



Marine
Management
Organisation

OUTER DOWSING OFFSHORE WIND

EN010130

Marine Management Organisation

Principal Areas of Disagreement Summary Statement (PADSS)

Finalised: 13 June 2024

A new approach to establishing principal areas of disagreement between consultees and applicants is being trialled on the Outer Dowsing Offshore Wind (ODOW) project under the [NSIP Reform Early Adopters Programme](#).

Pre-application is the optimal time to seek agreement between parties. The use of PADSS have proved helpful in Examination procedures and should also assist negotiations when developed during the Pre-application stage.

The development of 'Pre-application PADSS' is expected to be an iterative process with versions provided by consultees to the Planning Inspectorate and the Applicant to inform discussion at project update meetings with the Applicant. Finalised Pre-application PADSS are requested to be provided by consultees to the Applicant to accompany the submission of their application for development consent. and provided to the Applicant prior to submission.

If the application is accepted for Examination, subject to the discretion of the appointed Examining Authority PADSS should continue to be updated during the Pre-examination and Examination stages of the process where issues remain.

This document comprises a preferred format for consultees to record areas of disagreement during the Pre-application stage.



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Ref	Area of disagreement	Summary of concern held by Marine Management Organisation	What needs to change, or be included or amended to overcome the disagreement?	Likelihood of the concern being addressed prior to submission of the application/ during the Examination
1	<u>Marine Processes</u> Impacts from scour.	Potential impacts from sediment that would be mobilised due to erosion occurring during scour development is not fully assessed.	<p>The impacts of using scour protection (relating to a greater footprint of hard substrate being introduced, which may lead to habitat change/loss) should be compared to the impacts of simply designing foundations which can accommodate scour development.</p> <p>Secondary scour can occur around the edges of scour protection and the potential for this to increase the footprint of the project effects should be assessed. It is noted that 'there is limited numerical basis for the prediction of this secondary scour'. The MMO recommends that further evidence is collected from field data/monitoring evidence from other wind farms if available.</p> <p>Section 7.12.2.2 discusses the impacts of seabed scouring, with the applicant making some estimations for the magnitude of the scour equilibrium volumes. There is a good general discussion regarding scour. MMO notes that the applicant still has not made any predictions for secondary scour due to limited numerical basis for prediction and remains unclear as to whether secondary scour volumes are included in the project footprint.</p>	MMO is hopeful that this will be resolved during Examination.
2	<u>Benthic and Intertidal Ecology</u> Impact of temporary habitat disturbance during the construction phase: <i>Sabellaria spinulosa</i> reef.	It is possible that potential <i>Sabellaria spinulosa</i> reef could go undetected in future geophysical surveys.	<p>The MMO advises that ODOW indicate how they will ensure that the pre-construction surveys will be able to identify any areas of potential <i>Sabellaria spinulosa</i> reef so that they can be avoided by micro-siting / routeing.</p> <p>We note that the Applicant has committed to pre-construction surveys which outlines the mitigation plan. However, this document does not provide any details on the methodology to be adopted. We would highly recommend the use of drop-down video at the previous areas where substantial low and medium reef was observed in still images as it is known to be difficult to distinguish reef from the surrounding coarse/mixed sediments.</p>	MMO is hopeful that this will be resolved during Examination.
3	<u>Benthic and Intertidal Ecology</u> Potential spread of invasive non-native species (INNS) due to the presence of infrastructure during the	Impact magnitude assigned 'negligible'.	It is acknowledged that there is uncertainty regarding whether this impact will occur, and which species will be involved if it does. Given this uncertainty, the MMO queries whether it would be suitably precautionary to increase the impact magnitude above 'negligible'? When considering the risk of this impact, it would be useful to consider the proximity of the	MMO is hopeful that this can be resolved during the Examination.

	operation & maintenance phase.		<p>infrastructure to other artificial or natural hard habitats in the area in the Cumulative Effects Assessment (CEA). This would indicate the potential for the installed infrastructure to act as stepping stones for the spread of Invasive Non-Native Species (INNS) in the region.</p> <p>The Applicant has only considered temporary increases in suspended sediment concentration (SSC) and sediment deposition during construction under the Cumulative Effects Assessment (CEA) assessment. We recognise that embedded measures have been considered within the PEMP, however this is restricted to vessel movements during construction and does not consider potential spread of INNS during operation. The Applicant has acknowledged the lack of scientific knowledge regarding the spread of INNS and that the windfarm may act as stepping stones extending the impact beyond a local scale but has still assessed the magnitude as negligible. We therefore again advise reassessing this as above 'negligible'.</p> <p>Given the high level of uncertainty regarding the potential spread of INNS, the MMO considers it would be appropriate to monitor selected infrastructure for colonisation by INNS, followed by discussions with MMO regarding the possible application of adaptive management measures if INNS are recorded and action is deemed appropriate. We note that the Applicant has committed to monitor INNS only if gravity base structures (GBS) are used. It is not clear why this is the only turbine base type that is being considered. All structure types can provide suitable colonisation substrate for INNS.</p>	
4	<u>Fish and Shellfish Ecology</u> Shellfish	The listed data sources do not cover the array or cable corridor, and several are over 10 years old, which could be considered outdated.	MMO would expect more recent data to inform the baseline environment for shellfish receptors and shellfisheries. For a project of this size and nature, MMO would typically expect the most recent 10 years of IHLS data, up to year 2022/2023, to have been used.	MMO is hopeful that the Applicant will provide the required data for this to be resolved during Examination.
5	<u>Fish and Shellfish Ecology</u> Fish	The assessment of impacts to fish from underwater noise and habitat disturbance for some species (primarily herring and sand eel) requires further consideration.	Although the 135 dB modelling has been presented in the ES, the Applicant has chosen not to include the 135 dB impact range for behavioural effects in their impact assessment for herring. MMO considers the 135 dB threshold from Hawkins et al., (2014a) is the best current scientific evidence from which a quantitative threshold can be derived for the purposes of modelling behavioural responses in herring. MMO maintains that the 135 dB threshold (as per Hawkins et al., 2014) is a precautionary, but appropriate threshold for the purpose of modelling behavioural responses in herring at their spawning	MMO is hopeful that this can be resolved during Examination.

			ground and that the resulting impact range should be given due consideration in terms of whether the range of effect is likely to overlap the various herring spawning grounds near Flamborough head, or hinder the north-south migration of Banks herring in the Central North Sea.	
6	<u>Fish and Shellfish Ecology</u> Fish	The assessment of impacts to fish from underwater noise and habitat disturbance for some species (primarily herring and sand eel) requires further consideration.	<p>The Applicant has assessed the impacts to herring from UWN from piling as 'minor' adverse which is not significant in EIA terms, so has not proposed any specific mitigation measures for the species. MMO do not support the Applicant's conclusion and does not agree with the sensitivity criteria used. MMO considers that herring, who are sensitive both physiological and ecologically, should be categorised as a 'high' sensitivity receptor.</p> <p>When the receptor sensitivity for herring is re-categorised as 'high', with a 'low' magnitude of impact (as considered by the Applicant), it would result in a significance of effect of 'moderate' which is significant in EIA terms.</p> <p>MMO believes that there is potential for significant impacts to occur to Banks herring at a population level, if suitable mitigation is not employed. We therefore recommend that the following licence condition is included in the deemed marine licence (DML):</p> <p><i>'No piling of any type shall be permitted between 01 September and 16 October each year.</i></p> <p><i>Reason: To protect spawning Banks herring and their eggs and larvae during their spawning season.'</i></p>	MMO is hopeful that this can be resolved during Examination.
7	<u>Fish and Shellfish Ecology</u> Fish	Worst – case scenario modelling for consideration of herring.	The Applicant has modelled the worst-case scenario for simultaneous piling of two monopile foundations at the SW and NE piling locations in the array area. Please can the Applicant explain why this scenario has been chosen as the 'worst-case'? Modelling simultaneous piling from the SW and NE locations is indeed the worst- case scenario in terms of geographical spread, but not necessarily for fish receptors, specifically herring. The most vulnerable herring spawning grounds in relation to the project array are located northwest of the site. Therefore, for a worst-case simultaneous piling scenario, the NE and NW locations should also be modelled as these locations are the most critical in terms of impacts to herring at their spawning grounds and consequently are where greatest overlap in noise disturbance will occur.	MMO are hopeful that this can be resolved during Examination.
8	<u>Fish and Shellfish Ecology</u> <u>Marine Mammals</u>	Project to show consideration of additional noise abatement measures, such as bubble	The MMO notes the increase in hammer energies being used to install monopiles at OWFs. Monopile hammer energies have typically been in the region of 4,000 – 5,000 kilojoules	MMO highlights that noise is a major issue and policy is changing in relation to the

		curtains or other alternative measures.	<p>(kJ). It is noted that 6,000 – 7,000kJ is proposed. These higher hammer energies are likely to result in noise impacting a larger area. Whilst receptor-specific mitigation is recommended by the MMO when the evidence suggests that significant impacts to a particular species of fish are likely to occur, additional noise abatement measures may be required, such as bubble curtains or other alternative measures.</p> <p>Given the availability of effective alternatives to unmitigated piling – i.e., measures to reduce noise at source, also known as noise abatement – it will be difficult for unmitigated pile driving to be justified on the basis that there are no realistic alternatives. It is therefore clear that noise abatement measures will likely be required for this development, in order to reduce the risk of potential impact on marine receptors.</p> <p>The MMO would highlight that given the wider context of the current ramp up of offshore wind development at unprecedented scale in the North Sea it is vital that these discussions begin as soon as possible. To ensure adequate preparations are made and potential delays avoided, it is therefore in the applicant's interest to plan for noise abatement measures at the earliest opportunity and to incorporate such measures into any future Marine Mammal Mitigation Plans (MMMP).</p>	use of noise abatement systems and is hopeful that the Applicant will update the information required and provide further consideration for this to be resolved during Examination.
9	<u>Fish and Shellfish Ecology</u> Under Water Noise (UWN) impacts to Herring.	Additional noise modelling for the received levels of single strike sound exposure levels (SELss) at the Banks herring spawning grounds	Given the presence of herring spawning grounds within the project study area, the specific spawning habitat requirements of herring, and their sensitivity to underwater noise, the MMO requests that ODOW models and presents (in mapped form) additional noise modelling for the received levels of SELss levels at the Banks herring spawning grounds based on the 135 decibel (dB) (SELss) startle response) in order to predict the range of effect for behavioural responses in herring. This is particularly important as UWN generated by piling at Outer Dowsing has the potential to create an acoustic 'barrier' to herring as they follow their migration southwards through the central North Sea.	MMO is hopeful that the Applicant will provide additional modelling for this to be resolved during Examination.
10	<u>Fish and Shellfish Ecology</u> Electro-magnetic fields (EMF)	Cable burial depth to be a minimum depth of 1.5m.	Concerning the effects of EMF on electro-sensitive fish receptors such as elasmobranchs, eels and lampreys, it is noted that the intended average cable burial depth for array, interconnector and export cables will be between 0 - 3m. In line with the National Policy Statement EN3 (Department of Energy & Climate Change, 2011) the MMO recommends that where possible, cables are buried to a minimum depth of 1.5m (subject to local geology or seabed obstructions) as this will further increase the distance between electro-sensitive fish receptors and EMF, as well as reduce the risk of snagging and	MMO notes the Applicant has stated that this will be taken into consideration and therefore we are hopeful this will be resolved during Examination.

			damage to cables by other marine vessels e.g., anchors, bottom-towed gear. It is also noted that a CBRA has been undertaken in respect of the sections of export cables which cross through Annex 1 sandbanks.	
11	<u>Fish and Shellfish Ecology</u> Cumulative Impacts	The assessment of cumulative and inter-related impacts may need to include developments further afield.	It should be recognised that the range of effect for cumulative and inter-related effects may increase if the modelling shows an impact range exceeding 100km. With this in mind, there may be other offshore developments further afield that will require scoping into the assessment, should the UWN modelling show a range of effect of >100km.	MMO is hopeful the Applicant will provide required information and this point resolved during Examination.
12	<u>Marine Mammals</u> <u>UXO clearance</u>	MMMP for UXO clearance requires updating to reflect that bubble curtains are deployed for ALL High Order (HO) detonations, including those under 50kg.	Paragraph 27 within the MMMP for UXO clearance states that <i>"Technologies are available which attenuate the amount of noise emitted at the source (noise abatement). The use of bubble curtains during high-order UXO clearance activities is now standard best-practise for UXO clearance campaigns for offshore wind projects, with all projects since East Anglia One being required to use bubble curtains (subject to certain environmental limitations) for UXO detonations with combined charge sizes of greater than 50 kg (TNT-equivalent)"</i> . MMO recommends that bubble curtains are deployed for all high-order detonations, including those under 50 kg.	MMO is hopeful that this will be resolved during Examination.
13	<u>Marine Mammals</u> UXO clearance	Justification for use of 5km EDR for low order UXO clearance.	For low order UXO clearance, it is noted that a 5 km EDR has been assumed, although there is currently no advised EDR in the Statutory Nature Conservation Bodies (SNCB) guidance (Joint Nature Conservation Committee, 2020). The MMO notes it was requested that justification was provided to support the 5 km EDR, and Chapter 11, Section 11.6.34 states the following: <i>"In the absence of empirical data with which to set a threshold, the Sofia Offshore Windfarm Marine Licence Application for UXO detonation assumed a 5km EDR for low-order detonations. This assumed EDR was based on the fact that data has shown that low-order deflagration detonations produce underwater noise that is over 20dB lower than high-order detonation (Robinson et al., 2020). Note, the Sofia Offshore Windfarm Limited committed to undertaking noise monitoring of low-order detonations to confirm this proportionally lower noise level however, the data are not yet available. Until such time as empirical data are available to inform the EDR for low-order detonations, the 5km EDR suggested by Sofia Offshore Windfarm has been assumed"</i> . The MMO recommends that further evidence is provided to justify the 5 km EDR.	MMO is hopeful the Applicant will provide required justification but notes that a 5km EDR has not been agreed with MMO and therefore the worst-case scenario should be included until any further data is provided. The MMO is unsure if this will be resolved during examination.

