



Five Estuaries Offshore Wind Farm Case
Team
Planning Inspectorate
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(By Email only)

MMO Reference: DCO/2019/00008
Planning Inspectorate Reference: EN010115
Identification Number: 20049306

12 November 2024

Dear Sir or Madam,

Planning Act 2008, Five Estuaries Offshore Wind Farm Ltd, Proposed Five Estuaries Offshore Wind Farm Order

Deadline 3 Submission

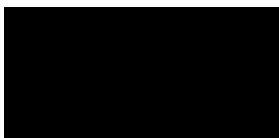
On 23 April 2024, the Marine Management Organisation (the “MMO”) received notice under section 56 of the Planning Act 2008 (the “PA 2008”) that the Planning Inspectorate (“PINS”) had accepted an application made by Five Estuaries Offshore Wind Farm Ltd (the “Applicant”) for determination of a development consent order for the construction, maintenance and operation of the proposed Five Estuaries Offshore Wind Farm (the “DCO Application”) (MMO ref: DCO/2019/00008; PINS ref: EN010115).

The Applicant seeks authorisation for the construction, operation and maintenance of DCO Application, comprising of up to 79 wind turbine generators together with associated onshore and offshore infrastructure and all associated development (“the “Project”).

This document comprises the MMO comments in respect of the DCO Application submitted in response to Deadline 3.

This written representation is submitted without prejudice to any future representation the MMO may make about the DCO Application throughout the examination process. This representation is also submitted 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.

Yours sincerely,



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1. MMO Comments on Deadline 1 Submissions

1.1. General Comments

1.1.1. The MMO noted in our Deadline 2 Response (REP2-054) that the Applicant submitted the following documents in Deadline 1 to address some of our concerns raised in our Relevant Representation (RR-070):

- REP1-024 and REP1-025 – Environmental Statement Annex Herring Seasonal Restriction Note (Clean) and (Tracked)
- REP1-033 and REP1-034 – Outline Marine Mammal Mitigation Protocol – Piling (Clean) and (Tracked)
- REP1-035 and REP1-036 – Outline Marine Mammal Mitigation Protocol - UXO - Revision B (Clean) and (Tracked)
- REP1-037 and REP1-038 – Outline Fisheries Liaison and Co-existence Plan - Revision B (Clean) and (Tracked)
- REP1-045 and REP1-046 – Offshore In Principle Monitoring Plan - Revision B (Clean) and (Tracked)
- REP1-049 – 10.4 Applicant's response to Relevant Representations (Clean)
- REP1-056 – Marine Mammal iPCoD Modelling for Project alone
- REP1-057 – Marine Geology, Oceanography and Physical Processes Sediment Plume Modelling
- REP1-058 – Revised International Herring Larval Survey Heat Map Figures

1.1.2. The MMO has reviewed the above documents with our technical advisers and have split our comments into the following topics:

- Fish Ecology
- Underwater Noise
- Benthic Ecology
- Coastal Processes
- Dredge and Disposal
- Shellfisheries

1.1.3. The MMO defers to Natural England regarding any comments on REP1-056.

1.2. Fish Ecology

1.2.1. In providing this response the MMO has reviewed the following documents:

- a. REP1-024 – 6.5.6.4 Environmental Statement Annex Herring Seasonal Restriction Note (Clean)
- b. REP1-025 – 6.5.6.4 Environmental Statement Annex Herring Seasonal Restriction Note (Tracked)



- c. REP1-037 – 9.16 Outline Fisheries Liaison and Co-existence Plan - Revision B (Clean)
 - d. REP1-038 – 9.16 Outline Fisheries Liaison and Co-existence Plan - Revision B (Tracked)
 - e. REP1-045 – 9.32 Offshore In Principle Monitoring Plan - Revision B (Clean)
 - Section 4.7
 - f. REP1-046 – 9.32 Offshore In Principle Monitoring Plan - Revision B (Tracked)
 - Section 4.7
 - g. REP1-049 – 10.4 Applicant's response to Relevant Representations (Clean)
 - h. REP1-058 – 10.15 Revised International Herring Larval Survey Heat Map Figures
- 1.2.2. The MMO notes the Applicant has addressed some of the concerns raised, however the back-calculation is still not considered to be appropriate in its current form.
- 1.2.3. The International Herring Larvae Survey (IHLS) data presented by the Applicant now appears to be correct in Table 2-1 of REP1-024. It should be noted that based on this, a different figure for the lowest bottom temperature has been quoted, along with a different percentage of larvae captured with a length below and above 11 millimetres (mm). In addition, the IHLS larval abundance figures have also been re-plotted in REP1-058, however no changes have been made to the presentation of the underwater noise contours (see point 1.2.4 below). The MMO notes that the Applicant has provided additional information regarding the presentation of average temperature at the maximum depth for each station. This is currently under review by the MMO, and additional comments will be provided for Deadline 4.
- 1.2.4. The MMO notes the Applicant has still not clearly presented the 135 decibels (dB) behavioural impact threshold for herring as was requested in our Relevant Representation (RR-070). We note that the Applicant has presented updated figures in REP1-058, however only two of these (Figure 6.15 and 6.22) show the 135 dB noise contour. In addition, these figures still present contours in 5 dB intervals, most of which are not relevant to the assessment. The MMO requests that the original request is actioned.
- 1.2.5. The back-calculation provided by the Applicant has not followed the instructions provided in our RR-070 and from previous meetings with the Applicant and our technical advisors and still does not represent an acceptable approach. It is important to consider the following factors when carrying out a back-calculation, including details of herring reproduction, the IHLS data itself, along with potential limitations:
- 1.2.6. Key points of understanding on herring reproduction:
- a) The Downs herring spawning season is understood to take place from 01 November to 31 January (inclusive) (see Ellis et al., 2012).
 - b) It is widely understood that spawning of Downs herring generally occurs earlier in the spawning season in the south in the English Channel, and later in the season further north in the Southern North Sea, as the herring migrate northwards. This is also supported by IHLS data (see Cushing & Bridger, 1966, and Burd, 1978).



- c) Herring do not arrive at their spawning grounds as one big shoal at the same time, but in 'waves' (Lambert, 1987), spawning across areas of suitable spawning habitat (gravel/coarse substrate).
- d) The eggs develop for a period of days before hatching. The time taken for eggs to develop is dependent on sea bottom temperatures (see Russell, 1976).
- e) Larvae hatch with yolk-sacs attached which contain nutrients stored in the sac for survival. The newly hatched larvae remain on or close to seabed until their yolk-sacs are absorbed. The time taken for the yolk-sacs to be absorbed is also dependent on sea bottom temperatures (see Russell, 1976).
- f) When the yolk-sacs have been absorbed, the larvae drift away from the spawning grounds.

