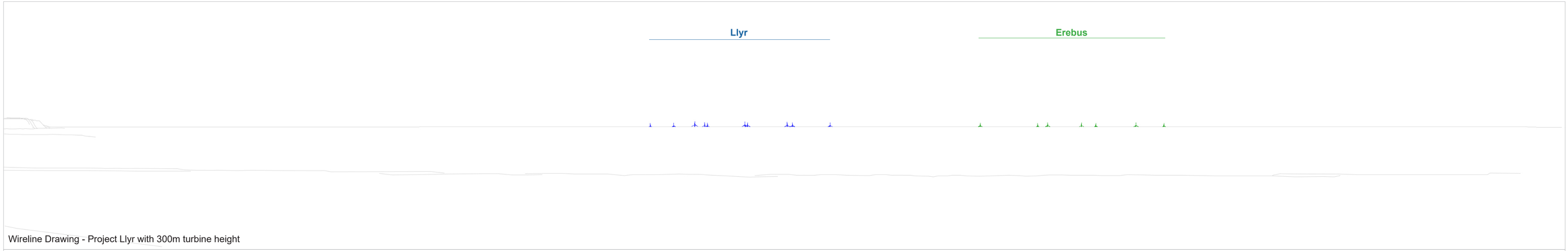


Wireline Drawing - Project Llyr with 300m turbine height

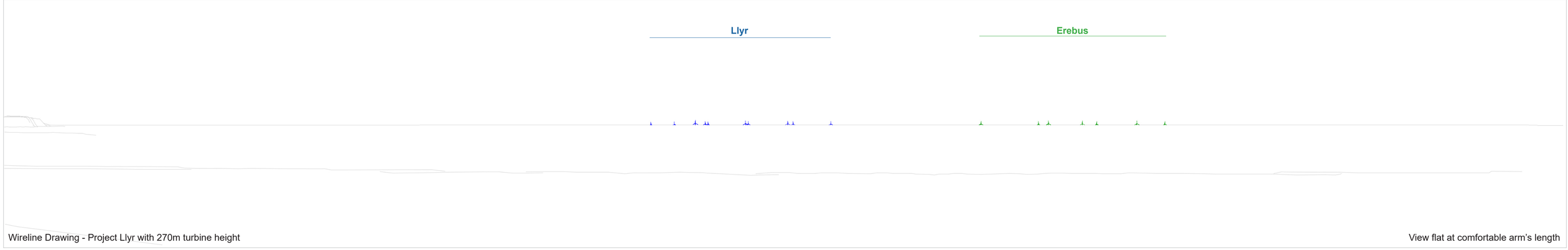
View flat at comfortable arm's length

Figure 6.1 - Comparative Wireline (325.5m and 300m tip heights)
Viewpoint 9: Freshwater West Beach

OS reference:	188260 E 200278 N	Horizontal field of view:	90° (cylindrical projection)
Eye Level:	7.3m AOD	Principal distance:	522 mm
Direction of view (Llyr):	220°	Paper size:	841 x 297 mm (half A1)
Nearest turbine:	36.4 km	Correct printed image size:	820 x 130mm



Wireline Drawing - Project Llyr with 300m turbine height

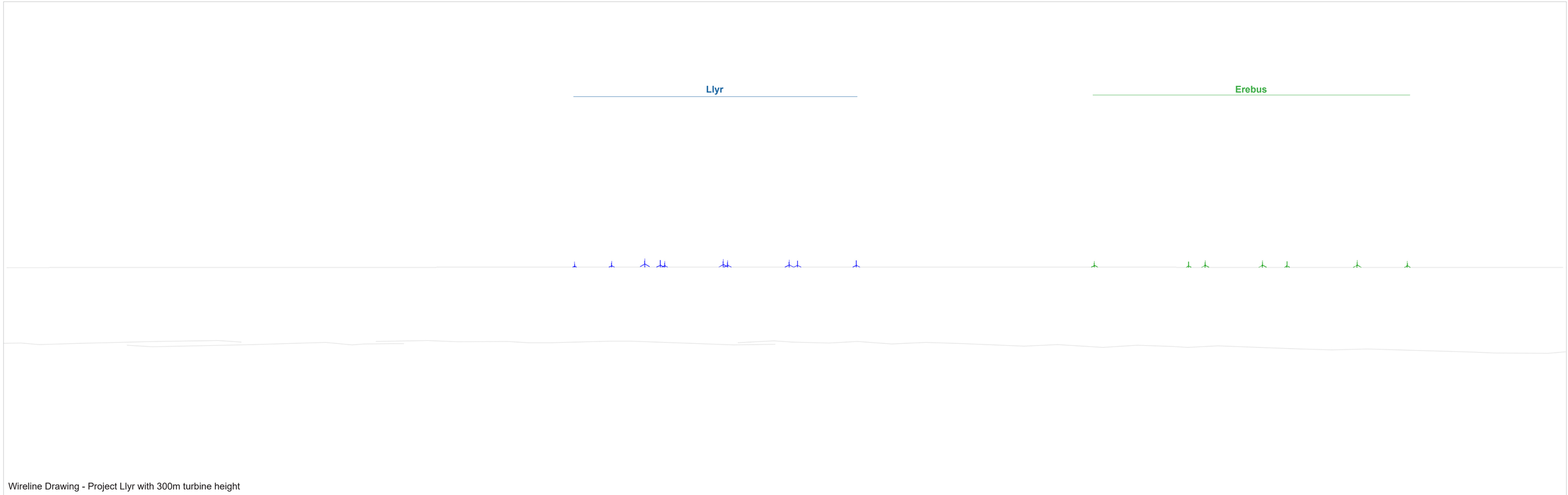


Wireline Drawing - Project Llyr with 270m turbine height

View flat at comfortable arm's length

Figure 6.2 - Comparative Wireline (300m and 270m tip heights)
Viewpoint 9: Freshwater West Beach

OS reference:	188260 E 200278 N	Horizontal field of view:	90° (cylindrical projection)
Eye Level:	7.3m AOD	Principal distance:	522 mm
Direction of view (Llyr):	220°	Paper size:	841 x 297 mm (half A1)
Nearest turbine:	36.4 km	Correct printed image size:	820 x 130mm



Wireline Drawing - Project Llyr with 300m turbine height

Figure 6.3 - Wireline Drawing
Viewpoint 9: Freshwater West Beach

OS reference:	188260 E 200278 N	Horizontal field of view:	53.5° (planar projection)
Eye Level:	7.3m AOD	Principal distance:	812.5 mm
Direction of view (Llyr):	220°	Paper size:	841 x 297 mm (half A1)
Nearest turbine:	36.4 km	Correct printed image size:	820 x 260mm

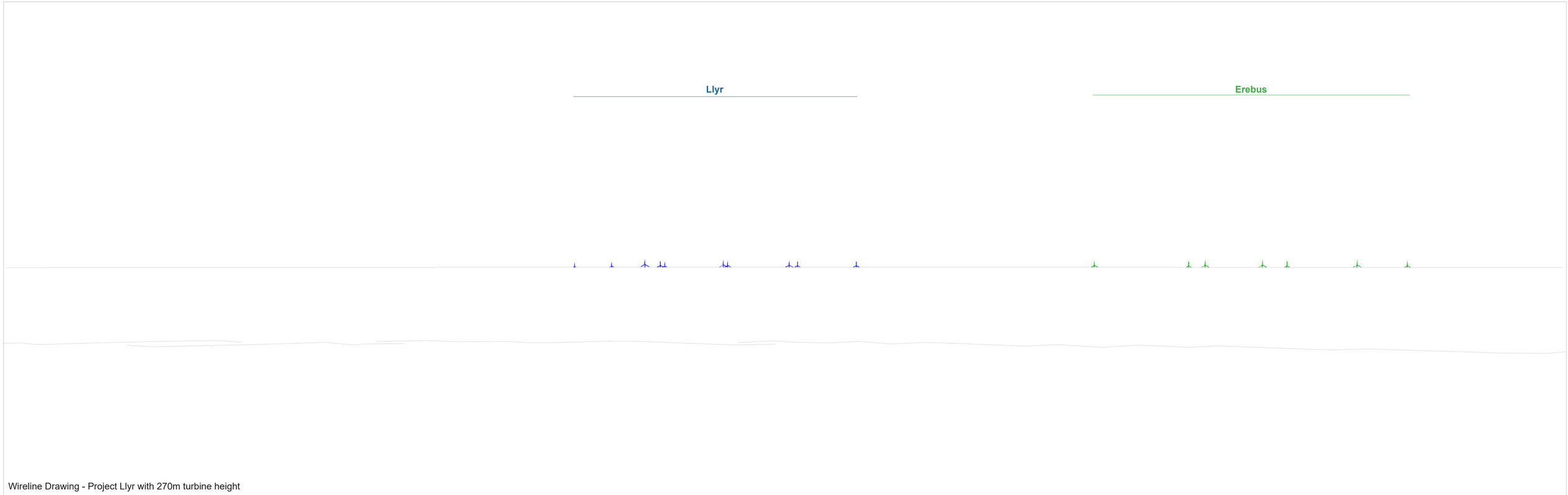


Figure 6.4 - Wireline Drawing
Viewpoint 9: Freshwater West Beach

OS reference:	188260 E 200278 N	Horizontal field of view:	53.5° (planar projection)
Eye Level:	7.3m AOD	Principal distance:	812.5 mm
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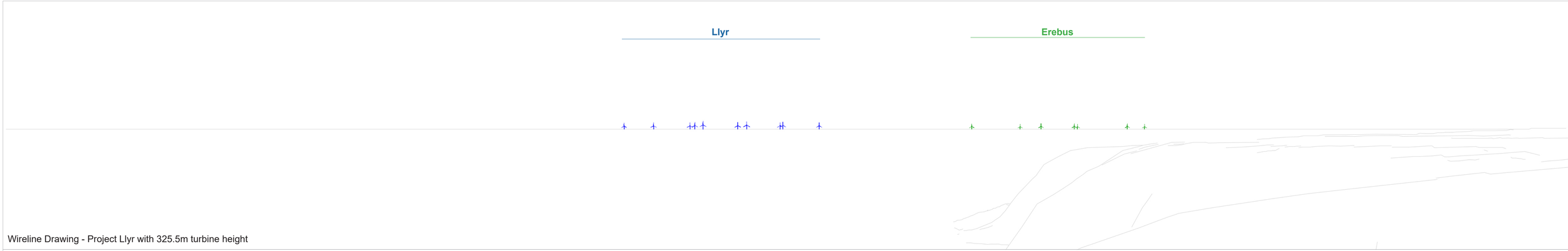
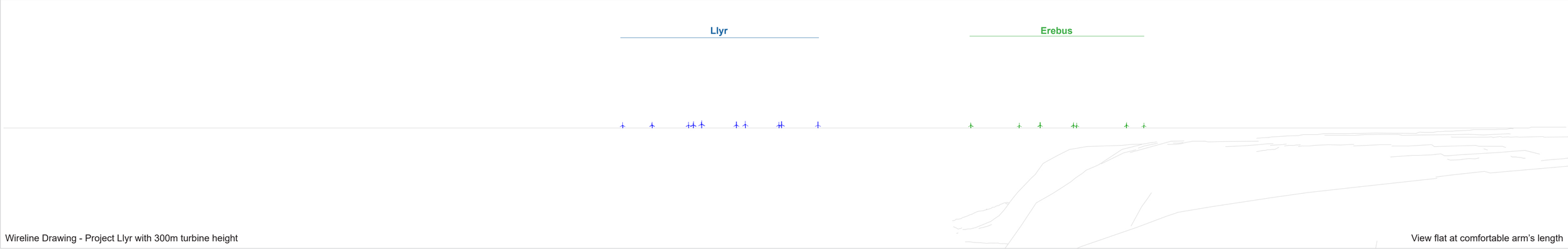


Wireline Drawing - Project Llyr with 325.5m turbine height

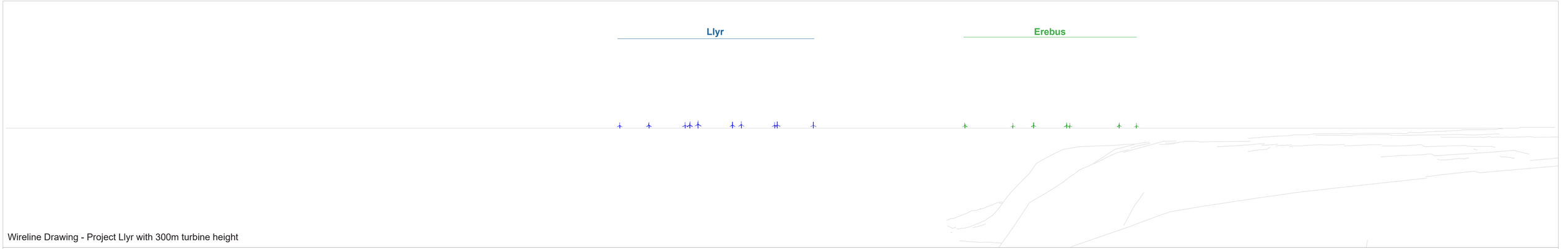


Wireline Drawing - Project Llyr with 300m turbine height

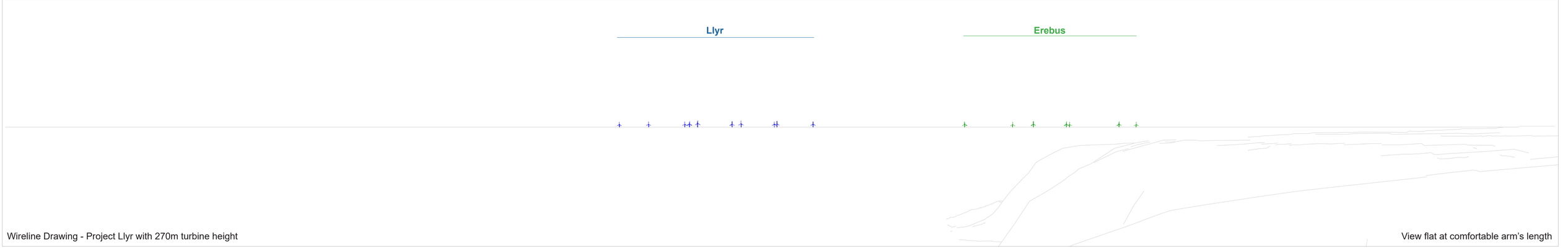
View flat at comfortable arm's length

Figure 7.1 - Comparative Wireline (325.5m and 300m tip heights)
Viewpoint 11: Elegug Stacks

OS reference:	192385 E 194458 N	Horizontal field of view:	90° (cylindrical projection)
Eye Level:	48.725m AOD	Principal distance:	522 mm
Direction of view (Llyr):	230°	Paper size:	841 x 297 mm (half A1)
Nearest turbine:	38.2 km	Correct printed image size:	820 x 130mm



Wireline Drawing - Project Llyr with 300m turbine height

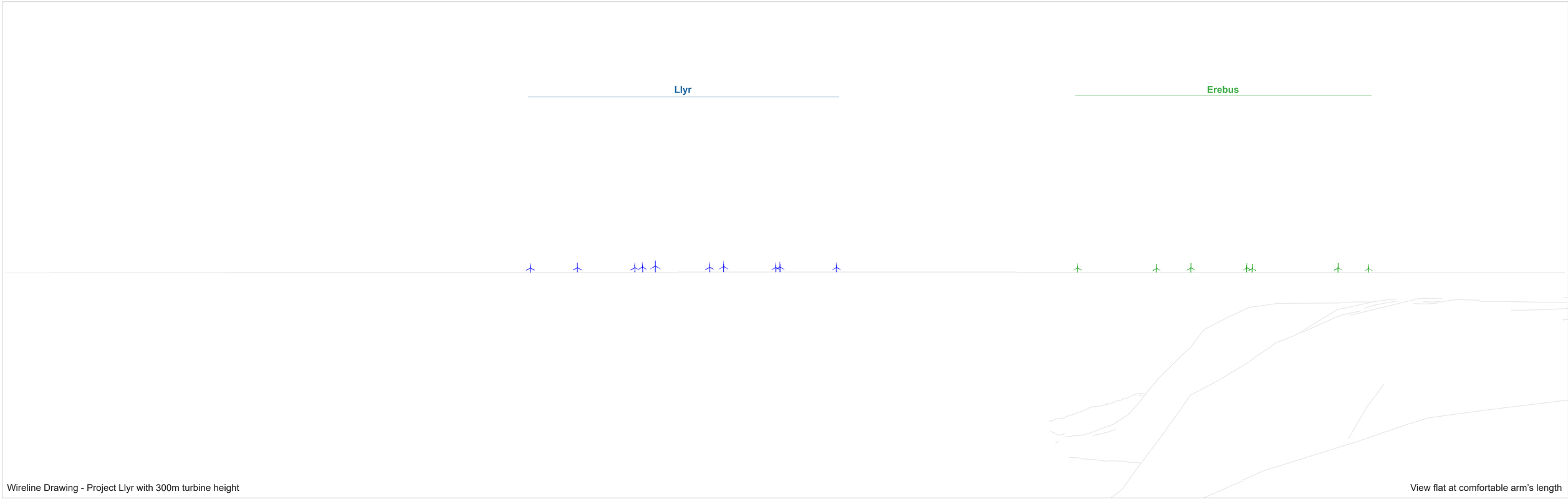


Wireline Drawing - Project Llyr with 270m turbine height

View flat at comfortable arm's length

Figure 7.2 - Comparative Wireline (300m and 270m tip heights)
Viewpoint 11: Elegug Stacks