14	<u>Marine Mammals</u> TTS-onset thresholds.	It is not appropriate to use TTS-onset thresholds as a proxy for disturbance from UXOs	The MMO advises that it is not appropriate to use TTS-onset thresholds as a proxy for disturbance from UXOs. TTS occurs at much higher sound exposures, and so will underestimate the risk of disturbance. In this instance, TTS-onset as a proxy for disturbance has been presented alongside the 26 km EDR approach in acknowledgement that there is no empirically based threshold to assess disturbance from high-order UXO clearance currently available.	MMO notes that three approaches are presented by the Applicant and are hopeful that this point will be resolved during Examination.
15	<u>Marine Mammals</u> UWN modelling: Modelling Results	The formula used to assess the correlation between SPL and various parameters is not suitable and may lead to underestimation of the levels in the far field.	$L_{eq} = C + \alpha \log_{10} \left(\frac{\text{distance}}{100 \text{ m}} \right) + \beta \log_{10} \left(\frac{\text{wind speed}}{10 \text{ m s}^{-1}} \right) + \gamma \log_{10} \left(\frac{\text{turbine size}}{1 \text{ MW}} \right)$ <p>This formula represents a statistical model that was used to assess the correlation between SPL and various parameters (distance, wind speed, turbine size) for the data in the Tougaard study. The MMO considers is that this is not suitable for estimation of the sound levels at 1m in a bespoke model, or as substitute for modelling the propagation loss to the far field. In particular, in terms of estimating propagation, the use of the formula would imply a loss of 23.7 log R, which is unrealistically large, and thus will lead to underestimation of the levels in the far field.</p> <p>No changes have been made to (this section of) the report after PEIR although our comment was more for observation purposes to highlight the uncertainties with using this formula. We appreciate that no empirical data is currently available for large wind turbines close to the specifications proposed here for Outer Dowsing. The report does appropriately acknowledge that the maximum turbine sizes considered at the Project are much larger than those used for the estimation, so caution must be applied when considering the results presented in this section (section 5.2).</p>	MMO believes this will not be resolved during Examination but has kept the comment within this PADSS to reflect that caution must be applied when considering the results.
16	<u>Draft Development Consent Order</u> Article 6(1)-(2)	MMO resists the inclusion of Article 6(1)-(2) as this provision operates to make the decision that of the undertaker, with the Secretary of State (SoS) providing consent to the transfer, rather than the MMO as the regulatory authority for marine licences considering the merits of any application for a transfer.	The MMO understands that Article 6 – Transfer of Benefit is drafted in a similar way to previous consents granted by the Secretary of State (SoS), however the MMO has major concerns over the wording. <p>Article 6(1)-(2) gives the right to permanently transfer the benefits of the DCO including the deemed marine licences (DML) in Schedule 11,12& 13 to a third party with the consent of the SoS.</p> <p>Part 2: Article 6(1)-(2)</p> <p><i>"6.-(1) Subject to this article, the provisions of this Order have effect solely for the benefit of the undertaker.</i></p>	MMO is hopeful that this can be resolved during Examination and notes it will be a major topic to be discussed during Examination.

		<p>it is the position of the MMO that these provisions are removed and that any transfer should be subject to the existing regime under the 2009 Act, with the decision maker remaining the MMO.</p>	<p><i>(2) Subject to paragraph (3), the undertaker may with the written consent of the Secretary of State— (a) transfer to another person ("the transferee") any or all of the benefit of the provisions of this Order (including the deemed marine licences) and such related statutory rights as may be agreed between the undertaker and the transferee;"</i></p> <p>The MMO considers that this is a clear departure from the 2009 Act, which would normally require the licence holder (here 'the undertaker') to make an application to the MMO for a licence to be transferred. Instead, this provision operates to make the decision that of the undertaker, with the Secretary of State (SoS) providing consent to the transfer, rather than the MMO as the regulatory authority for marine licences considering the merits of any application for a transfer.</p> <p>Parliament has already created a statutory regime for such a process and it is unclear what purpose the written consent of the SoS actually serves. If the intention is for the undertaker to be able to transfer the benefits under the terms of the DCO outside the established procedures under 2009 Act, the MMO queries why is it considered necessary or appropriate for the SoS to 'approve' the transfer of the DML.</p> <p>It is also unclear what criteria the SoS would be taking in determining whether to approve any transfer, and how this would differ from a consent granted by the MMO under the existing 2009 Act regime.</p> <p>Because of this confusion and potential duplication, it is the position of the MMO that these provisions are removed and that any transfer should be subject to the existing regime under the 2009 Act, with the decision maker remaining the MMO.</p>	
17	<p><u>Draft Development Consent Order</u> Article 6(2)(b)</p>	<p>MMO resists the inclusion of Article 6(2)(b) as there is no clarity on how will operate. It will be an additional administrative procedure for marine licences.</p>	<p>This Article 6(2)(b) gives the right to temporarily transfer the benefits of the DCO (including DML) to a third party.</p> <p>Article 6(2)(b) <i>"6(2)(b) grant to another person ("the lessee") for a period agreed between the undertaker and the lessee any or all of the benefit of the provisions of this Order (including the deemed marine licences) and such related statutory rights as may be so agreed, except where paragraph (6) applies, in which case the consent of the Secretary of State is not required."</i></p> <p>The MMO resists the inclusion of this article. Here the written consent of the SoS is not required. The MMO does not recognise that this would create a more streamlined system. Rather it simply operates to create an additional</p>	<p>MMO is hopeful that this can be resolved during Examination and notes it will be a major topic to be discussed during Examination.</p>

			administrative procedure for marine licences (and one not envisaged by Parliament) and with no clarity in how it will operate.	
18	<u>Draft Development Consent Order</u> Article 6(3)	MMO resists the inclusion of Article 6(3) as does not take into account the views of MMO. There is no obligation for MMO to be informed.	<p>The MMO has concerns regarding Article 6(3)</p> <p>Article 6(3)</p> <p><i>"6(3) The Secretary of State must consult the MMO before giving consent to the transfer or grant to another person of the benefit of any or all of the provisions of any of the deemed marine licences."</i></p> <p>The MMO notes that there is no obligation for the SoS to take into account the views of MMO when providing its consent. Furthermore, there is no obligation for MMO to be informed of the decision of the SoS, notwithstanding its impact on the MMO as the licencing authority.</p> <p>From a regulatory perspective it is highly irregular that a decision to transfer a licence should not be the decision of the regulatory authority in that area (MMO) but instead should be subject to such a cursory process as is set out in Article 6(1)-(3). MMO thus resists this change as unworkable.</p> <p>As explained above, Articles 6 (1)-(3) sets out what is effectively a new non-legislative regime for the variation and transfers of marine licences. In support of these provisions, Article 6(12) explicitly disapplies sections 72(7) and (8) of the 2009 Act, which would otherwise govern these procedures.</p>	MMO is hopeful that this can be resolved during Examination and notes it will be a major topic to be discussed during Examination.
19	<u>Draft Development Consent Order</u> Article 6(12)	MMO resists the inclusion of Article 6(12) as it conflicts with the MMO's stated position that the DML granted under a DCO should be regulated by the provisions of 2009 Act.	<p>Article 6(12)</p> <p><i>"(12) Section 72(7) and (8) of the 2009 Act do not apply to a transfer or grant of the whole or part of the benefit of the provisions of any of the deemed marine licences to another person by the undertaker pursuant to an agreement under this article 6 (benefit of the Order) save that the MMO may amend any deemed marine licence granted under Schedule 11, Schedule 12 or Schedule 13 of the Order to correct the name of the undertaker to the name of a transferee or lessee under this article 6 (benefit of the Order)."</i></p> <p>This conflicts with the MMO's stated position that the DML granted under a DCO should be regulated by the provisions of 2009 Act, and specifically by all provisions of section 72.</p> <p>Section 72(7)(a) of 2009 Act permits a licence holder to make an application for a marine licence to be transferred, and where such an application is approved for MMO to then vary the licence accordingly (s. 72(7)(b)). This power that should be retained and used in relation to the DML granted under the</p>	MMO is hopeful that this can be resolved during Examination and notes it will be a major topic to be discussed during Examination.

			<p>DCO and MMO therefore resists the inclusion of this article 6(12) to disapply these provisions.</p> <p>The key concern held by MMO is that Article 6 operates to override and/or unsatisfactorily duplicate provision that already exist within MCAA 2009 for dealing with variations to marine licences. Such provisions are also inconsistent with the PINS Guidance on how DMLs should operate within a DCO. Advice Note Eleven, Annex B – Marine Management Organisation National Infrastructure Planning (https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/an11-annex-b/) provides that where the undertaker choses to have a marine licence deemed by a DCO, MMO, “will seek to ensure wherever possible that any deemed licence is generally consistent with those issued independently by the MMO.” Article 6 as drafted is not in compliance with this guidance.</p>	
20	<u>Arbitration and Appeals</u>	<p>Schedule 19</p> <p>The MMO strongly disagrees requests the removal of Arbitration from the DCO. There is a standard MLA process for dealing with this issue which should be followed.</p>	<p>Schedule 19 proposes a new enhanced Appeals procedure for the Applicant should the MMO refuse an application for approval under a condition, or fail to determine the application for approval by certain ‘determination dates’ which have been inserted into the DML in Schedule 20. This Appeals procedure is not available for other marine licence holders. The MMO strongly requests that the Appeals procedure for the MMO is removed.</p> <p>The removal of the MMO decision-making function, and its placement into the hands of a private arbitration process, is inconsistent with the MMO legal function, powers and responsibilities, which was never intended by Parliament in enacting the Planning Act 2008 or MCAA 2009. The MMO also consider that arbitration would not be consistent with p.4 of Annex B of the PINS Guidance Note 11, which states that “the MMO will seek to ensure wherever possible that any deemed licence is generally consistent with those issued independently by the MMO”.</p>	MMO believes this will be resolved during Examination and notes it is a major topic to be discussed during Examination.
21	<u>Materially</u>	The MMO strongly considers that the activities authorised under the DCO and DML should be limited to those that are assessed within the EIA, and the statement that activities will be limited to those that ‘do not give rise to any materially new or materially different	<p>The MMO considers that wording should be updated to ‘do not give rise to any new or different environmental effects to those assessed in the environmental information’. This also applies to the definition of “maintain”.</p> <p>The intention behind EIA is to protect the environment by ensuring that in deciding whether to grant a development consent for a project, and in deciding what conditions to attach to that consent, the decision has full knowledge of what the likely significant environmental effects of the</p>	MMO is hopeful that this can be discussed and agreed during Examination.

		environmental effects' should be updated to clarify this.	project/development will be. That knowledge then guides the consent process and what conditions, if any, to attach to the consent. Additionally, there is considerable public consultation under the EIA process because the process recognises the importance of local knowledge in environmental decision making.	
22	<u>Schedule 20</u>	<p>Determination dates.</p> <p>The MMO strongly considers that it is inappropriate to put timeframes on complex technical decisions of this nature. The time it takes the MMO to make such determinations depends on the quality of the application made, and the complexity of the issues and the amount of consultation the MMO is required to undertake with other organisations to seek resolutions.</p>	<p>The MMO's position remains that it is inappropriate to apply a strict timeframe to the approvals the MMO is required to give under the conditions of the DML given this would create disparity between licences issued under the DCO process and those issued directly by the MMO, as marine licences issued by the MMO are not subject to set determination periods.</p> <p>The MMO strongly disagrees with determination dates and requests the removal of determination dates/ deemed approvals.</p>	MMO is hopeful that this can be discussed and agreed during Examination.
23	<u>Additional Conditions</u>	Maintenance reporting condition to be added.	<p>To ensure the MMO is able to know the maintenance activities throughout the lifetime of the operation including understanding any impacts the MMO requests this condition is added to both Schedule 10 and 11.</p> <p><i>"23.— (1) An annual maintenance report must be submitted to the MMO in writing within one month following the first anniversary of the date of commencement of operations, and every year thereafter until the permanent cessation of operation.</i></p> <p><i>(2) The report must provide a record of the licensed activities as set out in condition 3 during the preceding year, the timing of activities and methodologies used.</i></p> <p><i>(3) Every fifth year, the undertaker must submit to the MMO in writing, within one month of that date, a consolidated maintenance report, which will—</i></p> <p><i>(a) include a review of licensed activities undertaken during the preceding five years with reference to the reports submitted in accordance with condition XX (1) of this licence;</i></p> <p><i>(b) reconfirm the applicability of the methodologies and frequencies of the licensable activities permitted by this licence for the remaining duration of this licence."</i></p>	MMO is hopeful that this can be discussed and agreed during Examination.

24	<u>Additional Conditions</u>	Stages of construction condition to be added.	<p>To ensure the MMO has the full timetable for construction the MMO requests this condition is added to both Schedule 10 and 11.</p> <p><i>"24.— (1) The licenced activities must not be commenced until a written scheme setting out the stages of construction of the authorised development seaward of MHWS has been submitted to and approved by the MMO in writing.</i></p> <p><i>(2) The stages of construction referred to in subparagraph (1) will not permit the authorised development to be constructed in more than one overall phase.</i></p> <p><i>(3) The scheme must be implemented as approved.</i></p> <p><i>(4) The written scheme referred to in sub-paragraph (1) must be submitted to the MMO in writing six months prior to the planned commencement of the licenced activities."</i></p>	MMO is hopeful that this can be discussed and agreed during Examination.
25	<u>Additional Conditions</u>	Adaptive Management condition to be added.	<p>MMO requests that the following conditions be added to the Pre-construction monitoring and surveys condition (condition 19 of Schedules 10 and 11) to allow the applicant to provide potential solutions when reviewing the results of monitoring, to be discussed with the MMO and SNCBs.</p> <p><i>"(5). In the event that the reports provided to the MMO under sub-paragraph (3) identify a need for additional monitoring, the requirement for any additional monitoring will be agreed with the MMO in writing and implemented as agreed."</i></p> <p><i>"(6). In the event that monitoring reports provided to the MMO under sub-paragraph (3), identifies impacts which are beyond those predicted within the Environmental Statement/Habitat Regulations Assessment, adaptive management/mitigation may be required. An Adaptive Management/Mitigation Plan to reduce effects to within what was predicted within the Environmental Statement/Habitat Regulations Assessment, unless otherwise agreed in writing by the MMO, must be submitted alongside the monitoring reports submitted under sub-paragraph (3), including timelines and associated monitoring to test effectiveness. This plan must be agreed with the MMO in consultation with the relevant SNCB's to reduce effects to a suitable level for this project. Any such agreed or approved adaptive management/mitigation should be implemented and monitored in full. In the event that this adaptive management/mitigation requires a separate consent, the Applicant shall apply for such consent."</i></p> <p>The conditions ensure that all parties are clear what is required if the monitoring shows higher impacts than predicted during the assessment stage.</p>	MMO is hopeful that this can be discussed and agreed during Examination.



Outer Dowsing Offshore Wind (ODOW)
Case Team
Planning Inspectorate
OuterDowsingOffshoreWind@planninginsp
ectorate.gov.uk
(Email only)

MMO Reference: DCO/2021/00003
Planning Inspectorate Reference: EN010130
Identification Number: 20048765

13 June 2024

Dear Sir or Madame,

Planning Act 2008, GTR4 Limited, Proposed Outer Dowsing Offshore Wind Farm Order

This document comprises the Marine Management Organisation's ("MMO") initial comments in respect of the above Development Consent Order application ("DCO Application") in the form of a relevant representation.

This is without prejudice to any future representation the MMO may make about the DCO Application throughout the examination process. This is also without prejudice to any decision the MMO may make on any associated application for consent, permission, approval or any other type of authorisation submitted to the MMO either for the works in the marine area or for any other authorisation relevant to the proposed development.