1.2.7. Key points of understanding on the IHLS:

- a) The IHLS is conducted every year across North Sea spawning grounds. The equipment used is a Gulf VII plankton sampler which is towed through the water and samples to a depth of approximately 5 metres (m) above the seabed.
- b) It is important to note that it does not touch the seabed so does not sample eggs, but 'newly hatched larvae'.
- c) The International Council for the Exploration of the Sea (ICES) which conducts the IHLS classifies 'newly hatched larvae' as those <11 mm for Southern North Sea stocks.
- d) The timing of the IHLS is targeted to the 'peak' of when the herring larvae will be most abundant. The Southern North Sea and eastern English Channel (SNS) IHLS (Downs herring) survey was originally comprised of three separate surveys conducted as three separate sampling events; one in the 3rd quarter of each year undertaken by the Netherlands between 16-31 December, and two in the 1st quarter of each year; between 1-15 January undertaken by Germany, and between 16-31 January undertaken by the Netherlands. However, it should be noted that in 2018, the SNS IHLS survey which took place between 16-31 January by the Netherlands was discontinued.
- e) Hence, when attempting to determine the 'peak' of herring spawning activity, we can use IHLS data to establish the period when the newly hatched larvae are most abundant and work backwards from this to establish the period prior to this when spawning would have been most prolific, and the majority of eggs would have been laid.
- f) Taking this approach requires an element of conservatism, especially given ICES latest advice on North Sea autumn spawning herring:

1.2.8. ICES' 2024 advice for herring in Subarea 4 and divisions 3.a and 7.d, autumn spawners (North Sea, Skagerrak and Kattegat, and eastern English Channel) notes that a continuous decline in the spawning population of North Sea herring has been observed over recent years. Given their concerns, ICES has proposed a reduction in the fishing quota of 22.5% for North Sea herring (to 412,383 tons in 2025). ICES further advises that no activities that might have a negative impact on the spawning habitat of herring (e.g., extraction of gravel and offshore renewable energy) should occur unless the effects of these activities have been assessed and shown to be non-



detrimental. At present, ICES is not fully able to quantify the level and relative impact of cumulative non-fisheries anthropogenic factors on the reproductive capacity of the stock. However, the recommendation highlights the important link between habitat protection and population recovery ICES, 2024).

1.2.9. Limitations to be considered when performing a back-calculation:

- a) See points 1.2.6a and 1.2.6b - whilst a peak in spawning can be established, it can be expected that some spawning may occur at any time between 01 November and 31 January.
- b) See points 1.2.6d and 1.2.6e – egg development and yolk-sac absorption are temperature dependent. Sea bottom temperature data used in the back-calculation is taken from previous years' IHLS surveys so may not necessarily represent sea bottom temperatures for future years.

1.2.10. Some aspects of the back-calculation have been correctly implemented, although the choice of the yolk absorption and egg development period along with growth rate are not correct (see points 1.2.4 and 1.2.5). Some of this stems from not using the correct bottom temperature.

1.2.11. Using the IHLS survey data presented in Figures 2.1 and 2.2 of REP1-024, the Applicant has identified that the peak herring larval abundance occurs during the January surveys when compared to the December survey. The Applicant has then selected the earliest survey date in January of the 3rd, which is an appropriate approach. The continued use of a 5 mm and 11 mm length for hatch and catch length used in the previous back-calculation remain appropriate. All the other factors used are inconsistent with those recommended in our relevant representation and meetings with our technical advisors.

1.2.12. The MMO notes the Applicant has not presented the IHLS larval abundance data for each day of the survey, which can potentially be used to allow further refinements to the end date of the temporal restriction. The 3rd of January has been chosen as the start date for the back-calculation as this is the earliest survey date in the two January IHLS surveys. This is an appropriate approach, however identifying peak larval abundance to a specific day may allow further refinement of the end date of the restriction (please see point 1.2.19 for further details). It should be noted that the non-complete overlap between survey dates interannually would have to be taken into account.

1.2.13. It was requested in our RR-070 that the Applicant use the minimum temperature in the calculation to ensure that there is no scope for underestimating the time from peak spawning. The Applicant however has again used the average temperature of 8.3°C when the minimum bottom temperature recorded was 5.5°C. The MMO asks that this is corrected.

1.2.14. Although the Applicant has used the correct source to identify the egg development period (Russell 1976), the minimum temperature has not been used to identify the correct period (see point 1.2.13). Based on the use of an 8.3°C 'average' temperature, the Applicant has again used a 14-day egg development period. However, based on the minimum 5.5°C temperature recorded, a more conservative



egg development period would be 18 days (see Table 1 below, which was also presented in RR-070).

1.2.15. The MMO notes the yolk absorption duration and growth rate has not been adjusted from the previous back-calculation and therefore this remains inappropriate. As stated in our RR-070, Kiorboe et al., (1985) and Geffen (2002) have been used to inform the yolk absorption period and Oeberst et al. (2009) has been used to inform the growth rate. It should be noted that these studies use herring from the west coast of Scotland (the Clyde stock), Baltic and Limfjord, Denmark (the Dogger stock). None of these herring stocks exhibit the same spawning period as the Downs stock (November – January). A comparison of growth rates between stocks which have different spawning characteristics and may be physiologically different is not appropriate. The Applicant should use the yolk absorption periods from Russell (1976) and the growth rates from Heath (1993) which focus on the Downs stock and are therefore appropriate sources.

1.2.16. It should be noted that for the yolk absorption period, 5.5°C (the minimum temperature recorded) is lower than any temperature recorded in Russell, (1976) (see Table 1). Therefore, it is appropriate to use the lowest temperature referenced (10.3°C) and the longest absorption period of 20 days. Regarding the correct growth rate to use from Heath, (1993), despite a range of 0.2–0.3mm d⁻¹ being stated, 0.25 mm d⁻¹ is the rate used by Heath, (1993) and represents a midpoint in the range.

Table 1 Egg development periods

Average temperature	Days
12 - 13° C	7-9
10 - 11° C	10-12
7 - 8° C	14-18
3 -4° C	49

Table 2 Yolk absorption periods

Average temperature	Days
12.8° C	3 & 9
12.0° C	5 & 14
10.7° C	7 & 16
10.3° C	7 & 20

From Russell 1976.

1.2.17. The MMO is conscious of the ongoing lack of agreement, so in an effort to reach a resolution we have briefly outlined an acceptable approach to determining the 'peak' of herring spawning for the Downs population using a back-calculation approach and have provided an example of workings (see Table 3).

Table 3. Factors considered within the back-calculations and calculation.

Factor	Scenario	Source and/or Reason for choice of scenario
Earliest survey start date	3 rd January	Date of first survey when peak herring larval abundance was observed.
Larval length (catch length)	11 mm	Downs stock are known to hatch up to 11 mm and used by the Applicant.
Larval length at hatching (hatch length)	5 mm	Reported for the Downs stock by Heath, (1993) and used by the Applicant.
Egg development duration	18 days	Based on the minimum temperature of 5.5°C recorded in the IHLS data and Russell, (1976).
Yolk absorption duration	20 days	Based on the minimum temperature of 5.5°C recorded in the IHLS data and Russell, (1976).

Growth rate 0.25 mm d⁻¹ Rate from Heath, (1993), the middle value between 0.2–0.3 mm d⁻¹.

