Partners in UK offshore wind

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Technical engagement plan appendices part 3 (Appendix C)

Planning Inspectorate Reference Number: EN010136

Document Number: MRCNS-J3303-RPS-10028

Document Reference: E4.3

APFP Regulations: 5(2)(q)

April 2024

F01

Image of an offshore wind farm

www.morganandmona.com/morgan

Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
F01	Application	RPS	Morgan Offshore Wind Ltd	Morgan Offshore Wind Ltd	April 2024

Prepared by:

RPS

Prepared for:

Morgan Offshore Wind Ltd.

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Appendix C: Evidence Plan Marine mammals EWG

C.1. Marine mammals EWG overview

Table C.1: Associated minutes from marine mammals EWG consultation materials.

Date	Meeting	Information provided
17 February 2022	Marine mammals EWG meeting 1	Meeting minutes (C.2.1) Response from Natural England regarding the meeting minutes (C.2.2) Response from the MMO regarding the meeting minutes (C.2.3) Response from NRW regarding the meeting minutes (C.2.4) NRW's position statement on the use of Marine Mammal Management Units for screening and assessment in Habitats Regulations Assessments for Special Areas of Conservation with marine mammal features (C.2.5)
19 July 2022	Marine mammals EWG meeting 2	Meeting minutes (C.3.1) Response from Natural England regarding the meeting minutes (C.3.2) Response from the MMO regarding the meeting minutes (C.3.3) Morgan and Mona Offshore Wind Projects Note on Underwater Sound Modelling Methodology (C.3.4) Response from NRW regarding Morgan and Mona Offshore Wind Projects Note on Underwater Sound Modelling (C.3.5) Response from Natural England regarding the Morgan and Mona Offshore Wind Projects Note on Underwater Sound Modelling Methodology (C.3.6) Response from the MMO regarding the Morgan and Mona Offshore Wind Projects Note on Underwater Sound Modelling Methodology (C.3.7) Response from JNCC regarding the Morgan and Mona Offshore Wind Projects Note on Underwater Sound Modelling Methodology (C.3.8) Response from MWT regarding additional seal comments (C.3.9) Morgan and Mona Offshore Wind Projects Response to queries raised in the first Evidence Plan Marine Mammal EWG meeting (C.3.10) Response from APEM on queries regarding the Response to queries raised in the first Evidence Plan Marine Mammal EWG meeting note (C.3.11)

Date	Meeting	Information provided
17 November 2022	Marine mammals EWG meeting 3	Meeting minutes (C.4.1) Response from Natural England regarding the meeting minutes (C.4.2) Response from JNCC regarding the meeting minutes (C.4.3) Response from NRW regarding the meeting minutes (C.4.4) Mona and Morgan Clarification on Densities and Reference Populations Note (C.4.5) Response from JNCC regarding the Densities and Reference Populations (C.4.6) Response from Natural England regarding the Densities and Reference Populations (C.4.7) Response from NRW regarding the Densities and Reference Populations Note (C.4.8)
09 February 2023	Marine mammals EWG meeting 4	Meeting minutes (C.5.1) Response from Natural England regarding the meeting minutes (C.5.2)
29 June 2023	Marine mammals EWG meeting 5	Meeting minutes (C.6.1) Response from JNCC regarding the meeting minutes (C.6.2) Response from NRW regarding the meeting minutes (C.6.3) Response from Natural England regarding the meeting minutes (C.6.4) Response from Cefas regarding the meeting minutes (C.6.5) Minutes from the Isle of Man marine mammals meeting (C.6.6) Response from The Manx Wildlife Trust regarding the meeting minutes (C.6.7) Expert Working Group Technical Note (C.6.8) Response from the MMO regarding the EWG Technical Note (C.6.9) Response from NRW regarding the EWG Technical Note (C.6.10) Response from JNCC regarding the EWG Technical Note (C.6.11) Response from Natural England regarding the EWG Technical Note (C.6.12) Response from TWT regarding the EWG Technical Note (C.6.13) Final Density Agreement Confirmation (C.6.14) JNCC response to Final Density Agreement Confirmation (C.6.15) MMO response to Final Density Agreement Confirmation (C.6.16) Natural England response to Final Density Agreement Confirmation (C.6.17) NRW response to Final Density Agreement Confirmation (C.6.18)

Date	Meeting	Information provided
03 August 2023	Morgan and Mona Evidence Plan marine mammals IoM meeting	Response from The Manx Wildlife Trust regarding the meeting minutes (C.6.7)
10 October 2023	Natural England, RPS, JNCC, MMO, TWT, Cefas, NRW, IoM Defa	Provision of technical note with approach to addressing outstanding items for agreement.
05 December 2023	Marine mammals EWG meeting 6	Meeting minutes (C.7) Response from NRW regarding meeting minutes (C.7.2) Response from JNCC regarding meeting minutes (C.7.3) Response from Cefas regarding meeting minutes (C.7.4)
-	Marine mammals EWG agreement log	Agreement log (C.8)

C.2. Marine mammals EWG meeting 1

C.2.1 Meeting minutes

MINUTES OF MEETING

Security Classification: Project Internal

Partners in UK offshore wind

MOM Number	:	20220217_Morgan and Mona MMammal EWG01	**REV. No.** :	F02
MOM Subject	:	Morgan and Mona Evidence Plan Marine Mammals Expert Working Group meeting 1.		

MINUTES OF MEETING

MEETING DATE	:	17/02/2022
MEETING LOCATION	:	Microsoft Teams
RECORDED BY	:	[redacted] (RPS)
ISSUED BY	:	[redacted] (RPS)

PERSONS PRESENT:

- [redacted] – bp (GV)
- [redacted] – bp (MP)
- [redacted] – bp (WD)
- [redacted] – RPS (KL)
- [redacted] - RPS (ST)
- [redacted] – RPS (TMc)
- [redacted] – RPS ( )
- [redacted] – Natural England (AuB)
- [redacted]
- [redacted] – Natural England (OH)
- [redacted] – MMO (JS)
- [redacted] – MMO (SJ)
- [redacted] – JNCC (JW)
- [redacted] -JNCC (LM)
- [redacted] – JNCC (AG)
- [redacted] – NRW (LR)
- [redacted] – NRW (HS)
- [redacted] – Cefas (RF)
- [redacted] – TWT (GdJC)

ITEM NO:	DISCUSSION ITEM:	Responsible party	Date
1.	**Introduction** (Presented by KL) KL- This meeting is the first expert working group for marine mammals for Morgan and Mona. So far, two Evidence Plan (EP) Steering Group (SG) meetings for the projects have been held in November and December as well as the first Benthic (BE), Fish and Shell Fish (FSF) and Physical Processes (PP) EWG this morning to introduce the project and get the EP up and running.		

	The first few slides provide an introduction to the project, including how we envisage the Marine Mammal EWG working. TM (marine mammal specialist) will then run through the current surveys and any feedback we have already received on the current surveys.		
2.	**Overview of the Projects** (Presented by WD) bp are working with EnBW in a 50/50 partnership (the Applicants) to develop the Morgan and Mona offshore wind farms which are being progressed as two separate projects. These sites were awarded as part of The Crown Estate's Round 4 offshore wind leasing round and are currently at 'preferred bidder' status, subject to completion of the plan-level Habitats Regulations Assessment (HRA). The intention is for both projects to be developed as fixed bottom offshore wind farms. Morgan is the northern project, located in English waters, and Mona is the southern project, located mostly in Welsh waters. Together, they will have a combined capacity of 3GW. Morgan and Mona will be developed on similar but slightly staggered timescales and will be under separate consent applications. The Mona project is aiming to be operational in 2028 and the Morgan project is aiming to be operational in 2029. **Key dates** Both projects are currently at pre-scoping stage. The Applicants are working on the basis that The Crown Estate (TCE) will conclude the plan level HRA in spring 2022. The Applicants will then be in a position to sign the agreement for lease for seabed rights. Due to the size and nature of both projects, Morgan and Mona are both considered Nationally Significant Infrastructure Projects (NSIPs). The Applicants intend to submit separate Development Consent Order (DCO) applications for Morgan and Mona. Mona will also require a Welsh marine licence and the Applicants are in discussion with NRW Marine Licensing Team on the remit of this marine licence. Currently the Applicant is targeting the 2025 Contract for Difference (CfD) round, noting the recent announcement on annual CfD rounds. The scoping reports for both projects are planned to be submitted in April 2022. The intent is to have each project submission offset by a week as per the Planning Inspectorate's preference. The Applicants are currently undertaking pre-scoping engagement including local authority engagement. Throughout 2022 the Applicants will progress with pre-application activities including both offshore and onshore surveys. Local authority engagement and fisheries engagement have begun. The Applicants have also established a maritime navigation engagement forum. The Applicants aim to publish the Preliminary Environmental Information Report (PEIR) towards the end of 2022 with formal consultation scheduled for early 2023. The Mona DCO application is		

	currently planned to be submitted in Q4 2023 and the Morgan DCO planned for Q1 2024. **Indicative export cable corridor** The Applicants anticipate that there will be two Points of Interconnection (POIs), one for Morgan on the northwest coast of England and one for Mona on the north Wales coast. At the moment the Applicants are considering a number of POI options. The decision on the location of the POI for each Project is determined by National Grid and at this time we do not know where the POI will be. Once the Applicants have clarity around this, they will present this information to the SG. The Applicants have received feedback from TCE that scoping must be carried out on the full preferred bidder areas. This is to ensure consistency between the TCE plan level HRA and the round 4 scoping reports. The Applicants have refined down the preferred bidding area for Mona and are not currently looking to develop the northern section (the so called "dinosaur's head"). The figure on the slides shows the area currently considered as the Mona Potential Array Area, however scoping will be undertaken on the larger Mona preferred bidder area (including the "dinosaur head"). KL noted this is relevant to the slides on the aerial surveys which TM will discuss later. **Evidence plan process** (presented by KL) The EP process has been developed following the Planning Inspectorate and Defra guidance. The Applicants have also considered draft advice provided by Natural England [1]. The EP process is a mechanism for the Applicants to agree with the stakeholders what is needed to be included with the consent application and to discuss any issues or concerns. The aim is to agree as much as possible during the pre-application phase so only key issues are left for examination. The EP has historically been HRA focused however in line with recent best practice, the Applicants propose to extend this to include the EIA process for ecology topics, including designated sites such as SSSIs and MCZs. The Applicants are proposing to carry out a single EP process for both projects. The projects will have separate agreement logs to account for the differences between the projects ahead of the DCO applications. Meeting minutes will also note any differences between the projects.		
	EWG (presented by KL) The aim of the EWGs will be to discuss and where possible, agree key topics for the EIA and HRA so we are only left with key issues at examination. . The EP Template was issued to the SG early in 2021 and has been updated following receipt of comments. If there are any other comments, please let us know in writing after the meeting. The Applicants are seeking to agree the remit of the EWG following this meeting. The indicative timeline of the EWG meetings is subject to		

[1] Natural England (2021) Expectations for pre-application engagement and best practice guidance for the evidence plan process.

	change (particularly the latter meetings) but this gives stakeholders an indication of the number of meetings and expected timings to inform their resourcing over this time. Broad approach to EWGs as set out in the Ways of Working (WoW) document circulated prior to the meeting: • Information circulated to EWG 2 weeks ahead of meeting. • Meeting is held with attendees prepared to comment on materials provided. • Full meeting minutes will be taken, and agreement logs will be compiled where matters are agreed, and after each meeting the minutes and agreement log will be circulated. • Minutes and agreement logs to be returned/agreed within 2 weeks following receipt, alongside written comments on documents submitted. • The agreement logs and meeting minutes will ultimately be appended to the DCO application. HS- Slide 6 says that PEIR is expected to be published in Q4 2022 however Slide 10 says that the EWG meeting to discuss the baseline is in Q1 2023. I would like to check whether or not we will have an opportunity to discuss and agree the baseline before the PEIR consultation period. KL-The meetings that are later in the programme are on a very indicative timeline. The timings and scope of future EWG meetings will be discussed at the next EWG meeting once the Scoping Documents have been published. HS- The more that the EWG can discuss and agree where possible before the PEIR consultation the better. KL- The approach to the baseline characterisation is detailed in the scoping report and we would look to agree this imminently after the scoping opinion. Details of how the data analysis is to be undertaken hopefully can be agreed before the PEIR on the back of scoping.		
3.	**Marine Mammals** (Presented by TMc) The Mona marine mammal survey area does not include the top section ("dinosaur head") of Mona. The survey area includes a 10km buffer around the majority of the Mona Potential Array Area with a 4km buffer to the north. The ornithology/marine mammal aerial survey buffer was discussed with the SNCBs. The section where there is not a full 10km buffer is within the Morgan buffer area so across the two projects there is good data coverage. The Morgan marine mammal survey area includes a 10km buffer around the whole Potential Array Area. RPS will look at the design-based density assessments to get site specific densities for the study area which will be used for the EIA. HS- You have said that 12% of the surface has been analysed, has any power analysis been done on the suitability of the 12% figure?	**TMc to check if the**	15/03/2022

	TMc- When APEM developed the survey methods this was considered. Not sure if this was done specifically for this survey but this is APEM's typical approach. HS- It would be good to know if this value is used as standard or if it is specific to this site. More broadly NRW have concerns over the robustness of digital aerial surveys (DAS) for marine mammals depending upon the design. One trip per month, for example, may end up in very low sample numbers for some species which limits the ability of this data to generate robust density estimates for baseline characterisation. There are also limitations associated with the ability to confidently identify individuals to species level, depending on the quality of the images or video. TMc- Understand your points and concerns regarding the limitations of the survey however the site-specific surveys are only one piece of the jigsaw. We also use desktop data sources for marine mammal densities in the area and we can discuss which desk top data sources we are using for this. Furthermore we have marine mammal observers on our summer surveys recording sightings as supplementary data. However, it is also worth noting that boat based surveys also have difficulties e.g. sea states making detection tricky for small species. HS- It would be beneficial if a sample of real images that have been analysed for this project can be provided. Ones that represent the lower confidence limit for identifying an individual to species level or in adverse weather. TMc- APEM typically send a subsample of analysed images to an external QA marine mammal expert but it is noted that HS would appreciate sight of some example images and the Applicants can discuss with the APEM. HS-For previous projects, the DAS survey data was deemed to have limited species identification rates and density estimates from DAS have not been taken forward into assessment. TMc- Noted and to reiterate there is a QA process to ensure the best possible accuracy. Where there is some doubt in species identification an animal may be ID'd to a higher level e.g. 'dolphin' species. There may be some species that are more difficult to ID and as such existing data may be important in building up a picture of the baseline. As part of the remit of these EWGs, the Applicants want to make sure that SNCBs are satisfied with the baseline characterisation and what is taken forward to assessment. GV- Noted that the Applicants will provide the SNCBs with the necessary information regarding the QA methodology, but also made the point that the survey approach had been circulated to the SNCBs previously and was in line with (or exceeding) Industry best practice. Given that the 2-year survey programme is due to be completed this summer, and given the programme for submission of the Applications, there will not be an opportunity for re-survey. The Applicants will provide the evidence required to satisfy the SNCBs that the baseline will be characterised properly.	**12% is site-specific or a general approach.** **Applicants to discuss making some example DAS images available to NRW.**	15/03/2022

	HS- NRW understand that there is not necessarily a better survey method and there is not time to re-survey. NRW is likely to recommend the same as what was recommended for previous projects such as Awel y Mor, that site-specific density estimates are compared against existing data sources and then the most precautionary values are taken forward to the assessment. TMc- This would be a typical RPS approach. For DAS surveys there may be only a few species where there is enough data to produce density data. If this is the case, then for other species (with low number of sightings) RPS will use historical data e.g. SCANS III/SMRU seals at sea (Carter et al 2020) to inform the baseline. RPS would generally present a density range as well, as density can vary depending on season etc.		
4.	**Survey feedback (Presented by TMc)** Feedback was sought from SNCBs in 2020 prior to mobilising the surveys. As this was as combined survey with ornithology, a lot of the feedback was on ornithology and a 10 km buffer was deemed appropriate for red throated diver. The 10km was also considered to be a sufficient size to collect appropriate data on marine mammal distribution and density in the area. HS- NRW would consider this high level advice to be focused on birds, and that any advice about 'sufficiency' would pertain to birds only. Was it specifically asked if the 10km buffer was suitable for mammals? TMc- The 10km buffer was defined to account for both marine mammals and birds such as red throated diver. Feedback was received to say that 10km would be ideal especially considering proximity to the SPA designated for red throated diver. As it is a joint survey with ornithology, the expectation would be that there would not be a different buffer for marine mammals as for birds. HS- Can it be checked what was agreed and with who? KL- We can check and go back through the emails with the SNCBs and the project team. ***Post meeting note:*** *feedback received from stakeholders did flag red throated diver as a feature of the Liverpool Bay SPA as a reason for extending the survey area to 10km around the project boundary. The project decision to survey the 10km buffer around the arrays was based on this feedback, but but also noted that this would provide better coverage for marine mammals, for the purpose of EIA and HRA baseline characterisation than the existing best practice approach of a 4km buffer employed for both birds and marine mammals on the majority of (if not all) Round 2 and Round 3 windfarms.* Ultimately the project position is that the surveys are fit for the purposes of the marine mammal characterisation (alongside other data sources and acknowledging the limitations discussed during the meeting). Particularly when considering the Mona and Morgan data together, which includes overlap to the north of Mona and south of Morgan.		

5.	**Preliminary Results** (Presented by TMc) There were a number of species that were identified to species level and a number that could not be identified to species. For some species, where there is not enough data to create site-specific density estimates we would add in counts from the group. For example, for grey seals, we could include all seal counts, assuming they were grey seals, to give a precautionary estimate. HS- That is potentially a reasonable approach but NRW would need to see the detail and numbers before any specific advice is given on that approach. TMc- yes that is understood. Just to outline that we would not use the data if it cannot be used to get a species density estimate. We will use the site-specific data where we can. For grey seal we can use the approach described (i.e. assume all "seal spp" are likely to be grey seals) as this gives a conservative estimate but also will look at Carter et al (2020) seal maps for both harbour and grey seals to give density estimates for baseline. The only sighting so far for minke whale has been on a site investigation survey where the marine mammal observers recorded one minke whale. We are likely to scope this in as we would not want to rule anything out at this time unless we are confident. The marine mammal study area is the survey area (potential array areas with 10km buffer) plus the transmission infrastructure search area with a 10km buffer. The regional study area will also include the wider Irish Sea region. If there are SACs just outside this area then this may be slightly increased to include these for the HRA. Any projects for consideration in the cumulative assessment would be screened in on the basis of this regional study area. HS- NRW has a position on the use of management units (MU) as a regional study area. NRW would want this to be used for the HRA, for both screening of sites and screening of projects for the cumulative assessment. Populations within the MU are the populations that should be considered when assessing the number of individuals that may be affected against the population. HS- we can include the NRW position statement with our written response. LR noted this document was provided to the project in December – acknowledged by KL. TMc- The regional study area is used to provide context with respect to the proposed development area (e.g. distribution/abundance of key marine mammals in the proposed development area compared to the wider distribution/abundance in the Irish Sea) and is not the area used as reference populations. The reference populations are defined by the management units (MUs). Some of the MU are massive (e.g. for minke whale and common dolphin the MU covers the Celtic and Greater North Seas) and the assessment becomes too unwieldly if everything within the MU is considered. We would not screen in a project in the North Sea for example. We would be looking to get an agreement on the study area from all SNCBs. ***TMc post meeting note****: we also look at data for the eastern Irish sea which is relevant to understand distribution/abundance of marine*	**RPS to provide further detail on what the regional study area will be used for, including further clarity on**	15/03/2022

	mammals outside the boundaries of the proposed development area, particularly where Zones of Influence (ZoIs) could extend some distance from the boundary (e.g. subsea noise) and could go well beyond the area covered by marine mammal surveys. KL- Ordinarily we would not screen in an SAC in the North Sea for the Morgan or Mona projects due to the distance. An appropriate assessment would not screen in sites in the North Sea. HS- Bottlenose dolphin, grey seal and harbour porpoise are the Annex II species features of SACs in Wales, to which the HRA screening advice pertains. Their MUs are not as extensive. TMc- RPS consider the MU as a reference population and refer back to it but would use the regional study area rather than consider everything within the MU. It makes the assessment very cumbersome if the study area for the whole region. HS- Advice depends on what the regional study area is used for. MUs for common dolphin and minke whale would be relevant to the EIA rather than the HRA in Wales. TMc -It is important to get agreement on the study area for EIA as well as HRA. We can provide a more detailed description of what the regional study area will be used for. KL – Likely this will need to be broken down for the different elements of the application and agreed separately: Study area for the EIA; Screening distances for the LSE Screening (and approach to Appropriate Assessment following Screening); Projects and Plans to be considered in the Cumulative Effects Assessment. ***TMc post meeting note****- for HRA purposes for a given species we would suggest starting with SACs closest to the site and at the point (distance) at which a site get screened out, all other SACs within the MU for that same species at greater distances would also get screened out.*	**screening for HRA and CEA.**	
6.	**Desktop Data sources** (Presented by TMc) HS- NRW would suggest looking at data availability from the Manx Whale and Dolphin Watch around the Isle of Man. These show some sightings of Minke whale and HS would expect to see this species included in the assessment. Also, Seawatch Foundation may hold data which could be of use in the assessment. The Awel y Mor public PEIR marine mammal baseline document contains a useful summary of the data sources for marine mammals. For where there is no density estimate in SCANSIII, SCANSII may be recommended for use in its place. TMc welcomed these suggestions, as it's useful to have an early flag of datasets so they can be incorporated into the baseline sooner rather than later. MP- Project also had marine mammal observers on boats doing the geophysical and benthic surveys who observed one minke whale. TMc noted this was why this slide had been updated to include minke whale, but sources flagged by HS will also be useful to inform the baseline.		

	HS- NRW would rather see a short, proportionate assessment on species of very low densities rather than scoping them out. TMc and KL noted that these could be discussed as the baseline is developed. Important when considering species which are present at very low densities that if we use the SCANS block densities, these could considerably overestimate the effect on those species (e.g. number of individuals affected by underwater noise). As such we would not advocate this type of approach, but may favour undertaking a qualitative assessment that acknowledges the very low risk to these species. To discuss further in later EWG meetings.		
7.	**Next Steps** (Presented by KL) Confirmation on POIs from National Grid. Scoping scheduled for April 2022. The Applicants would seek agreement on the following points following the meeting: • Agreement on the Remit and Inputs to the EWG (as set out in Section 4.3 of the Evidence Plan Template); • Agreement on Ways of Working Documents, including timescales; • Agreement on broad approach to future surveys - that previous feedback has been considered in future scope; and Agreement on broad approach to characterisation for marine mammals.	**All- to fill in agreement log to provide progress of agreement for each of the points listed.**	15/03/2022
8.	**Close of meeting**		

C.2.2 Response from Natural England regarding the meeting minutes

Date: 10 March 2022
Our ref: DAS/UDS A000566 / 381726
Your ref: Marine Mammal EWG01

[redacted]
BP Alternative Energy Investments Limited

c/c [redacted]
RPS/ Energy

BY EMAIL ONLY

Customer Services
Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire
CW1 6GJ

0300 060 3900

Dear [redacted]

Discretionary Advice Service (Charged Advice) - UDS A000566
Contract Reference: BP EnBW Morgan and Mona Offshore Wind Farm
Consultation: Marine Mammal EWG01

This advice is being provided as part of Natural England's Discretionary Advice Service in accordance with the Quotation and Agreement dated 17 May 2021 to BP Alternative Energy Investments Limited.

The following advice is based upon the information presented in the Marine Mammal Expert Working Group (EWG) Meeting 1 (attended on 17 February 2022) and subsequent meeting notes provided on the 1 March 2022 by [redacted].

Natural England were asked to provide advice upon:

1. Agreement on the remit of the EWG;
2. Agreement on Ways of Working document;
3. Agreement on aerial surveys;
4. Agreement on Marine Mammals Study Area;
5. Agreement on broad approach to baseline characterisation.

1. Agreement on the remit of the EWG;

Natural England provided comment on the draft Evidence Plan, via a comments log, on 4 November 2021. It was our view that the Evidence Plan set out the basic framework of the Evidence Plan. This was ahead of the 1st Evidence Plan meeting on 16 November 2021. We welcome the update of the Evidence Plan (version F02, provided 4 February 2022) which has incorporated our earlier comments.

The remit of the Marine Mammal EWG as set out under 4.3 of the Evidence Plan (v F02) is appropriate and in line with Natural England's previous comments, we agree the remit as set out. The list of topics listed in 4.3.1 covers the majority of anticipated topics.
Very minor point but in the last bullet point, we anticipate that the monitoring options will be discussed prior to the finalisation of the In Principle Monitoring Plan – *the monitoring itself is typically finalised post-consent*.

We welcome the outlined timetable of future meetings and their focus as presented in Table 4.4.

Specific comment regarding Table 4.4 are as follows:

- Where the applicant has stated "timed to coincide with [application document]", could they please clarify at what point in the timeline of these application documents the timings will be targeted at? For example, if these will be timed to occur prior to submission of the documents, or following the receipt of

the consultation opinion on the various application documents? The precise timing will have implications for the scope of the discussion in the meeting and therefore their suitability.

-The final meeting coincides with the Mona application; will there be a similar final meeting that coincides with the Morgan application?

Whilst Natural England agrees with Natural Resources Wales in that the aim of the EWG is to agree the various topics listed it is acknowledged that it is not always possible to reach agreement on all topics. Agreement may also take longer on complex topics, or if there are many topics to review after a meeting, or if there is an action on either developers or SNCB to provide further information on previous discussions or advice to inform the discussion.

2. Agreement on Ways of Working document

We welcome the Evidence Plan Ways of working document (version F01, provided 4 February 2022) as a clear reference document.

Natural England agrees with the Ways of Working document which aligns with previous comments in terms of timescales for review and comment provided as part of our comments on the draft Evidence Plan (4 November 2022). As noted in the document, it may be necessary for timescales to be amended to ensure sufficient time to review and comment (e.g. large documents or multiple documents), in which case we will communicate and agree an alternative deadline.

Specific comments-

- On Table 2, fourth row: there is a repeat of “circulation of minutes and agreement logs”, based on the text in Figure 1 I believe this should read “Agree minutes and content of logs” or similar
- Could an outline of the chain of communications in Natural England be added? E.g go to case officer who will act as the main coordinator for input rather than going to specialist directly
- Could there be an additional line to say all issues/comments will be agreed to in writing after the meeting and there will be no verbal agreement
- In agreement with NRW, more information should be included on what is going to be communicated between meetings and how.

3. Agreement on aerial surveys

As the Mona site is located primarily in Welsh waters, Natural England defers to NRW as to the use of an appropriate buffer around Mona Potential Array Area

More generally in relation to aerial surveys:

Natural England is broadly supportive of using digital aerial survey data to characterise the marine mammal baseline in the region. The potential limitations to this survey method raised by the developer and NRW are acknowledged and it is agreed that a range of density estimates from other sources must also be presented, for comparison to the site-specific surveys. Depending on the outcomes of the survey, it may be that density estimates available in the literature are the most appropriate to be used in the assessment for certain species (for example, species which have no or low number of sightings, or low confidence associated with the sightings, in the surveys).

Natural England supports NRW in their concerns raised about the efficacy of digital aerial surveys in the Irish Sea, following from the recent outputs of the aerial surveys on the Awel y Mor OWF. These concerns are applicable to both Mona and Morgan. Natural England would also like sight of any example DAS images that are made available to NRW.

Natural England at this stage has not formally agreed the appropriateness of the 10km buffer for marine mammals specifically, noting that this buffer was originally proposed for ornithological purposes. Natural England consider that a 10km buffer is unlikely to be less suitable for the marine mammal surveys than a

4km buffer, which is the industry standard. The applicant has stated that the 10km buffer "would provide better coverage for marine mammals." Natural England would like to understand how the coverage is quantifiably "better" and the implications for the marine mammal impact assessment. Natural England requests that the applicant considers providing a short description in the EIA on this topic, which could for example compare the outcomes of a 10km buffer to the traditional 4km buffer.

4. Agreement on Regional Marine Mammals Study Area

Natural England requires a response from RPS on the purpose of the regional marine mammal study area before an agreement can be made on the extents proposed.

5. Agreement on broad approach to baseline characterisation

Natural England is in broad agreement to the approach to baseline characterisation, notwithstanding the aforementioned comment on the extent of the regional marine mammal study area to be characterised.

We consider that the revised list of likely species that was presented in the meeting, including minke whale, is appropriate.

With regards to the desktop data sources - consideration should be given to the inclusion of NGO/citizen observer data in the region. This would be particularly relevant for the more coastal areas, as these can provide local sightings information on areas of potential cable landfall. Natural England thanks and supports NRW in their detailed list of desktop data sources provided to the developer.

Natural England asks that the applicant explicitly include the results of the MMO observations (i.e. list all sightings) onboard the site investigation surveys in their baseline characterisation.

Natural England have set up a SharePoint Online (SPOL) site to share Natural England's advice on the environmental considerations and use of data and evidence to support offshore wind and cable projects in English waters. Advice provided on this site includes Natural England and Joint Nature Conservation Committee (JNCC)'s shared advice on 'Nature conservation considerations and environmental best practice for subsea cables in English inshore and UK offshore waters.'

The outputs of Natural England's project 'Offshore Wind Marine Environmental Assessments: Best Practice Advice for Evidence and Data Standards' are also provided. This project, produced in collaboration with DEFRA, the following reports are currently available;

- Phase I: Expectations for pre-application baseline data for designated nature conservation and landscape receptors to support offshore wind applications.
- Phase II: Expectations for pre-application engagement and best practice guidance for the evidence plan process.
- Phase III: Expectations for data analysis and presentation at examination for offshore wind applications.

You can access the new SPOL site from the following links:
Environmental considerations for offshore wind and cable projects - Home (sharepoint.com) or
https://defra.sharepoint.com/sites/WorkDelivery2512/SitePages/Home.aspx

Due to how SharePoint Online works, people outside of Defra will need to request access to the site before being able to view the advice documents, so there could be a slight delay for external stakeholders to access the site.

For clarification of any points in this letter, please contact me using the details provided below.

Yours sincerely

[redacted]
Strategic Coastal Lead Adviser
Coast and Marine Team
Cheshire, Greater Manchester, Merseyside & Lancashire Area Team
[redacted]

☐ The advice provided in this letter has been through Natural England's Quality Assurance process.

The advice provided within the Discretionary Advice Service is the professional advice of the Natural England adviser named below. It is the best advice that can be given based on the information provided so far. Its quality and detail is dependent upon the quality and depth of the information which has been provided. It does not constitute a statutory response or decision, which will be made by Natural England acting corporately in its role as statutory consultee to the competent authority after an application has been submitted. The advice given is therefore not binding in any way and is provided without prejudice to the consideration of any statutory consultation response or decision which may be made by Natural England in due course. The final judgement on any proposals by Natural England is reserved until an application is made and will be made on the information then available, including any modifications to the proposal made after receipt of discretionary advice. All pre-application advice is subject to review and revision in the light of changes in relevant considerations, including changes in relation to the facts, scientific knowledge/evidence, policy, guidance or law. Natural England will not accept any liability for the accuracy, adequacy or completeness of, nor will any express or implied warranty be given for, the advice. This exclusion does not extend to any fraudulent misrepresentation made by or on behalf of Natural England.

Cc commercialservices@naturalengland.org.uk

C.2.3 Response from the MMO regarding the meeting minutes

Marine Management Organisation

Marine Licensing
Lancaster House
Hampshire Court
Newcastle upon Tyne
NE4 7YH

T [redacted]
F [redacted]
www.gov.uk/mmo

[redacted]
Environmental Advisor
bp Alternative Energy Investments Ltd
(By email only)

Our reference:
ENQ/2021/00033

06 April 2022

Dear [redacted]

Morgan and Mona Offshore Windfarm – Expert Topic Group Meetings

The Marine Management Organisation (MMO) received the above document and accompanying comments for consideration on 04 February 2022. The MMO has reviewed the document alongside our advisors at Cefas and our comments are below:

Comments

Shellfisheries

1. Desktop data sources include the Northern Irish Sea Fish Trawl Surveys. Please note that this is unlikely to inform of shellfish abundances. At best, trawls (except for Nephrops if using an otter trawl) will provide presence/absence information at best. Shellfish (lobster, crab, whelks, cuttlefish) are typically targeted using specialised pots. The MMO would suggest interrogating MMO landings data to determine the extent of shellfish landings.

Underwater Noise

2. Timescales for Feedback (document F02 Ways of working document): Please note that although Cefas advisors can endeavour to provide comments and review minutes and contents of agreement logs within 2 weeks, the exact timeframes will ultimately depend on the deadlines specified by the MMO.

Benthic Ecology

3. The MMO requests confirmation that the benthic grab samples collected in relation to the developments will be processed to the recommend national processing guidelines (Worsfold and Hall, 2010) and that the resultant data will be made available as soon as possible.

4. The MMO note that there were several areas relevant to benthic ecology that were not discussed at the meeting (e.g., cumulative impacts, non-native invasive species, survey design and benthic analyses, electromagnetic fields, suitability of baseline

datasets, data processing and availability). The MMO is aware this is only the first group meeting but will expect these topics to be covered in the future.

Fisheries and Fish Biology

5. In the absence of confirmed export cable routes and cable landfall locations for the projects, the MMO are currently unable to comment, consider or advise on any potentially vulnerable fish receptors which may be affected by the construction activities associated with the construction and operational phases of the wind farms. The MMO will review this in more detail once landfall locations are confirmed.

6. During the expert topic meeting reference was made to the Cefas Pelagic ecosystem survey in the Western Channel and Celtic Sea (PELTIC) surveys and their potential use as a source of information/data to inform the baseline for fisheries. The MMO would advise that in the Irish sea the survey stations only go as far north as Llŷn Peninsula in North Wales, which is significantly further south of the proposed locations for Morgan and Mona. The day may be useful to provide broadscale information and data on pelagic species in the Irish Sea but may not be as useful for providing site-specific fisheries data for the windfarm study areas. See Annex1 for map of PELTIC survey stations.

Coastal Processes and Physical

7. No comments at this stage.

General- Benthic Scope of Works and the Intertidal Outline Scope Reports

8. The MMO note that [redacted] sent an email on 01 April 2022 requesting comments on the benthic scope of works report revision 2 with a deadline of 19 April 2022. The MMO has advised previously that consultation with our advisors requires 4 weeks and there will be time either side for quality checks. Further discussions are required around the timescales the projects are proposing as the MMO do not currently find them appropriate.

Conclusion

The MMO notes there are no major concerns at this stage of the projects and has provided advice to ensure all aspects of the topics raised above are adequately covered. The MMO is still concerned however by the time the project expects the MMO to provide comments within and would encourage further discussion on this topic at the next catch-up meeting with the MMO.

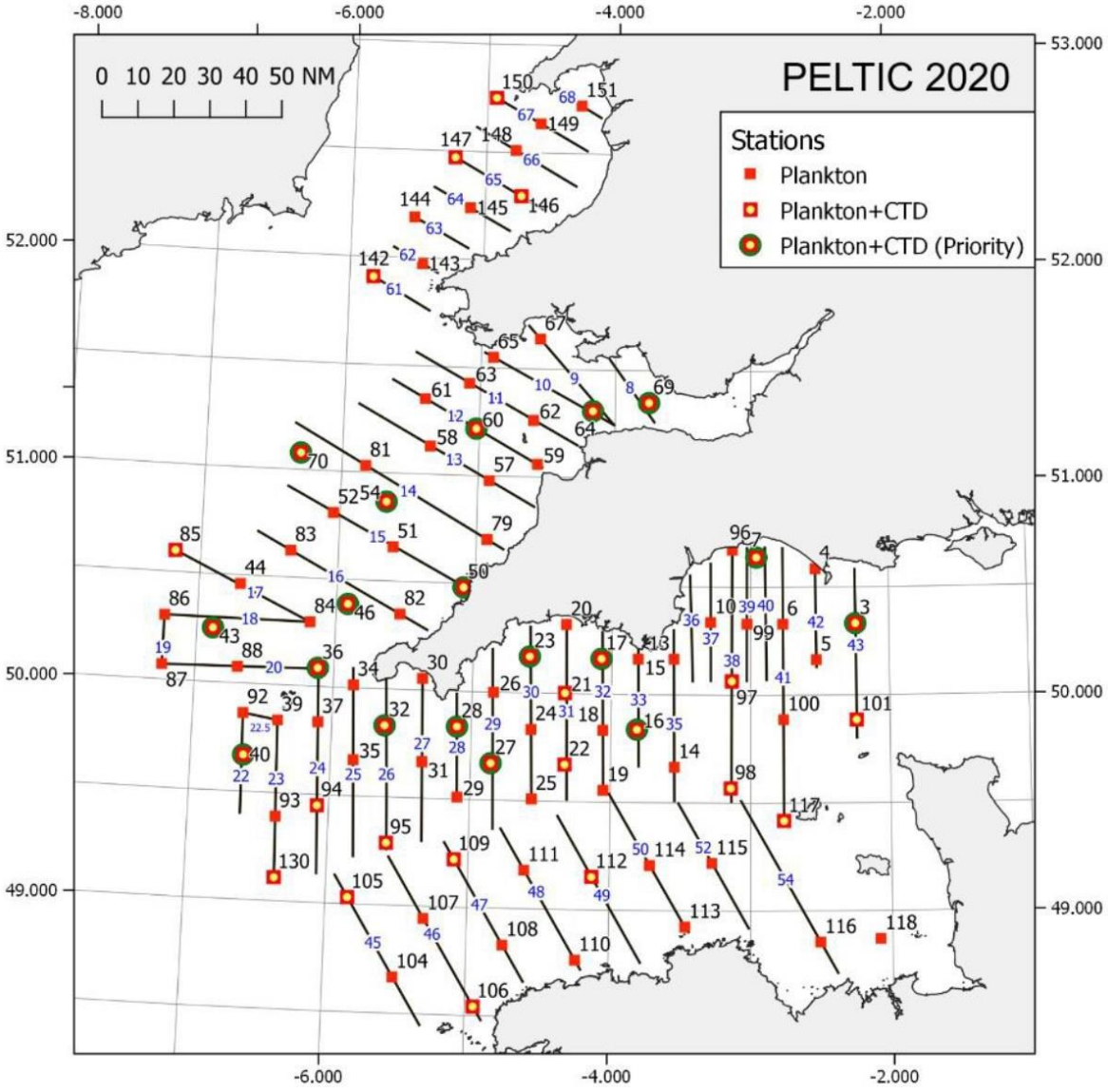
If you wish to discuss any of the points further, please don’t hesitate to contact me.

Yours sincerely,

[redacted]
Marine Licensing Case Officer

D [redacted]
E [redacted]

Annex 1 – Map of Survey Stations for the PELTIC survey



C.2.4 Response from NRW regarding the meeting minutes

bp / EnBW Project Mona Marine Mammal Expert Working Group

[redacted]
Senior Marine Advisor

15th March 2022

Introduction

This advice is provided in response to the Project Morgan and Mona Marine Mammal Expert Working Group held on 17/02/22.

NRW advice in this document is provided (under a Discretionary Advice Service agreement) in respect of a proposal which will require an application for which Natural Resources Wales is a Statutory Consultee.

The customer acknowledges that the content of any advice or assistance provided by NRW is advisory only and that it shall not be deemed to bind or in any other way restrict NRW in performing its statutory functions.

The recipient acknowledges that:

- any advice given or materials or documentation provided by NRW do not constrain or bind NRW in respect of its statutory functions or its role as a statutory consultee or any decision NRW may make in relation to any application for a licence or permit;
- any advice given by NRW does not bind NRW in respect of any future representations it may make as statutory consultee or any decision NRW may make in relation to any application for a licence or permit;
- any views or opinions expressed by NRW are without prejudice to the consideration NRW may be required to give to any application or any future representations as statutory consultee or any decision NRW may make in relation to any application for a licence or permit;
- the final decision as to any representations made by NRW as statutory consultee will be based on all the relevant information available to NRW at the time it makes such representations;
- NRW cannot and does not give any guarantee as to the representations it may make as statutory consultee; and,
- any advice given by NRW may be overtaken by changes in available information, law, policy and guidance relevant to the subject matter of the advice.

Advisors Consulted:
Marine Mammals

Advice

Key Issues

- The ‘Evidence Plan Ways of Working’ document would benefit from clarity regarding the ways of working relating to intersessional communications.
- NRW (A) will make best efforts to reach an agreement on proportional but precautionary approaches as far as possible within our remit but note that this may not always be possible for all issues.
- NRW (A) understand that the timings indicated are indicative and subject to change, but we highlight the risk associated with the indicated publication of the PEIR in Q4 2022 (slide 6) potentially prior to the EWG agreeing the baseline characterisation in Q1 2023.
- NRW (A) highlight the need for careful consideration of Digital Aerial Survey (DAS) data quality and sample size when considering the suitability of the survey data to inform a baseline.

Detailed comments

Document: bp/EnBW MORGAN AND MONA ESIA Evidence Plan Ways of working document

The document may benefit from clarity regarding the ways of working relating to intersessional communications, for example, what level of information will be conveyed via meeting minutes versus briefing documents, although we acknowledge that this may be an ambiguous metric and not possible to outline in detail. Whilst some advice / decisions can be satisfactorily recorded in minutes, where the nature of the advice request and responses are complex, NRW (A) recommend that briefing documents are provided by the applicant with more formal written responses forming the basis of the record.

Document: bp/EnBW MORGAN AND MONA ESIA Evidence Plan Template
4.3 Marine Mammals; 4.3.1 Overview

The list of topics identified for the EWG to seek agreement on appears to cover the majority of anticipated content for assessments of the works. NRW (A) will make best efforts to reach an agreement on proportional but precautionary approaches as far as possible within our remit, but please note that this may not always be possible for all issues.

NRW (A) also highlight the need for sufficient time for review and revision in order to reach agreement on each topic, particularly where multiple topics are listed against a single quarter.

Document: Morgan and Mona Offshore Wind Projects marine mammals expert working group 1 slides

Stakeholder engagement timeline

- NRW (A) understand that the timings shown are indicative and subject to change, but we highlight the risk associated with the indicated publication of the PEIR in Q4 2022 (slide 6) potentially prior to the EWG agreeing the baseline characterisation in Q1 2023 (slide 10). Publication of the PEIR before sufficient engagement and discussion may result in concerns being raised which could be resolved prior.

Offshore Marine Mammal Surveys Survey Method

- If Digital Aerial Survey (DAS) data is to be used in environmental assessments, an assessment of the suitability of analysing data covering 12% of the survey area, such as a power analysis, should be provided to support the approach taken. Alongside this, evidence of sufficient levels of quality assurance should be provided to resolve any concerns regarding the detection probability or species identification confidence associated with the chosen method. This could include, for example, provision of sample images in a range of ID confidence scenarios and visibility conditions. Careful consideration of the confidence in results based on the sample sizes achieved, alongside other survey performance criteria such as seasonal coverage, should be made.

Survey Feedback

- NRW (A) advise caution in applying feedback on the survey design with respect to birds (as provided in our joint advice with JNCC and NE by email on 28/04/21), to marine mammals. Whilst we appreciate both mammal and bird surveys were mentioned, the specific question received via email on 23/03/21 came under the heading ‘Bird Survey’. As such, any approval of indicated survey design was specifically related to ornithology and should not automatically be applied to other receptors.

Morgan and Mona Study Areas

- It is not clear for precisely what purpose these study areas are defined, so NRW (A) are unable to agree to them at this stage. To reach agreement, additional information should be provided, specifying what screening, assessment or other purposes the study areas are intended for, and taking into account the following:
  - Due to the mobile nature of all Annex II marine mammal features of Special Areas of Conservation (SACs), it is accepted that they do not stay within site boundaries. Where there is a potential and credible effect on the conservation objectives of a site, caselaw supports the need to consider offsite impacts (Moorburg case c-142/16 & Holohan case C-461/17).
  - NRW (A) generally consider that the appropriate scale at which to consider offsite impacts for marine mammals is the relevant species-specific Marine Mammal Management Unit (MMMU). NRW (A) consider SACs within an MMMU to be ‘functionally linked’ to the surrounding sea because evidence demonstrates a degree of connectivity between SACs and the wider area, and because SACs represent special areas of sea within the MMMU (Chapman & Tyldesley 2016, NRW 2022). For some pathways a different approach may also be relevant, however this depends on the weight of the

evidence supporting that approach and should be considered on a case-by-case basis in consultation with NRW (A).

Desktop data sources

Some additional data sources or informative documents should be considered for applicability to the desktop baseline study, including the following:

- Awel y Môr PEIR Volume 4, Annex 7.1: Marine Mammal Baseline Characterisation, available online; https://exhibition.awelymor.cymru/peir/
- Gwynt y Môr baseline surveys Description available in the Awel y Môr PEIR Volume 4, Annex 7.1
- Sea Watch Foundation data - North Wales (Sea Watch Foundation, 1960-2021). Description available in the Awel y Môr PEIR Volume 4, Annex 7.1
- Manx Whale and Dolphin Watch surveys (Manx Whale and Dolphin Watch (MWDW) 2007-2015) Description available in the Awel y Môr PEIR Volume 4, Annex 7.1
- Anglesey visual surveys Shucksmith et al. (2009)
- Anglesey towed acoustic surveys (Gordon et al. 2011)
- Wylfa Newydd surveys (Jacobs 2018)
- Morlais surveys (Royal Haskoning DHV 2019)
- Cardigan Bay bottlenose dolphin surveys (Lohrengel et al. 2018)
- An updated version of the Atlas of the Marine Mammals of Wales is in preparation
- The potential for both the telemetry and the density estimates associated with the work of Carter et al (2020) to be of use to the assessments should be considered.

NRW (A) cannot make recommendations regarding the approach to the baseline assessment for the projects until more detailed information is provided. However, we would be likely to recommend that all possible data sources, including those from DAS and the desktop study, are evaluated for quality and suitability and the most precautionary source with sufficient data quality be used in impact assessments. It may be appropriate to present multiple data sources in the final assessments.

Likely Key Species

The slides provided prior to the meeting did not include Minke Whale in the ‘likely key species’ list. While it is not clear exactly what is meant by likely key species, NRW are content that the revised list presented in the meeting, which included Minke whale, highlights the species we would expect to be included in the HRA (bottlenose dolphin, harbour porpoise, grey seal) and in the EIA (HRA species in addition to common dolphin, Risso’s dolphin, and Minke whale). Consideration of less common or transient species should also be made, particularly in the context of assessing any impacts on Annex IV European Protected Species.

Next Steps

In order to pursue agreement on the proposed subjects, we recommend the advice above be taken into account when providing documents for review and approval.

References

Gordon, J., D. Thompson, R. Leaper, D. Gillespie, C. Pierpoint, S. Calderan, V, J. Macaulay, and T. Gordon. 2011. Assessment of Risk to Marine Mammals from Underwater Marine Renewable Devices in Welsh waters Phase 2 - Studies of Marine Mammals in Welsh High Tidal Waters.

Jacobs. 2018. Wylfa Newydd Project 6.4.88 ES Volume D - WNDA Development App D13-6 - Marine Mammal Baseline Review. PINS Reference Number: EN010007. Application Reference Number: 6.4.88.

Lohrengel, K., P. Evans, C. Lindenbaum, C. Morris, and T. Stringell. 2018. Bottlenose Dolphin Monitoring in Cardigan Bay 2014-2016. Natural Resources Wales, Bangor. Available online; https://naturalresources.wales/evidence-and-data/research-and-reports/marine-reports/marine-and-coastal-evidence-reports/?lang=en

NRW (2022) NRW's position on the use of Marine Mammal Management Units for screening and assessment in Habitats Regulations Assessments for Special Areas of Conservation with marine mammal features v1.1

Royal Haskoning DHV. 2019. Morlais Project Environmental Statement: Chapter 12: Marine Mammals Vol.1. Applicant: Menter Môn Morlais Limited. Document Reference: PB5034-ES-012. Version F3.0.

Shucksmith, R., N. H. Jones, G. W. Stoyle, A. Davies, and E. F. Dicks. 2009. Abundance and distribution of the harbour porpoise (Phocoena phocoena) on the north coast of Anglesey, Wales, UK. Journal of the Marine Biological Association of the United Kingdom 89:1051-1058.

C.2.5 NRW's position statement on the use of Marine Mammal Management Units for screening and assessment in Habitats Regulations Assessments for Special Areas of Conservation with marine mammal features

Cyfoeth Naturiol Cymru
Natural Resources Wales

Position statement

NRW's position on the use of Marine Mammal Management Units for screening and assessment in Habitats Regulations Assessments for Special Areas of Conservation with marine mammal features

Document Owner: Marine Programme Board

What is this document about?

This document sets out Natural Resources Wales's (NRW) position on the use of Marine Mammal Management Units (MMMUs) and other approaches for screening[1] and assessment in Habitats Regulations Assessments (HRA) for Special Areas of Conservation (SACs) with marine mammal features.

It primarily describes the use of MMMUs as the relevant spatial scale for screening and inclusion of plans and projects in an in-combination assessment. The use of MMMUs is applied to most impact pathways, except for impact pathways where there is strong evidence that an alternative approach is appropriate (e.g. screening distances and disturbance from underwater noise). The use of an iterative/sequential Appropriate Assessment (AA) is advised to accompany the use of MMMUs at the screening stage. This is where an AA is first carried out on the closest site to the impact source / development and if an Adverse Effect on Site Integrity (AEOSI) cannot be ruled out, the next closest site is assessed and so on.

The Position Statement provides a steer on how NRW will consider information to inform HRA advice and present their advice to the Competent Authority.

Who is this document for?

The Position Statement is aimed at:

- Those within NRW who may be advising on Habitats Regulations Assessment (HRA) of SACs with marine mammal features
- NRW Marine Licensing Team, who may wish to understand how this advice should be applied
- Other Competent Authorities (CA) / regulators / UK Statutory Nature Conservation Bodies who may wish to understand our approach and consider its use in conducting HRA on sites with marine mammal features

[1] Screening is defined here as the first stage of HRA where plans or projects are checked to see if they would be likely to have or there is a possibility of a significant effect on a European site and follows Regulation 63 (1), 63 (2) and 67 (DTA Ecology 2020, HRA Handbook).

- Developers and their consultants who wish to understand this approach and submit applications with enough information to allow the CA to assess sites with marine mammal features in the same way

Development of this position

This Position was developed following discussion of a range of potential approaches to screening in HRA, with associated advisory and regulatory risks and benefits, at NRW's Strategic Marine Mammal Group (SMMG) (including MMMU subgroup), Offshore Renewable Energy Programme (OREP) and Marine Planning and Policy Delivery Group (MPPDG) meetings. External meetings and workshops were also organised to peer review the use of MMMUs in HRA. The approach was approved and adopted in October 2020 by the Marine Programme Board (MPB) within NRW.

This Position does not represent a legal opinion and should not be interpreted as such. Project developers and owners should be advised to seek their own independent legal advice on any matters arising in connection with this Position Statement in respect of a specific activity or development project.

This Position does not prejudice any advice that NRW might provide in our capacity as a statutory advisory or regulatory decision maker.

NRW will be review this Position Statement as and when relevant new evidence becomes available.

Contact for queries and feedback

[redacted]
Lead Specialist Advisor: Marine Species; Marine and Coastal Ecosystems Team, Sustainable Places Land and Sea Group, Natural Resources Management Policy Department.

Version History		
Document Version	**Date Published**	**Summary of Changes**
1.0	Oct-2020	
Review Date: Oct 2021		

To report issues or problems with this guidance contact Guidance Development

Cyfoeth Naturiol Cymru
Natural Resources Wales

Position Statement

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1. Introduction

What are MMMUs?

Marine mammal management units (MMMUs) are considered to be relevant spatial scales for marine mammal species that represent our best understanding of the structure of biological populations and any ecological differentiation within such populations, and the spatial differences in human activities and management relevant for that population. The boundaries of MMMUs do not just represent population differentiation but also political boundaries (e.g. country/county) or boundaries relevant to the management of human activities (e.g. ICES divisions used for the collection of fisheries data and management of fisheries).

Since 2012, the Inter-Agency Marine Mammal Working Group (IAMMWG), comprising representatives of the UK's Statutory Nature Conservation Bodies (SNCBs) - Natural England (NE), Scottish Natural Heritage (SNH), Natural Resources Wales (NRW), Department of Agriculture, Environment and Rural Affairs (DAERA) and Joint Nature Conservation Committee (JNCC) – have developed and proposed MMMUs for the seven most common cetacean species around the UK. These were approved by the SNCBs' Chief Scientist Group and published in 2015[2] and have been adopted by SNCBs as the relevant spatial scales for conservation advice on key cetacean species in UK waters (Figure 1).

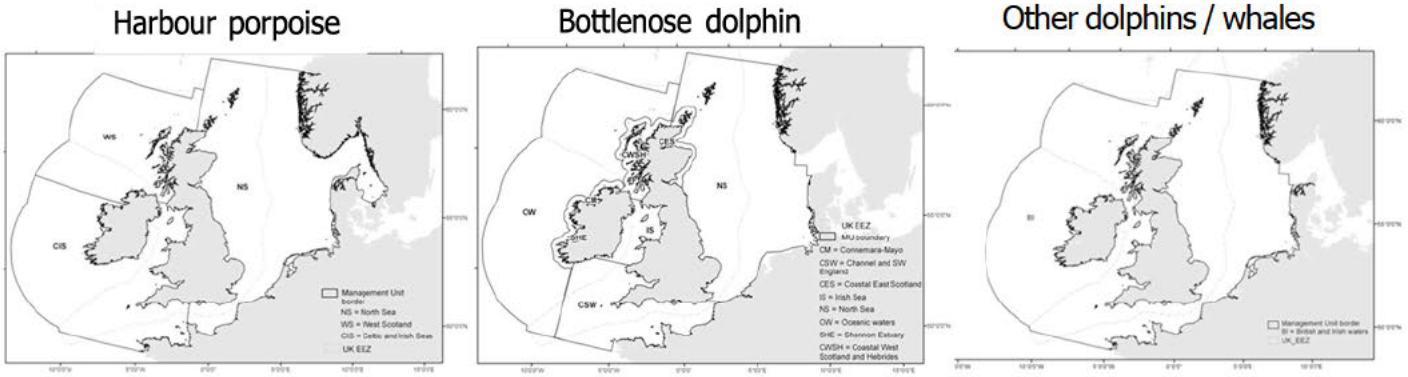

Figure 1. Interagency marine mammal working group (IAMMWG) marine mammal management units (MMMUs) for cetaceans[2]

Seal MMMUs were also developed by the IAMMWG at the same time but due to differences in how seals were managed in some parts of the UK (e.g. licensing in Scotland), seal MMMUs were not officially published and further work is required to develop these (Figure 2). Notably, the extent of the those MMMUs stopped at the UK boundary, unlike cetacean MMMUs which cover other Member State waters. This artificial UK boundary in the IAMMWG seal management units does not reflect known seal population movement and distribution or management boundaries eg ICES Areas. Although draft IAMMWG grey seal management units have been used in previous applications and NRW advice, we do not currently advocate their use. Until these are better defined by the IAMMWG, NRW suggest the use of the OSPAR Region III: Celtic

[2] IAMMWG (2015). Management Units for cetaceans in UK waters (January 2015). JNCC Report No. 547, JNCC Peterborough. Available at: https://hub.jncc.gov.uk/assets/f07fe770-e9a3-418d-af2c-44002a3f2872

Seas area as the appropriate interim management unit (Figure 2). Based on the best available evidence, this area reflects the most appropriate spatial scale of grey seal movements in the region, and currently the most plausible option among various management unit possibilities. This area has been used in our advice on recent significant marine project applications.

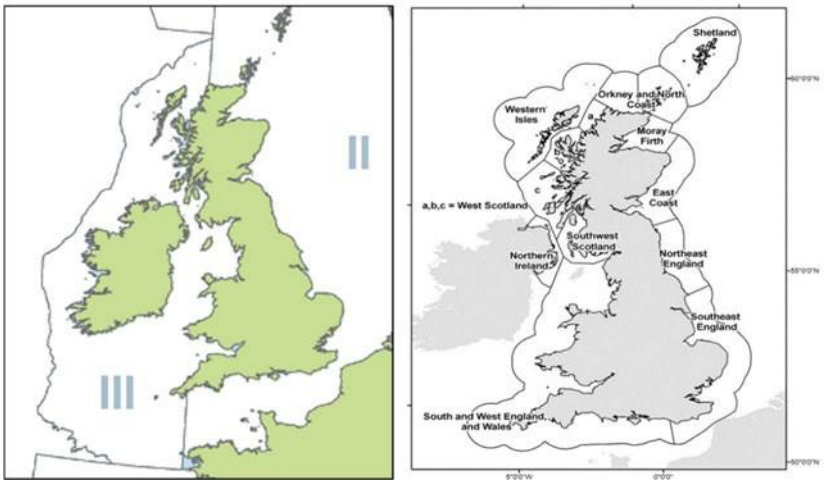

Figure 2. Example grey seal management units: OSPAR Region III: Celtic Seas (left); Draft IAMMWG management unit (right)

What are MMMUs used for?

MMMUs are used to inform conservation advice in several ways, including but not limited to, the relevant spatial scale for assessment of environmental impacts in marine casework (e.g. through HRA, EIA), and the appropriate scale for the selection of Marine Protected Areas e.g. harbour porpoise SACs. Cetacean MMMUs also have population abundance estimates associated with them which underpin conservation advice[3].

Not all UK SNCBs, however, use MMMUs as the spatial scale for considering impacts in HRA and may use different approaches in their advice. Evidence supporting a particular approach may differ between species and between sites and is unlikely to be equivalent for all sites and locations around the UK. As such, different approaches have developed that are suitable for the region at hand and need not be the same for each region. For example, based on the evidence in Wales, an approach that is appropriate in Wales with multiple marine mammal SACs in proximity of each other might not be appropriate for the North Sea where, in the case of harbour porpoise, there is a single SAC in a relatively large area.