OS reference:	192385 E 194458 N	Horizontal field of view:	90° (cylindrical projection)
Eye Level:	48.725m AOD	Principal distance:	522 mm
Direction of view (Llyr):	230°	Paper size:	841 x 297 mm (half A1)
Nearest turbine:	38.2 km	Correct printed image size:	820 x 130mm

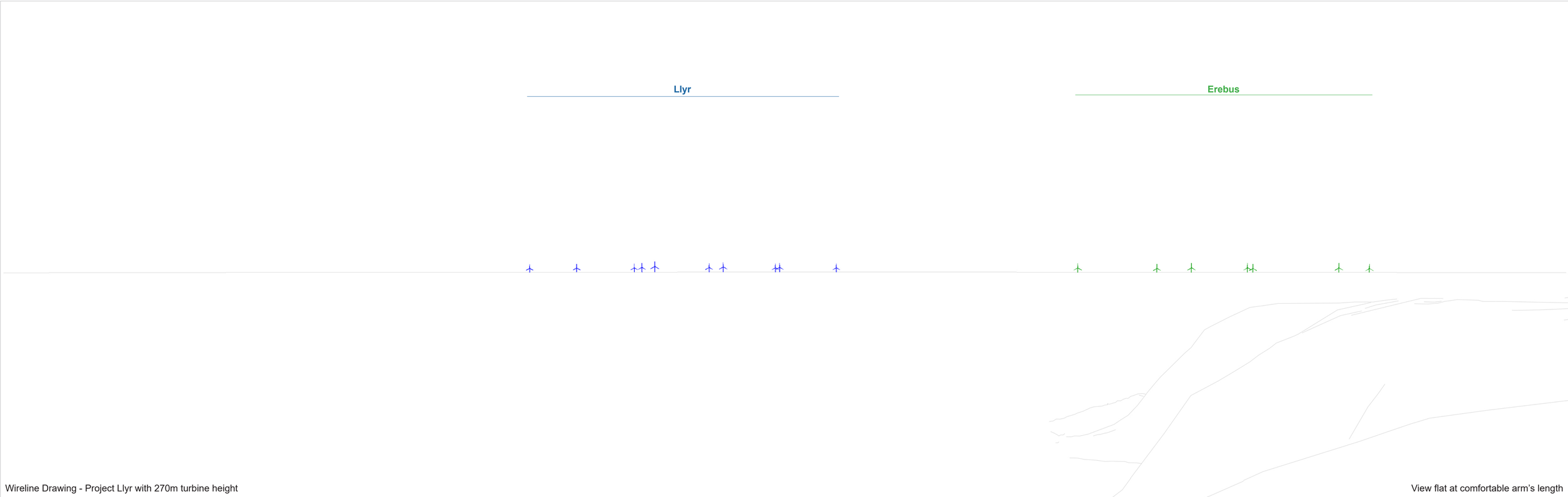


Wireline Drawing - Project Llyr with 300m turbine height

View flat at comfortable arm's length

Figure 7.3 - Wireline Drawing
Viewpoint 11: Elegug Stacks

OS reference:	192385 E 194458 N	Horizontal field of view:	53.5° (planar projection)
Eye Level:	48.725m AOD	Principal distance:	812.5 mm
Direction of view (Llyr):	230°	Paper size:	841 x 297 mm (half A1)
Nearest turbine:	38.2 km	Correct printed image size:	820 x 260mm



Wireline Drawing - Project Llyr with 270m turbine height

View flat at comfortable arm's length

Figure 7.4 - Wireline Drawing
Viewpoint 11: Elegug Stacks

OS reference:	192385 E 194458 N	Horizontal field of view:	53.5° (planar projection)
Eye Level:	48.725m AOD	Principal distance:	812.5 mm
Direction of view (Llyr):	230°	Paper size:	841 x 297 mm (half A1)
Nearest turbine:	38.2 km	Correct printed image size:	820 x 260mm

07 November 2025

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

As requested by NRW (A) on the call held on Friday 2nd May, we – the Llŷr applicant – have collated cumulative / in-combination figures for EIA and HRA 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.

Further to the call held with JNCC on 17 September 2025, we have updated this note to include the PVA output tables from these two Mona reports. We have not carried out any independent quality assurance or third-party review of impact estimates derived from Mona's 'gap-filling exercise' nor their PVA modelling.

NRW (A) have already confirmed their acceptance of the Mona figures, and the Mona project consent is based on this information, therefore acting as the legally agreed baseline for cumulative impact assessment going forward. We confirm that we agree with NRW(A) on the Mona collation, as referenced below, alongside the supplementary assessment provided by NRW (A) in Appendix 1 (EIA) and Appendix 2 (HRA) their response to NRW-MLT, dated 29 July 2025. The NRW (A)'s in-combination mortality calculations and the NRW (A) 's in combination mortality calculations are reproduced in Appendix 1 of this clarification note.

We concur with NRW (A)'s conclusion that there will be no adverse impact on site integrity (Table 6) from project Llŷr, alone or in-combination, against any of the SPA breeding seabird populations in question. The applicant also concurs with NRW (A)'s conclusions that there will be no significant impacts under EIA against any regional seabird populations (Table 4).

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

At JNCC's request from the call held on 17 September 2025, these PVA output tables are presented below:

Table 5-87: PVA outputs for common guillemot CEA.

Year	Impact scenario	Median adult population size	Population change (%) since 2017	Median growth rate	2.5 percentile of growth rate	97.5 percentile of growth rate	Median CPS	Median CGR
2030	Baseline	1,685,359	2.72	1.027	0.955	1.092	-	-
	Impact (Scenario A)	1,685,270	2.68	1.027	0.955	1.091	1.000	1.000
	Impact (Scenario B)	1,685,202	2.65	1.027	0.955	1.091	0.999	0.999
	Impact (Scenario C)	1,672,311	1.92	1.019	0.947	1.084	0.992	0.992
2065	Baseline	4,138,135	151.65	1.026	1.017	1.034	-	-
	Impact (Scenario A)	4,083,497	148.17	1.026	1.017	1.034	0.986	1.000
	Impact (Scenario B)	4,048,656	146.28	1.025	1.017	1.033	0.979	0.999
	Impact (Scenario C)	3,134,554	90.50	1.018	1.009	1.026	0.757	0.992

Table 5-95: PVA outputs for razorbill CEA.

Year	Impact scenario	Median adult population size	Population change (%) since 2017	Median growth rate	2.5 percentile of growth rate	97.5 percentile of growth rate	Median CPS	Median CGR
2030	Baseline	701,018	1.63	1.016	0.896	1.096	-	-
	Impact (Scenario A)	701,050	1.61	1.016	0.896	1.095	1.000	1.000
	Impact (Scenario B)	700,652	1.59	1.016	0.895	1.095	1.000	1.000
	Impact (Scenario C)	699,439	1.35	1.014	0.894	1.093	0.997	0.997
2065	Baseline	957,341	38.64	1.009	0.992	1.025	-	-
	Impact (Scenario A)	953,183	37.90	1.009	0.992	1.025	0.994	1.000
	Impact (Scenario B)	950,308	37.47	1.009	0.992	1.025	0.992	1.000
	Impact (Scenario C)	871,000	26.19	1.006	0.989	1.022	0.910	0.997

Table 5-126: PVA outputs for lesser black-backed gull CEA.

Year	Impact scenario	Median adult population size	Population change (%) since 2015	Median growth rate	2.5 percentile of growth rate	97.5 percentile of growth rate	Median CPS	Median CGR
2030	Baseline	223,566	-1.54%	0.985	0.859	1.206	-	-
2030	Impact (Scenario A)	223,271	-1.63%	0.984	0.858	1.204	0.999	0.999
2030	Impact (Scenario B)	223,177	-1.70%	0.983	0.858	1.205	0.999	0.999
2065	Baseline	183,729	-17.88%	0.995	0.972	1.017	-	-
2065	Impact (Scenario A)	176,802	-20.88%	0.994	0.971	1.016	0.962	0.999
2065	Impact (Scenario B)	174,610	-21.87%	0.993	0.971	1.015	0.950	0.999

Table 5-120: PVA outputs for great black-backed gull CEA.

Year	Impact scenario	Median adult population size	Population change (%) since 2017	Median growth rate	2.5 percentile of growth rate	97.5 percentile of growth rate	Median CPS	Median CGR
2030	Baseline	106,348	12.72%	1.127	1.058	1.195	-	-
2030	Impact (Scenario A)	106,167	12.55%	1.125	1.057	1.193	0.999	0.998
2030	Impact (Scenario B)	105,180	11.54%	1.115	1.046	1.183	0.990	0.990
2065	Baseline	6,830,545	7151.07%	1.126	1.120	1.133	-	-
2065	Impact (Scenario A)	6,466,720	6765.40%	1.125	1.118	1.131	0.947	0.998
2065	Impact (Scenario B)	4,702,469	4891.86%	1.115	1.108	1.121	0.688	0.990

As previously noted in the original clarification note 3, our review of these counterfactual metrics – the counterfactual of growth rate (CGR) and the counterfactual of population size (CPS) – does not indicate that there is any cause for concern for any of these regional seabird populations from cumulative offshore wind impacts, except perhaps great black-backed gull at the highest modelled impact scenario (scenario B). This has been confirmed by NRW (A) in their conclusions on EIA significance (**Table 3** below).

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.

NRW (A)'s conclusions on **herring gull** are also 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

At JNCC's request from the call held on 17 September 2025, these PVA output tables have been extracted and are presented overleaf:

Table 1.143: PVA outputs for common guillemot from Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro.

Year	Impact scenario	Median adult population size	Population change (%) since 2024	Median growth rate	2.5 percentile of growth rate	97.5 percentile of growth rate	Median CPS	Median CGR
2030	Baseline	46,113	2.67%	1.027	0.952	1.092	-	-
2030	70% displacement and 10% mortality	45,827	2.03%	1.020	0.945	1.086	0.994	0.994
2030	70% displacement and 2% mortality	46,062	2.56%	1.026	0.951	1.091	0.999	0.999
2065	Baseline	112,672	151.23%	1.026	1.017	1.034	-	-
2065	70% displacement and 10% mortality	88,628	97.43%	1.019	1.010	1.027	0.786	0.993
2065	70% displacement and 2% mortality	107,544	139.59%	1.025	1.016	1.033	0.953	0.999

Table 1.158: PVA outputs for razorbill from Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA.

Year	Impact scenario	Median adult population size	Population change (%) since 2013	Median growth rate	2.5 percentile of growth rate	97.5 percentile of growth rate	Median CPS	Median CGR
2030	Baseline	14,023	16.83%	1.022	0.840	1.129	-	-
2030	70% displacement and 10% mortality	13,970	16.40%	1.018	0.837	1.126	0.997	0.997
2065	Baseline	19,205	60.01%	1.009	0.992	1.025	-	-
2065	70% displacement and 10% mortality	17,033	41.92%	1.006	0.988	1.022	0.885	0.997

Table 1.151: PVA outputs for Manx shearwater from Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA.

Year	Impact scenario	Median adult population size	Population change (%) since 2018	Median growth rate	2.5 percentile of growth rate	97.5 percentile of growth rate	Median CPS	Median CGR
2030	Baseline	1,033,392	2.59%	1.026	0.805	1.165	-	-
2030	70% displacement and 10% mortality	1,031,439	2.38%	1.024	0.803	1.163	0.998	0.998
2065	Baseline	1,502,390	47.99%	1.011	0.991	1.030	-	-
2065	70% displacement and 10% mortality	1,400,686	38.10%	1.009	0.989	1.028	0.932	0.998

Table 1.132: PVA outputs for black-legged kittiwake Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA

Year	Impact scenario	Median adult population size	Population change (%) since 2022	Median growth rate	2.5 percentile of growth rate	97.5 percentile of growth rate	Median CPS	Median CGR
2030	Baseline	3,189	1.51	1.015	0.810	1.164	-	-
2030	Collisions only	3,173	1.18	1.012	0.809	1.159	0.997	0.996
2030	30% displacement and 3% mortality plus collisions	3,181	1.21	1.012	0.808	1.159	0.995	0.996
2030	70% displacement and 10% mortality plus collisions	3,162	0.79	1.008	0.805	1.156	0.993	0.993
2065	Baseline	3,490	11.16	1.003	0.981	1.022	-	-
2065	Collisions only	3,012	-4.01	0.999	0.977	1.018	0.865	0.996
2065	30% displacement and 3% mortality plus collisions	2,968	-5.91	0.998	0.977	1.018	0.851	0.996
2065	70% displacement and 10% mortality plus collisions	2,685	-14.70	0.996	0.974	1.015	0.768	0.993

Table 1.147: PVA outputs for northern gannet from Grassholm SPA.

Year	Impact scenario	Median adult population size	Population change (%) since 2015	Median growth rate	2.5 percentile of growth rate	97.5 percentile of growth rate	Median CPS	Median CGR
2030	Baseline	86,645	2.03%	1.020	0.913	1.085	-	-
2030	80% displacement and 10% mortality plus collisions (no macro-avoidance)	86,311	1.67%	1.017	0.909	1.082	0.996	0.996
2065	Baseline	131,362	55.39%	1.012	1.001	1.023	-	-
2065	80% displacement and 10% mortality plus collisions (no macro-avoidance)	114,832	35.38%	1.008	0.997	1.019	0.873	0.996

As previously noted in the original clarification note 3, our review of these counterfactual metrics – CGR and CPS – does not indicate that there is any cause for concern for the guillemot, razorbill, Manx shearwater, or kittiwake populations at SSSP SPA from cumulative offshore wind impacts, nor for the gannet population at Grassholm SPA. Also, note that HPAI was discussed in some depth in the submitted **Llŷr ES Volume 3, Chapter 22 Marine Ornithology,** paragraphs 146 – 148.

Therefore, we concur with NRW (A)'s conclusions that there would be **no 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**).

Table 5 – NRW (A) conclusions under marine ornithological HRA

Species	NRW advice on marine ornithological HRA conclusions	
	Llŷr project alone[1]	Cumulative impacts from all plans & projects incl. Llŷr [2]
Grassholm SPA		
Gannet, collision	No AEoSI	No AEoSI
Gannet, displacement	No AEoSI	No AEoSI
Gannet, collision + displacement	No AEoSI	No AEoSI
Skomer, Skokholm and Seas off Pembrokeshire (SSSP) SPA		
Kittiwake, collision	No AEoSI	No AEoSI
Lesser black-backed gull, collision	No AEoSI	No AEoSI
Herring gull, collision[3]	*No AEoSI*	*No AEoSI*
Great black-backed gull, collision[3]	*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

[3] Herring gull and great black-backed gull are included in Table 5 for completeness, although neither species required assessment at Llŷr under HRA.

We provided our original clarification note 1 on cumulative / in-combination impacts on 28 March 2025, supported by the stakeholder gap analysis spreadsheet. At the meeting held with NRW (A) to discuss these matters on 1 May 2025, they requested that we give further consideration to cumulative impacts in relation to **lesser black-backed gull** and **puffin** as they had not required PVA in respect of the Mona application. We provided this consideration in the original clarification note 3, dated 21 May 2025 and this allowed NRW (A) to conclude their advice as confirmed in their final response on Llŷr, dated 29 July 2025.

Following the meeting with JNCC on 17 September 2025, we reiterate the information we have previously provided for these two species, supported by the following two figures:

- **Figure 1** mapping the location of the developments considered under cumulative HRA as presented in **Appendix 8E: HRA RIAA** of the submitted Llŷr project application.
- **Figure 2** providing a plot of the 'at sea' distance calculation between SSSP and Mona, produced in support of this clarification note 3.

Lesser black-backed gull (LBBG)

Within the EIA, the estimate of LBBG collision mortality is **1.93 for Llŷr project-alone** and **1.92 for Mona project alone.** For HRA, the colony-apportioned impact estimate for Llŷr project-alone against the LBBG population at SSSP SPA is **1.1 birds**. This mortality estimate is well below the advised PVA threshold of a <1% change in baseline mortality, this being 19 birds as noted in Table 22-4 of **Llŷr ES Appendix 22E Marine Ornithology Impact Scenarios**.

As advised in the original clarification note 3, the offshore wind farms in Liverpool Bay, including Mona, lie at the outer reaches of LBBG foraging range and so the apportioned level of breeding season mortality is well below the 1% threshold.

The cumulative non-breeding season mortality estimates from offshore wind projects within the BDMPS[1] (Furness, 2015) is the same in all project assessments as it is based on a weighting derived from the SPA population size as a proportion of the BDMPS population size. The assumption for Llŷr therefore remains the same as that for Mona, that (annual) cumulative impacts within the wider BDMPS remain below a 1% change in baseline mortality.

This 1% change in baseline mortality (to determine PVA requirements) is the threshold that both NRW (A) and JNCC advised us to work to throughout the pre-application dialogue for our project submission. It was first set out in NRW (A) advice dated 5 April 2023, adopted for the threshold calculations we presented in the information note sent to NRW (A) and JNCC on 15 August 2023, and discussed together at the stakeholder meeting held the following day, 16 August 2023.

NRW (A) have already concluded **no AEoSI** alone or in-combination for LBBG at SSSP SPA, based on the information provided to date, and the applicant concurs with this conclusion.

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**. As set out in the project application, Llŷr modelled the population consequence of a 'worst-case' annual cumulative impact of 111.63 puffin mortalities against the SSSP SPA population.

Checking Mona, this figure of ~111 puffin is equivalent to that for total annual mortalities of this species from all cumulative offshore wind farm development that NRW (A) and JNCC wished assessed; based on matrix outputs with a displacement rate of 60% and the mortality rate of 2% which NRW (A) have been using to base their conclusions on – Table 5-99 of **Mona deadline 7 ES Cumulative Assessments, REP7-033, Section 5.9**.