⇒ **Start of 'peak' spawning period = 3rd January – (24 + 18 + 20) = 2nd November.**

- 1.2.18. Based on the back-calculation presented in Table 3, the start of the peak spawning period can be estimated to be 02 November. The parameters used in Table 1 are considered sufficiently conservative, but not overly conservative, especially given the current state of the stock and ICES' latest advice (see points 1.2.7f & 1.2.8).
- 1.2.19. It should be noted that a back-calculation to identify the end of peak spawning as attempted by the Applicant is not an appropriate approach, as eggs and larvae remain sensitive to the impacts of underwater noise (UWN) (Popper *et al.*, 2014). As already discussed in points 1.2.6 d & e and 1.2.7 a & c, the larvae caught in the IHLS are still associated with seabed habitat. This approach was discussed with the Applicant in a meeting dated 08 August 2024. The Applicant will need to interrogate 10 years of IHLS data to identify the end of peak larval abundance. This should allow a determination of the full extent of the egg laying dates in the Southern North Sea spawning ground. This approach should consider the discontinuation of the IHLS survey between 16-31 January by the Netherlands (see point 1.2.7d). As stated in point 1.2.12, it may be possible to refine the end date of the restriction by identifying peak larval densities on a 'per day' basis in order to ascertain if there is a trend for when larval abundance decreases. The MMO highlights that this is a standard request across all offshore wind farms that require seasonal restrictions and should be provided to ensure the seasonal restriction is appropriate.
- 1.2.20. The MMO notes the Applicant has provided comments regarding the impacts of elevated suspended sediment concentration (SSC) and associated redeposition resulting from cable installation and bed preparation works (point MMO-RR91 in REP1-049). This is still under review by the MMO and we aim to provide comments in the next deadline.
- 1.2.21. The MMO does not have concerns regarding the changes to the project design including the reduction in turbine height, removal of gravity-based foundations as an option and reduction in the offshore array boundary. These changes are unlikely to alter the likelihood and/or magnitude of the potential impacts to fish receptors.
- 1.2.22. Overall, the MMO still has outstanding concerns regarding fish ecology and will maintain a watching brief for further consideration from the Applicant.

1.3. Underwater Noise

1.3.1. In providing this response the MMO has reviewed the following documents:

- a. APP-075 – 6.2.6 Fish and Shellfish Ecology
- b. APP-076 – 6.2.7 Marine Mammal Ecology
- c. REP1-033 – 9.14.1 Outline Marine Mammal Mitigation Protocol – Piling (Clean)
- d. REP1-034 – 9.14.1 Outline Marine Mammal Mitigation Protocol – Piling (Tracked)



- e. REP1-035 – 9.14.2 Outline Marine Mammal Mitigation Protocol - UXO - Revision B (Clean)
 - f. REP1-036 – 9.14.2 Outline Marine Mammal Mitigation Protocol - UXO - Revision B (Tracked)
 - g. REP1-045 – 9.32 Offshore In Principle Monitoring Plan - Revision B (Clean)
 - Section 4.8
 - h. REP1-046 – 9.32 Offshore In Principle Monitoring Plan - Revision B (Tracked)
 - Section 4.8
 - i. REP1-049 – 10.4 Applicant's response to Relevant Representations (Clean)
 - j. REP2-019 – 6.5.6.2 Underwater Noise Technical Report - Revision B (Tracked)
- 1.3.2. The MMO notes REP1-045 highlights that underwater noise monitoring is proposed to validate, within reason, the assumptions made within 6.2.7 Marine Mammal Ecology (APP-076) and 6.2.6 Fish and Shellfish Ecology (APP-075). The MMO agrees that underwater noise monitoring will be required during the construction phase to test the validity of the noise modelling presented in the impact assessment.
- 1.3.3. It is appropriate that noise monitoring will be undertaken in line with guidance set out in Good Practice Guide No.133: Underwater Noise Measurement (National Physical Laboratory, 2014). Full specifications and monitoring proposal detailing methodologies will be provided within further iterations of the Offshore In Principle Monitoring Plan (IPMP).
- 1.3.4. The MMO notes there is a discrepancy within the IPMP. Paragraphs 4.7.3 and 4.8.7 in REP1-045 confirm that “where piled foundations are to be employed during construction, underwater noise monitoring of the first four piles of each type of foundation will be undertaken to inform comparison against predictions for received levels and source levels that were made within the ES assessments to validate the conclusions made”. However, a new paragraph (4.7.4) has been added (to the Fish and Shellfish Ecology section) to state that “The monitoring locations will be selected from the first 12 foundations to be installed in order to provide for sites with differing seabed conditions (particularly water depths), whilst ensuring data are collected for the earliest pile installations for verification of predicted (modelled) noise levels. The Applicant proposes to target two foundation sites of ≤ 40 m water depth and two sites of ≥ 40 m depth from the initial 12 foundation locations”.

If our understanding is correct, then this is somewhat misleading. The plan should make clear that the proposal is either to:

- (i) monitor the first four piled foundations of each foundation type or
- (ii) monitor four of the first 12 foundations (of each foundation type), and that this is consistent throughout the plan.

The MMO appreciates that the Applicant intends to provide for sites with differing seabed conditions (particularly water depths). The MMO welcomes further discussions with the Applicant regarding monitoring plans. The MMO would also highlight that there is an ongoing discussion with SNCBs in relation to noise

monitoring and an updated condition will likely be presented at hopefully Deadline 5, the MMO will engage with the Applicant as soon as this is identified to understand any risks to the project.

- 1.3.5. The MMO understands the Applicant states in the IPMP that an outline Marine Mammal Mitigation Protocol (MMMP) for piling has been submitted with this DCO application (REP1-033). The MMO notes a Final MMMP for piling will be submitted six months prior to the construction commencement.
- 1.3.6. The MMO has no major comments on the Outline MMMP for piling (REP1-033) at this time. The standard measures have been considered including the pre-deployment of acoustic deterrent devices (ADDs), Marine Mammal Observation, passive acoustic monitoring (PAM) system and a soft start piling procedure. Furthermore, noise abatement measures will be re-assessed pre-construction taking into account the most recent methods, specifications, industry practices and project site conditions. The specific mitigation measure (or suite of measures) that will be implemented during the construction of the Project will be determined, in consultation with relevant Statutory Nature Conservation Bodies (SNCB), following the appointment of the installation contractors (and therefore, confirmation of final hammer energies and foundation types), collection of additional survey data (further noise and/ or geophysical data) and/ or information on maturation of emerging technologies.
- 1.3.7. The MMO highlights that there is an error in Table 3.1 of REP1-033, the Cumulative PTS (SELcum) range for harbour porpoise is 8,400m for the S-SW location (not 84,000m).
- 1.3.8. The MMO notes that likewise in REP1-035, the UXO clearance mitigation measures for the Project will be determined in consultation with relevant SNCBs once charge weights, survey data, noise data, and information on maturation of emerging technologies are confirmed. This additional data and information will inform noise modelling to be fed into the Final UXO Clearance MMMP and discussions on suitable mitigation measures
- 1.3.9. The MMO notes the Applicant's position regarding our point on the worst-case piling parameters presented in the modelling, provided in our Deadline 1 Response (point MMO-RR97 in REP1-064). Although we do acknowledge that the predictions are based on the worst-case piling parameters (such as the hammer energies and time taken to install a pile), we need to base our advice on the worst-case scenarios presented in the assessment. The MMO is, therefore, not in agreement with this point and request that worst-case scenarios are presented.
- 1.3.10. The MMO notes the submission of REP2-019 in Deadline 2, where there is an update with the addition of a new section 'Predicted noise levels against range'. The MMO would like to highlight that it has been requested that level vs range plots are included as standard within impact assessments for underwater noise. As per Section 1.4.4, Figure 1.9 presents "the predicted unweighted Peak Sound Pressure Level (SPLpeak) and Single-strike Sound Exposure Level (SELss) noise levels from the North – NE corner location, during the maximum blow energy of the worst-case monopile scenario (15 m diameter pile, and 7,000 kJ blow energy), against range, over the longest calculated transect 002° to the North, which leads into deep water.