The MMO's role in Nationally Significant Infrastructure Projects (NSIPs)

The MMO was established by the Marine and Coastal Access Act 2009 (the "2009 Act") to make a contribution to sustainable development in the marine area and to promote clean, healthy, safe, productive and biologically diverse oceans and seas.

The responsibilities of the MMO include the licensing of construction works, deposits and removals in English inshore and offshore waters and for Northern Ireland offshore waters by way of a marine licence. Inshore waters include any area which is submerged at mean high water spring ("MHWS") tide. They also include the waters of every estuary, river or channel where the tide flows at MHWS tide. Waters in areas which are closed permanently or intermittently by a lock or other artificial means against the regular action of the tide are included, where seawater flows into or out from the area.

In the case of NSIPs, the Planning Act 2008 (the "2008 Act") enables DCO's for projects which affect the marine environment to include provisions which deem marine licences.

As a prescribed consultee under the 2008 Act, the MMO advises developers during pre-application on those aspects of a project that may have an impact on the marine area or those who use it. In addition to considering the impacts of any construction, deposit or removal within the marine area, this also includes assessing any risks to human health, other legitimate uses of the sea and any potential impacts on the marine environment from terrestrial works.

Where a marine licence is deemed within a DCO, the MMO is the delivery body responsible for post-consent monitoring, variation, enforcement and revocation of provisions relating to the marine environment. As such, the MMO has a keen interest in ensuring that provisions drafted in a deemed marine licence (“DML”) enable the MMO to fulfil these obligations.

Further information on licensable activities can be found on the MMO’s website [here](#). Further information on the interaction between the Planning Inspectorate and the MMO can be found in our joint advice note 11 Annex B [here](#).

Relevant Representation

On the 2 May 2024, the MMO received notice under Section 56 of the Planning Act 2008 (the “PA 2008”) that the Planning Inspectorate (“PINS”) had accepted an application made by GTR4 Limited (the “Applicant”) for a DCO Application (MMO ref: DCO/2021/00003; PINS ref: EN010130).

The DCO Application includes a draft development consent order (the “DCO”) and an Environmental Statement (the “ES”). The draft DCO includes, at Schedule 10, 11, 12, 13, 14, 16 and a draft Deemed Consent under Part 4 (Marine Licensing) of the Marine and Coastal Access Act 2009 (the “Deemed Marine Licence”)(DML).

The DCO Application seeks authorisation for the construction, operation and maintenance of Outer Dowsing Offshore Wind (ODOW) and located approximately 33 miles off the coast of Lincolnshire; comprising of up to 100 wind turbine generators together with associated onshore and offshore infrastructure and all associated development (“the “Project”).

Please find the MMO comments below.

Yours sincerely,



Amelia Clarke
Marine Licensing Case Officer

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1. The Proposed Development

1.1 Proposed Development Details

- 1.1.1 Outer Dowsing Offshore Wind Farm will be an offshore windfarm located approximately 54 kilometres (km) off the coast of Lincolnshire.
- 1.1.2 The proposed development includes an offshore generating station with an electrical export capacity of 150 Megawatts (MW) comprising up to 100 turbines, and array cables covering 436 square kilometres (km²).
- 1.1.3 The proposed development will comprise of up to four offshore substations, up to two offshore reactive compensation platforms (ORCPs) and an offshore export cable corridor running from the array area to landfall at Wolla Bank, to the South of Anderby Creek on the Lincolnshire coast. Onshore export cables will be installed underground and connect to the onshore substation (OnSS) located at Surfleet Marsh. 400 kilovolt (kV) cables will then connect the OnSS to a new National Grid substation (NGSS) which will connect the Project to the existing overhead lines.
- 1.1.4 Seven DMLs are included in the draft DCO. One in relation to the generation assets and the second in relation to the transmission assets. Four DMLs in relation to the Artificial Nesting Structures (ANS) and one for biogenic reef creation.

2. General comments on the application

2.1 Marine Plans

2.1.1 The Environmental Statement (ES) correctly identified that the proposed development is within the East Marine Plan areas. The MMO requests that all policies are reviewed within a table to show compliance. This must be produced as the Secretary of State must use the East Marine Plan when making planning decisions for the sea, coast, estuaries and tidal waters, as well as developments that impacts these areas, such as infrastructure. The relevant marine plan policies that should be met can be identified using the Explore Marine Plans tool and policy information on the following website: <https://www.gov.uk/guidance/explore-marine-plans>

Although some Marine Plan Policies are discussed under the relevant chapters to which they relate, MMO requires the Applicant to detail how the proposed project is compliant with the relevant marine plans by producing a marine plan policy assessment in one document.

3. Development Consent Order (DCO) and Deemed Marine Licences (DMLs)

3.1 Draft Development Consent Order

3.1.1 MMO has reviewed the draft DCO and provided comments below. MMO are currently undertaking a detailed review and will provide further comments on the DCO at Deadline 1 and during the course of the examination.

3.2 Unexploded Ordinance

3.2.1 The MMO would like clarity on if the investigation of and the detonation of UXO's are included within the licenced activities. These are not part of any of the Works order or set out within the activities of Schedule 10 & 11, however a draft UXO marine mammal mitigation plan is proposed.

3.3 Arbitration

3.3.1 Schedule 19 proposes a new enhanced Appeals procedure for the Applicant should the MMO refuse an application for approval under a condition, or fail to determine the application for approval by certain 'determination dates' which have been inserted into the DML in Schedule 20. This Appeals procedure is not available for other marine licence holders. The MMO strongly requests that the Appeals procedure for the MMO is removed from both the DCO.

3.3.2 Appeals are already available to the Applicant in the form of an escalated internal procedure and judicial review ("JR"), and therefore, including any additional appeal mechanism within the DCO and DML is unnecessary. The Marine Licensing (Licence Application Appeals) Regulations 2011 apply a statutory appeal process to the decisions that the MMO makes regarding whether to grant or refuse a licence or conditions which are to be applied to the licence. However, they do not include an appeal process to any decisions the MMO is required to give in response to an application to discharge any conditions of a marine licence issued directly by us. Therefore, if the DCO were to be granted with the proposed appeal process included, this would not be consistent with the existing statutory processes. This amendment would be introducing and making available to this specific Applicant, a new and enhanced appeal process which is not available to other marine licence holders, creating an unlevel playing field across the regulated community. These proposals go against the statutory functions laid out by parliament. The private nature of the arbitration process does not align with the public functions and duties of the MMO. The removal of the MMO decision-making function, and its placement into the hands of a private arbitration process, is inconsistent with the MMO legal function, powers and responsibilities, which was never intended by Parliament in enacting the Planning Act 2008 or MCAA 2009. The MMO also consider that arbitration would not be consistent with p.4 of Annex B of the PINS Guidance Note 11, which states that "the MMO will seek to ensure wherever possible that any deemed licence is generally consistent with those issued independently by the MMO". Inclusion of a different mechanism for determination of disputes in respect of DMLs would not be consistent with Marine Licences issued independently by the MMO.

3.3.3 In addition to this, the MMO emphasises that we are an open and transparent organisation that actively engages, and maintains excellent working relationships with, industry and those it regulates. The MMO discharges its statutory responsibilities in a manner which is both timely and robust in order to fulfil the public functions vested in it by Parliament. The scale and complexity of Nationally Significant Infrastructure Projects creates no exception in this regard and indeed it follows that where decisions are required to be made, or approvals given, in relation to these developments of significant public interest, only those bodies appointed by Parliament should carry the weight of that responsibility. Since its inception the MMO has undertaken licensing functions on over 130 DCOs, comprising some of the largest and most complex operations globally. The MMO is not aware of an occasion whereby any dispute which has arisen in relation to the discharge of a condition under a DML has failed to be resolved satisfactorily between the MMO and the applicant, without any recourse to an 'appeal' mechanism.

3.4 Transfer of Benefit of the Order

3.4.1 The MMO understands that Article 6 – Transfer of Benefit is drafted in a similar way to previous consents granted by the Secretary of State (SoS), however the MMO has major concerns over the wording.

3.4.2 Article 6(1)-(2) gives the right to permanently transfer the benefits of the DCO including the deemed marine licences (DML) in Schedule 11,12& 13 to a third party with the consent of the SoS.

Part 2: Article 6(1)-(2)

“6.—(1) Subject to this article, the provisions of this Order have effect solely for the benefit of the undertaker.

(2) Subject to paragraph (3), the undertaker may with the written consent of the Secretary of State— (a) transfer to another person (“the transferee”) any or all of the benefit of the provisions of this Order (including the deemed marine licences) and such related statutory rights as may be agreed between the undertaker and the transferee;”

The MMO considers that this is a clear departure from the 2009 Act, which would normally require the licence holder (here ‘the undertaker’) to make an application to the MMO for a licence to be transferred. Instead, this provision operates to make the decision that of the undertaker, with the Secretary of State (SoS) providing consent to the transfer, rather than the MMO as the regulatory authority for marine licences considering the merits of any application for a transfer.

Parliament has already created a statutory regime for such a process and it is unclear what purpose the written consent of the SoS actually serves. If the intention is for the undertaker to be able to transfer the benefits under the terms of the DCO outside the established procedures under 2009 Act, the MMO queries why is it considered necessary or appropriate for the SoS to ‘approve’ the transfer of the DML.

It is also unclear what criteria the SoS would be taking in determining whether to approve any transfer, and how this would differ from a consent granted by the MMO under the existing 2009 Act regime.

Because of this confusion and potential duplication, it is the position of the MMO that these provisions are removed and that any transfer should be subject to the existing regime under the 2009 Act, with the decision maker remaining the MMO.

3.4.3 This Article 6(2)(b) gives the right to temporarily transfer the benefits of the DCO (including DML) to a third party.

Article 6(2)(b)

“6(2)(b) grant to another person (“the lessee”) for a period agreed between the undertaker and the lessee any or all of the benefit of the provisions of this Order (including the deemed marine licences) and such related statutory rights as may be so agreed, except where paragraph (6) applies, in which case the consent of the Secretary of State is not required.”

The MMO resists the inclusion of this article. Here the written consent of the SoS is not required. The MMO does not recognise that this would create a more streamlined system. Rather it simply operates to create an additional administrative procedure for marine licences (and one not envisaged by Parliament) and with no clarity in how it will operate.

3.4.4 The MMO has concerns regarding Article 6(3)

Article 6(3)

“6(3) The Secretary of State must consult the MMO before giving consent to the transfer or grant to another person of the benefit of any or all of the provisions of any of the deemed marine licences.”

The MMO notes that there is no obligation for the SoS to take into account the views of the MMO when providing its consent. Furthermore, there is no obligation for the MMO to be informed of the decision of the SoS, notwithstanding its impact on the MMO as the licencing authority.

From a regulatory perspective it is highly irregular that a decision to transfer a licence should not be the decision of the regulatory authority in that area (the MMO) but instead should be subject to such a cursory process as is set out in Article 6(1)-(3). The MMO thus resists this change as unworkable.

As explained above, Articles 6 (1)-(3) sets out what is effectively a new non-legislative regime for the variation and transfers of marine licences. In support of these provisions, Article 6(12) explicitly disapplies sections 72(7) and (8) of the 2009 Act, which would otherwise govern these procedures.

3.4.5 Article 6(12)

“(12) Section 72(7) and (8) of the 2009 Act do not apply to a transfer or grant of the whole or part of the benefit of the provisions of any of the deemed marine licences to another person by the undertaker pursuant to an agreement under this article 6 (benefit of the Order) save that the MMO may amend any deemed marine licence granted under Schedule 11, Schedule 12 or Schedule 13 of the Order to correct the name of the undertaker to the name of a transferee or lessee under this article 6 (benefit of the Order).”

This conflicts with the MMO’s stated position that the DML granted under a DCO should be regulated by the provisions of 2009 Act, and specifically by all provisions of section 72.

Section 72(7)(a) of 2009 Act permits a licence holder to make an application for a marine licence to be transferred, and where such an application is approved for the MMO to then vary the licence accordingly (s. 72(7)(b)). This power that should be retained and used in relation to the DML granted under the DCO and the MMO therefore resists the inclusion of this article 6(12) to disapply these provisions.

The key concern held by the MMO is that Article 6 operates to override and/or unsatisfactorily duplicate provision that already exist within MCAA 2009 for dealing with variations to marine licences. Such provisions are also inconsistent with the PINS Guidance on how DMLs should operate within a DCO. Advice Note Eleven, Annex B – Marine Management Organisation | National Infrastructure Planning (<https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/an11-annex-b/>) provides that where the undertaker choses to have a marine licence deemed by a DCO, the MMO, “will seek to ensure wherever possible that any deemed licence is generally consistent with those issued independently by the MMO.” Article 6 as drafted is not in compliance with this guidance.

3.5 Materially

- 3.5.1 The MMO strongly considers that the activities authorised under the DCO and DML should be limited to those that are assessed within the EIA, and the statement that activities will be limited to those that ‘*do not give rise to any materially new or materially different environmental effects*’ should be updated to clarify this.
- 3.5.2 The MMO considers that wording should be updated to ‘*do not give rise to any new or different environmental effects to those assessed in the environmental information*’. This also applies to the definition of “maintain”.
- 3.5.3 The intention behind EIA is to protect the environment by ensuring that in deciding whether to grant a development consent for a project, and in deciding what conditions to attach to that consent, the decision has full knowledge of what the likely significant environmental effects of the project/development will be. That knowledge then guides the consent process and what conditions, if any, to attach to the consent. Additionally, there is considerable public consultation under the EIA process because the process recognises the importance of local knowledge in environmental decision making.
- 3.5.4 The EIA legislation was designed to apply to those plans/projects which could be sufficiently detailed and particularised at the application stage, to allow the consenting decision to be taken in the full knowledge of what the likely significant effects of that plan or project would be. In such circumstances, it would be unnecessary to create a legal obligation under the order which requires the activities to remain within what was assessed under the EIA, because the consent authorises the detailed and well particularised project, assessed in the EIA to be carried out, and therefore, providing the development is constructed as per the consent, those works would, by default, remain within the parameters of the EIA.
- 3.5.5 The difficulty identified with EIA, as was discussed in the Rochdale Envelope case, is that to deal with an outline planning case, where the project will flex over time, you need to undertake the EIA at the outline permission stage when there is not enough detail to properly identify what the final design of the project will actually be. In the case of Rochdale the court was saying things could remain flexible providing the EIA took account of the need for evolution of the project over time and assessed the likely significant effects within clearly defined parameters, and then the consent granted imposed conditions to ensure that the process of evolution kept within the parameters of the EIA. Whilst there might not be an express provision that you can point to in the legislation that says that a project cannot exceed the effects assessed in the EIA, it is implied (or the purpose of EIA would be undermined) and the Rochdale case discusses this.