While it is usually clear and obvious when an appropriate assessment (AA) is required for impacts from projects that occur inside or overlap with SAC boundaries, how we should assess impacts outside of site boundaries is less obvious. From critically reviewing caselaw on the application of Article 6 (HRA) outside site boundaries (‘offsite impacts’), Article 6 can indeed apply beyond the boundary of the site where there is pathway to impact on the conservation objectives of the site[4]. The extent of functional linkage to sea

[3] IAMMWG (2020 in prep). Abundance estimates for cetacean Management Units in UK waters (2020). JNCC Report No. XX, JNCC Peterborough.
[4] DTA Ecology and BSG Ecology 2020. The parallel application of Article 6 (SACs) and Article 12 (strict protection of EPS) for mobile marine species. How should Article 6 be applied beyond the boundary of a

areas outside the site, however, is important here, and depends on the strength of evidence, which varies for species and location. As a point of principle, an impact occurring outside the site needs to adversely affect the achievement of the conservation objectives of the site concerned for it to be considered to affect site integrity.

Informed by these outcomes, this Position Statement represents NRW's advisory position on the use of MMMUs and other approaches relevant to marine mammals in casework advice for HRA, especially in relation to impacts that occur outside of site boundaries. It is advised that this approach is followed by staff in NRW advisory and permitting and this advice is given externally to developers and stakeholders.

2. NRW's position on using MMMUs in HRA

Due to the mobile nature of all Annex II marine mammal features, it is accepted that they do not stay within site boundaries. It is reasonable, therefore, to assume that should an activity occur outside a site, marine mammal features of the sites (several of them rather than just the occasional individual) could travel to and thus be impacted by that activity, wherever it may be in the management unit.

We generally consider that there is the potential for the MMMU to be 'functionally linked' to SACs given, in most cases, the evidence demonstrating the degree of connectiveness and the fact that SACs are dependent on the wider population within the MMMU and represent special areas of sea within it (see Appendix 2; see Chapman & Tyldesley 2016[5] for information on the concept of functional linkage). The Moorburg case (c-142/16) and the Holohan case (C-461/17) confirm the need to adequately consider offsite impacts, where there is a potential and credible effect on the conservation objectives of a site. When considering likely significant effects on site features from offsite impacts, we must consider the specifics of whether the marine mammal site feature can reach the impact and in doing so whether it would be adversely affected in relation to the conservation objectives of the site and not just whether the impact occurs inside or overlaps with the site. For example, where there is evidence of functional linkage between the area of disturbance and the site, there is a potential for disturbance to affect site integrity when it occurs outside the site and the impact footprint does not overlap with its boundary. However, the degree to which the disturbance affects the conservation objectives, depends on the wording of the objective, the species, the weight of evidence supporting the connection of the site feature to the area of functionally linked sea and the magnitude of the effect. For impact pathways that potentially result in injury or death, the impact to the population is more direct and permanent than that of disturbance, and more likely to credibly affect the conservation objectives of the site and its integrity.

In accordance with NRW's internal guidance on HRA, NRW's consideration of marine mammals in project HRAs is carried out in two stages of the process (the derogations are not covered in this document): Stage 1 – test of Likey Significant Effect; Stage 2 – Appropriate Assessment.

European site where a species is also subject to protection under Article 12? Advice to NRW, Final Report. Doc. Ref. 1060(d) Article 6/12 report. 58pp.

[5] Chapman C, Tyldesley D (2016). Functional linkage: How areas that are functionally linked to European sites have been considered when they may be affected by plans and projects - a review of authoritative decisions. Natural England Commissioned Reports, Number207.Available here

Stage 1 - Test of Likely Significant Effect

At this stage, the Competent Authority consider whether a project either alone or in-combination with other plans and projects is 'likely to have a significant effect' (LSE) on a European site by undermining its conservation objective(s). An LSE is a 'possible' significant effect whose occurrence cannot be excluded on the basis of objective information. There should be an impact pathway and credible evidence of the absence of a possible yet real risk for LSE to be excluded. If the competent authority does not believe the risk to be credible, it can be ruled out at TLSE stage.

This stage – sometimes called screening – is intended to be a preliminary examination rather than a detailed investigation: if detail is required to come to a view, then it is probable that an Appropriate Assessment (AA) is needed. If it is unknown or there is doubt as to an absence of LSE, then an AA should be carried out.

Potential impact pathways are considered, including those occurring outside of site boundaries, with a brief examination of whether there are any reasonably foreseeable effects to marine mammal features of a site (in relation to the conservation objectives) based on credible evidence of a real risk, or a hypothetical risk where guidelines exist.

When considering which sites to screen into the assessment (for each impact pathway and species feature), the relevant MMMU is used as the spatial scale for screening (Figures 3-5). If credible impact pathways are identified, or there is reasonable doubt as to absence of an effect from the relevant impact to a marine mammal Annex II feature, in view of the conservation objectives, then all sites with that feature within the relevant MMMU for that species should be screened in for AA.

For most impact pathways, particularly those associated with potential removals or injury, using the MMMU as the spatial scale for assessment (screening) is therefore most appropriate. For some pathways, eg underwater noise disturbance, a different approach may also be relevant, eg using screening distances. However, using alternative approaches to screening depends on the weight of the evidence supporting that approach and should be considered on a case by case basis in consultation with NRW.

NRW advise the use of MMMUs for screening in HRA but may consider other approaches where adequately justified.

Stage 2 - Appropriate Assessment

An AA is made to establish whether there is any adverse effect on site integrity (AEOSI) in view of the site's conservation objectives.

When projects, impacts and mobile site features occur outside of site boundaries, but within the relevant MMMU, we follow different general principles for assessing each species feature for the AA. There may be exceptions to these principles where expert judgement will be required on a case by case basis. In this Position Statement we cover

species that are features of Welsh SACs – bottlenose dolphin, harbour porpoise and grey seal:

- ***Bottlenose dolphin***

The high level of connectivity between Pen Llŷn a'r Sarnau and Cardigan Bay SACs, and the strong evidence that there is a single population of bottlenose dolphins using both sites means that it is likely that an impact that causes AEOSI to one site would cause the same to the other. Conversely, ruling out an AEOSI on one site is likely to also mean no AEOSI on the other but this would need to be assessed independently.

For bottlenose dolphin: an Appropriate Assessment should be carried out on both bottlenose dolphin SACs: Pen Llŷn a'r Sarnau and Cardigan Bay.

- ***Harbour porpoise***

SAC documentation specifies that the population of porpoise associated with the sites is that of the MMMU population: there is no specific number of porpoises associated with the site. The site Conservation Objectives for all harbour porpoise SACs in the MMMU are the same (see Appendix 1) and the sites are of equal importance to the species but vary by season.

For harbour porpoise: An Appropriate Assessment should be carried out on the closest site to the proposed plan or project location first. If AEOSI cannot be ruled out, a sequential/iterative assessment should be carried out considering the next closest site.

If AEOSI cannot be ruled out on the closest site first, then the next closest site is assessed and so on. Where AEOSI is ruled out on the closest site, it follows that there AEOSI would also be ruled out at more distant sites. The differing seasonal nature of the sites, however, should be borne in mind during the assessment.

- ***Grey seal***

Grey seal is a relatively complex feature to assess due to the seasonal changes to the population; the seals present at a site at one time of year (pupping) may be different to the seals present at another time (moulting/post-breeding). Yet there is a high degree of connectivity throughout the region (ie interim management unit). Some life cycle stages may also be more sensitive to certain impacts at certain times eg pupping and moulting. The conservation objectives of grey seal features largely relate to pupping but not exclusively; grey seal presence and distribution during non-breeding periods is also an important consideration in the AA.

Some locations in the region/management unit are also important non-breeding haul-outs (eg moulting, resting). Several haul-outs occur outside of SACs but seals that use these may be 'SAC animals' or associated with SACs. Additionally there are differences in the 'importance' of certain pupping locations within the region. Pembrokeshire Marine SAC is the key SAC which supports most grey seal pupping within the Celtic and Irish Seas part of the OSPAR Region III area (interim management unit). As such, this site

may need to be routinely assessed if grey seal is taken forward to assessment, but will depend on the specifics of the case. Similarly, there are regionally important pupping sites that are not within an SAC, e.g. around Anglesey, but are connected to other SACs in the region. It is advised that the connectivity of these sites outside SACs and their association with SACs is considered when making an AA, and expert judgement will likely be required on assessments of grey seal SAC features on a case by case basis.

In general terms, we suspect that animals from further away from the source of an impact are less likely to travel to that location and therefore be affected than those in closer proximity.

For grey seal: An Appropriate Assessment should be carried out on the closest site to the proposed plan or project location first. If AEOSI cannot be ruled out, a sequential/iterative assessment should be carried out considering the next closest site.

Pembrokeshire Marine SAC is also likely to require assessment depending on the specifics of the case.

If the AA is unable to rule out an AEOSI for the closest site, the next closest site should then be considered, and so on. Where an AEOSI is ruled out at the closest site, it is unlikely that AEOSI would occur on sites further away, although Pemrokeshire Marine SAC is likely to require assessment depending on the specifics of the case.

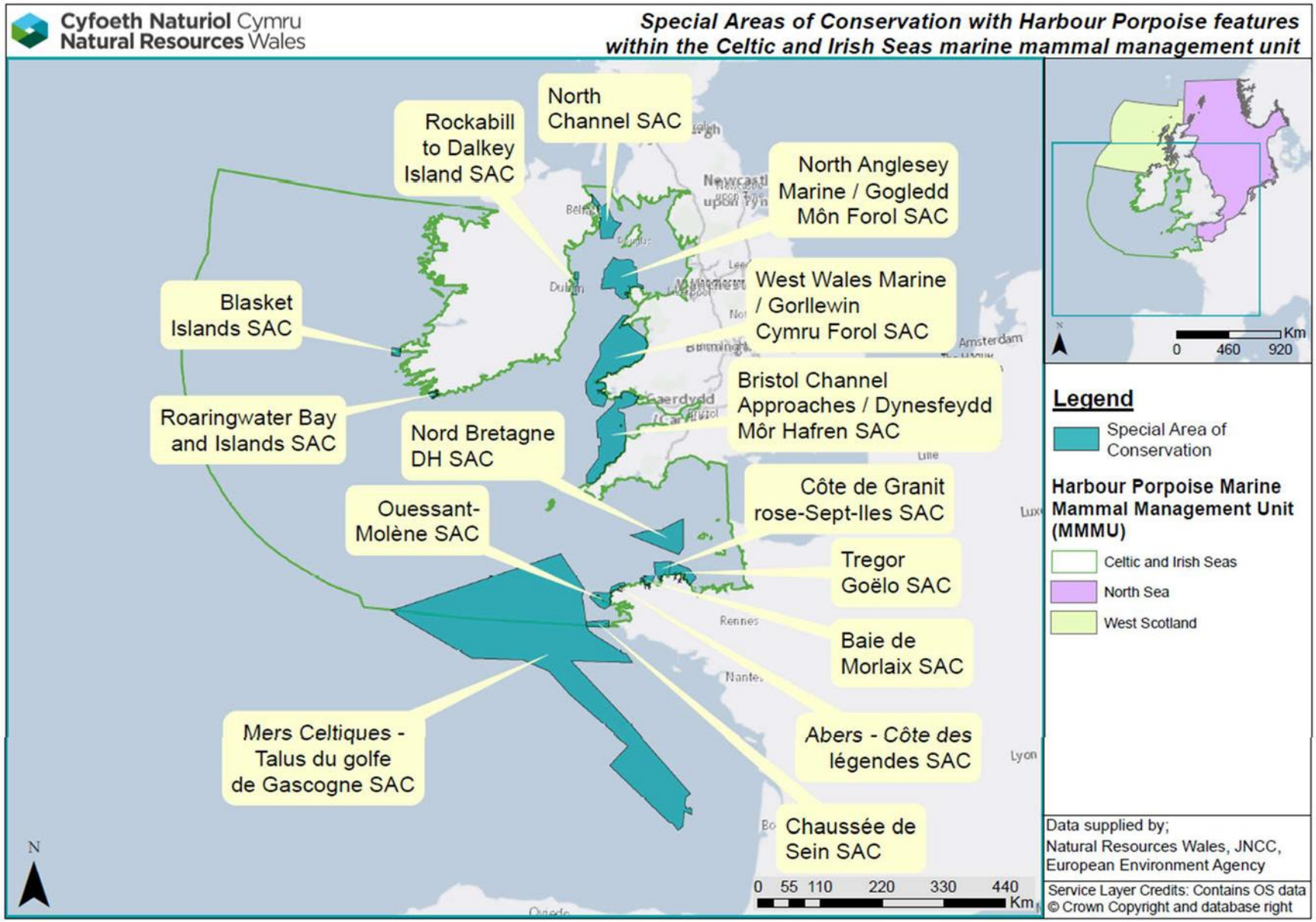

Figure 3. The Celtic and Irish Seas harbour porpoise MMMU and SACs within it.

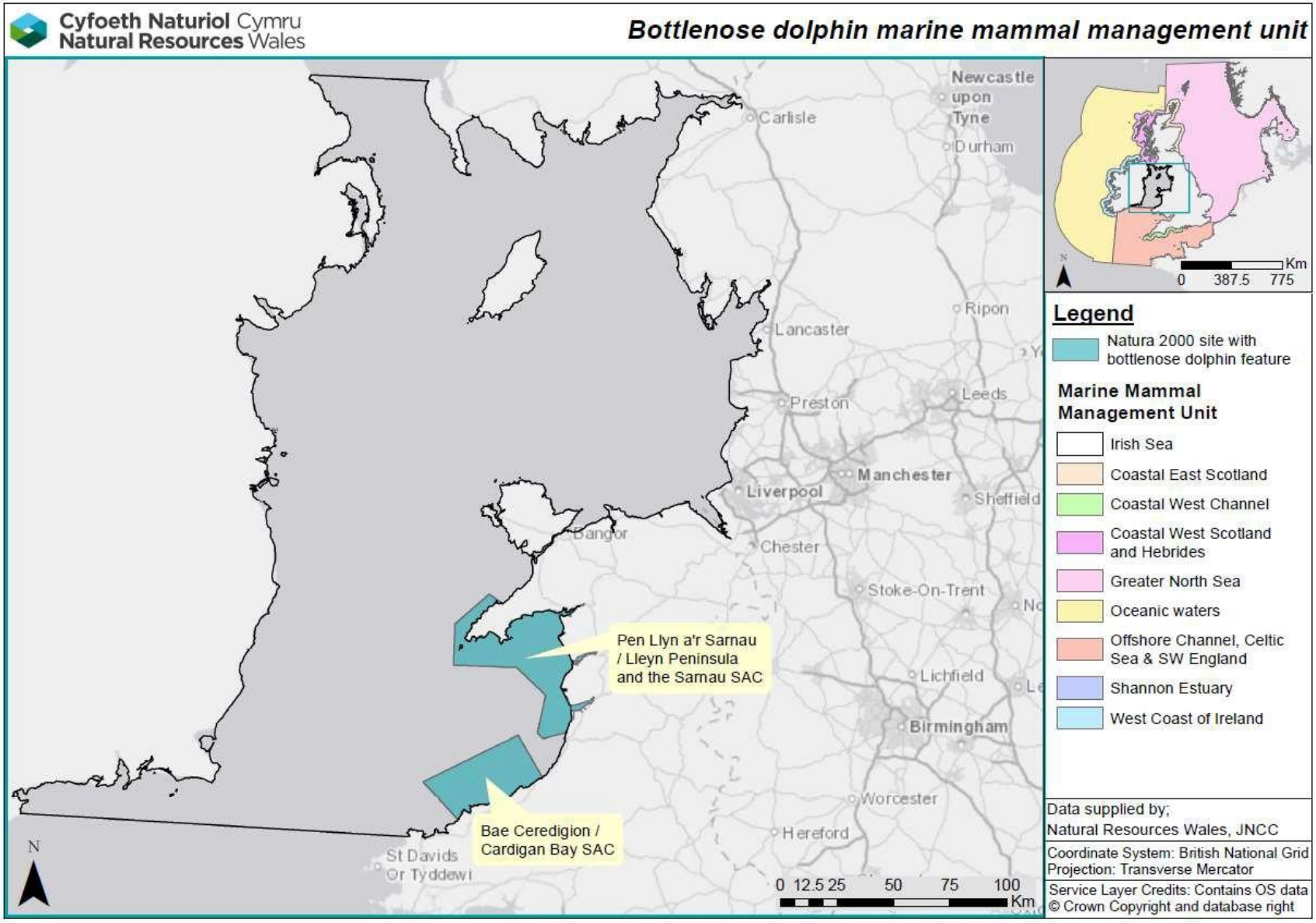

Figure 4. The Irish Sea bottlenose dolphin MMMU and SACs within it.

Figure 5. The OSPAR Region III interim MMMU for grey seal and SACs within it.

Appendices

Appendix 1: Conservation Objectives

Harbour porpoise

Harbour porpoise is a feature of four SACs in the CIS MMMU and three in welsh waters, North Anglesey Marine (NAM), West Wales Marine (WWM), Bristol Channel Approaches (BCA), and North Channel (NC). All sites are single feature sites (harbour porpoise only) and have common conservation objectives. The sites were identified as having persistently higher densities of harbour porpoises (Heinänen and Skov 2015) compared to other areas of the MMMU. This is likely linked to the habitats within the site providing good feeding opportunities. Therefore, operations within or affecting the site should be managed to ensure that the animals' potential usage of the site is maintained. The relevant conservation objective for collisions/removals is as follows (emphasis added with underlined font):

Harbour porpoise is a viable component of the site

This SAC has been selected primarily based on the long-term, relatively higher densities of porpoise in contrast to other areas of the MU. The implication is that the SAC provides relatively good foraging habitat and may also be used for breeding and calving. However, because the number of harbour porpoise using the site naturally varies (e.g. between seasons), there is no exact number of animals within the site.

The intent of this objective is to minimise the risk of injury and killing or other factors that could restrict the survivability and reproductive potential of harbour porpoise using the site. Specifically, this objective is primarily concerned with operations that would result in unacceptable levels of those impacts on harbour porpoises using the site. Unacceptable levels can be defined as those having an impact on the FCS of the populations of the species in their natural range. The reference population for assessments against this objective is the MMMU population in which the SAC is situated (IAMMWG 2015).

The harbour porpoise is also a European Protected Species (EPS) listed on Annex IV of the Habitats Directive and as such is protected under the Habitats Directive Article 12 and transposing regulations from deliberate killing (or injury), capture and disturbance throughout its range. In addition, Article 12 (4) of the Habitats Directive is concerned with incidental capture and killing. It states that Member States 'shall establish a system to monitor the incidental capture and killing of the species listed on Annex IV (all cetaceans). In the light of the information gathered, Member States shall take further research or conservation measures as required to ensure that incidental capture and killing does not have a significant negative impact on the species concerned'. Site based measures should therefore be aligned with the existing strict protection measures in place throughout UK waters.

Bottlenose dolphin and grey seals

Bottlenose dolphin are a feature of Cardigan Bay (CB) and Pen Llŷn a'r Sarnau (PLAS) SACs, both of which are in the Irish Sea MMMU. Grey seal is a feature of PLAS, CB and Pembrokeshire Marine (PM) SACs within Wales and there are several other SACs within the OSPAR Region III area (interim Management Unit).

In Wales, these species and welsh sites have common conservation objectives, the first of which is the most relevant, but aspects of the other objectives are also important for considering impacts from collisions/removals (emphasis added with underlined font).

Populations

The population is maintaining itself on a long-term basis as a viable component of its natural habitat. Important elements include:

• population size
• structure, production
• condition of the species within the site.
• for grey seal, populations should not be reduced as a consequence of human activity.
• for bottlenose dolphin and grey seal; Contaminant burdens derived from human activity should be below levels that may cause physiological damage, or immune or reproductive suppression "

Range

The species population within the site is such that the natural range of the population is not being reduced or likely to be reduced for the foreseeable future.

for bottlenose dolphin and grey seal:

•Their range within the SAC and adjacent inter-connected areas is not constrained or hindered
• There are appropriate and sufficient food resources within the SAC and beyond
• The sites and amount of supporting habitat used by these species are accessible and their extent and quality is stable or increasing
"

Supporting habitats and species

The presence, abundance, condition and diversity of habitats and species required to support this species is such that the distribution, abundance and populations dynamics of the species within the site and population beyond the site is stable or increasing. Important considerations include;

• distribution
• extent
• structure
• function and quality of habitat
• prey availability and quality.

As part of this objective it should be noted that;

• The abundance of prey species subject to existing commercial fisheries needs to be equal to or greater than that required to achieve maximum sustainable yield and secure in the long term.
• The management and control of activities or operations likely to adversely affect the species feature is appropriate for maintaining it in favourable condition and is secure in the long term.

• Contamination of potential prey species should be below concentrations potentially harmful to their physiological health.
• Disturbance by human activity is below levels that suppress reproductive success, physiological health or long-term behaviour "

Restoration and recovery
As part of this objective it should be noted that for the bottlenose dolphin, populations should be increasing.

Appendix 2: Evidence base underpinning MMMUs

The evidence varies for each of the Annex II marine mammal species. Species that are features of SACs around Wales are described below (common seal is not a feature of an SAC around Wales).

Harbour porpoise

Satellite telemetry in Denmark and Greenland indicates that some animals range widely while others show a degree of site fidelity (Nielsen *et al* 2018). However, there are no studies of harbour porpoise movements in UK - there has been no tagging of wild cetaceans in UK waters, and individual identification e.g. through photo ID, is not thought to be effective due to the general lack of identifying features and the small, elusive nature of the species. However, harbour porpoise are thought to be wide ranging (Read & Westgate 1997; Sveegaard et al 2011), and within the eastern North Atlantic they have generally been considered to behave as a 'continuous' biological population that extends from the French coasts of the Bay of Biscay northwards to the arctic waters of Norway and Iceland (Tolley & Rosel 2006; Fontaine et al 2007). For conservation and management purposes, it is useful to divide this population into smaller units where distinct habitat or human pressures – such as bycatch – exist. As such, three porpoise MUs – Celtic and Irish Seas, North Sea, Western Scotland - have been agreed around the UK (IAMMWG 2015; 2020 in prep), and given the evidence underpinning the creation of MUs, we consider the population associated with each MU to form a single inter-connected unit that represents an appropriate scale for wider management of the population.

Fontaine et al (2017), however, recently found some genetic and morphological differentiation in porpoise populations in the NE Atlantic. Around western parts of the British Isles and Bay of Biscay there is a mixing zone between Iberian and North Atlantic 'types' which has led the North Atlantic Marine Mammal Commission (NAMMCO) to propose separate stock identities for West Scotland/Ireland, Celtic Seas and Irish Seas (NAMMCO 2019; NAMMCO/IMR 2019). These stock assessment units differ from management units used by the IAMMWG (SNCBs) and the MSFD/ICES Assessment Units. Further work by the SNCBs is underway to examine these findings.

Bottlenose dolphin

There is strong evidence through photo-ID that coastal bottlenose dolphins in the Irish Sea do not tend to move into Celtic Seas or beyond and are relatively constrained to the Irish Sea Management Unit (Feingold & Evans 2014; Lohrengel et al 2018; Pesante et al 2008b). The largest population of coastal bottlenose dolphins in the UK is found in Cardigan Bay. The population ranges beyond the boundaries of Cardigan Bay (CB) and Pen Llŷn a'r Sarnau (PLAS) SACs (of which it is a feature of both), and has been observed throughout the wider management unit but not beyond (Pesante et al 2008a,b). Photo-ID evidence shows that most individual dolphins move between the two SACs, strongly supporting the idea that the populations of the two SACs are highly connected, and that there is likely a single generic population across the management unit (although a few individuals appear to be faithful to one particular site).

Cardigan Bay SAC is the principal SAC for bottlenose dolphin and was designated primarily (Grade A) for this species, whereas bottlenose dolphins are a secondary (Grade C) feature of PLAS SAC. However, there is no legislative reason why one site would be more important than the other, and given the strong evidence outlined above, we consider

the entire Irish sea MU to be a single inter-connected unit. We therefore consider the population associated with PLAS SAC and CB SAC to be the same and that this is broadly equivalent to the population of the wider MU for purpose of assessment of site integrity.

Grey seal

There is strong evidence (through photo-ID and tagging studies) that grey seals range among the three Welsh SACs and beyond throughout the regional seas (OSPAR Region III area: western coast of Great Britain and neighbouring areas) (Baines *et al*., 1995; Carter and Russell 2018; Cronin et al 2016; Jessopp et al 2013; Jones et al 2013; Keily et al 2000; Langley et al 2018, 2020; Pomeroy et al 2014; Russell et al 2017; Thompson 2011; Vincent et al 2005, 2017). The evidence shows that individual grey seals move between the sites, supporting the notion that the SACs are connected, and that there is likely a single generic population using the region. There is strong evidence that Pembrokeshire Marine SAC is the most important site in the region due to the highest numbers of pups being born there annually (Baines et al 1995; Keily et al 2000; McMath & Stringell 2006; Strong et al 2006).

Grey seals show strong site fidelity during the pupping season (Langley et al 2018, 2020; Pomeroy et al 2000), when they give birth and nurse pups on land. The population can therefore be considered a closed population during pupping time and the notion of a SAC population makes some sense during this time. Outside of this season, seals still rely on land for moulting and resting but are less site faithful, with animals dispersed over a wider area (SCOS 2017). Thus, we see a difference in the grey seal population distribution at different times of the year, and animals may be more sensitive to disturbance during pupping and moulting times. Nevertheless, the conservation objectives of Welsh SACs relate to the species in general rather than any specific life stage. It therefore makes sense to consider the population level effects at a wider scale and consider site specific evidence where available. We only have recent (within last 5 years) estimates of SAC level pup production for PLAS SAC. We have older data on pup production in Pembrokeshire Marine SAC and limited relevant data for CB SAC. We assert, however, that effects on the wider population should be considered when conducting HRA given the interconnectivity of the population in the region.

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Published by:
Natural Resources Wales
Cambria House
29 Newport Road
Cardiff
CF24 0TP
[redacted] (Mon-Fri 8am-6pm)
[redacted]

C.3. Marine mammals EWG meeting 2

C.3.1 Meeting minutes

MINUTES OF MEETING

Security Classification: Project Internal

Partners in UK offshore wind

MOM Number	:	20220720_Morgan and Mona MMammal EWG02	**REV. No.**	: F02
MOM Subject	:	Morgan and Mona Evidence Plan Marine Mammals Expert Working Group meeting 2.		

MINUTES OF MEETING

MEETING DATE	:	19/07/2022
MEETING LOCATION	:	Microsoft Teams
RECORDED BY	:	[redacted]
ISSUED BY	:	[redacted]

PERSONS PRESENT:

- [redacted]
- [redacted]
- [redacted] – bp (WD)
- [redacted] – RPS (KL)
- [redacted] - RPS (ST)
- [redacted]
- [redacted] – RPS (BP)
- [redacted]
- [redacted] - Seiche (CB)
- [redacted]
- [redacted] – Natural England (AuB)
- [redacted] – Natural England (OH)
- [redacted] – MMO (DN)
- [redacted] – JNCC (JW)
- [redacted] - JNCC (SC)
- [redacted] – NRW (LR)
- [redacted]
- [redacted] – TWT (GdJC)

APOLOGIES:

[redacted] - NRW (HS)

ITEM NO:	DISCUSSION ITEM:	Responsible party	Date
1.	**Project update (presented by WD)** bp are working with EnBW in a 50/50 partnership (the Applicants) to develop the Morgan and Mona Offshore Wind Projects, which are being progressed as two separate projects. Morgan is the northern project located in English waters, and Mona is the southern project located mostly in Welsh waters. Together, they will have a combined capacity of 3GW. Subject to consent, Morgan		

	and Mona will be delivered on similar but slightly staggered timescales and will be under separate consent applications. The Mona project is aiming to be operational in 2028 and the Morgan project is aiming to be operational in 2029. The Morgan and Mona Offshore Wind Projects are being developed as separate DCOs with separate landfalls. The Applicant is looking to sign The Crown Estate (TCE) Agreement for Lease this year. We now have final clarity from the National Grid regarding the results of the Pathway to 2030 Holistic Network Design review which has provided the onshore grid connection points for the Morgan and Mona Offshore Wind Projects. Mona will have a grid connection at the existing Bodelwyddan National Grid substation. Morgan will have a shared grid connection at the existing Penwortham National Grid substation with the Morecambe Offshore Wind Project which is being progressed jointly by Cobra and Floatation Energy. The two projects will share an onshore and offshore cable corridor however the projects will remain electrically separate. This means we have had to separate the Morgan generation and transmission assets. The Morgan (generation assets only) scoping report has been submitted to the Planning Inspectorate and the Applicant is working with Morecambe to deliver a joint scoping report, PEIR and DCO application for the transmission assets. The Morgan (generation assets only) and Mona (generation and transmission assets) PEIR submission will be at the end of Q1 2023. The Morgan (generation assets only) PEIR has been aligned with the Mona PEIR to allow the Applicant to properly consider the cumulative effects between the projects. This alignment is expected to continue to application.		
2.	**Responses to queries from EWG01 (presented by TMc)** A technical note addressing queries from EWG01 was distributed prior to this EWG meeting. It provided evidence of other examples of digital aerial surveys and the percentage cover that the contractor (APEM) have used and what has been agreed for other offshore wind farms around the UK. The technical note also included feedback on the request for power analysis. The Applicant wanted to highlight that that the aim of the aerial surveys is not to look for the ability to detect changes but for characterisation of the baseline. For marine mammals, the sighting rate is not high enough for meaningful power analysis. The Applicant will supplement the aerial surveys with available desk top data so that the survey is not the only data that is relied upon for the baseline characterisation. The technical note and meeting slides presented high- and low-confidence images and examples of how these images were assigned to species/species groups from the arial surveys and the approach to uncertain identifications. The Applicant explained that the purpose of the regional study area is to provide context to the project specific study area. The Applicant has defined the regional study area as the Irish Sea rather than all the relevant Management Units (MUs) as the Applicant does not consider		

	populations in the North Sea to be relevant for understanding the project in the wider region. The regional study area is also the areas within which the Applicant will undertake the screening for the Cumulative Effects Assessment (CEA) and Habitats Regulation Assessment (HRA) Likely Significant Effect (LSE) screening. The Applicant considers the Irish Sea to be sufficient to capture all potential likely significant impacts. TS- For the HRA [for bottlenose dolphin, harbour porpoise, grey seal], NRW would advocate the use of the relevant MUs as outlined in our Position Statement [NRW 2020]. NRW's position on the use of Marine Mammal Management Units for screening and assessment in Habitat Regulations Assessments for Special Areas of Conservation with marine mammal features. Position Statement 006. Natural Resources Wales, Bangor. For EIA/CEA, NRW understand that screening in sites from the North Sea – as part of the Celtic & Greater North Seas Management Unit [for common, Risso's, whitebeaked and white sided dolphin, and minke whale] - would be burdensome but restricting to the Irish Sea is limiting the species and impacts captured. NRW suggest considering using the MU for harbour porpoise (Celtic and Irish Sea MU) as a suitable/pragmatic option for other species ie adding the Celtic Sea area to the Irish Sea. TMc- Are NRW happy for the Applicant to use the step wise approach for LSE screening in sites where the Applicant will only screen in sites further away from the Morgan/Mona Offshore Wind Projects if Adverse Effect on Site Integrity (AEOSI) has been ruled out on the sites closer. TS- yes. *Post meeting note from TS: As outlined in our Position Statement, where there is evidence of a credible risk (and typically there is given the functional linkage within the relevant MU), all sites within the management unit should be screened in for LSE, but the Appropriate Assessment should concentrate on the closest site first for harbour porpoise, both Cardigna Bay/Pen lLyn a'rSarnau for bottlenose dolphin, and the closest site for grey seal (and probably Pembrokeshire marine SAC given its critical importance to the population in the region). If AEOSI can be ruled out for these closest/most relevant sites then it can (more than likely) be ruled out for more distant sites. Thus, this is a stepwise/sequential approach to HRA.* SC- JNCC would also like the routes to impacts to also be taken into account. In regard to CEA, can the same stepwise approach that will be undertaken for LSE screening be used for the CEA to screen in projects? KL- This is something RPS can take away and think about, however the processes are slightly different as the projects are screened in through a tiered approach which is a similar process but undertaken on a different basis. Adding in distance will increase the complexity of the CEA which may make it less comprehensible and informative.		
	Underwater Sound (presented by SS)		

	A technical paper detailing the underwater sound modelling methodology was distributed prior to this EWG meeting. Due to the size of the piles being considered for the Morgan/Mona Offshore Wind Projects (monopiles up to a maximum of 16m diameter), Seiche didn't consider that scaling up the percentage of energy from other piling events of different piles would be a suitably robust approach. Therefore Seiche has used a more detailed methodology for predicting the pile source levels. The model takes the design of the pile and predicts the source level for different pile depths and hammer energy using a hybrid finite element/parabolic equation model. This model is commonly used for European offshore wind farms. Seiche have used the maximum hammer energy being considered for the basic model set up. The piling scenarios are currently being finalised, following which, Seiche will carry out the detailed modelling. The use of a dose response approach to disturbance is considered most appropriate as it is more representative of reality (discussed further below). Particle motion will be dealt with through qualitative review, there are no thresholds available in the literature for particle motion. RPS and Seiche will review all available literature. Seiche have an external peer review stage where the model and the assumptions made will be reviewed to ensure they are best practice and fit for purpose. The model will use the assumption that marine mammals will be moving, and will use the recommended swim speeds from the literature. The assumption is that they will continuously flee the noise source in a straight line. A stationary model will be used for fish, although Seiche will also model a mobile receptor to present a more realistic scenario. The Applicant wants to highlight that there is a lot of conservatism built into the assessment. There is conservatism in the criteria being used, the maximum project design criteria that are being used and the most conservative swim speeds are being considered. KL- Does the EWG have any suggestions on the cut off between impulsive and non-impulsive sound, e.g. how far away from a source does the impulsive piling sound become continuous sound. OH- NE are on the steering group for the ORJIP working group considering this. The project is still in the early stages so there are no preliminary results to share. GV- The Applicant can control the strike rate as part of the soft start and noise mitigation, but the strike rate can't be changed during the functional piling. Strike rate can be considered in the modelling. RF- Consecutive piling should be considered in the assessment, the number of piles within 24hrs should also be considered.	**EWG to provide any**	

	SS- Would the assumption be that the marine mammals would continue to flee between piling events. RF- There would also be the potential for them to return so this also needs to be considered. GV-Is there a cut off in terms of where consecutive piling should be considered as continuous noise e.g. how close do piling events have to be before it is considered continuous sound. RF- This depends on the type of piling proposed and the duration of each piling event. SS- In the periods between piling events, marine mammals would have swum far beyond the range at which sound is impulsive. It is not practical or representative of reality to consider this as impulsive noise. TMc- We simplify the assessment down to the spatial and temporal worst-case scenario so that it doesn't lead to over complication of the assessment, making it hard to read and understand. RPS will provide a log of what we are including in the assessment and our justification.	**papers on evidence of effects of cable laying specifically (over the vessel doing the cable laying)** **RPS to provide a log of what has been included in the next EWG and justification.**	**22/08/22** **TBC**
3.	**Dose response (presented by TMc)** This approach is taken for most offshore wind farms and was developed for the Beatrice offshore wind farm. The approach should use a proportional response, where animals close to a piling location will experience a higher rate of disturbance. For pinnipeds, below 130db unweighted SEL, the Applicant would consider that there isn't a disturbance. OH- The dose response curves have been developed for offshore wind farms in the North Sea, a different location from the Morgan and Mona Offshore Wind Projects. Can RPS provide some information on why they are considered appropriate for the Irish Sea populations. There is also a second paper on dose response for seals- Whye *et al* 2020. TMc- We are using the best available data and we acknowledge the limitations in that the does response curves were developed for a different geographic region – this will be noted as a caveat to the assessment. TS- Is it valid to use the harbour porpoise dose response for other cetaceans? TMc- This will be another caveat on the assessment, but this is the best information we have. The alternative is a threshold approach (NMFS) using mild and strong disturbance and would be the same for cetaceans and pinnipeds. For dose response there are different	**RPS to review Whyte *et al* paper**	**22/08/2022**

	thresholds for cetaceans and pinnipeds so more robust and also we have to use the most up to date data available. SC- The Beatrice offshore wind farm study was undertaken on pin piles, not monopiles. When the assessment is written, it needs to be very clear on the methodology and state caveats and assumptions. TS- It might be useful to present a comparison of the harbour porpoise dose response to other species and the National Marine Fisheries Service (NMFS) thresholds to compare the different numbers. Noted that all caveats and limitations associated with the dose response approach need to be set out clearly. TMc- When RPS undertakes the assessment we will present a range of densities, a maximum and realistic scenario. If we presented too many variations the assessment becomes very complicated and very difficult to follow. If would be more productive for RPS to choose a best approach, agree that and clearly state it in the assessment. TS- Comparison of other species dose responses and thresholds could be done and presented at an earlier stage as part of an EWG rather than taking it through to the assessment itself. *Post meeting note from TS: An important point here is that a D/R which calculates the decreasing numbers of animals per isopleth is not suitable to determine the spatial area/footprint of ensonification of significant disturbance for harbour porpoise HRA as a 20%/10% spatial area overlap is required. Equating numbers of animals (proportions per isopleth) to area is not possible using a D/R*		
4.	**Interim baseline (presented by BP)** KL- Due to time constraints we will not present the interim baseline however the slides will be provided with the meeting minutes.		
5.	**Scoping Opinion (presented by KL)** KL- The desk top data and site specific survey data do not show that harbour seal and white beaked dolphin are key species. As the assessment it intended to be proportional and consider likely significant effects, the Applicant proposed to scope out these species. TS- White beaked dolphin can definitely be scoped out. AuB - NE also agree that white beaked dolphin can be scoped out. TS- For LSE Screening the screening paper stated that a 100km buffer was to be used for screening but then it also stated that the MUs were to be used. How will this work? KL- The LSE Screening will take into account foraging ranges and connectivity. Harbour seal were recorded in low densities and have low foraging ranges which is why they were scoped out. TS- I wouldn't expect any significant adverse effect on harbour seal however it would be good to consider it in the assessment. Carter et al		

	2022 used a range of 440km for grey seal. The 100km buffer is dated and the distance over which they are considered should be updated. KL- The primary concern for harbour seals is for the LSE screening rather than the EIA? TS- Wouldn't necessarily recommend it's in one and not the other. OH- We would also suggest that harbour seals should be scoped in due to the observations during the geophysical survey so there is evidence that they are present even if it is in low densities. TMc- The Applicant will include harbour seal in the EIA and HRA.		
6.	**LSE screening (presented by KL)** The Applicants have looked at the MUs next to the Morgan and Mona Offshore Wind Projects and looked at the foraging ranges for seals to identify the SACs with connectivity. KL noted that the foraging ranges for seals can be looked at again the context of the Carter *et al*. information, particularly in relation to sites on the east coast of Ireland and potential connectivity with these and the Morgan and Mona Offshor Wind Projects. OH- Has there been consideration of the Isle of Man populations? KL- The Applicant has contacted the Manx Wildlife Trust and the Manx Whale and dolphin trust to request their data, and this has been included in the baseline characterisation.	**RPS to reconsider foraging ranges for seals in the context of the Carter *et al* information.**	**22/08/22**
7.	**Discussion and next steps (presented by KL)** Outlined next steps for meeting minutes and agreement logs (attached). The Applicant is seeking agreement on the approach paper presented and points raised during the meeting.		
8.	**Close of meeting**		

C.3.2 Response from Natural England regarding the meeting minutes

Date: 19 August 2022
Our ref: DAS/UDS A000566 / 400336
Your ref: Morgan and Mona Marine Mammal Expert Working Group 02

[redacted]
BP Alternative Energy Investments Limited

c/c [redacted]
RPS/ Energy

Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire CW1 6GJ

T [redacted]

BY EMAIL ONLY

Dear [redacted]

Discretionary Advice Service (Charged Advice) - UDS A000566
Contract Reference: BP EnBW Morgan and Mona Offshore Wind Farm
Consultation: Morgan and Mona Offshore Windfarm Marine Mammal EWG02

This advice is being provided as part of Natural England's Discretionary Advice Service in accordance with the Quotation and Agreement dated 17 May 2021 to BP Alternative Energy Investments Limited.

The following advice is based upon the information presented in the Marine Mammal Expert Working Group (EWG) Meeting 2 (attended on 19 July 2022).

Natural England were asked to provide advice upon:

1. Agreement on the approach to baseline characterisation;
2. Agreement on the approach to noise modelling following clarifications provided in EWG;
3. Agreement on approach to LSE Screening for Marine Mammals;
4. Agreement that white-beaked dolphin be scoped out of the EIA and HRA;
5. Agreement that the Celtic and Irish Sea (Harbour Porpoise MMMU) is an appropriate study area for dolphin and minke whale.

1. Agreement on the approach to baseline characterisation

During the Marine Mammal EWG Meeting 2, the interim baseline was not presented by RPS due to time constraints. It was proposed that the slides from the presentation were to be provided following the meeting for review and comment. We request that a copy of the presentation slides or a paper is provided in order to inform our position and provide comment.

2. Agreement on the approach to noise modelling following clarifications provided in EWG

We have provided our advice (dated 21 June 2022, our reference 393968) on the Underwater Sound Modelling Methodology Technical Note provided by RPS (dated 24 May 2022). We do not believe that definite answers have been provided for the following queries raised by Natural England:

- modelling of underwater noise from piling and unexploded ordnance (UXO) scenarios, including mitigation or low noise methods;
- the worst-case spatial and temporal scenario that will be modelled and inclusion of consecutive

piling;
- the locations for modelling;
- the inclusion of temporary threshold shift (TTS);
- operational noise.

It is our understanding that RPS will be producing a log of aspects to be included in the underwater noise assessment and justification for these for the next EWG, therefore we will await further information before agreeing with the noise modelling approach.

Within the EWG Meeting 2, there was a request for any papers on evidence of effects of cable laying to be provided. Evidence[1] from the Norfolk Boreas offshore wind farm indicates that some aspects of the cable laying process (e.g. dredging and trenching) can have higher source levels than that of the vessel noise alone. We would welcome any evidence from the applicant that supports their position that the noise from cable laying is within the noise of the vessel, or further consideration of noise levels of the cable laying process.

3. Agreement on approach to LSE Screening for Marine Mammals

Natural England broadly agree with the approach to identification of sites and features for Likely Significant Effect Screening as set out within the meeting. However, in addition to the foraging ranges, we advise that telemetry of seals in the area should be used to identify protected sites with connectivity to the project. Furthermore, the Special Area of Conservation (SAC) Specific Distribution Maps produced by Carter *et al.* (2022)[2], (set out in section 10 in the Supplementary Material) should also be used to inform connectivity between sites and the project boundary and Zone of Influence. With regards to cetaceans, we agree that the relevant species-specific Management Unit (MU) should be used.

4. Agreement that white-beaked dolphin be scoped out of the EIA and HRA

As set out in the Agreement log (provided 8 August 2022), Natural England agree that white-beaked dolphin is scoped out of the Environmental Impact Assessment (EIA) and Habitat Regulations Assessment (HRA). The meeting minutes currently attribute our comment to [redacted] of the Joint Nature Conservation Committee (JNCC) and should be amended to prevent confusion and present an accurate portrayal of the meeting.

5. Agreement that the Celtic and Irish Sea (Harbour Porpoise MMMU) is an appropriate study area for dolphin and minke whale

Natural England agree that the Celtic and Irish Sea Marine Mammal Monitoring Units (MMMU) for harbour porpoise are an appropriate study area for dolphin species and minke whale. The larger study area is more biologically appropriate for wide-ranging species, such as minke whale, and is also more precautionary in that it can capture more distant sites for the HRA and projects for the EIA Cumulative Effects Assessment (CEA).

For clarification of any points in this letter, please contact me using the details provided below.

Yours sincerely

[redacted]
Strategic Coastal Lead Adviser
Coast and Marine Team

[1] Norfolk Boreas Offshore Wind Farm Appendix 5.4 Underwater Noise Assessment Environmental Statement; Volume 3. Subacoustech Environmental Ltd. June 2019, Version 1.

[2] Carter, M.I.D., Boehme, L., Cronin, M.A., Duck, C.D., Grecian, W.J., Hastie, G.D., Jessopp, M., Matthiopoulos, J., McConnell, B.J., Miller, D.L., Morris, C.D., Moss, S.E.W., Thompson, D., Thompson, P.M. and Russell, D.J.F., 2022. Sympatric Seals, Satellite Tracking and Protected Areas: Habitat-Based Distribution Estimates for Conservation and Management. Frontiers in Marine Science 9:875869. doi: 10.3389/fmars.2022.875869

Cheshire, Greater Manchester, Merseyside & Lancashire Area Team
[redacted]

☒ The advice provided in this letter has been through Natural England's Quality Assurance process.

The advice provided within the Discretionary Advice Service is the professional advice of the Natural England adviser named below. It is the best advice that can be given based on the information provided so far. Its quality and detail is dependent upon the quality and depth of the information which has been provided. It does not constitute a statutory response or decision, which will be made by Natural England acting corporately in its role as statutory consultee to the competent authority after an application has been submitted. The advice given is therefore not binding in any way and is provided without prejudice to the consideration of any statutory consultation response or decision which may be made by Natural England in due course. The final judgement on any proposals by Natural England is reserved until an application is made and will be made on the information then available, including any modifications to the proposal made after receipt of discretionary advice. All pre-application advice is subject to review and revision in the light of changes in relevant considerations, including changes in relation to the facts, scientific knowledge/evidence, policy, guidance or law. Natural England will not accept any liability for the accuracy, adequacy or completeness of, nor will any express or implied warranty be given for, the advice. This exclusion does not extend to any fraudulent misrepresentation made by or on behalf of Natural England.

Cc commercialservices@naturalengland.org.uk

C.3.3 Response from the MMO regarding the meeting minutes

From: [redacted]
To: [redacted]
Cc:
Subject: RE: Morgan Mona MMammals EWG02
Date: 01 September 2022 11:25:50
Attachments: image001.png
image002.png
image003.png

CAUTION: This email originated from outside of RPS.

Hi [redacted]

Please see below:
"For consecutive piles installed in a single location (a typical example may be the installation of a pin piled multi-leg jacket foundation), then the initial cumulative exposure would be greater in the first instance. If there a break in between piling, then the general approach is to assume that an animal remains stationary in between piles (as an animal may return near the pile if there is a break). However, even if an animal doesn't return, the subsequent pile/s would add to the cumulative exposure.

For consecutive piles installed in different locations (a typical example may be more than 1 monopile is installed in 24-hours), this is likely to be a more complex situation, particularly where the piling locations of the subsequent monopiles are substantially spaced apart. If the piles are sufficiently spaced apart, so that during the installation of the first pile, there is no displacement of animals in the vicinity of the second pile location, then it is expected that the second pile would produce similar impacts as the first, and these would be in addition to the impacts of the first pile. The effect areas scale up directly with the number of monopiles installed per day. The affected areas within a 24-hour period, for two monopiles for example, are essentially twice the size if the piles are sufficiently far apart.

If the monopiles are not spaced sufficiently apart, then there is the risk that a receptor may be exposed to both the first pile, and then the second pile, and may experience effects above what is predicted for a single monopile. Likewise, although the receptor has additional time between piles to potentially move further away, the modelling assumes that the receptor remains where it is at the end of piling at the previous pile (i.e. it is stationary in between piles)."

Kind Regards,

[redacted] **| Marine Licensing Case Manager | Marine Licensing | Marine Management Organisation**
[redacted] | Lancaster House, Hampshire Court, Newcastle upon Tyne. NE4 7YH

Our MMO Values: Together we are **Accountable, Innovative, Engaging** and **Inclusive**
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C.3.4 Morgan and Mona Offshore Wind Projects Note on Underwater Sound Modelling Methodology

MORGAN AND MONA OFFSHORE WIND PROJECTS

Note on Underwater Sound Modelling Methodology

[redacted], Senior Marine Acoustician, CEng, BSc(Hons), MIOA, ASA

Image of an offshore wind farm

24 May 2022
F01

Rev00
04 April 2022

Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
F01	Final for EWG	Seiche	TMc, KL (RPS) GV, DH (bp/EnBW)	KL	24/05/2022

Approval for issue

[Name]	[Signature]	[Date]

Prepared by:	Prepared for:
Seiche	**Morgan/Mona Offshore Wind Ltd.**

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1 NOTE ON UNDERWATER SOUND MODELLING METHODOLOGY

1.1 Introduction

1.1.1.1 Sound is readily transmitted into the underwater environment and there is potential for the sound emissions from the Morgan and Mona Offshore Wind Projects to affect marine mammals, fish and benthic receptors. Generally at close ranges (for example 100's m to several kms) from sources that generate high sound levels, permanent or temporary hearing impairment may occur to marine species while at a very close range (for example 10's m) physical injury impacts may be possible. At long ranges (eg 10's kms) the introduction of additional sound sources could potentially cause short-term behavioural changes, for example to the ability of species to communicate and to determine the presence of predators, food, underwater features, and obstructions.

1.1.1.2 The primary purpose of the underwater sound modelling study is to predict the likely range at which sound levels decrease to below available threshold criteria for potential impacts, such as the onset of permanent threshold shifts in hearing, which is commonly considered to represent injury (vs. a temporary threshold shift) and behavioural effects on different marine fauna when exposed to the different anthropogenic sounds that occur during different phases of the Morgan and Mona Offshore Wind Projects. The results from this study will be used to inform the Fish and shellfish ecology and Marine mammal impact assessments. Consequently, the sensitivity of species, magnitude of impact and significance of effect from underwater sound associated with the Morgan and Mona Offshore Wind Projects are addressed within the relevant EIA topic chapters separately to the underwater sound modelling study.

1.1.1.3 Underwater sound and vibration sources during construction may include piling for the wind turbine foundations (using impact or drilled installation techniques) and will include the use of barges and vessels, heavy machinery, and generators on the vessels. Sources of underwater sound and vibration during operation will include operational wind turbines as well as various maintenance vessels and activities.

1.1.1.4 This technical note provides information on the following topics:

- Potential sources of underwater sound
- Methods for determining source sound levels
- Sound propagation modelling methodologies;
- Exposure modelling
- Thresholds for injury and disturbance.

1.2 Activities and sound sources to be modelled

1.2.1.1 The Mona Offshore Wind Project scoping report, published on 5th May 2022 includes the following activities within the project design envelope:

- Site preparation activities including clearance of unexploded ordnance (UXO), boulder clearance and sandwave clearance
- Installation of monopile and jacket (pin-pile) foundations for wind turbine generators, offshore substation platforms and the offshore booster substation (and potential use of drilled or impact piles)
- Range of construction vessels including:
  - Main installation and support vessels
  - Tug/Anchor handlers
  - Cable lay installation and support vessels
  - Guard vessels
  - Survey vessels (e.g. for geophysical or geotechnical surveys)
  - Seabed preparation vessels for boulder removal, grapnel, pre-sweep/levelling
  - Crew transfer vessels
  - Scour protection installation vessels
  - Cable protection installation vessels.
- Operational wind turbines
- Operational vessels including:
  - Crew transfer vessels/workboats
  - Jack-up vessels
  - Cable repair vessels
  - Excavators or backhoe dredger.
- Decommissioning activities and vessels.

1.2.1.2 Whilst the Morgan Offshore Wind Project scoping report has not yet been published, the activities listed above are expected to be included within the project design envelope.

1.3 Proposed injury and disturbance thresholds

1.3.1.1 Sound propagation models can be developed to allow the predicted received sound level at different distances from the source to be calculated. To determine the consequence of these received levels on any marine fauna which might experience exposure to such sound emissions, it is necessary to relate the levels to available impact threshold criteria.

1.3.2 Marine mammals

1.3.2.1 It is proposed to utilise the permanent threshold-shift (PTS) and temporary threshold-shift (TTS) threshold values set out in Southall *et al.* (2019) which are based on a combination of un-weighted peak pressure levels and mammal hearing weighted (m-weighted) sound exposure levels (SEL). The m-weighting function is designed to represent the bandwidth for each group within which acoustic exposures can have auditory effects. The categories include:

- Low-frequency (LF) cetaceans: i.e. marine mammal species such as baleen whales.
- High-frequency (HF) cetaceans: i.e. marine mammal species such as dolphins, toothed whales, beaked whales and bottlenose whales.
- Very high-frequency (VHF) cetaceans: i.e. marine mammal species such as true porpoises, river dolphins and pygmy/dwarf sperm whales and some oceanic dolphins (generally with auditory centre frequencies above 100 kHz).
- Phocid pinnipeds (PCW): i.e. true seals.
- Other marine carnivores (OCW): including otariid pinnipeds (e.g., sea lions and fur seals), sea otters and polar bears.

1.3.2.2 The PTS/TTS threshold criteria proposed in Southall *et al*. (2019) are for two different types of sound as follows:

- Impulsive sounds which are typically transient, brief (less than one second), broadband, and consist of high peak sound pressure with rapid rise time and rapid decay (ANSI, 1986; 2005; NIOSH, 1998). This category includes sound sources such as seismic surveys, impact piling and underwater explosions
- Non-impulsive sounds which can be broadband, narrowband or tonal, brief or prolonged, continuous or intermittent and typically do not have a high peak sound pressure with rapid rise/decay time that impulsive sounds do (ANSI, 1995; NIOSH, 1998). This category includes sound sources such as continuous running machinery, sonar, and vessels.

1.3.2.3 The Southall *et al*. (2019) updated marine mammal threshold criteria were published in March 2019. The paper utilised the same hearing weighting curves and thresholds as presented in the preceding US technical guidance document (NMFS 2018) with the main difference being the naming of the hearing groups and introduction of additional thresholds for animals not covered by NMFS (2018). This document uses the Southall (2019) naming convention for marine mammal hearing groups and it is proposed to adopt these for the underwater sound study technical report.

1.3.2.4 At further distances, beyond the area in which hearing impairment may occur, effects on marine mammal behaviour may occur. Significant (i.e., non-trivial) disturbance may occur when there is a risk of animals incurring sustained or chronic disruption of behaviour or when animals are displaced from an area, with subsequent redistribution being significantly different from that occurring due to natural variation. Behavioural responses are widely recognised as being highly variable and context specific (Southall *et al.*, 2007; 2019; 2021). Assessing the severity of such impacts and development of probability-based response functions continues to be an area of ongoing scientific research interest (Southall *et al.,* 2021; Graham *et al.,* 2019).

1.3.2.5 In discussion with the marine mammal technical team for the Project at RPS Energy it is proposed to assess disturbance to marine mammals quantitatively by considering the proportional response of individuals exposed to decreasing sound levels with increasing distance from the sound source. Empirical evidence from piling at the Beatrice Offshore Wind Farm (Moray Firth, Scotland) (Graham *et al.,* 2019) and Horns Rev offshore wind farm (Brandt *et al.,*2011) demonstrated that the probability of occurrence of harbour porpoise (measured as porpoise positive minutes) increased exponentially moving further away from the source. Graham *et al.* (2019) showed a 100% probability of disturbance at an (un-weighted) SEL of 180dB re 1µPa^{2}s, 50% at 155dB re 1µPa^{2}s and dropping to approximately 0% at an SEL of 120dB re 1µPa^{2}s and the data were subsequently used to develop a dose-response curve.

1.3.2.6 Similarly, a telemetry study undertaken by Russell *et al*. (2016) investigating the behaviour of tagged harbour seals during pile driving at the Lincs offshore wind farm in the Wash found that there was a proportional response at different received sound levels. Dividing the study area into a 5km x5 km grid, the authors modelled SEL_{ss} levels and matched these to corresponding densities of harbour seals in the same grids during periods of non-piling versus piling to show change in usage. The study found that there was a significant decrease during piling at predicted received SEL levels of between 142dB and 151dB re 1µPa^{2}s.

1.3.2.7 The approach to be employed for the Project is therefore to plot unweighted single pulse SEL contours in 5dB increments and apply the appropriate dose-response curve to estimate the number of animals that would be disturbed by piling within each stepped contour. For cetaceans, the dose- response curve will be applied from the Beatrice data (Graham *et al.,* 2019) whilst for pinnipeds the dose-response curve will be applied using Russell *et al.* (2016) (Figure 1.1 and Figure 1.2 below).

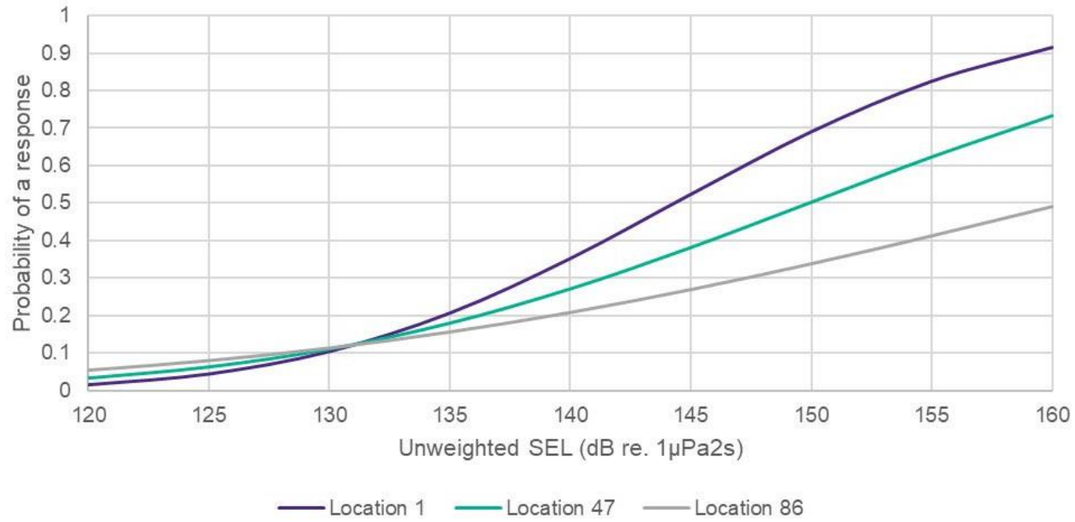

Figure 1.1: The Probability of a Harbour Porpoise Response (24h) in Relation to the Partial Contribution of Unweighted Received Single-Pulse SEL for the First Location Piled (Purple Line), the Middle Location (green line) and the Final Location Piled (Blue Line). Reproduced with Permission from Graham *et al*. (2019).

1.3.2.8 This is an accepted approach to assessing potential behavioural effects of sound from piling and has been applied at other UK offshore windfarms (for example Seagreen Alpha/Bravo and Hornsea Three).