This is provided on regulatory request”. The report notes that this plot has been presented in order to show the noise transmission, which can be used as a basis to compare and validate the levels against any future noise monitoring. It should not be assumed necessarily comparable to any other transect or blow energy. The MMO welcomes the Applicant including this plot in the report.

- 1.3.11. The MMO agrees that the GIS shapefiles (noise contours) showing 5 dB increments of the single strike sound exposure level are a useful addition. It is also requested that the weighted noise contours are also provided, especially those for Very High Frequency cetaceans.
- 1.3.12. The MMO is content that the Applicant has addressed and noted our concerns regarding temporary threshold shifts (TTS) predictions in comment MMO-RR105 of REP1-049.
- 1.3.13. The MMO is also content that comment MMO-RR-106 of REP1-049 has been addressed and has no further comments to make on this matter. The MMO is aware that the JNCC MNR applies a 5 kilometre (km) Evidence Deterrence Range (EDR) for low order clearance, and hopefully further monitoring data for UXO clearance, including low order, will become available in due course.
- 1.3.14. The MMO acknowledges the Applicant’s comments for MMO-RR107 in REP1-049 about impulsive sound characteristics and threshold shift recovery. However, we believe that these conservatisms may be offset by the assessment uncertainties, especially regarding the scaling of piling noise and assessment parameters. Furthermore, regarding animal movements, the model may use “typical swimming speeds” rather than fleeing speeds. We still maintain that the concept of continuous fleeing for several hours at a constant speed is not precautionary. This is an idealised assumption when in reality, actual animal responses are uncertain. The MMO requests further consideration on this point.
- 1.3.15. The MMO acknowledges the comments made by the Applicant in REP1-049 (MMO-RR111). The Applicant is correct that the MMO meant Figure 7 in the von Pein Paper. However, we believe it is important to highlight recent and relevant findings from the peer-reviewed literature. Quite opposite to the suggestion of a “relatively simplistic calculation” the study of von Pein is based on theoretical considerations backed up by state-of-the-art finite element models (FEM) for pile driving noise radiation and followed up by validation against field measurement data.
- 1.3.16. With regard to the scaling of noise levels with hammer strike energy, the authors found that FEM models agreed very well with a linear dependence of the acoustical energy and the strike energy (i.e., a 3 dB increase in noise levels for each doubling of the strike energy). The authors also note that in real life the contact between the pile and the hammer is subject to non-linear changes, although these discrepancies are assumed to be small. Furthermore, the measurement data of Bellman et al. (2020) supports an increase of 2.5 – 3 dB per doubling of strike energy.
- 1.3.17. We are not sure about the meaning of the following statement and request clarification from the Applicant, *“In practice it is much more complex than this, and the increases at higher energies lead to an increase much lower than 3dB.”*



- 1.3.18. The MMO would like to point out that when comparing the noise levels corresponding to strikes of different energies, it is essential to keep all the other relevant parameters (e.g., penetration depth, water depth) constant, and of course to refer to the same piling location and piling sequence, otherwise the change in noise levels will be determined by multiple other factors, not only the change in hammer strike energy.
- 1.3.19. Our understanding is that the measurement data in von Pein et al. is intended only as an overall, statistical validation of scaling laws and is not suitable for deriving empirical trends directly from observation, such as the differences between the 3.5m vs the 7.8m piles or the apparent trend reversal at larger pile diameters. Establishing such trend details with any confidence directly from the measurements would require much more comprehensive datasets.
- 1.3.20. Furthermore, we acknowledge that the validation of the von Pein et al. scaling laws is limited to observations of piles measuring up to 8.1 m diameter (while for the FEM models the upper limit was 12 m). Extrapolating this law to piles of 15 m would indeed indicate an increase of 9-10 dB in noise levels, compared to 4 m pile (however, this increase is about 4.5 dB when compared to an 8 m pile and only 1.5 dB over a 12 m pile). We note that Subacoustech's research indicates that pile diameter, although contributory, has a relatively small effect on noise emission. However, to our knowledge, the details of this research have not been disclosed to the scientific community, while the currently available observational datasets do not extend to the pile diameter values anticipated for this development.
- 1.3.21. The MMO would like to highlight that the study of von Pein et al. acknowledges the various limitations of their modelling and analysis (including limitations of the available validation datasets). However, we highlighted this study as the potential implications of diameter scaling law on the modelling predictions and the magnitude of their impacts can be quite considerable.
- 1.3.22. In response to the following statement: *"We would suggest that for site validation, the use of predicted noise levels at 750m will be of the greatest usefulness"*, we strongly believe that model validation should cover all aspects that are relevant for the model predictions, since the cumulative sound exposure level (SEL_{cum}) effects ranges are often much larger than 750m, and the affected fleeing receptors accumulate noise exposure even further downrange. The modelling predictions are crucially dependent on the Received Level (RL) beyond 750m, as well as on the spectral composition of the received levels (i.e., not solely on the unweighted SELs).
- 1.3.23. In regard to the Applicant's comments for MMO-RR115 in REP1-049, the MMO acknowledges and agrees that the transmission of sound is influenced by water depth. However, we maintain our position that the source levels used in the modelling are still low and we do not believe that sufficient evidence has been presented to justify the levels. Evidence could, for example, be presented in the form of existing measurements from similar projects and environments.

1.4. Benthic Ecology



- 1.4.1. In providing this response the MMO has reviewed the following documents:
- a. REP1-045 – 9.32 Offshore In Principle Monitoring Plan - Revision B (Clean)
 - Section 4.6
 - b. REP1-046 – 9.32 Offshore In Principle Monitoring Plan - Revision B (Tracked)
 - Section 4.6
 - c. REP1-049 – 10.4 Applicant's response to Relevant Representations (Clean)
- 1.4.2. The MMO welcomes the Applicant confirming that they will define the minimum acceptable cable burial depth in a pre-construction Cable Burial Risk Assessment (REP1-050).
- 1.4.3. The MMO welcomes the inclusion of the additional text within Section 4.6.3 of REP1-045, to confirm the approach to determine the presence and extent of *Sabellaria spinulosa* reef. In summary, in areas where potential *Sabellaria spinulosa* reef features are identified from the geophysical dataset, drop down video (and still photography) will be acquired to confirm presence and determine reef extent.
- 1.4.4. The MMO notes that Annex 1 *Sabellaria spinulosa* reef has not yet been identified during site specific surveys. However, should biogenic (and or geogenic) reef features be identified within the proposed works area during pre-construction assessments, it is noted that the Applicant is committed to conducting appropriate post-construction monitoring to determine any change in the location, extent and composition of such feature using the same method that was used for the pre-construction monitoring.
- 1.4.5. The MMO defers to the relevant Statutory Nature Conservation Body regarding the proposed pre-construction and approach to post-construction monitoring within the Margate and Long Sands Special Area of Conservation (MLS SAC).