- 3.5.6 In this DCO and the DML, the Applicant is wanting flexibility in terms of the design details (both in terms of some of the construction details, and in relation to some of the maintenance activities). Where those design details are not finalised at the application stage, the Applicant is wanting to retain some flexibility and is proposing that the works that can be carried out should be restricted to those which do not give rise to materially new or materially different environmental effects to those assessed in the EIA. The concern with this is that the inclusion of the word materially here would allow the undertaker to carry out works whose effects are outside of the likely significant effects assessed in the EIA, providing they do not do so materially, i.e. in any significant way, greatly, or considerably. This is not what the purpose of the EIA process is, and it runs contrary to the purpose of EIA. The other issue with this is that whilst the undertaker is responsible for producing the environmental information and statement on which the EIA decision is based, the appropriate authority is responsible for the EIA consent decision, the inclusion of the word materially essentially means that the undertaker makes the decision as to what is and what is not material. Under EIA it is for the appropriate authority to determine what the likely significant effects will be and how those should be mitigated.
- 3.5.7 The MMO does not consider that it is appropriate to use the word material in these circumstances. If the Applicant wants the flexibility of not being prescriptive about the design from the start, the Order and the DML granted through it should restrict works which can be carried out to those which do not give rise to any new or different environmental effects to those assessed in the EIA.

3.6 Schedule 16

- 3.6.1 Schedule 16 of the DML enables the recreation of Annex I Reef as a compensation measure within Inner Dowsing Race Bank North Ridge (IDRBNR) Special Area of Conservation (SAC) and that this will be considered as part of the Habitats Regulations Assessment (HRA) for the DCO/DML rather than a separate post consent marine licence. MMO defers to Natural England as statutory nature conservation body (SNCB) and supports any comments in relation to benthic compensation.
- 3.6.2 MMO notes that some of the potential compensation areas of search are located where The Crown Estate has recently issued seabed lease areas to the Aggregates Industry. MMO query whether this has been taken into account. We acknowledge that this is wider seabed issue and MMO will continue to work with relevant interested parties to address this and provide further comments throughout Examination accordingly.

3.7 Schedule 20

3.7.1 Determination Dates

The MMO strongly considers that it is inappropriate to put timeframes on complex technical decisions of this nature. The time it takes the MMO to make such determinations depends on the quality of the application made, and the complexity of the issues and the amount of consultation the MMO is required to undertake with other organisations to seek resolutions. The MMO's position remains that it is inappropriate to apply a strict timeframe to the approvals the MMO is required to give under the conditions of the DML given this would create disparity between licences issued under the DCO process and those issued directly by the MMO, as marine licences issued by the MMO are not subject to set determination periods.

Whilst the MMO acknowledges that the Applicant may wish to create some certainty around when it can expect the MMO to determine any applications for an approval required under the conditions of a licence, and whilst the MMO acknowledges that delays can be problematic for developers and that they can have financial implications, the MMO stresses that it does not delay determining whether to grant or refuse such approvals unnecessarily. The MMO makes these determinations in a timely manner as it is able to do so. The MMO's view is that it is for the developer to ensure that it applies for any such approval in sufficient time as to allow the MMO to properly determine whether to grant or refuse the approval application.

3.8 Additional Conditions

3.8.1 Maintenance Reporting

To ensure the MMO is able to know the maintenance activities throughout the lifetime of the operation including understanding any impacts the MMO requests this condition is added to both Schedule 10 and 11.

“23.—(1) An annual maintenance report must be submitted to the MMO in writing within one month following the first anniversary of the date of commencement of operations, and every year thereafter until the permanent cessation of operation.

(2) The report must provide a record of the licensed activities as set out in condition 3 during the preceding year, the timing of activities and methodologies used.

(3) Every fifth year, the undertaker must submit to the MMO in writing, within one month of that date, a consolidated maintenance report, which will—

(a) include a review of licensed activities undertaken during the preceding five years with reference to the reports submitted in accordance with condition XX(1) of this licence;

(b) reconfirm the applicability of the methodologies and frequencies of the licensable activities permitted by this licence for the remaining duration of this licence.”

3.8.2 Stages of Construction

To ensure the MMO has the full timetable for construction the MMO requests this condition is added to both Schedule 10 and 11.

“24.—(1) The licenced activities must not be commenced until a written scheme setting out the stages of construction of the authorised development seaward of MHWS has been submitted to and approved by the MMO in writing.

(2) The stages of construction referred to in sub-paragraph (1) will not permit the authorised development to be constructed in more than one overall phase.

(3) The scheme must be implemented as approved.

(4) The written scheme referred to in sub-paragraph (1) must be submitted to the MMO in writing six months prior to the planned commencement of the licenced activities.”

3.8.3 Adaptive Management

MMO requests that the following conditions be added to the Pre-construction monitoring and surveys condition (condition 19 of Schedules 10 and 11) to allow the applicant to provide potential solutions when reviewing the results of monitoring, to be discussed with the MMO and SNCBs.

“(5). In the event that the reports provided to the MMO under sub-paragraph (3) identify a need for additional monitoring, the requirement for any additional monitoring will be agreed with the MMO in writing and implemented as agreed.”

“(6). In the event that monitoring reports provided to the MMO under sub-paragraph (3), identifies impacts which are beyond those predicted within the Environmental Statement/Habitat Regulations Assessment, adaptive management/mitigation may be required. An Adaptive Management/Mitigation Plan to reduce effects to within what was predicted within the Environmental Statement/Habitat Regulations Assessment, unless otherwise agreed in writing by the MMO, must be submitted alongside the monitoring reports submitted under sub-paragraph (3), including timelines and associated monitoring to test effectiveness. This plan must be agreed with the MMO in consultation with the relevant SNCB’s to reduce effects to a suitable level for this project. Any such agreed or approved adaptive management/mitigation should be implemented and monitored in full. In the event that this adaptive management/mitigation requires a separate consent, the Applicant shall apply for such consent.”

The conditions ensure that all parties are clear what is required if the monitoring shows higher impacts than predicted during the assessment stage.

3.9 Conditions to Remove

3.9.1 Force Majeure

The MMO does not consider provisions on Force Majeure to be necessary as Section 86 MCAA 2009 provides a defence for action taken in an emergency in breach of any licence conditions. The defence under Section 86 of MCAA has two limbs, and in the event that the undertaker fails to notify the appropriate licensing authority, in this case the MMO, within a reasonable time of their actions (Section 86(2) “matters”) the defence cannot be relied upon in the event of any enforcement action.

4. Environmental Statement (ES)

4.1 General Comments

4.1.1 MMO has focused its review on the following chapters of Volume 1 Outer Dowsing Offshore Windfarm Environmental Statement (ES) March 2024 Revision: 1.0, by Outer Dowsing Offshore Wind. However, MMO has also reviewed the accompanying figures in Volume 2, and relevant appendices in Volume 3 where required:

6.1.1 Chapter 1 Introduction

6.1.3 Chapter 3 Project Description

6.1.7 Chapter 7 Marine Physical Processes

6.1.8 Chapter 8 Marine Water and Sediment Quality

6.1.9 Chapter 9 Benthic and Intertidal Ecology

6.1.10 Chapter 10 Fish and Shellfish Ecology

6.1.11 Chapter 11 Marine Mammals

4.1.2 An up-to-date schedule including specific timings and dates for each of the proposed works must be provided to the MMO. MMO must be further informed of any updates, or changes to the schedule, prior to the commencement of the works, this is to ensure an effective inspection can occur.

4.2 Coastal Processes

4.2.1 MMO had previously raised concerns that impacts on coastal processes and geomorphology above the Mean High Water Spring (MHWS) were scoped out. MMO believes that this should be scoped in under Impacts 3, 4 and 8 (construction and in operations maintenance and decommissioning). MMO notes that coastal processes and geomorphology above MHWS within the suggested impacts (3,4 and 8) above has been included. Therefore, this concern has been resolved.

4.2.2 MMO previously raised that impacts of using scour protection (relating to a greater footprint of hard substrate being introduced, which may lead to habitat change/loss) should be compared to the impacts of simply designing foundations which can accommodate scour development. Additionally, MMO noted that 'there is limited numerical basis for the prediction of secondary scour' has been noted. MMO suggested further evidence should be collected from field data/monitoring evidence from other wind farms if available, acknowledging that empirical assessment methodologies are less established for edge/secondary scour than they are for primary scour where no scour protection is applied. It is not clear whether secondary scour footprint is factored into project footprint estimates. Further information was requested be provided to support this.

4.2.3 Section 7.12.2.2 in Volume 1: Chapter 7: Marine Physical Processes document (ref: PP1-ODOW-DEV-CS-REP-0115) discusses the impacts of seabed scouring, with some estimations for the magnitude of the scour equilibrium volumes. There is a good general discussion regarding scour. MMO notes that there have still not been any predictions made for secondary scour due to limited numerical basis for prediction and remains unclear as to whether secondary scour volumes are included in the project footprint. MMO considers this to be a weakness. The suggested impact for scour is minor adverse, which we do believe is appropriate. However, we note that this is an area that could be improved yet we recognise it to be a cross-sector issue.

- 4.2.4 The only impacts scoped out of the ES (Section 7.7.1.2) in regard to the physical processes is the hydrodynamic impacts from installation vessels such as jack-up rigs, cable laying vessels etc during the construction phase. MMO has no concerns regarding this topic not being included within the ES.
- 4.2.5 Appropriate data sources have been identified for the desk-based study and are listed in Section 7.2 Paragraph 10. Section 7.3.2 of Volume 3: Appendix 7.2 Physical Processes document, goes into further detail of the data sources used and lists them all, including project-specific surveys including geophysical for the marine physical processes. There are a wide range of sources used and within reasonable timeframes. MMO considers them to be appropriate.
- 4.2.6 Table 7.4 outlines the embedded mitigation in relation to marine physical processes. MMO agrees with the measures in the table, which include standard procedures such as the creation of Cable Installation Plans and Scour Protection Management Plans.
- 4.2.7 Section 7.13 outlines the Cumulative Impact Assessment and Section 7.14 discusses the Inter-relationships which discusses the potential impacts on the benthic communities and fish species. MMO considers there to be an adequate description of the potential cumulative and inter-related impacts.
- 4.2.8 MMO notes some of the colour schemes and bathymetric scales are difficult to read. For example, Figure 7.6 – the colour scale on the figure is small with only 0 and 32 labelled for depth with no other depths highlighted. This isn't particularly useful for the reader and could be improved. Figure 7.7 – colour scheme used for the Benthic Samples Folk class is hard to distinguish the classes. MMO suggested that this is also improved.
- 4.2.9 MMO notes that Impact 8 is not included in the decommissioning stage of Table 7.3 (Maximum Design Scenario). MMO queries whether this is an oversight or intentionally left out. Whilst the cables are meant to be left in situ, MMO query if there is any risk of exposure by retreating shorelines/local erosion that may need to be considered.
- 4.2.10 In Table 7.5, where potential impacts/changes are classified to pathways and receptors; Impact 4 is only identified as a pathway. MMO considers it should be pathway/receptor, as Impact 4 includes the geomorphology above MHWS, which includes shoreline features such as beach dunes.
- 4.2.11 MMO notes that the Physical Processes Technical Baseline (Document number 6.3.7.1) was recently updated to include the correct Annex B. The MMO has not had time to review this updated version and may provide further comments on this document.

4.3 Dredge, Disposal and Chemical Use

- 4.3.1 MMO raised previous comments concerning the Preliminary Environmental Information Report (PEIR) with regard to whether a change in the number of gravity bases, would require an increase in the need for scour protection (rock dumping) due to the change in foundations. MMO notes that full descriptions of scour by foundation type are provided in Chapter 3 and in the approach in the outline scour management plan (document 8.2.1). There is also a consideration of the need for disposal sites as part of the updated assessment presented in the ES and a disposal site characterisation report has been provided alongside the DCO application. This provides clarification sought by MMO's previous comments on the PEIR.
- 4.3.2 Although the number of samples taken are less than is recommended by OSPAR guidelines (14-06e), and which would be expected for sediment dredges of this size, considering the sandy/coarse physical composition of the project area the effort seems appropriate over both the array and the Export Cable Corridor (ECC). Full descriptions of the physical and chemical analysis of the material undertaken are provided (summarised in Chapter 9 Appendix 9.2) which is sufficient to characterise the dredge material.
- 4.3.3 MMO notes that in the Water Framework Directive (WFD) Assessment, it states that the environmental quality standards directive list (Environment Agency (EA) 2016) should be considered when undertaking an assessment (Chapter 8.03 point 14) and that point 73 states, "*There is no intention to knowingly release any chemicals listed in the EQSD into the environment, during the construction, operation and maintenance, or decommissioning phase of the Project.*" To be able to be compliant with this, the properties of all the chemicals (products) and their component substances used for the construction operation maintenance and decommissioning of the offshore windfarm should be known to, and approved by the regulator on structures within 1nm (jurisdiction of WFD). For example potentially jacking grease, chemicals used on rollers for cable pulling, may contain chemicals on the EA list. MMO recommends these types of chemical are added to the chemical risk assessment (CRA).

- 4.3.4 Chapter 7 Point 93, describes the potential requirement for drilling. The chemicals that might be used for these works are not discussed within the ES (drill muds as well as paints, coatings, dye, tracer, cement etc.). OSPAR guidance on the environmental considerations for the development of offshore windfarms (2008-3) point 57 states that, “*All chemicals, paints, coverings etc used in the construction should be approved for use in the marine environment and their ecotoxicological properties known*”. MMO considers that this includes drilling fluids including, tracers, cement, grout etc. The ES should outline how the Project intends to provide this information to the regulator. Similarly, the applicant describes the type of drilling fluid for the Horizontal directional drilling (HDD), however detailed information regarding these types of chemicals should be provided in the CRA, including the impact and likelihood/contingency for blow out. Currently all that is stated is that management measures to minimise the likelihood of unplanned release of drilling fluid is outlined in the Code of Construction Practice (CoCP). MMO notes that table 8.14 confirms the commitment to provide a Project Environment Management Plan (PEMP) that will include a Marine Pollution Contingency Plan (MPCP) that will provide protocols to cover accidental spills and potential contaminant release, and provide key emergency contact details, and therefore should include the chemical risk for substances used on the OWF with potential for entry into the marine environment (e.g. cleaning fluids, rigwash, cement or biocides used within gravity base structures etc.).
- 4.3.5 In Chapter 8 Water and sediment quality, table 8.2, it identifies the need to consult with the MMO regarding contamination and benthic survey sample and analysis requirements and that “*project specific sediment sampling has been discussed with the MMO reference, with further detail provided in Volume 1, Chapter 9*”. MMO validated laboratories have been used to undertake appropriate analysis to be able to characterise the proposed dredge material sufficiently, and estimates of worst case scenarios for dredge volume for various phases of the construction and operation have been provided (Chapter 9 Appendix 9.2).
- 4.3.6 For dredge and disposal, sources such as the UK Marine Monitoring and Assessment Strategy (UKMMAS, 2010) and OSPAR assessments (OSPAR, 2022) are identified. The full suite of baseline datasets used to inform the Marine Water and Sediment Quality (MW&SQ) aspects of the ES, including project specific surveys, are presented in Section 8.4 of this ES chapter (Table 8.2). For the array, 30 sediment samples were analysed and included Particle Size Analysis (PSA), total organic content, trace metals, organotins, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs) and organochlorine pesticides (OCPs) such as dichlorodiphenyltrichloroethane (DDT) and dieldrin, and 28 samples for the ECC. MMO considers this to be appropriate.
- 4.3.7 The applicant identifies embedded mitigation to physical process, namely with regard to dredge and disposal and chemical risks are those for Landfall using Horizontal Directional Drilling and the fact that for the foundations and offshore cables etc., the dredged material from construction will be deposited within an area of similar sediment characteristics in close proximity to the dredge location to retain sediment within the sediment transport system, which seems appropriate.
- 4.3.8 MMO notes that the assessment of impact as a result of contaminant release for scour and increase in suspended sediment concentration for cumulative assessments has been scoped out. MMO is content with this conclusion.