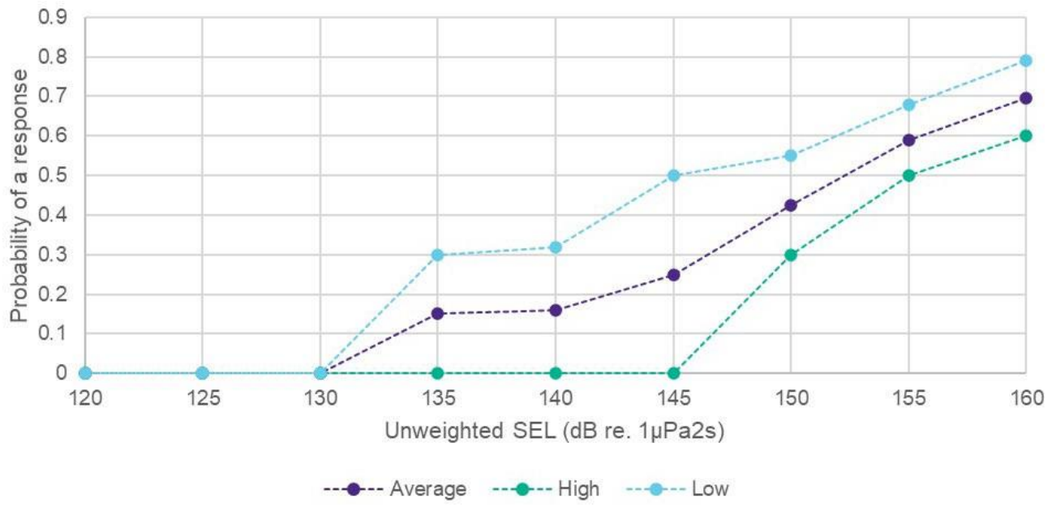

Figure 1.2: The Probability of Response for Seals due to Piling in Relation to Unweighted Received Single-Pulse SEL at 5dB Increments. Adapted from Russell *et al*. (2016).

1.4 Fish, larvae and sea turtles

1.4.1.1 For fish, the most relevant criteria for injury are considered to be those contained in the Sound Exposure Guidelines for Fishes and Sea Turtles (Popper *et al*. 2014). These guidelines do not group by species but instead broadly group fish into the following categories based on their anatomy and the available information on hearing of other fish species with comparable anatomies:

- Group 1: fishes with no swim bladder or other gas chamber (e.g. elasmobranchs, flatfishes and lampreys). These species are less susceptible to barotrauma and are only sensitive to particle motion, not sound pressure. Basking sharks, which do not have a swim bladder, also fall into this hearing group
- Group 2: fishes with swim bladders but the swim bladder does not play a role in hearing (e.g. salmonids). These species are susceptible to barotrauma, although hearing only involves particle motion, not sound pressure
- Group 3: Fishes with swim bladders that are close, but not connected, to the ear (e.g. gadoids and eels). These fishes are sensitive to both particle motion and sound pressure and show a more extended frequency range than Groups 1 and 2, extending to about 500 Hz
- Group 4: Fishes that have special structures mechanically linking the swim bladder to the ear (e.g. clupeids such as herring, sprat and shads). These fishes are sensitive primarily to sound pressure, although they also detect particle motion. These species have a wider frequency range, extending to several kHz and generally show higher sensitivity to sound pressure than fishes in Groups 1, 2 and 3
- Sea turtles: There is limited information on auditory criteria for sea turtles and the effect of impulsive sound is therefore inferred from documented effects to other vertebrates. Bone conducted hearing is the most likely mechanism for auditory reception in sea turtles and, since high frequencies are attenuated by bone, the range of hearing are limited to low frequencies only. For leatherback turtle the hearing range has been recorded as between 50 and 1,200Hz with maximum sensitivity between 100 and 400Hz
- Fish eggs and larvae: separated due to greater vulnerability and reduced mobility. Very few peer-reviewed studies report on the response of eggs and larvae to anthropogenic sound.

1.4.1.2 The most recent criteria for disturbance are considered to be those contained in Popper *et al*. (2014) which set out criteria for disturbance due to different sound sources. The risk of behavioural effects is categorised qualitatively in relative terms as “high”, “moderate” or “low” at three distances from the source: “near” (i.e., in the tens of metres), “intermediate” (i.e., in the hundreds of metres) or “far” (i.e., in the thousands of metres). The assessment of behavioural effects will also be supported by numerical modelling to allow for some quantification of the likely behavioural effects on fish and shellfish receptors, alongside the qualitative thresholds recommended by Popper *et al.* (2014) in order to better understand the risk to fish and shellfish species and populations within the zone of influence of the Morgan and Mona Offshore Wind Projects. These will be presented to and discussed with the Benthic Ecology, Fish and Shellfish Ecology and Physical Processes Expert Working Group as part of the Evidence Plan consultation.

1.4.1.3 The effects of particle motion will therefore be dealt with by qualitative review as opposed to quantitative modelling.

1.5 Pile source level determination

1.5.1 Summary of general concepts

1.5.1.1 The sound generated and radiated by a pile as it is driven into the ground is complex, due to the many components which make up the generation and radiation mechanisms. Larger pile sizes can require a higher energy in order to drive them into the seabed, and different seabed and underlying substrate types can require use of different installation techniques including varying the hammer energies and the number of hammer strikes. In addition, the seabed characteristics can affect how sound propagates from the pile through the sub-surface geology, thus fundamentally affecting the acoustic field around the activity. The type of hammer method used (i.e. the force-impulse characteristics) can also affect the sound characteristics.

1.5.1.2 Underwater sound source level is usually quantified using a decibel (dB) scale with values generally referenced to 1µPa pressure amplitude as if measured at a distance of 1m from a hypothetical, infinitesimally small source (often referred to as the Source Level). This quantity is often referred to as an equivalent monopole source level. In practice, it is not usually possible to measure at 1m from a large structure, which in reality is more akin to a distributed sound source, but the metric allows comparison and reporting of different source levels on a like-for-like basis. In reality, for a large sound source such as a monopile, this conceptual point at 1m from the (theoretical, infinitesimally small) acoustic centre does not exist. Furthermore, the energy is distributed across the source and does not all emanate from this imagined acoustic

centre point. Therefore, the stated sound pressure level at 1 m does not occur at any point in space for these large sources. In the acoustic near field (i.e. close to the source), the sound pressure level will be significantly lower than the value predicted by the Source Level.

1.5.1.3 A useful measure of sound used in underwater acoustics is the Sound Exposure Level, or SEL. This descriptor is used as a measure of the total sound energy of an event or a number of events (e.g., over the course of a day) and is normalised to one second. This allows the total acoustic energy contained in events lasting a different amount of time to be compared on a like for like basis. The SEL is defined as:

$$SSSSSS = 10lllllll_{10}\left(\frac{1}{t}\int_{0}^{T}\frac{pp^2(tt)}{pp_{rrrrr}^2}\,ddtt\right)$$

1.5.1.4 where T is the integration time of the sound "event", $pp^2(tt)$ is the squared sound pressure at a time tt and $pp_{rrrrr}^2 tt_{rrrrrr}$ is the reference time-integrated squared sound pressure of 1µPa²s. For impulsive sounds it has become customary to utilise the T90 time period for calculating and reporting rms sound pressure levels. This is the interval over which the cumulative energy curve rises from 5% to 95% of the total energy and therefore contains 90% of the sound energy.

1.5.1.5 It is common practice for sound modelling studies for UK offshore wind farms to estimate source levels for piling based on existing measurements of other similar piles, extrapolation of data or assumptions about the percentage of the hammer energy which is emitted into the water as sound. Such methods are useful for estimating source levels for piling for pile sizes, installation methodologies and hammer energies that are similar to those for which measurement data already exist. However, potentially widescale errors could occur by extrapolating these measurement data well beyond the scale of the operations for which they were intended.

1.5.1.6 For the Morgan and Mona Offshore Wind Projects, it is proposed to use piles which are of a significantly larger diameter than those for which any real-world measurement data is readily and openly available (e.g. potential monopile foundations of up to 16m diameter[1]). Consequently, it is considered that the use of existing empirical data for smaller monopile dimensions would not be a suitably robust method to use for estimating the source level for impact piling for the Morgan and Mona Offshore Wind Projects.

1.5.2 Proposed pile source modelling method

1.5.2.1 The source sound modelling methodology for piling will use a finite element (FE) model that will be set up for a representative location of the sites, applying the pile design and the surrounding soil conditions. The FE model allows for a detailed calculation of the excitation force due to the hammer, the resulting pile and soil reactions as well as the nearfield sound propagation in the water column. The general modelling approach exhibits a number of feasible simplifications, such as the reduction to a 2-dimensional rotational-symmetric problem, partly homogenised soil parameters, etc. and has been thoroughly validated within multiple measurement campaigns (Lippert *et al*. 2016; von Pein *et al*. 2017; 2019; 2021).

1.5.2.2 The methodology is capable of taking into account a number of variables including:

- Monopile geometries (e.g. diameter, wall thickness, profile)
- Water depth at the pile locations and surrounding bathymetry
- Sound velocity profiles in the soil at the pile locations (definition of s-wave and p-wave velocities and density for each soil layer)
- Specification of the type of impact hammer, the connecting devices between hammer and pile (like anvil, anvil ring, follower, etc), and the energy level
- Hammer type and energy, including velocity and force time profiles to describe the excitation by the hammer impact acting at the pile head.

1.5.2.3 In addition to the modelled hammer energy scenarios, an estimation of the effect on the sound levels when changing the hammer energy in the range between minimum and maximum hammer energy will be performed based on a linear scaling law.

1.5.2.4 The piling scenarios have not yet been finalised, but it is envisaged that these will include the following phases:

- Initiation (including slow-start)
- Soft start
- Ramp up
- Full power piling.

1.5.2.5 Mitigation methods such as use of ADDs and engineering means of reducing sound emissions will be investigated as part of the sound modelling exercise if required.

1.6 Source levels for other activities

1.6.1 Construction, operational and decommissioning activities

1.6.1.1 A wealth of experimental data and literature-based information is available for quantifying the sound emission from different construction operations. This information review will be employed to characterise their acoustic emission in the underwater environment. For a large number of activities such as seabed preparation, trenching and rock placement, sound from the vessels themselves (e.g. propeller, thrusters and sonar, if used) dominates the emission level. For any sources or activities where no measurement data exists, estimates of the source level will be based on a proxy for that source based on measurements of similar types of sources.

1.6.2 UXO clearance

1.6.2.1 Sound modelling for UXO clearance will be undertaken using the methodology described in Soloway and Dahl (2014). The equation provides a simple relationship

[1] As set out in Table 3.3 of the Mona Offshore Wind Project EIA Scoping Report, 5th May 2022.

between distance from an explosion and the weight of the charge (or equivalent TNT weight) but does not take into account bottom topography or sediment characteristics.

$$PP_{ppprpppp} = 52.4 \times 10^{6} \left(\frac{RR}{WW^{1/3}} \right)^{-1.13}$$

1.6.2.2 Where W is the equivalent TNT charge weight and R is the distance from source to receiver.

1.6.2.3 Since the charge is assumed to be freely standing in mid-water, unlike a UXO which would be resting on the seabed and could potentially be buried, degraded or subject to other significant attenuation, this estimation of the source level can be considered conservative.

1.6.2.4 According to Soloway and Dahl (2014), the SEL can be estimated by the following equation:

$$SSSSSS = 6.14 \times lllllll_{10} \left(WW^{1/3} \left(\frac{RR}{WW^{1/3}} \right)^{-2.12} \right) + 219.$$

1.6.2.5 In order to compare to the marine mammal hearing weighted thresholds, it will be necessary to apply the frequency dependent weighting functions at each distance from the source. This will be accomplished by determining a transfer function between unweighted and weighted SEL values at various distances based on an assumed spectrum shape and taking into account molecular absorption at various ranges. Furthermore, if there is potential for more than one UXO clearance event per day then this will be taken into account in the exposure calculation.

1.6.2.6 According to Robinson *et al*. (2020), low-order deflagration produces a much lower amplitude of peak sound pressure than high-order detonations. The study concluded that peak sound pressure during deflagration is due only to the size of the shaped charge used to initiate deflagration and, consequently, that the acoustic output can be predicted for deflagration as long as the size of the shaped charge is known. Sound modelling for deflagration or other low-yield methods will therefore be based on the methodology described for detonations, using a smaller donor charge size.

1.7 Sound propagation modelling methodology

1.7.1.1 Seiche proposes to utilise a robust, peer-reviewed sound propagation model for the Morgan and Mona Offshore Wind Projects in order to assess the effects of sound on marine life. In choosing the propagation model, it is important to ensure that it is applicable to the Morgan and Mona Offshore Wind Projects and surrounding area, including consideration of environmental variables, source types and frequency content etc.

1.7.1.2 There are a number of models available for modelling of underwater sound propagation from a source. These include:

- Ray-tracing (e.g. BOUNCE, BELLHOP)
- Normal Modes (e.g. KRAKEN, KRAKENC)
- Parabolic Equation (e.g. RAM, RAMS)
- Fast-Field or Wavenumber Integration (e.g. SCOOTER)
- Energy Flux (e.g. Weston Energy Flux model)
- Semi-empirical (e.g. Rogers, Marsh-Schulkin).

1.7.1.3 The National Physics Laboratory (NPL) Review of Underwater Acoustic Propagation Models (Wang *et al.,* 2014) provides a useful overview of many of these models and some of the pros and cons of using them in different situations, such as different water depths[2] and for different frequency ranges over which the calculation must be performed[3]. The suitability of some of the models is summarised in Table 1.1 below.

Table 1.1: Suitability of various sound propagation models for different frequency ranges and at different water depths (Wang *et al*., 2014).

Green – suitable; Amber – suitable with limitations; Red – not suitable or applicable

Shallow water – low frequency	Shallow water – high frequency	Deep water – low frequency	Deep water – high frequency
Ray theory	Ray theory	Ray theory	Ray theory
Normal mode	Normal mode	Normal mode	Normal mode
Wave number integration	Wave number integration	Wave number integration	Wave number integration
Parabolic equation	Parabolic equation	Parabolic equation	Parabolic equation
Energy flux	Energy flux	Energy flux	Energy flux

1.7.1.4 The use of Parabolic Equation (PE) models for predicting sound from piling activities is well established in peer-reviewed literature as well as in practice. One limitation of PE modelling is that the high computational requirements at higher frequencies means that it is typically limited to frequencies below 1kHz (Wang *et al.*, 2014). This means that use of the PE model alone can miss out the frequencies of most interest in assessing the effects of sound on high-frequency (HF) or very high-frequency (VHF) marine mammals when comparing against Southall *et al.* (2019) hearing-weighted SEL thresholds. Consequently, the model is often supplemented at higher frequencies by use of another model such as ray tracing. As assessment of HF and VHF cetaceans is an important outcome for the sound modelling assessment, then using PE modelling combined with another solver for higher frequencies is the more robust method (compared to using PE modelling alone). For this reason, Seiche has utilised combined PE and ray tracing modelling on a number of occasions for sources including seismic source arrays and piling. However, the use of two different models

[2] *There is no defined transition from deep to shallow water applicable for all situations. Acoustically, shallow water conditions exist whenever the propagation is characterised by multiple reflections with both the sea surface and bottom (Etter, 2013). Consequently, the depth at which water can be classified as acoustically deep or shallow depends upon numerous factors including the sound speed gradient, water depth, frequency of the sound and distance between the source and receiver.*

[3] *The frequency range for the calculation will depend on the frequency characteristics of the source and the required frequency range for the receiver – for example different hearing groups of marine mammals, fish etc.*

can lead to discontinuities in the resultant attenuation terms where the two models meet, at the limits of their frequency validity. It is also significantly more time intensive to implement two separate models.

1.7.1.5 Sound modelling studies were undertaken by NPL for Greater Gabbard and Hornsea Offshore Wind One using the Weston Energy Flux model (Weston 1971; 1976; 1980a; 1980b). The Weston Energy Flux methodology is openly available through peer-reviewed publications and has been subjected to comparative studies in a number of publications and peer reviewed-papers (e.g. Etter 2013; Toso *et al*. 2014). According to the NPL review report (Wang *et al.,* 2014) the method is suitable across a wide range of frequencies in shallow waters. Given the Weston Energy Flux model's known provenance and applicability, the water depth at the Morgan and Mona Offshore Wind Projects as well as the model's use in previous modelling studies for OWFs in the UK, Seiche proposes to adopt this model as the primary modelling methodology for the Morgan and Mona Offshore Wind Projects. In addition, Seiche proposes to carry out a comparative calibration against other propagation models (including the AcTUP based Parabolic Equation solver (RAMGeo) and AcTUP based Normal Mode solver (KrakenC) to ensure that the model outputs are robust and consistent regardless of the choice of model.

1.7.1.6 As an additional check, it is proposed to calibrate the sound propagation modelling for pile installation against the source model which uses a hybrid Finite Element and Parabolic Equation solver to determine the Source Level for piling as well as the sound field out to a few hundred metres.

1.7.1.7 Relevant model input parameters (e.g. sediment, geological layers, bathymetry, sound speed gradient) will be chosen based on a combination of project specific data combined with the information gathered from the publicly available literature. These parameters will be fed into the propagation model routine. The frequency-dependent loss of acoustic energy with distance (transmission loss, TL) values will then be evaluated along different transects around the source points. The propagation loss for the Weston model is calculated using one for the four formulae detailed in Table 1.2, depending on the distance of the receiver location from the source, and related to the frequency and the seafloor conditions such as depth and its composition.

Table 1.2: Regions of transmission loss derived by Weston (1971).

Region	Transmission Loss	Range of validity
Spherical	$TTSS = 10\log_{10}[RR^2]$	$RR < \frac{HH_{pp}}{2\theta\theta_{cc}}$
Channelling	$TTSS = 10\log_{10}\left(\frac{RRHH_{pp}HH_{bb}}{2HH_{cc}\theta\theta_{cc}}\right)$	$\frac{HH_{pp}}{2\theta\theta_{cc}} < RR < \frac{6.8HH_{pp}}{\alpha\alpha\theta\theta_{cc}^2}$
Mode stripping	$TTSS = 10\log\left(10^{\left(\frac{RRHH_{pp}HH_{bb}}{5.22}\alpha\alpha\int_0^{RR}\frac{ddRR}{HH^3}\right)^{1/2}}\right)$	$\frac{6.8HH_{pp}}{\alpha\alpha\theta\theta_{cc}^2} < RR < \frac{27kk^2HH_{pp}^3}{(2\pi\pi)^2\alpha\alpha}$
Single mode	$TTSS = 10\log_{10}\left(\frac{RRHH_{pp}HH_{bb}}{\lambda\lambda}+\frac{\lambda\lambda^2\alpha\alpha}{8}\int_0^{RR}\frac{ddRR}{HH^3}\right)$	$RR > \frac{27kk^2HH_{pp}^3}{(2\pi\pi)^2\alpha\alpha}$

1.7.1.8 In Table 1.2, RR is range from the source, HH is the range-dependent depth, HH_{pp} is the depth at the source, HH_{bb} is the depth at the receiver, HH_{cc} is the minimum depth along the bathymetry profile (between the source and the receiver), $\theta\theta_{cc}$ is the critical grazing angle (related to the speed of sound in both seawater and the seafloor material), $\lambda\lambda$ and kk are the wavelength and wavenumber respectively, and $\alpha\alpha$ is the seabed reflection loss gradient.

1.7.1.9 The spherical spreading region exists in the immediate vicinity of the source, which is followed by a region where the propagation follows a cylindrical spread out until the grazing angle is equal to the critical grazing angle $\theta\theta_{cc}$. Above the critical grazing angle in the mode stripping region an additional loss factor is introduced which is due to seafloor reflection loss, where higher modes are attenuated faster due to their larger grazing angles. In the final region, the single-mode region, all modes but the lowest have been fully attenuated.

1.7.1.10 For estimation of propagation loss of acoustic energy at different distances away from the sound source location (in different directions), the following steps will be considered.

- The bathymetry information around this chosen source point will extracted from the GEBCO database up to 80km (where possible) in 72 different transects
- A calibrated Weston Energy model will be employed to estimate the TL matrices for the range of frequencies of interest (e.g. one-third octave bands from 25Hz to 80kHz) along the 72 different transects
- The source level values calculated will be combined with the TL results to achieve a frequency and range dependant received level (RL) of acoustic energy around the chosen source position
- The marine mammal weightings will be employed for injury, TTS and PTS impact ranges for different marine mammal groups, which will be calculated using relevant metrics (from Southall *et al*. 2019) and by employing a fleeing marine mammal model where necessary.
- The cumulative hearing weighted SELs are then calculated by summing each individual pulse along the transects
- Ranges to peak sound pressure threshold values are calculated based on the single pulse unweighted peak sound pressure level
- Contours will also be produced for the relevant metrics, including the unweighted single pulse SEL contours in 5dB steps used as an input to the marine mammal behavioural disturbance model.

1.7.1.11 The peak sound pressure level can be calculated from SEL values via the empirical fitting between pile driving SEL and peak SPL data, given in Lippert et al. (2015), as $SPL_{pk} = 1.43 \times SSSSSS - 44.0$.

1.7.1.12 Root mean square (rms) sound pressure levels can be calculated assuming a typical T90 pulse duration (i.e., the period that contains 90% of the total cumulative sound energy) of 100ms. It should be noted that in reality the rms T90 period will increase significantly with distance which means that any ranges based on rms sound pressure

levels at ranges of greater than a few kilometres are likely to be significant over-estimates and should therefore be treated as over precautionary.

1.7.1.13 The propagation and sound exposure calculations will be conducted over a range of geological and sediment conditions, water column depths and geographic extents to determine the likely range for injury and disturbance.

1.7.1.14 It should be borne in mind that sound levels (and associated range of effects) will vary depending on actual conditions at the time (day-to-day and season-to-season) and that the model predicts a typical worst-case scenario. Considering factors such as animal behaviour and habituation, any injury and disturbance ranges should be viewed as indicative and probabilistic ranges to assist in understanding potential impacts on marine life rather than lines either side of which an impact will or will not occur.

1.7.1.15 It should be noted that the above modelling methodologies are not suitable for modelling the non-linear shock wave propagation caused by detonations. Consequently, propagation modelling for UXO will follow the semi-empirical methodology (Soloway and Dahl, 2014) as described previously.

1.8 Sound exposure calculations

1.8.1.1 As well as calculating the peak pressure un-weighted sound levels at various distances from each source, it is also necessary to calculate the cumulative SEL for a marine mammal or fish (in the case of marine mammals, using the relevant hearing weightings).

1.8.1.2 In order to carry out this calculation, it will be assumed that the animal will swim away from the sound source at the onset of activities. For impulsive sounds, such as pile driving, the calculation considers each pulse to be established separately resulting in a series of discrete SEL values of decreasing magnitude with increasing distance. As the animal swims away from the sound source, the exposure it experiences will become progressively more attenuated; the cumulative SEL is derived by logarithmically adding the SEL to which the animal is exposed as it travels away from the source. This calculation will be used to estimate the approximate minimum start distance for an animal in order for it to avoid being exposed to sufficient sound energy to result in the onset of potential injury. It should be noted that the sound exposure calculations are based on the simplistic assumption that the animal will continue to swim directly away at a constant relative speed. The real-world situation is more complex, and the animal is likely to move in a more complex manner.

1.8.1.3 Consequently, the cumulative SEL exposure depends on:

- The animal's assumed swim speed (and direction)
- The hammer strike rate and distance moved between each pulse
- The hearing weighted SEL per pulse at the receiver location.

1.8.1.4 For continuous sources (e.g. drilled piling, vessels) the calculation will be performed based on the SEL to which an animal is exposed to for each second of exposure in a similar way to the above.

1.8.1.5 The assumed swim speeds for animals likely to be present in the development area are set out in Table 1.3.

Table 1.3: Assessment swim speeds of marine mammals and fish that are likely to occur within the Irish Sea for the purpose of exposure modelling.

a As a sensitivity check exposure modelling will also be performed for stationary fish.

Species	Hearing group	Swim speed (m/s)	Source reference
Harbour seal *Phoca vitulina*	Phocid Carnivores in Water (PCW)	1.8	Thompson et al. (2015)
Grey seal *Halichoerus grypus*	Phocid Carnivores in Water (PCW)	1.8	Thompson *et al.* (2015)
Harbour porpoise *Phocoena phocoena*	Very High Frequency (VHF)	1.5	Otani *et al.* (2000)
Minke whale *Balaenoptera acutorostrata*	Low Frequency (LF)	2.3	Boisseau et al. (2021)
Bottlenose dolphin *Tursiops truncatus*	High Frequency (HF)	1.52	Bailey *et al.* (2010)
White-beaked dolphin *Lagenorhynchus albirostris*	High Frequency (HF)	1.52	Bailey *et al.* (2010)
Short beaked common dolphin *Delphinus delphis*	High Frequency (HF)	1.52	Bailey *et al.* (2010)
Risso's dolphin *Grampus griseus*	High Frequency (HF)	1.52	Bailey *et al.* (2010)
Basking shark *Cetorhinus maximus*	Group 1 fish	1.0	Sims *et al.* (2000)
All fish hearing groups[a] (excluding basking sharks)	Group 1 to 4 fish	0.5	Popper *et al.* (2014)

1.8.1.6 As an additional sensitivity analysis modelling will be carried out for fish assuming a swim speed of 0m/s (i.e. stationary).

1.8.1.7 Exposure modelling will be undertaken for single pile installation as well as for potential simultaneous piling at more than one foundation location.

1.8.1.8 Exposure scenarios will include consideration of:

- Slow start (e.g. starting with a slower hammer strike rate)
- Soft start (starting with a lower hammer energy)
- Ramp up (slowly increasing the hammer energy for a period of time after soft start);
- Full power piling
- ADD – if required.

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C.3.5 Response from NRW regarding Morgan and Mona Offshore Wind Projects Note on Underwater Sound Modelling Methodology

Morgan & Mona Offshore Wind Projects: Underwater Sound Modelling Methodology

[redacted]
Senior Marine Advisor

20th June 2022

Introduction

This advice is provided in response to the **Morgan and Mona Offshore Wind Projects Note on Underwater Sound Modelling Methodology Version F01 Dated 24th May 2022.**

NRW advice in this document is provided (under a Discretionary Advice Service agreement) in respect of a proposal which will require an application for which Natural Resources Wales is a Statutory Consultee.

The customer acknowledges that the content of any advice or assistance provided by NRW is advisory only and that it shall not be deemed to bind or in any other way restrict NRW in performing its statutory functions.

The recipient acknowledges that:

- any advice given or materials or documentation provided by NRW do not constrain or bind NRW in respect of its statutory functions or its role as a statutory consultee or any decision NRW may make in relation to any application for a licence or permit;
- any advice given by NRW does not bind NRW in respect of any future representations it may make as statutory consultee or any decision NRW may make in relation to any application for a licence or permit;
- any views or opinions expressed by NRW are without prejudice to the consideration NRW may be required to give to any application or any future representations as statutory consultee or any decision NRW may make in relation to any application for a licence or permit;
- the final decision as to any representations made by NRW as statutory consultee will be based on all the relevant information available to NRW at the time it makes such representations;
- NRW cannot and does not give any guarantee as to the representations it may make as statutory consultee; and,
- any advice given by NRW may be overtaken by changes in available information, law, policy and guidance relevant to the subject matter of the advice.

NRW Advisory Technical Specialists Consulted:
Marine Mammals
Marine & Estuarine Fish

Advice

Key Issues:

- NRW (Advisory) welcome the information provided within the Underwater Sound Modelling Methodology and the intention to undertake site-specific noise modelling to support the environmental assessment of the project.

- NRW (A) do not recommend applying a dose-response curve developed for harbour porpoise to all cetacean species when carrying out an EIA to assess the number of animals that would be disturbed by piling.

- NRW (A) advise that further information is provided to justify using the dose-response curve in Russell *et al.*, (2016) developed for harbour seal, as a proxy to assess number of grey seals disturbed by piling.

Detailed comments:

- It would be useful in *Section 1.3.2.1 Marine Mammals,* if the applicant could clarify which weighting function will be used. The older M-weighting functions were proposed in Southall *et al.,* (2007), based on human C-weighting functions, whereas the weighting functions in Southall *et al*., (2019) are based on hearing group audiograms.

- With reference to *Section 1.3.2.7 Marine Mammals,* NRW (A) would not recommend applying a dose-response curve developed for harbour porpoise to all cetacean species when carrying out an EIA to assess the number of animals that would be disturbed by piling. Whilst NRW (A) acknowledge the precautionary approach taken, this will likely lead to overestimates for species in different hearing groups. The applicant should either justify this approach in detail (with reference to published material) or preferably specify a method used to assess disturbance for cetaceans other than harbour porpoise, i.e. bottlenose dolphin, minke whale, Risso's dolphin, common dolphin and white-beaked dolphin (as listed in *Table 1.3: Assessment swim speeds of marine mammals and fish that are likely to occur within the Irish Sea for the purpose of exposure modelling*). Possible options for bottlenose dolphin, for example, could include US level B harassment levels (NMFS, 2005), or thresholds based on previous studies e.g. single-strike SEL of 129-133 dB re 1µPa^{2}s (Graham *et al*., 2017), or single-strike SEL 128 dB re 1µPa^{2}s (Fernandez-Betelu *et al*., 2021).

- NRW (A) note the proposal to use the dose-response curve in Russell *et al.,* (2016) developed for harbour seal as a proxy for grey seal. Whilst we are satisfied with the approach proposed, NRW (A) recommend that the applicant provides further information to validate this approach, referencing published materials demonstrating similar behavioural reactions to pile driving between grey seal and harbour seal (e.g. Gotz & Janik, 2010; Aarts *et al.,* 2018).

- NRW (A) note and agree with the proposed method to assess numbers of harbour porpoise disturbed using dose-response curves for the purpose of the Environmental Impact Assessment (EIA). However, NRW (A) draw attention to the fact that when assessing potential adverse effects on a harbour porpoise site for Habitats Regulations Assessment (HRA) purposes, the SAC Conservation Objective requires significant disturbance to be avoided at site level. Significant disturbance was defined as follows in JNCC *et al.,* (2020):

  "Noise disturbance within a SAC from a plan/project, individually or in combination, is considered to be significant if it excludes harbour porpoise from more than:
  1) *20% of the relevant area of the site in any given day; or*
  2) *an average of 10% of the relevant area of the site over a season."*

  In this regard, an area-based assessment should be carried out where the extent of habitat that is ensonified to a level that might produce significant disturbance is determined. For the purpose of carrying out an HRA for a harbour porpoise site, NRW (A) has ranked potential methods in order of preference and would advise the use of Fixed Noise Thresholds over Effective Deterrence Ranges (EDRs – where these exist), to obtain the area ensonified to a level that might produce significant disturbance.

- For harbour porpoise, NRW (A) recommend the use of a noise threshold of 143 dB re 1µPa^{2}s single-strike SEL (Brandt *et al.,* 2018; Heinis *et al.,* 2019) or its equivalent VHF-weighted 103 dB re 1µPa threshold (Tougaard, 2021) as the extent of disturbance for impulsive noise sources. This threshold is the modelled average of six different studies of full-scale pile driving operations (Brandt *et al.,* 2018) and therefore represents the greatest amount of empirical data.

- With reference to *Sections 1.5 Pile Source Level Determination – 1.8 Sound Exposure Calculations***,** NRW (A) agrees with the methodology proposed so far to determine source levels, sound propagation modelling, and sound exposure calculations.

- NRW (A) note in *Section 1.5 Pile source level determination*, that slow-start and ramping up are included in the scenario modelling. These are recognised as good practice, especially for marine mammals. However, it appears that some newer piling rigs may not be capable of operating at below full strike rates, in which case only energy levels can be adjusted – it would therefore be useful to confirm that slow-start is possible.

- With reference to *Section 1.6.2 UXO clearance*, NRW (A) would like to clarify whether high order detonations are being modelled to present a worst case scenario, if low-order deflagration is not possible?

- The applicant should provide more information in *Section 1.6.2.5 UXO clearance,* regarding any plans to carry out more than one UXO clearance event per day, and how cumulative exposure to multiple detonations would be modelled.

- NRW (A) welcomes the intention to include modelling of fish as both fleeing and stationary receptors and would welcome further discussion through the relevant Expert Working Group regarding the appropriate fleeing speed and duration of 'fleeing' response for selected receptor species. In general, NRW (A) advise that all spawning fish should be modelled as stationary receptors as a worst-case scenario.

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C.3.6 Response from Natural England regarding the Morgan and Mona Offshore Wind Projects Note on Underwater Sound Modelling Methodology

Date: 21 June 2022
Our ref: DAS/UDS A000566 / 393968
Your ref: Underwater Sound Modelling Methodology Technical Note

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T [redacted]

[redacted]
BP Alternative Energy Investments Limited

BY EMAIL ONLY

Dear [redacted]

Discretionary Advice Service (Charged Advice) - UDS A000566
Development proposal: BP EnBW Morgan and Mona Offshore Wind Farm
Consultation: Underwater Sound Modelling Methodology Technical Note

This advice is being provided as part of Natural England's Discretionary Advice Service in accordance with the Quotation and Agreement dated 17 May 2021 to BP Alternative Energy Investments Limited.

Thank you for your consultation on the above dated and received on 24 May 2022.

The following advice is based upon the information within;

- Morgan and Mona Offshore Wind Projects: Note on Underwater Sound Modelling Methodology. RPS (dated 24 May 2022).

Overarching comments

Natural England welcomes the opportunity to provide comment on the additional detail presented in this technical note, which supplements the Environmental Impact Assessment (EIA) Scoping Reports for the Morgan and Mona projects. However, please note that Cefas are the underwater noise specialist advisers to the MMO, therefore we defer to Cefas on technical comments on the underwater sound modelling.

It would be beneficial to consider modelling piling with noise abatement systems in place, to understand the possible reduction in underwater noise (and associated impacts) if such mitigation methods are used. Similarly, noise abatement for Unexploded Ordnance (UXO) clearance where deflagration is not an option should also be considered.

We advise it would also be beneficial for the underwater noise modelling to qualitative describe the distances to which underwater noise produced by the project would be detectable above ambient noise.

There are project(s) being undertaken under the Offshore Renewables Joint Industry Programme (ORJIP)[1] that may have relevance to the underwater noise modelling for this project. If needed, we can relay the outputs of these projects when they become available.

We provide detailed comments and advice below within our remit.

Detailed comments

[1] Offshore Renewables Joint Industry Programme (ORJIP)

1.1 Introduction

Natural England agrees that auditory injury comprises Permanent Threshold Shifts (PTS), nevertheless we would expect to see a quantitative assessment of the Temporary Threshold Shift (TTS) impact ranges and the number of animals within those ranges.

We advise that some activities associated with cable laying may also produce noise, such as trenching and rock placement. These activities should be given consideration in the underwater noise modelling. It should not be assumed that the noise from such activities will be contained within the noise from the vessels, without supporting evidence.

1.3 Proposed injury and disturbance thresholds

We are content for either the Southall *et al.* (2019)[2] or NMFS (2018)[3] naming convention for marine mammal hearing groups to be used, so long as one is used consistently.

We note that the proposed sources for the dose-response curves for harbour porpoise and pinnipeds are derived from Offshore Wind Farm projects in the North Sea, whereas the Morgan and Mona projects are in the Irish Sea and therefore overlap with different populations that may differ in their reactions.

- We request further clarity on the applicability of the sources for the does-response curves for the marine mammals populations in the Morgan and Mona projects area.

We advise the outputs from Whyte *et al.* (2020)[4] which provides a dose-response curve for seals in relation to decreasing Sound Exposure Levels (SELs) should be considered.

Three dose-response curves have been presented on Figure 1.1 for harbour porpoise. Similarly, in Figure 1.2, three dose-response curves are presented, termed “average”, “high” and “low” for seals.

- We request clarification on how the three dose-response curves will be used.

1.5 Pile source level determination

We welcome more information on the piling scenarios, once available.

1.6 Source levels for other activities

For the avoidance of doubt, we expect to see the underwater noise from operational wind turbines quantified in the underwater noise modelling report.

We are supportive of the underwater noise emissions modelling from deflagration. As outlined in the recent position statement[5], deflagration is the preferred method for UXO clearance, and high order should only be used as a last resort.

1.7 Sound propagation modelling methodology

We welcome the comparison between acoustic models for sense-checking the model results. Further sense checking against modelling for other offshore wind farms in the area should be considered.

- We request clarification on the number of locations that will be modelled, and the rationale for the chosen modelling location(s).

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[2] Southall, B.L., Finneran, J.J., Reichmuth, C., Nachtigall, P.E., Ketten, D.R., Bowles, A.E., Ellison, W.T., Nowacek, D.P. and Tyack, P.L., 2019. Marine mammal noise exposure criteria: Updated scientific recommendations for residual hearing effects. Aquatic Mammals, 45(2), pp.125-232.

[3] NMFS. 2018. “2018 Revision to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0).” NOAA Technical Memorandum NMFS-OPR-59. National Oceanic and Atmospheric Administration.

[4] Whyte, K.F., Russell, D.J.F., Sparling, C.E., Binnerts, B., and Hastie, G.D., 2020. Estimating the effects of pile driving sounds on seals: Pitfalls and possibilities. The Journal of the Acoustical Society of America 147, 3948.

[5] Policy paper Marine Environment: unexploded ordnance clearance joint interim position statement. Updated 13 January 2022.

The document states that contours will be generated for unweighted SELs.

- We request clarification of whether the contours or a single range will be used to calculate the number of animals within the impact zones.

1.8 Sound exposure calculations
Table 1.3 sets out the swim speeds of marine mammals and fish for the purpose of exposure modelling. With respect to marine mammals these are broadly aligned with those we would expect to see. However, we advise that for the purpose of exposure modelling, all fish hearing groups (Group 1 to 4, excluding megafauna such as basking shark) should be assessed as static receptors (as per our response to the Mona Offshore Windfarm EIA Scoping, our reference 390930).

Currently, there is not consensus within scientific literature for most fish species as to whether a directional fleeing response is elicited as a reaction to disturbance from underwater noise. While fleeing responses are observed frequently, the direction and duration of such a response is highly variable. Variations have also been noted between species, and it can be dictated by the habitat, environmental conditions and life stage.

We welcome the inclusion of exposure modelling for simultaneous piling, if this is within the project design envelope.

- We request clarification as to whether consecutive piling (i.e. multiple piles, one after the other) is also within the project design envelope.

For clarification of any points in this letter, please contact me using the details provided below.

Yours sincerely

[redacted]

Strategic Coastal Lead Adviser
Coast and Marine Team
Cheshire, Greater Manchester, Merseyside & Lancashire Area Team
[redacted]

☒ The advice provided in this letter has been through Natural England's Quality Assurance process.

The advice provided within the Discretionary Advice Service is the professional advice of the Natural England adviser named below. It is the best advice that can be given based on the information provided so far. Its quality and detail is dependent upon the quality and depth of the information which has been provided. It does not constitute a statutory response or decision, which will be made by Natural England acting corporately in its role as statutory consultee to the competent authority after an application has been submitted. The advice given is therefore not binding in any way and is provided without prejudice to the consideration of any statutory consultation response or decision which may be made by Natural England in due course. The final judgement on any proposals by Natural England is reserved until an application is made and will be made on the information then available, including any modifications to the proposal made after receipt of discretionary advice. All pre-application advice is subject to review and revision in the light of changes in relevant considerations, including changes in relation to the facts, scientific knowledge/evidence, policy, guidance or law. Natural England will not accept any liability for the accuracy, adequacy or completeness of, nor will any express or implied warranty be given for, the advice. This exclusion does not extend to any fraudulent misrepresentation made by or on behalf of Natural England.

Cc [redacted]

C.3.7 Response from the MMO regarding the Morgan and Mona Offshore Wind Projects Note on Underwater Sound Modelling Methodology

Marine Management Organisation

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Our reference: DCO/2022/00003

(By email only)

11 July 2022

Dear [redacted]

Morgan and Mona Offshore Wind projects – Underwater Sound Modelling Methodology

The Marine Management Organisation (MMO) received the above documents on 06 June 2022 for consideration.

BP has been successful in their bid to be preferred applicants in the round 4 windfarms and is proceeding on this basis that they will be constructing two offshore windfarms in the Irish Sea off the West Coast of England with some parts of the windfarm area being within Welsh Waters. The Windfarms are called Morgan and Mona.

The project has now produced a technical note for underwater noise and have requested comments from their stakeholders. The MMO have reviewed the document and have the following comments below.

Comments

The document appears to cover all potential impacts appropriately. Section 1.2 lists the activities and sound sources to be modelled. These include site preparation activities such as the clearance of unexploded ordnance (UXO), the installation of monopile and pin pile foundations, various construction vessels (including cable lay installation vessels, survey vessels, seabed preparation vessels and cable protection vessels), operational wind turbines and operational vessels. Potential impacts (in terms of injury and disturbance) on marine mammals and fish receptors will be assessed.

Minor Comment: Currently, there are no noise exposure thresholds for marine invertebrates, thus, the noise modelling will focus on marine mammals and fish species. Nevertheless, it is important to note that studies conducted thus far have revealed a range of negative effects from noise on marine invertebrates (e.g. Solan et al., 2016), and assessments should draw on the peer-reviewed literature where relevant, to support assessment conclusions.

Modelling

The modelling proposed to determine the risk of potential impact on marine mammal and fish species is appropriate, robust and follows best practice. The technical note describes the various models and approaches that will be used. The final assessment should also be transparent, providing the relevant modelling details.

Minor comment: Table 1.3 in the technical note provides the receptor swim speeds that will be applied for the cumulative sound exposure modelling. As per para 1.8.1.6, “an additional sensitivity analysis modelling will be carried out for fish assuming a swim speed of 0m/s” (i.e. a stationary receptor). It is appropriate that a stationary fish receptor will also be considered. The MMO is not aware of current evidence to support ‘fleeing’ in fish. For this reason, the main assessment outcomes and considerations should be based on a stationary fish receptor (and the predicted results based on a fleeing receptor. If you wish to include these, they should be provided for context/information only).

Following on from the previous point, the swim speed for harbour porpoise in Table 1.3 (1.5 m/s) is in keeping with other underwater noise assessments. The proposed swim speed for minke whale is conservative (2.3 m/s compared to 3.25 m/s observed in other assessments). Generally, other assessments have used 1.5 m/s as the swim speed for all other marine mammal species, including seals, although 1.8 m/s for seals is reasonable. Consultation is required with Natural England and the SNCBs for their comments on the proposed swim speeds.

Minor comment: Para 1.8.1.7: “Exposure modelling will be undertaken for single pile installation as well as for potential simultaneous piling at more than one foundation location”. Please note that the total number of piles (monopiles and/or pin piles) to be installed in a 24-hour period should also be considered in the noise modelling.

Section 1.6.2 UXO clearance: It is appropriate that sound modelling for UXO clearance will be undertaken using the methodology described in Soloway and Dahl (2014). The peak sound pressure (SPLpeak) is the most appropriate metric to use for instantaneous injury (e.g. Permanent Threshold Shift (PTS)) from UXO detonation (rather than the Sound Exposure Level).

Thresholds for injury/modelling

The thresholds proposed for marine mammals and fish are appropriate.

For marine mammals, it is proposed to utilise the permanent threshold-shift (PTS) and temporary threshold-shift (TTS) threshold values set out in Southall et al. (2019) which are based on a combination of un-weighted peak pressure levels and mammal hearing weighted (m-weighted) sound exposure levels (SEL) (para 1.3.2.1 of the technical note). These thresholds for injury are appropriate and follow best practice.

For disturbance, it is proposed to use dose-response curves based on data from Graham et al. (2019) for cetaceans, and from Russel et al. (2016) for pinnipeds (seals). Dose-response

curves are a more sophisticated approach to quantifying the risk of behavioural responses (compared to the application of simplistic sound level thresholds) and this is in keeping with other wind farm developments.

For fish, it is appropriate that the Popper et al. (2014) criteria will be utilised. The Popper criteria do not provide quantitative criteria for disturbance, however. The risk of behavioural effects is categorised qualitatively in relative terms as “high”, “moderate” or “low” at three distances from the source. Para 1.4.1.2 states that “the assessment of behavioural effects will also be supported by numerical modelling to allow for some quantification of the likely behavioural effects on fish and shellfish receptors, alongside the qualitative thresholds recommended by Popper et al. (2014) in order to better understand the risk to fish and shellfish species and populations within the zone of influence of the Morgan and Mona Offshore Wind Projects. These will be presented to and discussed with the Benthic Ecology, Fish and Shellfish Ecology and Physical Processes Expert Working Group as part of the Evidence Plan consultation”. The MMO agree that this is a sensible approach and way forward (whilst nevertheless recognising the uncertainties surrounding the application of simplistic sound level thresholds for behaviour).

Summary

The proposed modelling methodology as specified in the technical note is largely appropriate and fit for purpose. The MMO have made a number of recommendations which have been noted as ‘minor comments’ throughout.

If you require any further information, please do not hesitate to contact me using the details provided below.

Yours sincerely

D. Nickless

[redacted]
Marine Licensing Case Officer
D [redacted]
E [redacted]

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Graham, I. M., Merchant, N. D., Farcas, A., Barton, T. R., Cheney, B., Bono, S., & Thompson, P. M. (2019). Harbour porpoise responses to pile-driving diminish over time. Royal Society Open Science, 6, 190335.

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pp.125-232.

C.3.8 Response from JNCC regarding the Morgan and Mona Offshore Wind Projects Note on Underwater Sound Modelling Methodology

Joint Nature Conservation Committee

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JNCC Reference: OIA-08763
Date: 22/06/2022

Dear [redacted]

Morgan and Mona Offshore Wind Projects, Note on Underwater Sound Modelling Methodology: Version F01

Thank you for consulting JNCC on the Morgan and Mona Offshore Wind Projects, Note on Underwater Sound Modelling Methodology (Version F01), dated 24 May 2022, which we received on 24 May 2022.

The JNCC advice contained within this minute is provided (under a Discretionary Advice Service agreement) as part of our advisory role relating to nature conservation in UK offshore waters (beyond territorial limit). We have subsequently concentrated our comments on aspects of the documents that we believe relate to offshore waters.

Any advice or assistance provided by JNCC via our Discretionary Advice Service is advisory only, and with reference to the General terms and conditions for DAS chargeable services, JNCC excludes any warranty that the advice provided by its officers represents JNCC's opinion or otherwise binds JNCC when acting as a Statutory Consultee.

Marine Mammal Comments

JNCC are generally accepting of the technical note for underwater sound modelling, with some minor comments and suggestions:

- **Page 3, section 1.3.2.1:** We are satisfied with the approach taken to assess marine mammal impacts using PTS and TTTs based on SEL. JNCC define auditory injury as PTS only although an assessment of TTS can provide useful context, so we are pleased to see that both are being included.
- **Page 4, section 1.3.2.5**: We have concerns about using the dose-response curve based on harbour porpoise only for all cetaceans. Although harbour porpoise are more sensitive to noise and this would likely provide a conservative estimate of

disturbance for other species, it is unclear how applicable this response curve is to the other hearing groups listed in Southall (2019[1]). Harbour porpoise also have a very different ecology to other species, meaning a different assessment approach may be needed for different species. We recommend further justification for this approach is included and a discussion with the Expert Working Group (EWG) to agree a suitable approach.

- **Page 4, section 1.3.2.7**: This approach is relatively new and seems to be being used more widely, but JNCC are not familiar with the technical details of this method and so we cannot accurately assess the appropriateness of this technique. We suggest this be discussed in one of the upcoming EWG meetings to explain and clarify the methodology is appropriate.
- **Page 5, section 1.4, Fish, larvae and sea turtles:** This is not JNCC's area of expertise so we assume another agency (e.g., Cefas) will comment this section.
- **Page 6, section 1.5.2.5**: To understand the effectiveness of these mitigation methods, please clarify whether you will you be modelling the propagation and impacts of ADDs.
- **Page 9, section 1.8.1.2, Table 1.3**: JNCC agree with the swim speeds in Table 1.3. Generally, we would assume swim speeds of 1.5m/s for all cetaceans except minke whales; while some species e.g. harbour porpoise, have been reported as swimming faster, these more precautionary speeds allow for individual differences in behavioural response.
- **Page 9, section 1.8.1.7:**
    - We have assumed that we will find out the specific locations for piling at a later date. Depth of the site is noted to be 45m – 29m below LAT (scoping report, EN010137-000011-EN010137, page 48). Propagation modelling should ensure that the range of depths in the site are covered.
    - The maximum number of monopiles noted in the scoping report (EN010137-000011-EN010137, page 53, Table 3.3) is 107 and concurrent piling is noted to be two at a time. Modelling should account for these planned activities.

Please contact me with any questions regarding the above comments.

Yours sincerely,

[redacted]

Senior Marine Mammal Adviser

Email: [redacted]

Telephone: [redacted]

[1] Southall B, Finneran J, Reichmuth C, Nachtigall P, Ketten D, Bowles A, Ellison W, Nowacek D, Tyack P. 2019. Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects. Aquatic Mammals 45, 125-232.

C.3.9 Response from MWT regarding additional seal comments

From: [redacted]

Subject: Mona and Morgan OWF additional seal comments
Date: 04 August 2023 10:59:24
Attachments: image001.png
Seal tagging St Andrew"s Uni 887.jpg
Seal tagging St Andrew"s Uni 712.jpg
Seal tagging St Andrew"s Uni All.jpg
D182_TRACK.png

Hi All

As discussed in the meeting, below is some additional information that may be useful for the marine mammal section, specifically around Manx seals.

Historic data (before I started at MWT, so at least 9.5 years ago)
SMRU/St Andrews Uni satellite tagged a number of seals in Strangford Lough and two of them travelled to the Isle of Man. One visited several times and headed to the Sound, the area between the Isle of Man and the Calf of Man. The other individual travelled north around the point of Ayre, north of Ramsey Bay. I have included 3 screen shots that I have. They are not my data and I'm unsure where they came from so please do not sue them within your final documents.

SMRU/St Andrews sent us some photos of satellite tagged seals in 2019 but I think they were tagged in 2017 from the Dee Estuary area and one of the seals did make it to the Calf of Man during breeding season. The track is attached. Again please don't use this image as its not mine but it looks like it certainly passed through the wind farms general area. The contact was Matt Carter and Debbie Russell at St Andrews, should you require more information.

Through are photo ID work on the Calf of Man we have matched one seal (Tulip Belle) with the Cornwall Seal Group Research Trust. She has been moving between the Calf and Cornwall for several years and has bred on the Calf. The contact at Cornwall is Sue Sayer. She generates a spreadsheet of where and when they are seen and that might provide useful for you. We have had another match only this week with another seal from Cornwall that was in Manx waters (near Fleshwick, north of Port Erin) and it was confirmed by its flipper tag and obvious scar on its side.
So "our" seals are very mobile within the Irish and Celtic seas.

Seal numbers in Manx waters
Just to confirm seal numbers around the Island. Our Island wide survey in 2017 counted 365 seals but was a one off snap shot during October and November. The work in 2007 by Manx BirdAtlas (now Manx Birdlife) surveyed every month and recorded around 200 individuals in October. Their highest count was 405 in January, showing variability in the abundance. The Calf of Man seal catalogue has around 450 individuals but this covers the span of the programme from 2009 to 2022, so you can imagine that some of the early individuals are not seem now and that each year new individuals are appearing. Clearly we don't have 450 seals visiting the Calf in each pupping season.

Manx haul out sites

Further to what you will have extracted from our Manx reports I would also add that more recently the Point of Ayre (most northerly point of the Island) has become an important haul out site for predominantly grey seals. Numbers vary but over 100 are being seen fairly regularly. The highest count is around 160. What we don't know is if this site is over spill as the population is increasing or whether they have moved here from elsewhere. It is nevertheless an important site now and worth including in your report. In addition to that and not necessarily relevant but worth mentioning is the Manx Wildlife Trust back in 2000's did some work on highlighting important areas that have a high value for wildlife and although this was mainly focused on terrestrial features there are 6 sites highlighted as important sites for seals. They are the Calf of Man, Gob Garvain, Santon head, Maughold Head, Clay head and Contrary head. These sites are not legal recognised, such as SPAs or SACs, but any development within one is given consideration by the planners. So might be worth including them in the report for haul out sites, if not already mentioned. Below is a link to the government website where the sites can be viewed along with other marine designations.
[redacted]
For more information on what Wildlife Sites are please go to our website for details
[redacted]

I hope this is useful and if you have any questions please ask. I'm on leave next week but will reply on my return.

Kind regards
[redacted]

[redacted]

Manx Wildlife Trust - **Manx Wildlife for the Future**
*Treisht Vanninagh Y Doogys Feie - **Bea-Feie Vannin son y traa ry-heet***

Stay connected. Find us on [redacted]

Manx Wildlife Trust, 7-8 Market Place Peel, IM5 1AB, Isle of Man | (01624) 844432 | Reg Charity 225 IOM | Reg Company 5297 IOM

C.3.10 Morgan and Mona Offshore Wind Projects Response to queries raised in the first Evidence Plan Marine Mammal EWG meeting

Partners in UK offshore wind

MORGAN AND MONA OFFSHORE WIND PROJECTS

Response to queries raised in the first Evidence Plan Marine Mammal Expert Working Group meeting

Image of an offshore wind farm

06 July 2022
F01

1 RESPONSE TO QUERIES RAISED DURING THE FIRST EVIDENCE PLAN MARINE MAMMALS EXPERT WORKING GROUP MEETING

Table 1.1: Response to queries raised during the first Evidence Plan Marine Mammals Expert Working Group Meeting.

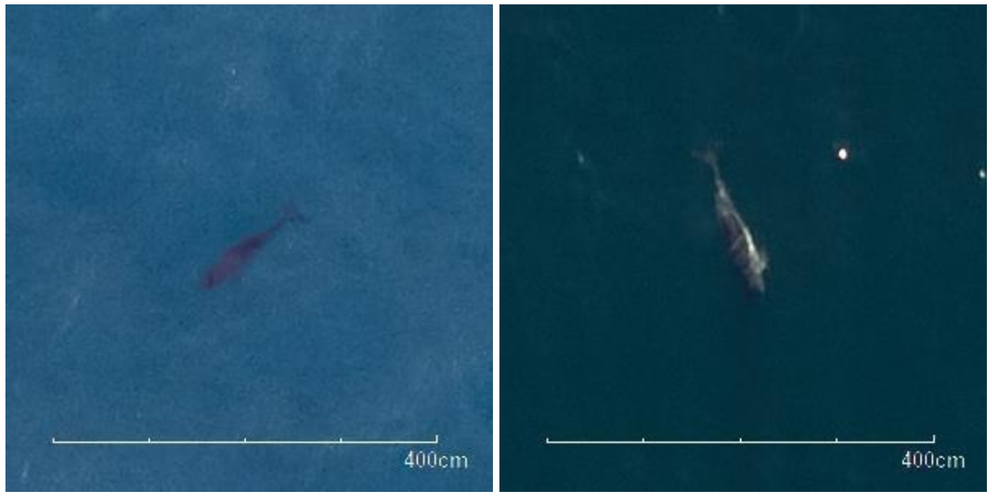
Query date	Query from	Query	Applicant response
17/02/2022	NRW	Query if the 12% of the sea surface analysed by APEM for the aerial survey is site specific or a general approach.	The digital aerial survey uses a grid-based design which collects 30% coverage of the sea surface and analyses a subset equating to ~12% of the sea surface. Crucially, studies have been undertaken which suggest that baseline surveys should collect a minimum of 10% coverage (BSH, 2013). It is important to note that this study was in relation to transect-based surveys, and it has been suggested that due to the high number of replicates achieved from grid-based surveys this method requires less coverage compared to transect-based surveys (Coppack et al. 2017; Weidauer et al. 2016). Due to the lack of historic data within the survey area, the survey design process relied on similar projects which been previously agreed by statutory nature conservation bodies (SNCBs) as suitable for baseline characterisation. Two examples include: Norfolk Boreas which analysed an 8% grid and Gwynt y Môr which analysed a 12% grid. From analysis done so far on the aerial survey data for Morgan and Mona, calculations from effort data demonstrate for Mona survey area, the mean area actually processed was 15.2% (± 0.12%), and for the Morgan area this was 12.9% (±0.04%) (figures in parentheses are standard errors). These values are higher than the 10% previous minimum coverage suggested by literature (BSH, 2013) and coverage accepted by previous projects. Due to the lack of historic data within the survey area and wider region a power analysis was not undertaken before the survey commenced. As stated in the Natural England best practice document, "typically power is expressed as the probability of detecting a change of *x* % at a probability of *y"* and therefore it is not appropriate to do a power analysis at this stage as we are carrying out baseline characterisation, not monitoring a change over time. We understand the requirement for evidence-based design from SNCBs. APEM will provide 24 months of data per project (Morgan and Mona), which include the design-based estimates with confidence limits and precision (CVs) for abundance and density. The coefficient of variation (CV) is a measure of relative variability and is the ratio of the standard deviation to the mean. Typically, the level of precision that we would be looking to achieve through the power analysis is that of less than 0.16. As the data has been collected and analysed, we are able to see through the data what the level of precision achieved is. For seabirds, if you look at key species such as guillemot and razorbill you will find the precision from the data is lower than 0.16 for peak count month and this in itself is evidence that the survey is robust with the required precision for birds. For marine mammals however, it is unlikely that low CVs would be obtainable. It is not always possible to achieve the 0.16 target precision on species with lower abundances, as the calculation uses both the sample number and encounter rate. To get a sufficient sample size for cryptic species, in particular species that spend the majority of their life underwater such as cetaceans, the level of survey effort required exceeds what can be reasonably expected. CVs will be higher for marine mammals, due to very low sighting numbers given their life history, so the difference between raw counts would be proportionally greater. Precision estimates reach close to the desired 0.16 target precision (e.g. harbour porpoise = 0.2), but obtaining a low CV for all species would be difficult. CVs for marine mammal abundances can be large (Taylor et al., 2007), and detecting population trends is difficult due to small sample size and relatively large uncertainty in abundance or density estimates (Authier *et al.*, 2020). Expert groups (ICES, 2008; 2014; 2016) have discussed this at length, but statistical power to detect change remained low (ICES, 2016; OSPAR, 2017). Furthermore, there will be big differences between species and months due to abundance and distribution within the survey area. Where possible during density modelling, species categories were grouped to give higher sample numbers to improve power and CVs and provide more conservative estimates of density for grey seal and harbour porpoise. When carrying out model-based density estimates, based on the frequency of occurrence of known species across the aerial survey area, unidentified seal species were considered most likely to be grey seal and as such were grouped together to produce a more conservative estimate of grey seal density. It must be noted whilst unidentified seals were assigned to grey seal, this does not discount the possibility that unidentified seal species may have been harbour seal. Similarly, harbour porpoise was initially modelled as a variable in its own right, but to increase sample size and improve model robustness, this was also pooled with animals identified as "Dolphin/Porpoise"; labelled together as "porpoise species". As with grey seals, this grouping does not discount the possibility that some individuals may have been dolphin species, but by pooling the data, a more conservative density for harbour porpoise could be estimated alongside estimations for high confidence sightings per species. Furthermore, as discussed in the first EWG, the aerial data is not the primary data source for baseline characterisation. Key data sources include SCANS-III (Hammond *et al.,* 2021), JCP-III data (Paxton *et al.,* (2016), ObSERVE surveys (Rogan *et al.,* 2018), monthly densities from Waggitt *et al.* (2020), and seal at-sea usage maps (Carter *et al.,*2020; 2022). Data has also been purchased from Manx Wildlife Trust, Manx Whale and Dolphin Watch and SMRU to aid with robust evidence-based baseline characterisation based on a broad range of sources. Densities from the aerial survey data modelling have so far been lower than values in those sources mentioned, and the most precautionary estimates will be used for assessment. Thus the 12% survey coverage is good enough to provide a characterisation when combined with the other desktop data sources, and lower coverages have been acceptable on other projects which have progressed through consenting.