1.5. Coastal Processes

- 1.5.1. In providing this response the MMO has reviewed the following documents:
- a. REP1-057 – 10.14 Marine Geology, Oceanography and Physical Processes Sediment Plume Modelling
 - b. REP1-045 9.32 Offshore In Principle Monitoring Plan - Revision B (Clean)
 - Sections 4.3 and 4.4
 - c. REP1-046 – 9.32 Offshore In Principle Monitoring Plan - Revision B (Tracked)
 - Sections 4.3 and 4.4
- 1.5.2. The MMO notes that the Applicant's Environmental Statement Chapter (6.2.2 Marine Geology, Oceanography and Physical Processes - APP-071) previously presented results from spreadsheet-based models describing patterns of suspended sediment concentration (SSC) and thickness of deposition representative of a range of different construction related activities. However, it was noted that the results presented were largely qualitative.



- 1.5.3. The MMO notes that in order to address this concern, the Applicant has commissioned numerical sediment plume modelling to supplement the existing spreadsheet-based analysis. REP1-057 presents information on the numerical sediment plume modelling undertaken.
- 1.5.4. The near-field spreadsheet model provides a more realistic range of potential deposition area/thickness combination estimates in the nearfield, i.e. for sediment of any type that is deposited more rapidly to the seabed in timescales less than 1 hour and distances less than 500-1000 m. Such estimates can provide a more reliable description of details in the nearfield that were not resolved spatially or temporally by the previous sediment plume model. The new method uses volume of sediment displaced from the trench which is finite and proportional to the trench cross section (up to 6m²) and so it is possible to estimate the maximum average sediment thickness for a range of realistic downstream dispersion distances. All the calculated values are presented in Table 5.1 of REP1-057.
- 1.5.5. The MMO considers the changes made and the new method used, to be sufficient and alleviates any concerns previously raised, relating to broad scale modelling to resolve the sediment deposition and other coastal processes issues.

1.6. Dredge and Disposal

- 1.6.1. In providing this response the MMO has reviewed the following documents:
- APP-072 – 6.2.3 Marine Water and Sediment Quality.
 - APP-119 – 6.5.5.1 Main Array Benthic Ecology Monitoring Report.
 - APP-120 – 6.5.5.2 Export Cable Route and Intertidal Benthic Ecology Monitoring Report.
 - REP1-045 9.32 Offshore In Principle Monitoring Plan - Revision B (Clean)
 - Sections 4.4
 - REP1-046 – 9.32 Offshore In Principle Monitoring Plan - Revision B (Tracked)
 - Sections 4.4
 - REP1-049 – 10.4 Applicant's response to Relevant Representations (Clean)
- 1.6.2. The MMO notes that the Applicant has alleviated some concerns raised in our RR-070, however there are still significant information gaps in relation to the raw data for sediment quality and the survey strategy which should be addressed.
- 1.6.3. Although the Applicant has provided the raw data for sediment quality within annexes 6.5.5.1 Main Array Benthic Ecology Monitoring Report (APP-119) and 6.5.5.2 Export Cable Route and Intertidal Benthic Ecology Monitoring Report (APP-120), these have been provided in PDF format and not in an extractable format such as the MMO excel template, as is standard practice. The template can be found at <https://www.gov.uk/guidance/marine-licensing-sediment-analysis-and-sample-plans>. The MMO understands the Examining Authority prefers documents to be provided, however due to the size of the document, this has been included as a link. The MMO



is in discussion with the Applicant regarding this point and will provide them with the document.

- 1.6.4. In the current format, the MMO is unable to fully interrogate the data without manually transcribing the data into the excel template, which carries a high risk of human error. This is necessary to fully understand the levels of contamination present within the area. As such, the MMO is unable to agree with the conclusions reached regarding contaminants until the raw data can be provided in the required format.
- 1.6.5. The MMO understands that the survey strategy within APP-119 was designed to target sediments with the greatest predicted mud content, however it is not clear why the Applicant has applied a threshold of 6% to determine whether a sample should be included for contaminant analysis. This threshold appears to be somewhat arbitrary having only been applied within the array area. For example, the MMO notes there are multiple samples within the Export Corridor Cable (ECC), such as FE6_01, FE7c_01 and FE7e_03, which have not been included for contaminant analysis yet comprise a silt/clay component which exceeds the 6% threshold. The MMO asks the Applicant to clarify why a 6% threshold has been applied in this instance.
- 1.6.6. Moreover, although the sediment does not appear to comprise a large proportion of silt/clay, the MMO would not consider it appropriate to describe silt/clay to be absent from the array area. Based on the maximum design scenario parameters provided in Table 3.20 of 6.2.7 Marine Water and Sediment Quality (APP-072), the maximum volume of material estimated to be disturbed within the array area is in the region of ~27 Million cubic metres (m³). As such, what might be considered a small silt/clay fraction may still represent a significant volume of material (e.g. 6% silt/clay would equate to a volume of ~1.6 M m³).
- 1.6.7. The MMO notes that additional samples are considered unlikely to provide additional information in terms of contaminant levels, however without access to the raw data in the standard MMO excel template, we are unable to fully assess the contaminant levels present. Therefore, the MMO asks for the Applicant to provide this.
- 1.6.8. The MMO would like to highlight that the concerns raised during the Preliminary Environmental Information Report (PEIR), including any resolved in following discussions, should be clearly and appropriately addressed within the stakeholder consultation section of APP-072 for transparency and completeness. This also includes justification regarding sample numbers being provided within the relevant chapters.
- 1.6.9. The MMO notes that Figure 2.1 of 6.5.5.2 Export Cable Route and Intertidal Benthic Ecology Monitoring Report (APP-120) does not indicate which transect corresponds with the three samples that have been analysed for contaminants. Based on the coordinates provided within Table 4.1 of APP-120, intertidal transect 'I_TR05' appears centrally located within the intertidal area (fourth from right within Figure 2.1). The MMO notes that this transect was selected for contaminant analysis to target finer sediments and has provided further comments below (please see point 1.6.10).
- 1.6.10. The MMO notes the PSA results provided in Table 4.4 and Figure 4.2 of 6.5.5.2 Export Cable Route and Intertidal Benthic Ecology Monitoring Report indicate the material to consist of gravel - fine sand (2mm to 125 µm), with very little (if any)



material classed as very fine sand (62.5 to 125 µm) and no material classed as silt/clay (0.98 to 62.5 µm). Furthermore, the maximum design parameters provided in Table 3.20 of 6.2.7 Marine Water and Sediment Quality, estimate the maximum volume of material to be distributed within the intertidal area as 23,145 m³. This is in line with OSPAR guidelines (Agreement 14-06) which recommend up to three samples for dredges of up to 25,000 m³. As such, the MMO is content that three samples are likely sufficient to represent the intertidal region. However, the raw contaminant data should be provided within the standard MMO template to confirm this.