As set out in their response, NRW (A) conclude **no AEoSI** for Llŷr project-alone or in-combination against the puffin population at SSSP SPA, and we concur with this advice.

[1] BDMP = biologically defined minimum population scale

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

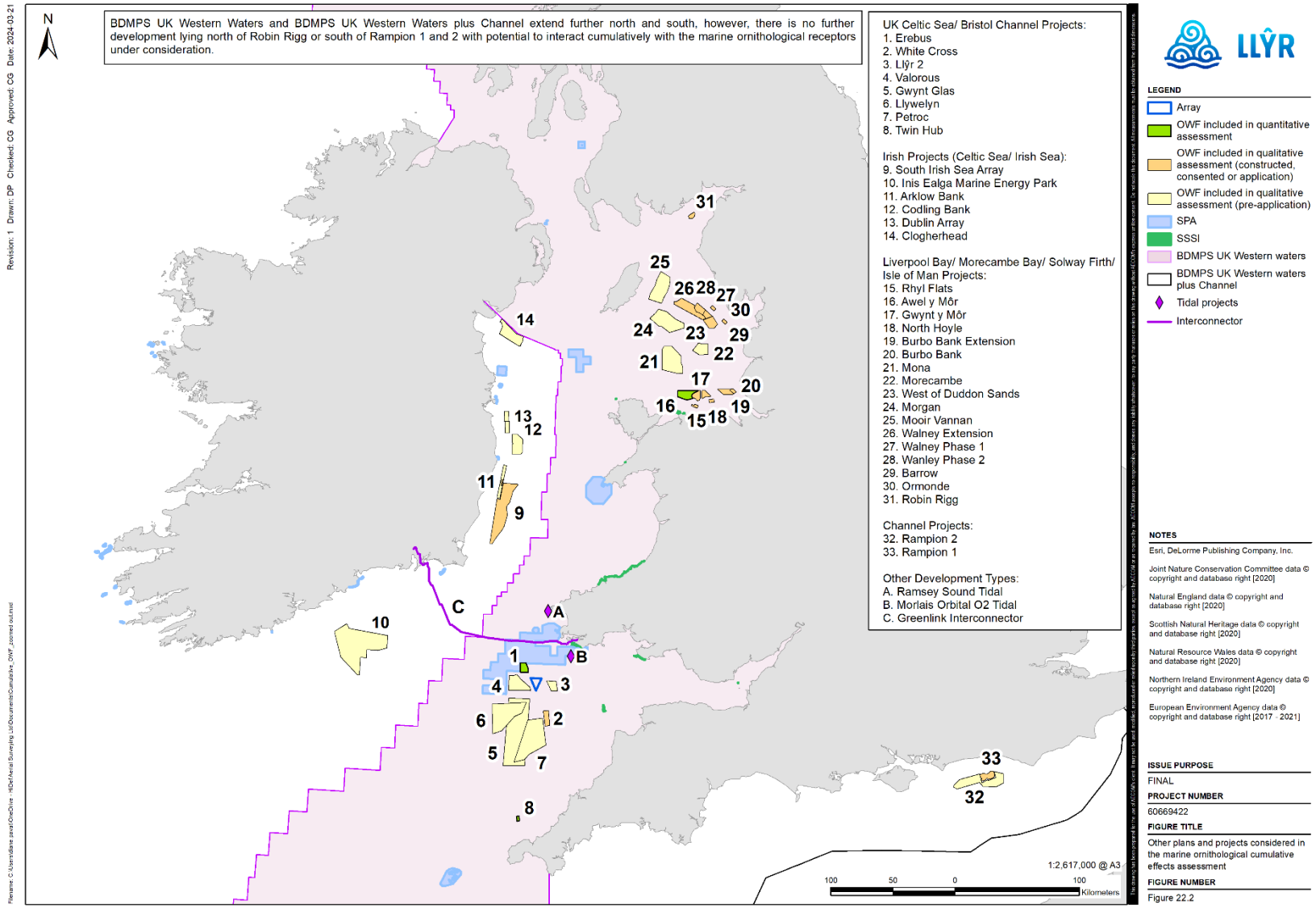
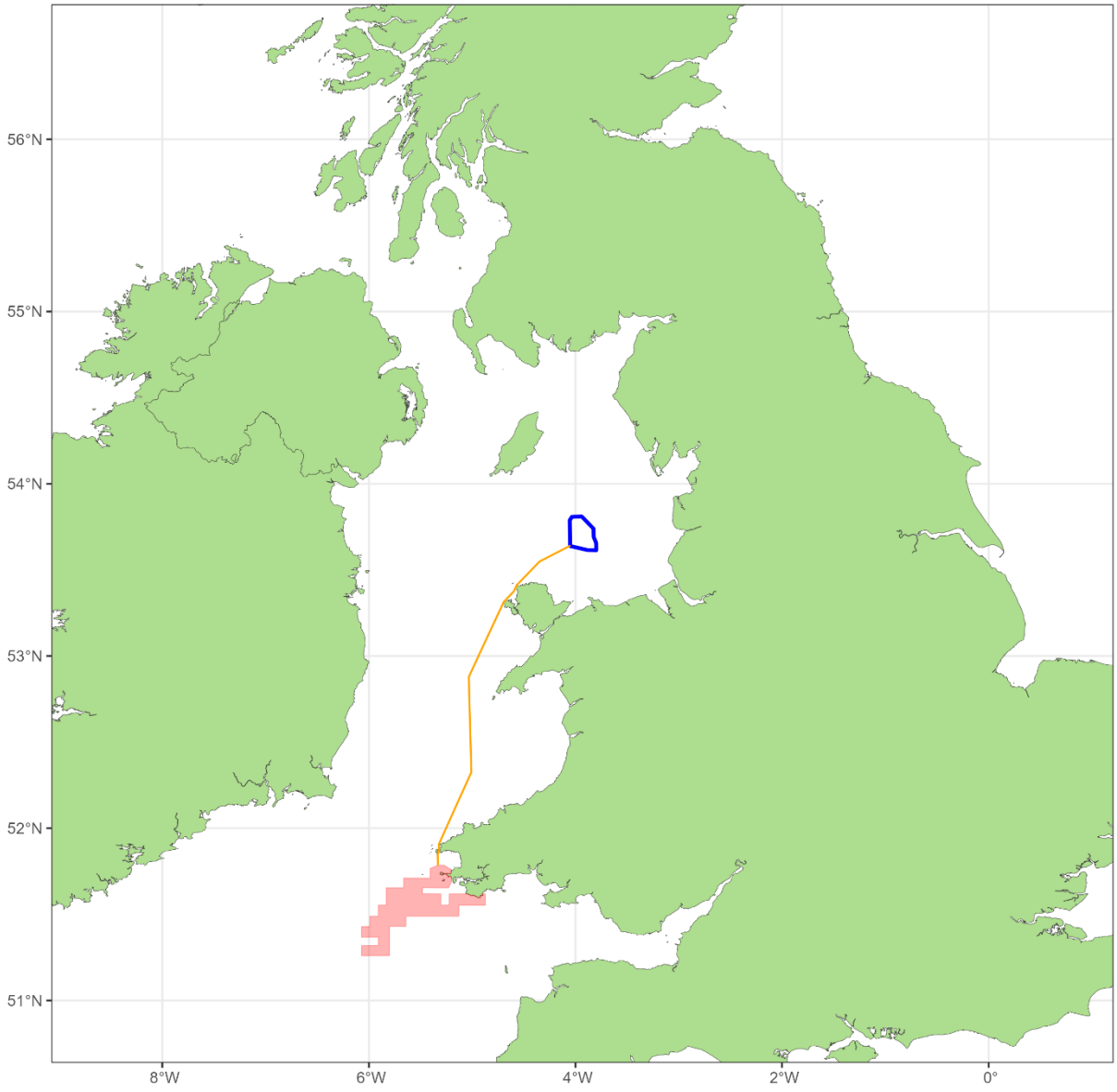


Figure 2 – Plot of the 'at sea' distance measurement, closest edge to closest edge, between SSSP SPA and the Mona offshore wind project located in Liverpool Bay, a distance of ~237km



APPENDIX 1 - NRW (A)’s in-combination mortality calculations and the NRW (A) 's in combination mortality calculations

4 APPENDIX 1: NRW (A) detailed comments/conclusions on the Llŷr project EIA scale cumulative assessments following the Applicant's further information in '*Offshore Ornithology Clarification Notes 1 and 3*', and; NRW (A)'s further work to extract the relevant information from the Mona project submission documents in order to produce advice for NRW MLT

This document is a technical document to provide scientific justification for NRW (A)'s advice provided on the significance of the potential impacts at the Environmental Impact Assessment (EIA) scale from the project cumulatively with other plans and projects, as summarised within each section. Our advice is based on best available evidence at the time of writing and is subject to change in the future should further evidence be presented.

1.1 EIA impacts from collision risk from Llŷr project cumulatively with other plans and projects

We welcome that the Llŷr Applicant has presented the indicative cumulative collision mortality totals calculated by the Mona project in Table 2 of *'Clarification Note 3'.* We note that the Llŷr Applicant has presented the percentage of baseline mortality that these predicted cumulative collision totals equate to of the respective species EIA scale reference populations (in Table 2 of *'Clarification Note 3'*). However, the Applicant has not included any information on the reference populations and mortality rates used to calculate these, and therefore, they cannot be replicated. As the numbers presented are the same as those presented by Mona, we assume the Llŷr Applicant's figures are based on the same EIA reference populations and mortality rates used by the Mona project, which we have included for information in ***Table A1.1*** below.

Table A1.1 Percentage of baseline mortality for indicative predicted impact levels for cumulative operational collision risk for the Llŷr project cumulatively with other plans and projects at EIA scale (based on indicative cumulative totals calculated by the Mona project in Section 5.9.3 of Mona Deadline 7 ES Offshore Ornithology Chapter 5 (Mona Offshore Wind Limited 2025a) and as presented by Llŷr in Table 2 of *'Clarification Note 3'*). Largest Biologically Defined Minimum Population Scale (BDMPS) reference populations and average across all age class mortality rates, as used by the Mona project have been used. (Note herring gull is not considered for cumulative collisions, as 0 collisions are predicted from the Llŷr project alone). Highlighted cells indicate where 1% of baseline mortality is exceeded.

	Annual total indicative cumulative CRM prediction (from Table 2 of Llŷr clarification note 3, and as calculated by Mona project*)	**Largest BDMPS individuals (as used by Mona project)**	**Mortality rate (%) (weighted mean across all ages, as used by Mona project)**	**% baseline mortality largest BDMPS**
Gannet (note: assumed no reduction for macro avoidance)	183	661,888	19.3	0.14
Kittiwake	641	911,586	15.6	0.45
LBBG	299	240,750	12.1	1.03
GBBG	167	17,742	9.5	9.93

* Annual indicative collision predictions using species-group avoidance rates (ARs) and for the consented (where available) plus as built (where consented figures are unavailable) project parameters as calculated by the Mona project and presented in Section 5.9.3 of Mona Deadline 7 ES Offshore Ornithology Chapter 5 (Mona Offshore Wind Limited 2025a), and as presented by the Llŷr Applicant in Table 2 of *'Clarification Note 3'.* Note: Collision predictions rounded to whole birds.

1.1.1 Gannet and kittiwake

As shown in ***Table A1.1*** above, the indicative cumulative collision risk assessments, as calculated by Mona and presented by the Llŷr Applicant in Table 2 of *'Clarification Note 3'*, suggest that the predicted cumulative collision mortalities would not exceed 1% of baseline mortality for gannet and kittiwake. This could therefore be considered to be undetectable against background mortality and hence we advise that **cumulative collision impacts would not result in a significant adverse effect (i.e. no greater than minor adverse effect) for cumulative EIA scale for gannet and kittiwake.**

With regard to gannet, we understand that the Mona indicative cumulative impact of 183 collisions per year as presented by the Llŷr Applicant, does not consider any accounting for macro avoidance by gannet of offshore wind farms. Therefore, if this is the case, it is likely that the gannet indicative cumulative collision total presented by the Llŷr Applicant in Table 2 of *'Clarification Note 3'* could be an overestimate.

1.1.2 Lesser black-backed gull (LBBG)

The indicative cumulative collision totals for LBBG of 299 birds per annum, as calculated by Mona and presented by the Llŷr Applicant in Table 2 of *'Clarification Note 3'*, equates to 1.03% of baseline mortality of the UK western waters BDMPS scale population (***Table A1.1*** above). We note that there is uncertainty in the predicted collision figures due to the uncertainty/variability in the input parameters and some degree of precaution in the cumulative total regarding build out scenarios of projects. It is also worth noting that there is limited evidence and therefore some uncertainty around baseline mortality rates (Horswill & Robinson 2015).

As noted by the Llŷr Applicant in *'Clarification Note 3'* the Mona project undertook a PVA for LBBG cumulative collision impacts. Despite NRW (A)'s advice to the Llŷr Applicant of the need to present the Mona PVA outputs in their assessment, the Applicant has not done this in any of their submission documents (including *'Clarification Note 3'*). Therefore, NRW (A) have extracted the relevant PVA output metrics in ***Table A1.2*** below.

Table A1.2 PVA outputs for lesser black-backed gull indicative cumulative assessment, as presented by Mona in Table 5-126 of Mona Deadline 7 ES Offshore Ornithology Chapter 5 (Mona Offshore Wind Limited 2025a)

Scenario (after 35 yrs impact: 2030-2065)	Median adult population size	Median growth rate	Median counterfactual of population size (CPS)	Median counterfactual of growth rate (CGR)
Baseline	183,729	0.995	-	-
Impact*	174,610	0.993	0.950	0.999

* Using species-group avoidance rate of 0.9939, as advised by SNCBs and for the consented (where available) plus as built (where consented figures are unavailable) project parameters

Using the PVA model undertaken by the Mona Applicant, as this represents best available evidence at this time, if the additional mortality from the offshore wind farms is 299 LBBGs per annum (indicative Mona calculated cumulative collision mortality figure for the SNCB advised species-group avoidance rate) then:

- The BDMPS population after 35 years (time period model impacts were run by Mona) will be approximately 5% lower than it would have been in the absence of the additional mortality (see ***Table A1.2***).
- The BDMPS population growth rate would be reduced by around 0.1% (see ***Table A1.2***).

The LBBG is classified as 'Least Concern' in the GB International Union for Conservation of Nature (IUCN)2a assessment (Stanbury et al. 2024). The species is Amber listed in Birds of Conservation Concern (BoCC) 5a (Stanbury et al. 2024) due to the International importance of the UK breeding population, with the UK supporting a large proportion of the North Atlantic biogeographical populations (>30%) (Burnell et al. 2023).

Based on the above, the cumulative collision mortality is unlikely to be detectable against background mortality and **would not result in a significant adverse effect (i.e. no greater than minor adverse effect) from cumulative collision to LBBG at an EIA scale.**

1.1.3 Great black-backed gull (GBBG)

The indicative cumulative collision totals for GBBG of 167 birds per annum, as calculated by Mona and presented by the Llŷr Applicant in Table 2 of *'Clarification Note 3'* equates to 1% of baseline mortality of the BDMPS population (***Table A1.1*** above). **This is not insignificant and requires further consideration.**

As noted by the Llŷr Applicant in *'Clarification Note 3',* the Mona project undertook a PVA for GBBG cumulative collision impacts. Despite NRW (A)'s advice to the Llŷr Applicant of the need to present the Mona PVA outputs in their assessment, the Applicant has not done this in any of their submission documents (including *'Clarification Note 3'*). Therefore, NRW (A) have extracted the relevant PVA output metrics in ***Table A1.3*** below.

Table A1.3 PVA outputs for great black-backed gull indicative cumulative assessment, as presented by Mona in Table 5-120 of Mona Deadline 7 ES Offshore Ornithology Chapter 5 (Mona Offshore Wind Limited 2025a)

Scenario (after 35 yrs impact: 2030-2065)	Median adult population size	Median growth rate	Median counterfactual of population size (CPS)	Median counterfactual of growth rate (CGR)
Baseline	6,830,545	1.126	-	-
Impact*	4,702,469	1.115	0.688	0.990

* Using species-group avoidance rate of 0.9939, as advised by SNCBs and for the consented (where available) plus as built (where consented figures are unavailable) project parameters

Using the PVA model undertaken by the Mona Applicant, as this represents best available evidence at this time, if the additional mortality from the offshore wind farms is 167 GBBGs per annum (indicative Mona calculated cumulative collision mortality figure for the SNCB advised species-group avoidance rate) then:

- The BDMPS population after 35 years (time period model impacts were run by Mona) will be approximately 31.2% lower than it would have been in the absence of the additional mortality (see ***Table A1.3***).
- The BDMPS population growth rate would be reduced by around 1% (see ***Table A1.3***).

We note that GBBG moved to the Red list in UK BoCC5a owing to a severe population decline of 56% since Operation Seafarer (1969–70). The species was Green-listed in the first two BoCC assessments and Amber-listed in BoCC3 and BoCC4 (Stanbury et al. 2024). In the GB IUCN2a assessment the species moved from 'Least Concern' in IUCN1 to 'Critically Endangered' (Stanbury et al. 2024). Seabirds Count (Burnell et al. 2023) reported a 43% decline since Seabird 2000.

Based on consideration of: the PVA metrics from the Mona PVA presented in ***Table A1.3*** (which suggest a reduced growth rate as a result of the cumulative impact of the Llŷr project

with other offshore wind projects, than would be experienced by an unimpacted population); our included conservation assessment, and particularly that the GBBG population is declining; and that we are not aware of any evidence to suggest that the population is likely to increase during the project lifetime, we consider that the predicted cumulative collision impacts at the south-west and Channel population scale (relevant BDMPS considered for the Llŷr cumulative assessment) have the potential to give rise to a moderate adverse impact. Additionally, the uncertainties around demographic rates for the species, with juvenile and immature survival rates unknown (Horswill & Robinson 2015), require a more precautionary approach to interpreting PVA model results. Therefore, **we are unable to rule out a moderate adverse, i.e. significant adverse impact, on GBBG from cumulative collision mortality at an EIA scale**.