Query date	Query from	Query	Applicant response
17/02/2022	NRW	Request for a sample of real images from the aerial survey that represent the lower confidence limit for identifying an individual to species level or in adverse weather.	APEM use the precautionary principle and only identify species to a level we are 100% confident with. An accurate identification is based upon species level ID; if a target cannot be identified to species level it will be assigned to the next taxonomic level possible. Examples of species identification are presented in section 1.1 below. APEM analysts have access to identification guides and a reference library to aid in the identification of marine mammals. As part of the image analysis process the size of individuals can also be measured which can also aid in species identification. Every survey image goes through a quality assurance process where at least two members of staff quality check the identification. Avian identifications are reviewed by ornithological specialists with extensive experience in identifying birds from digital aerial still images. Marine mammal identification is reviewed by our in-house marine mammal team. APEM's marine mammal consultancy team incudes: [redacted]: Principal Marine Mammal Consultant, with experience of environmental impact assessment coordination, and marine mammal and noise monitoring and mitigation for offshore and coastal development projects. [redacted]: Technical Specialist, [redacted] joined APEM at the end of February 2022 from Marine Scotland Science, bringing a wealth of expertise in the field of marine mammal ecology, conservation and management. [redacted]; a Senior Marine Mammal Consultant with a comprehensive knowledge of marine mammal ecology and six years of experience in providing services from survey design and execution to post-processing analysis.
17/02/2022	NRW	Request for further detail on what the marine mammal regional study area will be used for, including further clarity on screening for HRA and CIA.	The regional marine mammal study is defined in order to provide a regional context for marine mammals as a comparison to the Project marine mammal study area (which represents the Project area plus a 4-10km buffer). For example, this allows us to understand the distribution of marine mammals across the region in relation to the Project and whether, for key species, the densities within the Proposed Development area are similar to or higher/lower than the surrounding region. In addition, for some impacts – in particular subsea noise – the spatial scale may extend beyond the Project marine mammal study area and therefore by gathering data from the wider region we can help to quantify the effects on key marine mammal species. The Regional marine mammal study area is also the area within which we base our screening for projects considered in the Cumulative Effects Assessment (CEA). The Irish Sea covers a large geographic area and whist we appreciate that this does not capture the whole population range for some key species (as defined by Management Units (MUs)), we believe that it is sufficiently large to capture any potential for projects to interact cumulatively for wide ranging species. We believe that it would be too cumbersome to undertake CEA screening on the basis of MUs: this would include projects in the North Sea during the initial compilation of the CEA long list. We do not believe that there is the potential for cumulative effects to occur on such large geographic scales. The use of the Irish Sea to define our Regional study area does not mean that we do not consider the populations at the MU level. The MUs will be presented as part of the baseline assessment and will be used as reference populations against which to assess impacts. Further information on the approach to Likely Significant Effects Screening for the purposes of HRA will be provided to the EWG in due course.

1.1 Example images of marine mammals from aerial surveys

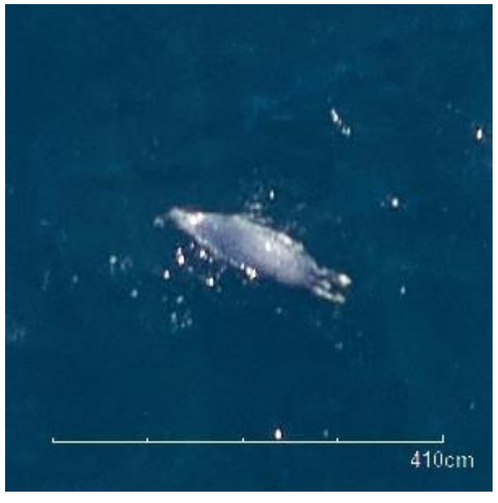
1.1.1 Mona Snags – Marine Mammal Low Confidence

Dolphin/Porpoise

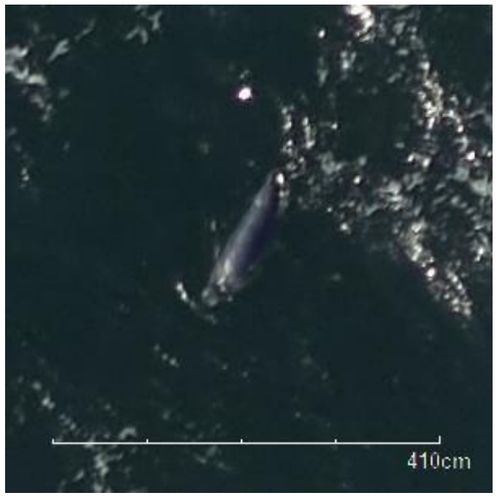


Dolphin Species

Grey Seal



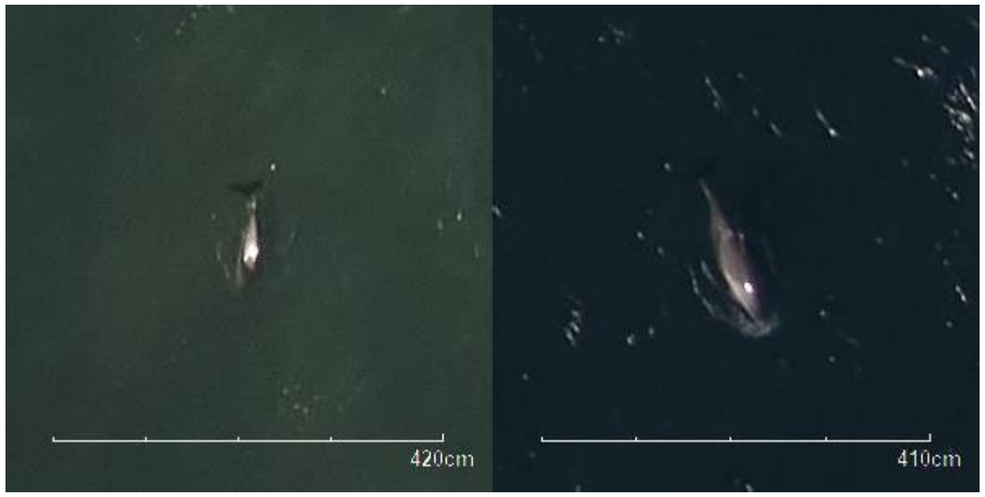
Seal Species



Marine Mammal Species

1.1.2 Mona Snags – Marine Mammal High Confidence

Harbour porpoise



Grey seal

Bottlenose dolphin (High confidence snags)

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C.3.11 Response from APEM on queries regarding the Response to queries raised in the first Evidence Plan Marine Mammal EWG meeting note

commercial in confidence

15th April 2022

APEM Ref: P4623

RE: p/EnBW - Morgan and Mona: Marine Mammal EWG01 action

To Whom It May Concern:

APEM Ltd (APEM) have been commissioned on behalf of BP Alternative Energy Investments Ltd (BP) to conduct monthly digital aerial surveys of the Mona and Morgan Development Areas. The aim of the work is to assess the abundance and distribution of birds and marine megafauna within the development area and surrounding 10 km buffer area.

Regarding the use of 12% and whether any power analyses has been carried out to justify the use of 12%. Please could APEM provide information to support to the statistical validity of this approach that we can present.

The digital aerial survey uses a gird-based design which collects 30% coverage of the sea surface, of which 12% is analysed. Due to the lack of historic data within the survey area and wider region a power analysis was not undertaken before the survey commenced. However, studies have been undertaken which suggest that baseline surveys should collect a minimum of 10% coverage (BSH, 2013). It is important to note that this study was in relation to transect-based surveys, it has been suggested that due to the high number of replicates achieved from grid-based surveys this method requires less coverage compared to transect-based surveys (Coppack *et al*. 2017; Weidauer *et al.* 2016). Due to the lack of historic data within the survey area, the survey design process relied on similar projects which been previously agreed by statutory nature conservation bodies (SNCB's) as suitable for baseline characterisation. Two examples include: Norfolk Boreas which analysed an 8% grid and Gwynt y Môr which analysed a 12% grid.

Marine Mammal Identification

APEM use the precautionary principle and only identify species to a level we are 100% confident with. An accurate identification is based upon species level ID, if a target cannot be identified to species level it will be assigned to the next taxonomic level possible, examples of species ID can be seen in Appendix 1. APEM analysts have access to identification guides and a reference library to aid in the identification of marine mammals. As part of the image analysis process the size of individuals can also be measured which can also aid in species identification. Every survey image goes through a quality assurance process where at least two members of staff quality check the identification. Avian identifications are reviewed by ornithological specialists with extensive experience in identifying birds from digital aerial still images. Marine mammal identification is reviewed by our in-house marine mammal team. APEM's marine mammal consultancy team incudes Helen Hedworth; a Principal Marine Mammal Consultant, with experience of environmental impact assessment coordination, and marine mammal and noise monitoring and mitigation for offshore and coastal development projects. [redacted]; a Technical Specialist, [redacted] joined APEM at the end of February 2022 from Marine Scotland Science, bringing a wealth of expertise in the field of marine mammal ecology, conservation and management. [redacted]; a Senior Marine Mammal Consultant with a comprehensive

knowledge of marine mammal ecology and six years of experience in providing services from survey design and execution to post-processing analysis.

Yours sincerely

Name

[redacted]

[redacted]

Refences

(BHS) Bundesamt für Seeschifffahrt und Hydrographie, 2013. Investigation of the Impacts of Offshore Wind Turbines on the Marine Environment. StUK4.

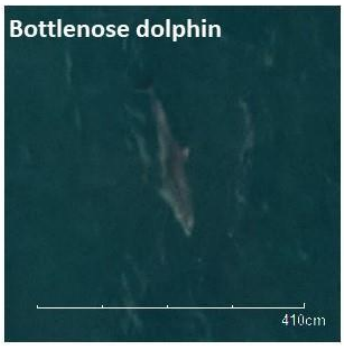
Coppack, T., McGovern, S., Rehfisch, M. and Clough, S., 2017. Estimating wintering populations of waterbirds by aerial high-resolution imaging. *Vogelvelt*, 137, pp.149-155.

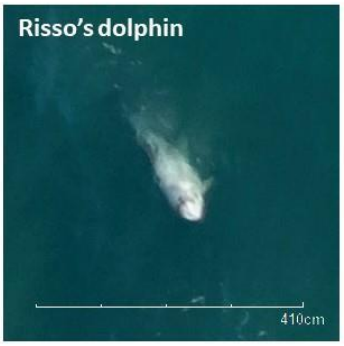
Weidauer, A., Coppack, T., Stefen, U. and Grenzdörfer, G., 2016. Monitoring seabirds and marine mammals by georeferenced aerial photography. *International Archives of the Photogrammetry, Remote Sensing & Spatial Information Sciences*, *41*.

Appendix 1

commercial in confidence

Mona Snags – Marine Mammal High Quality





Please note the quality of snags in lower than that of the original images.

www.apemltd.com

APEM Ltd, Riverview A17 Embankment Business Park, Heaton Mersey, Stockport SK4 3GN Telephone [redacted]

Registered in England No. 2530851 Registered Address Riverview A17 Embankment Business Park, Heaton Mersey, Stockport SK4 3GN

C.4. Marine mammals EWG meeting 3

C.4.1 Meeting minutes

MINUTES OF MEETING

Security Classification: Project Internal

Partners in UK offshore wind

MOM Number : 20221117_bpEnBW_MM EWG03_MoM **REV. No.** : F02

MOM Subject : Mona and Morgan generation Marine Mammal Expert Working Group 03

MINUTES OF MEETING

MEETING DATE : 17/11/2022

MEETING LOCATION : MS Teams

RECORDED BY : [redacted](RPS)

ISSUED BY : [redacted](RPS)

PERSONS PRESENT:

- [redacted] bp (GV)
- [redacted] - bp (MP)
- [redacted] - bp (RS)
- [redacted] - bp (DH)
- [redacted] - RPS (KL)
- [redacted] - RPS (ST)
- [redacted] - RPS (TMc)
- [redacted] - RPS (BP)
- [redacted] - RPS (LB)
- [redacted]- JNCC (JW)
- [redacted] - JNCC (AG)
- [redacted] - MMO (GR)
- [redacted] - Natural England (MNW)
- [redacted] - NRW (LR)
- [redacted] - NRW (NM)
- [redacted] - NRW (SB)
- [redacted] - NRW (RN)
- [redacted] - TWT (GJC)
- [redacted] - DEFA, Isle of Man Government (PD)
- [redacted] - Cefas (RF)

Apologies

- [redacted] - Natural England (AuB)
- [redacted] - JNCC (LM)
- [redacted] - bp (IG)

ITEM NO:	DISCUSSION ITEM:	Responsible party	Date
1.	**Project update (presented by MP)** bp are working with EnBW in a 50/50 partnership (the Applicants) to develop the Morgan Offshore Wind Project Generation Assets ('Morgan (Generation Assets)')and the Mona Offshore Wind Projects ('Mona'), which are being progressed as two separate projects. Morgan (Generation Assets) is the northern project located in English waters, and Mona is the southern project located mostly in Welsh waters. Together, they will have a combined capacity of 3GW. The Morgan Offshore Wind Project and the Morecambe Offshore Windfarm (developed by Cobra Instalaciones Servicios, S.A. and Flotation Energy plc) have been scoped into the Pathways to 2030 workstream under the Offshore Transmission Network Review (OTNR). Under the OTNR, the National Grid Electricity System Operator is responsible for conducting a Holistic Network Design Review to assess options to improve the coordination of offshore wind generation connections and transmission networks. The output of this process concluded that the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm should share a transmission assets route corridor to a shared grid connection location at Penwortham in Lancashire. Both projects support the Holistic Network Design Review conclusions and intend to collaborate on a shared route corridor. The Morgan and Morecambe Transmission Assets project will be subject to a separate DCO. This consenting approach will provide a formal structure for the projects to collaborate, allows for integrated consideration of cumulative effects and streamlining the process with a single consent which should be simpler for stakeholders. The Applicants therefore intend to set up a separate Evidence Plan Process (EPP) to cover the Morgan and Morecambe Transmission Assets. The Mona and Morgan (Generation Assets) EPP will progress as planned and be separate from the Morgan and Morecambe Transmission Assets EPP. Mona is being taken forward as a seperate DCO including both the generation and transmission assets. The individual Morgan (Generation Assets) and Mona PEIR submissions will be at the end of Q1 2023. The two PEIR submissions have been aligned to allow the Applicant to properly consider the cumulative effects between the projects. The Morgan and Morecambe Transmission Assets PEIR is likely to be submitted in Q3 2023.		
2.	**Actions from EWG02 (presented by BP, RPS)** There were some queries from the first marine mammal EWG regarding the baseline characterisation. These will be discussed later in the meeting. We will also discuss the agreement on the approach to underwater sound modelling, approach to LSE screening for marine mammals, agreement on the use of dose response curves and UXO clearance methods.		

3.	**<u>Interim baseline information (presented by BP, RPS)</u>** We have provided the key sources used to characterise the baseline. In the last EWG we agreed that we would use Management Units (MUs) for each species reference populations. These have been taken forward to the assessment. For the Cumulative Effects Assessment (CEA) we have focused on the Irish Sea and Celtic Sea to ensure a proportionate assessment which focuses on the area within which there is a likely impact receptor pathway. NRW have recommended several reference populations. We can take forward the use of OSPAR region III and use the MU as sub populations within the iPCoD model to provide a more proportionate assessment of the population. PD- Can you explain how the Isle of Man (IoM) marine mammal populations have been taken into account. BP- OSPAR region III covers the IoM and includes the IoM waters. For the MUs, these go up to the edge of the borders of the IoM waters. We do take into account the IoM seal populations from the Carter *et al* 2022 maps which show the densities across the whole Irish Sea, including the IoM populations. These populations have been taken forward to the qualitative population assessments. PD- Whichever populations are included in the assessment they should include the IoM populations. The IoM has important marine mammal populations and animals do not start at political borders. We are happy to provide the data where available for these assessments. TMc- The IoM populations will be considered in the assessment. NM- We agree that the Seal MU (SMU) 12 would be too small of a reference population. However, using a number of SMUs wouldn't adequately capture the range of grey seals, especially to the south. NRW would recommend the use of OSPAR region III. Tagging data has shown that grey seal can travel from Wales to southwest England and the west coast of Ireland up to the shelf edge. NRW acknowledges that the use of OSPAR region III could dilute the impact, but the size of the MU is likely appropriate to the level of connectivity between grey seal colonies. Whereas SMUs stop at political boundaries (UK territorial waters) which does not reflect the movement of animals. Population models are sensitive to the spatial boundaries you choose. If this doesn't match the biological population boundaries, and there's a lot of movement of animals in and out of the Management Unit you've defined, then that will affect the results of your model which could give misleading results. NRW did carry out some population modelling trials of four MU approaches for grey seal at four different scales, because no decision has been taken as of yet on an appropriate spatial scale for a grey seal Management Unit among SNCBs. As a result of these trials, we concluded that ideally when running population models we'd recommend a smaller MU (though still quite large) which includes ICES sub-areas VIIa, g, h, f, and e, since this fits the tracking data better, but there's still some uncertainty on this. It's also provisional and internal,	**IoM to provide any marine mammal population data** **Applicant to consider the use of OSPAR region three for the population modelling but for this to be supported**	15/12/22 Complete

	so until the interagency group comes to an agreement on an approach we'll need to keep to our interim MU to retain consistency in our advice. TMC- Does the population for OSPAR region III provided by NRW include the IoM population? NM- Yes, this population includes the IoM population. MNW- Natural England agree with NRW on using OSPAR region III. However as this is such a large area it may lead to local impacts on seal haul out sites being overlooked. Hornsea Project Four looked at local grey seal haul out sites qualitatively. If there is enough information, then a high-level qualitative assessment can be done on these populations i.e qualitative assessment of movements from key haul out sites to the project area. TMC- Can you provide further details of how this was carried out on Hornsea Project Four? MNW- The full assessment is available on the Planning Inspectorate website. This would be Natural England's suggestion for how to make the assessment precautionary for local populations while considering the connectivity of the wider population. KL- Action for the applicant to consider the use of OSPAR region III for the population modelling but for this to be supported by a qualitative assessment on the local haul out sites. PD- The IoM would support NRW comments and Natural England's suggestion. The IoM would be happy to provide any data required if available. NM- Natural England's suggestion make sense, but I will take it back to NRW and provide NRWs position in writing after the meeting. GJC- TWT hold grey seal count data for the haul out site on Walney Island if you do go with that approach. Post meeting note: *NRW Advisory support the suggestion made by NE*.	**by a qualitative assessment on the local haul out sites.** **NRW to provide feedback on the suggestion to present a qualitative assessment on local haul out sites.** **TWT to provide seal count data for the haul out site on Walney Island**	Complete 15/12/22
4.	**<u>Overview of data sources (Presented by BP, RPS)</u>** Data has been purchased from the Manx Wildlife Trust, Manx Whale and Dolphin Watch and SMRU. We have looked at the new Joint Cetacean Data Programme portal and are continuing to check for any additional data sets. We are aware that the Welsh marine atlas is being prepared but will not be available in time for inclusion in the Preliminary Environmental Information Report (PEIR). We will consider it in the application if it is available.		
5.	**<u>Agreement on impact assessment baseline populations</u>** The highest densities across the literature and site-specific surveys have been taken forward to the assessment. **Harbour Porpoise**	**NRW to provide an**	

	Density taken forward to the Mona assessment is 0.097 which is from the Mona digital aerial surveys. However NRW have advised that the Welsh marine atlas is used. NM- NRW advised the use of the Welsh marine atlas as it comprises 30 years of survey data and highlighted the higher densities around the Isle of Anglesey. It avoids the issues of using snapshot survey data. NRW can't present the shapefiles for the Welsh marine atlas until the final version of the report is published. NRW can provide densities for an area of search if the applicant provides a shapefile for the area of search. NRW also noted that the location of Mona is fairly near to the borders between Scans III Block E and Block F. Taking into account the usual propagation ranges of noise from monopiling, then noise would be expected to propagate into the next block, block F where densities are much higher than either Block E or the aerial survey density. BP- We would suggest the use of quarterly mean densities for harbour porpoise rather than the absolute maximum densities over the whole season. This is so that the assessment doesn't end up being over precautionary and will be a more accurate value for a bio season. Can NRW share the maps from the Welsh marine atlas with the rest of the EWG? NM- This will need to be subject to an internal NRW discussion, since we're finalising our methodology for querying the data. MNW- Natural England agrees with using the Welsh marine atlas. This provides further details to SCANS data. Natural England would like to consider the values used and provide feedback. If possible, it would be good to see the difference between the maximum and mean densities proposed. TMc- We will provide the search area shapefile to NRW for them to provide the average density for the July bio-season and confidence limits. *Post meeting note: Following the EWG we would like to request any harbour seal data available for the IoM. We are looking to include an estimate of harbour seal populations within IoM waters in our reference populations if possible. Does the Isle of Man have anything comparable to the seal Management Units provided by SCOS?* **Bottlenose dolphin** Density taken forward to the Mona assessment is 0.035 which is from Lohrengel *et al* 2018. NM- From some preliminary queries carried out on the composite map, the max densities within the Welsh marine atlas are within the values for the Cardigan Bay area and the SCANS values. The max densities for the Liverpool Bay are 0.015 animals per km2. In the final version of the Awel y Mor Environmental Statement, they amended their assessment of bottlenose dolphin to the 20m noise contour instead of a 6 km coastal zone, based on discussion with their EWG pre-application. TMc- Concerned that if Welsh marine atlas maximum densities for bottlenose dolphin are used this would result in vast overestimate of the numbers of animals affected. Animals from the Cardigan Bay population move offshore and around the IoM in groups (i.e. are not	**estimated timeframe of when the Welsh marine atlas will be published.** **The EWG to consider and feedback on the densities used for harbour porpoise.** **NRW to confirm if the maps from the Welsh marine atlas can be shared with the EWG.** **The applicant to provide area of search shapefile to NRW** **NRW to provide the average density and confidence limits for the area of search from the Welsh marine atlas** **DEFA, IoM to provide any harbour seal population data**	Complete Complete Complete Completed 15/12/22 15/12/22

	evenly distributed) and use of the map could result in double counting. The grid cells in the density map would add up to greater than the Irish Sea population, which when noise contours are applied will show that the proportion of the Welsh population affected will be well in excess of 100%. Can NRW recommend an alternative approach to overlaying the noise contours on the BND atlas as we think this is going to result in an unrealistic assessment. Would they be content with using, for example a 6km coastal buffer or 20m depth contour (whichever is preferrable) overlaid on the Welsh marine atlas instead? LR- Please can the applicant clearly set out the concerns/queries for the EWG in the meeting minutes. **Short beaked dolphin** Densities have been agreed via the population densities note circulated before the EWG[1]. **Rissos dolphin** Densities have been agreed via the population densities note circulated before the EWG. **Minke whale** Densities have been agreed via the population densities note circulated before the EWG. **Grey Seal** Underwater sound contours have been overlaid with the Carter *et al* 2022 density maps. Average density calculated from grid cells within Project study areas (Mona/Morgan generation) to apply to estimate of PTS effects. **Harbour Seal** Underwater sound contours have been overlaid with the Carter *et al* 2022 density maps. Average density calculated from grid cells within Project study areas (Mona/Morgan generation) to apply to estimate of PTS effects.	**NRW to consider if there is an alternative approach to overlaying noise contours on the BND atlas that would be acceptable**	Complete
6.	**<u>Approach to assessment (presented by BP, RPS)</u>** We have used the dose response curves from Graham *et al*. 2019. The same dose response curve has been applied for all cetaceans due to the lack of other approach for other species. NM- NRW Advisory agree with this approach in the interests of being pragmatic. As long as the assessment is written with clear assumptions and any caveats. It is useful to present the results for the National Marine Fisheries Services (NMFS) results in parallel especially for minke whales. TMc- We have referred to the NMFS thresholds in the PEIR assessment.		

[1] Morgan Mona EWG clarifications on MU technical note issued to the EWG on 03 Septemer 2022.

	NM- Is the applicant proposing to apply the dose response for the assessment for the harbour porpoise SAC? KL- We will pick this up in the Likely Significant Effect (LSE) section of the meeting. **Cumulative assessment** We are using a tiered system for the CEA. We have assumed the worst case scenario, that projects may be piling at the same time, that the maximum design scenario is constructed for each project and the piling is distributed evenly across construction phase for each project. Modelling has been carried out across all tier 1 projects (Mona, Awel y Mor and Erebus). KL- As more information becomes available on the tier 2 projects (e.g. Morecambe), we will incorporate these into the modelling for the Applications. The PEIR will include a quantitative assessment for the tier 2 projects, where information on projects is available.		
7.	**<u>Initial underwater sound modelling outputs</u>** Underwater sound modelling has been undertaken on three piling locations which are based on their proximity to sensitive areas. Consecutive piling has been modelled over 24h. Temporary threshold Shift (TTS) thresholds have been used as a proxy for disturbance Unexploded Ordnance (UXO) clearance. RF- Has the injury range for both TTS and PTS have been included in the assessment? TMc- Permanent Threshold Shift (PTS) has been carried forward to the assessment. The ranges for TTS are in the underwater sound Technical Report but haven't been included in the assessment. RF- Cefas would recommend the use of Effective Deterrent Range (EDR) (i.e. 26km range) for the UXO assessment. Concern is the use of TTS as a proxy would underestimate disturbance. **Post meeting clarification:** To provide further context here, TTS occurs at much higher sound exposures, and so will underestimate the risk of disturbance. Therefore, our recommendation is to use the EDR for UXO clearance. TMc- Disturbance is not the main concern for UXO as detonation is very short term and not as important as TTS. EDR are more typically applied for the Habitats Regulations Assessment (HRA) so we can discuss this in the HRA section of the meeting. *Cefas post meeting note: Agree that auditory injury is one of the primary concerns from UXO detonation, although disturbance still needs to be appropriately considered.* NM- NRW hasn't signed up to the EDR guidance so would prefer this to be presented alongside the TTS ranges. Current methods available for the modelling of UXO tend to give overprecautionary range predictions. Applying TTS (although we're aware it's inherently the least precautionary behavioural disturbance threshold) we can		

	counterbalance the precautionary nature of predictions from UXO models. TMc- If we consider TTS ranges for high order clearance of UXO, ranges of 14.8km for harbour porpoise and 17.7km for minke whale are predicted. If we consider the largest UXO the TTS is 28km for harbour porpoise and 34km for minke whale. This suggests that the EDR and TTS ranges are of a similar magnitude. We can present the EDR alongside the TTS. MNW- Natural England support the use of the EDR and these can be presented alongside TTS ranges as per suggestion by NRW. How is a sensitive area defined when choosing the piling locations to model? KL- We consider proximity to protected areas, spawning grounds, locations close to the coast where you would expect high densities of marine mammals. NM- The results of using the dose response curves on species other than harbour porpoise are likely to be conservative. This should be mentioned when discussing results from the model in the assessment. TMc- We would generally not present numbers that we know are over conservative as the numbers have the potential to be considered without the caveats. NMW- Happy to leave this discussion with the Applicant and NRW. Natural England will provide a written response when more information can be provided. TMc We also wanted to highlight that the iPCoD modelling is very sensitive to the parameters being used, with small alterations to parameters leading to large changes in results (e.g. populations increasing or decreasing). KL- RPS will review the Awel y Mor Environmental Statement to review their iPcOD model. Awel y Mor reported a stable population. NM- Awel y Mor did carry out follow up IPCoD modelling on harbour porpoise. They found that there were no biologically significant adverse effects from piling disturbance. They compared the unimpacted populations with the impacted populations. They also found the model very sensitive to input parameters.	**RPS to share initial iPcOD model results with the EWG when available.**	Early 2023
8.	**<u>Mitigation considerations- piling</u>** The Applicant is looking for agreement on defining the mitigation zone using the dual metric approach of SPLpk and SELcum. NM- Whilst NRW Advisory agree that the SELcum is inherently precautionary as a method, it is the only metric currently available to assess cumulative impacts We are aware there is some research being done to improve estimates (e.g. work by Kastelein, Von Benda Beckman, Finneran etc), but current consensus is that we do not have enough data to apply any of these initial findings to the impact assessment yet. Our advice would be to use the dual metric approach and assess whichever metric results in the largest ranges. TMc- The SELcum have larger impact ranges that will lead to a requirement for long duration use of ADDs. There needs to be a balance		

	between having long use ADDs which introduce additional sound. We have had previous feedback from other UK stakeholders not to use SELcum so wanted to ensure we are following best practice. RF-Cefas recognises the uncertainty with the dual metric, but Cefas would recommend the dual metric with the worst case being assessed. Sound abatement at the source would be recommended to avoid the long use of ADDs. **Post meeting note:** We recognise that there are uncertainties and difficulties associated with predicting the true levels of sound exposure over long periods of time. However, the MMMP should focus on mitigating both the predicted SPL_{peak} and SELcum impact ranges. Agree with Tessa's comment about the need to balance ADD use, as such devices introduce additional noise into the marine environment. Noise abatement measures, such as bubble curtains, can reduce the noise at source. MNW- Natural England is in line with comments from NRW and Cefas. It is understood that the dual metric may be over precautionary but there is no other available method, so this is what is recommended at the moment. Natural England shares concerns with Cefas on the prolonged use of ADDs and supports use of sound abatement. RF- For UXO clearance Cefas have previously advised the used of bubble curtains for high order detonation. **Post meeting note:** This is on the basis that high order detonation is a last resort (i.e. where low order methods are not feasible for whatever reason).		
9.	**<u>Approach to LSE Screening (presented by KL)</u>** We have received feedback on the seal foraging distances used in the HRA. The EWG asked us to review the Carter *et al* 2022 paper. We have reviewed these and incorporated them into the LSE Screening criteria. We have extended the number of sites considered in the LSE screening in line with the Carter *et al* 2022 paper and looking at tagging/tracking data to determine potential connectivity with the project boundaries (as presented on slides). In the Appropriate Assessment, asequential approach will be undertaken, in line with NRW advice. If an adverse effect on integrity on a site can be excluded, then the same can be concluded for site(s) further away. This approach will also be taken for the Morgan generation assets assessment. NM- The sequential approach is fine; this is what is in NRWs position statement. However for grey seal we would advise that all sites within OSPAR region III are scoped in. *Post-meeting note (NRW): NRW Advisory agree to the use of Carter et al 2022 ranges for LSE screening.* KL- We will look at this and consider if any other SAC have the potential to be included. However, previous advice through the Evidence Plan process was to review Cartel *et al*. 2022 and similar studies to take a proportionate approach (i.e. identifying a credible link between the project and SACs/features, based on tracking/tagging data).	**Applicant to consider if any other sites within OSPAR region III should be included in the LSE screening** **JNCC to provide a written**	Complete

	MNW- Natural England would expect the standard approach of all sites in English waters screened into the ISAA should have an assessment, rather than taking the sequential approach proposed by NRW. Natural England is in support of using Carter *et al* 2022 to inform LSE Screening. AG- JNCC will provide a written response after the meeting on sites to be screened into the LSE screening. PD- As the IoM is not part of the EU or UK the IoM designed sites are not subject to the HRA legislation. However, we would request that the IoM designated sites are explicitly considered. KL- The IoM designated sites will not be in the LSE screening or the Information to Support Appropriate Assessment (ISAA). However, the IoM designated sites will be considered in the environmental impact assessment, where any impact on their specific features has been identified. KL- The applicant would like feedback from the EWG on whether the dose response curve or the EDRs should be used in the HRA. NM- In addition to the 26km EDR, NRW would recommend a fixed threshold for single strike SEL for assessing adverse effects in a harbour porpoise SAC against the 20%/10% criteria. This is because a D/R curve fundamentally can't link numbers disturbed to area ensonified other than as a proxy. The preferred threshold is 143db which is the threshold used in the Netherlands and Denmark. Thresholds of 140dB (ASCOBANS), 143 dB single strike SEL (Brandt e*t a*l, 2018[2]) or 145dB (Lucke *et al*., 2009[3]) would also be acceptable. KL- Following the Crown Estate Plan Level HRA, the intention was to use the EDRs for the HRA. Ideally we do not want to present multiple parallel assessments which would considerably increase the volume of material produced (and to be reviewed by stakeholders). TMc-Our concern over the thresholds approach set out by NRW would be that it doesn't take into account the dissipation of impulsive sound over distance or site-specific conditions. RF- Cefas would usually advise against using fixed thresholds and the preference would be to use the dose response curve and would need to see justification / literature for use of thresholds. **Post meeting note:** RF- Cefas would usually advise against using fixed thresholds for behaviour and the preference would be to use an appropriate dose response curve or EDR. However, Cefas would be happy to review additional evidence presented to support a different distance on the basis of behavioural response studies. NM- The fixed threshold approach is for area assessment for harbour porpoise SACs only, for other species and for EIA, the dose response curve is acceptable.	**response after the meeting on sites to be screened into the LSE screening** **NRW to provide supporting paper for the 143db threshold** **NRW to provide Brant *et al* 2018.** **RPS to consider use of thresholds suggested by NRW**	Complete Complete Complete Complete

[2] Brandt, Miriam & Dragon, AC & Diederichs, Ansgar & Bellmann, MA & Wahl, V & Piper, W & Nabe-Nielsen, Jacob & Nehls, Georg. (2018). Disturbance of harbour porpoises during construction of the first seven offshore wind farms in Germany. Marine Ecology Progress Series. 596. 10.3354/meps12560.

[3] Lucke, Klaus, Ursula Siebert, Paul A. Lepper, and Marie-Anne Blanchet. 2009. "Temporary Shift in Masked Hearing Thresholds in a Harbor Porpoise (*Phocoena Phocoena*) after Exposure to Seismic Airgun Stimuli." The Journal of the Acoustical Society of America 125 (6): 4060–70

	AG- JNCC is signed up to the EDR approach so that is our recommendation. MNW- NE support the use of EDRs but have no objections to using thresholds alongside EDR. RF- For the consecutive piling scenarios, can the underwater sound TR include information on the assumptions being made regarding animal movements? e.g. swim speeds. **Post meeting note:** Fleeing speeds but also details such as the time (e.g. onset of activity) or noise level at which animals are assumed to begin responding; the speed and direction in which they flee; whether there is a maximum distance or minimum sound level at which animals will cease to respond; whether animals are assumed to continue fleeing, remain stationary, or return toward the noise source during temporary cessations in noise-generating activity. TMc- Yes, the swim speeds are in the underwater sound TR. We have assumed directional movement away from the piling source, this is also presented in the underwater sound TR. KL noted that ideally advice given on Mona and Morgan (Generation Assets) projects (e.g. densities, baseline populations, Management Units) as set out above should be consistent with other Irish Sea developers. This will ensure a consistent approach to cumulative and in-combination assessments. These become problematic in the CEA if different projects are adopting different approaches.	**RPS to review the advice and methodologies used for the Awel y Mor application.**	Complete
10.	**<u>Discussion and next steps</u>** The applicant is seeking agreement on: • Agreement on approach to baseline characterisation. • Agreement on approach to densities and baseline populations. • Agreement on approach to underwater sound modelling following clarifications provided in EWG. • Agreement on approach and sites screened LSE Screening for Marine Mammals. Next steps: • Meeting minutes to be circulated 2 weeks following the EWG. • Agreement logs to be circulated following EWG. The EWG04 will be organised in Q1 2023 To discuss Morgan Generation baseline and initial assessment outputs, including cumulative effects.		

C.4.2 Response from Natural England regarding the meeting minutes

Date: 15 December 2022
Our ref: DAS/UDS A000566 / 412776
Your ref: Morgan and Mona Marine Mammal Expert Working Group 03

[redacted]
BP Alternative Energy Investments Limited

c/c [redacted]
RPS/ Energy

Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire CW1 6GJ

T [redacted]

BY EMAIL ONLY

Dear [redacted]

Discretionary Advice Service (Charged Advice) - UDS A000566
Contract Reference: BP EnBW Morgan and Mona Offshore Wind Farm
Consultation: Morgan and Mona Offshore Windfarm Marine Mammal EWG03

This advice is being provided as part of Natural England's Discretionary Advice Service in accordance with the Quotation and Agreement dated 17 May 2021 to BP Alternative Energy Investments Limited.

The following advice is based upon the information presented in the Marine Mammal Expert Working Group (EWG) Meeting 3 (attended on 17 November 2022 by [redacted]).

Natural England were asked to provide advice upon:

1. Agreement on approach to baseline characterisation
2. Agreement on approach to densities
3. Agreement on approach to underwater sound modelling, following clarifications
4. Agreement on approach and sites screened LSE Screening for Marine Mammals

Detailed comments

1. Agreement on approach to baseline characterisation

Natural England agree with Natural Resources Wales (NRW) on using OSPAR region III for grey seals. However, as this is such a large area it may lead to local impacts on seal haul out sites being overlooked. We therefore suggest that applicant also conduct a high-level qualitative assessment on local populations (as has been undertaken for Hornsea Project Four). It would be Natural England's advice in order to make the assessment precautionary for local populations while considering the connectivity of the wider population.

2. Agreement on approach to densities

Natural England agree on the approach to densities and reference populations for Risso's dolphin, short beaked dolphin, minke whale, and also on the densities for grey seal.

However, we cannot yet agree on approach to densities and reference populations for bottlenose dolphin considering that further discussions are required between the applicant and NRW on the best approach for using the data from the Welsh Marine Atlas.

We also cannot yet agree on approach to densities and reference populations for harbour porpoise

considering that NRW is yet to provide the average density and confidence limits for the area of search from the Welsh Marine Atlas. However, Natural England agrees with using the Welsh marine atlas as this provides further details to SCANS data. Natural England would like to consider the values used and provide feedback. If possible, it would be good to see the difference between the maximum and mean densities proposed.

3. Agreement on approach to underwater sound modelling, following clarifications

Natural England agree on the use of dual metric approach SPLpk and SELcum with the worst case being assessed.

Natural England's advice is to present Effective Deterrent Range (EDR) alongside Temporary threshold Shift (TTS) for UXOs.

4. Agreement on approach and sites screened LSE Screening for Marine Mammals

Natural England agree on approach to screening of sites for Annex II marine mammals. We would expect the standard approach of all sites in English waters screened into the Information to Support Appropriate Assessment should have an assessment, rather than taking the sequential approach proposed by NRW.

Natural England is in support of using Carter *et al.* (2022) to inform Likely Significant Effect Screening of seal sites.

For clarification of any points in this letter, please contact [redacted] on 07471 003933 or by email at [redacted]. Elliott will be taking over as case officer for the Morgan and Mona projects, and the Morgan and Morecambe transmission from January 2023.

Yours sincerely

[redacted]
Strategic Coastal Lead Adviser
Coast and Marine Team
Cheshire, Greater Manchester, Merseyside & Lancashire Area Team
[redacted]

☒The advice provided in this letter has been through Natural England's Quality Assurance process.

The advice provided within the Discretionary Advice Service is the professional advice of the Natural England adviser named below. It is the best advice that can be given based on the information provided so far. Its quality and detail is dependent upon the quality and depth of the information which has been provided. It does not constitute a statutory response or decision, which will be made by Natural England acting corporately in its role as statutory consultee to the competent authority after an application has been submitted. The advice given is therefore not binding in any way and is provided without prejudice to the consideration of any statutory consultation response or decision which may be made by Natural England in due course. The final judgement on any proposals by Natural England is reserved until an application is made and will be made on the information then available, including any modifications to the proposal made after receipt of discretionary advice. All pre-application advice is subject to review and revision in the light of changes in relevant considerations, including changes in relation to the facts, scientific knowledge/evidence, policy, guidance or law. Natural England will not accept any liability for the accuracy, adequacy or completeness of, nor will any express or implied warranty be given for, the advice. This exclusion does not extend to any fraudulent misrepresentation made by or on behalf of Natural England.

Cc [redacted]

C.4.3 Response from JNCC regarding the meeting minutes

From: [redacted]
To: [redacted]
Cc: [redacted]
Subject: RE: Morgan Mona marine mammal EWG03 meeting
Date: 15 December 2022 17:00:24
Attachments: image001.png
image002.jpg
image003.jpg
image004.png
image005.png
image006.jpg
Morgan_Mona_MM_EWG_Agr_Log_Final.xlsx

Hi [redacted]

Please see JNCC's response to the EWG actions below. I have also attached the updated agreement log.

We are content with the minutes and have no comments to make.

- The EWG to consider and feedback on the densities used for harbour porpoise assessment (15/12/22)
    - The APEM Mona aerial survey density is notably smaller than the SCANS-III block E density. We recommend using either the SCANS density or the Marine Mammal Atlas as recommended by NRW for a more conservative estimate.
- JNCC to provide a written response after the meeting on sites to be screened into the LSE screening (15/12/22)
    - JNCC support a sequential approach to site screening, in line with advice from Natural England. JNCC delegate any advice on seals to NE and NRW as these are inshore sites and typically inshore species and therefore not in JNCC's remit.

Please let me know if you have any questions.

Kind regards,
[redacted]

[redacted] BSc(Hons)
Offshore Industries Adviser
Marine Management Team
JNCC, Inverdee House, Baxter Street, Aberdeen, AB11 9QA
Tel: [redacted]
Email: [redacted]

C.4.4 Response from NRW regarding the meeting minutes

Project Mona & Morgan Marine Mammal EWG03 NRW Actions

[redacted]
Senior Marine Advisor

15th December 2022

Introduction

This advice is provided in response to the Meeting Actions from the Marine Mammal EWG 03 which took place on 17th November 2022.

NRW advice in this document is provided (under a Discretionary Advice Service agreement) in respect of a proposal which will require an application for which Natural Resources Wales is a Statutory Consultee.

The customer acknowledges that the content of any advice or assistance provided by NRW is advisory only and that it shall not be deemed to bind or in any other way restrict NRW in performing its statutory functions.

The recipient acknowledges that:

- any advice given or materials or documentation provided by NRW do not constrain or bind NRW in respect of its statutory functions or its role as a statutory consultee or any decision NRW may make in relation to any application for a licence or permit;
- any advice given by NRW does not bind NRW in respect of any future representations it may make as statutory consultee or any decision NRW may make in relation to any application for a licence or permit;
- any views or opinions expressed by NRW are without prejudice to the consideration NRW may be required to give to any application or any future representations as statutory consultee or any decision NRW may make in relation to any application for a licence or permit;
- the final decision as to any representations made by NRW as statutory consultee will be based on all the relevant information available to NRW at the time it makes such representations;
- NRW cannot and does not give any guarantee as to the representations it may make as statutory consultee; and,
- any advice given by NRW may be overtaken by changes in available information, law, policy and guidance relevant to the subject matter of the advice.

Receptors Consulted:
Marine Mammals

Actions

NRW to provide feedback on the suggestion to present a qualitative assessment on local haul out sites

NRW Advisory (A) agree with the suggestion to present a qualitative assessment on local haul out sites in addition to the use of the OSPAR III management unit as the relevant population scale.

NRW to confirm if the maps from the Welsh marine atlas can be shared with the EWG

These maps have necessarily been shared on an 'Official-Sensitive' basis, so we kindly ask that they are not distributed further at this stage.

NRW to provide the average density and confidence limits for the area of search provided by RPS from the Welsh Marine Atlas

This action is currently in progress. NRA (A) are awaiting further response and some additional clarification from the authors.

NRW to consider if there is an alternative approach to overlaying noise contours on the BND atlas that would be acceptable

NRW (A) recommend the use of an alternative fixed noise threshold, such as the 160dB SPL_{rms} threshold for impulsive noise (NMFS 1995, 2005) over the use of a harbour porpoise dose response curve. While the latter is a pragmatic approach, harbour porpoise are likely to be more sensitive to the effects of pile-driving than bottlenose dolphin. This is likely to lead to over-precautionary results, which the number of individuals impacted in the initial modelling carried out by the applicant would suggest.

The indications from the literature indicate that bottlenose dolphin (and minke whale) are more tolerant to noise than harbour porpoise. For bottlenose dolphin, whilst there is currently insufficient data for a species-specific threshold, a few studies have looked at their reactions to impulsive sounds (but not enough for a definite threshold). Graham *et al*. (2017) studied reactions of bottlenose dolphins (and porpoises) to impact and vibratory pile driving noise of small-diameter monopiles. Dolphins did not flee the study area, but stayed away from the vicinity of the construction site. Received sound exposure levels (single pulse SEL, unweighted) were estimated to be between 129 and 133 dB re. 1 μPa^2s . Fernandez-Betelu *et al*. (2021) also studied the response of bottlenose dolphins to pile driving noise, but from larger piles at the Beatrice and Moray East offshore wind farms. Dolphins remained in the area, but some changes in their behaviour were noted. Received sound exposure levels (single pulse SEL, unweighted) were estimated to be 128 dB re. 1 μPa^2s.

NRW to provide supporting paper for the 143db threshold

Please find attached: Brandt *et al*. (2018), Heinis *et al*. (2019), and Tougaard (2021), in addition to a table from Tougaard (2021), which summarises the relevant studies of full-scale pile driving operations on which this threshold is based.

NRW (A) recommends that bespoke noise modelling is required for any proposed activity that may generate impulsive noise (e.g. pile driving, seismic surveys). An unweighted noise threshold of 143 dB re 1µPa^{2}s (or 103 dB re 1µPa^{2}s VHF-weighted) single strike sound exposure level is recommended to represent the minimum noise threshold at which disturbance would occur from impulsive noise sources (Brandt *et al*. 2018; Heinis *et al*. 2019). The 143 dB re 1µPa^{2}s noise contour should be displayed on a map of the area to find the extent of overlap with the SAC, and the extent of the area of the SAC that would experience noise disturbance can then be determined. This threshold is the modelled average of six different studies of full-scale pile driving operations (see attached figure) and thereby represents the largest amount of empirical data (Tougaard, 2021).

NRW to provide Brandt et al. 2018

Please find attached: Brandt *et al*. (2018), Heinis *et al*. (2019), and Tougaard (2021).

NRW to provide an estimated timeframe of when the Welsh marine atlas will be published

NRW (A) currently estimate publication of the Welsh Marine Atlas in Quarter 1 2023.

References

- Brandt MJ, Dragon AC, Diederichs A, Bellmann MA, Wahl V, Piper W, Nabe-Nielsen J, Nehls G. 2018. Disturbance of harbour porpoises during construction of the first seven offshore wind farms in Germany. Mar. Ecol. Prog. Ser. 596: 213 – 232.

- Fernandez-Betelu O, Graham IM, Brookes KL, Cheney BJ, Barton TR, Thompson PM. 2021. Far-Field Effects of Impulsive Noise on Coastal Bottlenose Dolphins. Front. Mar. Sci. 8.

- Graham IM, Pirotta E, Merchant ND, Farcas A, Barton TR, Cheney B, Hastie GD, Thompson PM. 2017. Responses of bottlenose dolphins and harbor porpoises to impact and vibration piling noise during harbor construction. Ecosphere. 8.

- Heinis F, de Jong CAF, von Benda-Beckmann S, Binnerts B. 2019. Framework for Assessing Ecological and Cumulative Effects–2018 Cumulative effects of offshore wind farm construction on harbour porpoises. Rijkwaterstaat Sea and Delta.

- Tougaard J. 2021. Thresholds for behavioural responses to noise in marine mammals - Background note to revision of guidelines from the Danish Energy Agency.

C.4.5 Mona and Morgan Clarification on Densities and Reference Populations Note

1 EWG 03 CONSULTATION ON DENSITIES AND REFERENCE POPULATIONS

In advance of the next Expert Working Group (EWG), we are seeking written agreement on use of densities of key marine mammal species and marine mammal reference populations in our Environmental Impact Assessment.

1.1 Densities of key species

For densities we have used a range that represents the average density to the maximum density. We are focusing on Mona for this consultation and will present the Morgan densities in the next EWG meeting. Densities per species which are to be used in the assessment are presented in Table 1, with the reference and justification for use.

Table 1 Summary of marine mammal receptors to be considered in the EIA together with relevant densities and references.

Species	Density (Animals per km^2)	Reference
Harbour porpoise	Mona = 0.086 to 0.097	Using a range from SCANS-III (Hammond *et al.*, 2021) for Block F density value to the highest absolute design-based bio-season density from site-specific aerial survey data in the Mona Array Area plus a buffer (i.e. digital aerial survey area).
Bottlenose dolphin	Mona = 0.0082 to 0.035	Using a range based upon the offshore densities given in SCANS-III (Hammond *et al.*, 2021) for adjacent Block E (as none observed for Block F) and high-density coastal area (6km from coast) density in outer Cardigan Bay from Lohrengel *et al.* (2018). Consistent with approach used in Awel y Mor.
Short-beaked common dolphin	Mona = 0.018	SCANS-II (Hammond *et al.*, 2013) for Block O, as no values for SCANS-III.
Risso's dolphin	Mona = 0.0313	SCANS-III (Hammond *et al.*, 2021) for adjacent Block E, as none observed for Block F.
Minke whale	Mona = 0.0173	SCANS-III (Hammond *et al.*, 2021) for adjacent Block E, as none observed for Block F.
Grey seal	Mona offshore = 0.0368	Carter *et al* (2022) values – average densities calculated to per km^2 from 25km^2 cells for the Mona marine mammal study area. Offshore densities are from the Mona aerial survey area, whilst inshore densities are the average for the Mona Offshore Cable Corridor.
	Mona inshore = 0.196	
Harbour seal	Mona offshore = 0.0002	
	Mona inshore = 0.0008	

For all species the underwater sound assessment is undertaken on the basis of the spatial area of effect, from areas within modelled noise contours multiplied by the densities given in Table 1. For bottlenose dolphin, it can be reasonably assumed that most bottlenose dolphins will be located within a 6km region from the coastline, and those coastal areas may be comparable to other high use areas in the regional marine mammal study area (such as in outer Cardigan Bay which has higher densities, as described in Lohrengel *et al.*, 2018). Therefore the assessment is based on the noise contours overlapping with the 6km zone from the coast. This was the approach taken in Awel y Mor.

1.2 Reference populations

As part of the impact assessment for the Mona Offshore Wind Farm, we use reference populations at a relevant spatial scale to assess proportions of species populations potentially impacted by the project (particularly for underwater sound). For cetaceans, we are using relevant management units (MUs) from the Inter-Agency Marine Mammal Working Group (IAMMWG) for our reference populations, and for pinnipeds we are using seal MUs (SMUs) from SCOS.

For pinnipeds in the vicinity of the proposed development (harbour seal and grey seal), the offshore wind projects overlap two SMUs (12 Wales and 13 NW England), however, in the wider Irish and wider Celtic Sea, there are four SMUs (12 Wales, 13 NW England, 14 Northern England, 1 SW Scotland). Telemetry studies from Sea Mammal Research Unit (SMRU) show potential connectivity with offshore wind projects and the surrounding four SMUs for grey seal (Figure 1) and harbour seal (Figure 2). For grey seals there is also some additional connectivity with the West Scotland MU but taking a precautionary approach and thus not adding additional populations to dilute any effects, we have excluded this SMU and plan to use the four SMUs that overlap the Irish Sea.

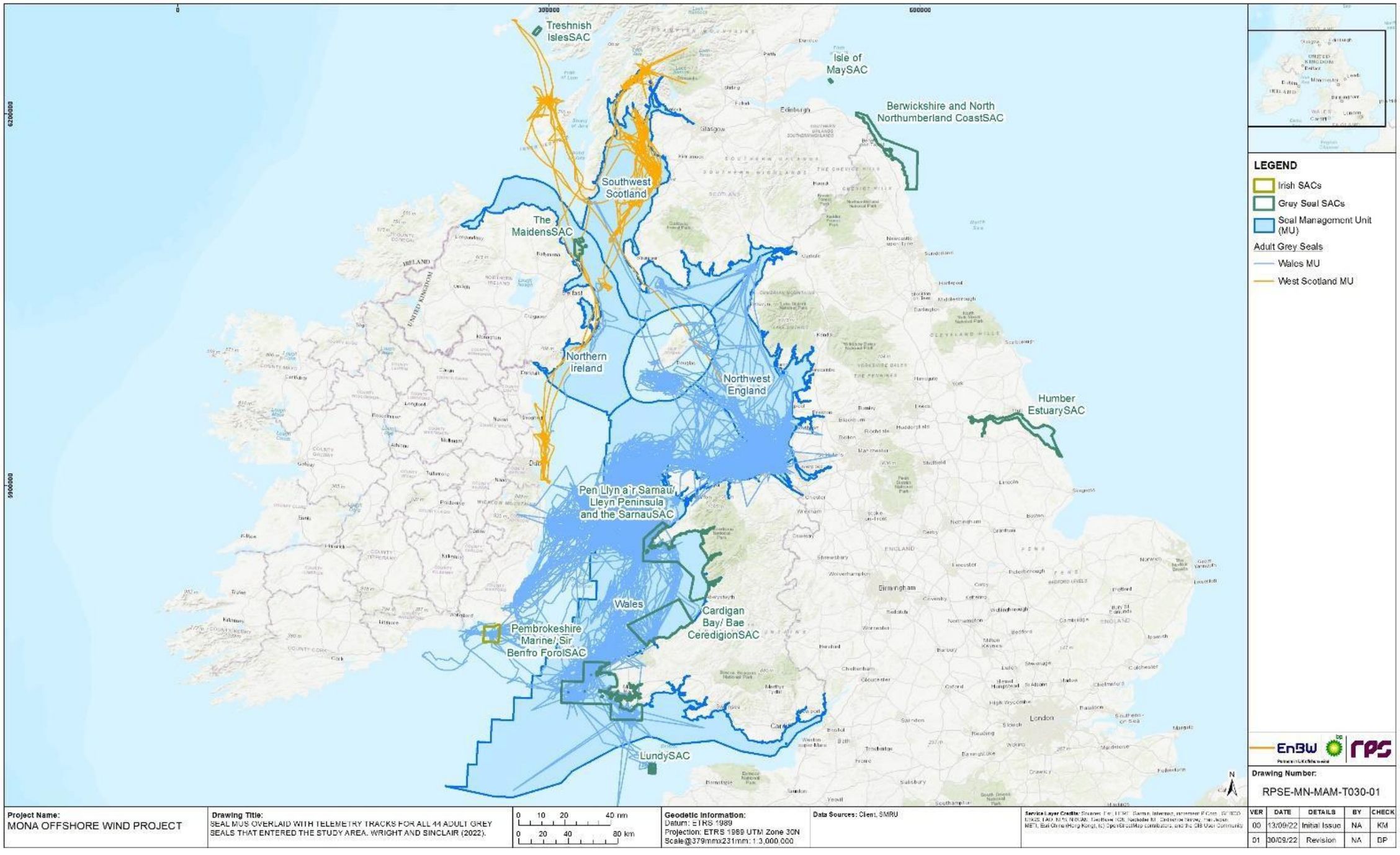


Figure 1: Seal MUs and telemetry tracks for 44 adult grey seals that entered the regional marine mammal study area. Data provided by SMRU (Wright and Sinclair, 2022).

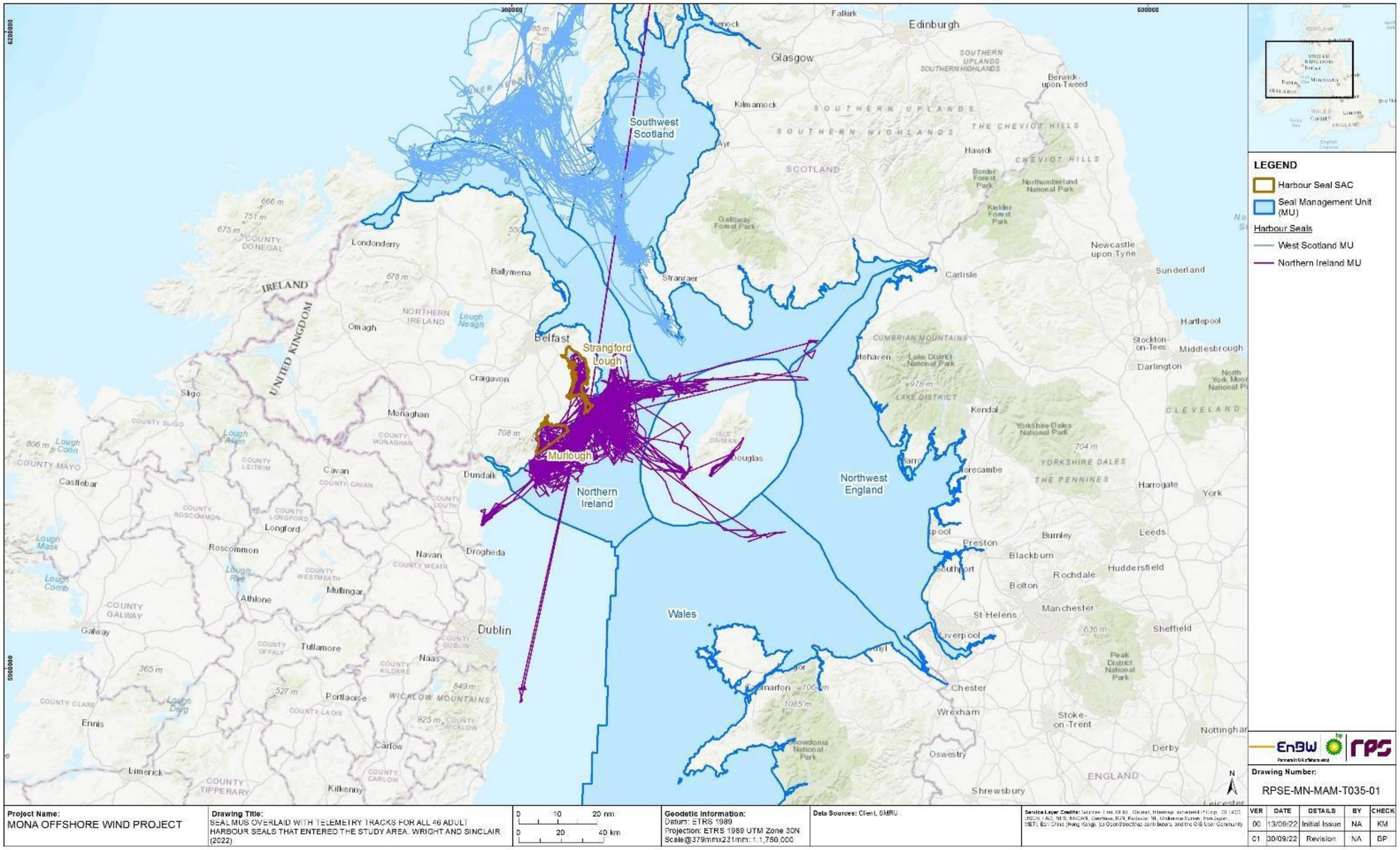


Figure 2: Seal MUs and telemetry tracks for 46 adult harbour seals that entered the regional marine mammal study area. Data provided by SMRU (Wright and Sinclair, 2022).