1.6.11. The MMO noted the Applicant confirming the contracted MMO accredited laboratories for analyses undertaken, in regard to MMO-RR55 of our REP1-064. The MMO would like to reiterate that whilst SOCOTEC has been referenced as an accredited laboratory for sediment contaminant analysis within Section 3.6.4 of APP-072, SOCOTEC are not validated to undertake Particle Size Analysis. As such, for future reference please ensure all contracted laboratories are clearly stated within the relevant chapter.

1.7. Shellfisheries

1.7.1. In providing this response the MMO has reviewed the following documents:

- a. REP1-045 – 9.32 Offshore In Principle Monitoring Plan - Revision B (Clean)
 - Sections 4.7
- b. REP1-046 – 9.32 Offshore In Principle Monitoring Plan - Revision B (Tracked)
 - Sections 4.7
- c. REP1-037 – 9.16 Outline Fisheries Liaison and Co-existence Plan - Revision B (Clean)

1.7.2. The MMO notes that no monitoring in relation to commercial fisheries is considered necessary by the Applicant other than the standard arrangements for fisheries liaison, which will be agreed in the Fisheries Liaison and Co-existence Plan (FLCP) prior to the start of construction.

1.7.3. The MMO believes it would be best practice to consider monitoring the fishing activity of the potting fleet during the operational phase. This would allow a comparison against the baseline (pre-construction) to ensure that the impacts on the potting fishery are in line with the expected impacts (minor adverse).

1.7.4. Furthermore, the Applicant mentions that significant impacts on fishing fleets during the operational phase of the Project are not anticipated. A monitoring during operational phase would reduce the uncertainty around the anticipated impacts on the potting fishing fleet.



2. MMO Comments on Deadline 2 Submissions

2.1. General Comments

2.1.1. The MMO notes the Applicant submitted the following documents in Deadline 2:

- a. REP2-018 and REP2-019 – 6.5.6.2 Underwater Noise Technical Report - Revision B (Clean and Tracked)
- b. REP2-020 and REP2-021 – 9.13 Margate and Long Sands Special Area of Conservation Benthic Mitigation Plan - Revision B (Clean and Tracked)
- c. REP2-027 – 10.20.1 Technical note - Methodology for Determining MDS (Offshore)
- d. REP2-028 – 10.20.2 Technical note - Offshore Decommissioning
- e. REP2-039 – 10.22 Applicant's Response to EXQ1.

2.1.2. The MMO is currently reviewing the documents listed a, c and d with our technical advisors and will provide our comments on these in due course.

2.1.3. The MMO notes that the cover page of REP2-028 includes an incorrect spelling in the report title (i.e., decommissioning instead of decommissioning).

2.1.4. The MMO has provided some comments in relation to REP2-018 and REP2-019, for underwater noise concerns in section 1.3 of this response. The MMO is looking to provide further comments on these documents in due course.

2.2. REP2-039 – 10.22 Applicant's Response to EXQ1

2.2.1. The MMO notes the Applicant's response to GC.1.17 with regards to the submission of the Technical note - Offshore Decommissioning (REP2-028). The MMO will provide comments on this document in due course.

2.2.2. The MMO agrees with the Applicant's response to DCO.1.02 d). Whilst the MMO agrees that duplication should be avoided, the DMLs must have definitions within them as they should be read as standalone documents.

2.2.3. The MMO notes the Applicant's response to DCO.1.20-DCO.1.21, which the MMO will provide responses to in due course to the Examining Authority.

2.2.4. The MMO notes the Applicant's response to DCO.1.25 about Force Majeure. The MMO is still under review of this condition and the comments raised and will provide our response in due course. The MMO currently still maintains our position that we request this condition is removed. As stated in REP1-064, the MMO has previously requested the removal of this clause as it unnecessarily duplicates the effect of s.86 of the 2009 Act. If it is to be retained, then the relationship between this clause and section 86 of the 2009 Act should be clarified. The MMO would like to reiterate that whilst we accept that there is a need for consistency in decision making, a decision maker is not bound by previous decisions and can depart from them where there is good reason to do so.



- 2.2.5. The MMO notes the Applicant's response to DCO.1.26 about MCA's suggested changes to the DMLs in their Deadline 1 submission (REP1-065). The MMO agrees that as the statutory body that manages marine licences, any conditions to be added to the DMLs will need to be agreed with us. The MMO is in discussion with MCA regarding the suggested changes, and our comments will be provided in due course.
- 2.2.6. The MMO notes the Applicant's response to DCO.1.27 regarding the Maximum Design Scenario. The MMO will maintain a watching brief for the next updated draft DCO to check this is included.
- 2.2.7. The MMO notes the Applicant's comments to ME.1.01. The MMO has provided our response to this question in Section 4.

2.3.REP2-020 and REP12-021 – 9.13 Margate and Long Sands Special Area of Conservation Benthic Mitigation Plan - Revision B (Clean and Tracked)

- 2.3.1. The MMO notes that the changes made to REP2-020 have been made in response to comments received from Natural England and the Examining Authority.
- 2.3.2. REP2-20 has been updated to provide further information on considerations within the MLS SAC to include:
- Avoidance of Section 41 habitats and species of principle importance.
 - Further information on maximum length of cable protection within the SAC.
 - Updated cable protection mitigation commitments alongside their ecological benefit.
- 2.3.3. The MMO agrees with the inclusion of "habitats of principle importance (Section 41 of the 2006 Natural Environmental and Rural Communities (NERC) Act" in response to Natural England's recommended mitigation regarding cable micro siting (Table 2.1 of REP2-020).
- 2.3.4. The MMO notes the clarification regarding the theoretical length of cable (2.5 km) within the Margate and Long Sands SAC and the current indicative length (0.4 – 1.5 km) which will be updated following pre-construction works.
- 2.3.5. The MMO notes the Applicant included additional cable protection mitigation commitments. This includes not trial trenching within MLS SAC site boundary and should cable repair be required, the maximum conducted (5,400 metres squared (m²)) will be within the limit of that already assessed. The MMO welcomes the inclusion that should cable repair and protection be required within the MLS SAC outside of the construction period, then an addition Marine Licence will be required.
- 2.3.6. The MMO also notes that the Applicant considers it very likely that cable burial within the SAC will be successful and the maximum design scenario for cable protection is based on a precautionary worst-case scenario.
- 2.3.7. The MMO defers to the relevant Statutory Nature Conservation Body (SNCB) regarding their comments on the updates of the MLS SAC Benthic Mitigation Plan.



3. MMO Comments on Stakeholders' Deadline 2 Submissions

3.1. Environment Agency (EA)

3.1.1. The MMO notes EA submitted the following documents for Deadline 2:

- REP2-051 – Written Representations (WRs), including summaries for any WRs exceeding 1,500 words
- REP2-052 – Responses to EXQ1

3.1.2. The MMO has no comments to make regarding these documents. The MMO defers to EA for flood risk and groundwater matters.

