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Morlais Project

Document MOR/RHDHV/DOC/0069: Statement of Common Ground – NRW – Ornithology

Applicant: Menter Môn Morlais Limited

Document Reference: PB5034-ES-SoCG-O

Document MOR/RHDHV/DOC/0069: Statement of Common Ground – NRW
– Ornithology

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Morlais Document No.: MOR/RHDHV/DOC/0069	Status: Live	Version No: D1.1	Date: July 2019
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Revision History			
Date	Rev.	Summary of Changes	Issue Purpose
17/05/19	0.1	First draft for review by Menter Môn	For comment
28/05/19	0.2	Draft for approval by Natural Resources Wales	For approval
22/07/19	1.0	Second draft for review by Menter Môn	For comment
30/07/19	1.1	Second draft for approval by Menter Môn	For approval

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1. INTRODUCTION

1.1. THE PROJECT

1. The Project is being developed by Menter Môn, the applicant, a not for profit social enterprise company. When consented, the Project will have a generating capacity of up to 240 MW of tidal generating capacity.
2. The Project is located within one of several marine energy demonstration zones located around the United Kingdom (UK) coast, which have been leased out by The Crown Estate in a bid to encourage and accelerate the marine energy industry. The Project is located within the West Anglesey Demonstration Zone (WADZ), a zone primarily selected for its tidal resource. Menter Môn has been appointed as the manager of the WADZ by The Crown Estate. In this ES, the WADZ is referred to as the Morlais Demonstration Zone (MDZ).
3. The development of the Project will provide a consented tidal technology demonstration zone, specifically designed for the installation and commercial demonstration of multiple arrays of tidal energy devices. The Project will include permanent communal infrastructure for tidal technology developers which provides a shared route to a local grid connection via nine export cable tails, an onshore landfall substation, and an onshore electrical cable route to a grid connection via a grid connection substation.
4. The Project will be authorised via the following principal consents:
 - A Transport and Works Act Order under the Transport and Works Act 1992; and
 - A Marine Licence under the Marine and Coastal Access Act 2009 (MCAA).

1.2. THE DEVELOPER

5. Development of the MDZ is being led by Menter Môn who have been allocated funding from European Union (EU) Structural Funds prioritised for marine energy in Wales. Menter Môn is a not for profit, third sector social enterprise, delivering socioeconomic development projects across North Wales. Menter Môn's motivation for the Project is to position itself as a community organisation at the centre of renewable innovation, and to establish Anglesey as a marine energy hub, thereby securing maximum added value for the local economy and community.

1.3. THE NEED FOR THE PROJECT

6. Tidal energy is a clean, renewable and highly predictable source of energy. The EU has identified tidal energy, and more widely ocean energy (tidal and wave combined), as having the potential to contribute significantly to climate change reduction, socio-economic and energy security objectives. The Project would present a significant proportion of the Welsh carbon budgets.
7. In allowing long-term commercial demonstration of different technologies and small arrays of tidal devices, the Project is an important step in developing the tidal energy industry within the UK and internationally, with significant potential socio-economic benefits as well as contributing towards the reduction of greenhouse gas emissions and greater security of energy supply.

8. Development of the Project will support those objectives of the 2017 Anglesey and Gwynedd Joint Local Development Plan, aimed at promoting the development of renewable or low carbon energy technologies (Isle of Anglesey County Council and Gwynedd Council, 2017). The Project will prioritise maximising opportunities for local communities directly via employment and indirectly via the establishment of a local supply chain.

1.4. ROLE OF POLICY AND LEGISLATION IN THE DECISION MAKING PROCESS

9. The ES identifies the key National and European legislative and policy drivers and commitments in areas of climate change and renewable energy which are relevant to the Project. Each technical topic within the ES outlines how the development of the Project will comply with the requirements of national legislation and policy, local plans and technical guidance.
10. The ES provides consideration of the key legislation, including the Well Being of Future Generations (Wales) Act 2015, which promotes improvement of the social, economic, environmental and cultural well-being of Wales. The developers of the Project also have a desire to increase and diversify employment and economic development opportunities across the communities. The Project will have no significant negative impact on health and wellbeing and is expected to have a minor beneficial impact to a number of receptors.
11. National Policy Statements (NPS) are produced by Government and comprise the Government's objectives for the development of projects in a particular sector. Those relevant to the Project give reasons for the policy set out in the statement and include an explanation of how the policy takes account of Government policy relating to the mitigation of, and adaptation to, climate change.
12. The Marine Policy Statement (MPS) supports marine renewable developments and suggests that adaptation and mitigation methods for these technologies may be supported by detailed monitoring programmes and co-ordinated research initiatives, including post deployment of devices. This approach is being followed by Menter Môn, with the intention to supply a detailed environmental monitoring and mitigation plan.
13. Planning Policy Wales (PPW) outlines the Welsh Government's approach to ensuring that the planning system contributes to the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales.
14. The draft Welsh National Marine Plan (WNMP) outlines the following aspects that Menter Môn should be undertaking to ensure that the Project is in accordance with the plan:
 - Engage early across and between relevant stakeholders;
 - Apply the general cross-cutting and sector-specific policies set out in this plan to guide proposals;
 - Consider the potential beneficial and adverse impacts of their proposed activity on the economy, society and the environment; minimise adverse effects and maximise opportunities for coexistence and securing multiple benefits;
 - Supply the information required for the relevant public authorities to assess their proposal(s) including fit with relevant planning policy; and

- Ensure that evidence provided is sound and proportionate given the development in question and its associated risks.

1.5. PURPOSE OF THIS DOCUMENT

15. Drawing upon experience from Development Consent Order (DCO) applications for major offshore wind farms, Menter Môn is applying a technical working group (TWG) and “statement of common ground” (SoCG) approach to management of key environmental issues for the Morlais Project (hereafter referred to as ‘the Project’) and associated Transport and Works Act Order (TWAo) application. A small number of TWGs have been established to enable technical discussions with experts from relevant stakeholders.
16. The main participants of the TWGs are technical experts drawn from Natural Resources Wales (NRW). This Statement of Common Ground (SoCG) is a ‘live’ document that has been prepared by Royal HaskoningDHV on behalf of Menter Môn to record the outcomes of technical discussions with NRW regarding marine and terrestrial ornithology. It has been prepared in accordance with guidance published by the Planning Inspectorate and available from the Assembly Government’s website (Welsh Government, 2019).
17. Paragraph 1 of the Guidance states that SoCG: *are joint statements made by the appellant/applicant and other parties such as the local planning/relevant authority. The aim of the document is to agree factual information and to provide a commonly understood basis for the appellant/applicant; the local planning / relevant authority and/or other parties.*
18. Although not required as statutory documents under Schedule 5 and 6 of the Transport and Works (Applications and Objections Procedure) (England and Wales) Rules 2006, Menter Môn is submitting SoCG on key technical issues, including ornithology, marine mammals and seascape and landscape visual impact assessment (SLVIA). Although there is no statutory requirement, SoCG are useful tools and their submission is encouraged where a SoCG contributes to an improvement in the quality of the evidence and a reduction in the quantity of material which needs to be considered (Welsh Government, 2019).
19. The purpose of this SoCG is to set out matters which are agreed and not agreed about the application for consent to be made by Menter Môn for the construction and operation of the Project.
20. The aim of this SoCG is therefore to provide a clear position of the state and extent of agreement between Menter Môn and NRW on matters relating to the Project at the time of writing and the SoCG will continue to evolve in the lead up to and during the post application period.
21. The contents of this document and NRW’s views are based on pre-application discussions/submissions which are subject to the submission of the formal application and detailed supporting documents, and NRW’s views and position are therefore subject to change (at least on some aspects).
22. This first draft of the SoCG for ornithology was provided to NRW by Menter Môn on 28th May 2019 for review and comment.