Whilst we would suggest that the Applicant consider mitigation, such as raising the turbine draught height (i.e. clearance of the lower turbine tip height above seas surface), we note that given the very low predicted GBBG collisions from the Llŷr project alone (1.61 collisions per annum), it is unlikely that any increases in draught height would make a significant difference in this instance. Therefore, **in this instance**, we are satisfied that the Applicant does not need to consider changes to draught height any further. This conclusion is based on the assumption that the change in upper-tip height does not alter the air gap with the sea surface (i.e the lower-tip height) (see details in Section in 1.6.1.1 above).

However, given the concerns relating to this species, we recommend that for future projects located within the UK south-west and Channel BDMPS, consideration of inclusions of measures to reduce collision mortality (such as raising turbine draft height by as much as possible) be given in order to allow maximum realisation of renewable energy for the minimum environmental impact.

1.2 EIA impacts from Llŷr project cumulatively with other plans and projects: displacement

We welcome that the Llŷr Applicant has presented the indicative cumulative displacement mortality totals calculated by the Mona project in Table 1 of *'Clarification Note 3'.* However, we note that the figures presented appear to be a central value with a range of impacts given in brackets, but no information is presented as to what these refer to (e.g. which % displacement and % mortality rates the numbers refer to). Given that the numbers match those presented by the Mona project in their operation and maintenance phase cumulative displacement assessments presented Section 5.9.2 of Mona Deadline 7 ES Offshore Ornithology Chapter 5 (Mona Offshore Wind Limited 2025a), we assume the numbers relate to the following rates that were presented by Mona:

- Guillemot, razorbill, puffin and Manx shearwater: central value for 50% displacement and 1% mortality, with a range in brackets for 30% displacement and 1% mortality – 70% displacement and 10% mortality.
- Gannet: central value for 70% displacement and 1% mortality, with a range in brackets for 60% displacement and 1% mortality – 80% displacement and 10% mortality.

Whilst the Llŷr Applicant has presented the % of baseline mortality that these predicted cumulative displacement totals equate to (in Table 1 of 'Clarification Note 3'), we note that the Applicant has not included any information on the reference populations and mortality rates used to calculate these. As the numbers presented are the same as those presented by Mona, we assume the Llŷr Applicant's figures are based on the same EIA reference populations and

mortality rates used by the Mona project, which we have included for information in **Table A1.4** below.

As noted in Section 1.6.1.2.3 of our main comments above, the Applicant has not included the additional mortalities from underwater collisions from tidal energy sites that the Mona project did include for guillemot, razorbill, puffin and gannet cumulative displacement assessments. We have added these into our cumulative assessments in ***Table A1.4*** below.

Table A1.4 Percentage of baseline mortality for indicative predicted impact levels for cumulative operational displacement plus underwater collision mortality for the Llŷr project cumulatively with other plans and projects at EIA scale (based on indicative cumulative totals calculated by the Mona project in Section 5.9.2 of Mona Deadline 7 ES Offshore Ornithology Chapter 5 (Mona Offshore Wind Limited 2025a). Largest BDMPS reference populations and average across all age class mortality rates, as used by the Mona project have been used. Figures in bold text indicate where 1% of baseline mortality is exceeded.

	Indicative annual cumulative mortalities			**Largest BDMPS individuals (as used by Mona project)**	**Mortality rate (%) (weighted mean across all ages, as used by Mona project)**	**% baseline mortality largest BDMPS**
	Displacement mortality (from Table 1 of Llŷr clarification note 3, and as calculated by Mona project*)	**Underwater cumulative collision mortality (from tables in Section 5.9.2 Mona ES Chapter)**	**Combined indicative cumulative mortality**			
Guillemot	335-7,814	54	389-7,868	1,145,528	13.3	0.26-***5.16***
Razorbill	59-1,372	24	83-1,396	606,914	17.2	0.08-***1.34***
Puffin	28-648	1	29-649	1,482,791	17.6	0.01-0.25
Gannet	51-683	1	52-684	661,888	19.3	0.04-0.54
Manx shearwater	107-2,492	-	107-2,492	1,821,544	13.0	0.05-***1.05***

*Displacement predictions based on ranges of 30-70% for auks and Manx shearwater and 60-80% for gannet. All based on 1-10% mortality for all species. Lower figure relates to the lower displacement and mortality rates, upper figure relates to the upper displacement and mortality rates.

1.2.1 Puffin and gannet

The indicative cumulative operational displacement plus underwater collision mortality, as calculated by Mona, suggest that the predicted cumulative mortalities would not exceed 1% of baseline mortality even at the worst-case scenario of the advised SNCB ranges of % displacement and % mortality for both puffin and gannet (see ***Table A1.4***). This could therefore be considered to be undetectable against background mortality and hence **we advise that cumulative displacement plus underwater collision impacts of puffin and gannet would not result in a significant adverse effect (i.e. no greater than minor adverse effect) for cumulative EIA scale.**

1.2.2 Razorbill

As shown in ***Table A1.4*** above, the indicative cumulative operational displacement plus collision mortalities for the NRW (A) recommended rates of 30-70% displacement and 1-10% mortality, as calculated by Mona suggest that the predicted cumulative razorbill mortality is between 83 (30% displacement and 1% mortality) and 1,396 (70% displacement and 10%

mortality) birds per annum. This equates to 0.08-1.34% of baseline mortality for the largest BDMPS (***Table A1.4***). This is significant at the upper level of the displacement/mortality range that the SNCBs advise for auks (70% displacement and 10% mortality) and therefore requires further consideration.

As noted by the Llŷr Applicant in *'Clarification Note 3'*, the Mona project undertook a PVA for a range of predicted razorbill cumulative impacts. Despite NRW (A)'s advice to the Llŷr Applicant of the need to present the Mona PVA outputs in their assessment, the Applicant has not done this in any of their submission documents (including *'Clarification Note 3'*). Therefore, NRW (A) have extracted the relevant PVA output metrics in ***Table A1.5*** below.

Table A1.5 PVA outputs for razorbill indicative cumulative assessment scenarios, as presented by Mona in Table 5-95 of Mona Deadline 7 ES Offshore Ornithology Chapter 5 (Mona Offshore Wind Limited 2025a)

Scenario (after 35 yrs impact: 2030-2065)	Median adult population size	Median growth rate	Median counterfactual of population size (CPS)	Median counterfactual of growth rate (CGR)
Baseline	957,341	1.009	-	-
Impact A (30% D, 1% M)	953,183	1.009	0.994	1.000
Impact B (50% D, 1% M)	950,308	1.009	0.992	1.000
Impact C (70% D, 10% M)	871,000	1.006	0.910	0.997

Using the PVA model undertaken by the Mona Applicant in Mona Offshore Wind Limited (2025a), if the additional mortality from the offshore wind farms is 83-1,396 razorbills per annum (indicative updated cumulative mortalities across the range of SNCB advised % displacement and % mortality rates: 30-70% displacement and 1-10% mortality) then:

- The BDMPS population after 35 years (time period model impacts were run by Mona) will be approximately 0.6-9.0% lower than it would have been in the absence of the additional mortality (see ***Table A1.5***).
- The BDMPS population growth rate would be reduced by around 0.0-0.3% (see ***Table A1.5***).

Razorbill are listed as Amber on BoCC5a (Stanbury et al. 2024) and are listed as 'Vulnerable' in the latest IUCN2a update (Stanbury et al. 2024).

While there is some empirical evidence to support the displacement levels for auks we do not know what the likely mortality impacts of displacement are. We therefore consider it appropriate to consider a range of mortalities from 1-10%. However, on the basis that the projects that have been scoped into the cumulative assessment largely lie in areas of the UK western waters that represent low to medium levels of razorbill density during both the breeding (where relevant) and non-breeding seasons (MERP), it is assumed that areas of low/medium density will be less important/desirable feeding areas and therefore mortality impacts of displacement from less good areas would be lower than displacement from optimal/important areas. Therefore, we do not expect mortality rates to be at the top of the range considered.

Based on the above, **we advise a significant adverse impact to razorbill from cumulative operational displacement plus underwater collision morality can be ruled out at an EIA scale.**

1.2.3 Guillemot

As shown in ***Table A1.4*** above, the indicative cumulative operational displacement plus underwater collision mortalities for the NRW (A) recommended rates of 30-70% displacement and 1-10% mortality, as calculated by Mona suggest that the predicted cumulative guillemot mortality is between 389 (30% displacement and 1% mortality) and 7,868 (70% displacement and 10% mortality) birds per annum. This equates to 0.26-5.16% of baseline mortality for the largest BDMPS (***Table A1.4***). This is significant at the upper level of the displacement/mortality range that the SNCBs advise for auks (70% displacement and 10% mortality) and therefore **requires further consideration**.

As noted by the Llŷr Applicant in *'Clarification Note 3'*, the Mona project undertook a PVA for a range of predicted guillemot cumulative impacts. Despite NRW (A)'s advice to the Llŷr Applicant of the need to present the Mona PVA outputs in their assessment, the Applicant has not done this in any of their submission documents (including *'Clarification Note 3'*). Therefore, NRW (A) have extracted the relevant PVA output metrics in ***Table A1.6*** below.

Table A1.6 PVA outputs for guillemot indicative cumulative assessment scenarios, as presented by Mona in Table 5-87 of Mona Deadline 7 ES Offshore Ornithology Chapter 5 (Mona Offshore Wind Limited 2025a)

Scenario (after 35 yrs impact: 2030-2065)	Median adult population size	Median growth rate	Median counterfactual of population size (CPS)	Median counterfactual of growth rate (CGR)
Baseline	4,138,135	1.026	-	-
Impact A (30% D, 1% M)	4,083,497	1.026	0.986	1.000
Impact B (50% D, 1% M)	4,048,656	1.025	0.979	0.999
Impact C (70% D, 10% M)	3,134,554	1.018	0.757	0.992

Using the PVA model undertaken by the Mona Applicant in Mona Offshore Wind Limited (2025a), if the additional mortality from the offshore wind farms is 389-7,868 guillemots per annum (indicative updated cumulative mortality across the range of SNCB advised % displacement and % mortality rates: 30-70% displacement and 1-10% mortality) then:

- The BDMPS population after 35 years (time period model impacts were run by Mona) will be approximately 1.4-24.3% lower than it would have been in the absence of the additional mortality (see ***Table A1.6***).
- The BDMPS population growth rate would be reduced by around 0.0-0.8% see (***Table A1.6***).

Guillemot are listed as Amber on BoCC5a (Stanbury et al. 2024) and are listed as 'Vulnerable' in the latest IUCN2a update (Stanbury et al. 2024).

While there is some empirical evidence to support the displacement levels for auks, we do not know what the likely mortality impacts of displacement are. We therefore consider it appropriate to consider a range of mortalities from 1-10%. However, on the basis that the projects that have been scoped into the cumulative assessment largely lie in areas of the UK

western waters that represent low to medium levels of guillemot density during both the breeding (where relevant) and non-breeding seasons (MERP), it is assumed that areas of low/medium density will be less important/desirable feeding areas and therefore mortality impacts of displacement from less good areas would be lower than displacement from optimal/important areas. Therefore, we do not expect mortality rates to be at the top of the range considered.

Based on the above, **we advise a significant adverse impact to guillemot from cumulative operational displacement plus underwater collision mortality can be ruled out at an EIA scale.**

1.2.4 Manx shearwater

As shown in ***Table A1.4*** above, the indicative cumulative operational displacement mortality for Manx shearwater just exceeds 1% of baseline mortality (1.05%) for the worst-case scenario of 70% displacement and 10% mortality (see ***Table A1.4*** above). However, we note it is only at this particular % displacement and % mortality scenario (i.e. the extreme worst case) across the whole SNCB advised range of advised rates (30-70% displacement and 1-10% mortality) where the predicted impact exceeds 1% baseline mortality.

Based on the above, **we advise a significant adverse impact to Manx shearwater from cumulative operational displacement can be ruled out at an EIA scale.**

1.3 EIA Impacts for gannet from Llŷr project cumulatively with other plans and projects: operational collision risk and displacement

In *'Clarification Note 3',* the Applicant has presented the gannet cumulative EIA scale collision predicted impacts and the displacement predicted impacts calculated by Mona separately (see Tables 1 and 2 of *'Clarification Note 3'*). We note that in *'Clarification Note 3'*, the Applicant states that:

*'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.'*

However, this statement is not evidenced by any presentation of the cumulative collision plus displacement predicted impact, nor what this equates to of baseline mortality of the relevant gannet EIA scale reference population. Therefore, NRW (A) have undertaken this assessment below (see ***Table A1.7***).

Table A1.7 Combined indicative predicted cumulative collision plus displacement mortalities and percentage of baseline mortality for gannet at EIA scale (based on indicative cumulative totals calculated by the Mona project in Section 5.9 of Mona Deadline 7 ES Offshore Ornithology Chapter 5 (Mona Offshore Wind Limited 2025a), using average across all age class mortality rate of 19.3% and largest BDMPS reference population as used by the Mona project

	Gannet predicted mortalities per annum (rounded to whole birds)
Cumulative wind farm collision, including gap filled projects (from Table 2 of Llŷr clarification note 3)	183
Cumulative displacement: 60% D, 1% M (from Table 1 of Llŷr clarification note 3)	52

Cumulative displacement: 80% D, 10% M (from Table 1 of Llŷr clarification note 3)	684		
Cumulative collision plus displacement		**Largest BDMPS individuals**	**% baseline mortality largest BDMPS**
Combined cumulative collision + displacement (with 60% D, 1% M)	235	661,888	0.18
Combined cumulative collision + displacement (with 80% D, 10% M)	867	661,888	0.68

Based on ***Table A1.7*** above, the combined indicative impact of operational collision plus displacement to gannet from Llŷr cumulatively with other plans and projects - including gap filled projects - equals between 235 birds per annum when a 60% displacement and 1% mortality rate is used, and up to 867 birds per annum when an 80% displacement and 10% mortality rate is used. These predicted figures both equate to less than 1% of baseline mortality and hence could be considered to be undetectable against background mortality. Therefore, we can conclude that **cumulative displacement plus collision impacts would not result in a significant adverse effect (i.e. no greater than minor adverse effect) for cumulative EIA scale for gannet.**

5 APPENDIX 2: NRW (A) detailed comments/conclusions on the Llŷr project HRA scale in-combination assessments following the Applicant's further information in '*Offshore Ornithology Clarification Notes 1 and 3*', and; NRW (A)'s further work to extract the relevant information from the Mona project submission documents in order to produce advice for NRW MLT

This document is a technical document submitted to provide scientific justification for NRW (A)'s advice provided on the significance of the potential impacts for Habitats Regulations Assessment (HRA) scale impacts from the Llŷr project in-combination with other plans and projects, as summarised within each section. Our advice is based on best available evidence at the time of writing and is subject to change in the future should further evidence be presented.

1. SKOMER, SKOKHOLM & SEAS OFF PEMBROKESHIRE (SSSP) SPA: MANX SHEARWATER

1.1 Impacts from the Llŷr project in-combination with other plans and projects: displacement

The indicative in-combination displacement total calculated by the Mona project in Table 1.81 of Mona Offshore Wind Limited (2025b) and as presented by the Applicant in Table 4 of '*Clarification Note 3'*, is 66-1,547 adult Manx shearwaters (rounded to whole birds) from the SSSP SPA per annum for all projects. This predicted in-combination displacement impact equates to 0.06-1.31% of baseline mortality of the colony (based the 2018 colony count of 910,312 breeding adults and an adult mortality rate of 13.0% as used in the Mona assessment, as per Table 1.90 of Mona Offshore Wind Limited 2025b). This exceeds 1% of baseline mortality of the colony at the worst case scenario of the advised range and **requires further consideration**. As noted by the Llŷr Applicant in *'Clarification Note 3',* the Mona project undertook a PVA for SSSP SPA in-combination impacts for the worst case scenario of 70% displacement and 10% mortality, as presented in Table 1.151 of Mona Offshore Wind Limited (2025b). However, despite NRW (A)'s advice to the Llŷr Applicant advising of the need to present the Mona PVA outputs in their assessment, the Applicant has not done this in any of their submission documents (including *'Clarification Note 3'*). Therefore, NRW (A) have extracted the relevant PVA output metrics in ***Table A2.1*** below.

Table A2.1 PVA outputs for SSSP SPA Manx shearwater indicative in-combination displacement assessment, as presented by Mona in Table 1.151 of Mona Deadline 7 HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments Annex E1.3.1 (Mona Offshore Wind Limited 2025b)

Scenario (after 35 yrs impact: 2030-2065)	Median adult population size	Median growth rate	Median counterfactual of population size (CPS)	Median counterfactual of growth rate (CGR)
Baseline	1,502,390	1.011	-	-
Impact: 70% displacement, 10% mortality	1,400,686	1.009	0.932	0.998

Using the PVA model undertaken by the Mona Applicant (as this represents best available evidence at this time), if the additional mortality from the offshore wind farms is up to 1,547

adult Manx shearwaters per annum (indicative in-combination displacement mortality for worst case scenario of 70% displacement and 10% mortality) then:

- The SPA population after 35 years (time period model impacts were run by Mona) would be approximately 6.8% lower than it would have been in the absence of the additional mortality (see ***Table A2.1***).
- The SPA population growth rate would be reduced by around 0.2% (see ***Table A2.1***).