3.2. Historic England (HE) – Written Representations (WRs), including summaries for any WRs exceeding 1,500 words – (REP2-053)

3.2.1. The MMO supports HE's comments in relation to the Outline Written Scheme of Investigations, including being a named party in any document control going forward.

3.2.2. The MMO notes HE's suggested amendment to Condition 13 (2) and is content with the updated wording.

3.2.3. The MMO notes the comments raised in regard to the offshore project description and offshore archaeology and cultural heritage. The MMO defers to HE regarding any further comments in relation to the historic environment.

3.3. Ministry of Defence (MoD) – Written Representations (WRs), including summaries for any WRs exceeding 1,500 words – (REP2-055)

3.3.1. The MMO has no comments to make on this.

3.4. Maritime and Coastguard Agency (MCA) – Responses to ExQ1 – (REP2-056)

3.4.1. The MMO notes MCA is content with the methodology and data sources used within the Applicant's Navigational Risk Assessment (NRA). The MMO will maintain a watching brief for any further comments from this Interested Party (IP).

3.5. Natural England (NE)

3.5.1. The MMO notes NE submitted the following documents for Deadline 2:

- REP2-057 – Cover Letter
- REP2-058 – Risk and Issues Log
- REP2-059 – Responses to EXQ1

3.5.2. The MMO will maintain a watching brief for NE's comments with regards to ME.1.01 Methodological Concerns.



- 3.5.3. The MMO notes NE's response to EXQ1 ME.1.12 where they do not believe that the Applicant needs to consider alternative routes within the designated sites. The MMO defers to NE on compensation/mitigation measures for MLS SAC.
- 3.5.4. The MMO notes NE's response to ME.1.14 and will maintain a watching brief for NE's comments in their next submission.
- 3.5.5. The MMO notes the comments raised by NE in their cover letter (REP2-057) regarding the unclarity on when the new submissions from Change Requests should be considered. The MMO would like to echo this point and seeks clarification.

3.6. National Trust (NT) (REP2-063)

- 3.6.1. The MMO notes that the NT has nothing further to add at this time. The MMO will maintain a watching brief on any further comments from this IP.

3.7. Port of London Authority (PLA)

- 3.7.1. The MMO notes the PLA submitted the following documents for Deadline 2:

- REP2-066 – Written Representations (WRs), including summaries for any WRs exceeding 1,500 words
- REP2-067 – Summary of Written Representations (WRs)

- 3.7.2. The MMO notes points 4.6-4.15 in PLA's Deadline 2 response REP2-066 relating to the Marine Policy Statement and Marine Plans.

- 3.7.3. The MMO welcomes point 4.15 that states which policies have not been considered. The MMO will maintain a watching brief for an updated Marine Plan Policy Assessment, which also responds to our comments made in our Deadline 2 response (REP2-54).

- 3.7.4. The MMO notes that PLA has concerns regarding the cable burial depth. The MMO sought clarification on this in RR-070, but noted that the Applicant stated that the target cable burial depth will be defined post-consent in a Cable Burial Risk Assessment in our REP1-064.

- 3.7.5. The MMO notes the PLA does not agree with the Applicant's conclusion regarding planning policies in APP-232 and raised concerns regarding impacts on the Deep Water Routes. The MMO defers to the PLA on shipping and navigation concerns. The MMO will maintain a watching brief on further comments regarding this.

- 3.7.6. The MMO notes the concerns raised with regards to the placement of inert material within the Export Cable Corridor in REP2-067.

- 3.7.7. Regarding point 7.1 (b) in REP2-067, the MMO agrees with this comment and provided our interpretation of 'maintain' in our Deadline Response 2 (REP2-054).



- 3.7.8. The MMO notes the PLA's comment regarding Article 7 (Benefit of the Order) in REP2-066. The MMO is still reviewing this point as stated in our Deadline 2 Response (REP2-054) and will review this as well.
- 3.7.9. The MMO notes the PLA's concerns with the dDCO. Regarding their points 9.3 and 9.6 in REP2-066, the MMO is reviewing these points.
- 3.7.10. Regarding point 9.6 (a), the MMO would welcome the inclusion of a definition for outline cable burial risk assessment.
- 3.7.11. With regards to Schedule 11 Part 2 Conditions 6 and 13, the MMO notes the PLA requests to be included to be notified. The MMO is reviewing these points as stated in 3.7.9 of this response and will provide more comments in due course.
- 3.7.12. The MMO is currently in discussions with the PLA and will provide an update at the next Deadline.

3.8. Royal Society for the Protection of Birds (RSPB) – Written Representations (WRs), including summaries for any WRs exceeding 1,500 words (REP2-068)

- 3.8.1. The MMO notes RSPB disagrees with the worst-case scenario for the assessment of impacts on Guillemot and Razorbill arising through distributional responses, displacement and barrier effects presented in REP1-017.
- 3.8.2. The MMO notes that RSPB still has outstanding ornithological concerns. As stated in our Procedural Deadline D (PD4-014), we defer to NE and RSPB regarding issues and advice related to compensation measures for ornithology.

3.9. Trinity House (TH) – Responses to ExQ1 (REP2-069)

- 3.9.1. The MMO notes TH has stated that they are content with the methodology, identified hazards and data sources used within the NRA. The MMO will maintain a watching brief of any further comments raised by this IP.

3.10. The UK Chamber of Shipping – Responses to ExQ1 (REP2-070)

- 3.10.1. The MMO notes the UK Chamber of Shipping is content with the methodology and data sources used in the NRA. The MMO will continue maintaining a brief watch on any further comments raised by this IP.

3.11. National Federation of Fishermen's Organisations (NFFO) – Written Representations (WRs), including summaries for any WRs exceeding 1,500 words (REP2-088)

- 3.11.1. The MMO notes NFFO expressed concerns on the reliability of the modelling used for cable burial and risks to fisheries stakeholders. The MMO will maintain a watching brief on further comments raised by this IP.



4. MMO Comments on PD-011 - Examining Authority's Written Questions (ExQ1)

4.1. Overall Response to ME.1.01 – Methodological Concerns

4.1.1. The MMO noted the Examining Authority asked the MMO the following question in EXQ1:

The ExA notes the documents submitted by the Applicant, together with updates to the Environmental Statement, pursuant to addressing the methodological concerns of Interested Parties. This includes a ExQ1 8 October 2024 Page 31 of 50 Question to: Question Herring Seasonal Restriction Note [REP1-024], an Apportioning Note [REP1-020], Guillemot and Razorbill Survey Reports [REP1-054], Population Viability Analysis [REP1-022] and Marine Mammal Modelling [REP1-056]. Can the Parties identify areas of outstanding disagreement with regard to assessment methodologies, as well as provide an update in relation to how such concerns are being addressed.

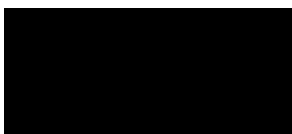
4.1.2. The MMO notes the Applicant submitted documents in Deadline 1 to address our concerns, as discussed in Section 1 of this Response.