23. The document will be updated as more information becomes available and as a result of ongoing discussions between Menter Môn and NRW . Updates are recorded in the “Revision History” table provided on the front page of this document.
24. Once finalised, the SoCG will be submitted to the Welsh Government as part of the formal application by Menter Môn under the Transport and Works Act 1992.
25. This document should be read in conjunction with the relevant technical chapters in the ES; **Chapter 11, Marine Ornithology (Volume I** of the ES) for information on seabirds and **Chapter 19, Onshore Ecology (Volume I** of the ES) for terrestrial ornithology.

2. PROJECT DESCRIPTION

2.1. OVERVIEW

27. The Project will provide the supporting electrical infrastructure to connect tidal energy converters (TECs) within the MDZ and export the electricity generated to grid. The Project aims to secure a broad consent envelope, which will encompass a range of tidal device types and technologies with the potential to be installed and operated as part of the Project. The final details of all equipment to be installed, including tidal devices, will be confirmed following consent.
28. The Project comprises two development areas, as follows:
- Offshore Development Area: including all intertidal and offshore areas where offshore infrastructure may be placed and encompassing the MDZ (covering an area of 35 km²), and the export cable corridor (covering an area of 4.75 km²).
 - Onshore Development Area: including all intertidal and onshore areas where infrastructure may be placed (covering an area of 1 km²).
29. As a pre-consented and grid connected commercial demonstration zone, a number of different tidal devices and array configurations may be deployed at the Project over its 37-year lifetime. Tidal devices will be deployed in multiple arrays within the MDZ, to a maximum installed capacity of 240 MW.
30. The key components of the offshore works associated with the include:
- Tidal Devices, TECs and inter-array cables within the MDZ;
 - Up to nine export cable tails (shared with onshore components);
 - Navigation and environmental monitoring equipment;
 - Mooring and foundation structures; and
 - Offshore electrical infrastructure, including submerged, floating or surface emergent hubs.
31. The key components of the onshore works associated with the Project include:
- Cable landfall works, including;
 - Up to nine HDD ducts or trenched equivalents,
 - Up to nine transition pits or bays, and
 - Up to nine export cable tails (shared with offshore components).
 - A landfall substation at Ty-Mawr (hereafter referred to as Landfall Substation);
 - A switchgear building at Parc Cybi (hereafter referred to as Switchgear Building);
 - A grid connection substation at the existing Orthios Eco-Park to the east of Holyhead (the site of the former Anglesey Aluminium works) (hereafter referred to as Grid Connection Substation); and,
 - Onshore cable route between Landfall Substation, Switchgear Building and Grid Connection Substation).

2.2. OFFSHORE WORKS

2.2.1. Tidal Devices

32. Tidal devices comprise of the TEC, the supporting structure, and the anchor or foundation. Several representative tidal technologies have been considered in order to capture the likely range of TECs that may be demonstrated within the MDZ.
33. Using three generic types of tidal device as exemplars shown in **Plate 2-1**, **Plate 2-2** and **Plate 2-3**, the TEC support structure may be seabed mounted and submerged, buoyant and mid-water column or floating. The TECs to be installed will fall into one of two main types as shown in **Plate 2-4** horizontal axis (axial flow) rotors; or vertical axis (cross flow) rotors.
34. Note that the actual form of tidal devices and numbers of TECs supported will differ between the technologies deployed. Following consent award, tidal device developers will be allocated “berths” within the MDZ, within which they will be able to deploy anything from one device to arrays of multiple tidal devices. Repowering is the replacement of one array of tidal devices with another array of tidal devices, normally with a different, newer or / and updated technology. Array deployments will vary in duration; therefore, the allocation of berths will be repeated throughout the life of the Project, as berths become available and are repowered.

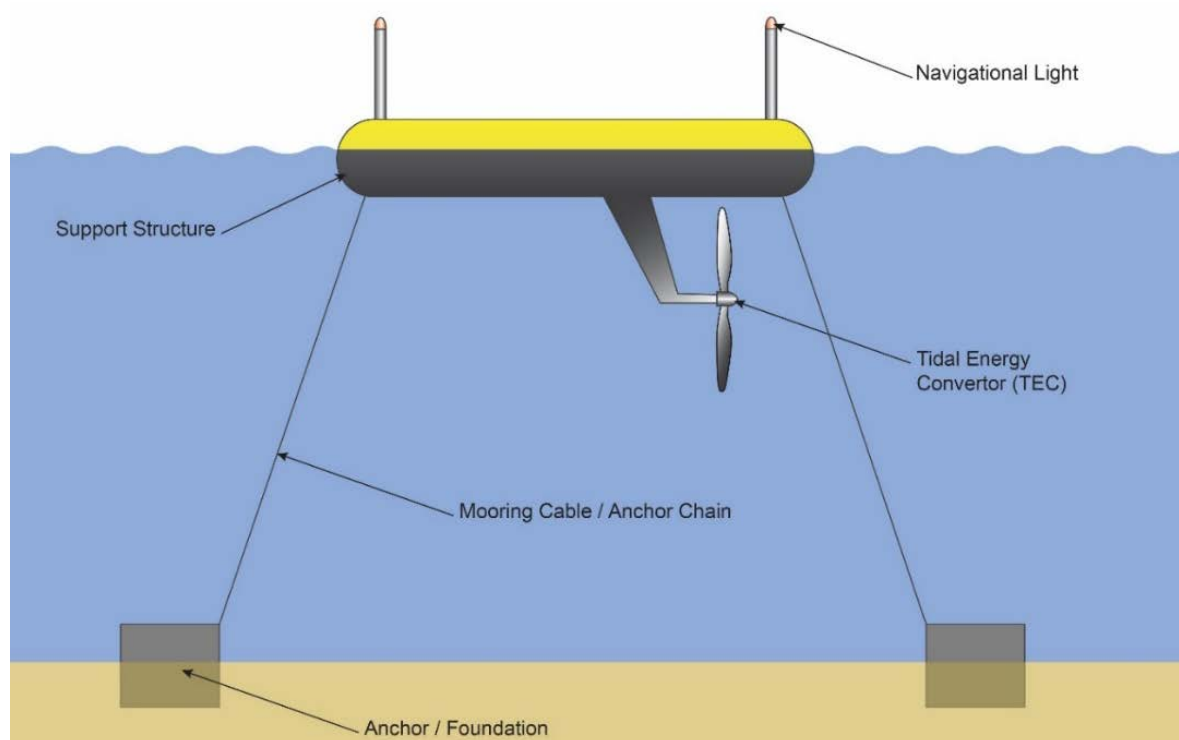


Plate 2-1 Generic Tidal Device Exemplar 1 – Floating or Surface Emergent Tidal Device, Comprised of TEC, Support Structure, Mooring Cables / Anchor Chains and Anchors / Foundations