Manx shearwater numbers at the SSSP SPA have increased by 201% from Seabird 2000 to the most recent Seabird Count Census (Burnell et al. 2023): Seabirds 2000 Census count of 151,000 Apparently Occupied Sites (AOS) (302,000 adults) undertaken in 1998, Seabirds Count Census count of 455,156 AOS (910312 adults) undertaken in 2018. Over this time many of the offshore wind farms (OWFs) included in the in-combination assessments have been constructed and become operational. Hence as the colony population has continued to increase, it would suggest they have not been adversely impacted by the operation of the OWFs. Additionally, the PVA suggests that for an impact of up to 1,547 Manx shearwaters per annum (predicted impact for worst case scenario of 70% displacement and 10% mortality), the Manx shearwater population of the SPA will be able to continue growing beyond its current level, even with the additional impact from the OWFs, as indicated by a growth rate above 1, and the Counterfactual of Growth Rate is 0.998 (see ***Table A2.1***). This suggests that there will be only a small impact on the growth rate in comparison to baseline conditions. Hence there will remain a thriving Manx shearwater population at the site and the Conservation Objective target population of 300,000 adults (150,000 pairs)[5] would be achieved. On the basis of these figures, **NRW advises that an adverse effect on site integrity (AEoSI) can be ruled out for predicted displacement impacts on the Manx shearwater feature from the project in-combination with other plans and projects for the SSSP SPA**.

2. SKOMER, SKOKHOLM & SEAS OFF PEMBROKESHIRE (SSSP) SPA: LESSER BLACK-BACKED GULL (LBBG)

2.1 Impacts from the Llŷr project in-combination with other plans and projects: collision risk

As noted in ***Section 1.6.1.2.3*** of our main comments above, the Applicant has still not undertaken any updated in-combination assessments for SSSP SPA LBBG and has made no attempt to apportion the EIA scale figures to the colony for a complete assessment. Given the lack of thorough in-combination assessment including all relevant projects, it is therefore unclear from the documents submitted by the Applicant whether there would be a significant impact on the LBBG feature of the site and whether an AEoSI could be ruled out. Therefore, in order to assist NRW MLT and to expedite the consenting process, NRW (A) has undertaken its own apportionment exercise to inform our assessment. We again note that such an assessment should have been undertaken by the Applicant.

In the breeding season, the following OWF projects are located within the mean-maximum foraging range + 1SD of 127 + 109km of LBBG (Woodward et al. 2019) from the SSSP SPA colony and hence have connectivity with the colony: Llŷr, Erebus, White Cross and Wave Hub floating wind farm.

[5] Currently available conservation objective target populations for SSSP SPA available from: https://naturalresources.wales/media/673958/Skomer.Skokholm%20management%20plan%2007.pdf

In the non-breeding seasons, based on tracking data of LBBGs from Skokholm (undertaken by BTO), it can be considered unlikely that LBBGs from the SSSP SPA colony will migrate through or winter in the Liverpool Bay/NE Irish Sea area and hence it could be assumed that there is unlikely to be connectivity with the OWFs here in the non-breeding seasons (essentially, birds from the colony generally go south) (Thaxter et al 2019; see ***Figure A2.1***).

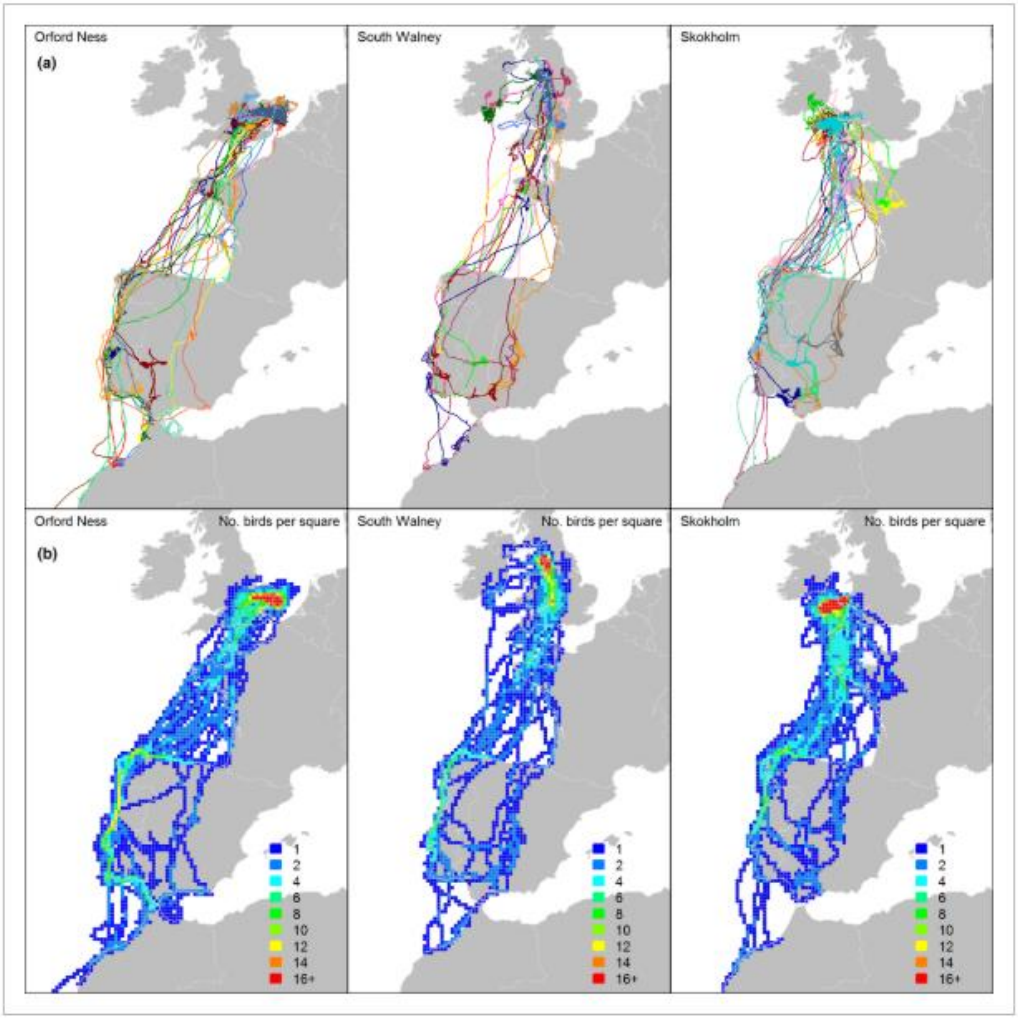


Figure A2.1 Movements of birds through the year as (a) GPS tracks and (b) the annual flux of movement, depicted as number of birds per square per year. Reproduced from Thaxter et al. (2019)

Therefore, taking the above into account NRW (A) have taken the EIA scale LBBG collision impacts for the species-group avoidance rate of 0.9939 presented in Table 5-123 of Mona Deadline 7 ES Offshore Ornithology Chapter 5 (Mona Offshore Wind Limited 2025a) and apportioned these to the SSSP SPA colony (***see Table A2.2***).

Based on this approach we have calculated an indicative in-combination LBBG SSSP SPA total to be in the region of 11 adult LBBG collisions from the SPA per annum (***Table A2.2***), which equates to around 0.57% of baseline mortality of the colony (based on an adult mortality rate of 11.5% calculated from the adult survival rate in Horswill & Robinson (2015) and a colony size of 16,704 breeding adults (2021-22 colony size used by LlŷR in Table 22E-2 of Appendix 22E of the original submission – the most contemporaneous count with the Llŷr baseline surveys)). This is below 1% of baseline mortality for the SSSP SPA LBBG colony and can be

considered undetectable against background mortality and hence an **AEoSI can be ruled out for in-combination collision mortality.**

Table A2.2 NRW (A) calculated indicative LBBG in-combination collision mortalities apportioned to SSSP SPA based on an avoidance rate of 0.9939 *

	Season	Llŷr	Erebus	White Cross	Wave Hub floating OWF[1]
EIA Scale Collisions	Breeding	1.12	7.61	0.41	3.45[1]
	Post-breeding	0.20	0.60	0.00	1.38[1]
	Winter	0.20	0.00	0.00	2.76[1]
	Pre-breeding	0.41	0.00	0.00	0.69[1]
Apportioning	Breeding	0.951[2]	0.978[3]	0.951[4]	0.422[5]
	Post-breeding[6]	0.083	0.083	0.083	0.083
	Winter[6]	0.094	0.094	0.094	0.094
	Pre-breeding[6]	0.083	0.083	0.083	0.083
SSSP SPA Apportioned collisions	Breeding	1.07	7.44	0.39	1.46
	Post-breeding	0.02	0.05	0.00	0.11
	Winter	0.02	0.00	0.00	0.26
	Pre-breeding	0.03	0.00	0.00	0.06
	Annual	***1.14***	***7.49***	***0.39***	***1.89***
Annual indicative in-combination collision total					**10.91**

*Note that the figures used here are based on the Mona project's cumulative assessment and NRW (A) has undertaken an assessment following the approach taken by Mona for other sites, in order to give us an indication of what the in-combination total might be, and an indication on whether an AEoSI can be ruled out. As a result, these numbers should not be seen as NRW "agreed" figures and we advise that future projects undertaking an in-combination assessment for this site and feature should discuss their approaches with NRW (A) in advance of any submission

[1] We have reviewed the Wave Hub floating wind farm 'Revised Bird Collision Risk' document and note that from Table 4 of this document there does not appear to be any major peaks in densities of LBBGs in flight in the survey area, we have assumed that the annual total EIA scale collisions for the project (8.3 collisions) are equally distributed across each month. Then to give an EIA scale seasonal breakdown of collision we have simply multiplied the monthly collision figure by the number of months making up each seasonal definition for LBBG.

[2] Llŷr 1 Floating Offshore Wind Farm Environmental Statement Volume 6: Appendix 22B Marine Ornithology Colony Apportioning, Table 22B-6.

[3] Erebus: Offshore Ornithology 11.2 Technical Appendix - Apportioning, Table 9

[4] Assuming the same SPA breeding season apportioning value as Llŷr, noting this is likely to be precautionary.

[5] As in Table 4.6 of the Wave Hub floating wind farm HRA Screening Report – review and update the Applicant attributed 57.8% of LBBG collisions to the Isles of Scilly SPA and the only other LBBG SPA likely to have breeding season connectivity with the project is the SSSP SPA, we have made the assumption that the remaining 42.2% of collisions in the breeding season are attributed to the SSSP SPA. However, we do note that this is likely to be precautionary.

[6] Applying the standard SNCB advised approach of calculating the proportion of the SPA adult birds present in the relevant BDMPS season across the BDMPS total of birds of all ages for each relevant non-breeding BDMPS season (as used by Llŷr)

We note that the LBBG population at the SSSP SPA is in decline. The latest census indicates a 47% decline: Seabird 2000 (1998-2002) = 15,748 Apparently Occupied Nests (AON); Seabirds Count (2015-2021) = 8,347 AON (Burnell et al., 2023). The most recent population count from 2024 from the Seabird Monitoring Programme (SMP) suggests a current population of 3,024 AON (6,064 breeding adults). The Conservation Objective is for the breeding population to be stable or increasing, aiming for at least 20,300 pairs (40,600 breeding adults)[5]. Whilst there may be few in-combination mortalities from the OWF projects with connectivity to the SPA, which can be considered to be undetectable against background mortality, a combination of further declines in population abundance and increased impact from future developments with potential connectivity to the colony may increase mortality to a level where more detailed assessment (such as through PVA) is required for those future projects. We therefore recommend for future projects that inclusion of measures to reduce collision mortality (such as raising turbine draft height as much as possible) be considered in order to allow maximum realisation of renewable energy for the minimum environmental impact.

3. SKOMER, SKOKHOLM & SEAS OFF PEMBROKESHIRE (SSSP) SPA: PUFFIN

3.1 Impacts from the Llŷr project in-combination with other plans and projects: displacement

In *'Clarification Note 3',* the Applicant notes that the original Llŷr in-combination assessment (included Llŷr, Erebus and White Cross only) for the worst case scenario of 70% displacement and 10% mortality of 111.63 puffin mortalities from the SSSP SPA, is similar to the Mona EIA scale cumulative predicted impact of 111 puffins at 60% displacement and 2% mortality. However, we note that the Mona project's EIA scale cumulative impact - at 70% displacement and 10% mortality -was 648 mortalities. These are clearly significantly different totals at the same % displacement and mortality rates, and is because the Mona values are EIA scale and have not been apportioned to the SSSP SPA colony. Clearly these are not comparative metrics.

Therefore, the in-combination PVA previously conducted by the Llŷr Applicant - assuming 111 mortalities in-combination - may not necessarily present the worst-case scenario, particularly given that all relevant plans and projects have not been included in the in-combination assessment.

As with lesser black-backed gull, given the lack of thorough in-combination assessment including all relevant projects (those within foraging range during the breeding season and within the BDMPS region during the non-breeding season), it is therefore unclear from the documents submitted by the Applicant whether there would be a significant impact on the puffin feature of the site and whether an AEoSI could be ruled out. Therefore, in order to assist NRW MLT and to expedite the consenting process, NRW (A) has undertaken its own apportionment exercise to inform our assessment. We again note that such an assessment should have been undertaken by the Applicant.

In the breeding season, the following OWF projects are located within the mean-maximum foraging range + 1SD of 119.6 + 131.2 km of puffin (Woodward et al. 2019, data excluding Fair Isle where foraging range may have been unusually high as a result of reduced prey availability during the study year) from the SSSP SPA colony and hence have connectivity with the colony: Llŷr, Erebus, White Cross, Twin Hub, Awel-y-Môr, Gwynt-y-Môr, Rhyl and North Hoyle. We have used the breeding season apportionment rates used in the project alone assessments for Llŷr, Erebus and Awel-y-Môr. As no breeding season apportionment rates are available from White Cross, Twin Hub, Gwynt-y-Môr. Rhyl or North Hoyle we have applied a proxy approach and used the rate from the nearest project with an apportionment rate, as per the approach taken by the Mona project in their other in-combination assessments (noting that this is likely to be precautionary, given the distance of the projects from the colony).

Based on the puffin tables in Appendix A of Furness (2015), 18% of SSSP SPA adult puffins are present in the western waters biologically defined minimum population scale (BDMPS) in the non-breeding season. Assuming birds within the western waters BDMPS are evenly mixed, then all the other OWFs within the western waters puffin BDMPS may contribute in-combination impacts outside of the breeding season, albeit these are likely to be small from each project – applying the standard SNCB advised approach of calculating the proportion of the SPA adult birds present in the relevant BDMPS season across the BDMPS total of birds of all ages for each relevant non-breeding BDMPS season, which for SSSP SPA puffin results in a non-breeding season apportionment rate of 2.9%.

Based on this, NRW (A) have taken the EIA scale puffin abundances presented in Table 5-96 of Mona Deadline 7 ES Offshore Ornithology Chapter 5 (Mona Offshore Wind Limited 2025a) and apportioned these to the SSSP SPA colony. From this an indicative annual total of 1,678 puffins from the SSSP SPA are at risk of displacement (***Table A2.3***).

Table A2.3 NRW (A) calculated indicative puffin abundance apportioned to SSSP SPA.

	Mean Seasonal Peak		**Apportioning**		**Apportioned abundances**	
OWF	**Breeding**	**Non-breeding**	**Breeding**	**Non-breeding**	**Breeding**	**Non-breeding**
Llŷr	152	592	0.98[1]	0.029	148.96	17.17
White Cross	49	31	0.98[2]	0.029	48.02	0.899
Erebus	1416	160	0.997[3]	0.029	1411.75	4.64
Wave Hub floating OWF	0	0	0.98[2]	0.029	0.00	0.00
Gwynt y Môr	2	1	0.628[5]	0.029	1.26	0.03
Awel y Môr	8	0	0.628[4]	0.029	5.02	0.00
North Hoyle	0	0	0.628[5]	0.029	0.00	0.00
Rhyl Flats	0.5	0.5	0.628[5]	0.029	0.31	0.01
Barrow	1	0	0.00	0.029	0.00	0.00
Burbo Bank	0.5	0.5	0.00	0.029	0.00	0.01
Burbo Bank extension	10	0	0.00	0.029	0.00	0.00
Morecambe	39	20	0.00	0.029	0.00	0.58
Morgan	9	5	0.00	0.029	0.00	0.15
Ormonde	1	0	0.00	0.029	0.00	0.00
Robin Rigg	0	0	0.00	0.029	0.00	0.00
Walney 1 & 2	3	2	0.00	0.029	0.00	0.06
Walney 3 & 4	53	119	0.00	0.029	0.00	3.45
West of Duddon Sands	61	35	0.00	0.029	0.00	1.02
West of Orkney	5272	1177	0.00	0.029	0.00	34.13
Mona	15	22	0.00	0.029	0.00	0.64
Seasonal apportioned abundance total					***1615.32***	***62.79***
Annual apportioned abundance total						***1678***

*Note that the figures used here are based on the Mona project's cumulative assessment and NRW (A) has undertaken an assessment following the approach taken by Mona for other sites, in order to give us an indication of what the in-combination total might be, and an indication on whether an AEoSI can be ruled out. As a result, these numbers should not be seen as NRW "agreed" figures and we advise that future projects undertaking an in-combination assessment for this site and feature should discuss their approaches with NRW (A) in advance of any submission

[1] Llŷr 1 Floating Offshore Wind Farm Environmental Statement Volume 6: Appendix 22B Marine Ornithology Colony Apportioning, Table 22B-6.

[2] Assuming the same SPA breeding season apportioning value as used by the Llŷr project, noting this is precautionary.

[3] Erebus: Offshore Ornithology 11.2 Technical Appendix – Apportioning, Table 8.