- 4.3.9 There is a comprehensive list of nearby projects under construction/consideration. There is an adequate description of the potential cumulative and inter-related impacts and effects on the physical and biological environment in relation to impacts of dredge and disposal.
- 4.3.10 Volume 1: Chapter 3: Project Description, section 6.11.5.5 second paragraph and Section 7.1 first paragraph has an error 'reference source not found'. MMO recommends that this is rectified.
- 4.3.11 Additionally, Chapter 8 point 58 refers to metals analysis in Table 8.10, this should read Table 8.9 (as Table 8.10 identifies PAH contaminant levels ($\mu\text{g}/\text{kg}$) as analysed from the Project-specific array survey, against Canadian guidelines). Chapter 8, point 59 States "59. *The full suite of metals analysed at each of the 28 stations within the ECC are provided in Table 8.11*". However, the heading for table 8.11 is "*Table 8.11: PAH contaminant levels ($\mu\text{g}/\text{kg}$) as analysed from the Project-specific ECC survey, against Canadian guidelines*". MMO recommends that these are rectified.
- 4.3.12 Volume 1: Chapter 8: Marine Water and Sediment Quality, Point 61, states that "*The full suite of contaminants analysed at each of the 30 stations within the array area are provided in Table 8.12.*" However, this data is in the Table labelled 8.10. Similarly point 66 states that PAH for 28 stations within the ECC are in Table 8.13, this data is in Table labelled 8.11. Table 8.12 contains PAH data for the ECC not the Array - "*Table 8.12: PAH contaminant levels as analysed from the Project specific ECC survey, against USEPA guidelines*".
- 4.3.13 Section 3.3 heading in the Offshore In-Principle Monitoring Plan (8.03), has a typo where 'benthic' is spelt incorrectly.
- 4.3.14 MMO notes the comprehensive discussions on the contaminants present and description of analysis and comparisons of results, which is welcomed. However, a minor point regarding concerns for levels of Arsenic exceeding Action level 2 (AL2) "*One station in the survey area, ECC_51, had very high concentrations of arsenic, exceeding all thresholds detailed in Table 23, including Cefas action level 1 of 20mg.kg^{-1} and Cefas action level 2 (AL2) of 50 mg.kg* " (Volume 3: Chapter 9: Appendix 9.2 page 82). The Project should note that the current published AL2 for Arsenic is 100 milligrams per kilogram (mg/kg) dry weight.
- 4.3.15 It is noted that 'ecological' scour protection may be used that would not exceed the footprint of the methods presented. Any scour protection method used should be notified to the MMO for review and approved prior to use.
- 4.3.16 The applicant may wish to note that Volume 1: Chapter 3: Project Description, Section 6.11.5.1 describes rock placement and size of rock. All rock used for scour protection should be inert and free from fines.

4.3.17 In Volume 1: Chapter 8: Marine Water and Sediment Quality, point 150 states that *“Bentonite is a non-toxic, inert, natural clay material with a particle size less than 63µm. It is included in the List of Notified Chemicals approved for use and discharge into the marine environment and is classified as a Group E substance under the Offshore Chemical Notification Scheme. Substances in Group E are defined as the group least likely to cause environmental harm and are “readily biodegradable and non-bioaccumulative”.* This is further supported by bentonite being included on the OSPAR List of Substances Used and Discharged Offshore which are considered to Pose Little or No Risk to the Environment (PLONOR)”. This list of chemicals is not an ‘approved’ list to denote chemicals approved for use in offshore wind and the wording should be amended.

4.3.18 The list referenced in Chapter 8, point 26, is a list of chemicals that have had all their substance data (ingredient level) presented checked and verified as complete (includes all relevant persistence bioaccumulation and toxicity data per ingredient) and generic oil and gas platform parameters applied to rank them. It is therefore not appropriate to assume that this list can be used like-for-like within offshore wind applications. The operator can choose chemicals from the ranked list use, at which point they provide a site-specific risk assessment together with detailed justification for the use of each chemical (product) to the regulator (MMO) who then makes a determination whether to permit. Even chemicals that are on the PLONOR list have to be approved by the regulator prior to use. Therefore, all chemicals with a pathway to the marine environment used on the offshore windfarm (unless covered by other regulations e.g. MARPOL) including Bentonite quantities should be notified to MMO with their properties, including safety data sheets to the regulator for approval, prior to use in the marine environment. In addition, impacts of “blow out” should this occur and loss of drill string contingency should also be provided in the method statement.

The PEMP will include a chemical risk assessment (CRA) *“Where relevant, this will comprise a risk assessment for the use of these chemicals in the marine environment, including consideration of whether they are approved for use offshore (e.g. included on the PLONOR list).”* As in the point above, the Cefas ranked list is not an ‘approved list’ for use. All chemicals for use at any phase in the life of the windfarm should be notified to MMO if there is a pathway to the marine environment and not covered by other regulations (e.g. used on vessels in closed systems (with no top up) or covered under other regulations e.g. MARPOL).

4.4 Benthic ecology

4.4.1 The acoustic data did not reveal any unique signatures that could be attributed to *Sabellaria spinulosa* reef, although the ground truthing showed the presence of patchy reef in several places although it was low lying. MMO raised concern that future geophysical surveys would not detect potential *Sabellaria spinulosa* reef and asked for clarification on how any pre-construction surveys would identify reef to avoid by micro-siting. MMO welcomes that the Project has committed to pre-construction surveys as outlined within Outline Biogenic Reef Mitigation Plan March 2024 document (ref 8.22). However, this document does not provide any details on the methodology to be adopted. We would highly recommend the use of drop-down video at the previous areas where substantial low and medium reef was observed in still images as it is known to be difficult to distinguish reef from the surrounding coarse/mixed sediments (see Jenkins et al 2015, 2018).

- 4.4.2 Regarding the spread of invasive non-native species and the consideration of this impact in the cumulative effects assessment (CEA), MMO notes that temporary increases in suspended sediment concentration (SSC) and sediment deposition during construction has only been considered under this assessment. We recognise that embedded measures have been considered within the PEMP, however this is restricted to vessel movements during construction and does not consider potential spread of Invasive Non-Native Species (INNS) during operation. MMO notes the acknowledgement of the lack of scientific knowledge regarding the spread of INNS and that the windfarm may act as stepping stones extending the impact beyond a local scale but has still assessed the magnitude as negligible. We therefore again advise reassessing this as above 'negligible' and advises scoping INNS into the cumulative effects assessment during operation.
- 4.4.3 MMO notes that there has been commitment to monitor INNS only if gravity base structures (GBS) are used. It is not clear why this is the only turbine base type that is being considered. All structure types can provide suitable colonisation substrate for INNS. MMO requests a response regarding this.
- 4.4.4 Annex I stony reef was scoped out of the assessment at Section 42 consultation. However, MMO notes that reefiness assessments have been undertaken for this feature within the OWF and ECC.
- 4.4.5 MMO recognises that there has been commitment to mitigation for *Sabellaria spinulosa* reef via micrositing, however, the mitigation plan does not contain sufficient detail to assess whether it is appropriate.
- 4.4.6 The CEA should consider the spread of INNS during operation as per the comment in paragraph 4.3.2 above.
- 4.4.7 MMO agrees with Natural England in that the assessment seems to down weight the reefiness scores as they are averaged over the transect. Some of the transects show areas of continuous low/medium reef which should be considered as separate patches as per Jenkins et al, 2015, 2018. The technical report does not provide any information on the distance covered for these patches. In the absence of sufficient acoustic data, it should be assumed that any distance of 5 metres (m) or greater with continuous reef presence should be considered as Annex I reef and should not be averaged across the transect, especially considering the naturally patchy nature of *Sabellaria spinulosa* reef.
- 4.4.8 There is a discrepancy between Figure 54 on P188 of Volume 3: Appendices: Chapter 9 Benthic and Intertidal Ecology (ref: PP1-ODOW-DEV-CS-REP-0165) when compared to the text on P187. The text states that the *Sabellaria spinulosa* aggregations were not reef-forming at station OWF_76, but Figure 54 shows station OWF_76 to be classified as 'medium reef'. This should be checked.
- 4.4.9 On page 90 of Appendix 9.2 Benthic Ecology ECC Area Results Report. (Document Number: 6.3.9.2), there is referral to an ECC station (ECC_02), however there is no ECC_02 listed in Table 25 on pages 94/95. MMO suggests that this be checked and corrected.

4.5 Fish Ecology

- 4.5.1 One of the concerns MMO raised at PEIR stage was in relation to disturbance to herring at their spawning grounds from piling noise, and we had requested the inclusion of some further underwater noise (UWN) modelling, we have provided further comments on this issue in points 4.5.2 – 4.5.4.

- 4.5.2 MMO previously recommended the presentation of additional noise modelling for the received levels of single strike sound exposure levels (SELss) at the Banks herring spawning grounds based on the 135 decibel (dB) SELss startle response (as per Hawkins et al., (2014)). In the ES, the utility of the 135 dB threshold has been challenged and it has been suggested that it is overly precautionary, and that, as stated by Popper et al. (2014), it is not appropriate to determine the potential for behavioural effects quantitatively due to the range of behavioural responses. Notwithstanding these comments, the potential behavioural impact ranges for 135 dB as 5 dB increments from the piling source in Figure 10.40 of the Volume 2: Chapter 10: Fish and Shellfish Ecology Figures, document (ref: PP1-ODOW-DEV-CS-FIG-0010) were presented. MMO welcomes this inclusion as per our request.
- 4.5.3 Although the 135 dB modelling has been presented in the ES, it does not include the 135 dB impact range for behavioural effects in their impact assessment for herring and has provided a discussion in Section 10.6.1 in Volume 1: Chapter 10: Fish and Shellfish Ecology document (ref: PP1-ODOW-DEV-CS-REP-0118) to support their decision. The discussion provided includes some valid points concerning the limitations of the study by Hawkins et al., (2014), such as the study being carried out in a quiet coastal sea loch where fish were not accustomed to heavy disturbance, and that the fish in the study (sprat) were not involved in any particular activity, i.e. spawning. MMO recognise that there are limitations with the study, and it is accurate that the Hawkins et al. (2014) 135 dB SELss threshold was determined based on sprat schooling in the water column rather than sprat (or herring) engaged in spawning, however, sprat are a clupeid species, closely related and anatomically similar to herring, and similarly sensitive to underwater sound (sprats also possess a swim bladder involved in hearing), so are considered a suitable proxy species in terms of their hearing sensitivity. Given that there is an absence of suitable peer-reviewed empirical evidence of behavioural responses in clupeid fishes to support an alternative threshold for impulsive noise, MMO considers the 135 dB threshold from Hawkins et al., (2014) is the best current scientific evidence from which a quantitative threshold can be derived for the purpose of modelling behavioural responses in herring. Notwithstanding this, we would be willing to consider the use of an alternative quantitative threshold for modelling behavioural responses in herring (or a similar clupeid fish), should one be able to be provided, which is based on an appropriate species, suitable situation, and peer-reviewed literature.

- 4.5.4 MMO welcomes the reference to the study by Skaret et al. (2005) which found herring to have a significantly reduced reaction to external stimulus when involved in spawning activity than when swimming/schooling. MMO notes the suggestion that in light of this study, it is likely that any behavioural impacts to fish (herring) would be significantly reduced when spawning, with consequently limited impact on spawning potential. However, it must be recognised that the study by Skaret et al. (2005) investigated vessel avoidance responses in herring exposed to continuous noise exposures, which is entirely different to the impulsive noise exposure generated by the proposed piling works. More importantly, whilst herring may display a biological drive to spawn regardless of the impulsive piling noise exposures, it is equally possible that such disturbance may cause herring to abandon necessary migrations to the gravel beds on which they need to spawn, in order to avoid the disturbance, potentially resulting in reduced spawning success and limited recruitment of herring larvae into the Banks stock. In the absence of appropriate, empirical evidence indicating that herring will continue to spawn when subject to significant UWN disturbance, a precautionary approach, based on the best available, peer-reviewed evidence, should be adopted (ICES, 2003, 2015, 2018). For the reasons given above, we maintain that the 135 dB threshold (as per Hawkins et al., 2014) is a precautionary, but appropriate threshold for the purpose of modelling behavioural responses in herring at their spawning ground and that the resulting impact range should be given due consideration in terms of whether the range of effect is likely to overlap the various herring spawning grounds near Flamborough head, or hinder the north-south migration of Banks herring in the Central North Sea.
- 4.5.5 MMO has no concerns regarding the scoping in/out of impacts or receptors. The fish species present in and around the project's study area have been correctly identified, as have the spawning and nursery grounds found within the vicinity of the project. The potential impacts to fish receptors and commercial fisheries have been appropriately scoped in/out of the ES. The list of impacts identified in the ES can be found in Annex 2.
- 4.5.6 As agreed at the PEIR stage, impacts arising from accidental pollution during the construction, operation and maintenance (O&M), and decommissioning phases have been scoped out of further assessment on the basis that a Project Environmental Management and Monitoring Plan (PEMMP) will be implemented to mitigate pollution events. Impacts from direct disturbance during the O&M phase have now been scoped in, which is appropriate. Impacts arising from changes in fishing pressure due to displacement have been scoped out of further assessment for fish ecology, but scoped into the assessment for commercial fisheries, which MMO supports. Transboundary impacts have been scoped into the assessment in respect of Annex II migratory fish species listed as features of European sites in other European Economic Area (EEA) States.
- 4.5.7 MMO notes that some benthic compensation within an area of seabed for the creation and re-creation of biogenic reef habitat, located within the Biogenic Reef Restoration Area reviewed in document Volume 1: Chapter 3: Project Description, document (ref: PP1-ODOW-DEV-CS-PDE-0001), has been proposed. Further comments on the potential impacts and suitability of creation / re-creation of biogenic reef habitat and the benefits to benthic ecology are found in the Benthic Ecology and Shellfish Ecology sections.