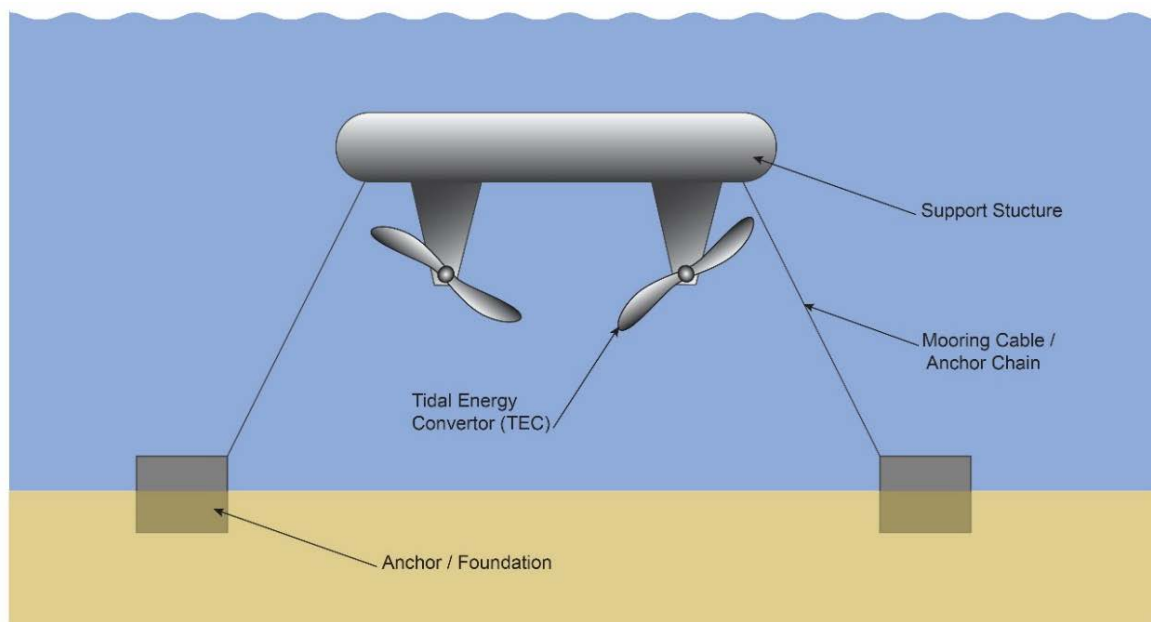


Plate 2-2 Generic Tidal Device Exemplar 2 – Mid Water Column Tidal Device, Comprised of TEC, Support Structure, Mooring Cables / Anchor Chain, and Anchor / Foundation. Note this device is shown facing into direction of current flow

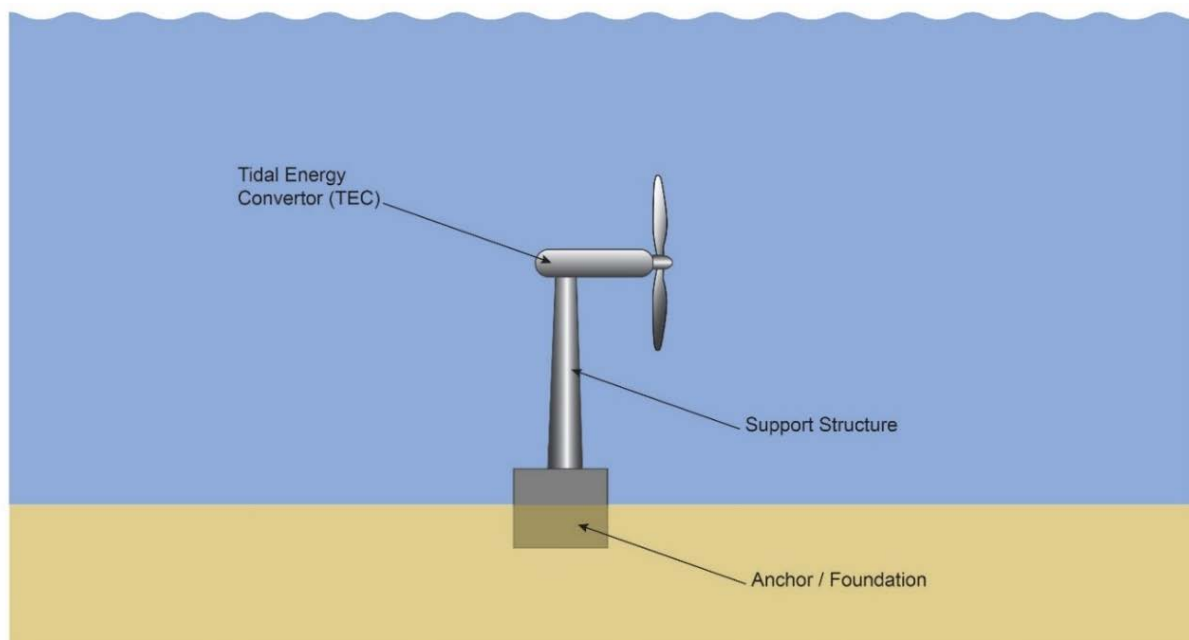


Plate 2-3 Generic Tidal Device Exemplar 3 – Seabed Mounted Sub Surface Tidal Device with TEC Supporting Structure and Foundation

35. **Plate 2-4** shows the two generic forms of TEC that may be mounted on the generic tidal device exemplars shown in **Plate 2-1** to **Plate 2-3**. These may be either horizontal axis or vertical axis TECs.



36. From the arrays of tidal devices, electricity will be transmitted via subsea inter-array cables to an offshore hub or other connection point(s), from which subsea export cables will connect to export cable tails in the nearshore, with the export cable tails continuing to landfall.
37. On reaching shore the export cable tails will be joined to underground onshore cables via an underground transition pit or bay, near to the point of landfall.

38. Landfall will be located within the bay on the western coast of Holy Island known as Abraham's Bosom. There are two main methods which could be used for cable installation at landfall; Open cut trenching, or HDD.
39. HDD is the preferred option to achieve landfall. However, if HDD is not found to be feasible, possible alternative methods consist of cutting of shallow trenches with an excavator / rock cutter; installation and pinning of ducting and/or subsea cable with a split-pipe to the cliff face, across the foreshore region, all within a trench where possible.
40. The Landfall Substation will house the connection between the offshore export cables and the onshore cable to a grid connection substation. The landfall substation location is within currently farmed land, in the area of Holy Island known as Penrhos Feilw.
41. The preferred option for the onshore cable route is for it to be excavated into the local road network where possible. Where constraints such as a narrow road or existing services within the road do not allow, the cable will be installed within land/fields adjacent to the road. From

the landfall substation location, the majority of the onshore cable route follows the minor road network to towards the A55 and Holyhead to Bangor rail line.