[4] Awel y Môr: Deadline 8 Report 5.2: Report to Inform Appropriate Assessment, paragraph 849.

[5] Assuming the same SPA breeding season apportioning value as used by the Awel y Môr project, noting this is potentially precautionary.

Table A2.4 Displacement matrix for NRW (A) calculated indicative SSSP SPA in-combination displacement impacts. Cells within the dark lined box indicted the range of SNCB advised % displacement and % mortality rates. Highlighted cells indicate those where 1% of baseline mortality is exceeded (based on an adult mortality rate 9.4% and a colony population of 33,619 adults from 2021-22 count, as used by the Applicant in Table 22E-2 of Appendix E of the submission documents)

		Mortality Rate (%)											
		1	**2**	**3**	**4**	**5**	**10**	**20**	**30**	**40**	**50**	**75**	**100**
Displacement Rate (%)	**1**	0	0	1	1	1	2	3	5	7	8	13	17
	5	1	2	3	3	4	8	17	25	34	42	63	84
	10	2	3	5	7	8	17	34	50	67	84	126	168
	20	3	7	10	13	17	34	67	101	134	168	252	336
	30	5	10	15	20	25	50	101	151	201	252	378	503
	40	7	13	20	27	34	67	134	201	268	336	503	671
	50	8	17	25	34	42	84	168	252	336	419	629	839
	60	10	20	30	40	50	101	201	302	403	503	755	1007
	70	12	23	35	47	59	117	235	352	470	587	881	1175
	80	13	27	40	54	67	134	268	403	537	671	1007	1342
	90	15	30	45	60	76	151	302	453	604	755	1133	1510
	100	17	34	50	67	84	168	336	503	671	839	1258	1678

From ***Table A2.4***, the indicative in-combination displacement total calculated by NRW (A) is 5-117 adult puffins (rounded to whole birds) from the SSSP SPA per annum for all projects. This predicted in-combination displacement impact equates to 0.16-3.72% of baseline mortality of the colony (an adult mortality rate 9.4% and a colony population of 33,619 adults from 2021-22 count, as used by the Applicant in Table 22E-2 of Appendix E of the submission documents). This is significant at the upper end of the range of advised rates and **requires further consideration.**

However, we note that the NRW (A) indicative worst case scenario (70% displacement and 10% mortality) in-combination impact of 117 displacement mortalities is a small increase compared to the 111 mortalities previously assessed via Llŷr's PVA (Table 22F-5 and Table 22F-9,of Appendix F of original submission) – the difference is an additional 6 mortalities per annum. As such, we are content that this would result in a negligible difference in the results of the PVA. Therefore, as the previous PVA undertaken by the Applicant suggests that the puffin population of the SPA will be able to continue growing beyond its current level, even with the additional impact from the OWFs, as indicated by Figure 22F-5 of Appendix F of the original submission, and the Counterfactual of Growth Rate is 0.996 (see Table 22F-9 of Appendix F of original submission). This suggests that there will be only a small impact on the growth rate in comparison to baseline conditions.

Additionally, the count data from seabird 2000 through to counts in 2022 shows an increase from 13,706 individual puffins in 2000 to 46,507 individual puffins in 2022. Over this time many of the OWFs included in the in-combination assessments have been constructed and become operational. Hence as the colony population has continued to increase, it would suggest they have not been adversely impacted by the operation of the OWFs.

Based on the above, there will remain a thriving puffin population at the site and the Conservation Objective target population of 19,000 adults (9,500 pairs)[5] would be achieved. On the basis of these figures, **NRW advises that an adverse effect on site integrity (AEoSI) can be ruled out for predicted displacement impacts on the puffin feature from the project in-combination with other plans and projects for the SSSP SPA**.

4. SKOMER, SKOKHOLM & SEAS OFF PEMBROKESHIRE (SSSP) SPA: EUROPEAN STORM PETREL

Given the very low numbers of storm petrel recorded in the site-specific surveys, we consider that there would be no measurable effects on storm petrel due to the project alone and hence there would be no contribution to any in-combination effects on this feature. Therefore, **we can agree that an AEoSI can be ruled out for predicted impacts on the European storm petrel feature from the project alone and in-combination with other plans and projects for the SSSP SPA**.

5. SKOMER, SKOKHOLM & SEAS OFF PEMBROKESHIRE (SSSP) SPA: SEABIRD ASSEMBLAGE

5.1 Impacts from Llŷr project in-combination with other plans and projects: kittiwake (collision)

The Applicant has only presented SSSP SPA kittiwake in-combination collision plus displacement impacts in Table 4 of *'Clarification Note 3'*. We note that NRW (A) does not recommend that displacement is assessed for kittiwake as we currently consider the evidence base to be insufficient. Therefore, it would have been useful if the Applicant had provided the split of in-combination collision impacts and in-combination displacement impacts separately as well as combined. However, this information is extractable from the Mona assessment (in Table 1.42 of Mona Deadline 7 HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments Annex E1.3.1: Offshore ornithology ISAA supporting information (Mona Offshore Wind Limited 2025b). Hence, we have extracted this information and have provided advice on in-combination collision impacts only for SSSP SPA kittiwake.

The indicative in-combination collision total calculated by the Mona project in Table 1.42 of Mona Offshore Wind Limited (2025b) is 11 adult kittiwakes (rounded to whole birds) from the SSSP SPA per annum for all projects. This predicted in-combination collision impact equates to approximately 2.29% of baseline mortality of the colony (based the 2024 colony count of 3,144 breeding adults and an adult mortality rate of 14.6% as used in the Mona assessment). This therefore requires further consideration. As noted by the Llŷr Applicant in *'Clarification Note 3'* the Mona project undertook a PVA for SSSP SPA in-combination impacts, including a separate PVA for just in-combination collision impacts in Table 1.132 of Mona Offshore Wind Limited (2025b). However, despite NRW (A)'s advice to the Llŷr Applicant advising of the need to present the Mona PVA outputs in their assessment, the Applicant has not done this in any of their submission documents (including *'Clarification Note 3*'). Therefore, NRW (A) has extracted the relevant PVA output metrics in ***Table A2.5*** below.

Table A2.5 PVA outputs for SSSP SPA kittiwake indicative in-combination collision only assessment, as presented by Mona in Table 1.132 of Mona Deadline 7 HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments Annex E1.3.1 (Mona Offshore Wind Limited 2025b)

Scenario (after 35 yrs impact: 2030-2065)	Median adult population size	Median growth rate	Median counterfactual of population size (CPS)	Median counterfactual of growth rate (CGR)
Baseline	3,490	1.003	-	-
Impact*	3,012	0.999	0.865	0.996

* Using species-group avoidance rate of 0.9928, as advised by SNCBs and for the consented (where available) plus as built (where consented figures are unavailable) project parameters

Using the PVA model undertaken by the Mona Applicant, as this represents best available evidence at this time, if the additional mortality from the offshore wind farms is 11 adult kittiwakes per annum (indicative in-combination collision mortality) then:

- The SPA population after 35 years (time period model impacts were run by Mona) would be approximately 13.5% lower than it would have been in the absence of the additional mortality (see ***Table A2.5***).
- The SPA population growth rate would be reduced by around 0.4% (see ***Table A2.5***).

The Mona project's in-combination collision PVA suggest that the SSSP SPA kittiwake population would decline due to the in-combination impact (as shown by a growth rate of <1, see ***Table A2.5***). We note that breeding season connectivity of the SSSP SPA kittiwake colony is based on the mean-maximum foraging range of kittiwake of 156.1 ± 144.5 km from Woodward et al. (2019). However, we note that tracking data for kittiwake from Skomer from 2016-17, albeit from a small sample size (n=17) did not record birds foraging over any great distance, with a mean maximum foraging range across both years of 22.0 ± 2.6 km (Trevail et al. 2019). The tracking study from Skomer presented in Trevail et al. (2019) was not included in the review undertaken by Woodward et al. (2019). Based on this, it can be considered to be unlikely that there would be breeding season connectivity with the OWF projects located in the NE Irish Sea/Liverpool Bay area and the Wave Hub floating offshore wind farm project. Hence, it is likely that the breeding season apportionment values and resulting apportioned impacts, calculated by the Mona project for these projects in their in-combination collision impacts to the colony presented in the assessment above, are overly precautionary. Based on consideration of this, the in-combination collision impact to SSSP SPA is considered likely to be below 1% of baseline mortality of the colony, and be unlikely to be detectable against background mortality.

However, as kittiwake is not a qualifying feature of the SSSP SPA in its own right, it is a named component of the seabird assemblage feature, this should be considered in the wider context of the assemblage feature and consideration of the assemblage feature Conservation Objectives. Therefore, see ***Section 5.4*** below for the overall conclusion of significance of effect on this qualifying feature.

5.2 Impacts from the Llŷr project in-combination with other plans and projects: guillemot (displacement)

The indicative in-combination displacement total calculated by the Mona project in Table 1.81 of Mona Offshore Wind Limited (2025b) is 29-678 adult guillemots (rounded to whole birds) from the SSSP SPA per annum for all projects. This predicted in-combination displacement impact equates to 1.19-27.83% of baseline mortality of the colony (based the 2024 colony count of 39,923 breeding adults and an adult mortality rate of 14.6% as used in the Mona assessment, as per Table 1.83 of Mona Offshore Wind Limited 2025b) and is significant across the entire range of advised rates and requires further consideration. As noted by the Llŷr Applicant in *'Clarification Note 3'* the Mona project undertook a PVA for SSSP SPA in-combination impacts for two impact scenarios ((i) the worst case scenario of 70% displacement and 10% mortality, and (ii) an alternative of 70% displacement and 2% mortality), as presented in Table 1.143 of Mona Offshore Wind Limited (2025b). However, despite NRW (A) advising the Llŷr Applicant of the need to present the Mona PVA outputs in their assessment, the Applicant has not done this in any of their submission documents (including *'Clarification Note 3*'). Therefore, NRW (A) has extracted the relevant PVA output metrics in ***Table A2.6*** below.

Table A2.6 PVA outputs for SSSP SPA guillemot indicative in-combination displacement assessment, as presented by Mona in Table 1.143 of Mona Deadline 7 HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments Annex E1.3.1 (Mona Offshore Wind Limited 2025b)

Scenario (after 35 yrs impact: 2030-2065)	Median adult population size	Median growth rate	Median counterfactual of population size (CPS)	Median counterfactual of growth rate (CGR)
Baseline	112,672	1.026	-	-
Impact: 70% displacement, 10% mortality	88,628	1.019	0.786	0.993
Impact: 70% displacement, 2% mortality	107,544	1.025	0.953	0.999

Using the PVA model undertaken by the Mona Applicant, as this represents best available evidence at this time, if the additional mortality from the offshore wind farms is up to 678 adult guillemots per annum (indicative in-combination displacement mortality for worst case scenario of 70% displacement and 10% mortality) then:

- The SPA population after 35 years (time period model impacts were run by Mona) would be approximately 21.4% lower than it would have been in the absence of the additional mortality (see ***Table A2.6***).
- The SPA population growth rate would be reduced by around 0.7% (see ***Table A2.6***).

The PVA suggests that for an impact of up to 678 guillemots per annum (predicted impact for worst case scenario of 70% displacement and 10% mortality), the guillemot population of the SPA will be able to continue growing beyond its current level, even with the additional impact from the OWFs, as indicated by a growth rate above 1, and the Counterfactual of Growth Rate is 0.993 (see ***Table A2.6***). This suggests that there will be only a small impact on the growth rate in comparison to baseline conditions. Additionally, the count data from Seabird 2000 through to counts in 2022 shows an increase from 14,848 individual guillemots in 2000 to 37,305 individual guillemots in 2022. Over this time many of the OWFs included in the in-combination assessments have been constructed and become operational. Hence as the colony population has continued to increase, it would suggest they have not been adversely impacted by the operation of the OWFs.

As guillemot is not a qualifying feature of the SSSP SPA in its own right, it is a named component of the seabird assemblage feature, this should be considered in the wider context of the assemblage feature and consideration of the assemblage feature Conservation Objectives. Therefore, see ***Section 5.4*** below for the overall conclusion of significance of effect on this qualifying feature.

5.3 Impacts from the Llŷr project in-combination with other plans and projects: razorbill (displacement)

The indicative in-combination displacement total calculated by the Mona project in Table 1.120 of Mona Offshore Wind Limited (2025b) is 2-35 adult razorbills (rounded to whole birds) from the SSSP SPA per annum for all projects. This predicted in-combination displacement impact equates to 0.10-2.27% of baseline mortality of the colony (based the 2024 colony count of 14,846 breeding adults and an adult mortality rate of 10.5% as used in the Mona assessment). This exceeds 1% of baseline mortality of the colony at several scenarios across the advised range (see ***Table A2.7***).

Table A2.7 NRW (A) calculated percent of baseline mortality for predicted annual in-combination displacement impact levels for razorbill for SSSP SPA for NRW (A) preferred range of 30-70% displacement and 1-10% mortality – baseline mortality calculated using adult only colony size (14,846 breeding adults) and adult mortality rate (10.5% from Horswill & Robinson 2015)

Displacement (%)	% Baseline mortality of SSSP SPA						
	Mortality rate (%)						
	1	2	4	5	6	8	10
30	0.10	0.19	0.39	0.49	0.58	0.77	0.97
40	0.13	0.26	0.52	0.65	0.77	1.03	1.30
50	0.16	0.32	0.65	0.81	0.96	1.28	1.62
60	0.19	0.39	0.78	0.97	1.15	1.54	1.95
70	0.23	0.45	0.91	1.14	1.35	1.80	2.27

As noted by the Llŷr Applicant in *'Clarification Note 3'*, the Mona project undertook a PVA for SSSP SPA in-combination impacts for the worst case scenario of 70% displacement and 10% mortality, as presented in Table 1.158 of Mona Offshore Wind Limited (2025b). However, despite NRW (A)'s advice to the Llŷr Applicant of the need to present the Mona PVA outputs in their assessment, the Applicant has not done this in any of their submission documents (including *'Clarification Note 3'*). Therefore, NRW (A) has extracted the relevant PVA output metrics in ***Table A2.8*** below.

Table A2.8 PVA outputs for SSSP SPA razorbill indicative in-combination displacement assessment, as presented by Mona in Table 1.158 of Mona Deadline 7 HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments Annex E1.3.1 (Mona Offshore Wind Limited 2025b)

Scenario (after 35 yrs impact: 2030-2065)	Median adult population size	Median growth rate	Median counterfactual of population size (CPS)	Median counterfactual of growth rate (CGR)
Baseline	19,205	1.009	-	-
Impact: 70% displacement, 10% mortality	17,033	1.006	0.885	0.997

Using the PVA model undertaken by the Mona Applicant, as this represents best available evidence at this time, if the additional mortality from the offshore wind farms is up to 35 adult razorbills per annum (indicative in-combination displacement mortality for worst case scenario of 70% displacement and 10% mortality) then:

- The SPA population after 35 years (time period model impacts were run by Mona) would be approximately 11.5% lower than it would have been in the absence of the additional mortality (see ***Table A2.8***).
- The SPA population growth rate would be reduced by around 0.3% (see ***Table A2.8***).

The PVA suggests that for an impact of up to 35 razorbills per annum (predicted impact for worst case scenario of 70% displacement and 10% mortality), the razorbill population of the SPA will be able to continue growing beyond its current level, even with the additional impact from the OWFs, as indicated by a growth rate above 1, and the Counterfactual of Growth Rate is 0.997 (see ***Table A2.8***). This suggests that there will be only a small impact on the growth rate in comparison to baseline conditions. Additionally, the count data from Seabird 2000 through to counts in 2022 shows an increase from 5,140 individual razorbills in 2000 to 14,157 individual razorbills in 2022. Over this time many of the OWFs included in the in-combination assessments have been constructed and become operational. Hence as the colony population

has continued to increase, it would suggest they have not been adversely impacted by the operation of the OWFs.

As razorbill is not a qualifying feature of the SSSP SPA in its own right, it is a named component of the seabird assemblage feature, this should be considered in the wider context of the assemblage feature and consideration of the assemblage feature Conservation Objectives. Therefore, see ***Section 5.4*** below for the overall conclusion of significance of effect on this qualifying feature.

5.4 Impacts from the Llŷr project in-combination with other plans and projects: seabird assemblage (collision and displacement)

The seabird assemblage is a qualifying feature of the SSSP SPA in its own right. The Conservation Objective for the seabird assemblage feature states that:
During the breeding season the SPA will regularly support at least 67,000 individual seabirds of the following species, most of which also qualify independently as SPA features:

- *Puffin*
- *Manx shearwater*
- *European storm petrel*
- *Lesser black-backed gull*
- *Guillemot*
- *Razorbill*
- *Kittiwake*

Based on the above, the growth rates of guillemot, razorbill, Manx shearwater are unlikely to be significantly affected over the lifetime of the project as a result of in-combination impacts and will continue to be stable or increasing. Under a worst-case scenario of assuming connectivity of the NE Irish Sea/Liverpool Bay OWFs in the breeding season with the SSSP SPA kittiwake colony for in-combination collision risk the kittiwake population is predicted to decline. However, based on evidence from tracking data we consider there is an extremely low risk that kittiwake would become locally extinct as a result of impacts from the proposed project in-combination with other plans and projects, and the species would still contribute to the assemblage. Additionally, the indicative in-combination impacts to the puffin and LBBG features are considered to be likely to be undetectable against background mortality. Therefore, based on this we consider that the abundance target (67,000 individuals)**Error! Bookmark not defined.** of the assemblage will be met and that the diversity of species making up the assemblage is not at risk from the project alone and in-combination collision and displacement impacts from offshore wind farms. Therefore, the Conservation Objective can be met and we advise **that an AEoSI of the seabird assemblage feature of the SSSP SPA can be ruled out for collision and displacement impacts from both the project alone and in-combination impacts**.