4.1.3. The MMO still has outstanding concerns regarding fish ecology, which is explained in section 1.2 of this response. The MMO still considers the back-calculation to not be appropriate in its current form. The MMO has provided advice in this response (Section 1.2) in order to aid the Applicant in addressing our concerns.

4.1.4. The MMO also has outstanding concerns regarding Dredge and Disposal and comments regarding Underwater Noise and Shellfish Advice. Please see sections 1.3, 1.6 and 1.7 of this response for full comments.

4.1.5. The MMO welcomes further discussions with the Applicant to address our concerns.

Yours sincerely,



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Marine
Management
Organisation

...ambitious for our
seas and coasts





Five Estuaries Offshore Wind Farm Case
Team
Planning Inspectorate
FiveEstuaries@planninginspectorate.gov.uk
(By Email only)

MMO Reference: DCO/2019/00008
Planning Inspectorate Reference: EN010115
Identification Number: 20049306

Dear Sir or Madam,

Planning Act 2008, Five Estuaries Offshore Wind Farm Ltd, Proposed Five Estuaries Offshore Wind Farm Order

Deadline 3 Submission Summary

On 23 April 2024, the Marine Management Organisation (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 Five Estuaries Offshore Wind Farm Ltd (the “Applicant”) for determination of a development consent order for the construction, maintenance and operation of the proposed Five Estuaries Offshore Wind Farm (the “DCO Application”) (MMO ref: DCO/2019/00008; PINS ref: EN010115).

The Applicant seeks authorisation for the construction, operation and maintenance of DCO Application, comprising of up to 79 wind turbine generators together with associated onshore and offshore infrastructure and all associated development (“the “Project”).

As a marine licence has been deemed within the draft 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 an interest in ensuring that provisions drafted in a deemed marine licence enable the MMO to fulfil these obligations.

This document comprises the MMO’s summary of the submission for Deadline 3. This written representation is submitted without prejudice to any future representation the MMO may make about the DCO Application throughout the examination process. This representation is also submitted 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.

Yours sincerely,



Emma Chalk



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1. MMO Comments on Deadline 1 Submissions

1.1. The MMO noted in our Deadline 2 Response (REP2-054) that the Applicant submitted the following documents in Deadline 1:

- REP1-024 and REP1-025 – Environmental Statement Annex Herring Seasonal Restriction Note (Clean) and (Tracked)
- REP1-033 and REP1-034 – Outline Marine Mammal Mitigation Protocol – Piling (Clean) and (Tracked)
- REP1-035 and REP1-036 – Outline Marine Mammal Mitigation Protocol - UXO - Revision B (Clean) and (Tracked)
- REP1-037 and REP1-038 – Outline Fisheries Liaison and Co-existence Plan - Revision B (Clean) and (Tracked)
- REP1-045 and REP1-046 – Offshore In Principle Monitoring Plan - Revision B (Clean) and (Tracked)
- REP1-049 – 10.4 Applicant's response to Relevant Representations (Clean)
- REP1-056 – Marine Mammal iPCoD Modelling for Project alone
- REP1-057 – Marine Geology, Oceanography and Physical Processes Sediment Plume Modelling
- REP1-058 – Revised International Herring Larval Survey Heat Map Figures

1.2. The MMO has reviewed the documents with our technical advisers and has split our comments into the following topics:

- Fish Ecology
- Underwater Noise
- Benthic Ecology
- Dredge and Disposal
- Coastal Processes
- Shellfisheries

1.3. The MMO considers there to be several points that require action from the Applicant.

2. MMO Comments on Deadline 2 Submissions

2.1. General Comments

2.1.1. The MMO noted the following documents provided by the Applicant in Deadline 2:

- a) REP2-018 and REP2-019 – 6.5.6.2 Underwater Noise Technical Report - Revision B (Clean and Tracked)
- b) REP2-021 – 9.13 Margate and Long Sands Special Area of Conservation Benthic Mitigation Plan - Revision B (Tracked)
- c) REP2-027 – 10.20.1 Technical note - Methodology for Determining MDS (Offshore)



d) REP2-028 – 10.20.2 Technical note - Offshore Decommissioning

e) REP2-039 – 10.22 Applicant's Response to EXQ1.

2.1.2. The MMO is currently reviewing documents a, c and d with the MMO's scientific advisors and will provide our comments on these in due course.

2.2. REP2-039 – 10.22 Applicant's Response to EXQ1

2.2.1. The MMO has provided comments on the Applicant's response to EXQ1s.

2.3. REP2-020 and REP12-021 – 9.13 Margate and Long Sands Special Area of Conservation Benthic Mitigation Plan - Revision B (Clean and Tracked)

2.3.1. The MMO notes the changes made to REP2-020, which were made in response to comments received from Natural England and the Examining Authority.

2.3.2. The MMO welcomes the changes made to the plan and deferred to the relevant Statutory Nature Conservation Body (SNCB) regarding their comments on the updates to the MLS SAC Benthic Mitigation Plan.

3. MMO Comments on Stakeholders' Deadline 2 Submissions

3.1. The MMO has provided comments on the following Interested Parties' Deadline 2 Submissions:

- Environment Agency (EA) (REP2-051 and REP2-052)
- Historic England (HE) (REP2-053)
- Maritime and Coastguard Agency (MCA) (REP2-056)
- Ministry of Defence (MoD) (REP2-055)
- Natural England (NE) (REP2-057, REP2-058 and REP2-059)
- National Trust (NT) (REP2-063)
- Port of London Authority (PLA) (REP2-066 and REP2-067)
- Royal Society for the Protection of Birds (RSPB) (REP2-068)
- Trinity House (TH) (REP2-069)
- The UK Chamber of Shipping (REP2-070)
- National Federation of Fishermen's Organisations (NFF) (REP2-088)

3.2. The MMO will be reviewing the responses from the above Interested Parties (IP) throughout examination and hopes to see issues between the above IPs and the Applicant resolved.



4. MMO Comments on PD-011 - Examining Authority's Written Questions (ExQ1)

4.1. Overall Response to ME.1.01 – Methodological Concerns

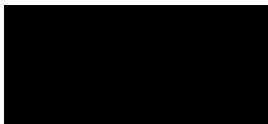
4.1.1. The MMO noted the Examining Authority asked the MMO the following question in EXQ1:

The ExA notes the documents submitted by the Applicant, together with updates to the Environmental Statement, pursuant to addressing the methodological concerns of Interested Parties. This includes a ExQ1 8 October 2024 Page 31 of 50 Question to: Question Herring Seasonal Restriction Note [REP1-024], an Apportioning Note [REP1-020], Guillemot and Razorbill Survey Reports [REP1-054], Population Viability Analysis [REP1-022] and Marine Mammal Modelling [REP1-056]. Can the Parties identify areas of outstanding disagreement with regard to assessment methodologies, as well as provide an update in relation to how such concerns are being addressed.

4.1.2. The MMO notes the Applicant submitted documents in Deadline 1 to address our concerns, and discusses them in Section 1 of our response.

4.1.3. The MMO also notes that there are still outstanding concerns and minor comments which the Applicant should consider.

Yours sincerely,



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