42. At certain locations where specific features need to be crossed or avoided, such as the A55 and Holyhead to Bangor rail line, trenchless techniques such as drilling under the feature would be used to install ducts, minimising environmental impacts and disruption.
43. Menter Môn propose to construct a grid connection substation to convert the electricity produced by the demonstration zone into a format that can be accepted by the existing energy supply. The cable would be routed from the Landfall Substation, via trenching to a 33kV Switchgear Building at Parc Cybi then to the Grid Connection Substation at Orthios Eco-Park to the east of Holyhead (the site of the former Anglesey Aluminium works). Connection to existing electricity network will be through existing infrastructure at the Grid Connection Substation. Although the infrastructure at the Switchgear Building is not sufficient to accommodate the full project capacity, this will offer an additional connection to the local electricity network.

3. RECORD OF CONSULTATION

44. The preparation of this SoCG has been informed by a programme of discussions between Menter Môn and NRW. The relevant meetings are summarised in **Table 3-1** and the outline of topics covered relevant to SoCG discussions for ornithology are shown in **Table 3-2**.

Table 3-1 Ornithology Technical Meeting Details

Meeting / Date / Attendees	Agenda	Documents sent to NRW prior to meeting
TWG First Meeting 13/12/18 NRW	<p>Assessment Approach</p> <ul style="list-style-type: none"> Project background (recap) Review of project design envelope Species, conservation sites and populations to be included Appropriate spatial scale for assessment Review species parameters and vulnerability by species/group: <ul style="list-style-type: none"> Above water Submerged Foraging distances Approach to Collision Risk Modelling (CRM)/ Encounter Rate Modelling (ERM) <ul style="list-style-type: none"> Appropriate avoidance rates Potential Biological Removal (PBR) Approach to assessment / potential impacts Cumulative assessment 	<p>Technical note detailing current plan for assessment of impacts upon seabirds.</p> <p>PowerPoint outlining main areas proposed for discussion.</p>
TWG Second Meeting 19/02/19 NRW	<p>Assessment Parameters</p> <ul style="list-style-type: none"> Overview of CRM and ERM: <ul style="list-style-type: none"> Methods, limitations, interpretation, role in Environmental Impact Assessment (EIA) Device parameters and overview of modelling scenarios Bird input parameters (densities and diving behaviour) and sources of information Avoidance rates Presentation and review of preliminary results Plans for future work Obtaining feedback on work already undertaken and planned 	<p>PowerPoint presentation outlining the key works undertaken since the previous meeting and points for discussion at second meeting.</p>
TWG Third Meeting 03/05/19 NRW	<ul style="list-style-type: none"> Outstanding points and queries raised in first and second TWG meetings Progress update on Marine Ornithology EIA, including ERM/CRM and Population Viability Analysis (PVA) for Holy Island Coast Site of Special Scientific Interest (SSSI) Progress update on Marine Ornithology Habitats Regulations Assessment (HRA) Progress update on Terrestrial Ornithology EIA - chough 	<p>PowerPoint presentation outlining the key works undertaken since the previous meeting and findings of assessment works undertaken.</p>



Table 3-2 Statement of Common Ground – Ornithology – Natural Resources Wales

Issue	Date	Menter Môn position	NRW position	Status	Actions (if required)
Environmental Impact Assessment (EIA) – Baseline Environment					
1. Species to be considered in the baseline environment	13/12/18	<p>The proposed bird species to be included in the assessment (i.e. EIA, HRA or both) are:</p> <ul style="list-style-type: none"> ▪ Terns: Arctic tern, common tern, Sandwich tern, roseate tern ▪ Gulls: black-headed gull, common gull, great black-backed gull, herring gull, kittiwake, lesser black-backed gull ▪ Auks: guillemot, puffin, razorbill ▪ Tubenoses: fulmar, Manx shearwater ▪ Seaducks: common scoter ▪ Divers: red-throated diver ▪ Gannets: gannet ▪ Cormorants and shags: shag 	NRW agreed in principle with the list of species to be included in the assessment.	Ongoing	N/A – Full details will be present in the assessment submitted in September.
2. Data sources	13/12/18	<p>Site specific survey data – November 2016 to October 2018</p> <p>Various data sources used to refine species list include (but are not limited to) the following;</p> <ul style="list-style-type: none"> ▪ Furness R.W., Wade H.M., Robbins A.M.C. and Marsden E.A. (2012) Assessing the sensitivity of seabird populations to adverse effects from tidal stream turbines and wave energy devices ICES Journal of Marine Science (2012), 69(8), 1466–1479. ▪ JNCC (2018) Seabird Monitoring Programme Online Database [online: http://jncc.defra.gov.uk/smp/sitesBrowser.aspx?siteID=84733]. ▪ NRW (2015) Proposal to extend and reclassify Ynys Feurig, Cemlyn Bay and The Skerries Special Protection Area and rename it as Anglesey Terns Special Protection Area. Advice to the Welsh Government June 2015. 	<p>NRW agrees in principle. However, we have not yet seen the full set of papers and references and how they have been used.</p> <p>The list of data sources is good. However, NRW advise that Menter Môn could also use Wildfowl and Wetlands Trust (WWT) and European Seabirds at Sea (ESAS) combined data set, Future of the Atlantic Marine Environment (FAME), Biologically Defined Minimum Population Scales (BDMPS) and papers such as Frederiksen (2012) for kittiwake.</p> <p>There will be various other papers and data sources available that show the movement of birds from sites, e.g. Manx shearwaters, gannets.</p>	Ongoing	Full details will be present in the assessment submitted in September.



Issue	Date	Menter Môn position	NRW position	Status	Actions (if required)
		<ul style="list-style-type: none"> Thaxter C.B., Lascelles B., Sugar K., Cook A.S.C.P., Roos S., Bolton M., Langston R.H.W. and Burton N.H.K. (2012) Seabird foraging ranges as a preliminary tool for identifying candidate Marine Protected Areas. <i>Biological Conservation</i> 156 (2012) 53–61. Oppel S., Bolton M., Carneiro A.P.B., Dias M.P. et al. (2018) Spatial scales of marine conservation management for breeding seabirds. <i>Marine Policy</i> 98 (2018) 37–46. RSPB (2018) Combining habitat modelling and hotspot analysis to reveal the location of high density seabird areas across the UK: Technical Report. RSPB Research Report 63, September 2018. All relevant Countryside Council for Wales (CCW)/NRW Marine Monitoring reports. Minesto Deep Green Holyhead Deep Project Environmental Statement. Minesto Deep Green Holyhead Deep Project Offshore Habitats Regulations Assessment Report. Horizon Wylfa Newydd Power Station baseline information, Environmental Statement and information for Habitats Regulations Assessment. 	<p>There is useful information about tidal turbines and birds in Alex Robbins' PhD.</p> <p>Data should also include populations from Sites of Special Scientific Interest (SSSIs) for those features which are potentially affected, e.g. guillemots and Carreg y Llam SSSI.</p> <p>NRW advise that the applicant should use Thaxter <i>et al.</i> 2012, as a blunt tool for scoping in of sites to the assessment. Data such as FAME can then be used to inform more local movements/use of the sea.</p>		
	19/02/19	<p>More references have been included for the bird input parameters as discussed in the previous meeting. Alex Robbins' PhD thesis has been used where there was high confidence in data, and substituted for other studies where there was lower confidence.</p> <p>Robbins (2017) has not applied conversions to published data, so in some cases this has had to be converted to make compatible with SNH methods and spreadsheets.</p>	<p>NRW agreed.</p> <p>NRW agrees in principle but still needs to see the detail of the process of determining high and low confidence and what has been left out through that process.</p>		
3. Terns	13/12/18	Commic terns will be allocated to one species or the other by establishing the ratios of each species seen by month and	NRW agreed with the ratio allocation for "commic" terns to species level.	Agreed	N/A