6. GRASSHOLM SPA: GANNET

6.1 Impacts from Llŷr project in-combination with other plans and projects: gannet (collision and displacement)

We note that the Applicant's original assessment was undertaken using the Grassholm SPA colony count from 2015, and that the Mona assessment in Mona Offshore Wind Limited (2015b) was also based on this. This is because the 2015 colony count of 72,022 breeding adults (Burnell et al. 2023) is the count that is most contemporaneous with the Llŷr (and Mona) project site-specific survey data conducted between March 2020-March 2022. We consider that it is important to use contemporaneous data in order to be comparing like-for-like impacts

against populations. This is particularly important should there be a large change in a colony population after baseline surveys have been carried out. For example, the HPAI outbreak caused large numbers of mortalities in summer 2022 and 2023 with the Grassholm SPA gannet colony having been severely affected: with a 54% reduction between the pre-HPAI baseline (2015) and 2023 counts, or a 57% decline when the 2023 count is compared with the predicted population estimate for 2021, produced using colony-specific average annual rates of change since 2003-05 by Wanless et al. (2023) (Tremlett et al. 2024). This is reflected in Seabird Monitoring Programme (SMP) counts showing 78,584 adults in 2009 and 72,022 in 2015, then just 32,964 in 2023 and 38,398 in 2024. Therefore, comparing mortalities associated with offshore wind farm development calculated using data collected pre-HPAI against colony counts post-HPAI is not appropriate, and is likely to overestimate relative impacts. We expect seabird data collected prior to summer 2022 (approx. August) (as is the case for the Llŷr project survey data) to remain a valid representation of 'typical' seabird distribution and density, as this was before mass mortality events began to take place. Broadly, we expect any changes in abundance at colonies to be reflected proportionately in the at sea data. That is, it is reasonable to assume distribution patterns will remain broadly similar, but densities to change accordingly.

For the worst case scenario of 80% displacement and 10% mortality, the indicative in-combination collision plus displacement total calculated by the Mona project in Table 1.96 of Mona Offshore Wind Limited (2025b), is 231 adult gannets (rounded to whole birds) from the SPA per annum, which equates to 3.96% of baseline mortality of the colony (based on the adult 2015 colony count of 72,022, used by both the Applicant in Table E22-2 of Appendix E of original submission documents, and the Mona Applicant and adult mortality rate of 8.1% from Horswill & Robinson (2015)), see ***Table A2.9*** below.

Table A2.9 Combined indicative predicted in-combination collision plus displacement mortalities and percentage of baseline mortality for Grassholm SPA gannet (based on indicative in-combination totals calculated by the Mona project in Table 1.96 of Mona Offshore Wind Limited (2025b), using adult mortality rate of 8.1% and 2015 colony count)

	Gannet predicted mortalities per annum (rounded to whole birds)		
In-combination wind farm collision, including gap filled projects	60		
In-combination displacement: 60% displacement, 1% mortality	13		
In-combination displacement: 80% displacement, 10% mortality	171		
In-combination collision plus displacement		**Colony count, breeding adults (2015)**	**% baseline mortality**
Combined in-combination collision + displacement (with 60% D, 1% M)	73	72,022	1.25
Combined in-combination collision + displacement (with 80% D, 10% M)	231	72,022	3.96

As noted by the Llŷr Applicant in *'Clarification Note 3'*, the Mona project undertook a PVA for SSSP SPA in-combination impacts for the worst case scenario of 80% displacement and 10% mortality plus collisions (with no consideration of macro avoidance), as presented in Table 1.147 of Mona Offshore Wind Limited 2025b). However, despite NRW (A)advising the Llŷr Applicant of the need to present the Mona PVA outputs in their assessment, the Applicant has

not done this in any of their submission documents (including *'Clarification Note 3'*). Therefore, NRW (A) has extracted the relevant PVA output metrics in ***Table A2.10*** below.

Table A2.10 PVA outputs for Grassholm SPA gannet indicative in-combination collision plus displacement assessment, as presented by Mona in Table 1.147 of Mona Deadline 7 HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments Annex E1.3.1 (Mona Offshore Wind Limited 2025b)

Scenario (after 35 yrs impact: 2030-2065)	**Median adult population size**	**Median growth rate**	**Median counterfactual of population size (CPS)**	**Median counterfactual of growth rate (CGR)**
Baseline	131,362	1.012	-	-
Impact: 80% displacement, 10% mortality plus collisions (with no macro avoidance)	114,832	1.008	0.873	0.996

Using the PVA model undertaken by the Mona Applicant, as this represents best available evidence at this time, if the additional mortality from the offshore wind farms is up to 321 adult razorbills per annum (indicative in-combination collision plus displacement mortality for worst case scenario of 80% displacement and 10% mortality) then:

- The SPA population after 35 years (time period model impacts were run by Mona) would be approximately 12.7% lower than it would have been in the absence of the additional mortality (see ***Table A2.10***).
- The SPA population growth rate would be reduced by around 0.4% (see ***Table A2.10***).

The PVA suggests that for an impact of up to 321 gannets per annum (predicted impact for worst case scenario of 80% displacement and 10% mortality plus collisions), the gannet population of the SPA will be able to continue growing beyond its current level, even with the additional impact from the OWFs, as indicated by a growth rate above 1, and the Counterfactual of Growth Rate is 0.996 (see ***Table A2.10***). This suggests that there will be only a small impact on the growth rate in comparison to baseline conditions.

We also note that during the Mona project examination (at Deadline 5) the (Mona) Applicant did produce a PVA based on an in-combination impact of 230 mortalities and with a starting population for the colony using the post HPAI 2024 count of 38,398 adults. The results of this did suggest that the colony could continue to grow beyond its 2024 starting level even with the impact of the OWFs: predicted growth rate above 1 and counterfactual of growth rate of 0.993 (see Table 1.22 and Figure 1.6 of Mona Offshore Wind 2024).

It should also be considered that the above assessment can be considered **overly precautionary** for a number of reasons, as set out in ***Sections 6.1.1 to 6.1.3*** below.

6.1.1 Tracking data and connectivity with wind farms in Liverpool Bay/north-east Irish Sea area

Tracking data (e.g. from Votier et al. 2010) and utilisation distributions (e.g. Wakefield et al. 2013) suggest that gannets have been shown to display spatial segregation between colonies and that it is unlikely that gannets from Grassholm SPA will forage in the Liverpool Bay/north-east Irish Sea area (see ***Figures A2.2 and A2.3***). Therefore, it can be considered unlikely that there is breeding season connectivity with projects located in Liverpool Bay/north-east Irish Sea area. Hence, the apportionment values calculated by the Mona Applicant for these OWFs

in their in-combination assessment using the generic NatureScot approach and the subsequent apportioned in-combination collision, displacement and combined collision plus displacement impacts to the colony in the Applicant's assessment are overly precautionary.

Additionally, Fort et al. (2012) analysed geolocator tag (GLS) data to reveal non-breeding movements and winter distribution for 86 gannets from five breeding colonies, including Grassholm. The results found that after their breeding season, almost all gannets moved to the south, including those from Grassholm. Therefore, it could be assumed that there is unlikely to be connectivity with the OWFs located in the Liverpool Bay/north-east Irish Sea area during these periods also.

Taking the above into account, this would mean that the only projects with likely potential connectivity in all seasons would be Llŷr, Erebus, White Cross and Wave Hub.

Fig. 1. Gannet colony foraging ranges. (**A**) Gannets tracked from colonies around the British Isles forage in largely mutually exclusive areas, despite their potential home ranges overlapping (red, study colonies; yellow, others). Home ranges predicted by the hinterland model (*3*) form Voronoi polygons, bounded by lines of equidistance between colonies (black lines). (**B**) Satellite tracks from 184 individuals show that foraging birds direct their movements away from neighboring colonies (colors correspond to different colonies). Data were collected in 2011, except for St Kilda (SK), which were collected in 2010. Gray lines, 200- and 1000-m isobaths; LS, Little Skellig; TB, Bull Rock (mentioned in the text; see table S1 for colony details).

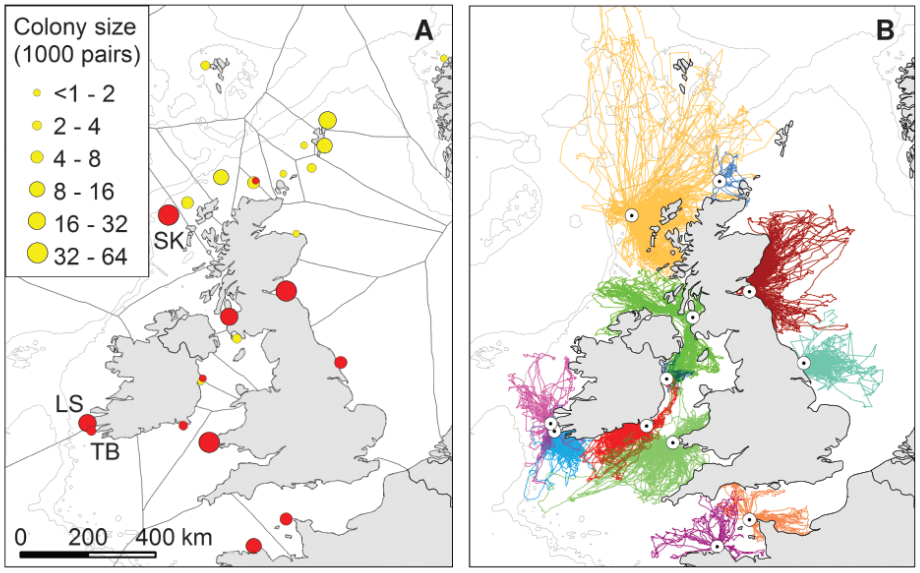


Fig. 2. Density-dependent competition and colony segregation. Density-dependent competition within and between colonies explains large-scale among-colony segregation. (**A**) Observed colony utilization distributions (colored polygons plus 95, 75, 50, and 25% UD contours) are largely mutually exclusive. This is at odds with the null model (predicted 75 and 95% UDs, solid and dashed lines), which assumes density-dependent competition only within colonies, predicting broad overlap between some UDs. (**B**) The density-dependent hinterland (DDH) model additionally assumes competition between colonies, providing a better fit to the tracking data.

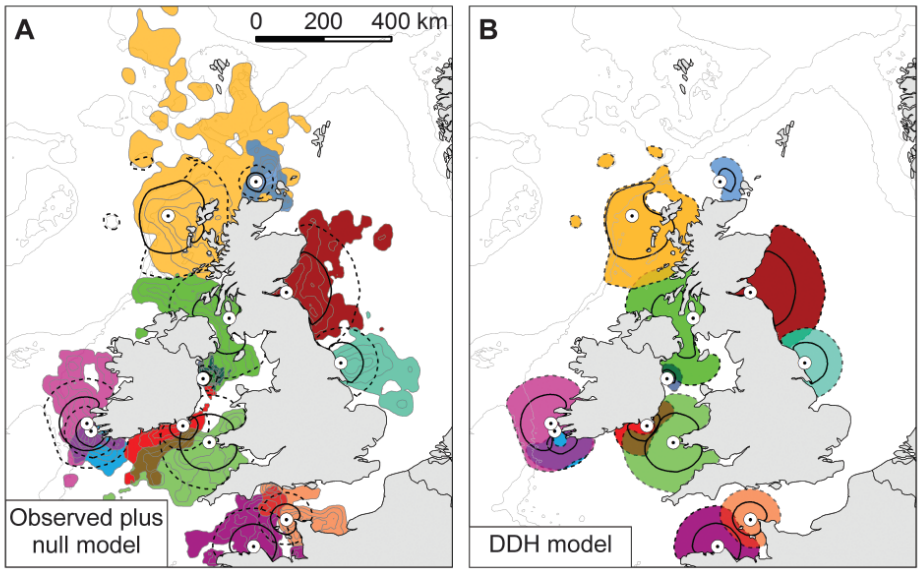


Figure A2.2 Spatial partitioning between gannet breeding colonies in the breeding season. Grassholm is indicated on the figure (reproduced from Wakefield et al. (2013))

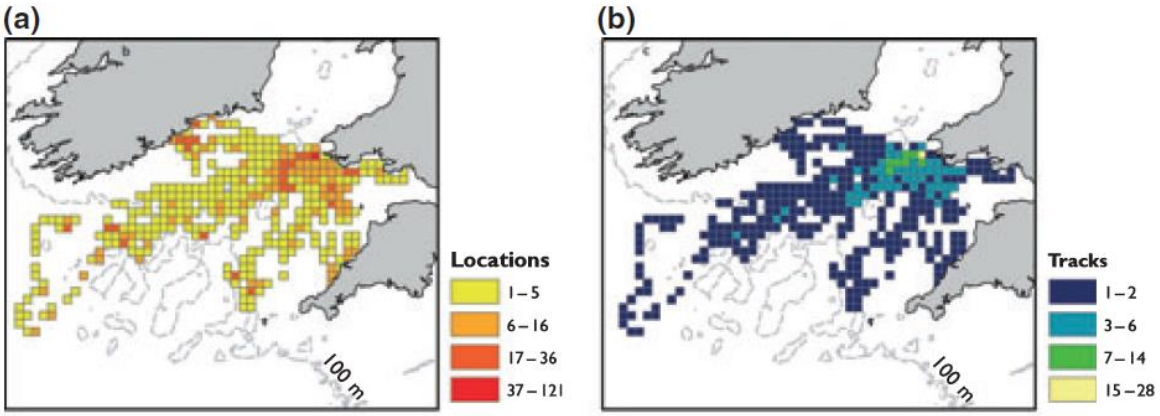


Figure A2.3 Plots of Grassholm gannet GPS locations: a) gannet GPS fixes 2006; b) gannet foraging tracks 2006 (reproduced from Votier et al. 2010)

6.1.2 Macro avoidance of offshore wind farms by gannet

Evidence suggests that gannets show strong macro-avoidance of offshore windfarms (e.g. Dierschke et al. 2016; Pavat et al. 2023). Therefore, assessments where there has been no consideration of macro avoidance should be considered precautionary. This is the case in the in-combination assessment presented above.

6.1.3 Gannet foraging range and habitat flexibility

Gannet has a large foraging range (mean-maximum of 516.7km for Grassholm SPA, Woodward et al. 2019) and has a high habitat flexibility (Furness & Wade 2012) suggesting that displaced birds would readily find alternative habitats including foraging areas. Therefore, it is considered unlikely that in-combination displacement mortality rates would be at the top of the range of % mortality considered and may be more likely to be towards the lower end of the range.

6.1.4 Conclusions

Taking account of the elements of precaution considered in Sections 6.1.1 to 6.1.3 above, we consider it is most likely that the in-combination collision plus displacement mortality is likely to be below 1% of baseline mortality of the colony (as shown in ***Table A2.11*** below), which can be considered to be undetectable against background mortality. We also note that using the post HPAI 2024 count of 38,398 adults, the predicted impact at a potentially more realistic worst case scenario of 80% displacement and 1% mortality equates to 0.74% of baseline mortality. Together with the PVA outputs, this suggests the colony can continue to grow, even for the extreme worst case scenario of in-combination collision plus displacement (i.e. no macro avoidance, 80% displacement and 10% mortality), we consider that the Conservation Objective of 33,000 pairs[6] would not be undermined and an **AEoSI can be ruled for in-combination collision, displacement and collision plus displacement.**

[6] NRW (2025) Grassholm Special Protection Area: Advice provided by Natural Resources Wales in fulfilment of Regulation 37(3) of the Conservation of Habitats and Species Regulations 2017.conservation-advice-for-grassholm-spa.pdf

Table A2.11 Indicative in-combination collision plus displacement Grassholm SPA gannet impacts for projects with likely connectivity, accounting for macro avoidance annually for SNCB advised range of displacement (60-80%) and mortality (1-10%) scenarios. Shaded cells exceed 1% baseline mortality of the colony (based on adult mortality rate of 8.1% and 2015 colony count of 72,022 adults – most contemporaneous count with Llŷr baseline surveys and as used by Applicant in their assessment)

		% mortality									
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
% displaceme	**60**	21	27	33	39	46	52	58	64	70	77
	70	22	29	36	44	51	58	65	72	80	87
	80	23	31	39	48	56	64	72	81	89	97

Whilst it is considered likely that there may be few in-combination mortalities from the OWF projects with connectivity to the SPA, which can be considered to be undetectable against background mortality, the colony has declined significantly followed the HPAI outbreak. We note that a combination of any further declines in population abundance and increased impact from future developments with potential connectivity to the colony may increase mortality to a level where further consideration is required for future projects. We therefore recommend that future projects consider inclusion of measures to reduce mortality (such as raising turbine draft height as much as possible to reduce collision mortalities) in order to allow maximum realisation of renewable energy for the minimum environmental impact.

The Strategic Need for the Llŷr Project

Executive Summary

Deep water offshore wind will be crucial to achieving the net-zero targets of the UK and Welsh Governments; fixed bottom capacity alone will be unable to meet growing electricity demand. The Llŷr wind farm has been brought forward to showcase the next generation of clean, renewable offshore energy technology before it enters industrialisation. The project's goal is not only to help deliver clean energy but also to accelerate learning from new full-scale floating offshore wind technology solutions tested in UK waters.

The project fully meets the Wales National Marine Plan's low carbon energy Supporting Policies for the development of renewable energy activities, in particular ELC_01, which seek to ensure that potential for energy generation from renewable sources is achieved in line with climate and energy targets, and does so in a way which gives due regard to relevant environmental, social and cumulative impact considerations, in particular the Wales National Marine Plan policies SOC_06, SOC_07 and SAF_01 b.