- 4.5.8 MMO considers that overall, the assessment is proportionate for the nature and scale of the project. However, we do have some comments and recommendations that need to be addressed on the appropriateness of the assessment (see points 4.5.1, 4.5.2, 4.5.3, 4.5.4 above, and 4.5.10 below).
- 4.5.9 On the whole, the evidence sources and data that have been used to inform the assessment are all appropriate, and there are no signification gaps in evidence to give cause for concern.
- 4.5.10 The 'heat' maps in Figures 10.14 – 10.17 in the Volume 1: Chapter 10: Fish and Shellfish Ecology document (ref: PP1-ODOW-DEV-CS-REP-0118) that show abundance of herring larvae across the study area, have used International Herring Larvae Surveys (IHLS) data from 2009/2010 - 2020/2021. The ES was finalised in March 2024, so there are 2 years of more recent IHLS data that could have been used to inform the assessment. MMO appreciates that the modelling is likely to have been completed prior to the ES submission and prior to all the internal checks, thus this is a minor comment to note. However, for a project of this size and nature, MMO would typically expect the most recent 10 years of IHLS data, up to year 2022/2023, to have been used, and recommend this is done in future.
- 4.5.11 The baseline characterisation utilises a broad combination of datasets and provides temporal analysis and validation of regional monitoring datasets, for example Fisheries Sensitivity Maps (Coull et al., (1998) & Ellis et al. (2012)), IHLS data, MMO landings data and International Bottom Trawl Surveys (IBTS) data, to name but a few. Further data and evidence has been acquired through site-specific benthic ecology surveys undertaken across the array area and offshore ECC. These surveys include sediment grabs, epibenthic trawls and Environmental DNA (eDNA) data. The data and evidence sources used to inform the assessment are consistent with those used for other OWF Environmental Impact Assessments (EIAs).
- 4.5.12 A series of 'best practice' embedded measures that aim to mitigate potential impacts of the proposed works to fish receptors has been proposed in (documents reviewed; Volume 1: Chapter 10: Fish and Shellfish Ecology, document (ref: PP1-ODOW-DEV-CS-REP-0118)). These include an MPCP, marine invasive and non-native species prevention measures, the development of a decommissioning program to ensure impacts from decommissioning are minimised, the use of soft-start techniques on commencement of piling, the implementation of a PEMP and the burial of cables wherever possible. MMO supports the inclusion of these embedded mitigation measures.
- 4.5.13 Concerning the effects of electro-magnetic fields (EMF) on electro-sensitive fish receptors such as elasmobranchs, eels and lampreys, MMO notes that the intended average cable burial depth for array, interconnector and export cables will be between 0 - 3m. In line the with the National Policy Statement EN3 (Department of Energy & Climate Change, 2011)) MMO recommends that where possible, cables are buried to a minimum depth of 1.5m (subject to local geology or seabed obstructions) as this will further increase the distance between electro-sensitive fish receptors and EMF, as well as reduce the risk of snagging and damage to cables by other marine vessels e.g. anchors, bottom-towed gear. MMO also notes that a cable burial risk assessment has been undertaken in respect of the sections of export cables which cross through Annex 1 sandbanks. MMO defers to Natural England as the SNCB for further comments on impacts to the features of the SAC.

Herring

- 4.5.14 The impacts to herring from UWN from piling have been assessed as ‘minor’ adverse which is not significant in EIA terms, so any specific mitigation measures for the species have not been proposed. MMO does not support the conclusion for a number of reasons which MMO will expand on in the following points.
- 4.5.15 In categorising the sensitivity of receptors, it is stated that herring are considered to be of high vulnerability, with low recoverability and of regional importance, and therefore have a ‘medium’ sensitivity rating. This is based upon the criteria provided in Table 10.10 (Volume 1: Chapter 10: Fish and Shellfish Ecology, document (ref: PP1-ODOW-DEV-CS-REP-0118) – see Annex 3) which states that for a receptor to be of ‘high’ sensitivity it must also be internationally or nationally important. MMO also notes that hearing sensitivity group 3 has been categorised (Cod, sprat and whiting), group 2 fish species (salmonids) and group 1 fish species (flat fish and sandeels etc.) as all having a receptor sensitivity of ‘low’. MMO’s opinion is it is not appropriate to list all of these above-mentioned species, which have variable sensitivities to the impacts of underwater noise, as having the same sensitivity rating within the 4 stage receptor sensitivity criterion. MMO agrees that herring are more sensitive to underwater noise impacts than fish in other hearing sensitivity groups, as well as fish within their own hearing sensitivity group (Cod etc.). However, MMO does not agree with the criteria set out in Table 10.10 (see Annex 3) regarding the subjective categorisation of herring as a ‘medium’ sensitivity species. This is based on 3 main reasons: 1) Herring are of national importance, both ecologically by playing a critical role in the north sea food-web as a prey item for many Annex II species, rare and vulnerable species and species of conservation importance, as well as being commercially important for UK fisheries; 2) the timing of the impact (i.e. piling) overlapping with critical life stages (spawning etc.); 3) herring are highly sensitive in two ways, both physiologically with regard to them possessing a swim bladder involved in hearing (Popper et al., 2014) and ecologically with their reliance on a specific benthic location during their spawning and egg-yolk larvae life cycle stages. If piling works overlapped both spatially and temporally with herring spawning it could result in limited or no capacity to avoid, adapt to, accommodate or recover from this impact. Therefore, it is MMO’s opinion that herring, who are sensitive both physiological and ecologically, should be categorised as a ‘high’ sensitivity receptor.
- 4.5.16 It is also important to remember that where a receptor is sensitive to an impact e.g., underwater noise or disturbance to habitat, such sensitivity is irrespective of the location. What matters is whether the receptor in question is at risk from the impact at that particular location and, if so, what the level / magnitude of risk is likely to be if there was (hypothetically) a spatial overlap. Taking herring as the receptor and noise disturbance in their spawning habitat as the impact; we know that herring rely on specific locations of gravel substrates on which to lay their eggs, therefore gravid females and the developing eggs and larvae attached to the gravel will have very limited to no capacity to avoid disturbance to their spawning habitat. As the impact has the potential to occur at the critical life stage of spawning, the sensitivity of the receptor is considered ‘high’.
- 4.5.17 Based on the points discussed in 4.5.15 – 4.5.16, and using the matrix in Table 10.11 found in Volume 1: Chapter 10: Fish and Shellfish Ecology, document (ref: PP1-ODOW-DEV-CS-REP-0118), see Annex 4, to determine effect significance, when the receptor sensitivity for herring is re-categorised as ‘high’, with a ‘low’ magnitude of impact (as considered by the ES), it would result in a significance of effect of ‘moderate’ which is significant in EIA terms.

- 4.5.18 In addition, MMO does not agree with the assessment of a 'low' magnitude of impact for the reasons outlined in points 4.5.19 – 4.5.22 below.
- 4.5.19 In Figures 10.39 and 10.40 in document Volume 2: Chapter 10: Fish and Shellfish Ecology Figures, (ref: PP1-ODOW-DEV-CS-FIG-0010), see Annex 5, it is presented that the modelled noise contours for pin-piling and monopiling (respectively), including the 135 dB SELss threshold alongside the 'heat' maps of herring larval abundance and the historic herring spawning grounds from Coull et al. (1998). Both figures show a significant overlap between the 135 dB SELss noise contour and large areas of larval densities ranging 0 to 6,000 herring larvae per metres squared (m^2), as well as overlaps with the historic spawning grounds. MMO has already highlighted in point 4.5.3, the reasons why we maintain that using the 135 dB SELss threshold is appropriate for determining the likelihood of behavioural impacts causing disturbance to gravid and spawning herring.
- 4.5.20 Further modelling presented in the Figures 10.35, 10.36, 10.39 and 10.40 in Volume 2: Chapter 10: Fish and Shellfish Ecology Figures, document (ref: PP1-ODOW-DEV-CS-FIG-0010) demonstrates that noise disturbance from pin-piling and mono-piling of the Artificial Nesting Structures (ANS) and in the array, will cause mortality and potential mortal injury, recoverable injury and temporary threshold shift (TTS) in herring at the spawning grounds (and other fish species).
- 4.5.21 MMO notes the highlighted larval densities of herring around the array site (ranging 0 to 6,000 larvae per m^2) are much lower than those that occur off Flamborough Head, which is considered to be the current focus of Banks spawning activity, as demonstrated by the IHLS data. Whilst MMO agrees that the larval densities are much lower compared with areas around Flamborough Head, it is still important to consider the importance of the southern extent of the spawning ground around Outer Dowsing to the overall contribution to the Banks herring spawning population, as this location been shown to be of periodical importance to the Banks herring spawning population. MMO notes the presented IHLS larval density plots for individual years in Figures 10.15, 10.16 and 10.17 in the Volume 2: Chapter 10: Fish and Shellfish Ecology Figures, document (ref: PP1-ODOW-DEV-CS-FIG-0010). Increased larval densities were recorded in the IHLS data for years 2011-2012, 2016-2017 and 2019-2020 which visually demonstrates the ongoing importance of the southern portion of the Banks spawning ground in certain years (see Annex 6). MMO notes the latest 2 years' IHLS data (2021/2022 and 2022/2023) have not been presented, so it is not known if herring relied more heavily on this southern portion of the Banks spawning ground during this period.
- 4.5.22 In summary, the UWN modelling presented shows that the effects of UWN from piling is likely to cause behavioural impacts across a wide area of the southern portion of the Banks spawning ground, albeit where larval densities are lower, the UWN modelling also demonstrates that spawning herring will be affected by piling through impacts including mortality and potential mortal injury, recoverable injury and TTS. The IHLS data also demonstrate that the location of around Outer Dowsing OWF plays a more important role as a spawning habitat in certain years.

4.5.23 For the reasons outlined in points 4.5.19 – 4.5.22, MMO believes that it is appropriate and necessary to re-categorise the magnitude of impact from 'low' to 'medium', resulting in a significance of effect of 'major'. To conclude this point, it is in MMO's opinion that the presented current categorisation of herring sensitivity does not appropriately reflect their vulnerability to the underwater noise impacts associated with the proposed works.

4.5.24 Points 4.5.14 – 4.5.23 have outlined our position and concerns regarding the presented assessment for impacts of UWN on herring. For these reasons, we believe that there is potential for significant impacts to occur to Banks herring at a population level, if suitable mitigation is not employed. MMO therefore recommends that the following licence condition is included in the deemed marine licence (DML):

- No piling of any type shall be permitted between 01 September and 16 October each year. *Reason: To protect spawning Banks herring and their eggs and larvae during their spawning season.*

4.5.25 It is worth noting that the duration of the recommended piling condition is shorter than that typically recommended for the Banks herring spawning season (August to October inclusive). The recommended condition is proportionate to the licence condition for Triton Knoll OWF (DCO/2013/00004), located ~10km west of Outer Dowsing OWF, and reflects the timing of when herring spawning typically occurs in this southerly part of the Banks spawning ground, relative to those areas of spawning ground further north, e.g. Flamborough Head. This refined spawning period was identified through interrogation of IHLS data during the consenting stage for Triton Knoll OWF, and through the understanding that herring migrate through the North Sea from north moving south during their spawning season (Cushing and Bridger 1966, and Burd, 1978).

Sandeel

- 4.5.26 MMO notes the recognition of the increased sensitivity of sandeels to offshore construction and disposal activities and that a species-specific assessment has been undertaken, which is appropriate. For the UWN impact assessment, sandeel have been categorised as Group 1 (fish without swim bladder) and are assessed as a stationary receptor, which is appropriate. For the impacts of mortality and potential mortal injury, from sequential pin-piling in the array area, an impact range of up to 1.5km is predicted. However, under the scenario of pin piles for jacket foundations being installed simultaneously at both the North East (NE) and South West (SW)piling locations, a larger impact range is predicted, with a maximum area of 9km². For simultaneous piling of two monopile foundations at the NE and S W piling locations, the range of effect for potential for mortality and potential mortal injury in sandeels equates to a maximum area of up to 6.4km². Figures 10.25, 10.26, 10.29, 10.30, 10.34, 10.37 and 10.38 in Volume 2: Chapter 10: Fish and Shellfish Ecology Figures, document (ref: PP1-ODOW-DEV-CS-FIG-0010) present the modelled noise contours for pin-piling and monopiling within the Array and ANS search areas including sequential and simultaneous piling scenarios. With the exception of Figure 10.34, the Figures largely show the overlaps between the effects of mortality and potential mortal injury and TTS in sandeels with sandeel habitat in the Outer Dowsing study area.
- 4.5.27 Please note that Figures 10.29, 10.30, 10.31 and 10.32 do not present the spawning grounds for sandeel or any other species that are spawning in the area, so are of little value in their current form. The figures with the relevant spawning grounds and/or habitats included should be re-presented.
- 4.5.28 On the whole, the UWN modelling indicates that there will be injurious effects to sandeels across much of the array area where habitat is suitable. This is likely to be of greatest concern during their winter hibernation period and spawning period (November to February inclusive). In addition, disturbance to sandeel habitat across the Outer Dowsing area will result in further disturbance to the species, again this will be of greatest concern during their winter hibernation period and spawning period. Whilst MMO agrees with the presented statement that sandeel habitat is widely distributed across the central North Sea, it is reasonable to assume that impacts of UWN and habitat disturbance to sandeel will occur at a local scale. MMO does not believe this warrants any further mitigation to prevent significant impacts to sandeels at a population scale. However, as highlighted in our previous comment, there are a number of protected areas which overlap or are in close proximity to the Outer Dowsing study area which include Annex II species that may rely on sandeels as part of their diet whilst foraging in the area and therefore, may experience reduced foraging success and/or incur greater energy expenditure travelling to new feeding grounds as a result of localised impacts to fish populations during the construction of the wind farm, especially those receptors with relatively small and/or coastal restricted foraging areas. MMO defers to the relevant SNCB on whether localised reductions in sandeel will cause significant effects to any of the annex II species, however, MMO notes that the impacts of prey availability has been assessed in Chapter 12, Intertidal and Offshore Ornithology.