Issue	Date	Menter Môn position	NRW position	Status	Actions (if required)
		<p>applying this ratio to the birds that could not be identified to species level.</p> <p>Terns have a low predicted sensitivity to displacement and disturbance impacts and a low sensitivity to collision risk as they only use the first 2-3m of the water column for feeding.</p> <p>All terns will be screened into the EIA and HRA.</p>	NRW agreed with the low sensitivity, and doesn't see collision as a risk for terns.		
4. Kittiwake	13/12/18	<p>Possible use of apportioning calculations (Scottish Natural Heritage, SNH) including Irish Special Protection Area (SPA) populations</p> <p>Kittiwake have a low predicted sensitivity to displacement and disturbance impacts and a low sensitivity to collision risk as they only use the first 1m of the water column for feeding.</p> <p>Kittiwake will be screened into the EIA and considered during the screening stage of the HRA before being discounted for further consideration.</p>	<p>NRW agreed that the SNH method could be used for apportioning kittiwake numbers to SPAs.</p> <p>NRW agreed with the low risk of collision for kittiwake.</p>	Agreed	N/A
5. Other gulls	13/12/18	<p>Other gulls have a low predicted sensitivity to displacement and disturbance impacts and a low sensitivity to collision risk as they only use the first 1m of the water column for feeding.</p> <p>As such, other gulls will be included in the EIA but screened out of the HRA.</p>	NRW agreed that other gulls should be considered at HRA screening, before being discounted for further consideration within Stage 2 of HRA. All species to be included in EIA.	Agreed	N/A
6. Puffins	13/12/18	<p>Puffins have a medium predicted sensitivity to displacement and disturbance impacts and a high sensitivity to collision risk as they use the full water column.</p> <p>Puffins will be included in the EIA and HRA, with further investigation into Skokholm and Skomer SPA foraging (seems unlikely).</p>	NRW agreed.	Agreed	N/A
7. Guillemot and razorbill	13/12/18	<p>Birds that were either guillemot or razorbill will be allocated to one species or the other by establishing the ratios of each species seen by month and applying this ratio to the birds that could not be identified to species level.</p> <p>Razorbills and guillemots have a low to medium predicted sensitivity to displacement and disturbance impacts and a high sensitivity to collision risk as they use the full water column.</p>	NRW agreed with the approach for allocating unknown guillemot / razorbill sightings to one species.	Agreed	N/A



Issue	Date	Menter Môn position	NRW position	Status	Actions (if required)
		Guillemot and razorbill will be included in the EIA (with particular emphasis on collision risk). They will be included in HRA, with a further investigation into the presence of foraging SPA-qualifiers during the breeding season.			
8. Fulmar	13/12/18	Fulmar have a low predicted sensitivity to displacement and disturbance impacts and a low sensitivity to collision risk as they only use the first 5m of the water column. Fulmar will be included in the EIA and HRA, but that likely significant effect would potentially be ruled out due to low numbers of birds/SPA distance.	NRW agreed with this assessment, though did add that the breeding pattern for this species was to breed in small pockets in many locations rather than large colonies.	Agreed	N/A
9. Manx shearwater	13/12/18	Manx shearwater has a medium predicted sensitivity to displacement and disturbance impacts and a high sensitivity to collision risk as they dive to 30m water depths Manx shearwater will be included in the EIA and HRA, using apportioning calculations to allocate counts to SPAs.	NRW agreed but also advise that the sensitivity of the diving bird will depend on the depth of the turbines.	Agreed	N/A
10. Gannet	13/12/18	Gannet have a low to medium predicted sensitivity to displacement and disturbance impacts and a medium sensitivity to collision risk as they only use the first 5 to 10m of the water column. Gannet will be included in the EIA and HRA, although it may be possible to screen out due to low numbers in the development area.	NRW agreed but also advise that the sensitivity of the diving bird will depend on the depth of the turbines.	Agreed	N/A
11. Shag	13/12/18	Shag have a medium to high predicted sensitivity to displacement and disturbance impacts and a medium to high sensitivity to collision risk, with an average dive depth of 20.5m. Shag will be included in the EIA but screened out of the HRA at Stage 1.	NRW agreed but also advise that the sensitivity of the diving bird will depend on the depth of the turbines.	Agreed	N/A
12. Common scoter	13/12/18	Common scoter have a high predicted sensitivity to displacement and disturbance impacts and a medium sensitivity to collision risk, with an average dive depth of 10m. Common scoter will be included in the EIA but screened out of the HRA.	NRW agreed but also advise that the sensitivity of the diving bird will depend on the depth of the turbines.	Agreed	N/A



Issue	Date	Menter Môn position	NRW position	Status	Actions (if required)
13. Red throated diver	13/12/18	Red-throated divers have a high predicted sensitivity to displacement and disturbance impacts and a medium sensitivity to collision risk, with an average dive depth of 10m Red-throated divers will be included in the EIA but screened out of the HRA.	NRW agreed but also advise that the sensitivity of the diving bird will depend on the depth of the turbines.	Agreed	N/A
14. Cormorant	19/02/19	Cormorant are not included within the Collision Risk Model (CRM)/Encounter Rate Model (ERM) as surveys have only recorded cormorant in flight, therefore it is not appropriate to model without 'on water' densities. For the impact assessment, Menter Môn will look qualitatively at the potential impact of attraction to surface devices as resting locations, for cormorant and shag.	NRW cannot confirm agreement yet because we have not seen the map, which we thought was to be presented for the second TWG meeting. Please note that this regarding a disturbance scenario for birds 'at sea' and not the colony and the sensitivity of the diving bird will depend on the depth of the turbines.	Ongoing	Full details will be present in the assessment submitted in September.
Impact Assessment					
15. Construction and decommissioning impacts	13/12/18	Potential construction and decommissioning impacts are identified as: <ul style="list-style-type: none"> Airborne noise and visual disturbance/displacement; Potential barrier effects; Disturbance at breeding sites (e.g. vessels moving to and from the site/landfall); Potential changes in water quality (e.g. suspended sediments, accidental release of contaminants); and Potential changes in prey availability (e.g. due to underwater noise, disturbance, loss of seabed habitat, increased suspended sediment and sediment re-deposition). 	The list of potential impacts seems comprehensive although the potential impact of lighting on seabirds is missing, e.g. collision, disturbance. We recommend that this potential impact is included for assessment.	Agreed	Full details will be present in the assessment submitted in September.
16. Operation impacts	13/12/18	Potential operation impacts are identified as: <ul style="list-style-type: none"> Airborne noise and visual disturbance; Potential changes in water quality (e.g. accidental release of contaminants); 	The list of potential impacts seems comprehensive although the potential impact of lighting on seabirds is missing, e.g. collision, disturbance. NRW recommends that	Agreed	Full details will be present in the assessment submitted in September.