1.3 Summary

We seek agreement from stakeholders on the items in Table 2.

Table 2: Items to be agreed via consultation with members of the EWG.

Item	Date	Issue on which agreement is sought
1	30/09/2022	Use of densities of key marine mammal species as outlined in Table 1.
2	30/09/2022	Use of 6km coastal region for bottlenose dolphin densities, as in Awel y Mor.
3	30/09/2022	Use of the cumulative population estimates of all four SMUs as an appropriate reference population against which to assess population impacts from the project for grey seals and harbour seals.
4	30/09/2022	Using the relevant MUs from IAMMWG for cetaceans as a reference population against which to assess impacts is acceptable. For harbour porpoise this is the Celtic and Irish Sea MU, for bottlenose dolphin this is the Irish Sea MU, for short-beaked common dolphin/Risso's dolphin/Minke whale this would be the Celtic and Greater North Seas MU.

1.4 References

Hammond, P. S., C. Lacey, A. Gilles, S. Viquerat, P. Börjesson, H. Herr, K. Macleod, V. Ridoux, M. Santos, M. Scheidat, J. Teilmann, J. Vingada, and N. Øien. (2017) Estimates of cetacean abundance in European Atlantic waters in summer 2016 from the SCANS-III aerial and shipboard surveys. Wageningen University. 40p.

Hammond, P. S., C. Lacey, A. Gilles, S. Viquerat, P. Börjesson, H. Herr, K. Macleod, V. Ridoux, M. Santos, M. Scheidat, J. Teilmann, J. Vingada, and N. Øien. (2021) Estimates of cetacean abundance in European Atlantic waters in summer 2016 from the SCANS-III aerial and shipboard surveys. Revised June 2021.

Lohrengel, K., Evans, P.G.H, Lindenbaum, C.P, Morris, C.W and Stringell, T.B (2018) Bottlenose Dolphin Monitoring in Cardigan Bay, 2014 – 2016. NRW Evidence Report 191, 162 pp, Natural Resources Wales, Bangor.

Carter, M. I. D., Boehme, L., Cronin, M. A., Duck, C. D., Grecian, W. J., Hastie, G. D., Jessopp, M., Matthiopoulos, J., McConnell, B. J., Miller, D. L., Morris, C. D., Moss, S. E. W., Thompson, D., Thompson, P. M., & Russell, D. J. F. (2022). Sympatric Seals, Satellite Tracking and Protected Areas: Habitat-Based Distribution Estimates for Conservation and Management. Frontiers in Marine Science, 9.

C.4.6 Response from JNCC regarding the Densities and Reference Populations Note

[redacted]
Senior Marine Consultant
RPS | Energy
Goldvale House
27-41 Church Street West
Woking
Surrey
GU21 6DH

JNCC Reference: OIA-09024
Date: 17 October 2022

Dear [redacted]

Morgan and Mona Offshore Wind Projects – Expert Working Group 03 Consultation on Densities and Reference Populations

Thank you for consulting JNCC on the bp/EnBW, Expert Working Group 03 Marine Mammal Densities and Reference Populations consultation, which we received on 3 October 2022.

The JNCC advice contained within this minute is provided (under a Discretionary Advice Service agreement) as part of our advisory role relating to nature conservation in UK offshore waters (beyond the territorial limit). We have subsequently concentrated our comments on aspects of the documents that we believe relate to offshore waters.

Any advice or assistance provided by JNCC via our Discretionary Advice Service is advisory only, and with reference to the General terms and conditions for DAS chargeable services, JNCC excludes any warranty that the advice provided by its officers represents JNCC's opinion or otherwise binds JNCC when acting as a Statutory Consultee.

Marine Mammal Comments

Whilst we agree with the methodology and figures obtained for the cetaceans species in Table 1, we do question how the densities were obtained for the two pinniped species, given that the reference provided does not supply individual densities for each individual 25km^2 cell (only density maps are provided). We would therefore appreciate more detail regarding how these densities were derived.

JNCC agrees with the use of a 6km coastal region for bottlenose dolphin densities, in line with the methodology used for Awel-y-Môr.

We are happy with the approach being taken with regard to the seal Management Units (MUs).

JNCC also agree with the cetacean MUs being used as reference populations.

Please contact me with any questions regarding the above comments.

Yours sincerely,

[redacted]

Offshore Industries Adviser

Email: [redacted]

Telephone: [redacted]

C.4.7 Response from Natural England regarding the Densities and Reference Populations Note

From: [redacted]
To: [redacted]
Subject: RE: Morgan and Mona Offshore wind Marine Mammal EWG
Date: 20 October 2022 11:56:58
Attachments: image002.png
image003.png

CAUTION: This email originated from outside of RPS.

Date: 20 October 2022
Our ref: DAS/UDS A000566 / 408924
Your ref: Morgan and Mona - Marine Mammals EWG: Clarification on MUs

[redacted]
BP Alternative Energy Investments Limited

c/c [redacted]
RPS/ Energy

Dear [redacted],

Discretionary Advice Service (Charged Advice) - UDSA000566
Contract Reference: BP EnBW Morgan and Mona Offshore Wind Farm
Consultation: Morgan and Mona - Marine Mammals EWG: Clarification on Mus

This advice is being provided as part of Natural England's Discretionary Advice Service in accordance with the Quotation and Agreement dated 17 May 2021 to BP Alternative Energy Investments Limited.

The following advice is based upon the information presented in the briefing note '*Morgan Mona EWG Clarification on MUs*' (titled 'EWG 03 CONSULTATION ON DENSITIES AND REFERENCE POPULATIONS') provided by [redacted], RPS by email (3 October 2022).

Comments

The proposed approach regarding the densities and reference population appears appropriate but considering that Mona Offshore Wind Farm is in Welsh waters we defer to Natural Resources Wales to provide the agreement.

Nonetheless, we would like to seek a clarification on the following point, which will also apply for Morgan Offshore Wind Farm once the densities have been presented:

- Can the applicant please clarify how they are going to use multiple densities (i.e. average and maximum) (Table 1 *Summary of marine mammal receptors to be considered in the EIA together with relevant densities and references*)?

For clarification of any points in this email, please contact me using the details provided below.

The advice provided in this letter has been through Natural England's Quality Assurance process. The advice provided within the Discretionary Advice Service is the professional advice of the Natural England adviser named below. It is the best advice that can be given based on the information provided so far. Its quality and detail is dependent upon the quality and depth of the

information which has been provided. It does not constitute a statutory response or decision, which will be made by Natural England acting corporately in its role as statutory consultee to the competent authority after an application has been submitted. The advice given is therefore not binding in any way and is provided without prejudice to the consideration of any statutory consultation response or decision which may be made by Natural England in due course. The final judgement on any proposals by Natural England is reserved until an application is made and will be made on the information then available, including any modifications to the proposal made after receipt of discretionary advice. All pre-application advice is subject to review and revision in the light of changes in relevant considerations, including changes in relation to the facts, scientific knowledge/evidence,policy, guidance or law. Natural England will not accept any liability for the accuracy, adequacy or completeness of, nor will any express or implied warranty be given for, the advice. This exclusion does not extend to any fraudulent misrepresentation made by or on behalf of Natural England.

Yours sincerely,
Aurelie

[redacted]
Strategic Coastal Lead Adviser
Coast and Marine Team
Cheshire, Greater Manchester, Merseyside and Lancashire Area Team

Natural England
2nd Floor
Arndale House
The Arndale Centre
Manchester
M4 3AQ

Jabber / Office: [redacted]
Mobile: [redacted]

[redacted]

ne-email-signature

From: [redacted]
Sent: 03 October 2022 14:50
To: [redacted]

C.4.8 Response from NRW regarding the Densities and Reference Populations Note

Project Mona & Morgan Marine Mammal EWG03 NRW Actions

[redacted]

15th December 2022

Introduction

This advice is provided in response to the Meeting Actions from the Marine Mammal EWG 03 which took place on 17th November 2022.

NRW advice in this document is provided (under a Discretionary Advice Service agreement) in respect of a proposal which will require an application for which Natural Resources Wales is a Statutory Consultee.

The customer acknowledges that the content of any advice or assistance provided by NRW is advisory only and that it shall not be deemed to bind or in any other way restrict NRW in performing its statutory functions.

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- any advice given by NRW may be overtaken by changes in available information, law, policy and guidance relevant to the subject matter of the advice.

Receptors Consulted:
Marine Mammals

Actions

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NRW Advisory (A) agree with the suggestion to present a qualitative assessment on local haul out sites in addition to the use of the OSPAR III management unit as the relevant population scale.

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This action is currently in progress. NRA (A) are awaiting further response and some additional clarification from the authors.

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NRW (A) recommend the use of an alternative fixed noise threshold, such as the 160dB SPL_{rms} threshold for impulsive noise (NMFS 1995, 2005) over the use of a harbour porpoise dose response curve. While the latter is a pragmatic approach, harbour porpoise are likely to be more sensitive to the effects of pile-driving than bottlenose dolphin. This is likely to lead to over-precautionary results, which the number of individuals impacted in the initial modelling carried out by the applicant would suggest.

The indications from the literature indicate that bottlenose dolphin (and minke whale) are more tolerant to noise than harbour porpoise. For bottlenose dolphin, whilst there is currently insufficient data for a species-specific threshold, a few studies have looked at their reactions to impulsive sounds (but not enough for a definite threshold). Graham *et al*. (2017) studied reactions of bottlenose dolphins (and porpoises) to impact and vibratory pile driving noise of small-diameter monopiles. Dolphins did not flee the study area, but stayed away from the vicinity of the construction site. Received sound exposure levels (single pulse SEL, unweighted) were estimated to be between 129 and 133 dB re. 1 μPa^2s . Fernandez-Betelu *et al*. (2021) also studied the response of bottlenose dolphins to pile driving noise, but from larger piles at the Beatrice and Moray East offshore wind farms. Dolphins remained in the area, but some changes in their behaviour were noted. Received sound exposure levels (single pulse SEL, unweighted) were estimated to be 128 dB re. 1 μPa^2s.

NRW to provide supporting paper for the 143db threshold

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NRW (A) recommends that bespoke noise modelling is required for any proposed activity that may generate impulsive noise (e.g. pile driving, seismic surveys). An unweighted noise threshold of 143 dB re 1µPa^{2}s (or 103 dB re 1µPa^{2}s VHF-weighted) single strike sound exposure level is recommended to represent the minimum noise threshold at which disturbance would occur from impulsive noise sources (Brandt *et al*. 2018; Heinis *et al*. 2019). The 143 dB re 1µPa^{2}s noise contour should be displayed on a map of the area to find the extent of overlap with the SAC, and the extent of the area of the SAC that would experience noise disturbance can then be determined. This threshold is the modelled average of six different studies of full-scale pile driving operations (see attached figure) and thereby represents the largest amount of empirical data (Tougaard, 2021).

NRW to provide Brandt et al. 2018

Please find attached: Brandt *et al*. (2018), Heinis *et al*. (2019), and Tougaard (2021).

NRW to provide an estimated timeframe of when the Welsh marine atlas will be published

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References

- Brandt MJ, Dragon AC, Diederichs A, Bellmann MA, Wahl V, Piper W, Nabe-Nielsen J, Nehls G. 2018. Disturbance of harbour porpoises during construction of the first seven offshore wind farms in Germany. Mar. Ecol. Prog. Ser. 596: 213 – 232.

- Fernandez-Betelu O, Graham IM, Brookes KL, Cheney BJ, Barton TR, Thompson PM. 2021. Far-Field Effects of Impulsive Noise on Coastal Bottlenose Dolphins. Front. Mar. Sci. 8.

- Graham IM, Pirotta E, Merchant ND, Farcas A, Barton TR, Cheney B, Hastie GD, Thompson PM. 2017. Responses of bottlenose dolphins and harbor porpoises to impact and vibration piling noise during harbor construction. Ecosphere. 8.

- Heinis F, de Jong CAF, von Benda-Beckmann S, Binnerts B. 2019. Framework for Assessing Ecological and Cumulative Effects–2018 Cumulative effects of offshore wind farm construction on harbour porpoises. Rijkwaterstaat Sea and Delta.

- Tougaard J. 2021. Thresholds for behavioural responses to noise in marine mammals - Background note to revision of guidelines from the Danish Energy Agency.

C.5. Marine mammals EWG meeting 4

C.5.1 Meeting minutes

MINUTES OF MEETING

Security Classification: Project Internal

Partners in UK offshore wind

MOM Number	:	20230209_bpEnBW_MM EWG04_MoM	**REV. No.**	:	F02
MOM Subject	:	Mona and Morgan Generation Offshore Windfarms Marine Mammal Expert Working Group 04			

MINUTES OF MEETING

MEETING DATE	:	09/02/2023
MEETING LOCATION	:	MS Teams
RECORDED BY	:	[redacted] (RPS)
ISSUED BY	:	[redacted](RPS)

PERSONS PRESENT:

- [redacted] – bp (MP)
- [redacted] – bp (DH)
- [redacted] – RPS (KL)
- [redacted] – RPS (ST)
- [redacted] – RPS (BP)
- [redacted] – RPS (Lbu)
- [redacted]- RPS (CL)
- [redacted] – JNCC (LM)
- [redacted] – Natural England (MNW)
- [redacted] – Natural England (LBr)
- [redacted] – Natural England (EW)
- [redacted] – NRW (LR)
- [redacted] – NRW (NM)
- [redacted] – NRW (SB)
- [redacted] – TWT (GJC)
- [redacted] – DEFA, Isle of Man D)
- [redacted] – Cefas (RF)
- [redacted] – MMO

Apologies

- [redacted] – MMO (GR)
- [redacted] – bp (GV)
- [redacted] – JNCC (JW)
- [redacted] – JNCC (AG)

ITEM NO:	DISCUSSION ITEM:	Responsible party	Date
1.	**Project update (presented by MP)** The Applicant is expecting to submit the Mona and Morgan Generation Preliminary Environmental Information Reports (PEIR) at the end of March 2023. Statutory consultation will then take place in April and May 2023. We have increased the duration of statutory consultation to 47 days as it runs over the Easter holidays so we hope this will give stakeholders more time to read and respond to the PEIRs'. Only the first year of data from the digital aerial surveys was available to feed into the Morgan Gen PEIR. The surveys end in March 2023 and the full two years of data will be incorporated into the Environmental Statement to accompany the DCO application. The Applicant will consult with the Expert Working Group (EWG) in summer 2023 to provide an update on the site-specific data and to confirm if there are any changes to the assessment as a result of the second year of data.		
2.	**Actions from EWG03 and progress of agreement (Lbu)** There are two actions remaining from the last marine mammal EWG meeting. The first is that the Isle of Man (IoM) Gov were going to provide any seal data they had for the IoM. PD- Has the Applicant checked with the Manx Wildlife Trust (MWT)? They hold most of the seal data. The harbour seal population is not very large on the IoM. KL- We have been in touch with the MWT and the Manx Whale and Dolphin Trust (MWDT). We have the non-seal data from the MWDT and grey/harbour seal data from MWT but we will follow up with an email to set out the data that we currently hold for PEIR and please can the IoM gov let us know if there are any data sources missing. The second action from the last marine mammal EWG is for Natural Resources Wales (NRW) to send RPS the densities (plus confidence limits) for the RPS area of search, drawn from Welsh Marine Atlas data. NM- We have looked at the RPS area of search and we will send over the data soon. There is one outstanding query with the modellers on the density maps. When that is resolved, we will be able to send the data. LR- The slides say the Welsh Marine Atlas data would need to be received within a certain timeframe for RPS to be able to include it in the Environmental Statement. Is there a more definite deadline that we can work to? Lbu – End of March 2023 would be the realistic deadline for when we could receive the data and include it in the Environmental Statement. It sounds like it will be available soon so hopefully that is achievable.	**RPS to send DEFA, IoM Gov an email outlining the data sources currently in the PEIR.** **IoM to check list and provide any further updates to data source.** **NRW to send Welsh Marine Atlas Data for areas of search requested.**	Completed Ongoing Completed
3.	**Data not included in PEIR (Lbu)** As described at the start of the meeting, only the first year of data from the digital aerial surveys was available to feed into the Morgan Gen PEIR. The surveys end in March 2023 and the full two years of data will be		

	incorporated into the Environmental Statement. While the 18 month report does not feed into the PEIR, we have reviewed it and sightings data is very similar to that of the first year of data, and we are not expecting any changes to the assessments as a result of the second year of data. Further data will be consulted on via the EWG and results discussed and included in Environmental Statement.		
4.	**<u>Morgan Gen Interim baseline (Lbu)</u>** The approach to the baseline characterisation for Morgan Gen is the same as presented for Mona in the last EWG meeting. We have used three seal management units (SMUs) for harbour seal (NW England, Wales and Northern Ireland). The Scotland SMU has been removed for Morgan due to lack of connectivity with the Morgan Generation assets, as demonstrated by telemetry studies. For grey seal, we have used four SMUs (NW England, Wales, Northern Ireland and Scotland SMU) due to connectivity with all four, the IoM reference population, east Ireland and southeast Ireland regions from Duck and Morris (2019) plus OSPAR Region III. Key data sources for Morgan Gen are the same as presented for Mona in the last EWG meeting. Harbour porpoise densities for Morgan Gen are slightly higher than for Mona. We have taken forward to the assessment the absolute design-based bio-season density from the Morgan site specific aerial survey data = 0.247 animals per km^2. For bottlenose dolphin, it can be reasonably assumed that most bottlenose dolphins will be located within a 6km region from the coastline, and those coastal areas may be comparable to other high use areas in the regional marine mammal study area. Even though the Morgan Array Area does not overlap with this 6km region, the highest densities from outer Cardigan Bay from Lohrengel *et al*. (2018) have been taken forward to the assessment (0.035 animals per km^2) as a precautionary approach. For short beaked common dolphin the same density as was selected for Mona was taken forward to the Morgan Gen assessment – SCANS-II Block O (0.018 animals per km^2). For Risso's dolphin the same density as was selected for Mona was taken forward to the Morgan Gen assessment – SCANS-II Block E (0.0313 animals per km^2). For minke whale the same density as was selected for Mona was taken forward to the Morgan Gen assessment – SCANS-II Block E (0.0173 animals per km^2). For grey seal, only one density value was taken forward to the assessment (for the Morgan Array area) as the Morgan Transmission Assets will be subject to a separate consent application. Densities for Morgan Gen were slightly higher than for Mona at 0.0412 animals per km^2 from Carter *et al*. (2022). For harbour seal, only one density was taken forward to the assessment (for the Morgan Array area) as the Morgan Transmission Assets will be subject to a separate consent application. Densities for Morgan Gen were		

	slightly higher than for Mona at 0.0005 animals per km^2 from Carter *et al* (2022).		
5.	**Approach to assessment (Lbu)** The approach to the EIA for Morgan Gen is the same as was presented for Mona in the previous EWG meeting. The cumulative assessment has taken a tiered approach where projects are placed into tiers based on where they are in the planning process, information available in the public domain, and when they will become operational. Population modelling (iPCoD) was carried out for Tier 1 projects – Morgan Gen plus Awel y Môr, with sequential piling (previous year) at Project Erebus, and for Mona which is a Tier 2 project but we hold quantitative data for. All other projects in Tier 2 do not have the data available in the public domain that would be needed to include them in the population modelling. Therefore an assessment of those projects has been done qualitatively. If further data becomes available on these projects between PEIR and the Environmental Statement, then this will be taken into account and a quantitative assessment will be undertaken where possible. Any updated data will be taken into account up to three months before application to allow it to be included in the assessment.		
6.	**Initial underwater sound modelling outputs (Lbu)** The approach to underwater sound modelling for Morgan Gen is the same as presented for Mona in the last EWG meeting. Modelling showed that underwater noise contours which represent the greatest spatial range are those associated with concurrent piling for two piles (when compared to single piling, or consecutive piling of two piles). The ranges are very similar to the modelling for Mona. PTS ranges presented are very similar for Morgan Generation compared to Mona. Ranges presented include primary mitigation. With the implementation of ADDs as tertiary mitigation, the thresholds for PTS were not exceeded for HF cetaceans or seals. Residual ranges of effect for concurrent piling (maximum spatial scenario), using the SELcum metric were 20m (no more than one animal) for harbour porpoise and just over a 1km for minke whale (no more than one animal). For behavioural responses, as with Mona, a dose response approach was applied where unweighted sound exposure level single strike (SEL_{ss}) contours were plotted in 5dB isopleths in decreasing increments from 180dB to 120dB re.1µPa^{2}s using the highest modelled received sound level. Disturbance during piling was predicted to have far-reaching effects across the north part of the Irish Sea, noting however, that the extent is likely to be an overestimate as it assumes that the sound maintains its impulsive characteristics at large distances, which is considered unlikely to be the case. As a comparison with the NMFS 2005 thresholds for mild and strong disturbance, the 150dB SELs contour, which equates to the 160dBrms contour from NMFS 2005 is relatively localised. Beyond this point disturbance is considered to be mild.		

	When overlaying behavioural noise contours with Carter *et al.* (2022) seal at-sea usage densities, it can be seen that areas of strong disturbance response overlap with low densities of grey and harbour seal, and higher densities overlap with contours representing mild disturbance responses. The piling locations selected to be taken forward for modelling have been chosen to be closest to the marine mammal high density areas. *Post meeting note from Cefas: Are the residual ranges of effect for concurrent piling correct? We can provide further comments on the noise modelling once we have reviewed full details of the assessment and approach.* *Applicant response: Yes, this is correct. Range with 30 mins ADD was 20m for harbour porpoise and 1,221m for minke whale for the Morgan Generation Assets.*		
7.	**<u>Cumulative assessment results (LBu)</u>** The tables in the accompanying slides show the number of animals disturbed from the Tier 1 projects and Mona in addition to the Morgan Generation project. The results presented are for Morgan but are representative for Mona as well. The numbers of animals disturbed is based on the maximum spatial scenario with concurrent piling. They do not take into account any of the measures adopted as part of the Morgan generation assets. 39 bottlenose dolphin (13.3% of the Irish Sea MU) could be disturbed by simultaneous piling at Morgan and Awel Y Môr (Tier 1), and 33 bottlenose dolphin (10.97%) at Morgan Generation and Mona (Tier 2). Assessments found that most of the disturbance at Morgan and Awel Y Môr would occur in offshore waters where densities of bottlenose dolphin are lower. iPCoD modelling showed a small difference between the impacted and unimpacted population size over time, although the model statistics suggests that this falls within the natural variation of the population. The cumulative impact could result in potential reductions to lifetime reproductive success to some individuals in the Irish Sea MU population. The effect on bottlenose dolphin will, therefore, potentially be of moderate adverse significance for the bottlenose dolphin Irish Sea MU population, which is significant in EIA terms, but of minor adverse significance for the wider Offshore Channel and Southwest England MU plus Irish Sea MU population, which is not significant in EIA terms. This is a conservative assessment as it has several layers of precaution built in (e.g. in the noise modelling, the project parameters and the approach to assessment, particularly for the concurrent piling scenario). PD- We are in touch with Orsted on the IoM wind farm, we could put you in touch with the Orsted team to see if you would need to include them in the cumulative assessment. KL- Thank you for the offer, the Applicant is in touch with Orsted however the detail we need to be able to include the project in the cumulative assessment will likely only be available when the EIA is concluded and is in the public domain.		

	MP- The scoping report for the IoM wind farm is not in the public domain therefore we have not been able to consider it in the cumulative assessment. LR- Would it be possible to present the approximate piling and construction dates in the PEIR? KL- Yes this is in the PEIR. The cumulative assessment sets out the construction period for all the tier 1 and 2 projects.		
8.	**<u>Cumulative assessment- PEIR to Es (LBu)</u>** The Applicant is looking to reduce the impact of piling from the project alone for both Morgan Gen and Mona. This is currently being investigated so we do not have any details to share, but we will investigate topics such as project refinements and noise abatement. It will be discussed with the EWG when we have further details. KL- The assessment shows that for bottlenose dolphin, some populations may be affected so the Applicant is looking at what the project can commit to, to reduce the impact of the project on this receptor (with consequent benefits to other receptors). Please read the detail at PEIR and consider the evidence included in PEIR to support the conclusion that has been made, particularly for other species. PD- At what phase would the details of measures to reduce the impact be available? KL- The PEIR will be published soon and this will contain the initial assessment. The Applicant has started investigating what can be done to reduce the project alone effect. The intention is that after we have received the section 42 response, will have an EWG meeting and the Applicant will be able to provide an update on the progress of the work investigating reducing the piling impact. We are unlikely to have all the details and updated assessment outputs at that meeting. We may have another EWG meeting at the end of the summer to provide an update on the updated assessments. The Applicant aims to discuss the key topics in the DCO application with the EWG before submission so there are no surprises. PD- When the additional measures are developed is the model then run again to see how this would affect the population? KL- Yes, the final application will have a revised marine mammal assessment with revised modelling if required. Any changes to the Morgan Generation project and additional data are to be taken into account, and this will be run through the population modelling.		
9.	**<u>Population modelling (LBu)</u>** The population modelling simulates the mean population difference between the impacted and un-impacted population to provide comparison of the type of changes that could occur resulting from natural environmental variation, demographic stochasticity and human-induced disturbance. The parameters used in the population modelling were those provided by NRW. Population modelling was undertaken for piling only, for the project alone and the cumulative assessment. The model itself has		

	been built from expert elicitations however it has some limitations e.g. it does not take into account the locations of the other projects included (for example, how far away Project Erebus is) and it doesn't incorporate density dependent elicitation. The population model only allows for the assessment of harbour porpoise, bottlenose dolphin, minke whale and grey seal currently. We have used the most conservative demographic parameters. We would prefer to stay consistent with the assessments for the other projects in the Irish Sea to allow more meaningful comparison. PD- Risso's dolphins are important around the IoM, has that species been considered? LBu - A full assessment has been carried out on Risso's dolphin for the project alone and with cumulative projects. The iPCoD model provides additional justification and evidence for the assessment, but a robust assessment has been caried out for Risso's dolphin without the modelling. The iPCoD model does not currently have the required detailed parameters for modelling for Risso's dolphin. For concurrent piling at the project alone, the impacted population of bottlenose dolphin only had one fewer individual than the unimpacted population after 25 years. For all other species, whilst the modelling outputs predict declining population trajectories, there was predicted to be very little difference between the impacted and unimpacted populations. Therefore for all species it was considered that there is no potential for long term population impacts from the project alone. For concurrent piling in the cumulative assessment, there were five fewer bottlenose dolphin in the impacted population compared to the unimpacted population after 25 years. This is in the context of an already declining population. PD- Why does the impacted population not revert back to the unimpacted population after 20 years? BP- This cannot be attributed to one factor alone, but it is likely due to the susceptible nature of the species (e.g. low fertility rate, 9 years before first birth of calf) of bottlenose dolphin. If you have an impacted population, it would take a high fertility rate and high survival rates to recover to the levels of the unimpacted population, which bottlenose dolphin does not have. The population is declining, and therefore with or without the impact, it is not a growing population. This is also in the context of a small population.		
10	**<u>Approach to agreement (KL)</u>** The focus now is on the approach to agreement as part of the EPP remit and building towards the statement of common ground that will be submitted with or soon after the application for consent. When you read the PEIR we would appreciate it if you could think about agreement on the baseline and assessments, keeping in mind the agreements we are aiming for, for the application. If you do not agree with what is in the PEIR, please focus on what the Applicant can provide to get agreement. It is important to note that the HRA and EIA process are a step in the process to agree how the Applicant can build these projects with minimal impact to the		

	environment. The Applicant is looking to get as much agreement as possible before the application. CL- As you are reading PEIR, if you have any questions or if there is anything we can do to aid your understanding or navigation of the PEIR, please get in contact with KL or ST.		
11	**<u>Next steps (KL)</u>** Next steps: • Meeting minutes to be circulated 2 weeks following the EWG. • If applicable, agreement logs to be circulated following EWG. The EWG05 will be organised in summer 2023 to discuss the section 42 response and updates for the Environmental Statement.		

C.5.2 Response from Natural England regarding the meeting minutes

Date: 13 March 2023
Our ref: DAS/UDS A000566 / 412776
Your ref: Morgan and Mona Marine Mammal Expert Working Group 04

[redacted]
BP Alternative Energy Investments Limited

c/c [redacted]
RPS/ Energy

Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire CW1 6GJ

T [redacted]

BY EMAIL ONLY

Dear [redacted]

Discretionary Advice Service (Charged Advice) - UDS A000566
Contract Reference: BP EnBW Morgan and Mona Offshore Wind Farm
Consultation: Morgan and Mona Offshore Windfarm Marine Mammal EWG04

This advice is being provided as part of Natural England's Discretionary Advice Service in accordance with the Quotation and Agreement dated 17 May 2021 to BP Alternative Energy Investments Limited.

The following advice is based upon the information presented in the Marine Mammal Expert Working Group (EWG) Meeting 4 (attended on 09 February 2023 by [redacted]).

Natural England were asked to provide advice upon:

1. Agreement on approach to densities and reference populations – harbour porpoise
2. Agreement on approach to densities and reference populations – bottlenose dolphin

Detailed comments

Natural England agrees with the current approach to densities and reference population for harbour porpoise/bottlenose dolphins. However, Natural England reserves the right to review its position after the inclusion of the densities from the Welsh Marine Atlas.

For clarification of any points in this letter, please contact me using the details below.

Yours sincerely
[redacted]

Marine and Coastal Lead Adviser
Coast and Marine Team
Cheshire to Lancashire Area Team
[redacted]

☒The advice provided in this letter has been through Natural England's Quality Assurance process.

The advice provided within the Discretionary Advice Service is the professional advice of the Natural England adviser named below. It is the best advice that can be given based on the information provided so far. Its quality and detail is dependent upon the quality and depth of the information which has been provided. It does not constitute a statutory response or decision, which will be made by Natural England acting corporately in its role as statutory consultee to the competent authority after an application has been submitted. The advice given is therefore not binding in any way and is provided without prejudice to the consideration of any statutory consultation response or decision which may be made by Natural England in due course. The final judgement on any proposals by Natural England is reserved until an application is made and will be made on the information then available, including any modifications to the proposal made after receipt of discretionary advice. All pre-application advice is subject to review and revision in the light of changes in relevant considerations, including changes in relation to the facts, scientific knowledge/evidence, policy, guidance or law. Natural England will not accept any liability for the accuracy, adequacy or completeness of, nor will any express or implied warranty be given for, the advice. This exclusion does not extend to any fraudulent misrepresentation made by or on behalf of Natural England.

Cc [redacted]

C.6. Marine mammals EWG meeting 5

C.6.1 Meeting minutes

MINUTES OF MEETING

Security Classification: Project External

Partners in UK offshore wind

MOM Number	:	20230629_Morgan and Mona MM	**REV. No.**	:	F02
MOM Subject	:	Morgan and Mona Evidence Plan marine mammals EWG meeting 5			

MINUTES OF MEETING

MEETING DATE	:	29/06/2023
MEETING LOCATION	:	Microsoft Teams
RECORDED BY	:	[redacted] (RPS)
ISSUED BY	:	[redacted]RPS)

PERSONS PRESENT:

- [redacted] bp (GV)
- [redacted] – bp (SR)
- [redacted] bp (DH)
- [redacted] – RPS (KL)
- [redacted] – RPS (ST)
- [redacted] – RPS (BP)
- [redacted] – RPS (TMc)
- [redacted] – JNCC (JW)
- [redacted] – JNCC (LM)
- [redacted] – JNCC (AG)
- [redacted] – MMO (AP)
- [redacted] – Natural England (EW)
- [redacted] – NRW (LR)
- [redacted] – NRW (EL)
- [redacted] – Martin – NRW (NFM)
- [redacted] – NRW (SB)
- [redacted] – Cefas (RF)
- [redacted] – TWT (BS)

ITEM NO:	DISCUSSION ITEM:	Responsible party	Date
	Project updates (presented by GV) Statutory consultation on the Mona and Morgan Generation PEIRs ended on 4th June. The Applicant appreciates all the feedback; we are currently reviewing all the responses and how they can be addressed. From the statutory consultation feedback and parallel activities, the Applicant has been considering a number of project updates. There are several updates to the project description envelope that are expected to be included in the application. The Applicant is looking to reduce the Mona Array Area and the Morgan Generation Array Area. They are expected to be reduced from what was presented in PEIR and lie wholly within the array areas presented in the PEIR. The Mona Array Area is anticipated to		

	be reduced by approximately 33% and lie wholly within Welsh offshore waters. The Morgan Array Area is anticipated to be reduced by approximately 10%. The primary driver for these reductions is shipping and navigation, specifically ensure safety of navigation. The need for changes for the project design envelope has been highlighted through engagement with a number of the ferry companies in the Irish Sea. The reductions have also been driven through consultation with aviation and other sea users receptors. The layout principles for both Mona and Morgan Generation are expected to be updated to increase the spacing requirements between offshore structures, the specific updates will be communicated in due course. These updates are to address concerns from commercial fisheries. The Applicant is anticipating that monopile foundations will be removed from the project design envelope. The foundations options remaining will be gravity base or jackets (which may be pin piled or suction bucket foundations). This is being driven by the ground conditions. The Applicant expect there to be a mixed foundation solution taken forward to the application, likely to be a mix of jacket and gravity base foundations. The smallest wind turbine option is being removed from the project design envelope due to feedback from the supply chain that this turbine option will not be available at the time of construction. The rotor diameter will therefore also increase from 280m to 320m and this is also based on feedback from the supply chain on the parameters for the wind turbines that will be available at the time of construction. <u>Post meeting note:</u> *The rotor diameter will increase from 280m to 320m not 340m, as set out in the slide pack. The slide pack has been updated and is circulated alongside these meeting minutes.* The Applicant is also reviewing the parameters for the design envelope following the section 42 statutory consultation responses. Any updated parameters will be fully explained and justified within the application. GV asked if anyone had any questions or comments. No response or questions raised.		
	<u>Actions from the last EWG (presented by BP)</u> RPS sent DEFA, IoM Government a list of data sources currently in the PEIR. DEFA, IoM were to check list of data sources in PEIR and provide any further data sources if required. IoM government did not identify any additional data sources in their response to statuary consultation therefore we consider this closed. NRW have sent the Welsh Marine Atlas Data for areas of search requested for harbour porpoise and bottlenose. We note the Welsh Marine Mammal Atlas has been released and shapefiles are available on the data portal, and we have received		

	access to shapefiles. We will review densities for the Environmental Statement.		
	<u>Section 42 responses - overarching (presented by KL)</u> The Applicant and RPS have been working through all the S42 responses, looking to the project design envelope and the environmental assessment. There were a couple of key responses that we wanted to raise to the EWG. There were several requests for the projects to undertake assessments for historic projects where quantitative information required to include them in the cumulative and in-combination assessments is not available. The cumulative and in-combination assessment can only be undertaken on publicly available data and it may not be appropriate to undertake analysis for other projects. There is also no precedent for that type of analysis – this is to be discussed at the Offshore Ornithology EWG tomorrow. The IoM offshore windfarm is in the early stage of the planning process and we expect the scoping report to be published in the autumn. We will incorporate the information in the public domain into the cumulative and in-combination assessment for Mona and Morgan Generation, in line with the Tiered approach. There were a few comments on the site specific data available to be included in the PEIR. The benthic data for the Mona Offshore Cable Corridor and the zone of influence for the Mona and Morgan Array Areas will be presented in the July benthic, fish and shellfish and physical processes EWG. For marine mammals and offshore ornithology, the 24 months of survey data for Morgan Generation will be presented and discussed in the October EWG meetings for those topics. Natural England provided comments on the Morgan Generation and the Morgan and Morecambe Offshore Wind Farms: Transmission Assets (Transmission Assets) applications to ensure that a whole project assessment is undertaken. Are there specific topics or receptors that are of particular concern for the cumulative assessment for Morgan Generation and the Transmission Assets together? The Applicant is considering how human topic cumulative impacts are addressed and we have strategies for those impacts. For Morgan Generation, we will be undertake a whole project assessment within the cumulative effects assessment (CEA). The Transmission Assets will be included within the CEA as a separate section so it clearly presents the impact of the Morgan Offshore Wind Project as a whole project. We can only base the CEA on information in the public domain. These projects are subject to separate consent applications so there will always be difficulty regarding what information is available at the time of application. However, that is why the tiered approach to CEA was developed and adopted and we feel		

	the approach set out in the slides adequately addresses the concerns raised. We will circulate the slides after the meeting so you can review the approach to CEA in full. Please can the stakeholders provide their feedback in writing with the meeting minutes.	**Stakeholders to provide their feedback on the approach to the CEA for Morgan Generation**	Complete
	Section 42 responses – marine mammals (presented by BP) S42 Response: The Applicant received feedback from several stakeholders that noise abatement should be included in the dMLs. The Applicant will be following the required guidance at the time of construction. We are expecting further guidance to come out of the ongoing Defra workstream. The Applicant also received responses that the impact assessment should be based on modelling with no ADDs. As we have done for PEIR, most assessments are modelled with and without ADDs to demonstrate how effective ADDs are. The assessment is based on an indicative standard maximum of 30 minutes ADD use. Our understanding is that ADDs are included as part of mitigation as a standard industry measure (such as PAM/MMO) and is therefore considered a tertiary mitigation measure. It would be unrealistic to base modelling on scenarios with no ADD, as this will not happen. Therefore whilst an indicative ADD duration is modelled, further detail on ADD duration and use will be included in the Marine Mammal Mitigation Protocol (MMMP) which will be refined and agreed post consent. LR- We can take this away and provide a response. S42 Response: NRW statutory consultation response did not agree with using a dose-response approach in parallel with the EDR approach for assessing disturbance in harbour porpoise SACs for the HRA, however JNCC and Natural England did agree with using the EDR approach. NRW recommend using an unweighted noise threshold of 143 dB re 1µPa2s (or 103 dB re 1µPa VHF-weighted) to represent the minimum fixed noise threshold at which significant disturbance to harbour porpoise could occur for the application. The Applicant suggested approach is to present this 143 threshold alongside the EDR for the HRA. The dose response approach will be removed for the HRA only. The dose response will be retained for the EIA. JW- If stakeholders disagree on the approach then we are happy to see both methods presented. NFM- Yes this would be fine to see both approaches presented. <u>Post meeting note:</u> *NRW originally helped develop the EDR approach in conjunction with other SNCBs but divested from endorsing the SNCB guidance to allow greater flexibility when assessing disturbance in Welsh waters. NRW have recently developed their own position statement on assessing disturbance in harbour porpoise SACs, which can be found online. As can be noted in the position statement, NRW do not explicitly exclude the use of EDRs (they have previously been used in their advice, e.g. for*	**NRW to provide a response to the proposed modelling approach regarding ADDs.** **JNCC to feedback on the inclusion of the UXO activities in the DCO consent rather than a separate marine licence.**	Complete Complete

	geophysical surveys). NRWs approach has been to rank different approaches, and as a result of this our preferred method for assessing the impacts of pile driving from behavioural disturbance is to use the 143 dB noise threshold. Furthermore, NRW note that in their comments on the PEIR NRW asked for a presentation of the results of both approaches in parallel, and this was also suggested in an earlier EWG (November 2022). *NRW have provided a link to their position statement on assessing disturbance in harbour porpoise SACs* Assessing behavioural disturbance of harbour porpoise from underwater noise (cyfoethnaturiol.cymru) S42 Response: JNCC statutory consultation response recommended a separate marine licence for UXO activities. The project assessment includes all types of noise and this includes UXO clearance. The worse case scenario is assessment for potentially significant impacts associated with the project. This is in line with the Planning Act 2008 and the Planning Inspectorate guidance for assessing a whole project. LM- I will take this away and request further feedback. GV- Under the Planning Act 2008, the purpose of the DCO was to act as a single consent covering all activities associated with a project. This was created to move away from a project requiring multiple different consents. TMc- Once further details of the UXO clearance are known post-consent then the MMMP would be updated to reflect this and ensure the measures are appropriate. S42 Response: NRWs statutory consultation response recommended using the Welsh Marine Atlas data and have provided the densities and data for the project to use. We will be considering those densities for taking forward to the application assessment. S42 Response: NRW recommended using the updated Welsh Marine Atlas (WMA) data and they have provided the relevant species densities and shapefiles. For bottlenose dolphin, we are proposing to no longer use the 6km coastal zone with a higher density. We are going to apply one density from the WMA across the whole study area. Is the EWG content with using one density across the whole study area for bottlenose dolphin and are they happy with using the WMA densities? TMc- We will be providing a table of the densities being taken forward to the assessment within the meeting minutes for stakeholders to consider. Please see Table 1 on page 9 of these minutes. S42 Response: JNCC do not agree with use of SCANS III Block E estimate for Minke Whale, they recommend using the UK wide mean density. During the EWG process, JNCC agreed approach via pre-EWG03 meeting note which included minke whale densities. RPS consider it preferable to use more site-specific data where	**EWG to feedback on whether they can agree to one density across the whole study area for bottlenose dolphin and if using densities from the Welsh Marine Atlas is appropriate.** **EWG to review the table of species densities and confirm agreement or provide feedback.**	Complete Complete

	applicable which is more proportionate to the area. We will be revisiting the densities taken forward to the assessment based on the latest relevant up-to-date data sources and will provide densities and reference populations as a table within the meeting minutes for agreement with EWG. Please see Table 1 on page 9 of these minutes. LM – In principle JNCC are happy for the application to use the WMA densities. With any estimate of densities there is a lot of uncertainty so we would suggest that the most conservative estimate is used. TMc- RPS agree with this approach and we would look to use the most precautionary density in the assessment. However, there is a balance between using a broad scale density vs a regional specific one and the most conservative estimate may not be proportionate. The densities chosen need to make sense within the regional context so that the assessment is conservative but proportionate.	**EWG to confirm agreement or feedback on the approach to use average density (which accounts for group size) across all cells for the study area for assessment of UXO clearance.**	Complete
	<u>Post meeting note:</u> NRW would suggest that this could be less of an issue of proportionality, and more of an issue of data robustness. NRW generally agree with the approach that the most conservative estimate is taken (so as to be able to cover the "worst case scenario"), however if more robust data is available (e.g. Welsh Marine Mammal Atlas densities, based on 30 years of survey data), then this should take priority over snapshot surveys e.g. Scans III which take place every 11 years .	**EWG to provide advice on the sensitivity scores to be used for PTS.**	Complete
	<u>Post meeting note:</u> RPS note NRW and NE response for short-beaked common dolphin and propose instead to take forward the average density value from the Welsh Marine Mammal Atlas (Evans and Waggitt, 2023) for the Mona array area (0.0006 animals per km^2) (over the density for the marine mammal study area 0.0046 animals per km^2). This is the most robust data source, taking priority over the snapshot SCANS II surveys. Please see update to Table 1 on page 9.	**EWG to provide any further advice on how they would like to see the assessment of disturbance from vessels.**	Complete
	S42 Response: Natural England requested that group size is taken into account when assessing the numbers potentially injured via UXO clearance. RPS's approach is to use average density across all cells for the study area, multiplied by the area of effect to give the number of animals impacted. The average density estimate used already takes into account group size. We therefore cannot make further assumptions for group size. Please can the EWG confirm they are happy with this approach to use average density across all cells for the study area.	**EWG to confirm if there are any other projects they would like to see considered for the CEA/in-combination assessments.**	Complete
	<u>Post meeting note:</u> NRW is in agreement with NE over taking group size into consideration. Whilst this does not necessarily need to be included quantitatively as part of the assessment, it is a point which should be acknowledged qualitatively in the text of any upcoming drafts of the assessment, and in particular in any draft mitigation plans. KL noted that the project could look at including some qualitative text in the assessment that notes the numbers are presented using	**EWG to confirm or feedback on approach to include consider the Irish Sea management unit for bottlenose dolphin**	Complete

	average densities and that group size is already taken into account in these density estimates. S42 Response: NRW responded to suggest that while we agree with a sensitivity of high for all receptors for PTS, a sensitivity of medium would also be acceptable. Natural England agreed with the assigned sensitivity scores which was high for PTS. We will revisit the assessment but would like further clarification from the EWG on advice regarding what sensitivity score should be used for PTS. EW- Suggest that Natural England and NRW discuss this on cross SNCB calls. KL- We understand that SNCBs can have different views but we would like some agreement or advice on what should be included in the application in regard to this conflicting advice. We are happy with the current approach but any further advice would be welcome. S42 Response: NRW responses to state that it is unrealistic to assess injury and disturbance from vessel use by presenting a sum of the impact ranges of all vessels within each OWF and further information is required to support the assessment for vessel disturbance. RPS will review the approach and revise the EIA and HRA where applicable. Is there any other suggestions on how stakeholders want to see this addressed? TMc- Was there a specific example we could look at? LR- We will have to take that question away. The CEA will be reviewed and revised with any updates to the status of projects with any new information in the public domain. The statutory consultation suggested several other projects for consideration in the CEA. Are there any other projects that stakeholders would like considered? <u>Post meeting note:</u> *In NRWs PEIR comments, NRW provided an example of how this could be done, referring to the Wylfa assessment. Although other approaches can be taken.* S42 Response: iPCoD modelling for bottlenose dolphin: Statutory consultation requested that the two populations of bottlenose dolphin in the area will need to be assessed separately as the Management Units cover different ecotypes. The suggestion for the assessment is therefore to only use the Irish Sea Management Unit for bottlenose dolphin only, which comprises the inshore ecotype (rather than combining MUs). This means Project Erebus would be scoped out as it is outside the Irish Sea Management Unit. Please can the EWG feedback on if this approach would be acceptable. NFM- We will take this away.	**EWG to confirm agreement or provide feedback on approach to use the OSAPR region III and the combined populations for the grey seal reference population.** **Isle of Man to confirm the estimate of 400 seals for Manx population is suitable.** **Isle of Man gov to confirm what further details they would like to see for Risso's dolphin** **Isle of Man gov to confirm content with approach to bottlenose dolphin assessment?**	Complete Complete Complete Complete

	TMc- It is not uncommon to have different CEA study areas for different species, we have done this for other offshore wind farm applications. S42 Response: NRW have suggested using the OSPAR REGION III for the Grey Seal reference population used in the assessment. In the current assessment we use both OSPAR Region III and a "Grey Seal Reference population". This reference population is the sum of population estimates from four seal management units that cover the Irish Sea, as well as an Isle of Man estimate (400 seals from Howe, 2018) and two Irish estimates from Duck and Morris (2019). These are combined to give one reference population against which we assess impacts. We are looking for agreement on using the two approaches. LR- We will take this away. *<u>Post-meeting note:</u> Noting detailed response from NRW which notes presenting OSPAR Region III and GSRP in parallel is beneficial and mentioned that when screening in projects if a smaller area is proposed (other than OSPAR III) for grey seal and justified, NRW (A) would not anticipate ruling it out.* *Noting, Natural England do not have objections on presenting OSPAR region III alongside MUs for comparison but advise that then more precautionary one should be taken further to the assessment.* *RPS: We will present the impact assessment for project alone against both the OSPAR Region III and the Grey Seal Reference population (GSRP) in parallel. Whilst we acknowledge there is some disagreement about the appropriateness of the SMU boundaries, we have not limited the assessment to the single MU in which the project lies and have instead used the sum of four SMUs (based upon counts in SCOS 2020 with the updated scalar of 25.15% from SCOS (2021)) plus an estimate from Isle of Man (Howe, 2018) plus East of Ireland and Southeast of Ireland estimates from Morris and Duck (2019) = 12,909 grey seal. This is based upon the telemetry study provided by SMRU which shows high levels of connectivity with designated haul out sites in the Irish Sea and wider Celtic Sea, we feel this captures the wide-ranging mobile nature of the species but allows a proportionate and relevant population assessment.* *For the screening for the CEA, we will be using the GSRP rather than OSPAR Region III as it provides optimal coverage of the wide-ranging nature of the species but allows for a pragmatic approach to screening. Noting NE comments to take forward the most precautionary to assessment.* *The GSRP lies within the cumulative screening area agreed during the EWG02 (Irish Sea extending into the Celtic Sea rather than the entire extent of the largest MU: the Celtic and Greater North Seas (CGNS) MU) but is more proportional and applicable to the species (as was done with using the IS MU for bottlenose dolphin) and broadly aligns with ICES areas 7.a, g and f. The maximum foraging ranges from Carter et al. (2022) for example does not specify the time travelled per day, and it is known grey seals can travel for*	**Circulate the Offshore Ornithology slides to stakeholders prior to EWG meeting.**	Completed

	many days (e.g. Cronin et al. (2013) mean foraging trip duration was 1.7 days, longest being over 15 days). *Therefore, we suggest the GSRP is suitable to take forward for the cumulative assessment, as a species-specific approach (as with the Irish Sea MU for bottlenose dolphin).* S42 Response: NRW provided a response to the screening distance used for projects assessed cumulative with site investigation surveys. The PEIR uses the maximum ranges over which impacts could occur to screen in project to the CEA. The spatial range is less for the site investigation surveys so we would suggest using a more proportional screening criteria so we don't screen in projects over 100km away. Using this method also provides a proportionate criteria for a cut off for screening projects rather than an arbitrary range. <u>Post meeting note:</u> *NRW(A) would not agree with this approach. Screening ranges for cumulative assessments are based on population boundaries, given the scope of a cumulative assessment is to assess the impact of multiple projects on the same population, and thus cannot be described as arbitrary.* <u>Post meeting note</u>*: RPS note NRW's response, we propose to screen using the CEA area of the Irish Seas and wider Celtic Sea (rather than the maximum impact ranges used in PEIR) and then use a proportionate number to assume how many will be happening at the same. For example, previous OWF assessments have assumed up to 4 site-investigation surveys to occur at the same time in North Sea (see Hornsea 4) whilst up to 1 assumed in Irish Sea (see Awel y Mor).* S42 Response: The Isle of Man government responded to request specific evidence of the consideration of Risso's dolphins. We have included Risso's in the detailed quantitative assessment – can the IoM clarify further detail they would like? S42 Response: The Isle of Man Government responded to highlight that the Cardigan Bay and Manx winter population of bottlenose dolphins on the east coast are believed to be the same group based on Photo ID data. This should be acknowledged, and yet there is no specific assessment of the Manx population in this section. RPS specifically referenced this movement of individuals in impact assessment, and the assessment captures this. We can add further detail on impacts on bottlenose within Manx waters but providing a specific Manx assessment does not support suggestion they are the same dolphin population. Can the IoM confirm they are happy with this approach? KL- Are there any further comments that anyone want to highlight? BS- For future meetings, sight of the slides ahead of the meeting will improve the usefulness of the meetings.		

	LR- This would be NRW preference as well. We need to see the slides ahead of the meeting in order to provide any advice as agreed in our Ways of Working for the Evidence Plan. KL- Noted, the programme for these projects are very tight so it has made it difficult to put this together after the statutory responses. We would like to circulate the slides in advance and for future EWGs we will circulate slides in advance. We would therefore now look for feedback following the meeting minutes. KL and ST took an action to circulate the Offshore Ornithology slides immediately after the EWG to give the relevant stakeholders early sight of these ahead of the EWG meeting tomorrow.		
	<u>Update to assessment (presented by BP)</u> This section presented a summary of the proposed updates to the assessment. We will add unweighted noise threshold of 143 dB re 1µPa ^{2}s (or 103 dB re 1µPa VHF-weighted) to represent the minimum fixed noise threshold at which significant disturbance could occur for ES, alongside the EDR. We will add in seal count data from Walney Island, which has been provided by The Wildlife Trust. We will add in the additional year of aerial survey data for Morgan Offshore Wind Project. We will include additional new data sources where applicable: • Welsh Marine Mammal Atlas (Waggitt and Evans, 2023) • New SCANS III density estimates from Lacey *et al.* (2022) • Update to latest SCOS (2021) estimates TMc- Does this capture everything the EWG were anticipating in terms of addressing the statutory responses. Please follow up in writing after the meeting if you think there is anything that has been missed.	**Provide written confirmation of any additional updates anticipated by the EWG.**	Complete
	<u>Agreement logs (presented by KL)</u> The latest agreement logs were circulated in May and it would be useful if stakeholders could review their positions within those agreement logs and update them now the PEIR has been reviewed. Parallel to that the Applicant and RPS is working through the statutory consultation responses and looking at where we consider agreement has been reached. If stakeholders can provide feedback on agreement logs to date and then following the EWGs, we will circulate the meeting minutes two weeks after the meeting but the agreement logs may be a week or so behind that to incorporate the statutory consultation feedback.	**Stakeholders to provide updated EWG agreement logs to reflect the information provided in the PEIR.**	Complete

	Next Steps (presented by KL) KL noted that meeting minutes are to be circulated 2 weeks following the meeting, with agreement logs circulated after the meeting minutes. Next EWG meeting planned for October 2023.		

Table 1: Marine mammal species densities and reference populations to be included in the Environmental Statement.

Species	***Density to be used in Final ES (animals per km²)***	***Source and justification for use***	***Reference population and source to be used in Final ES***
Harbour porpoise	0.2773	Average density from the maximum composite shapefiles from the **Welsh Marine Atlas (Evans and Waggitt, 2023)** for the updated Mona array area. These values are slightly higher than NRW value provided (0.27357), but this is due to new array area, and are higher than the density estimate for the Mona marine mammal study area - the most precautionary chosen. The Welsh Marine Atlas (Evans and Waggitt, 2023) is available at: 646: Modelled Distributions and Abundance of Cetaceans and Seabirds of Wales and Surrounding Waters (cyfoethnaturiol.cymru) and provides modelled density distributions for those species sufficiently common to model, based upon vessel and aerial sighting data from 1990 to 2020. For PEIR, the density was 0.097 based upon site specific surveys but the Welsh Marine Atlas was requested for use during the EWG and S42 for the ES. ***Change from agreed approach in PEIR.***	Celtic and Irish Sea MU = 62,517 animals (IAMMWG, 2022; 2023)
Bottlenose dolphin	0.00171	Average density from the maximum composite shapefiles from the **Welsh Marine Atlas (Evans and Waggitt, 2023)** for the Mona marine mammal study area, as is higher than the estimate for the updated array area only. For PEIR, the approach was to use a higher coastal buffer zone (0.035), but use of one single density from the Welsh Marine Atlas was requested during the EWG and S42 for the ES. ***Change from agreed approach in PEIR.***	Irish Sea MU = 293 animals (IAMMWG, 2022; 2023)
Short-beaked common dolphin	0.074	Density value for the aerial survey area (updated Mona array area plus 7.06-15.68 km buffer) from Waggitt *et al.* (2020). This value is the most precautionary estimate compared to the Welsh Marine Atlas (0.0006 animals per km²), Lacey *et al.* (2022) density (0.005) and SCANS II Block O Estimate (0.018). For PEIR, the SCANS II density for Block O was used (0.018 animals per km²), in the absence of SCANS III block estimates and agreed with EWG.	Celtic and Greater North Seas MU = 102,656 animals (IAMMWG, 2022; 2023)

Species	Density to be used in Final ES (animals per km²)	Source and justification for use	Reference population and source to be used in Final ES
		<u>Post meeting note:</u> NRW would not recommend the use of density values from Waggitt et al. (2020), given that in the pulication it was stated that: "Because of these caveats, outputs should not be used as a representation of absolute densities and fine-scale distributions at the present time." We would instead recommend the use of densities from the newest version of the Atlas which is based on an updated version of the methodology used in Waggitt et al. (2020) *<u>Post meeting note:</u> RPS note NRW and NE response for short-beaked common dolphin and propose instead to take forward the average density value from the Welsh Marine Mammal Atlas (Evans and Waggitt, 2023) for the Mona array area (**0.0006** animals per km²).* ***<u>Change from agreed approach in PEIR.</u>***	
Risso's dolphin	0.0313	This value from SCANS-III (Hammond *et al.*, 2021) for adjacent Block E is the most precautionary estimate compared to the Welsh Marine Atlas (0.001 animals per km²), and Waggitt *et al.* (2020) (0.001 animals per km²) densities. Risso's not included in maps by Lacey *et al* (2022). For PEIR, SCANS-III (Hammond *et al.*, 2021) for adjacent Block E used, as none observed for Block F and was agreed by EWG. ***<u>No change from agreed approach in PEIR.</u>***	Celtic and Greater North Seas MU = 12,262 animals (IAMMWG, 2022; 2023)
Minke whale	0.0173	This value from SCANS-III (Hammond *et al.*, 2021) for adjacent Block E is the most precautionary estimate compared to the Welsh Marine Atlas (0.006 animals per km²), Waggitt *et al* (2020) (0.007 animals per km²) and is comparable to Lacey *et al.* (2022) density maps which are not Irish sea specific (0.018 animals per km2), with SCANS Blocks widely accepted. For PEIR, SCANS-III (Hammond *et al.*, 2021) for adjacent Block E used, as none observed for Block F and was agreed by EWG. ***<u>No change from agreed approach in PEIR.</u>***	Celtic and Greater North Seas MU = 20,118 animals (IAMMWG, 2022; 2023)
Grey seal	Offshore density 0.037	Density for the aerial survey area (updated Mona array area plus 7.06-15.68 km buffer) from Carter *et al.* (2022). For PEIR, density was also 0.037 animals per km². ***<u>No change from agreed approach in PEIR.</u>***	Two reference populations included: **1) "Grey seal reference population":** Sum of four SMUs (based upon counts in SCOS 2020 with scalar of 0.23 from Russell et al. 2016;): 12 Wales = 3,766, 13 NW England = 1,046, 14 Northern Ireland = 2,113, SW Scotland = 2,163) plus an estimate of 400 from Isle of Man (Howe, 2018)
	Inshore density 0.180	Density for the cable corridor area plus 10 km buffer from Carter *et al.* (2022). For PEIR, density was 0.196 animals per km². ***<u>Change from agreed approach in PEIR.</u>***	

Species	Density to be used in Final ES (animals per km²)	Source and justification for use	Reference population and source to be used in Final ES
			plus East of Ireland (1,749) and Southeast of Ireland (2,326) from Morris and Duck (2019) = 13,563 grey seal. *Post meeting note:* *These estimates have been updated using an updated scalar from SCOS (2021). Sum of four SMUs (based upon counts in SCOS 2020 with updated scalar of 25.15 from SCOS 2021): 12 Wales = 3,579, 13 NW England = 994, 14 Northern Ireland = 2008, SW Scotland = 2,056) plus an estimate of 400 from Isle of Man (Howe, 2018) plus East of Ireland (1,662) and Southeast of Ireland (2,211) from Morris and Duck (2019) = 12,909 grey seal.* **2) OSPAR Region III estimate** = 60,780 from OSPAR QSR report for 2023
Harbour seal	Offshore density 0.0002	Density for the aerial survey area (updated Mona array area plus 7.06-15.68 km buffer) from Carter *et al.* (2022). For PEIR, density was also 0.0002 animals per km². ***No change from agreed approach in PEIR.***	Sum of the Wales (13), Northern Ireland (1,405) and Northwest England MU (6) latest population estimates per SMU in SCOS (2021) = 1,424 harbour seal.
	Inshore density 0.001	Density for the cable corridor area plus 10 km buffer from Carter *et al.* (2022). For PEIR, density was also 0.001 animals per km². ***No change from agreed approach in PEIR.***	

C.6.2 Response from JNCC regarding the meeting minutes

JNCC responses to actions raised in EWG05

1. EWG to provide their feedback on the approach to the CEA for Morgan Generation (27th July 2023) > As this action relates to Morgan only, JNCC defer to Natural England in the matter.