- 4.5.29 The approach to the assessment of cumulative and inter-related impacts outlined in the Offshore Cumulative Effects Assessment in Volume 1: Chapter 10: Fish and Shellfish Ecology, document (ref: PP1-ODOW-DEV-CS-REP-0118) follows a standard approach of identifying the impacts which have potential to cause an effect. The study area for the range of effect is 12km around the array area and 15km around the ECC (for sedimentary impacts, based on physical processes). For underwater noise the range of effect is 100km due to the larger range of effect from noise generating activities such as piling. All other offshore operations (OWFs, subsea cables and aggregate areas) within the study area in the planning, consented, construction and operational activities have been identified.
- 4.5.30 The cumulative behavioural effects to fish from underwater noise between different OWFs and the proposed works to fish have been assessed. However, from our understanding, the underwater noise impact ranges for behavioural responses in fish have been based on the conclusions of the ES of those windfarms, which may quantify behavioural responses in a different way, therefore appropriate comparisons cannot be made. For example, the ES states that the Hornsea Project Three OWFs (Ørsted, 2018) assessment assumed a maximum of 319 monopiles across the site and predicted behavioural effects up to 10.8km from the piling locations. However, the Hornsea Project Three OWF ES did not include modelling of the 135 dB threshold for behavioural effects in herring, therefore discussing the potential overlapping cumulative effects with the proposed works is not appropriate; especially when the Applicant's behavioural effects assessment for fish has not been modelled using the 135 dB threshold either (Hawkins et al., 2014). Secondly, MMO recommends that the cumulative impact range contours are presented, for all the projects discussed in the cumulative impact assessment, as a figure to help better visualise any potential cumulative impacts between OWF projects.
- 4.5.31 MMO reiterates a comment made at PEIR stage, concerning cumulative impacts of UWN from piling; We are becoming increasingly concerned about the increase in hammer energies being used to install monopiles at OWFs. Monopile hammer energies have typically been in the region of 4,000 – 5,000 kilojoules (kJ), but we are seeing an increasing number of OWF licence applications proposing the use of 6,000 – 7,000kJ. These higher hammer energies are likely to result in noise impacting a larger area. Whilst receptor-specific mitigation is recommended by MMO when the evidence suggests that significant impacts to a particular species of fish are likely to occur, we do have general concerns regarding impacts to all fish (and other marine fauna in general) from unmitigated noise disturbance during piling at sea, especially given the recent surge in OWF development in the North Sea. For example, MMO notes in Table 10.19 in Volume 1: Chapter 10: Fish and Shellfish Ecology, document (ref: PP1-ODOW-DEV-CS-REP-0118) that there may be temporal overlaps in the construction phases of Norfolk Boreas, Sheringham Shoal Extension, Dudgeon Extension, Hornsea Three and Hornsea Four OWFs, all of which require piling as part of their construction activities. It is therefore MMO's opinion that additional noise abatement measures should be implemented for piling at this development as standard. With this in mind, the Project should consider the use of additional noise abatement measures for piling, such as bubble curtains (see Würsig et al. (1999)), or other alternative measures.

- 4.5.32 The worst-case scenario for simultaneous piling of two monopile foundations at the SW and NE piling locations in the array area has been modelled. MMO requests an explanation as to why this scenario has been chosen as the 'worst-case'? In our opinion, modelling simultaneous piling from the SW and NE locations is indeed the worst- case scenario in terms of geographical spread, but not necessarily for fish receptors, specifically herring. The most vulnerable herring spawning grounds in relation to the project array are located northwest of the site. Therefore, in our opinion for a worst-case simultaneous piling scenario, the NE and NW locations should also be modelled as these locations are the most critical in terms of impacts to herring at their spawning grounds and consequently are where greatest overlap in noise disturbance will occur. MMO asks for a more detailed explanation on why these locations (SW and NE) were chosen for their worst-case scenario for simultaneous piling for fish receptors, herring specifically. MMO additionally requests the presentation of the modelled results for simultaneous piling of two monopiles from the NE and NW locations.
- 4.5.33 In paragraph 247 of the ES Volume 1: Chapter 10: Fish and Shellfish Ecology, document (ref: PP1-ODOW-DEV-CS-REP-0118) it states that the migration circuit for herring in the North Sea has been mapped alongside the herring larval hotspots, and noise contours from piling in the array area, the ORCPs and ANSs in Volume 2, Figure 10.38. Please note that Figure 10.38 of the Volume 2 Figures chapter presents UWN modelling relating to sandeel. The MMO considers that the figure for herring should be presented as described, or signposting provided to the correct volume/chapter it can be found in.

4.6 Shellfish ecology

- 4.6.1 The MMO notes the use of several data sources for shellfish and shellfisheries. These are a combination of desk sources and additional opportunistic surveys. However, the listed data sources do not cover the array or cable corridor, and several are over 10 years old, which could be considered outdated. Furthermore, as acknowledged by ODOW, the surveys conducted are not shellfish targeted surveys and are therefore only indicative of presence and absence of shellfish species. It is acknowledged that the report states "*the MMO agreed that the baseline datasets identified in the Scoping Report (Outer Dowsing Offshore Wind, 2022) were appropriate for characterisation and the MMO confirmed no need for site-specific surveys.*" However, the MMO would expect more recent data to inform the baseline environment for shellfish receptors and shellfisheries.
- 4.6.2 The MMO acknowledges that the specific benthic ecology surveys including Particle Size Analysis of sediment samples, epibenthic trawls and eDNA have since been conducted. As acknowledged within the ES, the site-specific surveys vary in their effectiveness in capturing shellfish. MMO notes the use of several data sources, including existing surveys from other developments and desk-based literature. In our opinion, although some data sources are relevant, these are not recent (some over 10 years old). Furthermore, although site-specific surveys have been conducted, no shellfish targeted surveys have been undertaken to inform the baseline for shellfish receptors.
- 4.6.3 MMO defers to Eastern Inshore Fisheries & Conservation Authority (EIFCA) for comments on potential impacts of the development on cockle and whelk features in The Wash.

- 4.6.4 It is noted that the impacts that have been considered in the Cumulative Impact Assessment are, during the construction phase, cumulative mortality, injury and behavioural changes resulting from underwater noise; and Cumulative increase in Suspended Sediment Concentration and sediment deposition.
- 4.6.5 For the UK potting fishery, the “*implementation of evidence-based mitigation in line with Fishing Liaison with Offshore Wind and Wet Renewables guidelines, following procedures to be set out within the outline Fisheries Liaison and Coexistence Plan*” has been proposed. MMO agrees with the mitigation measure proposed.
- 4.6.6 A comprehensive list of nearby projects under construction/consideration has been provided. MMO considers that there is an adequate description of the potential cumulative and inter-related impacts and effects on the physical and biological environment for shellfish and shellfisheries.
- 4.6.7 There are some scientific names which are incorrect. For example, In the document Appendix 10:1 Fish and Shellfish Ecology Technical Baseline, p23 “European lobster *Homarus 23ubulate*”, the scientific name should be *Homarus gammarus*. On p24 of the same document “European common squid *Alloteuthis 24ubulate*”. The European common squid scientific name is *Alloteuthis subulata*. MMO requests that these are amended.
- 4.6.8 MMO advises that scientific names of the shellfish species should be presented in brackets next to the common name. This has been done in some cases but not all. This is a minor comment, for the applicant to consider.

4.7 Underwater Noise

- 4.7.1 MMO considers that the relevant impacts have largely been scoped in. The impacts of relevance to underwater noise that have been considered include the following:

Construction:

- Impact 1: Unexploded Ordinance (UXO) Clearance – Permanent Threshold Shift (PTS);
- Impact 2: UXO Clearance – Disturbance;
- Impact 3: Pile driving – PTS;
- Impact 4: Pile Driving –TTS;
- Impact 5: Pile driving – Disturbance;
- Impact 6: PTS from other construction activities;
- Impact 7: TTS from other construction activities;
- Impact 8: Disturbance from other construction activities;
- Impact 10: Vessel disturbance;

Operation:

- Impact 14: Operational noise;
- Impact 16: Vessel disturbance

- 4.7.2 It was raised during the PEIR consultation that MMO would expect the impact of UXO Clearance and TTS to be listed as a specific impact in Volume 1: Chapter 11: Marine Mammals, document (ref: PP1-ODOW-DEV-CS-REP-0119), alongside PTS and disturbance (see section 11.5.1.1, for example). It is still unclear why this impact isn't specifically listed with the other impacts. Nevertheless, predicted TTS ranges for fish and marine mammals have been provided in the underwater noise assessment (currently Appendix 11.2, document reference 6.3.11.2), which is appropriate.
- 4.7.3 MMO notes that a detailed UXO survey will be completed prior to construction. The type, size and number of possible detonations and duration of UXO clearance operations is not known at this stage. It is noted that the Project is not seeking to license the disposal of UXO in this application, but it is included in the impact assessment.
- 4.7.4 MMO considers that the approach to identify and assess the potential impacts is largely appropriate. Detailed underwater noise modelling is provided in Volume 3: Appendix 11.2 Underwater Noise Assessment, document (ref: PP1-ODOW-DEV-CS-REP-0170). This appendix presents the predicted impact ranges for PTS and TTS (for marine mammals), and mortality, recoverable injury and TTS for fish species. Volume 1: Chapter 11 Marine Mammals, document (ref: PP1-ODOW-DEV-CS-REP-0119) provides further details and consideration of the effects of underwater noise including disturbance. For assessing disturbance from pile driving, a species-specific dose-response approach has been adopted, which is appropriate. Noise contours at 5dB intervals were generated by noise modelling and were overlain on species density surfaces to predict the number of animals potentially disturbed.
- 4.7.5 The Outline mitigation plans for piling and Unexploded Ordnance Clearance (UXO) have been submitted. An In Principle Southern North Sea (SNS) SAC Site Integrity Plan (SIP) has also been submitted. Overall, at this stage, Please see below for specific comments.

Appendix 11.2 Underwater Noise Assessment (Document reference: 6.3.11.2).

- 4.7.6 The map in Figure 1-1 (on page 1) is lacking any coordinates and has little geographical context. The bathymetry layer is not very informative either (no legend or contours and using a single colour). This is also the case for all the other maps presented in the report. We don't expect that bathymetry should be shown in great detail on the maps that otherwise focus on presenting modelling impacts (e.g., TTS and PTS contours). However, it would be useful if the bathymetry was shown (together with coordinates / more geographical context) perhaps on the first map, since they all appear to show the same domain.

- 4.7.7 A number of scenarios (covering monopile and jacket pin-pile foundations) have been modelled including three locations within the array area, two locations for the Offshore Reactive Compensation Platform (ORCP) and two locations for the Artificial Nesting Structures (ANS). Additional modelling has also been carried out to investigate the potential impacts of two piling installations occurring simultaneously at separated foundation locations. Using the monopile and jacket pile foundation piling scenarios, separately, modelling has been carried out for simultaneous piling at the SW and NE locations. We understand that the SW and NE locations have been chosen as this represents the maximum geographical spread of locations. Indeed, the maximum separation between piles will likely lead to the greatest risk of disturbance. However, other (additional) scenarios may also need to be considered, such as locations which are in closer proximity to important habitats (i.e., spawning or nursery grounds). Please also refer to comment 4.5.32.
- 4.7.8 Table 4-2 (in section 4.1) shows a summary of the maximum predicted unweighted peak sound pressure level (SPL_{peak}) and the SEL_s noise levels at a range of 750 m from the source. This section (section 4.1) is a new addition to the report. MMO appreciates the inclusion of this information. It is very informative (we would say more than the source levels (SLs), since the SLs only have meaning within the particular context of the propagation model – while the values at 750 m, should, in principle at least, correspond to true noise values that could be verifiable by field measurements).
- 4.7.9 Thee values (focusing on the SEL_s) do not seem to be particularly very high, given the large pile diameters and hammer energies. The monopile foundation values (for a 14 m diameter pile and 6600 kJ hammer energy) are only 1-1.5 dB above the corresponding jacket pile foundation values (5 m diameter pile and 3500 kJ hammer energy) at the same locations. The increase of hammer energy alone from 3500 kJ to 6600 kJ might plausibly explain these differences; however, the substantial increase in pile diameter (from 5 to 14 m) does not seem to have a very important role. This is somewhat at odds with the emerging evidence from literature, which suggests that the pile diameter is a very important factor in the scaling of the piling noise (von Pein et al., 2022). In this context, we also note that the report acknowledges that the INSPIRE model is based on existing empirical data (which allegedly does not exist for the parameters relevant for the foundation at this windfarm) which need to be extrapolated, based on the existing trends, up to the scale of piling anticipated for the current application.
- 4.7.10 Section 4.5 Multiple location modelling (on page 49): The report states that “*It is assumed that a fleeing animal in the model starts at both piling locations*”. We are unsure what this means. The meaning of an impact zone (such as those enclosed by the TTS contours in Figure 4-1) is that of showing all starting positions of fleeing animals that eventually accumulate noise exposure above the particular threshold level of that respective impact. As such, the model needs to consider animals starting to flee from all points within the model domain in order to establish which starting points fall within the impact zone and which fall outside - not only starting at the two piling locations. This comment does not necessarily require any action as such; however, we wanted to highlight that this statement could be seen as confusing.

4.8 Chapter 12 Offshore and Intertidal Ornithology

- 4.8.1 MMO defers to Natural England as SNCB and supports any comments raised in relation to the Ornithology. The MMO will continue to be part of the discussions relating to securing any mitigation and monitoring or other conditions required within the DMLs.

4.9 Chapter 13 Marine and Intertidal Archaeology

4.9.1 MMO defers to the Historic England on matters of marine archaeology and supports any comments raised. The MMO will continue to be part of the discussions relating to securing any mitigation, monitoring or other conditions required within the DMLs.

4.10 Chapter 14 Commercial Fisheries

4.10.1 It is likely that there will be an impact to fishing operations and to other legitimate users of the sea, as temporary exclusion zones will be in force around the worksite for the duration of any proposed works. This could result in temporary restrictions of access to fishing grounds or navigation routes. MMO notes the inclusion of such safety zones within ES Volume 1: Chapter 14: Commercial Fisheries, document (ref: PP1-ODOW-DEV-CS-REP-0122)

MMO defers to the National Federation of Fishermen's Organisations and Sussex Inshore Fisheries and Conservation Authorities, along with standalone representatives on matters of commercial fisheries. The MMO will continue to be part of the discussions relating to securing any mitigation, monitoring or other conditions required within the DMLs.

4.11 Chapter 15 Shipping and Navigation

4.11.1 MMO defers to the Maritime and Coastguard Agency and Trinity House on matters of shipping and navigation and supports any comments raised. The MMO will continue to be part of the discussions relating to securing any mitigation, monitoring or other conditions required within the DMLs.

4.12 Chapter 17 Seascape Landscape and Visual

4.12.1 MMO defers to Natural England as the SNCB, along with Historic England and the Local Planning Authorities on matters of Seascape, Landscape and Visual Resources and supports any comments raised. The MMO will continue to be part of the discussions relating to securing any mitigation and monitoring or other conditions required within the DMLs.

5. Other Application Documents

5.1 In Principle Southern North Sea Special Area of Conservation Site Integrity Plan

- 5.1.1 As advised during the PEIR consultation, the need to implement effective alternatives to unmitigated piling – i.e. measures to reduce noise at source (noise abatement) is especially pressing given the wider context of the current ramp up of offshore wind development at unprecedented scale in the North Sea. To ensure adequate preparations are made and potential delays avoided, it is therefore in the applicant's interest to plan for noise abatement measures at the earliest opportunity and to incorporate such measures into relevant mitigation plans.
- 5.1.2 MMO defers to Natural England and other SNCBs for further comment on SIPs. As per paragraph 23 of the SIP, MMO does agree with the JNCC, Natural England & DAERA (2020) guidance in that it is important to allow sufficient time between assessment and construction to implement additional mitigation measures if necessary.