Issue	Date	Menter Môn position	NRW position	Status	Actions (if required)
		<ul style="list-style-type: none"> Potential changes in prey availability (e.g. underwater noise, disturbance, loss of seabed habitat, introduction of hard substrate (e.g. foundations, cable and scour protection), changes to water quality and electromagnetic fields (EMF); Potential barrier effects; Potential entanglement with moorings for floating devices; and Collision risk with tidal devices. 	this potential impact is included for assessment.		
17. Cumulative impacts	13/12/18	<p>Potential cumulative impacts are identified as:</p> <ul style="list-style-type: none"> Airborne noise and visual disturbance; Collision risk with tidal devices; and Potential changes in prey availability. <p>The proposed projects and plans to include in the cumulative impacts and in-combination assessments are identified as:</p> <ul style="list-style-type: none"> Wylfa Newydd Power Station; Minesto Holyhead Deep; and Holyhead Port Expansion. 	<p>The list of potential impacts seems comprehensive although the potential impact of lighting on seabirds is missing, e.g. collision, disturbance. We recommend that this potential impact is included for assessment.</p> <p>We advise that the applicant needs to look at foraging ranges from available data for the breeding season, as well as the Furness (2015) BDMPS report for the non-breeding season before determining which projects would need to be included.</p>	Ongoing	Full details will be present in the assessment submitted in September.
	11/04/19	<p>Proposed projects to be considered within the CIA and HRA have been updated and reflect foraging distances. Those screened into the HRA for marine ornithology, with sufficient information available to assess potential impacts are as follows;</p> <ul style="list-style-type: none"> Holyhead Deep Phase I; Argyll Tidal Demonstration; Alexandra Basin Redevelopment Project Greater Dublin Drainage <p>Due to the project suspension, the Wylfa project has been removed from screening. A number have been screened in on a precautionary basis but insufficient information is freely available;</p>	<p>NRW agreed with this approach but advise that the applicant needs to look not just at foraging range, but also include what effects might happen outside of the breeding season. <i>E.g.</i> Wave hub in Cornwall is potentially causing mortality of gannets at Grassholm. Therefore, NRW advise that the applicant needs to conduct a wide and thorough search.</p>		Full details will be present in the assessment submitted in September.



Issue	Date	Menter Môn position	NRW position	Status	Actions (if required)
		Anglesey Eco Park Power Station; Marine Energy Wales Marine Testing Area; East Rhyl Coastal Defence Scheme; Sirius SBC Renewables; Amlwch LNG; Greenlink Interconnector; Milford Haven Maintenance Dredge; Proposed New Cruise Berth Dun Laoghaire; Codling Wind Park II; Kinsale Head / Ballycotton gas fields and Seven Heads gas field; Gas Storage Project Islandmagee; and Fair Head Tidal Energy Park.			
	03/05/2019	NRW suggested that cumulative assessment with Minesto (Holyhead Deep) would be important. RHDHV confirmed that a scoping report for an updated 80MW project has been published, but nothing detailed is available.	NRW iterated that the project does need to be mentioned in the CIA. NRW advise that the applicant needs to look not just at Minesto but all other plans or projects that could have an additive effect on a site.	Ongoing	NRW checked how the Project can be included effectively and reverted to RHDHV: Any cumulative impact assessment must include the Minesto work that has been consented, and anything currently within the planning system..
18. Impact assessment methodology	13/12/18	Matrix approach proposed to standardise impact assessment, with due reference to recent guidance.	NRW agreed with the proposed EIA methodology, but advised that impacts on SSSIs also need to be considered.	Agreed	N/A
19. Standard Assessment table for importance	03/05/2019	It is proposed that the main driver for sensitivity within the Morlais ES is sensitivity rather than importance, therefore locally important species, such as SSSI species are not underplayed.	NRW has not definitively agreed to this as we have not yet been able to critically evaluate the information presented.	Ongoing	Full details will be present in the assessment submitted in September.
20. Airborne noise and visual disturbance	13/12/18	It is proposed that the potential airborne noise and visual disturbance impacts will be determined from a desk-based review and assessment. Because the airborne noise and visual elements for Morlais will have some commonality with other marine projects, a broad range of project literature concerning the interaction between marine	NRW agreed with approach.	Agreed	N/A



Issue	Date	Menter Môn position	NRW position	Status	Actions (if required)
		birds and anthropogenic activities in the marine environment will be consulted during the preparation of this assessment.			
	03/05/2019	RI confirmed that an assumed displacement distance of 2km for red throated diver within the medium sensitivity rating. RI further explains that one of the criteria of high is inability to adapt, assumed that will be displaced elsewhere.	NRW has not definitively agreed to this as we have not yet been able to critically evaluate the information presented.	Ongoing	Full details will be present in the assessment submitted in September.
21. Disturbance at breeding sites	13/12/18	<p>To assess any potential effects on breeding colonies, the location of any sites used by the species of interest in the wider Gwynedd area will be identified. This will be done primarily by reviewing all relevant reports, publications and data sources. The known source of data is the Joint Nature Conservation Committee (JNCC) Seabird Monitoring Programme Online Database (JNCC, 2018), but other sources of information (e.g. local ornithology club reports) will be consulted if deemed to be relevant.</p> <p>The location of the breeding colonies and foraging areas will be mapped in relation to the Morlais Demonstration Zone and the potential for any disturbance at each identified site assessed for all relevant activities, both onshore and offshore, including any vessel movements to and from the site.</p>	NRW agreed with approach.	Agreed	N/A
22. Changes in water quality	13/12/18	<p>The assessment will be based on the maximum potential area that could be affected by any changes to water quality.</p> <p>The maximum potential number of individuals that could be affected in that area will be based on the relevant species density estimates from boat-based surveys. The number of individuals of each species that could be affected will be considered as a proportion of relevant reference populations.</p>	NRW agreed with approach.	Agreed	N/A
23. Changes in prey availability	13/12/18	<p>It is anticipated that the potential effects on prey could include, but not limited to:</p> <ul style="list-style-type: none"> Underwater noise; Loss or changes of habitat; Changes to water quality, increased suspended sediment concentrations and sediment re-deposition; 	NRW agreed with approach.	Agreed	N/A