2. EWG to provide updated EWG agreement logs to reflect the information provided in the PEIR. (14th July 2023) > Completed (19 July).

3. EWG to provide written confirmation of any additional updates that were expected by the EWG. (27th July 2023) > JNCC have no comments to make on this.

4. EWG to feedback on whether they can agree to one density across the whole study area for bottlenose dolphin and if using densities from the Welsh Marine Atlas is appropriate. (27th July 2023) > JNCC defers to Natural Resources Wales on this point.

5. EWG to review the table of species densities and confirm agreement or provide feedback. (27th July 2023) > JNCC are happy with the densities for the specified marine mammal species, on the basis that they are either the most site-specific, or the most precautionary densities available.

6. EWG to confirm agreement or feedback on the approach to use average density (which accounts for group size) across all cells for the study area for assessment of UXO clearance. (27th July 2023) > JNCC agrees with the approach to use average density across all cells for the study area, multiplied by the area of effect to give the number of animals impacted.

7. EWG to provide any further advice on how they would like to see the assessment of disturbance from vessels. (27th July 2023) > JNCC have no feedback to offer on this point.

8. EWG to confirm if there are any other projects they would like to see considered for the CEA/in-combination assessments. (27th July 2023) > JNCC recommend the consented (but not yet constructed) Awel y Môr offshore wind farm is also included in the CEA/in-combination assessments.

9. EWG to confirm or feedback on approach to include consider the Irish Sea management unit for bottlenose dolphin cumulative assessment. (27th July 2023) > we defer to NRW on this point.

10. EWG to provide advice on the sensitivity scores to be used for PTS. (27th July 2023) > This is currently scored as high for all marine mammal receptors. As a minimum, we would recommend that the sensitivity remains as high for harbour porpoises, given their sensitivity to impulsive noise and the potential for cumulative exposure. However, given the irreversibility of PTS, plus the fact that all cetaceans in UK waters rely on sound to some degree for survival, we would recommend that the scores remain as high for all species.

11. EWG to confirm agreement or provide feedback on approach to use the OSAPR region III and the combined populations for the grey seal reference population. (27th July 2023) > We defer to NRW on this point.

12. Isle of Man to confirm the estimate of 400 seals for Manx population is suitable. (27th July 2023) > N/A for JNCC.

13. Isle of Man gov to confirm what further details they would like to see for Risso's dolphin. (27th July 2023) > N/A for JNCC.

14. Isle of Man gov to confirm content with approach to bottlenose dolphin assessment. (27th July 2023) > N/A for JNCC.

15. NRW to provide a response to the proposed modelling approach regarding ADDs. (27th July 2023) > N/A for JNCC.

16. JNCC to feedback on the inclusion of the UXO activities in the DCO consent rather than a separate marine licence. (27th July 2023) > As with the advice provided by Natural England in their best practice guidance documents, JNCC recommend that a separate Marine Licence is applied for post consent, rather than including UXO clearance as a licensed activity in the DCO/deemed marine license. Submitted a separate licence application following the investigative surveys of potential UXOs enables a more realistic scenario to be assessed and proportional mitigation applied. It is beneficial to include a highlight level assessment in the environmental statement (e.g. can be a qualitative assessment) to demonstrate impacts can be mitigated however too little is known at the pre-consent stage to enable a realistic assessment of risk.

17. RPS to circulate the Offshore Ornithology slides to stakeholders prior to EWG meeting (complete) > N/A for JNCC.

C.6.3 Response from NRW regarding the meeting minutes

Projects Mona & Morgan Marine Mammal EWG05 NRW Response

[redacted]
Senior Marine Advisor

27th July 2023

Introduction

This advice is provided in response to the Meeting Actions from the **fifth Mona and Morgan Marine Mammal Expert Working Group (EWG05), which took place on 29th June 2023**.

NRW advice in this document is provided (under a Discretionary Advice Service agreement) in respect of a proposal which will require an application for which Natural Resources Wales is a Statutory Consultee.

The customer acknowledges that the content of any advice or assistance provided by NRW is advisory only and that it shall not be deemed to bind or in any other way restrict NRW in performing its statutory functions.

The recipient acknowledges that:

- any advice given or materials or documentation provided by NRW do not constrain or bind NRW in respect of its statutory functions or its role as a statutory consultee or any decision NRW may make in relation to any application for a licence or permit;
- any advice given by NRW does not bind NRW in respect of any future representations it may make as statutory consultee or any decision NRW may make in relation to any application for a licence or permit;
- any views or opinions expressed by NRW are without prejudice to the consideration NRW may be required to give to any application or any future representations as statutory consultee or any decision NRW may make in relation to any application for a licence or permit;
- the final decision as to any representations made by NRW as statutory consultee will be based on all the relevant information available to NRW at the time it makes such representations;
- NRW cannot and does not give any guarantee as to the representations it may make as statutory consultee; and,
- any advice given by NRW may be overtaken by changes in available information, law, policy and guidance relevant to the subject matter of the advice.

Advisors Consulted:
Marine Mammals

Actions

- **EWG to provide their feedback on the approach to the CEA for Mona and Morgan Generation**

  NRW Advisory (A) do not agree with the approach outlined for screening cumulative impacts for site investigation surveys for marine mammals. Given that the scope of a cumulative assessment is to assess the impact of multiple projects on the same population, screening ranges should be based on population boundaries, and thus cannot be described as 'arbitrary' (as per S42 response in the EWG05 Meeting Minutes). Due to animals from a given population moving around over wide areas, for an accurate assessment setting, both the temporal range and the correct population boundary (by using an appropriate screening distance) are required.

  Since 2015 the agreed population boundaries for cetaceans have been the Management Units (MU – IAMMWG 2015) as these adequately capture the known ranges of these species given their highly mobile nature and functional linkage to areas outside of the SAC boundaries (NRW, 2022). In a previous EWG (EWG02), following a suggestion by the developer, NRW (A) agreed that the use of the Celtic and Irish sea MU would be a pragmatic screening distance for all cetacean species with very large MUs such as Minke whale and dolphin species other than Bottlenose dolphin (BND). For these species, unlike e.g. Harbour Porpoise (HP) and BND, there is much more uncertainty over the exact population boundaries or the existence of smaller sub-populations, which means that their current MUs are (likely disproportionately) large and therefore using a smaller boundary would be pragmatic in this case.

  Here, it is being suggested that a smaller screening area based on the impact radius is used, citing reasons of pragmatism / proportion. However, no justification or evidence has been presented that such an impact radius would adequately represent the population boundaries and therefore it is unclear how the use of an impact radius as a screening distance would be more proportionate. If too small a screening radius is selected, there is a risk of excluding projects which impact the same population and therefore a risk of underestimating the cumulative impact.

- **EWG to provide written confirmation of any additional updates that were expected by the EWG.**

  No further additional updates expected other than addressing comments already provided in our PEIR response.

- **EWG to feedback on whether they can agree to one density across the whole study area for bottlenose dolphin and if using densities from the Welsh Marine Atlas is appropriate.**

  NRW (A) recommend the use of densities from the Welsh Marine Mammal Atlas. As previously mentioned, the Atlas links 30 years of sightings and effort data with a number of other environmental parameters.

- **EWG to review the table of species densities and confirm agreement or provide feedback.**

  For short-beaked common dolphin NRW (A) do not recommend the use of density values from Waggitt et al., (2020), given that in the publication it was stated that: *"Because of these caveats, outputs should not be used as a representation of absolute densities and fine-scale distributions at the present time."* NRW (A) recommend the use of densities from the newest version of the Atlas instead, which is based on an updated version of the methodology used in Waggitt et al., (2020).

  NRW (A) agree with the remaining species densities and reference populations provided in *Table 1: Marine mammal species densities and reference populations to be included in the Environmental Statement*, appended to the draft Meeting Minutes received via email on 13th July 2023 (16:35).

- **EWG to confirm agreement or feedback on the approach to use average density (which accounts for group size) across all cells for the study area for assessment of UXO clearance.**

  NRW (A) is in agreement with NE over taking group size into account. While this does not necessarily need to be included quantitatively as part of the assessment, it is a point which should be acknowledged qualitatively in the text of any upcoming drafts of the assessment, and in particular in any draft mitigation plans.

- **EWG to provide any further advice on how they would like to see the assessment of disturbance from vessels.**

  In our PEIR comments, NRW (A) provided an example of how this could be done, referring to the Wylfa assessment which considered disturbance based on the travel paths of vessels used by the project. This is by no means prescriptive and other approaches can be taken.

  NRW (A) advise against basing assessment conclusions on assumptions that marine mammals are anticipated to demonstrate some degree of habituation to sound from vessels, as this may overlook the extent of a potential impact pathway. Whilst it is reasonably likely that boat noise as a stressor is tolerated by marine mammals, absence of displacement is not evidence of absence of all detrimental consequences to animals. Responses may be physiological which are harder to detect, and animals may react by reducing foraging which leads to energy intake costs (e.g. harbour porpoise, see Rojano-

Donate et al., (2023) - presented at Oceanoise 2023), or making deeper dives increasing swimming effort, and ceasing echolocation and foraging for several minutes (Wisniewska et al., 2018). Thus the presence of vessels almost certainly has an energetic cost to harbour porpoise. Similar / related findings were made by e.g. Pirotta et al., (2013, 2015), Dyndo et al., (2015), Oakley et al., (2017), Marley et al., (2017a, 2017b). Other arguments such as, '*the increase in number of vessels will be small when compared to the baseline shipping traffic'*, should ideally also be quantified.

In future, ideally, direct measures of the associated energetic costs of exposure would be available for Population Consequence of Disturbance (PCoD) models, to link disturbance parameters to fitness and population dynamics, however work on this is still ongoing.

- **EWG to confirm if there are any other projects they would like to see considered for the CEA/in-combination assessments.**

  NRW (A) have no further additions to the comments already provided in our PEIR response.

- **EWG to confirm or feedback on approach to include consider the Irish Sea management unit for bottlenose dolphin cumulative assessment.**

  NRW (A) have no further comments in addition to those already provided in our PEIR response. As mentioned, the two populations of bottlenose dolphins (Irish Sea MU, and Offshore Channel and Southwest England MU) will need to be assessed separately (or alternatively only assess the Irish Sea MU population) as there is no evidence to support the presence of a unified population composed of both MU populations. In line with NRW's position statement on using MUs as screening distances (PS0006 MMMUs in HRA Position statement May22 (naturalresources.wales)), only projects within the Irish Sea MU will need screening in for the purpose of the CEA/in-combination assessment. NRW (A) therefore have no concerns with scoping out project Erebus for the cumulative assessment, particularly given that their assessment focused on quantifying impacts to the Offshore MU.

- **EWG to provide advice on the sensitivity scores to be used for PTS.**

  Following agreement with NE, NRW (A) recommend maintaining a sensitivity score of high for all species, and a magnitude of medium.

- **EWG to confirm agreement or provide feedback on approach to use the OSPAR region III and the combined populations for the grey seal reference population.**

- As discussed in a previous EWG (EWG03, November 2022) and as advised in previous comments, NRW (A) recommend using both approaches in parallel.

  There is some disagreement about the appropriateness of the boundaries of the SMUs – which only extend to UK waters – especially in SW Britain where photo-ID data and recent

telemetry studies demonstrate movements of seals not only around the Irish Sea, but also encompassing Southwest England, Northwest France and Ireland (Vincent et al. 2017, Russell et al. 2019, Carter et al. 2020, Langley et al. 2020, Luck et al. 2020). As outlined in our position statement, NRW utilise the OSPAR Region III area (west coast of UK + Ireland) as an interim MU for the species (NRW, 2022).

That said, the use of the combined SMU populations in parallel would be beneficial. During EWG 03, NE proposed that the combined SMU population be retained so as to avoid local impacts on seal haul out sites being overlooked, whilst also considering the connectivity of the wider population. NE also suggested using Hornsea Project Four as an example of how to consider local grey seal haul out sites qualitatively. If there is enough information, then a high-level qualitative assessment can be done on these populations i.e. qualitative assessment of movements from key haul-out sites to the project area. NRW (A) agree with and support this approach.

Finally, in our PEIR comments, NRW (A) mentioned that when screening in projects if a smaller area is proposed (other than OSPAR III) for grey seal and justified, NRW (A) would not anticipate ruling it out. This is in reference to previous correspondence between NRW (A) and RPS on population numbers and population parameters to be used for IPCoD modelling. NRW presently utilise the large OSPAR Region III area (west coast of UK + Ireland) as an interim MU for the species – this MU was used in recent marine development applications and is the basis for reporting under OSPAR and MSFD. While we would still advise the use of OSPAR III for screening, we are conscious that a large MU could be somewhat un-pragmatic. To this end, alternatives such as (1) the maximum foraging range of 448 km (Carter et al., 2022); (2) ICES divisions 7a,e,f,g,h; or (3) ICES divisions 7a,b,e,f,g,h,j would still be acceptable as screening distances.

- **NRW to provide a response to the proposed modelling approach regarding ADDs.**

  Following further discussion and agreement with NE, NRW (A) recommend modelling the impact ranges without ADDs in parallel.

C.6.4 Response from Natural England regarding the meeting minutes

Date: 27 July 2023
Our ref: DAS/UDS A009203 434568
Your ref: Morgan and Mona Marine Mammal EWG05 29th June 2023

[redacted]
RPS/ Energy
Goldvale House
27-41 Church Street West
Woking
Surrey
GU21 6DH

cc [redacted]
RPS

Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire
CW1 6GJ

[redacted]

BY EMAIL ONLY

Dear [redacted]

Discretionary Advice Service (Charged Advice): UDS A009203
Development proposal: Morgan Generation and Mona Offshore Windfarm
Consultation: Morgan and Mona Marine Mammal EWG05

This advice is being provided as part of Natural England's Discretionary Advice Service (DAS) in accordance with the Quotation and Agreement dated 23rd May 2023 to Morgan Offshore Wind Limited & Mona Offshore Wind Limited.

The following advice forms Natural England's response to the meeting minutes provided for the Morgan and Mona Marine Mammal EWG05 attended by Natural England on 29th June 2023.

Natural England were asked to provide feedback on the following:

- The approach to CEA for Morgan Generation
- Bottlenose dolphin density and use of Welsh Atlas
- Species densities table
- The approach to use average density (which accounts for group size) across all cells for the study area for assessment of UXO clearance
- Approach to bottlenose dolphin cumulative assessment
- Sensitivity scores to be used for PTS
- Use of the OSAPR region III and the combined populations for the grey seal reference population.

Detailed comments

Approach to CEA for Morgan Generation

Natural England provided comments on CEA in PEIR where we recommended application of the tiered approach for cumulative assessment as outlined in the Best Practice Guidelines Phase III. Further to this, we are not able to agree at this point on CEA approach as our comments need to be addressed for the project on its own before we could consider cumulative assessment. In terms of IPOCD modelling, we support NRW advice that a 6 year modelling period is more suitable than 25

years.

Bottlenose dolphin density and use of Welsh Atlas

Natural England agrees with the use of the one density across the whole study area for bottlenose dolphin referencing the Welsh Marine Mammal Atlas. As the Welsh Marine Mammal Atlas is the latest and most relevant evidence for densities in the project area, Natural England agrees to its use going forward unless new evidence (e.g. two years of site specific surveys or SCAN IV) reveals higher densities.

Species densities table

Natural England advice on species densities is outlined in the Best Practice Guidelines Phase III: *"The most precautionary density estimate (i.e. highest) should then be selected for use within the assessment. If a density estimate is selected which is not the highest, robust evidence is required to justify why it is the most appropriate option."*
We agree that the Welsh Marine Mammal Atlas represents the robust evidence in certain instances such as in the case of harbour porpoise and bottlenose dolphins. However, we are not able to agree on the approach to all species before seeing the final densities obtained from the two years of site specific surveys.
We note that densities from Waggitt *et al.* 2019 are proposed for short-beaked common dolphin. We query this decision as the author of the paper does not advise that their maps are used in this way: *"Because of these caveats, outputs should not be used as a representation of absolute densities and fine-scale distributions at the present time. Instead, it is recommended that outputs be used as a general illustration of relative densities and broad-scale distribution over several decades".* Thus ,Natural England do not agree that this is the relevant reference for the short-beaked common dolphin density.

The approach to use average density (which accounts for group size) across all cells for the study area for assessment of UXO clearance

Natural England acknowledges that the standard methodology has been used to calculate the number of animals that could be potentially impacted within the relevant PTS/TTS zones. This approach works well for species such as seals or harbour porpoise, but it is not ecologically relevant for social, gregarious species such as bottlenose dolphin, Risso's dolphin or short-beaked common dolphin when it comes to mitigation. Considering that these animals predominantly occur in groups larger than 1, then more than 1 animal could be potentially injured or disturbed within the impact zone in a 'real life' setting. This then makes the previous calculations incorrect and it does not constitute the most precautionary approach. Thus, this needs to be acknowledged and taken into account when selecting appropriate mitigation measures. Natural England is content for this to be acknowledged in the same paragraph following the calculations based on the standard approach for these species. NB, this comment is relevant for other activities not only UXO clearance. We are happy to discuss this further at future EWGs.

Approach to bottlenose dolphin cumulative assessment

Natural England is content with the proposed approach to consider the Irish Sea management unit for bottlenose dolphin cumulative assessment.

Sensitivity scores to be used for PTS

In this instance, Natural England, in line with NRW, advise that sensitivity of the receptors should be scored 'High' while the appropriate score for magnitude should be 'Medium'.

Use of the OSAPR region III and the combined populations for the grey seal reference population

As agreed during the previous EWG, Natural England do not have objections on presenting OSPAR

region III alongside MUs for comparison. We advise that then more precautionary one should be taken further to the assessment.

For clarification of any points in this letter, please contact me using the details provided below.

Yours sincerely,

[redacted]
Marine and Coastal Lead Adviser
Coast and Marine Team
Cheshire to Lancashire Area Team
[redacted]

☒ The advice provided in this letter has been through Natural England's Quality Assurance process

The advice provided within the Discretionary Advice Service is the professional advice of the Natural England adviser named below. It is the best advice that can be given based on the information provided so far. Its quality and detail is dependent upon the quality and depth of the information which has been provided. It does not constitute a statutory response or decision, which will be made by Natural England acting corporately in its role as statutory consultee to the competent authority after an application has been submitted. The advice given is therefore not binding in any way and is provided without prejudice to the consideration of any statutory consultation response or decision which may be made by Natural England in due course. The final judgement on any proposals by Natural England is reserved until an application is made and will be made on the information then available, including any modifications to the proposal made after receipt of discretionary advice. All pre-application advice is subject to review and revision in the light of changes in relevant considerations, including changes in relation to the facts, scientific knowledge/evidence, policy, guidance or law. Natural England will not accept any liability for the accuracy, adequacy or completeness of, nor will any express or implied warranty be given for, the advice. This exclusion does not extend to any fraudulent misrepresentation made by or on behalf of Natural England.

Cc [redacted]

Annex 1
European Protected Species

A licence is required in order to carry out any works that involve certain activities such as capturing the animals, disturbance, or damaging or destroying their resting or breeding places. Note that damage or destruction of a breeding site or resting place is an absolute offence and unless the offences can be avoided (e.g. by timing the works appropriately), it should be licensed. In the first instance it is for the developer to decide whether a species licence will be needed. The developer may need to engage specialist advice in making this decision. A licence may be needed to carry out mitigation work as well as for impacts directly connected with a development. Further information can be found in Natural England's 'How to get a licence' publication.

If the application requires planning permission, it is for the local planning authority to consider whether the permission would offend against Article 12(1) of the Habitats Directive, and if so, whether the application would be likely to receive a licence. This should be based on the advice Natural England provides at formal consultation on the likely impacts on favourable conservation status and Natural England's guidance on how the three tests (no alternative solutions, imperative reasons of overriding public interest and maintenance of favourable conservation status) are applied when considering licence applications.

Natural England's pre-submission Screening Service can screen application drafts prior to formal submission, whether or not the relevant planning permission is already in place. Screening will help applicants by making an assessment of whether the draft application is likely to meet licensing requirements, and, if necessary, provide specific guidance on how to address any shortfalls. The advice should help developers and ecological consultants to better manage the risks or costs they may face in having to wait until the formal submission stage after planning permission is secured, or in responding to requests for further information following an initial formal application.

The service will be available for new applications, resubmissions or modifications – depending on customer requirements. More information can be found on Natural England's website.

C.6.5 Response from Cefas regarding the meeting minutes

From: [redacted]
Sent: 17 August 2023 10:43
To: [redacted]
Cc:
Subject: RE: Morgan Generation & Mona fifth marine mammal EWG meeting

CAUTION: This email originated from outside of RPS.

Hi [redacted]

Apologies for the delay in responding – this email got lost!

Please see comments from CEFAS Underwater Noise Team: "I largely defer to Natural England and SNCBs this time, as the meeting primarily focused on the comments received from Natural England and NRW.

I did follow up with [redacted] after the meeting, as we (Cefas) had a number of comments on the PEIR that were mostly in relation to the underwater noise modelling report, which I assume will be addressed at ES. However, given the project updates to remove the monopile foundations, I expect that the (noise) assessment will be revised anyway. [redacted] did confirm that RPS are revising the underwater noise modelling based on the updated piling parameters/PDE. The reason RPS didn't raise anything in particular in the EWG was because their noise specialists did not have anything they felt they needed to raise in the meeting. [redacted] did say that they will check in with them and confirm if there are any clarifications they would need to get in writing; but otherwise, they are looking to incorporate Cefas comments and feedback into the final ES."

The MMO have also reviewed the minutes and are content that they summarise the meeting.

Many thanks

[redacted] (Hons), MSc I Marine Licensing Case Officer I PCS London & South East Branch Representative | His Majesty's Government – Marine Management Organisation.
Direct Line: [redacted] I Mobile: [redacted] I Email: [redacted] I Lynx House, 1 Northern Road, Cosham, Portsmouth, PO6 3XB
Website Twitter Facebook Linkedin Blog Instagram Flickr YouTube Google+ Pinterest

My pronouns are she/her

I'm a PCS Member. If you aren't a member you can join here https://www.pcs.org.uk/get-involved/why-join-pcs

Our MMO Values: Together we are **Accountable, Innovative**, **Engaging** and **Inclusive**

Enabling sustainable growth in our marine area

The MMO 'call for evidence - MMO assessment of fishing impacts in marine protected areas - Stage 2' is now open. To respond please go to Citizen Space: https://consult.defra.gov.uk/mmo/call-for-evidence-stage-2/

- JNCC to feedback on the inclusion of the UXO activities in the DCO consent rather than a separate marine licence. (27th July 2023)
- RPS to circulate the Offshore Ornithology slides to stakeholders prior to EWG meeting (complete)

Please can you provide feedback on these minutes via tracked changes by **27th July 2023**. If after this date we have received no comments, the minutes will be assumed to be accepted.

Kind Regards,

[redacted]
Senior Marine Consultant
RPS | Energy
Goldvale House
27-41 Church Street West
Woking, Surrey GU21 6DH, United Kingdom
[redacted]
Digital Business Card

C.6.6 Minutes from the Isle of Man marine mammals meeting

MINUTES OF MEETING

Security Classification:
Project External

Partners in UK offshore wind

MOM Number	:	20230803_Morgan and Mona MM	**REV. No.**	:	F02
MOM Subject	:	Morgan and Mona Evidence Plan marine mammals IoM meeting			

MINUTES OF MEETING

MEETING DATE	:	03/08/23
MEETING LOCATION	:	Microsoft Teams
RECORDED BY	:	[redacted] (RPS)
ISSUED BY	:	[redacted] (RPS)

PERSONS PRESENT:

- [redacted] – bp (SR)
- [redacted] – bp (MP)
- [redacted] – RPS (KL)
- [redacted] – RPS (ST)
- [redacted] – RPS (BP)
- [redacted] – RPS (TMc)
- [redacted] – MWT (LH)
- [redacted] – MWDW (BM)
- [redacted] – IoM (PD)

ITEM NO:	DISCUSSION ITEM:	Responsible party	Date
1.	**Project updates (presented by MP)** Statutory consultation on the Mona and Morgan Generation PEIRs ended on 4th June. The Applicant appreciates all the feedback; we are currently reviewing all the responses and how they can be addressed. From the statutory consultation feedback and parallel activities, the Applicant has been considering a number of project updates. There are several updates to the project description envelope that are expected to be included in the application. The Applicant is looking to reduce the Mona Array Area and the Morgan Generation Array Area. They are expected to be reduced from what was presented in PEIR and lie wholly within the array areas presented in the PEIR. The Mona Array Area is anticipated to be reduced by approximately 33% and lie wholly within Welsh offshore waters. The Morgan Array Area is anticipated to be reduced by approximately 10%. The primary driver for these reductions is shipping and navigation, specifically ensure safety of navigation. The need for changes for the project design envelope has been highlighted through engagement with a number of the ferry companies in the Irish Sea. The reductions have also been driven through consultation with aviation and other sea users receptors.		

	The layout principles for both Mona and Morgan Generation are expected to be updated to increase the spacing requirements between offshore structures, the specific updates will be communicated in due course. These updates are to address concerns from commercial fisheries. The Applicant is anticipating that monopile foundations will be removed from the project design envelope. The foundations options remaining will be gravity base or jackets (which may be pin piled or suction bucket foundations). This is being driven by the ground conditions. The Applicant expect there to be a mixed foundation solution taken forward to the application, likely to be a mix of jacket and gravity base foundations. The smallest wind turbine option is being removed from the project design envelope due to feedback from the supply chain that this turbine option will not be available at the time of construction. The rotor diameter will therefore also increase from 280m to 320m and this is also based on feedback from the supply chain on the parameters for the wind turbines that will be available at the time of construction.		
2.	**<u>Actions from the last EWG (presented by BP)</u>** RPS sent DEFA, IoM Government a list of data sources currently being used in the PEIR. DEFA, IoM were to check list of data sources in PEIR and provide any further data sources if required. IoM government did not identify any additional data sources in their response to statuary consultation. We wanted to check that there were no additional data that the IoM government would like to see included. LH- There may be an updated annual report from the Calf of Man. This is unlikely to be different for what you have already seen previously. KL- Have you had a look at the PEIR? LH- No we haven't had a chance to read the PEIR. PD sent over the specific questions for this meeting. *Post meeting note: Further to the recent meetings and communications between MWT, MWDW, IoM Gov. and RPS, The Isle of Man Government is content that the most recent and relevant data sources have been provided. It is understood that 4 years of data has been collected, but the usual, most recent two years is likely to be used for the EIA process.* *Post meeting note: The Applicant would like to clarify that 24months of site-specific digital aerial survey data has been collected and these will all be included in the consideration of the species-specific densities to take forward to the EIA.* **<u>Section 42 responses - overarching (presented by KL)</u>** The IoM offshore windfarm is in the early stage of the planning process and we expect the scoping report to be published in the	**RPS to send over the list of data sources to be used in the assessment** **IoM to provide feedback on the data sources used for the assessment**	Complete Complete

	autumn. We will incorporate the information in the public domain into the cumulative and in-combination assessment for Mona and Morgan Generation, in line with the Tiered approach. LH- Orsted have undertaken four years of data collection in Manx waters so they should have information available within 3-12nm zone from the coast of the IoM. KL- bp are in discussions with Orsted regarding data and information sharing. When this information is in the public domain and we have access to it then we will include the information in the assessments where possible. Mona and Morgan Generation have both completed 24 months of digital aerial surveys to provide site specific data. However, this will be put into the context of the wider baseline from other desktop data sources, including sources from Isle of Man and other wind farms in the Irish Sea. There were a few comments on the site specific data available to be included in the PEIR. The benthic data for the Mona Offshore Cable Corridor and the zone of influence for the Mona and Morgan Array Areas will be presented in the July benthic, fish and shellfish and physical processes EWG. For marine mammals and offshore ornithology, the 24 months of survey data for Morgan Generation will be presented and discussed in the October EWG meetings for those topics. Natural England provided comments on the Morgan Generation and the Morgan and Morecambe Offshore Wind Farms: Transmission Assets (Transmission Assets) applications to ensure that a whole project assessment is undertaken (i.e. Combined Transmission and Generation assessment). For Morgan Generation, we will be undertaken a whole project assessment within the cumulative effects assessment (CEA). The Transmission Assets will be included within the CEA as a separate section so it clearly presents the impact of the Morgan Offshore Wind Project as a whole project. We can only base the CEA on information in the public domain. These projects are subject to separate consent applications so there will always be difficulty regarding what information is available at the time of application. However, that is why the tiered approach to CEA was developed and adopted and we feel the approach set out in the slides adequately addresses the concerns raised.		
3.	**<u>Section 42 responses – marine mammals (presented by BP)</u>** S42 Response: The Isle of Man government responded to request specific evidence of the consideration of Risso's dolphins. We have included Risso's in the detailed quantitative assessment – can the IoM clarify further detail they would like? We have considered Risso's equally with the other key species. BM- If you have included Risso's in the key species and they are considered fully then we don't have any further comments. PD may have had something specific in relation to this. Action for Peter to feedback on this.	**Isle of Man gov to confirm what further details they would like to see for**	Complete

	PD- We need to see that the IoM has been fully considered. Risso's should be included in the baseline even if not sighted during the surveys. If the MWDW has been consulted and they are content with the information provided then the IoM gov is content. BM- The MWDW have photo ID of Risso's dolphins that show connectivity between the Isle of Man and Cornwall. Risso's are not in Manx waters in winter but they are present in the summer months and movement is up and down the Irish Sea. PD- One of the specific issues was ensuring that you have all the appropriate data for Risso's dolphins in Manx waters e.g. the effort data that goes with the counts data. MWDW have effort data that can be provided. Also, the modelling of the sensitivity of species to underwater sound covers a range of species and range of frequencies. Bottlenose dolphins were included but we need to see that Risso's have also been taken into account in the noise assessment. TMc – We can add further detail in the report that bottlenose dolphin and Risso's are both high frequency cetaceans and so would have been considered together. We can make this more clear in the reports. KL- For all the species, we will look to ensure there is specific reference to the populations associated with the Manx waters so it's really clear to the Isle of Man gov where we have considered the species within IoM waters. We want to make things as clear as possible for all our stakeholders, noting the different priorities/approaches in different jurisdictions. Post meeting note: Further to the recent meetings and communications between MWT, MWDW, IoM Gov. and RPS, and noting the comments from MWDW, the Isle of Man Government is content that Risso's dolphin have been adequately included in the assessment. This approach is noted and accepted by IoM Government. S42 Response: The Isle of Man have suggested a restricted baseline by using a single reference and excluding the IoM from the SMRU report. We have used the Carter *et al* (2022) maps to cover the IoM and these are the densities we have taken forward to the assessment. SMRU does not hold any further data in relation to the IoM. The SMRU data is an additional data source rather than the only data source that has been used in the assessment. We will include further reference to the data that we have used. LH- Through photo ID work and satellite tagging we know that we have overlap of the Manx population of grey seals with the Cornwall, Strangford Loch and Dee Estuary populations. SMRU have been in contact for tagging data at the Dee Estuary and one seal from the study was recorded at the Calf of Man. Bearing in mind the barrier effects for movements would be important. BP- Is that photo ID study publicly available?	**Risso's dolphin** **MWT to confirm the applicant can use these minutes for a 'personal comms' reference to explain connectivity of grey seals around the IoM**	Complete

	LH- It was more a discussion with SMRU rather than a published report. We can send an email explaining this through to you. KL- Even a personal comms reference would be really useful to give a good idea of how seals are using the data. LH- The MWT data is very limited and very local (only referring to the number of seals in Manx waters) so there could be high variability. It just needs to be clear that you have used the best data available. BP- We have used a value of 400 seals for the size of the Isle of Man seal management unit. This was taken from the Manx Environmental Assessment. Are you happy with 400 grey seals for the IoM. LH- This sounds about right. The 2017 seal report estimated 365 grey seal. The female catalogue from the seal reports from the Calf stands at over 400 but they won't be there all the time. TMc- When the MWT are responding can you provide some personal communication on the grey seal population size. *Post meeting note: Comments noted, and IoM Government is content with MWT comments and that these responses and actions will provide the appropriate consideration of grey seals in Manx waters.* S42 Response: The Isle of Man Government responded to highlight that the Cardigan Bay and Manx winter population of bottlenose dolphins on the east coast are believed to be the same group based on Photo ID data. This should be acknowledged, and yet there is no specific assessment of the Manx population in this section. RPS specifically referenced this movement of individuals in impact assessment, and the assessment captures this. We can add further detail on impacts on bottlenose within Manx waters but providing a specific Manx assessment does not support suggestion they are the same dolphin population. Can the IoM confirm they are happy with this approach? BM- This makes sense. We don't know where all the dolphins come from. We know that some in Manx waters are from Cardigan Bay but we have also recorded dolphins that are not from Cardigan Bay so there is evidence that the populations are mixing. It is worth acknowledging that summer dolphins in Cardigan Bay may be subject to impacts in Manx waters. PD- If BM confirms they are comfortable with the approach to PD then IoM can confirm that they have consulted with the MWDW and are content with the project approach. The main concern was to ensure that the lifecycle component should be considered properly. The population should be considered a whole population and their seasonality. *Post meeting note: Further to the recent meetings and communications between MWT, MWDW, IoM Gov. and RPS, and noting the comments from MWDW, the Isle of Man Government is content that bottlenose dolphin have been adequately included in the assessment.*	**Isle of Man to confirm the estimate of 400 seals for Manx population is suitable.** **Isle of Man gov to confirm content with approach to bottlenose dolphin assessment?**	Complete Complete

4.	**<u>Update to assessment (presented by BP)</u>** This section presented a summary of the proposed updates to the assessment. We will add unweighted noise threshold of 143 dB re 1µPa ^{2}s (or 103 dB re 1µPa VHF-weighted) to represent the minimum fixed noise threshold at which significant disturbance could occur for ES, alongside the EDR. PD- Does this approach relate to the Cumulative assessment? KL- The thresholds are used to inform the overlap between the SAC and the noise contours for the project. This threshold is specifically for the harbour porpoise SAC. You look at specific thresholds and add in the ranges for the other cumulative projects that may be piling at the same time. You then look at this against the conservation objectives of the designated site. PD- As the IoM designated sites are not under the habitats regulations does that mean they are not applicable to this. TMc- It is not that we don't consider sites or features in Manx waters, it is that they are fully assessed in the EIA, rather than the HRA, which is specific to European sites so not relevant to the Isle of Man. PD- Are these thresholds the basic standards that you would use to assess impacts on features of all SACs. TMc- The EDR threshold is used for harbour porpoise SAC and the unweighted noise threshold of 143 dB re 1µPa ^{2}s is also developed for harbour porpoise. There isn't a threshold available for every species due to insufficient data but we could potentially consider using the unweighted noise threshold as a precautionary threshold for other species. We will add in seal count data from Walney Island, which has been provided by The Wildlife Trust. We will add in the additional year of aerial survey data for the Morgan Offshore Wind Project. We will include additional new data sources where applicable: • Welsh Marine Mammal Atlas (Waggitt and Evans, 2023) • New SCANS III density estimates from Lacey *et al.* (2022) • Update to latest SCOS (2021) estimates.		

C.6.7 Response from The Manx Wildlife Trust regarding the meeting minutes

From: [redacted]
To: [redacted]
Cc: [redacted]
Subject: Mona and Morgan OWF additional seal comments
Date: 04 August 2023 10:59:24
Attachments: image001.png
Seal tagging St Andrew"s Uni 887.jpg
Seal tagging St Andrew"s Uni 712.jpg
Seal tagging St Andrew"s Uni All.jpg
D182_TRACK.png

Hi All

As discussed in the meeting, below is some additional information that may be useful for the marine mammal section, specifically around Manx seals.

Historic data (before I started at MWT, so at least 9.5 years ago)
SMRU/St Andrews Uni satellite tagged a number of seals in Strangford Lough and two of them travelled to the Isle of Man. One visited several times and headed to the Sound, the area between the Isle of Man and the Calf of Man. The other individual travelled north around the point of Ayre, north of Ramsey Bay. I have included 3 screen shots that I have. They are not my data and I'm unsure where they came from so please do not sue them within your final documents.

SMRU/St Andrews sent us some photos of satellite tagged seals in 2019 but I think they were tagged in 2017 from the Dee Estuary area and one of the seals did make it to the Calf of Man during breeding season. The track is attached. Again please don't use this image as its not mine but it looks like it certainly passed through the wind farms general area. The contact was Matt Carter and Debbie Russell at St Andrews, should you require more information.

Through are photo ID work on the Calf of Man we have matched one seal (Tulip Belle) with the Cornwall Seal Group Research Trust. She has been moving between the Calf and Cornwall for several years and has bred on the Calf. The contact at Cornwall is Sue Sayer. She generates a spreadsheet of where and when they are seen and that might provide useful for you. We have had another match only this week with another seal from Cornwall that was in Manx waters (near Fleshwick, north of Port Erin) and it was confirmed by its flipper tag and obvious scar on its side.
So "our" seals are very mobile within the Irish and Celtic seas.

Seal numbers in Manx waters
Just to confirm seal numbers around the Island. Our Island wide survey in 2017 counted 365 seals but was a one off snap shot during October and November. The work in 2007 by Manx BirdAtlas (now Manx Birdlife) surveyed every month and recorded around 200 individuals in October. Their highest count was 405 in January, showing variability in the abundance. The Calf of Man seal catalogue has around 450 individuals but this covers the span of the programme from 2009 to 2022, so you can imagine that some of the early individuals are not seem now and that each year new individuals are appearing. Clearly we don't have 450 seals visiting the Calf in each pupping season.

Manx haul out sites

Further to what you will have extracted from our Manx reports I would also add that more recently the Point of Ayre (most northerly point of the Island) has become an important haul out site for predominantly grey seals. Numbers vary but over 100 are being seen fairly regularly. The highest count is around 160. What we don't know is if this site is over spill as the population is increasing or whether they have moved here from elsewhere. It is nevertheless an important site now and worth including in your report. In addition to that and not necessarily relevant but worth mentioning is the Manx Wildlife Trust back in 2000's did some work on highlighting important areas that have a high value for wildlife and although this was mainly focused on terrestrial features there are 6 sites highlighted as important sites for seals. They are the Calf of Man, Gob Garvain, Santon head, Maughold Head, Clay head and Contrary head. These sites are not legal recognised, such as SPAs or SACs, but any development within one is given consideration by the planners. So might be worth including them in the report for haul out sites, if not already mentioned. Below is a link to the government website where the sites can be viewed along with other marine designations.

[redacted]

For more information on what Wildlife Sites are please go to our website for details

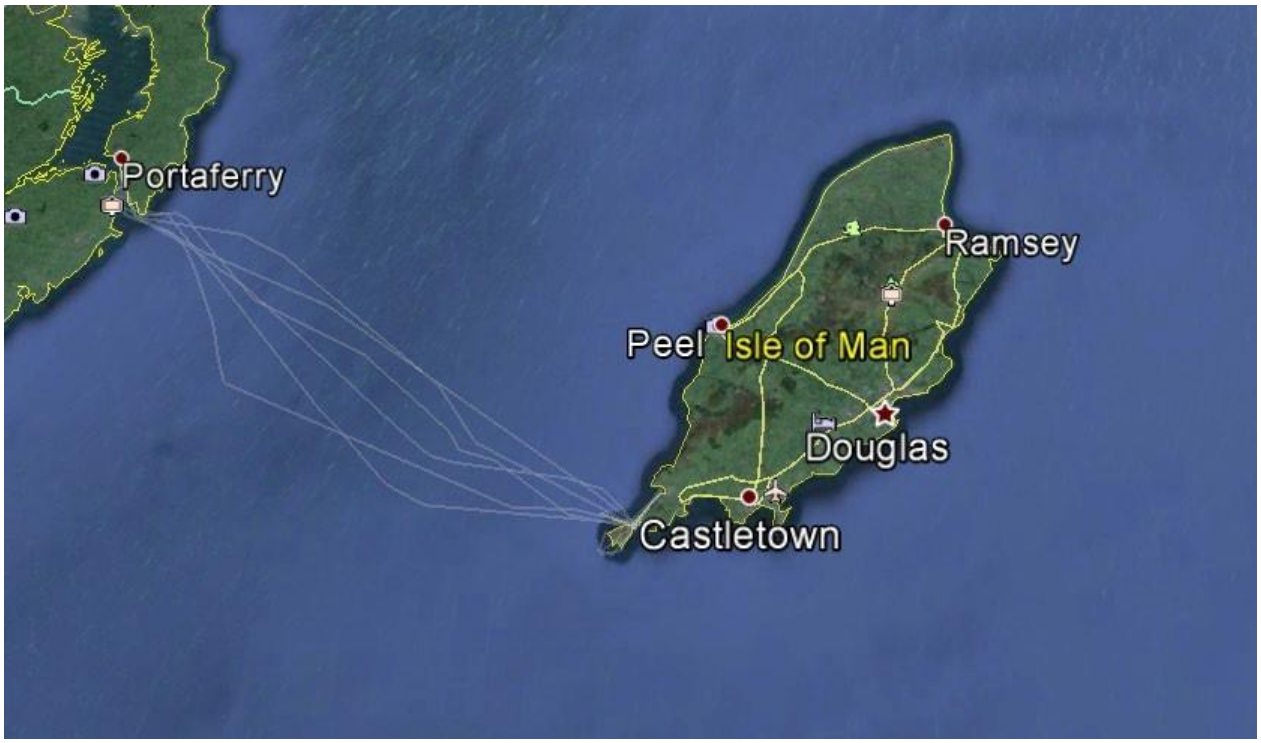
[redacted]

I hope this is useful and if you have any questions please ask. I'm on leave next week but will reply on my return.

Kind regards

[redacted]

[redacted]
Marine Officer
IOM Seasearch Co-ordinator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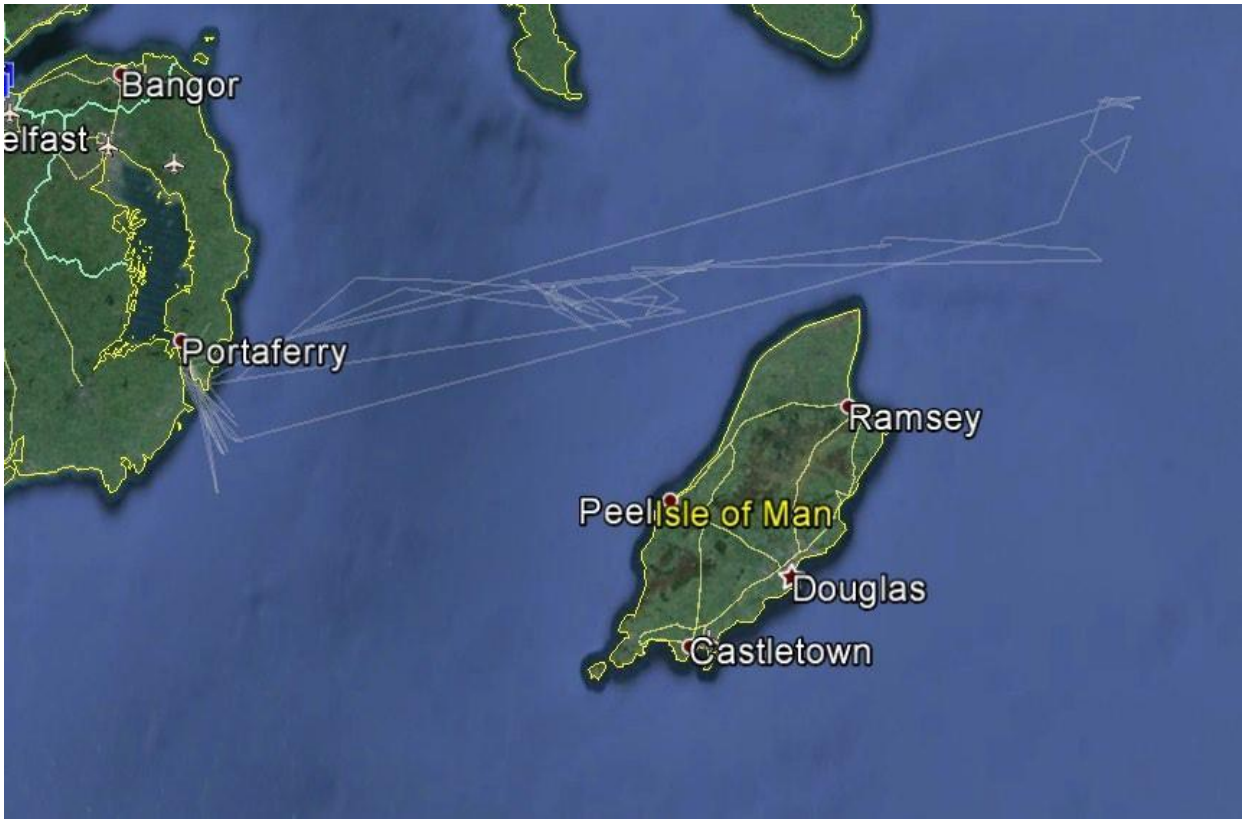
Ramsey
Peel
Isle of Man
Douglas
Castletown


Bangor
elfast
Portaferry
Ramsey
Peel
Isle of Man
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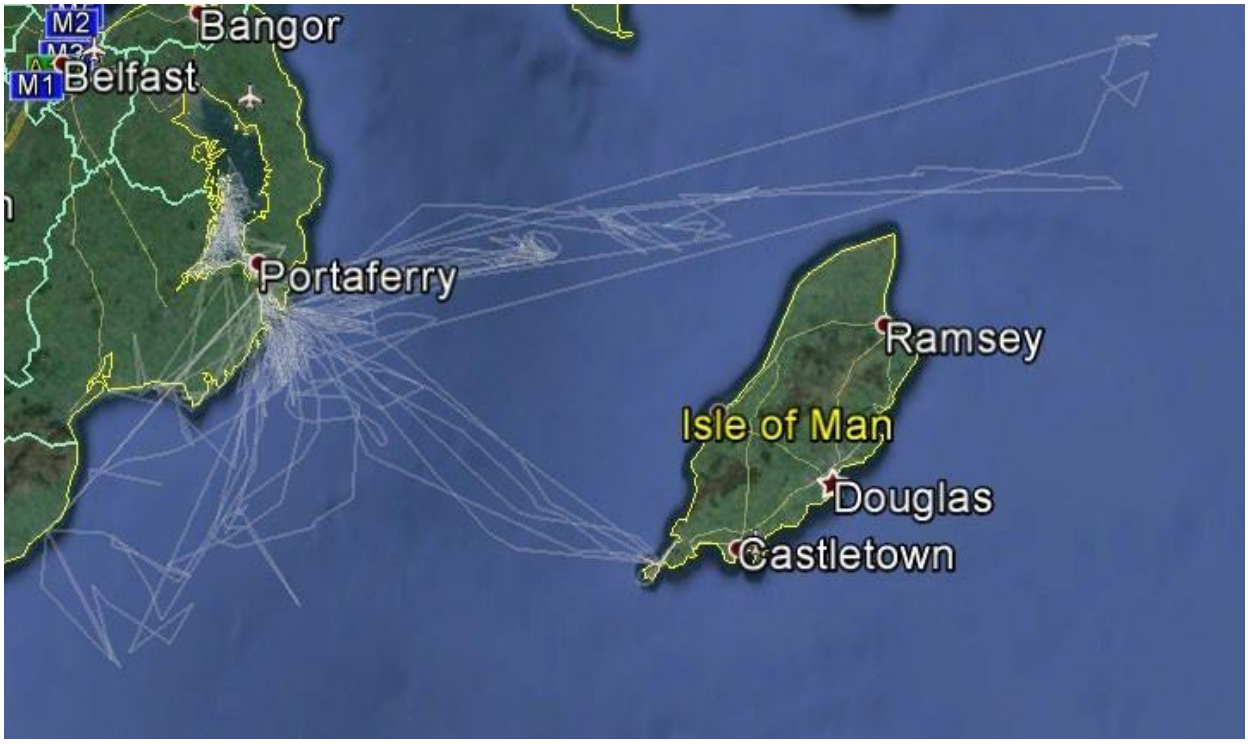
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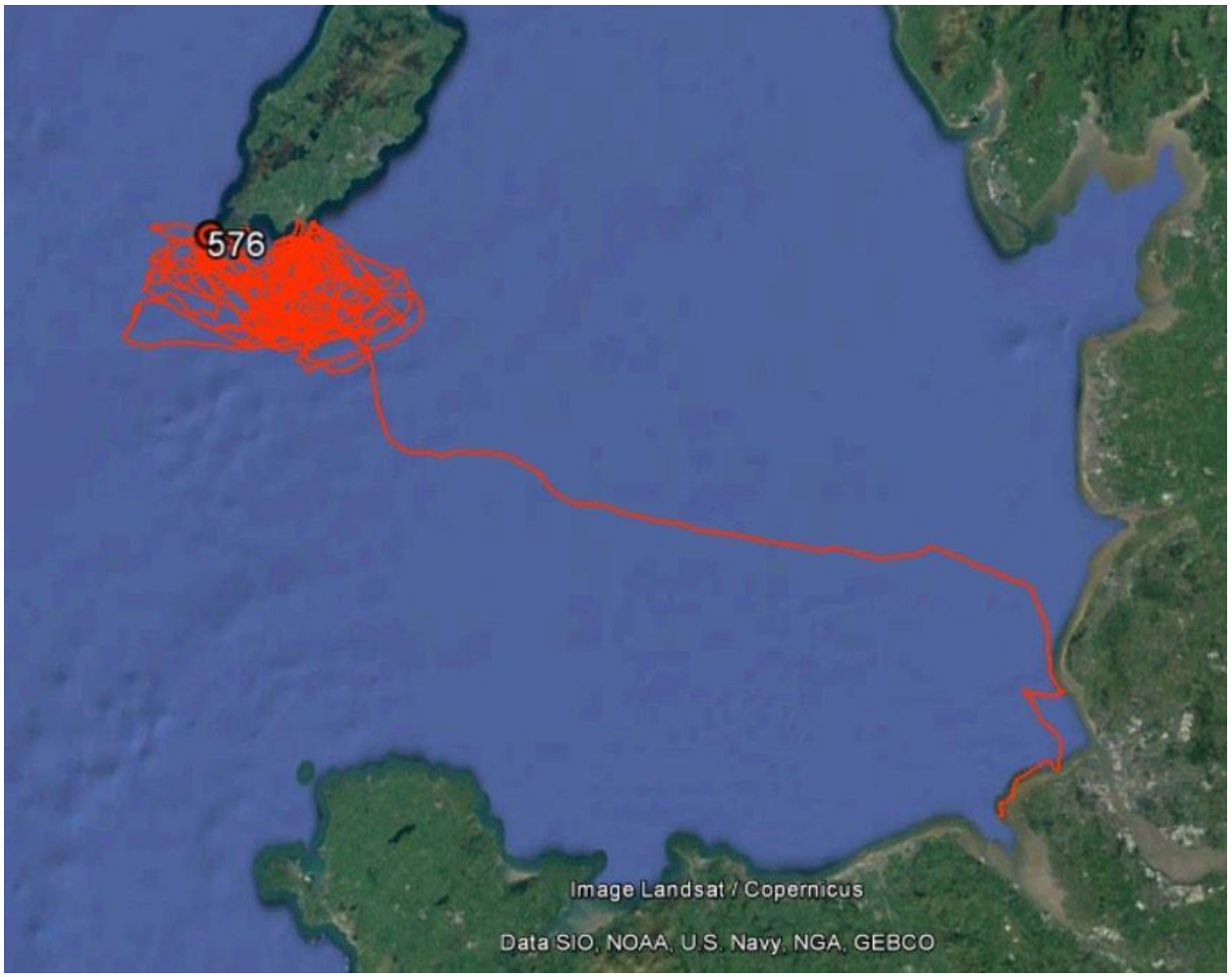
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C.6.8 Expert Working Group Technical Note

MONA OFFSHORE WIND PROJECT AND MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Expert Working Group Technical Note

Document Reference: Expert Working Group Technical Note

September 2023

F01

Image of an offshore wind farm

1 Marine Mammals EWG Technical Note – Progress agreements

1.1.1.1 The aim of this technical note is to set out any outstanding agreements for the Mona Offshore Wind Project and Morgan Offshore Wind Project: Generation Assets (hereafter referred to as the 'Morgan Generation Assets') in the EWG and provide a summary of approach in the final Environmental Statement. Feedback is sought on the following topics:

- Design of aerial surveys with respect to marine mammals and use of an appropriate buffer around Mona and Morgan Array Areas.
- Regional Marine Mammal study area (MMSA) for use in the impact assessment and cumulative impacts assessment.
- Consideration of OSPAR Region III or maximum foraging range for Grey Seal CEA
- Agreement on noise modelling clarifications
- EDRs, dose response for HRA and EIA
- Densities and reference populations
- IPCoD modelling

1.2 Design of aerial surveys with respect to marine mammals and use of an appropriate buffer around Mona and Morgan Array Areas.

Table 1: Summary of agreements still outstanding – Digital Aerial Surveys.

Consultee	S42 / EWG Response
NRW	Responses from previous EWGs suggest NRW cannot confirm agreement on aerial survey design for Mona Offshore Wind Project and Morgan Generation Assets - suitability of Digital Aerial Survey (DAS) data for the marine mammal impact assessment cannot be conclusively determined based on the presented survey design alone. NRW recommended that all possible data sources (including those from DAS and the desktop study) are evaluated for quality and suitability and the most precautionary source with sufficient data quality to be used in impact assessments. It may be appropriate to present multiple data sources in the final assessments.
NE	Deferred to NRW for appropriate array area buffer size for the DAS but more generally in relation to aerial surveys broadly supportive of using digital aerial survey data to characterise the marine mammal baseline in the region and agreed that a range of density estimates from other sources must also be presented, for comparison to the site-specific surveys. Support concerns raised about the efficacy of digital aerial surveys in the Irish Sea. Would like to understand how the 10 km buffer coverage is quantifiably "better" and the implications for the marine mammal impact assessment. Natural England requests that the applicant considers providing a short description in the EIA on this topic, which could for example compare the outcomes of a 10 km buffer to the traditional 4km buffer.
JNCC	In S42 responses JNCC noted at least a qualitative review of the coverage over the entire area is required (i.e.is coverage even and are key areas of the Mona array areas covered by the surveys). JNCC do not agree with the approach of using

Consultee	S42 / EWG Response
	combined bird and mammal surveys, as these are not suitably designed for marine mammals and are unlikely to provide sufficient data. Agreed in EWG DAS should not be primary data source and happy to be supplemented with other sources.

1.2.1 Action for Final Environmental Statement in response to Table 1

1.2.1.1 The two years of aerial surveys have been completed and carried out according to the design in the PEIR and as presented at EWG meetings. Following EWG meetings and S42 responses, we will add in further detail about the consistency of coverage of surveys over the survey area (comprising the array area and buffer) during the monthly survey including discussion on a spatial coverage monthly and seasonally. Note, however, that the baseline characterisation does not rely upon aerial surveys alone and provides a comprehensive review of all desktop data sources and site-specific data which have subsequently been considered for quality, suitability, and robustness to carry forward to the impact assessment (as detailed in the marine mammal technical report). The Applicant has received all of the information and data sources suggested by the EWG and S42 responses, incorporating additional data sources for the Environmental Statement, and therefore are seeking for agreement on baseline characterisation as a whole (see Section 1.8 for presentation of densities and reference populations).

1.3 Regional Marine Mammal study area (MMSA) for use in the impact assessment and cumulative impacts assessment.

Table 2: Summary of agreements still outstanding - Marine Mammal Study Areas.