5.2 Outline Marine Mammal Mitigation Protocol (MMMP) for Piling Activities

- 5.2.1 It is noted that page 12 states that the maximum number of piling events (for multi-leg pin piled jackets) in a single day is eight, assuming two piling rigs, each installing four piles. For the purposes of the underwater noise modelling to inform the MMMP, 6 piling events at a single location have been modelled to inform the maximum injury ranges. Indeed, the worst-case stated in the underwater noise modelling is 6 piles to be installed in a 24-hour period (and a total of 12 piles in 24 hours for the simultaneous piling) (4 hours per pin pile equating to a total of 24 hours).
- 5.2.2 The specific mitigation measures that will be implemented during the construction of the Project will be determined, in consultation with relevant SNCBs, following the appointment of the installation contractors (and therefore, confirmation of final hammer energies and foundation types), collection of additional survey data (further geophysical and/or geotechnical data) and/or information on maturation of emerging technologies. This additional data and information will allow the noise modelling to be updated and feed into discussions on the appropriate mitigation measure(s) in the Final Piling MMMP (if required). MMO considers this approach to be appropriate.
- 5.2.3 The Outline MMMP identifies the standard mitigation measures that are commonly employed, including: pre-piling deployment of Acoustic Deterrent Devices (ADDs), Marine Mammal Observers (MMObs), Passive Acoustic Monitoring (PAM) system and a piling soft start procedure. Noise abatement is also considered (section 4.4). MMO notes that the specific protocol for handling piling breaks would be determined in collaboration with the piling contractor and SNCBs and documented in the final piling MMMP.

5.3 Outline Marine Mammal Mitigation Protocol for UXO

- 5.3.1 As with the Outline MMMP for piling, this MMMP for UXO only provides a high-level outline of the information which would be contained within the UXO MMMP that will accompany a future Marine Licence application. The document identifies the standard mitigation measures that are commonly employed for UXO clearance, including: pre-piling deployment of Acoustic Deterrent Devices (ADDs), Marine Mammal Observers (MMOb), Passive Acoustic Monitoring (PAM) system, low order techniques and noise abatement.

5.3.2 Of relevance, paragraph 27 states that “*Technologies are available which attenuate the amount of noise emitted at the source (noise abatement). The use of bubble curtains during high-order UXO clearance activities is now standard best-practise for UXO clearance campaigns for offshore wind projects, with all projects since East Anglia One being required to use bubble curtains (subject to certain environmental limitations) for UXO detonations with combined charge sizes of greater than 50 kilogram (kg) (TNT-equivalent)*”. MMO considers that bubble curtains should be deployed for all high-order detonations, including those under 50 kg.

5.4 Offshore In-Principal Monitoring Plan (IPMP)

5.4.1 The IPMP has been produced to provide the basis for delivering the monitoring measures required by the conditions of the deemed Marine Licences (dMLs) contained within the draft Development Consent Order (DCO). The monitoring plan to be submitted to the MMO for approval post consent must accord with this IPMP. Final detailed plans for monitoring work will be produced post consent closer to the time that the actual work will be undertaken, in line with the conditions proposed within the dMLs.

5.4.2 Paragraph 31 (section 3.5.2) appropriately identifies that if piled foundations are used in the final project design, underwater noise monitoring of the first four piles of each piled foundation type will be undertaken with the methods agreed with the MMO and relevant SNCBs in the pre-construction period. This is in keeping with the standard monitoring requirements for offshore wind farms. Monitoring of the first four piled foundations (during the construction phase) is required for validation purposes – to check whether the noise predictions in the ES are reasonable/appropriate.

5.4.3 MMO notes that monitoring (in the form of MMObs and PAM) will also be undertaken in order to manage to the risk of auditory injury to marine mammals from underwater noise.

5.4.4 MMO will continue discussions on monitoring throughout examination. MMO also encourages pre-engagement at the earliest stages once consented to allow for any issues to be resolved.

5.5 Outline Fisheries Liaison and Coexistence Plan

5.5.1 The MMO welcomes and notes that an Offshore Fisheries Liaison Officer (OFLO) will be appointed, alongside a Company FLO and a Marine Coordinator for Outer Dowsing OWF.

5.5.3 Advice should be sought via the FLO when the timetable of works is known so that the local industry can provide real-time advice.

5.5.4 MMO would note that MMO will not act as arbitrator in regard to compensation and will not be involved in discussions on the need for or amount compensation being issued. This needs to be made clear within the Outline Fisheries Liaison and Coexistence Plan.

5.6 Report to Inform Appropriate Assessment

5.6.1 The MMO defers to and supports Natural England as SNCB regarding impacts to international designated sites and the HRA for the Project.

5.6.2 The MMO will keep a watching brief on these documents and would remind the Applicant that any mitigation secured through these assessments will need to be included within the conditions on the DML.

5.7 Habitats Regulations Assessment Derogation Case

5.7.1 The MMO defers to and supports Natural England as SNCB regarding the derogation case proposed.

5.7.2 The MMO will keep a watching brief on these documents and would ask for any compensation requirements to be included within the DCO at this stage to ensure all parties have reviewed the wording, should the Secretary of State be minded to include compensation.

5.8 Outline Offshore Operations and Maintenance Plan

5.8.1 MMO would like to see details of Operation and Maintenance (O&M) activities from both within and outside the designated sites. This is to ensure details of cable protection required within designated sites are provided for further comment.

Yours faithfully,

A large black rectangular redaction box covering the signature area.

Amelia Clarke
Marine Licensing Case Officer

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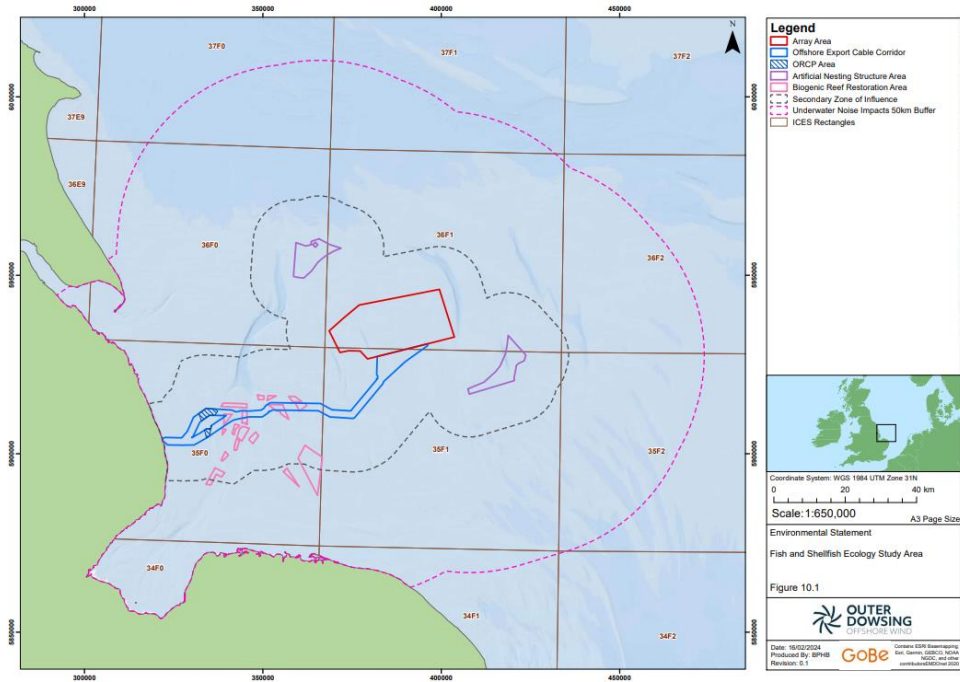
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Würsig, B., Greene Jr, C.R. and Jefferson, T.A., (2000). Development of an air bubble curtain to reduce underwater noise of percussive piling. *Marine environmental research*, 49(1), pp.79-93.

8. Annexes

8.1 Annex 1: Project site overview

Annex 1 Project site overview showing the array area, offshore export cable corridor, ORCP area and ANS within the wider area of the southern North Sea.



8.2 Annex 2: Potential Impacts

Potential Impacts from the Construction, Operation and Decommissioning of Outer Dowsing OWF, as identified by the Applicant.

Construction

- Mortality, injury and behavioural changes resulting from underwater noise arising from construction activity.
- Increase in SSC and sediment deposition.
- Temporary seabed habitat loss/disturbance.
- Direct and indirect seabed disturbances leading to the release of the sediment contaminants.
- Direct damage (e.g., crushing) and disturbance to mobile demersal and pelagic fish species.

Operation and Maintenance

- Underwater noise as a result of operational turbines.
- Long-term habitat loss due to the presence of turbine foundations, scour protection and cable protection.
- Increased hard substrate and structural complexity, as a result of the introduction of turbine foundations, scour protection and cable protection.
- Direct disturbance resulting from O&M activities.
- EMF effects arising from cables.

Decommissioning

- Mortality, injury and behavioural changes resulting from underwater noise arising from decommissioning activity.
- Temporary increase in SSC and sediment deposition.
- Temporary seabed habitat loss/disturbance.
- Direct and indirect seabed disturbances leading to the release of sediment contaminants.
- Direct damage (e.g., crushing) and disturbance to mobile demersal and pelagic fish species.
- Loss of additional habitat arising from the removal of infrastructure that have been used by fish and shellfish communities during the operational phase of the project.

8.3 Annex 3 Receptor Sensitivity/importance from ES Chapter 10.

Table 10.10 Extracted from ES Volume 1: Chapter 10: Fish and Shellfish Ecology, document ref: PP1-ODOW-DEV-CS-REP-0118

Table 10.10: Sensitivity/importance of the environment.

Receptor sensitivity/importance	Description/reason
High	Internationally or nationally important receptors with high vulnerability and no ability for recovery.
Medium	Regionally important receptors with high vulnerability and no ability for recovery. Internationally or nationally important receptors with medium to high vulnerability and low to medium recoverability.
Low	Locally important receptors with medium to high vulnerability and low recoverability. Regionally important receptors with low vulnerability and medium recoverability. Nationally important receptors with low vulnerability and medium to high recoverability. Internationally important receptors with low vulnerability and high recoverability.
Negligible	Receptor is not vulnerable to impacts regardless of value/importance. Locally important receptors with low vulnerability and medium to high recoverability.

8.4 Annex 4 Matrix to Determine Effect Significance

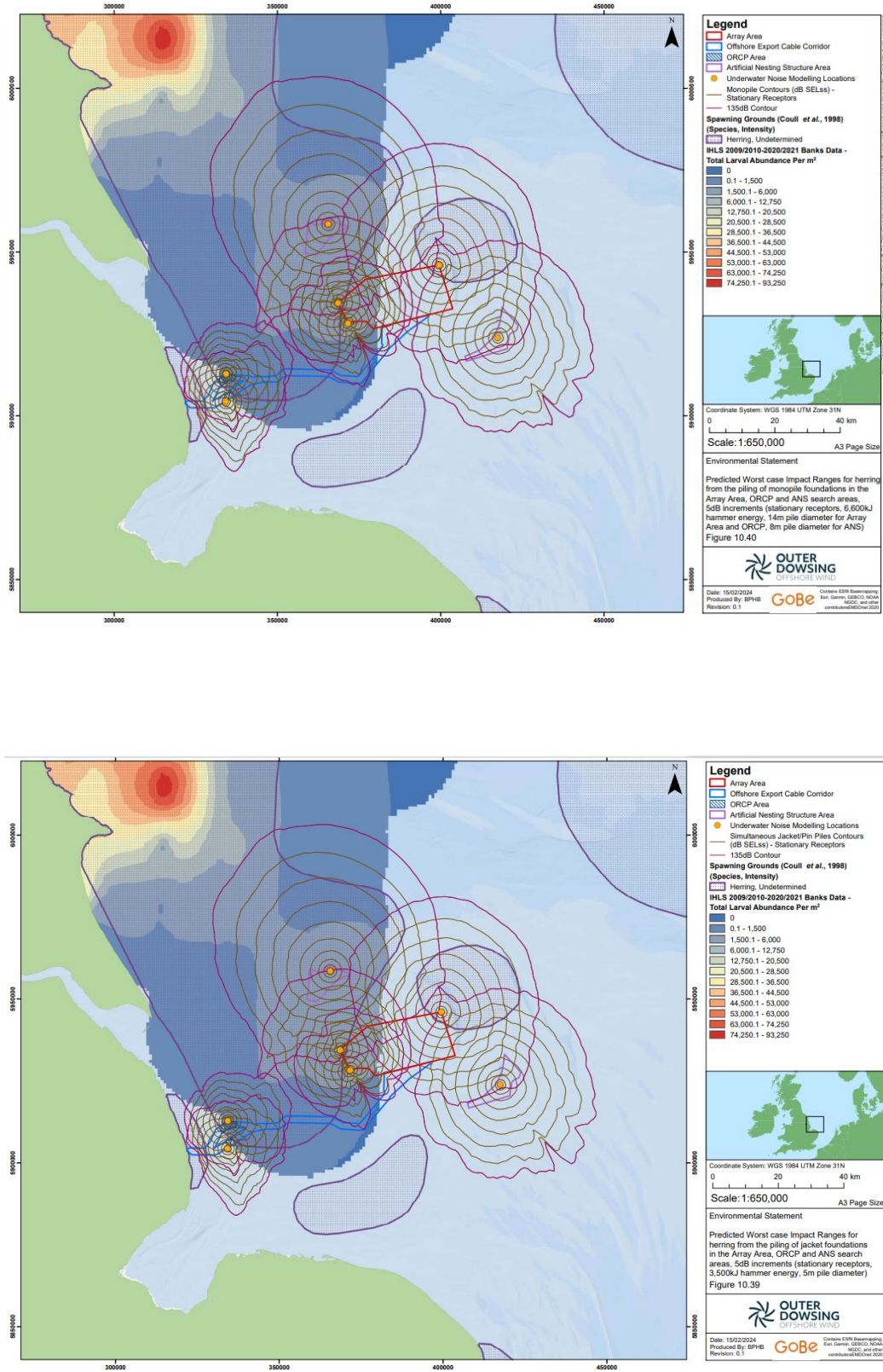
Table 10.11 Extracted from ES Volume 1: Chapter 10: Fish and Shellfish Ecology, document ref: PP1-ODOW-DEV-CS-REP-0118.

Table 10.11 Matrix to determine effect significance.

		Magnitude of impact			
		<i>Negligible</i>	<i>Low</i>	<i>Medium</i>	<i>High</i>
Sensitivity of receptor	<i>Negligible</i>	Negligible (Not significant)	Negligible (Not significant)	Minor (Not significant)	Minor (Not significant)
	<i>Low</i>	Negligible (Not significant)	Minor (Not significant)	Minor (Not significant)	Moderate (Significant)
	<i>Medium</i>	Minor (Not significant)	Minor (Not significant)	Moderate (Significant)	Major (Significant)
	<i>High</i>	Minor (Not significant)	Moderate (Significant)	Major (Significant)	Major (Significant)

8.5 Annex 5 Modelled 'Worst Case' Scenario Impact Ranges

Figures 10.39 and 10.40 - modelled 'worst-case' scenario impact ranges for herring from pin-pile (10.39) and monopile (10.40) foundations in 5dB increments, including the 135 dB behavioural response contour shown in purple.



8.6 Annex 6 Increased Larval Densities

Increased larval densities recorded in the IHLS data for years 2011-2012, 2016-2017 and 2019-2020.