Issue	Date	Menter Môn position	NRW position	Status	Actions (if required)
		<ul style="list-style-type: none">▪ EMF effects; and▪ Physical interactions with the infrastructure. As a worst-case scenario, the assessment will be based on the maximum potential area for any changes in prey availability.			
24. Collision risk with tidal devices	13/12/18	At this stage, it is recommended that ERM only is used for the Morlais project to quantify collision impacts on birds, for the following reasons: <ul style="list-style-type: none">▪ Outputs from the model are familiar to Statutory Nature Conservation Bodies (SCNBs) and regulators, bearing similarity to collision risk modelling carried out for wind farms;▪ Outputs from the model are simple to interpret; and▪ The model can be easily adapted to cover a range of devices, which is a key strength compared to the CRM method.	NRW believes that both ERM and the CRM should be used, similar to the approach being taken for the marine mammal work.	Agreed	N/A
	19/02/19	Menter Môn agree to undertake both ERM and CRM in the assessment of collision risk to marine birds.	NRW agreed with this approach.		
Modelling					
25. Potential biological removal	13/12/18	PBR will not be used for the Morlais Project as it is simplistic and makes assumptions, particularly on density dependence and population trajectory.	NRW is satisfied that PBR is not proposed for use and that PVA will be used instead where necessary.	Agreed	N/A
26. Collision risk modelling	13/12/18	A level of 1% increase in the population mortality rate is identified as a threshold. If predicted mortality due to collisions with tidal devices represents less than a 1% increase in the population mortality rate, then this is considered likely to be within the range of natural variation and not significant. If predicted mortality represents a 1% or greater increase in the population mortality then this may cause population effects and requires further investigation, such as PVA.	NRW agreed with this approach.	Agreed	N/A
27. CRM and ERM guidance	19/02/19	SNH-authored spreadsheets provided with the 2016 guidance were redesigned for high throughput application.	NRW agreed with this approach and requested that when presenting the final data, workings are shown	Agree	N/A



Issue	Date	Menter Môn position	NRW position	Status	Actions (if required)
		Appropriate Quality Assurance (QA) has been applied to ensure outputs of revised sheets are as original.	against SNH original sheet for comparison.		
28. Tidal device parameters	13/12/18	<p>The assessment will take into account the wide range of potential tidal device parameters, for example:</p> <ul style="list-style-type: none"> Some on surface and some fully submerged; Rotor diameters typically 5-16m diameter, although some could be larger; Rotor speed 11-15 rpm typically, but some could be greater; and Tip speeds typically 20-30 m/s, but some might be higher. <p>The potential tidal devices for the marine bird encounter and collision risk assessment have been initially grouped based on:</p> <ul style="list-style-type: none"> Different rotor diameters, including related parameters for number of rotors per device, rotor width, blade chord width and rotation speed; a Position in the water column. 	NRW does not agree with the different groupings and would like to see more groups which may well have a similarity in the collision risk models. For instance, floating devices may have more contact with diving birds as closer to the surface. NRW feels that the groupings need further consideration.	Ongoing	Full details will be present in the assessment submitted in September.
	19/02/19	<p>Rather than modelling three device groups/scenarios, this has been amended to nine device groups/scenarios.</p> <p>It is hoped to refine these further to approximately five groups.</p>	When grouping tidal device parameters, consideration should be focused on whether there is an ecologically meaningful way to categorise in terms of potential encounter rates for birds, for example using depth.		
	03/05/2019	Refining of device parameters and groupings completed. Nine groups of devices have been assessed.	NRW agreed that the approach appeared to be reasonable, but would reserve agreement until after review of the full assessment	Ongoing	Full details will be present in the assessment submitted in September.
29. Avoidance rates	19/02/19	<p>Given the following considerations, it is expected that avoidance rates are expected to be high:</p> <ul style="list-style-type: none"> Hydrodynamic forces are expected to reduce potential for collision, and may influence collision rates; 	Due to the many unknowns with tidal devices, NRW recommends presenting all qualitative evidence possible. Therefore, the assessment should include all suggested by SNH	Ongoing	Full details will be present in the assessment submitted in September.



Issue	Date	Menter Môn position	NRW position	Status	Actions (if required)
		<ul style="list-style-type: none"> Burst speed of diving birds relative to tidal turbine blades is far higher than equivalent situation for flying birds and wind turbine blades as a result of the much slower rotation speed of tidal turbines; and Expected reduced mortality when collisions do occur. <p>It is suggested that avoidance rates between 98-99% should be used.</p>	(2016) Guidance (0%, 50%, 90%, 95%, 98% and 99%).		
	03/05/19	<p>Avoidance rates will be presented using the range outlined in SNH (2016).</p> <p>Outcomes of PVA indicate that avoidance of 99% and higher will be important based upon PVA for guillemot and razorbill. For other species lower values are indicated.</p>	<p>NRW agreed that monitoring targeted on the confirmation of high avoidance is indicated. Involvement of appropriate partners such as RSPB, academic organisations and NRW should be sought.</p> <p>However, NRW has not definitively agreed to this in full as we have not yet been able to critically evaluate the information presented.</p>	Ongoing	Monitoring and management measures to be developed post consent with appropriate partners.
30. General bird parameters	13/12/18	The information contained in SNH (2016) will be used as a starting point for the modelling. Where appropriate, the information presented will be updated using species-specific empirical data from more recent literature.	No comment, there are no diving parameters mentioned.	Ongoing	Full details will be present in the assessment submitted in September.
	19/02/19	There is not a large enough amount of information regarding diving behaviour of seabirds, and behaviour is likely to be highly location specific. Therefore, the model uses three categories for the key species; deep diving (guillemot, shag), shallow diving (razorbill, puffin, red-throated diver, Manx shearwater) and plunge diving (gannet), as indicated by the guidance document.	NRW agrees in principle but needs to see the detailed workings before we can agree in full.		Full details will be present in the assessment submitted in September.
	19/02/19	The models require dive frequencies to be calculated for each species. There are no standardised approaches although two methods are possible. The end outcome is dives per second.	NRW agrees in principle but we need to see the detailed workings before we can agree in full.	Ongoing	Full details will be present in the assessment submitted in September.



Issue	Date	Menter Môn position	NRW position	Status	Actions (if required)
	19/02/19	Mean animal density is taken from two years of boat-based survey data, distance corrected where number of records allowed (razorbill and guillemot), non-speciated birds added to totals where relevant (razorbill and guillemot) A range of parameters have been obtained from literature – length/wingspan, proportion of time at sea foraging, dive frequency when at sea, foraging trips per day, dives per trip, dive duration, vertical swim speed.	NRW agrees in principle but we need to see the detailed workings before we can agree in full.	Ongoing	Full details will be present in the assessment submitted in September.
31. Guillemot modelling parameters	19/02/19	SNH Apportioning: 97.25% of birds from South Stack, corroborated by Cleasby <i>et al.</i> (2018) – assume 100%. Nocturnal activity – model assumes 60% of daytime activity at night. Reference population – 6,200 individuals on land (SMP, 2016) x 1.34 correction factor (Seabird 2000) = 8,308 breeding adults.	NRW suggested that the draft assessment so far was missing key SSSI sites and therefore there may be skewing apportioning percentage. For instance, the third biggest guillemot site in Gwynedd (Ynys Feirig), 20km from the MDZ counted 13,662 in 2018. Furthermore, although not a SSSI or SPA, the colony at South Stack should be counted. NRW advise that the applicant needs to not just consider SSSIs but all relevant colonies in apportioning birds to the different ones.	Ongoing	Menter Môn to ensure SSSI information included for PVA.
	03/05/2019	RHDHV confirm that apportioning follows the same methodology as agreed in the second technical meeting and additional sites requested by NRW at that meeting have been included.	NRW agreed with this approach.	Agreed	N/A
32. Razorbill modelling parameters	19/02/19	SNH Apportioning: 97.34% of birds from South Stack, corroborated by Cleasby <i>et al.</i> (2018) – assume 100%. Nocturnal activity – model assumes 60% of daytime activity at night during breeding season compared to during the day, 80% in non-breeding season. Reference population – 1,088 individuals on land (SMP, 2016) x 1.34 correction factor (Seabird 2000) = 1,458 breeding adults.	NRW agree that reference population is largely accurate but check not missing SSSI sites. NRW advise that the applicant needs to not just consider SSSIs but all relevant colonies in apportioning birds to the different ones.	Ongoing	Menter Môn to ensure SSSI information included for PVA.