Consultee	Responses
NRW	In EWGs, NRW sought clarification on the purpose of the MMSA and use of MMMUs for impact assessment/screening. Agreement that the Celtic and Irish Sea (HP MMMU) is an appropriate study area for dolphin and minke whale for CEA, rather than full extent of their MUs. Recommend use of OSPAR Region III for screening (HRA) for grey seal. For EIA, NRW mentioned that when screening in projects if a smaller area is proposed (other than OSPAR III) for grey seal and justified, they would not anticipate ruling it out. While we would still advise the use of OSPAR III for screening, we are conscious that a large MU could be somewhat un-pragmatic. To this end, alternatives such as (1) the maximum foraging range of 448 km (Carter et al., 2022); (2) ICES divisions 7a,e,f,g,h; or (3) ICES divisions 7a,b,e,f,g,h,j would still be acceptable as screening distances.
NE	Recommended application of tiered approach but needed project alone comments addressed before agreeing CEA approach.
JNCC	In S42 responses agreed with use of MUs for MMSA. For screening, agreed with Irish and Celtic Seas MU. S42 responses focus on HRA screening.

1.3.1 Action for Final Environmental Statement for Mona and Morgan Generation Assets in response to Table 2: refinement of the approach to CEA based on projects within relevant species-specific MUs only.

1.3.1.1 **For EIA** in the PEIR (HRA is discussed later in section 1.3), the desktop review considered the marine mammal ecology, distribution and density/abundance within the Irish Sea and wider Celtic Sea, termed as the 'Regional Marine Mammal Study Area'. Marine mammals are highly mobile and may range over large distances and therefore this area was used to provide a wider context. Species-specific MUs were used in the impact assessment to aid quantifying population impacts. Going forward to Final Environmental Statement the species-specific approach, using relevant MUs to define reference populations will again be adopted.

1.3.1.2 In terms of the cumulative effect assessment (CEA) screening area for the PEIR and, as agreed with consultees during the EWG 02, screening initially focussed on projects within the extent of the harbour porpoise Celtic and Irish Seas MU, rather than the entire extent of the largest MU: the Celtic and Greater North Seas (CGNS) MU. This was to ensure a proportionate and pragmatic approach was taken, focussing on a region within which receptor-impact pathways are likely (since cumulative effects from the Mona Offshore Wind Project or Morgan Generation Assets within the Irish Sea were considered unlikely to occur with projects in the North Sea, for example).

1.3.1.3 Following EWG05 and S42 responses to the PEIR, the initial screening for the final Environmental Statement will again be focussed on projects within the harbour porpoise CIS MU, however, for the CEA assessment (for EIA) the following refinements are proposed following a more species-specific approach:

- Only projects within the Irish Sea MU will be used for CEA for bottlenose dolphin, as this MU largely represents the coastal bottlenose dolphin ecotype (of which there are only a few hundred), thus Project Erebus, which lies in the Offshore Channel and Southwest England MU (offshore ecotype), will not be considered. This was agreed by NRW and NE post EWG05.
- Only projects within the Grey Seal Reference Population (GSRP) will be used for the CEA for grey seal which includes the Wales MU, North West England MU, Northern Ireland SMU, South West Scotland MU, waters around the Isle of Man, East of Ireland region and South-East of Ireland region[1] (see Section 1.4 of this note).

[1]Note that whilst we acknowledge there is some disagreement about the appropriateness of the SMU boundaries for grey seal, we have not limited the assessment to the single MU in which the Mona Offshore Wind Project / Morgan Generation Assets lies and have instead used the sum of four SMUs (based upon grey seal counts per SMU in SCOS 2020 with the updated scalar of 25.15% from SCOS (2021)) plus an estimate from Isle of Man (Howe, 2018) plus East of Ireland and Southeast of Ireland estimates from Morris and Duck (2019) = 12,909 grey seal. This is based upon the telemetry study provided by SMRU

- Harbour seal was not included in the CEA for PEIR as this species was not identified as a key species for other cumulative projects screened in at the time of submission. For final Environmental Statement the CEA will consider any projects (in the updated CEA long list) which have screened in harbour seal with the appropriate reference population including the Wales MU, North West England MU, Northern Ireland SMU and waters around the Isle of Man.

1.3.1.4 No change will be made to the CEA for harbour porpoise, minke whale and Risso's dolphin which will continue to consider all projects within the CIS MU (harbour porpoise) for the cumulative assessment.

1.3.1.5 **For HRA** in the PEIR**,** species specific MUs were used for screening with additional information provided by telemetry studies (seals) to inform which sites to screen in for consideration of Likely Significant Effect (LSE). This approach was accepted through the EWG process, and therefore the same approach will be carried forward for the final HRA, as follows:

- For harbour porpoise all sites within the Celtic and Irish Seas MU will be considered,
- For bottlenose dolphin all sites within the Irish Sea MU will be considered.
- For grey seal all SACs in the Wales MU, North West England MU, Southwest Scotland and Northern Ireland MU will be screened for LSE. Additional information set out in Carter *et al.*, 2022 and telemetry data presented in the PEIR (Wright and Sinclair, 2022), indicates some potential connectivity with the Isles of Scilly Complex SAC, Lundy SAC, The Maidens SAC and Saltee Islands SAC and are therefore included.
- For harbour seal, the Wales and North West England MU was used, alongside consideration of connectivity presented in Carter *et al.* (2022) and telemetry data in the PEIR which screened in Strangford Lough SAC and Murlough SAC.
- There are no SACs within Isle of Man waters.

which shows high levels of connectivity with designated haul out sites in the Irish Sea and wider Celtic Sea, we feel this captures the wide-ranging mobile nature of the species but allows a proportionate and relevant population assessment.

1.4 Consideration of OSPAR Region III or maximum foraging range for Grey Seal CEA

Table 3: Summary of agreements still outstanding - Grey Seal CEA Screening.

Consultee	Response
NRW	Highlighted use of management units (MU's) as the appropriate screening distance was not always followed when screening in projects for the assessment of potential cumulative effects on marine mammals. As agreed in previous EWGs, using the Irish and Celtic sea area as a screening distance for other cetacean species is a proportionate measure. For grey seal, however, the OSPAR Region III interim MU should ideally be used to screen in projects that may potentially have cumulative effects on the grey seal population. If a smaller area (or other approach) is proposed for screening in projects for grey seal and justified, NRW (A) would not anticipate ruling it out.
NE	EWG 05 response: Natural England did not have objections on presenting OSPAR Region III alongside MUs for comparison but advise that then more precautionary one should be taken further to the assessment.
JNCC	S42: JNCC agree with the use of Management Units (MUs) for the regional marine mammal study area. We agree with previous EWG meeting outcome to screen in the Irish Sea extending to the Celtic Sea rather than the largest MU, based on likely receptor-pathways.

1.4.1 Action for Final Environmental Statement in response to Table 3: consideration of appropriate CEA screening area for grey seal and justification of approach.

1.4.1.1 Following recommendation from NRW during the EWG02, for the PEIR a quantitative impact assessment was presented (i.e., estimating the % of population potentially affected) for the respective project alone assessment (Mona Offshore Wind Project or Morgan Generation Assets) and cumulative assessment, against two reference population estimates:

- 1) the Grey Seal Reference Population (GSRP) (for combined SMUs/grey seal regions as described in Section 1.3 above)
- 2) the OSPAR Region III interim population (noting that the cumulative screening area for PEIR was the CIS MU (harbour porpoise) and not the OSPAR Region III).

1.4.1.2 Feedback via S42 response was to ideally use the OSPAR Region III as the appropriate CEA screening area unless an alternative can be justified (Table 3). In addition to the GSRP and OSPAR Region III a third option, based on the maximum foraging range of grey seal (448 km) as per Carter *et al* (2022), was also suggested by the EWG.

1.4.1.3 Notwithstanding the discussions as part of the EWG we propose using a species-specific MU approach to CEA screening. For grey seal this would equate to the GSRP, rather than OSPAR Region III or the 448 km radial distance, as the GSRP provides optimal coverage of the wide-ranging nature of the species but allows for a pragmatic and

proportionate approach to screening. Further justification of this approach is provided below.

- *OSPAR Region III*: The GSRP was defined based on a seal telemetry study (data provided by SMRU) which looked at movements of individuals within the Celtic and Irish Seas, showing connectivity between key haul-outs and the Mona/Morgan Projects. Whilst we acknowledge there is some disagreement about the appropriateness of the individual SMU boundaries, the GSRP as a whole falls within, and is comparable to, the cumulative screening area already agreed during the EWG02 (i.e. the Celtic and Irish Seas MU), and broadly aligns with ICES areas 7.a, g and f (NRW stated in their EWG05 responses that "alternatives such as…(2) ICES divisions 7a,e,f,g,h; or (3) ICES divisions 7a,b,e,f,g,h,j would still be acceptable as screening distances"). In addition, adopting this species-specific approach using relevant UK MUs is consistent with the S42 advice to use the IS MU for bottlenose dolphin. Whilst it is acknowledged that OSPAR Region III would cover a larger area (and therefore include projects further afield), we believe that in applying the GSRP, the cumulative assessment adopts a biogeographic region approach which is proportionate to the area within which a receptor-impact pathway is most likely to occur. It is for this same reason that the EWG agreed that it would not be proportionate to use the Celtic and Greater North Seas as a CEA screening area for Risso's dolphin, short-beaked common dolphin and minke whale. In addition, it is highlighted that by applying the smaller GSRP (13,563 animals) as a reference population, instead of the larger OSPAR Region III population (60,780 animals) the quantitative assessment of effects is not diluted.
- *Maximum foraging range*: The maximum foraging range of 448 km provided by Carter *et al*. (2022) was also suggested in relation to the CEA screening area. This range represents the maximum geodesic distance from any haul-out across all geographic areas reported for all tagged seals in the UK. This distance, however, is based on movements of an individual over many days (e.g. Cronin *et al*. (2013) found that the mean foraging trip duration was 1.7 days, longest being over 15 days), and does not therefore reflect typical movements of individuals from haul-outs. Carter *et al.* (2022) highlighted that distance to haul-out site was the primary driver of distribution and the habitat preference model developed for grey seal in the Irish Sea North (Region 7, Figure 1), within which the Mona Offshore Wind Project and Morgan Generation Assets is situated, suggested that there is a negative association with areas >80 km from haul outs in this region (Figure 2). Notably, the data presented showed a single observation at approximate 120 km suggesting that this may be more indicative as a maximum foraging range for this region. Therefore, use of the 448 km maximum foraging range was not considered to be appropriate in the context of CEA screening for the Mona Offshore Wind Project and Morgan Generation Assets.

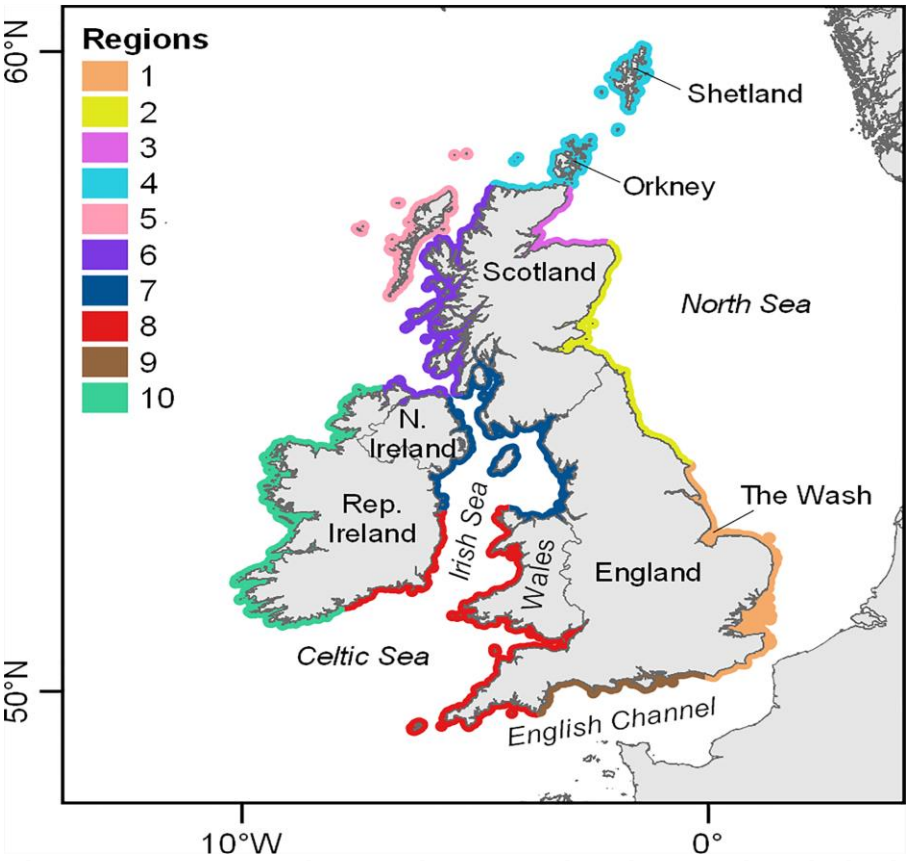

Figure 1: Map of the study area showing regional designations for habitat preference models. 1: Southeast England, 2: East Coast, 3: Moray Firth, 4: North Coast & Northern Isles, 5: Western Isles, 6: West Scotland & Ireland North, 7: Irish Sea North, 8: Celtic Sea & Irish Sea South, 9: English Channel. 10: West Ireland

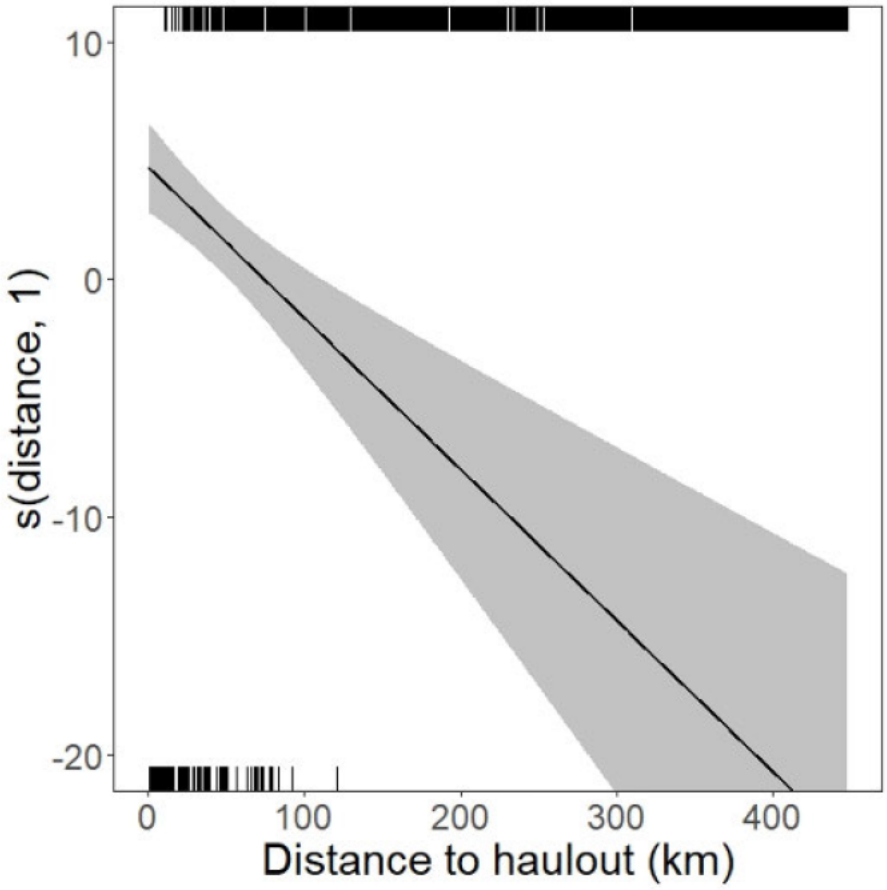

Figure 2: Habitat preference relationship in relation to distance from haul out for grey seal in the Irish Sea North (region 7).

1.4.1.4 Therefore, in light of the above, we propose to apply the GSRP as the CEA screening area, as the most appropriate reference population. As per PEIR, a quantitative assessment against the OSPAR Region III population will be presented, in parallel, for additional context but as this is less precautionary than the GSRP it will not be used to underpin the final conclusions in the impact assessment.

1.5 CEA - Site investigation (i.e. geophysical) surveys

Table 4: Summary of agreements still outstanding - CEA Screening, Geophysical Surveys.

Consultee	Response
NRW	Suggested screening based upon MUs not impact radius, and agreed use of CIS MU would be pragmatic for all cetacean species other than bottlenose dolphin.
NE	N/A
JNCC	N/A

1.5.1 Action for Final Environmental Statement in response to Table 4: revised approach to CEA screening area for site investigation surveys and use of a maximum number of SI surveys occurring concurrently.

1.5.1.1 Noting NRW's response to screening distances for site investigation surveys, we propose to screen using the species-specific CEA areas (rather than the maximum modelled impact ranges derived from the underwater noise modelling assessment used in PEIR). We propose to use a proportionate number to assume how many will be happening at the same. This is the approach adopted for previous OWF assessments, (e.g. Hornsea 4 assumed up to four site-investigation surveys to occur at the same time in North Sea whilst Awel y Mor assessed up to one in the Irish Sea). In alignment with other Round 4 projects in the Irish Sea (including Morgan Generation, Morecambe Generation, and Morgan-Morecambe Transmission Assets) we propose a conservative estimate of two site-investigation surveys could occur at a similar time.

1.5.1.2 Our estimate is based on the following:

- The CEA screening screened projects which could occur between 2024 and 2035. Projects where the licence expired two years before construction were excluded.
- There are potentially up to 14 site-investigations between this period, within the largest CEA study area (CIS MU).
- Surveys typically occur over short durations (typically up to 2 months).
- The construction period for Mona is four years.
- There are limitations on the number of survey vessels that could carry out such surveys at one time and therefore highly unlikely that all would overlap temporally.
- As a conservative approach we have assumed up to two surveys could overlap with the Mona site-investigation surveys. We are seeking agreement on this approach.

1.6 Agreement on noise modelling clarifications.

Table 5: Summary of agreements still outstanding - Noise Modelling Clarifications.

Consultee	Response
NRW	Agreed, NRW content with dual metric approach (SPL and SELcum) for impact assessment. Recommend modelling impact ranges without ADDs in parallel.
NE	In S42 responses, NE suggested they do not agree that 30 minute ADD should be included in the underwater noise modelling to predict impact ranges for the assessment and advises assessment should be based on the underwater noise modelling without ADDs and revise any assessments,

Consultee	Response
	including cumulative and HRA, that are based on the predicted ranges with 30min ADDs.
JNCC	No further comments from S42/EWG.

1.6.1 Action for Final Environmental Statement in response to Table 5: presentation of injury ranges with/without ADDs

1.6.1.1 **Dual metric approach:** Following EWG and S42 responses, we believe stakeholders are content with the dual metric approach for assessing injury (in the form of a permanent threshold shift (PTS)) to marine mammals. Thus both SPL and SELcum were presented in the impact assessment with the metric predicting the largest range of impact taken forward for the purposes of mitigation and considered in the adoption of appropriate measures to reduce injury to marine mammals.

1.6.1.2 **Acoustic Deterrent Devices (ADDs):** Most assessments model both with and without ADD to show the benefits of ADDs where this has been proposed as an integral part of the project designed-in mitigation measures to reduce the risk of injury to marine mammals. Therefore the assessment considers the implementation of an indicative 30 minute ADD deployment duration as well as the predicted ranges without the use of an ADD. ADDs are included as part of standard industry tertiary measures (as with passive acoustic monitoring/marine mammal observers) and therefore are accepted as part of best practice within marine mammal mitigation protocols (MMMPs). The detailed MMMP will be developed post-consent further to any project updates at this stage and a draft will be included with the application.

1.6.1.3 We are seeking agreement on our approach to present both with and without ADD and to base the conclusions of the assessment on the impacts which take into account any designed-in measures, including the use of ADDs.

1.7 EDRs, dose response for HRA and EIA

Table 6: S42 and EWG Responses – use of EDRs, dose response and thresholds.

Consultee	Response
NRW	For assessing area disturbed for harbour porpoise, NRW recommends that in addition / in parallel to EDRs, an unweighted noise threshold of 143 dB re 1µPa (or 103 dB re 1µPa VHF-weighted) single strike sound exposure level (Brandt et al.,2018; Heinis et al.,2019) should be used to represent the minimum fixed noise threshold at which significant disturbance would occur from impulsive noise sources.

Consultee	Response
NE/JNCC	Joint position statement gives SNCBs' advice on assessing the risk of significant disturbance as a result of noise and consequently managing noise disturbance within harbour porpoise sites to avoid a potential adverse effect on site integrity. Statement suggests use of EDRs for use in HRA assessments (JNCC, 2020).

1.7.1 Action for Final Environmental Statement in response to Table 6: use of the area-based approach for HRA based on EDR and 143 dB threshold.

1.7.1.1 **For HRA**, the approach to the assessment of disturbance resulting from piling use an unweighted noise threshold of 143 dB re 1µPa (or 103 dB re 1µPa VHF-weighted) will be used to represent the minimum fixed generalised response threshold (Tougaard, 2021) at which significant disturbance could occur for the final application in addition to the Effective Deterrence Range (EDR) approach. Dose-response will not be applied to the area-based assessment. The position statement (NRW, 2023b) will be reviewed and incorporated into the assessment as appropriate.

1.7.1.2 The use of an unweighted threshold of 143 dB re 1µPa relates to harbour porpoise only. For all other marine mammal species considered in HRA the NMFS level-B harassment threshold of 160 dB SPL_{rms} will be applied for piling alongside the relevant EDR (NMFS, 2005).

1.7.1.3 **For EIA,** the threshold 143 dB re 1µPa will be used alongside the dose-response approach. EDRs will not be used for the EIA assessment.

1.8 Densities and reference populations

Table 7: ES Densities and Reference Populations.

Consultee	S42 Response
NRW	Agreed except common dolphin
NE	Agreed except common dolphin
JNCC	Agreed.

1.8.1.1 Final densities to be taken forward to the assessment of impacts are presented in Table 8 for Mona Offshore Wind Project and Table 9 for Morgan Offshore Wind Project Generation Assets. We are seeking final agreement on all densities for both the Mona Offshore Wind Project and Morgan Offshore Wind Project Generation Assets.

1.8.2 Action for Final Environmental Statement in response to Table 7: update densities in assessment as per final agreed values with EWG.

1.8.2.1 NRW, NE and JNCC agreed with densities and reference populations for harbour porpoise, bottlenose dolphin, Risso's dolphin, minke whale, grey seal and harbour seal submitted via email following EWG05. Combined population estimates for the GSRP will be presented (as agreed with the EWG) and a population estimate for OSPAR Region III was also agreed for grey seal (provided for additional context as described in section 1.3 above). A single density for bottlenose dolphin will be applied, derived from the Welsh Marine Mammal Atlas (rather than two densities to represent coastal and offshore densities).

1.8.2.2 The Isle of Man government confirmed on 3rd August 2023 that they agreed with the grey seal population estimate of 400 for IoM waters (based on Howe, 2018).

1.8.2.3 During the EWG process, NRW (A) recommend the use of densities from the newest version of the Welsh Marine Mammal Atlas (Evans and Waggitt, 2023) instead of Waggitt *et al.* (2020). NE agreed with use of Welsh Marine Mammal Atlas unless new data reveals evidence of greater densities (e.g. SCANS IV; or site-specific surveys). Therefore, the proposed densities to take forward to assessment for short-beaked common dolphin, are also derived from the Welsh Marine Mammal Atlas (Evans and Waggitt, 2023) (see Table 9 for proposed densities for the Mona Offshore Wind Project and Table 10 for the Morgan Offshore Wind Project Generation Assets).

1.8.2.4 We are seeking final agreement on all densities for both the Mona Offshore Wind Project and Morgan Offshore Wind Project Generation Assets.

1.9 IPCoD modelling

Table 8: S42 Responses - IPCoD Modelling.

Consultee	S42 Response
NRW	NRW (A) recommend that when presenting results from IPCoD modelling to provide the ratio of the impacted versus unimpacted population over a set period of time (for example the first 6 years, based on the former Favourable Conservation Status (FCS) reporting period), and the full 25 year modelled period. Also suggested the modelled results from iPCoD are highly sensitive to whether or not the unit of population is appropriate, and therefore two populations of bottlenose dolphins (Irish Sea MU and Offshore Channel and Southwest England MU) will need to be assessed separately
NE	N/A
JNCC	For IPCoD modelling, MUs, by definition, should be considered separately and not combined unless strong justification to do so is provided.

1.9.1 Action for Final Environmental Statement in response to Table 8: present 6-year time step in iPCoD model, assess temporal maximum design scenario and add in additional cumulative projects

1.9.1.1 There is no change from the parameters presented in PEIR and no responses back on S42 on iPCoD parameters. Therefore, we are carrying these forward to the Environmental Statement.

1.9.1.2 We will, however, present the 6-year time step in the modelling period, which represents the former Favourable Conservation Status (FCS) reporting period, alongside 25 years.

1.9.1.3 We will add in additional projects that have since moved Tiers (scoping reports available, PEIR submitted, Environmental Statement available) e.g. Morecambe Generation, Transmission Assets.

1.9.1.4 We will also present iPCoD modelling for the temporal maximum design scenario as well as spatial maximum design scenario for Environmental Statement.

1.9.1.5 For bottlenose dolphin, as discussed in EWG05, only the Irish Sea MU will be used in IPCoD modelling. Therefore Project Erebus, which sits in the Offshore Channel and Southwest England MU rather than the Irish Sea MU will be scoped out for bottlenose dolphin.

1.9.1.6 We are seeking agreement on the above points related to iPCoD modelling.

Table 9: Marine mammal species densities and reference populations to be included in the final Environmental Statement for Mona Offshore Wind Project.

Species	Density (animals per km²)	Source and justification for use	Reference population	Agreement following EWG05
Harbour porpoise	0.2773	Average density from the maximum composite shapefiles from the Welsh Marine Atlas (Evans and Waggitt, 2023) for the updated Mona array area.[2] For PEIR density was 0.097 baseline on site-specific aerial survey data. **Change from agreed approach in PEIR.**	Celtic and Irish Sea MU = 62,517 animals (IAMMWG, 2022; 2023)	Agreed by NRW / NE / JNCC.
Bottlenose dolphin	0.00171	Average density from the maximum composite shapefiles from the Welsh Marine Atlas (Evans and Waggitt, 2023) for the Mona marine mammal study area, as is higher than the estimate for the updated array area only. For PEIR, density was 0.035 animals per km² (Lohrengel *et al.*, 2018) **Change from agreed approach in PEIR.**	Irish Sea MU = 293 animals (IAMMWG, 2022; 2023)	Agreed by NRW / NE / JNCC.

[2] These values are slightly higher than NRW value provided (0.27357), but this is due to the updated array area, and are higher than the density estimate for the Mona marine mammal study area - the most precautionary chosen.

Species	Density (animals per km^2)	Source and justification for use	Reference population	Agreement following EWG05
Short-beaked common dolphin	0.0006	RPS note NRW and NE previous response for short-beaked common dolphin suggesting that Waggitt *et al* (2020) densities are not appropriate for this species and in line with their advice. The Applicant proposes instead to take forward the average density value from the Welsh Marine Mammal Atlas (Evans and Waggitt, 2023) for the Mona array area (0.0006 animals per km^2). For PEIR density was 0.018 animals per km^2 (SCANS II, Block O) (Hammond *et al.,* 2002) **Change from agreed approach in PEIR / EWG05.**	Celtic and Greater North Seas MU = 102,656 animals (IAMMWG, 2022; 2023)	**Approach proposed by NRW/NE. Seeking final agreement on density.**
Risso's dolphin	0.0313	This value from SCANS-III (Hammond *et al*., 2021) for adjacent Block E is the most precautionary estimate compared to the Welsh Marine Atlas (0.001 animals per km^2), and Waggitt *et al.* (2020) (0.001 animals per km^2) densities. Risso's not included in maps by Lacey *et al* (2022) **No change from agreed approach in PEIR.**	Celtic and Greater North Seas MU = 12,262 animals (IAMMWG, 2022; 2023)	Agreed by NRW / NE / JNCC.
Minke whale	0.0173	This value from SCANS-III (Hammond *et al*., 2021) for adjacent Block E is the most precautionary estimate compared to the Welsh Marine Atlas (0.006 animals per km^2), Waggitt *et al.* (2020) (0.007 animals per km^2) and is comparable to Lacey *et al*. (2022) density maps (0.018 animals per km^2). **No change from agreed approach in PEIR.**	Celtic and Greater North Seas MU = 20,118 animals (IAMMWG, 2022; 2023)	Agreed by NRW / NE / JNCC.
Grey seal	Offshore density 0.037	Density for the aerial survey area (updated Mona array area plus 7.06-15.68 km buffer) from Carter *et al.* (2022). For PEIR, density was also 0.037 animals per km^2. **No change from agreed approach in PEIR.**	Two reference populations included: 1) "Grey seal reference population":	Density agreed by NRW / NE / JNCC. **Seeking agreement on**

Species	Density (animals per km^2)	Source and justification for use	Reference population	Agreement following EWG05
	Inshore density 0.180	Density for the cable corridor area plus 10 km buffer from Carter *et al.* (2022). For PEIR, density was 0.196 animals per km^2. **<u>Change from agreed approach in PEIR.</u>**	**To note, these estimates have been updated using an updated scalar from SCOS (2021) since EWG05.** Sum of four SMUs (based upon counts per SMU presented in SCOS 2020 with updated scalar of 25.15 from SCOS 2021): 12 Wales = 3,579 13 NW England = 994 14 Northern Ireland = 2,008 SW Scotland = 2,056 Plus an Isle of Man estimate (Howe 2018) = *400* Plus, estimates based upon Morris and Duck (2019) with scalar from SCOS (2021). East of Ireland = 1,662 Southeast of Ireland = 2,211 = total of 12,909 grey seal. 2) OSPAR Region III	**<u>updated reference population.</u>**

Species	Density (animals per km^2)	Source and justification for use	Reference population	Agreement following EWG05
			estimate = 60,780 (n*min*) from OSPAR QSR report for 2023. Used as precautionary estimate rather than mean.	
Harbour seal	Offshore density 0.0002	Density for the aerial survey area (updated Mona array area plus 7.06-15.68 km buffer) from Carter *et al.* (2022). For PEIR, density was also 0.0002 animals per km^2. **No change from agreed approach in PEIR.**	Sum of the Wales (13), Northern Ireland (1,405) and Northwest England MU (6) latest population estimates per SMU in SCOS (2021) = *1,424 harbour seal.*	Agreed by NRW / NE / JNCC.
	Inshore density 0.001	Density for the cable corridor area plus 10 km buffer from Carter *et al.* (2022). For PEIR, density was also 0.001 animals per km^2. **No change from agreed approach in PEIR.**		

Table 10: Marine mammal species densities and reference populations to be included in the final Environmental Statement for Morgan Generation Offshore Wind Project.

Species	Density (animals per km^2)	Source and justification for use	Reference population	Agreement following EWG05
Harbour porpoise	0.262[3]	Average density from the maximum composite shapefiles from the Welsh Marine Atlas (Evans and Waggitt, 2023) for the Morgan marine mammal study area. This density is comparable to, but more precautionary than densities derived from two years of site-specific aerial survey data ('bio-season' design based absolute densities = 0.219 animals per km^2). For PEIR, the density derived from one year of site-specific aerial survey data ('bio-season' design based absolute densities) was 0.247 animals per km^2. **Change from agreed approach in PEIR.**	Celtic and Irish Sea MU = 62,517 animals (IAMMWG, 2022; 2023)	Approach agreed for Mona, awaiting final agreement on densities for Morgan Gen Final ES.
Bottlenose dolphin	0.0012	Average density from the maximum composite shapefiles from the Welsh Marine Atlas (Evans and Waggitt, 2023) for the Morgan marine mammal study area. For PEIR, density was 0.035 animals per km^2 (Lohrengel *et al.*, 2018) **Change from agreed approach in PEIR.**	Irish Sea MU = 293 animals (IAMMWG, 2022; 2023)	Approach agreed for Mona, awaiting final agreement on densities for Morgan Gen Final ES.
Short-beaked common dolphin	0.00029	RPS note NRW and NE response for short-beaked common dolphin suggesting that Waggitt *et al* (2020) densities are not appropriate for this species and in line with their advice. The Applicant proposes instead to take forward the average density value from the Welsh Marine Mammal Atlas (Evans and Waggitt, 2023) for the Morgan marine mammal study area. For PEIR, density was 0.018 animals per km^2 (Hammond *et al.*, 2002)	Celtic and Greater North Seas MU = 102,656 animals (IAMMWG, 2022; 2023)	Approach agreed for Mona, awaiting final agreement on densities for Morgan Gen Final ES.

[3] This value is slightly different to the NRW value provided but this is due to an updated array area. Densities were estimated for two areas; Morgan array area and Morgan marine mammal study area. The higher (more precautionary) density has been applied to take forward for assessment.

Species	Density (animals per km^2)	Source and justification for use	Reference population	Agreement following EWG05
		Change from agreed approach in PEIR.		
Risso's dolphin	0.0313	Density from SCANS-III (Hammond *et al.*, 2021) for adjacent Block E. This is the most precautionary estimate compared to the Welsh Marine Atlas (0.0009 animals per km^2), and Waggitt *et al.*, 2020 (0.001 animals per km^2) densities. Risso's not included in maps by Lacey *et al.* (2022). **No change from agreed approach in PEIR.**	Celtic and Greater North Seas MU = 12,262 animals (IAMMWG, 2022; 2023)	No change from approach agreed for PEIR, awaiting final agreement on densities for Morgan Gen Final ES.
Minke whale	0.0173	This value from SCANS-III (Hammond *et al.*, 2021) for adjacent Block E is the most precautionary estimate compared to the Welsh Marine Atlas (0.005 animals per km^2), Waggitt *et al.* (2020) (0.007 animals per km^2) and is comparable in order of magnitude to Lacey *et al.* (2022) density maps (0.025 animals per km^2). For PEIR, density was 0.0173 animals per km^2 (Hammond *et al.*, 2021). **No change from agreed approach in PEIR.**	Celtic and Greater North Seas MU = 20,118 animals (IAMMWG, 2022; 2023)	No change from approach agreed for PEIR, awaiting final agreement on densities for Morgan Gen Final ES.
Grey seal	0.0412	Density for the aerial survey area (updated Morgan array area plus buffer) from Carter *et al.* (2022). Density derived from two years of site-specific aerial survey data ('bio-season' design based absolute densities) was 0.130 animals per km^2. **No change from agreed approach in PEIR.**	Two reference populations included: **1) "Grey seal reference population":** Sum of four SMUs (based upon counts per SMU presented in SCOS 2020 with updated scalar of 25.15 from SCOS 2021): 12 Wales = 3,579 13 NW England = 994 14 Northern Ireland = 2,008	No change on approach agreed for PEIR, awaiting final agreement on densities for Morgan Gen Final ES .

Species	Density (animals per km^2)	Source and justification for use	Reference population	Agreement following EWG05
			SW Scotland = 2,056 Plus an Isle of Man estimate (Howe 2018) = *400* Plus, estimates based upon Morris and Duck (2019) with scalar from SCOS (2021). East of Ireland = 1,662 Southeast of Ireland = 2,211 = *total of 12,910 grey seal.* **2) OSPAR Region III estimate =** 60,780 (n*min*) from OSPAR QSR report for 2023. Used as precautionary estimate rather than n*mean*.	
Harbour seal	0.00005	Density for the aerial survey area (updated Morgan array area plus buffer) from Carter *et al.* (2022). No harbour seal were sighted during site-specific aerial surveys. **No change from agreed approach in PEIR.**	Sum of the Wales (13), Northern Ireland (1,405) and Northwest England MU (6) latest population estimates per SMU in SCOS (2021) = *1,424 harbour seal.*	No change on approach agreed for PEIR, awaiting final agreement on densities for Morgan Gen Final ES .

1.10 References

JNCC (2020). Guidance for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise SACs (England, Wales & Northern Ireland). JNCC Report No. 654, JNCC, Peterborough, ISSN 0963- 8091

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Brandt, M. J., Dragon, A. C., Diederichs, A., Bellmann, M. A., Wahl, V., Piper, W., Nabe-Nielsen, J. and Nehls, G. (2018). *Disturbance of harbour porpoises during construction of the first seven offshore wind farms in Germany*. Marine Ecology Progress Series*,* 596**,** pp.213-232. DOI:10.3354/meps12560.

C.6.9 Response from the MMO regarding the EWG Technical Note

From: [redacted]
Sent: Monday, October 23, 2023 2:42 PM
To: [redacted]
[redacted]
Cc: [redacted]
Subject: RE: bp-EnBW Morgan and Mona OFW Monthly meeting with MMO

Hi [redacted],

Attached below is the response from Cefas following the marine mammal technical note. Apologies for the delay in getting this information back. Great to see you today and [redacted] and I will catch up regarding the other points.

"Please note that I largely defer to Natural England and to other relevant SNCBs for their comments on the following specific issues covered in the Technical Note (as these issues are outside my area of expertise):

- *Design of aerial surveys with respect to marine mammals and use of an appropriate buffer around Mona and Morgan Array Areas.*
- *Regional Marine Mammal study area (MMSA) for use in the impact assessment and cumulative impacts assessment.*

Consideration of OSPAR Region III or maximum foraging range for Grey Seal CEA

- *Densities and reference populations*
- *IPCoD modelling*

Agreement on noise modelling clarifications

1. *I can confirm that Cefas support the dual metric approach for assessing auditory injury in marine mammals. Both the peak sound pressure level (peak SPL) and the cumulative sound exposure level (SELcum) ranges should be presented.*
2. *I would add that for the assessment of UXO clearance, the peak SPL, as in the NOAA (NMFS, 2018) and Southall et al. (2019) guidance, is the correct metric to use for instantaneous PTS. This is because the risk of auditory damage depends on how high peak pressures get (and how rapidly they rise), which – out of the standard metrics available – is best reflected by the peak SPL. Because this PTS is physical damage to the inner ear, it is less dependent on the sensitivity of hearing across frequency, which is why it isn't weighted.*
3. *I am content for the assessment to present the benefits of using an ADD, as long as the worst-case ranges (i.e, no ADD) are clearly presented and considered.*

EDRs, dose response for HRA and EIA

4. *Section 1.7.1.2: The use of an unweighted threshold of 143 dB re 1µPa relates to harbour porpoise only. For all other marine mammal species considered in HRA the NMFS level-B harassment threshold of 160 dB SPLrms will be applied for piling alongside the relevant EDR (NMFS, 2005). Please note that thresholds based on the SPLrms are not appropriate for impulsive sources such as percussive pile driving – the appropriate metric is the SELss (single strike Sound Exposure Level)."*

Many thanks

[redacted] **BSc (Hons), MSc I Marine Licensing Case Officer I PCS London & South East Branch Representative | His Majesty's Government – Marine Management Organisation.**
Direct Line: [redacted] I Email: [redacted] I Lynx House, 1 Northern Road, Cosham, Portsmouth, PO6 3XB
Website Twitter Facebook Linkedin Blog Instagram Flickr YouTube Google+ Pinterest

My pronouns are she/her

I'm a PCS Member. If you aren't a member you can join here https://www.pcs.org.uk/get-involved/why-join-pcs

Our MMO Values: Together we are **Accountable, Innovative**, **Engaging** and **Inclusive**

C.6.10 Response from NRW regarding the EWG Technical Note

Projects Mona & Morgan Generation Marine Mammal Expert Working Group Technical Note (September 2023)

[redacted]
Senior Marine Advisor

25th September 2023

Introduction

This advice is provided in response to the Marine Mammal Expert Working (EWG) Group Technical Note received via email on 11th September 2023.

NRW advice in this document is provided (under a Discretionary Advice Service agreement) in respect of a proposal which will require an application for which Natural Resources Wales is a Statutory Consultee.

The customer acknowledges that the content of any advice or assistance provided by NRW is advisory only and that it shall not be deemed to bind or in any other way restrict NRW in performing its statutory functions.

The recipient acknowledges that:

- any advice given or materials or documentation provided by NRW do not constrain or bind NRW in respect of its statutory functions or its role as a statutory consultee or any decision NRW may make in relation to any application for a licence or permit;
- any advice given by NRW does not bind NRW in respect of any future representations it may make as statutory consultee or any decision NRW may make in relation to any application for a licence or permit;
- any views or opinions expressed by NRW are without prejudice to the consideration NRW may be required to give to any application or any future representations as statutory consultee or any decision NRW may make in relation to any application for a licence or permit;
- the final decision as to any representations made by NRW as statutory consultee will be based on all the relevant information available to NRW at the time it makes such representations;
- NRW cannot and does not give any guarantee as to the representations it may make as statutory consultee; and,
- any advice given by NRW may be overtaken by changes in available information, law, policy and guidance relevant to the subject matter of the advice.

Advisors Consulted:
Marine Mammals

Actions

Key Issues

- NRW Advisory (A) largely agree with the proposed progress agreements outlined in the Technical Note.

- NRW (A) note that use of the Grey Seal Reference Population (GSRP) for combined Seal Management Units (SMUs) / grey seal regions is being proposed for CEA screening, contrary to previous advice provided by NRW (A). However, we anticipate being able to agree with the proposed reference area / screening distance for grey seal, although we have some pending queries and comments regarding this – please see detailed comments below.

Detailed comments

- NRW (A) agree with the approach outlined in *Section 1.2.1.1*.

- NRW (A) disagree that the approach proposed in *Section 1.3.1.5* for grey seal was agreed through the EWG process. The additional detail qualifying our previous advice has not been fully captured in *Table 2* and *Table 3*. In view of our: (1) emailed comments following EWG05 (27th July 2023); (2) verbal comments during EWG03 (17th November 2022); and (3) our advice in the consultation on Marine Mammal Reference Populations & Densities (21st October 2022), the statement that *"If a smaller area (or other approach) is proposed for screening in projects for grey seal and justified, NRW (A) would not anticipate ruling it out"* should be interpreted with reference to the alternatives suggested, i.e. ICES divisions 7a,e,f,g,h; or ICES divisions 7a,b,e,f,g,h,j.

- Regarding *Table 3*, the question of which grey seal reference population to use has been raised at previous EWG's and written comment requests. NRW (A) note in *Paragraph 1.4.1.3* "*Nothwithstanding the discussions as part of the EWG*", use of the GSRP is being proposed for CEA screening, contrary to previous advice provided by NRW (A) and verbal agreement for a parallel approach reached with SNCBs. However, NRW (A) anticipate being able to agree to the use of the GSRP as the reference population / screening area used to underpin final conclusions in the impact assessment, with a quantitative assessment against the OSPAR region III (or any of the alternatives suggested by NRW (A)) presented in parallel. Justification for the use of the GSRP based on the greater sensitivity of a smaller modelled population to an impact (bearing in mind some modelling caveats discussed below), in addition to the telemetry evidence already presented (i.e. Wright and Sinclair, 2022; Carter et al 2022 etc.) may be sufficient. If NRW (A) has sufficient information to be able to independently conclude no impact / no adverse effect using the OSPAR III area (or any of the alternatives previously suggested by NRW (A)), then we would have no major concerns about the suggested approach. This would be contingent on a few clarifications / supplementary discussions noted below:

    1. Clarification is sought on what a *"quantitative assessment"* would entail. NRW (A) understand *"quantitative assessment"* to mean PCoD modelling of impacts of projects screened within the OSPAR III border on the OSPAR III population. We advise that applying projects screened in for the GSRP to the larger OSPAR III

population would effectively be diluting the impact - rendering the parallel modelling exercise less useful and less precautionary.

2. NRW (A) do not necessarily agree with the statement in *Paragraph 1.4.1.4 "as this is less precautionary"* due to various nuances that make such a conclusion difficult to make. Although a smaller population number may be more sensitive to modelled impacts, a larger screening area would include projects further afield. We should also be conscious of the uncertainty being introduced when selecting a smaller (pragmatic) population boundary that may not necessarily match the actual (likely larger) population boundary. With reference to our response to the consultation on Marine Mammal Reference Populations and Densities (21st October 2022) NRW are currently finalising a population modelling report which carried out sensitivity analyses for various models and recommends population parameters for harbour porpoise, bottlenose dolphin and grey seal. We draw attention to one of the major conclusions of this work: that all the models depended upon an appropriately defined population management unit. If the population boundaries assigned do not align with the true biological population (and there is movement of animals in or out), then this will affect whether the abundance estimate is appropriate and likewise the observed population trends when modelling demographic responses to human impacts. NRW (A) made a similar point verbally during EWG 03 when explaining the reasoning behind our preference for the OSPAR Region III interim management unit and / or the suggested alternatives based on ICES divisions.

3. NRW (A) note the justification that the GSRP is comparable in size to ICES areas 7a,g, and f, however, we do not agree with the suggestion that these are comparable to two of the alternatives (i.e. ICES divisions 7a,e,f,g,h / 7a,b,e,f,g,h,j) that were suggested by NRW (A) as potential smaller screening distances. The two suggested alternatives cover a wider area, and have been extensively sensitivity tested as part of our population modelling scope of work. As we have no such certainties for 7a,g,f, we do not agree with the justification provided.

4. NRW (A) note that the reasoning behind this decision is effectively the same as the decision to use the Celtic and Irish seas MU instead of the Celtic and Greater North Seas MU as a CEA screening area for Risso's dolphin, short-beaked common dolphin and minke whale. In EWG 02, following a suggestion by the applicant, NRW (A) agreed that the use of the Celtic and Irish sea MU would be a pragmatic screening distance for all cetacean species with large MUs such as Minke whale and dolphin species other than BND. For these species there is much more uncertainty over the exact population boundaries or little evidence of sub-structuring, therefore the advice was based on a combination of pragmatic judgement calls and available abundance data. This is not the case for grey seal where we have far more accurate population estimates, detailed knowledge of their foraging ranges, and good knowledge of population boundaries (albeit the precise location of these boundaries being a point of academic discussion). In addition, NRW (A) notes that a screening area / population boundary for grey seal equivalent to the CIS MU would be nearer in size to ICES divisions 7a,e,f,g,h or 7a,b,e,f,g,h,j. We recommend that advice and consent sought and given for some species should not be inferred for other species.

- NRW (A) acknowledge in *Section 1.5.1.2* that our response to the screening distances for site investigation surveys has been noted. We agree with the proposed approach of two

site investigation surveys occurring simultaneously, and the rationale on which the estimate is based on.

- With reference to *Section 1.6.1.3* / *Table 5 Presentation of injury ranges with/without ADDs,* NRW (A) agree with the proposed approach.

- NRW (A) acknowledge and agree with the proposed approach in *Section 1.7.1.1*, to use a 143 dB single strike unweighted Sound Exposure Level (SEL_{ss}) or a 103 dB VHF-weighted SEL_{ss} threshold in parallel with an EDR. We also acknowledge and welcome the statement that dose-response will not be applied to the area-based assessment.

- With reference to *Section 1.7.1.2,* NRW (A) agree with the proposed use of a 160 db SPL_{rms} threshold for other marine mammal species in the HRA, alongside the relevant EDR.

- With reference to *Section 1.7.1.3,* in line with NRW's position statement on assessing behavioural disturbance, NRW (A) recommend the use of the dose-response approach alone to assess behavioural disturbance from piling noise. This is because the 143 dB SEL_{ss} threshold is intended as a tool for area-assessment. Dose response approaches better reflect behavioural responses in the wild (which tend to be probabilistic) and should be used for EIA where these exist. Where dose response curves do not exist for a given noise source, NRW (A) recommend following the advice outlined in our position statement.

- With reference to *Section 1.8.2.4,* NRW (A) confirm that we agree with the proposed densities and population numbers outlined in *Tables 9* and *10*. We agree with the proposed use of common dolphin densities from Evans and Waggitt (2023), unless new data reveals evidence of greater densities. We also acknowledge and agree with the rationale provided for the choice of N_{min} for the grey seal OSPAR III population.

- With reference to *Section 1.9.1.2,* NRW (A) welcome the intent to present results at 6-year time step period alongside the full 25-year model run, and we agree on the points related to iPCoD modelling.

Response to specific Feedback Requests posed in Section 1.1.1.1

- *Design of aerial surveys with respect to marine mammals and use of an appropriate buffer around Mona and Morgan Array Areas* – NRW (A) agree with the approach outlined.

- *Regional Marine Mammal study area (MMSA) for use in the impact assessment and cumulative impacts assessment* – NRW (A) anticipate being able to agree with the approach outlined, however, we have some pending queries regarding the proposed approach for grey seal.

- *Consideration of OSPAR Region III or maximum foraging range for Grey Seal CEA* – NRW (A) anticipate agreeing to the use of the GSRP as the reference population / screening area used to underpin final conclusions in the impact assessment, with a quantitative assessment against the OSPAR region III presented in parallel. Clarification is being sought on the specifics of what the "quantitative assessment" would entail. Detailed comments have been provided above.

- *Agreement on noise modelling clarifications* – NRW (A) agree with the approach outlined.

- *EDRs, dose response for HRA and EIA* – NRW (A) agree overall with the approach outlined, although we have suggested some refinements in line with our position statement on assessing behavioural disturbance from underwater noise to harbour porpoise.

- *Densities and reference populations* – NRW (A) agree with the approach outlined.

- *IPCoD modelling* – NRW (A) agree with the approach outlined.

Additional comments

- With reference to the final minutes circulated following the Marine Mammal EWG05, we note the inclusion of "post-meeting" text. Although we recognise that this was done to include follow-up responses in relation to the post-meeting actions, agreement logs, and comments on the minutes, further responses have subsequently been provided by RPS to these comments.

  Whilst most of these responses and additional information appear to have been captured in the technical document reviewed here, this was not always done (e.g. NRW (A)'s response for Table 3). In some cases, the additional information provided by NRW (A) through comments on the minutes or in response to the post-meeting actions was summarised or paraphrased (e.g. NRW (A)'s feedback on the approach to the CEA for site investigation surveys; NRW (A)'s advice on assessing vessel disturbance; NRW (A)'s feedback on the approach to use of the OSPAR III region) and therefore does not capture the full nuances of the response supplied.

  NRW (A) recommend that where additional technical notes are provided following EWG's, that the responses to minutes and post-meeting actions should be recorded within the same technical document in full, without paraphrasing / summarising, in order to maintain a clear audit trail.

C.6.11 Response from JNCC regarding the EWG Technical Note

From: [redacted]
To: [redacted]
Cc: [redacted]
Subject: RE: Mona Morgan Generation marine mammal agreements technical note
Date: 25 September 2023 15:20:56
Attachments: image001.png
image002.png
image003.png

Good afternoon, [redacted]

Please see comments below from JNCC marine mammal specialists in relation to the Expert Working Group Technical Note (dated Sept 2023) which was circulated on 11 September.

1. Design of aerial surveys with respect to marine mammals and use of an appropriate buffer around Mona and Morgan Array Areas

   We are content with the proposed additions to the ES and note that the baseline characterisation does not rely on the aerial surveys alone. Provided a clear audit of how all data used in the baseline has been evaluated is provided in the ES, we agree with the baseline characterisation process.
   We acknowledge that these surveys have now been completed and but we will continue to advise future developments that marine mammal surveys should be given due consideration when designing DAS, and not simply treated as an add-on and it assumed that specifications for birds will be appropriate for marine mammals.

2. Regional Marine Mammal study area (MMSA) for use in the impact assessment and cumulative impacts assessment

   We are content with the approach proposed for EIA and HRA.

3. Consideration of OSPAR Region III or maximum foraging range for Grey Seal CEA

   We defer to NRW for matters relating to grey seal.

4. CEA - Site investigation (i.e. geophysical) surveys

   We defer to NRW re this item.

5. Agreement on noise modelling clarifications

   We agree with the approach described.

6. EDRs, dose response for HRA and EIA

   JNCC are content for EDRs not to be used in the EIA assessment and for an unweighted noise threshold of 143 dB re 1µPa (or 103 dB re 1µPa VHF-weighted) to be used in addition to the EDR approach for the HRA.

7. Densities and reference populations

   We agree with the densities discussed following EWG05 and the proposal to update the common dolphin density to reflect those presented in Evans and Waggitt 2023.

8. IPCoD modelling

   JNCC agree with the proposed amendments to how the modelling will be presented and addition of projects which have moved tiers. We defer to NRW regarding modelling undertaken for bottlenose dolphin.

If you have any queries please let me know.

Kind regards,
[redacted]

[redacted] | **Senior Marine Industries Adviser | JNCC**
Pronouns: she/her
Inverdee House, Baxter Street, Aberdeen, AB11 9QA | Tel: [redacted]
Working pattern: Monday to Friday

[redacted] [redacted]

C.6.12 Response from Natural England regarding the EWG Technical Note

Date: 05 October 2023
Our ref: DAS/UDS A009203 452152
Your ref: Morgan and Mona Marine Mammal Agreements Technical Note

Samantha Tuddenham
RPS/ Energy
Goldvale House
27-41 Church Street West
Woking
Surrey
GU21 6DH

Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire
CW1 6GA

0300 060 3900

cc Kevin Linnane and Alice White
RPS

BY EMAIL ONLY

Dear Samantha

Discretionary Advice Service (Charged Advice): UDS A009203
Development proposal: Morgan Generation and Mona Offshore Windfarm
Consultation: Morgan and Mona Marine Mammal Agreements Technical Note

This advice is being provided as part of Natural England's Discretionary Advice Service (DAS) in accordance with the Quotation and Agreement dated 23rd May 2023 to Morgan Offshore Wind Limited & Mona Offshore Wind Limited.

The following advice forms Natural England's response to the Marine Mammal Agreements Technical Note provided to Natural England, by email, on 11th September 2023.

Natural England were asked to provide feedback on the outstanding agreements from the Marine Mammal EWG.

Detailed comments

Data Sources in Baseline Characterisation
NE agree with the data sources presented for baseline characterisation. However, please note that SCANS IV report has been published (SCANS-IV survey (tiho-hannover.de)) and it would be a valuable addition to the baseline characterisation given that it provides the newest data on distribution and abundance of cetaceans in the area.

Proposed regional marine mammal study area
NE agree with the proposed regional marine mammal study area.

Grey Seal Reference Population for CEA
NE agree with the proposed approach of using Grey Seal Reference Population for CEA.

Geophysical Surveys

NE supports NRW advice that screening should be based upon MUs not impacts radius of geophysical surveys. NE broadly agree with the proposition that two geophysical surveys is an adequate number of surveys potentially overlapping with Mona site-survey investigations.

Dual Metric Approach (SPL and SELcum)
NE support use of dual metric approach (SPL and SELcum) for impact assessment with the largest range of impact being taken forward for the purpose of mitigation.

Noise Modelling and ADDs
NE stands with our previous advice that the assessment should be based on the underwater noise modelling without ADDs. Modelling with an indicative 30min ADD duration can be used to showcase the benefits of such devices as a potential mitigation tool in a separate chapter but not for the purpose of the assessment.

EDRs and Dose Response
NE agree with the proposed approach regarding the EDRs and dose response for HRA and EIA.

Densities used in Assessment
NE maintains the stand on the densities used in assessment i.e. to use Welsh Marine Mammal Atlas for agreed species unless new data reveals evidence of greater densities (SCANS IV and 2 years of site specific surveys).

iPCod Modelling Approach
NE agrees with the proposed approach in regards to iPCod modelling.

Other queries

1) Regarding grey seal density presented in Table 10 – it is indicated that the density derived from 2 years of site-specific aerial surveys was 0.130 an/km2 while density taken forward is a much smaller figure of 0.0412. Can you please clarify why 0.130 was not the chosen density?
2) Similarly, in Table 9, the grey seal inshore density that is taken forward of 0.180 is less precautionary than the previous density of 0.196. Please clarify.

For clarification of any points in this letter, please contact me using the details provided below.

Yours sincerely,
Elliott Waltho
Marine and Coastal Lead Adviser
Coast and Marine Team
Cheshire to Lancashire Area Team
Elliot.Waltho@naturalengland.org.uk

☒ The advice provided in this letter has been through Natural England's Quality Assurance process

The advice provided within the Discretionary Advice Service is the professional advice of the Natural England adviser named below. It is the best advice that can be given based on the information provided so far. Its quality and detail is dependent upon the quality and depth of the information which has been provided. It does not constitute a statutory response or decision, which will be made by Natural England acting corporately in its role as statutory consultee to the competent authority after an application has been submitted. The advice given is therefore not binding in any way and is provided without prejudice to the consideration of any statutory consultation response or decision which may be made by Natural England in due course. The final judgement on any proposals by Natural England is reserved until an application is made and will be made on the information then available, including any modifications to the proposal made after receipt of discretionary advice. All pre-application advice is subject to review and revision in the light of changes in relevant

considerations, including changes in relation to the facts, scientific knowledge/evidence, policy, guidance or law. Natural England will not accept any liability for the accuracy, adequacy or completeness of, nor will any express or implied warranty be given for, the advice. This exclusion does not extend to any fraudulent misrepresentation made by or on behalf of Natural England.

Cc commercialservices@naturalengland.org.uk

Annex 1
European Protected Species

A licence is required in order to carry out any works that involve certain activities such as capturing the animals, disturbance, or damaging or destroying their resting or breeding places. Note that damage or destruction of a breeding site or resting place is an absolute offence and unless the offences can be avoided (e.g. by timing the works appropriately), it should be licensed. In the first instance it is for the developer to decide whether a species licence will be needed. The developer may need to engage specialist advice in making this decision. A licence may be needed to carry out mitigation work as well as for impacts directly connected with a development. Further information can be found in Natural England's 'How to get a licence' publication.

If the application requires planning permission, it is for the local planning authority to consider whether the permission would offend against Article 12(1) of the Habitats Directive, and if so, whether the application would be likely to receive a licence. This should be based on the advice Natural England provides at formal consultation on the likely impacts on favourable conservation status and Natural England's guidance on how the three tests (no alternative solutions, imperative reasons of overriding public interest and maintenance of favourable conservation status) are applied when considering licence applications.

Natural England's pre-submission Screening Service can screen application drafts prior to formal submission, whether or not the relevant planning permission is already in place. Screening will help applicants by making an assessment of whether the draft application is likely to meet licensing requirements, and, if necessary, provide specific guidance on how to address any shortfalls. The advice should help developers and ecological consultants to better manage the risks or costs they may face in having to wait until the formal submission stage after planning permission is secured, or in responding to requests for further information following an initial formal application.

The service will be available for new applications, resubmissions or modifications – depending on customer requirements. More information can be found on Natural England's website.