Llŷr will enable several key benefits for Wales and the wider UK:

- *Catalyst for Accelerating the Floating Offshore Wind Industry*: Llŷr will help de-risk technology and reduce costs through early deployment. It will validate designs and demonstrate the manufacturing and installation of commercial-scale floating offshore wind turbines, allowing for further optimisation of substructure designs. This optimisation will lead to lower-cost, more efficient structures for gigawatt-scale projects.

- *Enhanced Understanding of Environmental Interactions*: The project will improve knowledge of the environmental impacts associated with the construction and operation of floating offshore wind farms.

- *Supporting the UK Clean Power 2030 Action Plan*: The project plays a crucial role in delivering the UK Clean Power 2030 Action Plan, which aims to reduce energy bills for households and businesses. It will facilitate the creation of more renewable energy sources, ensuring that Britain achieves energy security with clean power by 2030 and reaches Net Zero by 2050.

- *Economic Contribution*: Llŷr will significantly benefit the local and Welsh economy while contributing to the development and capacity of a new form of renewable energy generation at both a national and international level.

- *Maximizing Local Supply Chain and Employment Opportunities*: Llŷr will strengthen supply chains and create job opportunities in Pembrokeshire and throughout Wales, thereby contributing positively to both Welsh and UK economies. This initiative will provide the region with an early mover advantage to capitalise on domestic and export opportunities. An example of this is the recently announced 4.5GW Round 5 developments in the Celtic Sea, alongside ScotWind and other global prospects.

Requirement for Commercial Scale Turbines on Test and Demonstration Sites

The overall aim of the Llŷr project is to demonstrate a new model of deep water offshore wind technology to the emerging UK and international market. This Test and Demonstration (T&D) project will be amongst the first of its kind at this scale worldwide. Globally, to date, only 270 MW of deepwater offshore wind projects is fully operational across 16 projects in 8 countries. Of these

only two projects with a total capacity of 78 MW are in the UK (the Hywind and Kincardine projects in Scotland).

Since the first mega-watt scale floating offshore wind turbine (the 2.3 MW Hywind Demo) began operation in Norway in 2009, deep water has been recognised as the next frontier in offshore wind energy, unlocking 80% of the world's offshore resource in waters deeper than 50m.

Technical advancements through the learning experience from the deep water foundation technologies deployed to date mean that no deployed technologies in their current form are available commercially in the UK. This is due to a range of factors including:

- Learning and improvements identified during the T&D phase are being integrated into the design to mature it to a commercial market.
- Designs have been developed to specific regional supply chain capability that cannot be secured within the UK (e.g. Use of deep fjords in Norway).
- There is a need to move from a single, or low number of units, technology demonstration to move to a serial production scale to provide learning and feedback before significant investment is made into specialised port facilities for fabrication, assembly, and integration.
- Confidence needs to be established with project funders, insurers, warranty providers and policymakers that deep water offshore wind technology is scalable.

From a turbine technology perspective, the Kincardine floating wind project has the largest UK turbine capacity of 10MW, whereas the offshore wind turbine manufacturers have moved onto turbine capacities of 18MW or more[1]. To be an effective T&D project, Llŷr needs to showcase competitive commercial scale technology that represents the commercial market conditions. The size of a turbine is a critical aspect for deep water foundation technologies, having more of an influence on design and performance when compared to shallow fixed bottom foundations.

Llŷr will demonstrate deep water technologies that are capable of hosting turbines of 18MW (and greater) capacities and to provide small scale serial production deployment to validate technologies, trial logistics, and demonstrate supply chain capability at a significantly reduced risk and cost than full-scale commercial deployment. As a consequence, a successful Llŷr project, hosting new deep water foundation designs with turbines at an 18 MW scale will give funders and policymakers the confidence that the technology is scalable, not just on paper but in practice.

Future Energy Demands, Energy Security and the Climate Emergency

The UK government's Clean Power 2030 Action Plan[2] sets out a clear intent on electrification across various sectors to meet the pathway to Net Zero. This move will see a dramatic shift in consumption demand where the UK must roughly double its electricity generation capacity[3] while simultaneously transitioning to clean energy sources to meet both rising demand and net-zero targets by 2050.

A key aspect in delivering this transition is the development of new low carbon technologies, such as deep water offshore wind. This requires enabling the key necessary groundwork actions to accelerate the scaling up and delivery of deep water technologies to the market. This has to

[1] Zahle, F., Barlas, A., Lønbæk, K., et al. (2024). "Definition of the IEA Wind 22-Megawatt Offshore Reference Wind Turbine." Technical University of Denmark. https://doi.org/10.11581/DTU.00000317
[2] https://www.ukwa.org.uk/wp-content/uploads/2024/12/clean-power-2030-action-plan.pdf
[3] Energy and emissions projections 2023 to 2050

happen over the next 5 years to prepare the roll out of these technologies and embed their transition to a long-term, secure and clear energy system to 2050 and beyond.[4] This is due to the time required to secure the development projects (circa 10 years) and essential supply chain and infrastructure investment / upgrades necessary to meet the fabrication, integration and installation timeline requirements.

In addition to contributing 200 MW capacity to the Clean Power 2030 Action Plan objective by 2029, Llŷr is also a key enabler to the longer term ambition. As stated in a recent report by the joint government-industry Floating Offshore Wind Taskforce "*Floating wind test and demonstration sites are critically important to the UK's offshore wind ambitions, playing an essential de-risking and cost-reduction role as the country pursues what some describe as the "industrial opportunity of the century*"[5]. Fundamentally, T&D sites are the essential bridge between prototype concepts and commercial-scale deployment, without which the UK risks losing its current global leadership position in this emerging trillion-pound industry.

Strategic Importance of Test & Demonstration Projects

The Llŷr project will enhance understanding of environmental interactions, optimise designs, and create significant opportunities for training, employment, as well as manufacturing and supply chains in Pembrokeshire and Wales, especially as global demand for floating offshore wind energy increases. The Llŷr development will enable the realisation of a significant sustainable and low carbon economic opportunity for the local community and supply chain within the region by providing an early mover advantage not only for the forthcoming Round 5 developments in the Celtic Sea but also across the wider UK, European and global opportunities.

By reducing risk and uncertainty and demonstrating performance through T&D projects, stakeholders have the confidence and clarity they need to move forward with larger GW scale investments, such as the Round 5 Celtic Sea projects. Local supply chain could not tender for giga-watt scale projects in the region with prohibitive investment requirements. Llŷr provides the opportunity for local Welsh and UK suppliers to support offshore wind at an accessible scale, demonstrating their capabilities to the global market using existing facilities, before making large capital investments to support larger scale projects. Deepwater offshore wind (including floating) is at a crucial stage - decisions being made now will set the trajectory for the next decade. The UK Government is targeting 5 GW of deployed deep water offshore wind by 2030 and this remains a key component of the UK's broader clean power strategy to achieve 95% clean electricity generation by 2030. This ambition is severely under threat due to the lack of technology demonstration and lack of opportunity for the local UK supply chain to adapt and prepare for this ambition. T&D projects, such as the Llŷr project are a crucial enabler to address these challenges; either we build the supply chain and financial frameworks to scale, or the UK remains quoting ambition about potential without ever quite getting there.

The Llŷr site has been carefully chosen to allow suitable access to evaluate both the technology performance and its environmental interactions. The smaller scale of up to 10 turbines the demonstration project and its relative proximity (although the nearest turbine is still nearly 36 km offshore) to the coast means that it will be more feasible to access and learn from this early installation, make corrections, and prove concepts of environmental avoidance and operation.

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[4] "Future Energy Scenarios: Pathways to Net Zero", July 2025 (V.4), National Energy System Operator (NESO) - https://www.neso.energy/document/364541/download

[5] floating-offshore-wind-2050-vision-final.pdf

We would also like to highlight (as we did in Table 2-1. Description of the two main policy statements under WNMP ELC-01 (Welsh Government, 2019c, Volume 1: Chapter 02 – Regulatory and Planning Context) the Wales National Marine Plan's low carbon energy Supporting Policies for the development of renewable energy activities, in particular ELC_01, seek to ensure that potential for energy generation from renewable sources is achieved in line with climate and energy targets, and does so in a way which gives due regard to relevant environmental, social and cumulative impact considerations, in particular the Wales National Marine Plan policies SOC_06, SOC_07 and SAF_01 b.

Reducing the Cost of Energy

Currently there is over 25 GW capacity of deepwater wind seabed leases already in place within the UK to deliver the 2050 net zero target; however, the deep water offshore sector is under increasing pressure with the rise in supply chain costs, lack of technology demonstration and a need to achieve at least 30% cost reduction to compete with current market prices. While the technology currently carries higher costs than traditional offshore installations, taking a measured, stepping stone approach, will maximise long-term value to the UK, enhance future large-scale initiatives and strengthen the UK's position as a global leader in offshore wind development.

Hywind Scotland, a 30MW project, reduced costs by 70% compared to the Hywind Pilot. Hywind Tampen, a Norwegian 88MW project installed in 2022, is estimated to have reduced costs by 40% compared to Hywind Scotland[6].

Llŷr's own analysis[7] demonstrates that following a fully phased, structured approach, incorporating T&D projects like Llŷr unlocks cost reductions in future deployment of approximately 28% compared to moving to direct giga-watt scale deployment. This delivers multiple benefits including:

- Optimising infrastructure development based on operational learning
- Steady supply chain scale-up with clear investment signals
- Technology and deployment risk reduction through full scale experience
- Higher investor confidence through demonstrated success – unlocks lower cost of capital for giga-watt scale projects
- Development of continuous workforce development and skill retention

As a new technology, deep water wind carries a higher risk premium than established technology. However, this risk premium will decrease as operational assets accumulate a proven history, particularly compared to first-of-kind projects. As stated by the joint Government-industry Floating Offshore Wind Taskforce, "Building investor confidence through 'stepping-stone' projects, allowing reduced cost of capital is key.[8]"

Perceived Harm

Stakeholders have legitimate concerns that the proposed projects in the Celtic Sea at large scale may pose a significant risk of unforeseen environmental harm. The Llŷr project has the ability to

[6] https://cms.ore.catapult.org.uk/wp-content/uploads/2021/09/7527-Catapult-Report-–-Industrial-Leadership-FINAL.pdf
[7] https://www.llyrwind.com/wp-content/uploads/2025/06/Political-Insight-APPENDIX_MAY-2025_ENGLISH-1.pdf
[8] https://www.renewableuk.com/media/scccdrxe/floating-offshore-wind-2050-vision-final.pdf

address those issues at an appropriate scale before the larger commercial build out. A demonstration project allows for carefully controlled management of wildlife interaction, environmental risks, and the testing of effective mitigation measures before large-scale build-out proceeds and offers the opportunity to study the impacts of floating offshore wind projects in these relevant areas during construction and operation.

As acknowledged by NRW(A), in principle, the proposed mitigation measures to be adopted by the Llŷr project (and relied on in HRA and EIA assessments) are capable of avoiding adverse effects on site integrity and likely significant effects. The project is committed to ensuring that the mitigation measures presented during the application process are implemented to avoid adverse effects on ornithology or marine mammals.

In relation to the specific issue of potential landscape and visual effects from the Llŷr project, as we have outlined previously:

- The tip height of 325.5m assessed in the LVIA presented the "worst case" scenario used to enable a reasonable worst case assessment of the project and to inform mitigations and other measures that inform detailed design and implementation of a project. The assessment concluded that the majority of views (12 out of 15 viewpoint locations) are assessed as experiencing a small adverse change in visual amenity, resulting in effects of minor significance. At the remaining three viewpoint location viewers are assessed as experiencing a negligible adverse change in visual amenity, resulting in effects of negligible significance.

- However, in recognition of the concerns raised by the members of the PCNPA during the Members meeting and by NRW(A), and the project has committed to limit the turbine tip height to 300m above Highest Astronomical Tide (HAT). From a technical point of view, this is the minimum height achievable to ensure commercial scale turbine technology (up to 18 MW) whilst maintaining the necessary financial margins and turbine technical demonstration parameters needed to maintain the viability of the T&D project.

- Based on the 'ready reckoner' provided in the Stage 1 Report of the Offshore Wind Sensitivity Guidance, and the guidance within the Stage 2 and 3 Reports (including that on the specific sensitivities of the PCNP), NRW(A) advised that a reduction in blade tip height to 270m (the same height as the consented Erebus turbines) would be expected to reduce impacts within the PCNP. However, the Offshore Wind Sensitivity Guidance, 2019 is an approximation of potential effects based on subjective judgements and a limited number of case studies from SLVIAs and offshore projects. As demonstrated by the further information presented by the Llŷr project there is no discernible difference in landscape and visual effects from Llŷr Floating Wind Farm turbines of 300m or 270m. At 300m the Llŷr turbines are not perceived as larger than the Erebus turbines from key locations, including the PCNP. This is due to distance and relative proximity of the two schemes to the onshore viewpoints.

- In addition, it is likely that the visibility of the Llŷr turbines will be more limited, and magnitude of impact lower that stated in the SLVIA, for the majority of the time (as indicated by a review of average visibility data for the Milford Haven weather station suggests that frequency of visibility >35 km would be less than 33%, frequency of excellent visibility (>40 km) would be less than 24%, and frequency of visibility >50 km less than 10.5%).

- To address concerns raised on nighttime navigation lighting, the navigational lights will be designed to be legally compliant with CAA SARG Policy Statement (g) and will integrate a detection system to detect when visibility is greater than 5km. 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 and this measure has been welcomed by NRW(A).

- In the spirit of working together with the National Park as a good neighbour and recognising the concerns raised by the PCNPA members and NRW(A), Llŷr is proposing the implementation of a Landscape Enhancement Scheme. This £200,000 scheme will be set up to support the goal of landscape enhancement within the PCNPA, where the funds will be dispersed to landscape initiatives agreed by a steering group consisting of representatives from the project, the PCNPA and NRW(A).

Achieving Balance

The Llŷr project has adopted and incorporated all reasonable mitigation measures in the delivery of the project to avoid adverse effects on site integrity and likely significant effects identified during the assessment process.

The project represents a significant step in enabling the Welsh Government goal in achieving sustainable development. In accordance with the Well-being of Future Generations (Wales) Act 2015 (WFG), taking into account the ways of working as set out at section 5(2) of the WFG Act and 'SPSF1: Core Guidance, Shared Purpose: Shared Future – Statutory Guidance on the WFG Act', in that it:

- Provides a positive contribution to the Welsh Government's long-term, ambitious commitment and target for Wales to increase the renewable energy production to meet the equivalent of 100% of its annual electricity consumption from renewable sources by 2035, and to continue to keep pace with consumption thereafter.

- Provides a positive effect in building a stronger, greener economy delivering a significant step in decarbonisation, not only in its direct electricity production, but also by significantly contributing to the case for use of the technology at large scale by providing the economic, technology performance, social, supply chain, workforce development and environmental evidence necessary to enable large scale deployment of offshore wind in deeper water. This is turn will provide an opportunity for Wales and the wider UK to expand its offshore wind electricity generation contribution and to play a significant role in the international deep water offshore wind market.

Future Wales: The National Plan 2040 (the national development framework for Wales) recognises the potential for wind generation in the Southwest Region and sets out the Welsh Government's ambition for energy generation to play a role in supporting the Southwest economy. Policy 17 requires decision makers to give significant weight to the need to meet Wales' international commitments and the Government's target to generate 70% of consumed electricity by renewable means by 2030 in order to combat the Climate Emergency.

Consequence of not proceeding

In the situation that the T&D scale approach is not undertaken, or where the Llŷr project is not allowed to proceed, limited progress is achievable but with significant drawbacks. The UK could wait for other deep water offshore wind markets to progress the deep water offshore wind technology and thus avoid the burden of development costs. A development project constructed in the mid-2030s could benefit from a cost reduction of 10-15% due to global learning.

However, taking this approach would result in the UK losing its global market position as a leader in the offshore wind market; resulting in the inability to secure the necessary investment infrastructure to achieve a commercially competitive supply chain and failing to develop a skilled knowledgeable labour force that would not only service the UK market but have a significant potential export opportunity. It would also not lead to the 30% cost reduction target identified by RUK as necessary to compete with current market prices.

Instead of small-scale projects, the UK could progress directly to GW scale projects which could achieve a Levelized Cost of Energy (LCOE) of around £145/MWh in the 2030s. However, this requires significant investment in port facilities, grid infrastructure, and manufacturing, which may be challenging for private investors due to high initial costs and perceived risk.

Not proceeding with the Llŷr project will undermine the opportunity to effectively understand the environmental interactions of these technologies in the region before large scale build out. In addition, as stated by Marine Energy Wales, the T&D stepping stone approach recognises the need to develop the UK supply chain and supporting infrastructure, and provides opportunities for growth and investment.[9] The Llŷr project represents a key contribution to that stepping stone approach.

The Llŷr project provides an early mover opportunity to create significant opportunities for training, employment, as well as manufacturing and supply chains in Pembrokeshire and Wales, especially as global demand for floating offshore wind energy increases. The UK's floating wind industry has the potential to employ 97,000 people by 2050, with many of the jobs based in Scottish and Welsh ports, contributing £47 billion to our economy by building and supplying projects here as well as exporting our cutting-edge technology worldwide – but only if the right measures are put in place to enable more projects to go ahead faster.[10] The Llŷr project represents one of those measures necessary to capture this opportunity – without it, the potential for reaping the economic, energy security and environmental benefits may be lost.

[9] https://research.senedd.wales/research-articles/harnessing-wales-marine-renewable-energy-the-story-so-far/

[10] https://www.renewableuk.com/media/scccdrxe/floating-offshore-wind-2050-vision-final.pdf