Issue	Date	Menter Môn position	NRW position	Status	Actions (if required)
	03/05/2019	RHDHV confirm that apportioning follows the same methodology as agreed in the second technical meeting and additional sites requested by NRW at that meeting have been included.	NRW agreed with this approach.	Agreed	N/A
33. Puffin modelling parameters	19/02/19	SNH Apportioning: 88.13% of birds from South Stack. Nocturnal activity – model assumes 10% activity at night compared to during the day (Shoji <i>et al.</i> 2015). Reference population – 11 individuals on land (SMP, 2015) x 1.34 correction factor (Seabird 2000) = 14.74 breeding adults.	The Skerries SPA has been missed out, which is the third biggest puffin site with 471 burrows recorded recently. NRW advise that the applicant needs to not just consider SSSIs but all relevant colonies in apportioning birds to the different ones.	Ongoing	Menter Môn to ensure SSSI information included for PVA.
	03/05/2019	RHDHV confirm that apportioning follows the same methodology as agreed in the second technical meeting and additional sites requested by NRW at that meeting have been included.	NRW agreed with this approach.	Agreed	N/A
34. Red-throated diver	19/02/19	Red throated diver reference population – 1,676 individuals (O'Brien, 2010).	NRW notes that there is more up to date data for red-throated diver in Liverpool Bay SPA from consenting monitoring surveys completed for Burbo Bank Extension. NRW advise that the applicant may want to check whether this is available.	Ongoing	We do not have access to this information currently, though would be happy to discuss its implications post-submission.
35. Manx shearwater	19/02/19	Nocturnal activity – model assumes 10% activity at night compared to during the day (Shoji <i>et al.</i> 2015). Reference population – 316,070 breeding pairs (Perrins <i>et al.</i> 2012) plus 20,675 occupied burrows (SMP, 2016) x 2 correction factor = 600,000+ breeding adults.	NRW agree that reference population is largely accurate but check not missing SSSI sites.	Ongoing	Menter Môn to ensure SSSI information included for PVA. Full details will be present in the assessment submitted in September
36. Gannet	19/02/19	Nocturnal activity – model assumes 8% activity at night compared to during the day (Furness <i>et al.</i> 2018). Reference population – 138,474 birds based on latest SPA counts.	NRW suggests that some data may be missing for this species.	Ongoing	Menter Môn to ensure SSSI information included for PVA. Full details will be present in the assessment



Issue	Date	Menter Môn position	NRW position	Status	Actions (if required)
					submitted in September
37. Shag	19/02/19	Nocturnal activity – model assumes 10% activity at night compared to during the day (Wanless <i>et al.</i> 1999). Reference population – 13 occupied nests (SMP, 2015/16) x 2 correction factor (Seabird 2000) = 26 breeding adults.	NRW agree that reference population is largely accurate but check not missing SSSI sites	Ongoing	Menter Môn to ensure SSSI information included for PVA. Full details will be present in the assessment submitted in September
Habitats Regulations Assessment (HRA)					
38. Species to be considered	13/12/18	Species to be included within HRA Screening: <ul style="list-style-type: none"> ▪ Kittiwake; ▪ Guillemot; ▪ Razorbill; ▪ Puffin; ▪ Manx Shearwater; and ▪ Gannet. 	We agree in general with the preliminary findings of the HRA screening, however, would need to see the raw survey data before providing a definitive answer. We believe that the mean-maximum distances provided in Thaxter <i>et al.</i> (2012) should be used as a coarse screening filter for sites in the breeding season and that data from papers and FAME/Seabird Tracking and Research (STAR) projects should then be used to provide a more detailed look at where the birds come from. Furness (2015) should be used where applicable to try and allocate birds in non-breeding months.	Ongoing	Full HRA screening to be presented at future meeting.
39. Sites/species screened in	03/05/19	An update to the HRA was presented with many sites screened out and sites for gannet, guillemot, Manx shearwater and puffin taken through to Appropriate Assessment (AA).	NRW requested that all sites should be screened in initially and taken through to AA. There should be a separate screening report which screens in those sites which could be impacted and then take them through to an appropriate	Ongoing	RHDHV has considered all sites in AA. Screening report and AA presented in separate document – Information to Support HRA – will be



Issue	Date	Menter Môn position	NRW position	Status	Actions (if required)
			assessment where the reasons for the sites being impacted or not are looked at in enough detail to make an informed decision.		submitted in September with the ES.
Mitigation and Monitoring					
40. Phased approach to development	19/02/19	There is potential for the project to be phased and an adaptive monitoring approach with regular review of mitigation measures and monitoring outcomes may be taken.	NRW suggests that the array results should be additive as the Project will have all of these devices in at the one time, as worst-case scenario.	Ongoing	Phasing approach presented at future meeting (see below). Full details will be present in the assessment submitted in September
	03/05/19	The proposed first phase deployment to 40MW will be undertaken over several years. Before the first deployment and during subsequent deployments, detailed information on the behaviour of guillemot and razorbill using the MDZ will be collected using three principal approaches: <ul style="list-style-type: none"> Coastal vantage point watches Colony counts Dual deployment of bird-borne time-depth-temperature recorders and GPS recorders on as large a sample of the Holyhead Island Coast SSSI population as is permitted. 	NRW raised the potential for active sonar to be used and advise that the applicant needs to consider whether other monitoring could also be available to be used. Please note that this may not be our only recommendation, subject to our further consideration and evaluation of the proposal.	Ongoing	Use of active sonar to monitor bird species to be explored.
Terrestrial Ornithology EIA					
41. Chough	03/05/2019	Menter Môn recognises the potential for construction works to disturb/displace chough. Therefore, Menter Môn is proposing a stand-off zone of 500m from active nest during breeding season. It is proposed that this not apply to the cable route where it is along active roads given existing levels of disturbance along the road. Menter Môn proposes closing the road during cable laying works, with cable laid within the road and potentially in a 30m buffer applied either side. Works will be very localised along road.	NRW requested that figures of the works and designation boundaries could be passed on to NRW to be passed on to the relevant person.	Ongoing	RHDHV/ Menter Môn to provide plans to NRW.
	03/05/2019	RHDHV confirmed that an AA will be carried out for this species.		Agreed	N/A

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