C.6.13 Response from TWT regarding the EWG Technical Note

Rachel Abbott

From: [redacted]
Sent: 24 October 2023 13:57
To: [redacted]
Subject: RE: Mona Morgan Generation species densities

CAUTION: This email originated from outside of RPS.

Dear [redacted]

The WTW agrees with the RPS justification for the use of the 2 species dependant approaches to determine MM densities.

Thank you for the inclusion and opportunity to review the proposed methodology.

Best Wishes,

[redacted]

[redacted]
Swyddog Cynllunio Morol (Cymru) – Ynni Adnewyddadwy ar y Môr
Marine Planning Officer (Wales) – Offshore Renewable Energy

Wildlife Trust (Wales) / Ymddiriedolaeth Natur (Cymru)

From: [redacted]
Sent: 23 October 2023 11:52
To: [redacted]
Subject: Mona Morgan Generation species densities

Dear All,

Following EWG feedback on the Marine Mammal (MM) Technical Note (submitted 11th September 2023), final densities to be taken forward to assessments for Mona Offshore Wind Project and Morgan Offshore Wind: Generation Assets were agreed.
We note the responses from Natural England to the aforementioned Technical Note, stating: "*Please note that SCANS IV report has been published (SCANS-IV survey (tiho-hannover.de)) and it would be a valuable addition to the baseline characterisation given that it provides the newest data on distribution and abundance of cetaceans in the area*" And "*NE maintains the stand on the densities used in assessment i.e. to use Welsh Marine Mammal Atlas for*

agreed species unless new data reveals evidence of greater densities (SCANS IV and 2 years of site specific surveys).”

RPS has reviewed the methodology and relevant densities presented in the SCANS IV survey report and will include this data as a baseline characterisation source in technical reports for both projects. The densities that will be applied to the assessments for all cetacean species are those as agreed through EWG05 and/or the associated MM Technical Note (i.e. no changes from the MM Technical Note are proposed). Therefore, the Welsh Marine Mammal Atlas (for harbour porpoise, bottlenose dolphin and short-beaked commons dolphin) and SCANS III densities (Risso’s dolphin and minke whale) have been used for the assessment.

For harbour porpoise, bottlenose dolphin and short-beaked common dolphin the densities applied to the assessment are those derived from the Welsh Marine Mammal Atlas (WMMA) (Evans and Waggitt, 2023) as agreed through the MM Technical Note. WMMA uses 30 years of data from 1990 to 2020 from dedicated aerial and vessel surveys (including SCANS surveys) across Wales and the surrounding waters to produce modelled density distribution maps at a 2.5 km2 resolution. Crucially, the study is designed to quantify broad level habitat preferences and seasonality of species within regions of interest. This allows a robust representation of densities at a fine scale within the Irish Sea, rather than broad-scale densities derived from a single survey season conducted over a short timescale e.g. SCANS IV surveys. SCANS IV surveys were carried out between 28 June and 15 August 2022 (for those blocks in the Irish Sea), and densities are presented as blocks (e.g. Block CS-E has a surface area of 12,274 km2). As highlighted in Lacey et al. (2022) (which modelled density surfaces from SCANS III data) large scale line transect surveys (such as SCANS) are not designed to collect data at a sufficiently small spatial scale necessary to generate estimates of abundance for small coastal populations, such as the bottlenose dolphin ecotype found in the Irish Sea MU. The 2.5 km2 resolution modelled in the WMMA however, does allow for such fine-scale detail. Therefore, the Welsh Marine Mammal Atlas densities have been used for the assessment.

For Risso’s dolphin and minke whale, the densities applied to the assessment are those derived from SCANS III block E (in the absence of block F estimates), as agreed through EWG05 and the MM Technical Note. Whilst the SCANS IV survey is the latest of the SCANS surveys, the densities presented in SCANS IV are lower than equivalent densities from SCANS III and therefore to deviate from the agreed approach would result in the application of less conservative densities estimates. Therefore, we have taken the precautionary approach of using the SACNS III density data for these species.

In conclusion, after consideration of SCANS IV, the existing agreed densities as outlined in the MM Technical Note represents the most robust and appropriate approach, and therefore no change is required for the applications for consent.

Please can you confirm that this approach is the most appropriate for the Mona and Morgan projects by **6th November**?

[redacted]
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C.6.14 Final Density Agreement Confirmation

From: [redacted]
Sent: 23 October 2023 11:52
To: [redacted]
Subject: Mona Morgan Generation species densities

Dear All,

Following EWG feedback on the Marine Mammal (MM) Technical Note (submitted 11th September 2023), final densities to be taken forward to assessments for Mona Offshore Wind Project and Morgan Offshore Wind: Generation Assets were agreed.
We note the responses from Natural England to the aforementioned Technical Note, stating: “Please note that SCANS IV report has been published (SCANS-IV survey (tiho-hannover.de)) and it would be a valuable addition to the baseline characterisation given that it provides the newest data on distribution and abundance of cetaceans in the area” And “NE maintains the stand on the densities used in assessment i.e. to use Welsh Marine Mammal Atlas for agreed species unless new data reveals evidence of greater densities (SCANS IV and 2 years of site specific surveys).”
RPS has reviewed the methodology and relevant densities presented in the SCANS IV survey report and will include this data as a baseline characterisation source in technical reports for both projects. The densities that will be applied to the assessments for all cetacean species are those as agreed through EWG05 and/or the associated MM Technical Note (i.e. no changes from the MM Technical Note are proposed). Therefore, the Welsh Marine Mammal Atlas (for harbour porpoise, bottlenose dolphin and short-beaked commons dolphin) and SCANS III densities (Risso’s dolphin and minke whale) have been used for the assessment.

For harbour porpoise, bottlenose dolphin and short-beaked common dolphin the densities applied to the assessment are those derived from the Welsh Marine Mammal Atlas (WMMA) (Evans and Waggitt, 2023) as agreed through the MM Technical Note. WMMA uses 30 years of data from 1990 to 2020 from dedicated aerial and vessel surveys (including SCANS surveys) across Wales and the surrounding waters to produce modelled density distribution maps at a 2.5 km2 resolution. Crucially, the study is designed to quantify broad level habitat preferences and seasonality of species within regions of interest. This allows a robust representation of densities at a fine scale within the Irish Sea, rather than broad-scale densities derived from a single survey season conducted over a short timescale e.g. SCANS IV surveys. SCANS IV surveys were carried out between 28 June and 15 August 2022 (for those blocks in the Irish Sea), and densities are presented as blocks (e.g. Block CS-E has a surface area of 12,274 km2). As highlighted in Lacey et al. (2022) (which modelled density surfaces from SCANS III data) large scale line transect surveys (such as SCANS) are not designed to collect data at a sufficiently small spatial scale necessary to generate estimates of abundance for small coastal populations, such as the bottlenose dolphin ecotype found in the Irish Sea MU. The 2.5 km2 resolution modelled in the WMMA however, does allow for such fine-scale detail. Therefore, the Welsh Marine Mammal Atlas densities have been used for the assessment.

For Risso's dolphin and minke whale, the densities applied to the assessment are those derived from SCANS III block E (in the absence of block F estimates), as agreed through EWG05 and the MM Technical Note. Whilst the SCANS IV survey is the latest of the SCANS surveys, the densities presented in SCANS IV are lower than equivalent densities from SCANS III and therefore to deviate from the agreed approach would result in the application of less conservative densities estimates. Therefore, we have taken the precautionary approach of using the SACNS III density data for these species.

In conclusion, after consideration of SCANS IV, the existing agreed densities as outlined in the MM Technical Note represents the most robust and appropriate approach, and therefore no change is required for the applications for consent.

Please can you confirm that this approach is the most appropriate for the Mona and Morgan projects by **6th November**?

Kind Regards,

[redacted]
Senior Marine Consultant
RPS | Energy
Goldvale House
27-41 Church Street West
Woking, Surrey GU21 6DH, United Kingdom
[redacted]

C.6.15 JNCC response to Final Density Agreement Confirmation

From: [redacted]
Subject: RE: Mona Morgan Generation species densities
Date: 30 October 2023 16:25:18
Attachments: image002.png
image003.png

CAUTION: This email originated from outside of RPS.

Good afternoon, [redacted].

Our marine mammal specialists have reviewed and are content with the approach laid out below. JNCC have no further comments to make at this time.

Kind regards,
[redacted]

[redacted]

Website X/Twitter Facebook LinkedIn

C.6.16 MMO response to Final Density Agreement Confirmation

From: [redacted]
Subject: RE: Mona Morgan Generation species densities
Date: 26 October 2023 14:59:44
Attachments: image002.png
image003.png

CAUTION: This email originated from outside of RPS.

Hi [redacted],

I attach the response from CEFAS UWN:

I have reviewed the email from RPS regarding the Mona and Morgan Generation species densities. However, this topic on species densities is outside my area of expertise and we usually defer to Natural England for their comments.

Therefore, I have no specific comments to make at this time.

Many thanks

[redacted]

Our MMO Values: Together we are **Accountable, Innovative, Engaging** and **Inclusive**

Enabling sustainable growth in our marine area

The MMO 'call for evidence - MMO assessment of fishing impacts in marine protected areas - Stage 2' is now open. To respond please go to Citizen Space: https://consult.defra.gov.uk/mmo/call-for-evidence-stage-2/

To receive information from the MMO's Marine Conservation Team regarding marine protected areas in England, please email "Contact me" to [redacted]

C.6.17 Natural England response to Final Density Agreement Confirmation

From: [redacted]
Subject: RE: Mona Morgan Generation species densities
Date: 27 October 2023 08:53:40
Attachments: image002.png

CAUTION: This email originated from outside of RPS.

Good Morning [redacted],

Thank you for providing reasoning for your approach to the Marine Mammal species densities.

Natural England agree to the proposed approach below.

Kind regards,
Elliott

[redacted]

Natural England

[redacted]

www.gov.uk/natural-england

C.6.18 NRW response to Final Density Agreement Confirmation

From: [redacted]

Subject: RE: Mona Morgan Generation species densities
Date: 26 October 2023 16:18:10

CAUTION: This email originated from outside of RPS.

Good afternoon [redacted]

Thank you for your email regarding Marine Mammal species densities for the Mona and Morgan Generation projects. NRW Advisory confirm we are content with the approach outlined in your email below dated 23/10/23.

Kind regards,
[redacted]

C.7. Marine mammals EWG meeting 6

C.7.1 Meeting minutes

MINUTES OF MEETING

Security Classification:
Project External

Partners in UK offshore wind

MOM Number	:	20231205_Morgan and Mona MM	**REV. No.**	: F01
MOM Subject	:	Morgan and Mona Evidence Plan marine mammals meeting		

MINUTES OF MEETING

MEETING DATE	:	05/12/23
MEETING LOCATION	:	Microsoft Teams
RECORDED BY	:	[redacted]
ISSUED BY	:	[redacted]

PERSONS PRESENT:

- [redacted] – bp (SR)
- [redacted] – bp (MP)
- [redacted] bp (GV)
- [redacted] – bp (DH)
- [redacted] – RPS (ST)
- [redacted] (BP)
- [redacted] – RPS (LB)
- [redacted] – NRW (SB)
- [redacted] – JNCC (AG)
- [redacted] – NRW (NFM)
- [redacted]
- [redacted] – NRW (PB)
- [redacted] – JNCC (JW)
- [redacted] NRW (PM)
- [redacted] – Natural England (MNW)
- [redacted] – NRW (NP)
- [redacted] Natural England (EW)
- [redacted]
- [redacted] (BS)

ITEM NO:	DISCUSSION ITEM:	Responsible party	Date
1.	**Project updates (presented by MP)** The Mona and Morgan Generation projects description for the Applications are now finalised and the assessments are almost complete. Mona is aiming to submit the application at the end of February 2024 and Morgan Generation is aiming to submit the applications after Easter 2024. Any further comments and completion of the agreement logs before the Christmas break would be appreciated as we are now at a critical time and are unable to include anything new at this stage. All previous stakeholder comments have been considered.		

	Following responses to the Mona and Morgan Generation Preliminary Environmental Information Report (PEIR), the project design envelope has been reviewed and updated. The Mona and Morgan Array Areas have been reduced in size, mainly in response to shipping and navigation and commercial fisheries consultation. The slide (slide 5) provides links to the offshore newsletters for Mona and Morgan Generation that were published in September 2023 and present key offshore updates. The minimum spacing between offshore infrastructure has been increased to 1,400 m both within and between rows. The maximum number of wind turbines has been reduced from 107 to 96 for both Mona and Morgan Generation. The rotor diameter of the largest wind turbine has increased from 280 m to 320 m for both Mona and Morgan Generation. Monopiles have been removed from the list of foundation options included in the project design envelopes. Gravity base foundations and jackets on suction buckets or pin piles (drilled or driven) are retained. No cable protection higher than 70 cm will be installed within in the Menai Strait and Conwy Bay SAC. The percentage of export cable requiring cable protection has been reduced to not exceed 10% of the total length within the SAC. Additionally, no more than a 5% reduction in water depth will occur at any point along the export cables without prior written approval from the Licensing Authority in consultation with the MCA. In addition, we can confirm that the Mona export cables will be installed under the intertidal area from below MLWS to above MHWS onshore via trenchless techniques. Open-cut trenching within the intertidal area has been removed for the project design envelope. This will remove any direct impact to the clay and piddock habitat in the intertidal area. The project has also made a significant reductions to the volume of seabed preparation material in the Mona and Morgan Generation Array Areas and the Mona Offshore Cable Corridor. NP- Does the project team anticipate any potential for slippage in the programme? This is useful to understand so that we can plan our resourcing for next year MP- At this stage we are not planning for potential programme slippage. NP- Does the EWG already have the up to date agreement logs? ST- Yes these were sent out with the slides ahead of the meeting.		
2.	**<u>Mona Assessment updates (presented by BP)</u>** Monopiles have been removed from the project design and the assessment now considers pin piling as the only form of piles. The maximum hammer energy has been reduced from 5,500kJ for monopiles presented in the Preliminary Environmental Information Report (PEIR) to 4,400kJ for pin piles. Most foundations will be piled up to a maximum of 3,000kJ but up to 16 foundations may be pile with a hammer energy up to 4,400kJ. The		

	projects have committed to no concurrent piling at the maximum hammer energy of 4,400kJ and with concurrent piling only occurring for the foundations installed with a maximum of 3,000 kJ. A maximum separation distance of 15 km will be used for concurrent piling. This will minimise the likelihood of disturbance to marine mammals by limiting the ensonified area as there is greater overlap in ensonified areas when piling occurs closer together. A minimum separation distance of 1.4 km will be used for concurrent piling. This will minimise the likelihood of injury to marine mammal and fish species in the immediate vicinity of piling operations by limiting the spatial overlap of areas of the highest ensonification during concurrent piling. Measures apply to both Mona and Morgan Generation. <u>Haul out connectivity</u> The densities and management units that form the regional marine mammal study area were agreed via the Final Agreements with MM EWG technical note sent to the EWG in September. Thank you for quick responses. In the second EWG meeting, it was advised that a qualitative assessment of grey seal haul-out sites should be presented. Further detail has been added on haul out connectivity for grey seals throughout the regional marine mammal study area. This approach is applicable for both Mona and Morgan Generation. We utilised the SMRU telemetry data provided for Mona and Morgan Generation, for the four SMUs covering the Irish Sea. So we digitised grey seal haul out sites, and then applied a 5 km buffer around each haul out site. A 5 km radius was used, as this was used in the Carter *et al.* 2022 maps and allows more tracks to be captured or tied to a haul out site than for example a 1 kilometre buffer. We then identified any adult or pups that crossed the marine mammal study area (so for Mona this comprises the Mona Array Area and the cable corridor plus a buffer) and crossed within the 5 km buffer region around any haul out site. Seals were shown to cross numerous haul out sites, with 3.9 being the average number of haul out sites visited per seal, but a maximum of nine visited by one seal. This has allowed us to provide some quantification of grey seal connectivity within the regional marine mammal study area and add context to our assessment of barrier effects. <u>CEA screening region for seals</u> The Mona and Morgan Generation impacts assessment used the combination of four seal management units as the Grey Seal Reference Population (GSRP) and this has been assessed alongside OSPAR Region III.		

	The GSRP consists of the 4 seal MUs (12 Wales, 13 Northwest England, 14 Northern Ireland and 1 SW Scotland) plus two Ireland regions plus the Isle of Man region. For Mona, iPCoD modelling for grey seal has been undertaken against both GSRP and OSPAR Region III for both the project alone and cumulative assessments. The approach to Morgan Generation will be discussed later in the meeting. Following S42 and EWG feedback, OSPAR Region III has been used as extended screening area for grey seal – for offshore wind projects only to allow a proportionate approach to assessment. For harbour seal, the Harbour Seal Reference Population (12 Wales, 13 NW England, 14 Northern Ireland) is used as the relevant screening area. The list of cumulative projects has been updated and the marine mammal assessments have been updated with any changes to information available. Some projects for example have gone to Tier 1 from Tier 2 or Tier 3 to Tier 2 since PEIR. White Cross has now submitted their application for consent so they are now included under tier 1 and the assessment and iPCoD modelling has been updated to account for this. For grey seal, White Cross sits approximately 7 km outside the GSRP but the reported underwater sound contours extend up to 12 km, so this project has been included for assessment against the GSRP as a precautionary approach. Whilst the majority of Tier 2 projects do not have numbers in the public domain, Tier 2 projects with quantitative information are included, as was in PEIR, and for the Mona Offshore Wind Project includes the Morgan Offshore Wind Project: Generation Assets, Morecambe Offshore Wind Project: Generation Assets, Morgan and Morecambe Transmission Assets. NP- Llyr 1 and Llyr 2 are the wrong way round in the CEA other projects/plans figure. BP- Thank you, we will update the figure. NP- To confirm, will you accept comments on the slides and today's discussion after the EWG? MP- Yes please provide any comments as soon as possible. <u>Results: Injury and disturbance from piling</u> For both Mona Offshore Wind Project and Morgan Offshore Wind Project: Generation Assets, the project alone assessment of injury and disturbance from elevated underwater sound during piling has no significant impact in Environmental Impact Assessment (EIA) terms. As for PEIR, the cumulative assessment concluded a potential significant impact for bottlenose dolphin in the context of the Irish Sea MU, against a background of a declining small population. The EIA therefore presents a precautionary significant impact for the project cumulatively with all other projects considered in the Irish Sea MU. In addition to primary and tertiary measures adopted, the project has committed to the development of an Underwater Sound Management Strategy (UWSMS) to reduce any significant impacts.	**Applicant to updated the CEA figure in the Environmental Statement**	For the Environmental Statement

	The primary aim is to reduce any residual significant impact after primary and tertiary measures have been implemented. Although no significant impacts for projects alone were concluded, the applicant acknowledges the contribution to the soundscape.		
3.	**<u>Underwater Sound Management Strategy (presented by ST)</u>** Site Integrity Plans have historically been applied to projects in the Southern North Sea (SNS), in particular those within or close to the Southern North Sea SAC, which is designated for harbour porpoise. In these SIP's there are defined thresholds for cumulative effects of piling – 10% in a particular season, or 20% on a particular day. Mona and Morgan Generation are not predicted to reach the 10% area threshold for the nearest harbour porpoise SAC (i.e. North of Anglesey Marine SAC), either alone or in-combination with other projects. As such, a SIP, similar to those used in the Southern North Sea SAC, is not considered appropriate to manage underwater sound impacts. At PEIR, outstanding concerns were raised with respect to: • Bottlenose dolphin populations, including those associated with Welsh SACs; • Cumulative concerns about potential impacts of piling on cod spawning; • Concerns about potential piling impacts on herring spawning. The Applicant is looking to agree a mechanism (similar to SIPs) that allow us to agree an approach to managing the potential underwater sound impacts post consent, when more details of the project construction for the individual projects, and more detail on cumulative projects in the region, is known. We are producing an Underwater Sound Management Strategy (UWSMS) to do this. The UWSMS would allow the projects to focus on underwater sound for multiple receptors (fish and marine mammals). The project will submit an outline of the UWSMS with the applications so the stakeholders and Secretary of State can have confidence that this will be effective and agreed post consent. The UWSMS would set out the detailed refined project design pre-construction (e.g. the number of foundations that will need piling may be reduced, hammer energies may be revised etc.) as the application collects more information on the ground conditions. The version developed post-consent will contain any further environmental information e.g. cod and herring stock or spawning grounds. These have previously been used post-consent in discussion on underwater sound impacts. The impact assessments within applications assume all the piling is occurring at the same time and therefore you end up with a large, conservative assessment. In reality, all cumulative projects may not be piling at the same time therefore the cumulative impacts will likely be reduced from what has been assumed in the final		

	applications. This has been the experience for SIPs where impacts have been reduced due to phasing of projects. The UWSMS will set out potential mitigation options which could be employed if there are residual concerns about the cumulative impacts of underwater noise following refined project design. These are often agreed in principle at the application stage with final agreement achieved post consent with the final project design. Slide 15 presents the working table of content for the UWSMS. This may still be subject to change. An outline of the UWSMS will be submitted with the application for consent along side the MMMP. The main advice the applicant is looking for is whether this approach would be acceptable. This approach was presented at the steering group and the project generally received positive feedback. We are trying to put forward a process where the projects can continue towards consent and the detail can be discussed post-consent when further information is available. Post Meeting note from NRW: *The proposed Underwater Sound Management Strategy appears acceptable in principle, although we would need to have sight of the detailed version before being able to confirm full agreement.*	**Stakeholders to confirm whether the UWSMS is an acceptable approach to manage underwater sound impacts**	Complete
4.	**<u>Injury and disturbance during UXO clearance (presented by BP)</u>** The assessment has considered a range of UXO sizes and the maximum design scenario is based on high order clearance of 907 kg UXO. This is a highlight precautionary approach as the most likely maximum is 130 kg UXO. The assessments assumed standard industry mitigation (Marine mammal observers, Passive Acoustic Monitoring) plus Acoustic Deterrent Devices and soft starts for piling. The assessment concluded no significant effect for bottlenose dolphin, short-beaked common dolphin, Risso's dolphin, minke whale, grey seal and harbour seal for Permanent Threshold Shift (PTS). When a maximum UXO size of 907 kg is considered, for harbour porpoise there is some residual effect (small number of animals potentially exposed to sound levels that could elicit PTS), which has led to the conclusion of moderate adverse significance. The most likely maximum is 130 kg which is mitigatable and discussed in the Marine Mammal Mitigation Protocol. There is no significant impact for behavioural disturbance (using Temporary Threshold Shift as proxy) for any species. Details will be agreed post-consent when further information on UXO parameters are available. The project has committed to a hierarchy approach to UXO clearance. • Avoid UXO • Clear UXO with low order techniques		

	• Clear UXO with high order techniques. Low order techniques or avoidance of confirmed UXO are not always possible and are dependent upon the individual situations surrounding each UXO. Given that it is possible that high order detonation may be used the MMMP also includes mitigation to reduce the risk of injury from UXO clearance. The UWSMS would consider both project alone and cumulative scenarios; reducing project alone effect would reduce contribution to CEA. RF-B- Have Effective Deterrent Ranges been considered (for disturbance) in addition to the TTS thresholds? BP- In the EIA, TTS has been applied as a proxy, for piling we do use EDRs. We will get back to you regarding UXO. *Post meeting note: we currently have used TTS ranges for assessing UXO in the HRA, however we are reviewing the use of EDRs for the application for consent.* *Post meeting note from NRW: NRW would have no issue with the use of both TTS and EDRs in the HRA.*		
5.	**<u>Morgan Generation updated assessment (Presented by LB)</u>** The majority of the Morgan assessment is aligned with Mona. The approach to the iPCoD modelling for cumulative impacts differs to Mona. The parameters for modelling will be the same as for Mona for harbour porpoise and minke whale. For bottlenose dolphin, the most precautionary fecundity rate of 0.22 (rather than 0.3) will be modelled. For Mona, both were modelled but due to the large number of cumulative scenarios for Morgan Generation, only one fecundity rate will be modelled. For grey seal, only the most pragmatic precautionary management units, which comprises the GSPR rather than OSPAR Region III will be modelled as this is a more precautionary approach. Morgan Generation won't model both due to the large number of cumulative scenarios for Morgan Generation. The project is looking for agreement on this approach. NP- From the explanation provided, this appears reasonable – however, this needs to be discussed with the technical advisors before NRW (A) can confirm acceptance or otherwise. As per Mona, a six year time step will be presented alongside the 25 year model run length. *Post meeting note from NRW: For bottlenose dolphin, NRW agrees that the approach to the iPCoD modelling is sensible and acceptable. For grey seal NRW would prefer the use of OSPAR III rather than GSPR. However, as Morgan is mostly in English waters*	**Stakeholders to confirm that the approach to iPCoD modelling for bottlenose dolphin and grey seal is acceptable.**	Complete

	NRW find it acceptable to defer to Natural England on the preferred method for IPCoD modelling of grey seals. *NRW welcomes the decision to present a six year time step alongside the 25 year model run length.*		
6.	**<u>Morgan Generation Section 42 comments (presented by LB)</u>** There is one specific Section 42 comments for Morgan Generation that we would like to highlight. Natural England responded to say "In order to establish what % of the reference population (Management Unit) classes as significant, appropriate thresholds should be defined. Define appropriate thresholds for % of reference population predicted to be impacted by an activity, to aid assessment of the appropriate level of magnitude". There is a lack of understanding on the trigger point at which population level effects occur and equally a lack of understanding of the trigger point for effects in terms of percentage of the population. There isn't any guidance available on which to base a threshold therefore the assessment has used expert judgment. MNW- Understand that there isn't any guidance on where to set the threshold however without a threshold at which the impact becomes significant then the conclusions will always be not significant. It is a natural question but potential not one to be answered now for these projects. SR- We have used expert judgment in the assessments but if there is guidance available that could be provided to the project, that would be welcome. DH- There are examples of where thresholds have been set, these are fairly arbitrary though. Sound like we are looking for an opinion on a threshold and then analysis of what the project results look like against that threshold. SR- Is anyone aware of if guidance on this is coming out through the Environmental Standards? BS- We are involved in the Morlais project, which is different technology and for collision risk but they have conducted some work to set thresholds on collision for marine mammals. If this is available, we will send it over. *Post meeting note from TWT: having conducted a quick review the material on appropriate thresholds and collision rate modelling (CRM) for Morlais is restricted. I appreciate a different technology but the work to determine disturbance and species thresholds is comparable. Once it is releasable I will ensure it is made available to you.*		
7.	**<u>Updates to the HRA (presented by LB)</u>** For harbour porpoise, screening has been undertaken using the Celtic and Irish Sea MUs. For bottlenose dolphin, screening has been undertaken using the Irish Sea MU. For grey seal, screening has been undertaken using the four seal MUs. Following NRWs S42 advice, OSPAR Region III been considered to identify any additional		

	sites with grey seal as a qualifying feature, which may have connectivity with the Mona Offshore Wind Project. Telemetry data used to screen out additional sites that did not show connectivity. For harbour seal, the screening was undertaken using the Harbour Seal Regional Population (HSRP), typical foraging range of species (50 km) and seal telemetry. The approach to the assessment of disturbance resulting from piling in the ISAA now presents both EDRs and area-based threshold approaches. Dose response assessment has been removed based on S42 feedback. The EDRs used are 15 km as they are for pin piles not monopiles. For harbour porpoise only, the unweighted threshold of 143 dB re 1µPa will be used to represent the minimum fixed generalised response threshold (Tougaard, 2021) at which significant disturbance could occur. For all other species, the NMFS level-B harassment threshold of 160 dB SPLrms will be applied for piling alongside the relevant EDR (NMFS, 2005). No Adverse Effect on Integrity (AEoI) has been predicted for harbour porpoise, grey seal or bottlenose SAC for the project alone and in-combination. *Post meeting note from NRW: It is unclear whether these updates refer to only the Morgan ISAA, or both Mona + Morgan ISAAs. If this section includes Mona, the approach to use OSPAR III to identify additional grey seal sites and screen out any additional sites that did not show connectivity is pragmatic given that all three Welsh SACs with GS as a feature will be screened in (Pembrokeshire Marine SAC being crucial given its importance as a major pupping site).* *Confirmation is being sought over whether the intent is to use an iterative assessment on the SACs that were screened in, in accordance with NRWs position statement on the use of management units in HRA?* *Applicant response: These updates refer to the Mona ISAA. In accordance with NRW's position statement and guidance, an iterative assessment has been used on the Welsh SACs screened in.*		
8.	**<u>Agreement logs (presented by ST)</u>** As discussed in previous EWG meetings we have made good progress on methodologies, and these have been logged in the agreement logs. The next aim is to map out progress towards conclusions and mitigation agreements as we move to application submission. The projects are looking to agree topics now based on the PEIR and project update and information provided in this presentation, and other EWG discussions. The projects are aware that there will be some items under discussion and so agreements will be made once these discussions take place and as the projects progress the advice received from the PEIR and EWGs. The agreement log includes a request for agreement that for the project alone there will not be any adverse effects on integrity of designated sites. This is based on the PEIR and updates shown today that there is no greater magnitude of impact than was presented at PEIR. The applicant understands the EWG will wish to		Ongoing

	see the full cumulative assessment ahead of providing agreements on impact levels, but we wanted to highlight that we are not in a position of significant/adverse effects or impacts for Mona or Morgan Gen. Some additional items in the agreement log and others have been flagged as under discussion, and some have been flagged as agreed. We would like to map a pathway to agreement and where we want to progress to, up to application. These logs will form framework for statements of common ground.	**Stakeholders to review and update the agreement log**	
9.	**<u>Next Steps (presented by ST)</u>** The meeting minutes and agreement logs will be circulated 2 weeks after the meeting. Thank you very much for all your input over the last few years to this Evidence Plan process.		

C.7.2 Response from NRW regarding meeting minutes

From: [redacted]
Subject: RE: Morgan Mona marine mammals EWG meeting 7
Date: 10 January 2024 17:09:00
Attachments: image002.png
image003.png
20231205_Morgan and Mona_MM EWG06 MoM F01_NRW Comments.docx
Morgan_Mona_MM_EWG_Agr Log F05.xlsx

Dear [redacted]

Thank you for providing the minutes for the Morgan/Mona Marine Mammals EWG 06 held on Tuesday December 5th. Please find our comments in the version attached.

We note that the Agreement Log provided with the minutes does not reflect any discussion points from the latest EWG. There are also several items within the log that are out of date, and it is unclear which items bp are currently seeking agreement on as progress on items have not been tracked with dates of comments/agreement except for the date of the EWG they were raised at. The agreement log provided has however been reviewed and updated with NRW (A)s understanding of the position / status of each issue. To aid the applicant's understanding of NRW (A)'s position on the items within the logs, an additional column has been provided which contains NRW's suggested status for each item and a colour coding system, including

Agreed (green)
Ongoing point under discussion (yellow)
Not agreed – but no material impact (orange)
Not agreed – material impact (red)

This status may help when considering how to transpose the agreement log into any Statement of Common Ground. Please can the applicant review these changes, ready for discussion at our meeting on January 18th

Regarding the actions on stakeholders contained within your email, please find our responses below.

Stakeholders to confirm whether the UWSMS is an acceptable approach to manage underwater sound impacts (10/01/24) - NRW Advisory state that the strategy could be an acceptable approach, however without sight of this strategy in detail and its subsequent iterations we are unable to confirm that it would be acceptable for the management of impacts from underwater sound.

Stakeholders to confirm that the approach to iPCoD modelling for bottlenose dolphin and grey seal is acceptable (10/01/24) - We confirm that the approach to iPCoD modelling is acceptable. We also welcome the decision to present a six-year time step alongside the full 25 year model run length. For bottlenose dolphin, we agree with the decision to use a fecundity rate of 0.22, given this was the recommended rate in our advice on population parameters from October 2022 (with alternative options of 0.3 and 0.16). For grey seal while NRW would prefer the use of OSPAR III as a management unit (in line with all prior comments explaining our reasoning), given that Morgan is mostly in English waters, NRW defers to Natural England on the preferred management unit.

If you have any questions please don't hesitate to get in touch.

Kind Regards,

[redacted]

[redacted]

Croesewir gohebiaeth yn Gymraeg a byddwn yn ymateb yn Gymraeg, heb i hynny arwain at oedi.

Correspondence in Welsh is welcomed, and we will respond in Welsh without it leading to a delay.

C.7.3 Response from JNCC regarding meeting minutes

From: [redacted]
Date: [redacted] marine mammals EWG meeting 7
10 January 2024 16:26:28
Attachments: image002.png
image003.png
Morgan_Mona_MM_EWG_Agr Log F05_Final.xlsx

Good afternoon [redacted],

Please find attached the updated Decision Log for marine mammals. There was some confusion around the meeting date within the Log, in particular 16th October 2023. We are not aware of a meeting occurring on that date.

Please also see below our responses to the Action Points (below in blue):

1. Applicant to update the CEA figure in the Environmental Statement (for the Environmental Statement) > AP for applicant; not applicable to JNCC
2. Stakeholders to confirm whether the UWSMS is an acceptable approach to manage underwater sound impacts (10/01/24) > JNCC are content with the approach and agree with the inclusion of noise abatement as a potential mitigation option for piling however we disagree with the inclusion of UXO clearance, as indicated on slide 15. As we advised on the PEIR, we do not recommend this activity is included as a licensable activity in the DCO/deemed ML and therefore it should not be included in this strategy at this time. Once it is determined UXO clearance is needed, appropriate mitigation measures can be discussed as part of that marine licence application and if appropriate, it can be added to this strategy. We would also expect agreement to this approach is secured as a condition of consent, and that JNCC are one of the stakeholders involved in development of the strategy post-consent.
3. Stakeholders to confirm that the approach to iPCoD modelling for bottlenose dolphin and grey seal is acceptable (10/01/24) > JNCC defer to the relevant SNCBs regarding this point
4. Stakeholders to review and update the agreement log (10/01/24) > Agreement log attached.

Please let me know if you have any questions.

Kind regards,

[redacted]

C.7.4 Response from Cefas regarding meeting minutes

From: [redacted]
[redacted]
Subject: Review of meeting minutes for Morgan and Mona Evidence Plan marine mammals meeting which took place on the 5th December 2023.
Date: 08 January 2024 16:32:47
Attachments: Picture (Device Independent Bitmap) 1.jpg
Picture (Device Independent Bitmap) 2.jpg
Morgan_Mona_MM_EWG_Agr Log F05 - Cefas comments.xlsx
20231205_Morgan and Mona_MM EWG06 MoM F01 - Cefas comments.docx

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[redacted],

Please see below the response from the Under Water Noise Team (CEFAS) re the Marine mammal EWG 07 – 5 Dec 2023

To the best of my knowledge, I can confirm that the meeting minutes are an accurate representation of the discussions held.
I think I asked the question whether Effective Deterrent Ranges have been considered as well as TTS (Temporary Threshold Shift) thresholds – this has the initial 'RB' against this comment in the minutes rather than RF.
We (Cefas) do not support the use of TTS thresholds being applied as a proxy for assessing disturbance, so we recommend that appropriate alternatives are proposed.

The actions from the meeting that are for Cefas/MMO are:

- Stakeholders to confirm whether the UWSMS is an acceptable approach to manage underwater sound impacts (10/01/24)

We (Cefas) would be interested to hear Natural England's views on this, specifically the applicant's view that a Site Integrity Plan (SIP) is not considered appropriate to manage noise impacts. If an Underwater Sound Management Strategy (UWSMS) is agreed as the preferred approach, then it would be helpful to set out in advance the conditions under which noise abatement, for example, will be required, so that there is a clear set of boundaries within which the developer will be working. This approach would still allow for the construction planning to evolve, but it would also give confidence that appropriate safeguards are in place at the stage of giving consent to the project, rather than leaving it to time-pressured discussions (which is too often the case) after consent has been granted.

- Stakeholders to confirm that the approach to iPCoD modelling for bottlenose dolphin and grey seal is acceptable (10/01/24)

I defer to Natural England and the other relevant SNCBs for their recommendations.

- Stakeholders to review and update the agreement log (10/01/24)

Please see updated agreement log attached with Cefas comments (comments are noted in blue font).

Many thanks

[redacted]

[redacted]

[redacted]

Our MMO Values: Together we are **Accountable, Innovative**, **Engaging** and **Inclusive**

Enabling sustainable growth in our marine area

To receive information from the MMO's Marine Conservation Team regarding marine protected areas in England, please email "Contact me" to [redacted]'

C.8. Marine mammals agreement log

Morgan Agreement Log for the Marine Mammals Expert Working Group

Item	Meeting Date	Issue on which agreement is sought	Consultee	Progress of agreement in the EWG	Agreement?	Notes
1	17/02/2022	Agreement on the Remit and Inputs to the EWG (as set out in Section 4.3 of the Evidence Plan Template).	JNCC	JNCC agree in principle to the remit laid out in section 4.3 of the Evidence Plan Template.	Agreed	Any advice or assistance provided by JNCC via our Discretionary Advice Service is advisory only, and with reference to the General terms and conditions for DAS chargeable services, JNCC excludes any warranty that the advice provided by its officers represents JNCC's opinion or otherwise binds JNCC when acting as a Statutory Consultee.
			JNCC	JNCC agree in principle to the remit laid out in section 4.3 of the Evidence Plan Template.	Agreed	Any advice or assistance provided by JNCC via our Discretionary Advice Service is advisory only, and with reference to the General terms and conditions for DAS chargeable services, JNCC excludes any warranty that the advice provided by its officers represents JNCC's opinion or otherwise binds JNCC when acting as a Statutory Consultee.
			Natural England	Natural England provided comment on the draft Evidence Plan, via a comments log, on 4 November 2021. It was our view that the Evidence Plan set out the basic framework of the Evidence Plan. This was ahead of the 1st Evidence Plan meeting on 16 November 2021. We welcome the update of the Evidence Plan (version F02, provided 4 February 2022) which has incorporated our earlier comments. The remit of the Marine Mammal EWG as set out under 4.3 of the Evidence Plan (v F02) is appropriate and in line with Natural England's previous comments, we agree the remit as set out. The list of topics listed in 4.3.1 covers the majority of anticipated topics. Very minor point but in the last bullet point, we anticipate that the monitoring options will be discussed prior to the finalisation of the In Principle Monitoring Plan – the monitoring itself is typically finalised post-consent.	Agreed	None
			MMO/Cefas		No comments in agreement log	
2	17/02/2022	Agreement on Ways of Working document, including timescales.	JNCC	JNCC agree in principle to the Ways of Working document. JNCC would like to note that based on resources and workloads, longer response times may be needed for complex documents or issues. JNCC will notify RPS vis the lead contacts (Kevin Linnane and Samantha Tuddenham) if this situation arises.	Agreed	The timeline provided in the presentation indicates that PEIR will be submitted prior to the EWG being presented with the baseline characterisation and outputs of impact assessment. This timeline incurs a risk that we cannot agree with information presented in the PEIR and misses an opportunity to resolve potential issues prior to publication of the PEIR.
			Natural England	We welcome the Evidence Plan Ways of working document (version F01, provided 4 February 2022) as a clear reference document. Natural England agrees with the Ways of Working document which aligns with previous comments in terms of timescales for review and comment provided as part of our comments on the draft Evidence Plan (4 November 2022). As noted in the document, it may be necessary for timescales to be amended to ensure sufficient time to review and comment (e.g. large documents or multiple documents), in which case we will communicate and agree an alternative deadline	Agreed	None
			MMO/Cefas		No comments in agreement log	
3	17/02/2022	Agreement on aerial surveys with respect to marine mammals; in particular use of an appropriate buffer around the Morgan array area.	JNCC	JNCC do not agree with the current aerial survey design.	Not agreed	Based on discussions in the initial meeting on the 17th February 2022 and information provided to RPS by JNCC, NE, and NRW dated April 2021, the suitability of survey design cannot be confirmed. The design of aerial surveys for marine mammals and ornithology are still not suitable, and recommendations have previously been made to use multiple data sources. Agreement on survey design for ornithology does not mean design is suitable for other receptors. If the data is to be used in environmental assessments, receptor-specific evidence should be provided to support the approach taken. Please refer to the previously provided joint advice dated 28/04/2021.
			NRW	NRW(A) cannot confirm agreement to the aerial survey design.	Agreed	NRW (A) provided joint advice with JNCC and NE by email dated 28/04/21 regarding the suitability of the survey design for ornithology. It is not possible to determine whether the likely impacts on marine mammals from the development could extend beyond the survey area at this time. The suitability of Digital Aerial Survey (DAS) data for marine mammal impact assessment cannot be conclusively determined based on the presented survey design alone. We recommend all possible data sources, including those from DAS and the desktop study, are evaluated for quality and suitability and the most precautionary source with sufficient data quality be used in impact assessments. It may be appropriate to present multiple data sources in the final assessments.
			MMO/Cefas		No comments in agreement log	

4	17/02/2022	Agreement on extent of Regional Marine Mammal study area to be used for providing additional context (noting that reference populations will be defined on basis of species specific MUs) and for the purposes of CIA screening. Note that LSE screening distances will be agreed separately and will likely take an iterative approach i.e. for a given species screening SACs with increasing distance from the Morgan Offshore Wind Project such that at the point an SAC is screened out, all SACs at greater distance will also be screened out.	JNCC	JNCC do not agree with the use of Regional Marine Mammal study areas for this project.	Not agreed	JNCC require the use of Marine Mammal Management Units (MMMUs) for screening as noted by JNCC MU guidance: https://hub.jncc.gov.uk/assets/f07fe770-e9a3-418d-af2c-44002a3f2872.
			Natural England	Natural England requires a response from RPS on the purpose of the regional marine mammal study area before an agreement can be made on the extents proposed	Agreed	Natural England is in broad agreement to the approach to baseline characterisation, notwithstanding the aforementioned comment on the extent of the regional marine mammal study area to be characterised. We consider that the revised list of likely species that was presented in the meeting, including minke whale, is appropriate. With regards to the desktop data sources - consideration should be given to the inclusion of NGO/citizen observer data in the region. This would be particularly relevant for the more coastal areas, as these can provide local sightings information on areas of potential cable landfall. Natural England thanks and supports NRW in their detailed list of desktop data sources provided to the developer. Natural England asks that the applicant explicitly include the results of the MMO observations (i.e. list all sightings) onboard the site investigation surveys in their baseline characterisation.
			NRW	NRW (A) cannot agree to the use or extent of Regional Marine Mammal study areas at this time.	Under discussion	It is not clear for precisely what purpose Regional Marine Mammal study areas are defined, therefore NRW (A) are unable to agree to them at this stage. NRW (A)'s position on the use of Marine Mammal Management Units (MMMUs) for impact assessment or screening, and advice on applying these MUs during Appropriate Assessment has been provided in NRW (A)'s position statement which has been provided to the Applicant. 09/01/2024 - NRW (A) confirm that we disagree to the use of a Regional Marine Mammal study area. We do however recognise that the applicant has now changed the methodology to use management units instead, which we do agree with.
			MMO/Cefas		No comments in agreement log	
5	19/07/2022	Agreement on approach to the baseline characterisation.	JNCC	JNCC agree that DAS should not be the primary data source for marine mammal characterisation due to the issues associated with observing marine mammals at sea, and are happy for the baseline to be supplements with other data sources.	Agreed	Note, the interim baseline not presented due to lack of time
			NRW	NRW (A) await further discussion on the approach to baseline characterisation for Marine Mammals in future EWG meetings prior to formal agreement.	Agreed	09/01/2024 - NRW (A) can confirm that we now agree with the approach to the baseline characterisaiton approach following discussions during EWGs.
			MMO/Cefas	MMO defers to Natural England and the other relevant SNCBs	MMO defers to Natural England and the other relevant SNCBs	
6	19/07/2022	Agreement on approach to noise modelling following clarifications provided in EWG.	JNCC	JNCC hold agreeing to the approach until after RPS have provided a log of the scenario's being considered with justification for the approach	Under discussion	JNCC appreciate the information provided and opportunity to discuss the subject in the meeting
			NRW	NRW (A) await further information and discussion on the approach to noise modelling prior to formal agreement.	Agreed	NRW (A) agree with the outlined approach to noise modelling following clarifications provided in the EWG and welcome the proposal to use a hybrid finite element / parabolic equation model to determine the source level of the newer, larger piles intended for use in this project.
			MMO/Cefas	The MMO supports the dual metric approach for assessing auditory injury in marine mammals. Both the peak sound pressure level (peak SPL) and the cumulative sound exposure level (SELcum) ranges should be presented. For the assessment of UXO clearance, the peak SPL, as in the NOAA (NMFS, 2018) and Southall et al. (2019) guidance, is the correct metric to use for instantaneous PTS.	Agreed	
7	19/07/2022	Agreement on approach to LSE Screening for Marine Mammals.	JNCC	JNCC agree with the use of the harbour porpoise and bottlenose dolphin MUs for LSE screening; we will provide comment on the seal ranges once they've been considered again in the context of Carter et al	Under discussion	Note, the approach was briefly presented in the meeting but no oppotunity for discussion due to time contraints.
			NRW	NRW (A) await further discussion on the approach to LSE Screening for Marine Mammals in future EWG meetings prior to formal agreement.	Agreed	NRW agree with the use of the harbour porpoise and bottlenose dolphin MUs for LSE screening, in line with our position statement. For grey seal we would recommend the use of either the OSPAR III interim MU, or the use of the Carter et al 2022 maximum foraging range of 448 km. 09/01/2024 - Following discussions at the most recent EWG NRW (A) can now confirm agreement to the approach for LSE Screening for Marine Mammals.
			MMO/Cefas	MMO defers to Natural England and the other relevant SNCBs	MMO defers to Natural England and the other relevant SNCBs	
8	19/07/2022	Agreement that White beaked dolphin can be scoped out fo the EIA and HRA.	JNCC	Agreed during Marine Mammmal EWG02	Agreed	
			Natural England	Agreed during Marine Mammmal EWG02	Agreed	
			MMO/Cefas		No comments in agreement log	
9	19/07/2022	Agreement that the Celtic and Irsh Sea (HP MMMU) is an appropriate study area for dolphin and minke whale.	NRW	Agreed during Marine Mammmal EWG02	Agreed	NRW agree this could be a more pragmatic spatial scale for EIA and CEA than the very large Celtic and Greater North Sea MMMU with regards to dolphin species (ie all species except bottlenose, for which MMMUs have been well defined) and minke whale
			MMO/Cefas		MMO defers to Natural England and the other relevant SNCBs	

10	17/11/2022	Agreement on approach to densities and reference populations - harbour porpoise	Natural England	Proposed approach set out in EWG03, pre-meeting note and meeting minutes. Update after EWG05 *Agreed in response to the updated approach outlined in EWG05	Agreed	We note that in EWG05, it was confirmed that the welsh MM Atlas would be used going forward. Natural England is in agreement with the use of the Welsh Marine Mammal Atlast as this is the the latest and most relevant evidence related to harbour porpoise in the project area.
			NRW		Agreed	NRW would recommend the use of modelled density data from the latest version of the Marine Mammal and Bird atlas, and Harbour porpoise Celtic and Irish seas management unit.
			JNCC		Agreed	JNCC note that the APEM Mona aerial survey density is notably smaller than the SCANS-III block E density. JNCC recommend using either the SCANS density or the Marine Mammal Atlas as recommended by NRW for a more conservative estimate.
			MMO/Cefas		MMO defers to Natural England and the other relevant SNCBs	
11	17/11/2022	Agreement on approach to densities and reference populations - grey seal	Natural England	Carter et al. used for densities. Reference population to be discussed at the next EWG (Q1 2023).	Agreed	Natural England agree on the approach to densities and reference populations for Risso's dolphin, short beaked dolphin, minke whale, and also on the densities for grey seal.
			NRW		Agreed	NRW would recommend the use of the OSPAR Region III interim Management Unit as the appropriate scale for assessing population level impacts and as the reference population for IPCoD modelling. We agree with the use of Carter et al densities. 28/12/2023: NRW (A) can agree in principle with the approach proposed in EWG06, subject to this approach being adopted.
			JNCC		Agreed	Grey seal sites are inshore so JNCC defer to NRW and NE on this but agree in principle.
			MMO/Cefas		MMO defers to Natural England and the other relevant SNCBs	
12	17/11/2022	Agreement on approach to densities and reference populations - bottlenose dolphin.	Natural England	Proposed approach set out in EWG03, pre-meeting note and meeting minutes. Update after EWG05 *Agreed in response to the updated approach outlined in EWG05	Agreed	We note that in EWG05, it was confirmed that the welsh MM Atlas would be used going forward. Natural England is in agreement with the use of the Welsh Marine Mammal Atlast as this is the the latest and most relevant evidence related to bottlenose dolphin in the project area.
			NRW		Agreed	NRW would recommend the use of modelled density data from the latest version of the Marine Mammal and Bird atlas. 09/01/2024 - NRW (A) can agree in principle with the approach proposed in the latest EWG06, subject to this approach being adopted.
			JNCC		Agreed	
			MMO/Cefas		MMO defers to Natural England and the other relevant SNCBs	
13	17/11/2022	Agreement on approach to densities and reference populations - Risso's dolphin, short beaked dolphin, minke whale	Natural England	Agreed with EWG via pre-EWG03 meeting note.	Agreed	Natural England agree on the approach to densities and reference populations for Risso's dolphin, short beaked dolphin, minke whale, and also on the densities for grey seal.
			NRW		Agreed	NRW (A) do not agree with the use of densities from Waggitt et al 2020 for short beaked common dolphin proposed during EWG05. NRW (A) do agree with the remaining species densities and reference populations outlined in Table 1 of the draft EWG05 Meeting Minutes received via email on 13th July 2023. 09/01/2024 - NRW (A) can agree in principle with the approach proposed in the latest EWG06, subject to this approach being adopted.
			JNCC		Agreed	
			MMO/Cefas		MMO defers to Natural England and the other relevant SNCBs	
14	16/10/2023	Other than UXO impacts, there will be no significant effects on marine mammal receptors in EIA terms for the project alone.	Natural England		Under discussion	
			JNCC		No comments in agreement log	
			NRW		Under discussion	09/01/2024 - NRW (A) are unable to confirm no significant effects on marine mammal receptors in EIA terms for the project alone without sight of the assessments. Despite anticipating that agreement is likely, we are unable to confirm this without the opportunity to review the assessments.
			MMO	Unable to agree at this stage - full details of the updated noise modelling and proposed mitigation will need to be reviewed.	Under discussion	
15	16/10/2023	There will be no adverse effects on integrity on SACs with marine mammal features for the project alone.	Natural England		Under discussion	
			JNCC		No comments in agreement log	
			NRW		Under discussion	09/01/2024 - NRW (A) are unable to confirm no AEOI on SACs with marine mammal features without sight of the assessments. Despite anticipating that agreement is likely, we are unable to confirm this without the opportunity to review the assessments.
			MMO		MMO defers to Natural England and the other relevant SNCBs	
16	16/10/2023	Other than piling and UXO impacts, there will be no significant effects on marine mammal receptors in EIA terms for the project	Natural England		Under discussion	
			JNCC		Under discussion	

		cumulatively.	NRW		Under discussion	09/01/2024 - NRW (A) are unable to confirm no significant effects on marine mammal receptors in EIA terms cumulatively without sight of the assessments. Despite anticipating that agreement is likely, we are unable to confirm this without the opportunity to review the assessments.
			MMO		MMO defers to Natural England and the other relevant SNCBs	
17	16/10/2023	Other than piling impacts, there will be no adverse effects on integrity on SACs with marine mammal features for the project in-combination with other plans and projects.	Natural England		Under discussion	
			JNCC		Under discussion	
			NRW		Under discussion	09/01/2024 - NRW (A) are unable to confirm no AEOI on SACs wth marine mammal features in combination with other plans and projects without sight of the assessments. Despite anticipating that agreement is likely, we are unable to confirm this without the opportunity to review the assessments.
			MMO		MMO defers to Natural England and the other relevant SNCBs	
18	16/10/2023	For UXO impacts, although a significant effect (injury) on harbour porpoise is predicted any such effects will be managed and avoided through measures set out in the MMMP, which will be agreed with stakeholders post consent.	Natural England		Under discussion	
			JNCC		Under discussion	
			NRW		Under discussion	09/01/2024 - It is not possible for NRW (A) to confirm whether effects to harbour porpoise *could* be managed and avoided (note: not *will* be managed) through measures set out in the MMMP without the opportunity to review the latest version of this document and subsequent iterations.
			MMO	Full details of the updated / finalised noise modelling and proposed mitigation will need to be reviewed.	Under discussion	
19	16/10/2023	For piling impacts, although a significant cumulative effect (in EIA terms) / in-combination AEOI (in HRA terms) is predicted on bottlenose dolphin, any such effects will be managed and avoided through measures set out in the Underwater Sound Management Strategy (Piling Strategy), which will be agreed with stakeholders post consent.	Natural England		Under discussion	
			JNCC		Under discussion	
			NRW		Under discussion	09/01/2024 - It is not possible for NRW (A) to confirm whether effects to bottlenose dolphin *could* be managed and avoided (note: not *will* be managed) through measures set out in the UWSMS without the opportunity to review the latest version of this document and subsequent iterations.
			MMO		MMO defers to Natural England and the other relevant SNCBs	
20	16/10/2023	The mitigation and management measures are appropriate to ensure all other significant effects and AEOI are avoided for marine mammal receptors, including the the Measures to Minimise Impacts to Marine Mammals and Rafting Birds.	Natural England		No comments in agreement log	
			JNCC		No comments in agreement log	
			NRW		Under discussion	09/01/2024 - It is not possible for NRW (A) to confirm whether mitigation and management measures will be sufficient to rule out all other Significant Effects and AEOI for marine mammal receptors without sight of the latest version of the MMMP and subsequent iterations. We are unable to comment on rafting birds in the Marine Mammal Agreement Log.
			MMO		MMO defers to Natural England and the other relevant SNCBs	
	16/10/2023	Agreement on the CEA screening area for site investigation surveys and use of a maximum number of site investigation surveys occurring	Natural England	NE agree with the proposed regional marine mammal study area. NE agree with the proposed approach of using Grey Seal Reference Population for CEA	Agreed	
			JNCC		Agreed	

21		concurrently.	NRW	NRW (A) acknowledge in Section 1.5.1.2 that our response to the screening distances for site investigation surveys has been noted. We agree with the proposed approach of two site investigation surveys occurring simultaneously, and the rationale on which the estimate is based on.	Agreed	Update 09/01/2024 - NRW (A) can confirm that this issue has been closed out following our comments on EWG05 in September 2023
			MMO		MMO defers to Natural England and the other relevant SNCBs	
22	16/10/2023	Agreement on the use of the area-based approach for HRA based on Effective Deterrent Range (EDR) and 143 dB threshold	Natural England	NE agree with the proposed approach regarding the EDRs and dose response for HRA and EIA.	Agreed	
			JNCC	JNCC are content for EDRs not to be used in the EIA assessment and for an unweighted noise threshold of 143 dB re 1µPa (or 103 dB re 1µPa VHF-weighted) to be used in addition to the EDR approach for the HRA	Agreed	
			NRW	NRW (A) acknowledge and agree with the proposed approach in Section 1.7.1.1, to use a 143 dB single strike unweighted Sound Exposure Level (SELss) or a 103 dB VHF-weighted SELss threshold in parallel with an EDR. We also acknowledge and welcome the statement that dose-response will not be applied to the area-based assessment. With reference to Section 1.7.1.2, NRW (A) agree with the proposed use of a 160 db SPLrms threshold for other marine mammal species in the HRA, alongside the relevant EDR. With reference to Section 1.7.1.3, in line with NRW's position statement on assessing behavioural disturbance, NRW (A) recommend the use of the dose-response approach alone to assess behavioural disturbance from piling noise. This is because the 143 dB SELss threshold is intended as a tool for area-assessment. Dose response approaches better reflect behavioural responses in the wild (which tend to be probabilistic) and should be used for EIA where these exist. Where dose response curves do not exist for a given noise source, NRW (A) recommend following the advice outlined in our position statement.	Agreed	Update 09/01/2024 - Can confirm NRW (A) are content with this proposed approach for the HRA and confirm agreement.
			MMO	The use of an unweighted threshold of 143 dB re 1µPa relates to harbour porpoise only. For all other marine mammal species considered in HRA the NMFS level-B harassment threshold of 160 dB SPLrms will be applied for piling alongside the relevant EDR (NMFS, 2005). Please note that thresholds based on the SPLrms are not appropriate for impulsive sources such as percussive pile driving – the appropriate metric is the SELss (single strike Sound Exposure Level)."	Under discussion	
23	16/10/2023	Agreement on presenting a 6-year time step in the iPCoD model, assessing temporal maximum design scenario and to add in additional cumulative projects.	Natural England	NE agrees with the proposed approach in regards to iPCod modelling.	Agreed	
			JNCC		Agreed	
			NRW	NRW (A) agree with the approach outlined.	Agreed	Agreement confirmed 28/12/2023. NRW (A) welcomes the decision to present a six year time step alongside the 25 year model run length.
			MMO		MMO defers to Natural England and the other relevant SNCBs	
24	16/10/2023	Approach to present both with and without ADD and to base the conclusions of the assessment on the impacts which take into account any designed-in measures, including the use of ADDs	Natural England	NE stands with our previous advice that the assessment should be based on the underwater noise modelling without ADDs. Modelling with an indicative 30min ADD duration can be used to showcase the benefits of such devices as a potential mitigation tool in a separate chapter but not for the purpose of the assessment.	Under discussion	
			NRW	NRW (A) agree with the proposed approach.	Under discussion	09/01/2024 - We agree with the proposed approach in principle, however would recommend this is presented bearing in mind the most recent evidence [Elmegaard et al 2023] (https://www.nature.com/articles/s41598-023-43453-8) The approach proposed should consider: (a) Length of ADD exposure based on need, i.e. the impact range from PTS. Otherwise, if exposure length is indicative we would advise making that clear. (b) In line with MMO advice, the worst case ranges with no ADD need to be presented clearly and considered in depth . (c) The risk that in an effort to reduce injury, the impact pathway may be shifted to disturbance. With respect to point (c), recent work by Siri Elmegaard from Peter Madsen's group at the Uni of Aarhus has shown that porpoise in particular are extremely sensitive to acoustic harassment devices, even at low received levels. Thus, our advice would be that if overall conclusions are to be based on designed-in measures, all aspects of the designed-in measures including potential disturbance from ADDs should be considered and included.
			JNCC		Agreed	
			MMO	Content for the assessment to present the benefits of using an ADD, as long as the worst-case ranges (i.e, no ADD) are clearly presented and considered.	Agreed	