From: [redacted]
To: DBTeessideAB
Cc: [redacted]
Subject: EN010051 - MMO representation - Sofia Offshore Wind Farm NMC application
Date: 02 July 2020 16:08:25
Attachments: [redacted]

Dear Dogger Bank Teesside A and B Case Team,

Your reference: EN010051

Please find attached to this email the Marine Management Organisation's representation regarding the Non-Material Change application for Sofia Offshore Wind Farm that was submitted to the Secretary of State for Business, Energy and Industrial Strategy (BEIS) on 13 May 2020.

Please confirm receipt of this email.

Kind regards,

Ellen

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During the current health emergency, the Marine Management Organisation is continuing to provide vital services and support to our customers and stakeholders. We are in the main working remotely, in line with the latest advice from Government, and continue to be contactable by email, phone and on-line. Please keep in touch with us and let us know how we can help you https://www.gov.uk/mmo.

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Planning Inspectorate
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(Email only)

Planning Inspectorate reference: EN010051
MMO reference: DCO/2013/00011

2 July 2020

Dear Sir or Madam,

Non-Material Change Application to the Dogger Bank Teesside A and B Offshore Wind Farm Order 2015 (as amended) – Sofia Offshore Wind Farm

On 13 May 2020 the Marine Management Organisation (MMO) received notice that Sofia Offshore Wind Farm Limited (SOWFL) have submitted a non-material change application to The Department for Business, Energy and Industrial Strategy (BEIS) to make changes to the Dogger Bank Teesside A and B Offshore Wind Farm Order 2015 (as amended). The changes to the development consent order (DCO) as amended are in relation to the offshore works for Sofia Offshore Wind Farm only (previously known as Teesside B Offshore Wind Farm). This document comprises the MMO's comments in respect of this non-material change application.

The non-material changes being sought are as follows:

- An increase in the maximum hammer energy used for monopole installation for the wind turbine generators and the offshore convertor platform from 3,000 kilojoules (kJ) to 4,000kJ;
- Consent to lay cables between the wind turbine generators and the offshore convertor platform;
- An increase in the number of fibre-optic cables laid with the HVDC cables from one to two;
- Revisions to the definitions used within the DCO to clarify the authorised development assessed within the environmental statement;
- Corrections to ensure consistency in cross-referencing with the previously varied deemed marine licences.

The MMO has no objection to the amendments proposed in the non-material change application. However, we do have some comments that you may wish to consider relating

to the supporting assessments that have been provided regarding the impacts of the increase in hammer energy on fish receptors and marine mammals. We have provided our comments relating to the specific supporting information documents (Appendices) below:

Appendix C: Assessment of fish receptors

1. The MMO notes that the cumulative Sound Exposure Level (SELcum) impact ranges have been predicted using a fleeing receptor model for fish, whereas the MMO advises to model a stationary receptor, or alternatively, to provide the predicted results for a stationary receptor alongside the fleeing model predictions. SOWFL have stated that they
   "continue to strongly opine that the use of the SELcum stationary fish model is not representative of how an active fish such as herring is likely to respond if disturbed, and it therefore, presents an over-precautionary unrealistic method of assessing underwater effects. However, updated static fish modelling has been undertaken in support of this 4,000kJ".
   It is the MMO's view that eggs and larvae of herring are a stationary receptor i.e. cannot swim or flee from impact, so the modelling of a stationary receptor is appropriate given SOWFL's location proximal to herring spawning grounds. Furthermore, whilst we agree that disturbed fish are likely to swim away, scientific empirical evidence of fleeing speeds in fish were not provided to support this change. The MMO acknowledges that the developer has undertaken modelling of a stationary receptor for the herring assessment, please see points 3 to 7 below, however the MMO expects the results for a stationary receptor to be included.

2. The MMO previously advised that the 186 decibel (dB) SELcum threshold, as per the Popper criteria for assessing the onset of Temporary Threshold Shift (TTS), should not be used as a substitute for assessing behaviour. Previous comments and discussions between the MMO and the developer are captured in the supporting document *Annex B: Summary of consultation with the MMO*. However, again please see points 3 to 6 below.

3. Appendix C considers the potential effects on the Flamborough Head herring spawning (section 5.1). For herring, a stationary receptor has been modelled using the Popper criteria for TTS. Further, the single-strike Sound Exposure Level (SELss) of 135 dB has also been modelled. This 135 dB threshold is from Hawkins *et al*. (2014) and can be taken to be a conservative indicator for the risk of behavioural responses and potential displacement in fish. The MMO considers that the steps undertaken for the herring assessment are appropriate.

4. It should be noted that the International Herring Larval Survey (IHLS) Central North Sea (CNS) sampling has been extended further towards Dogger Bank since 2015, partly due to anecdotal information that herring were spawning in the vicinity. However, taking an evidence-based approach using the 10 years of IHLS data presented in Appendix C, and additionally considering 2018 and 2019 IHLS data, herring larvae are generally shown to be in their highest concentrations further west, towards Flamborough Head. Based on the modelled data, the distance between the closest point of predicted impact range and the higher concentrations of herring larvae is approximately 20-30 km. The potential separation distance offers gravid herring and their eggs and larvae some additional 'buffered space' against the impacts of noise at the Sofia Offshore Wind Farm site, thus reducing the risk of

adverse impacts to some extent.

5. The MMO notes that this this 'buffer' doesn't entirely eliminate the risk to gravid herring and their eggs and larvae1, especially as future IHLS sampling could show higher concentrations of larvae closer to the project and thus, impacts to gravid herring and their eggs and larvae are still possible. However, for this proposed change the MMO believes that the risk of significant impact is unlikely to be high.

6. The Popper TTS threshold of 186 dB is also applicable to all other fish species, and the 135 dB re 1 µPa2s threshold is likely to be conservative for species that are not hearing specialists (e.g. primarily sound pressure detectors), although this does not exclude a distinct behaviour response induced through particle motion instead of sound pressure level detection.

Appendix B: Auditory Injury Assessment: cumulative exposure to piling noise

7. Appendix B considers the cumulative exposure of marine mammals to piling. The MMO has no major concerns with the cumulative exposure modelling. However, the modelling is only based on the installation of a single monopile in a 24-hour period. The MMO advises that if more than one pile is to be installed in a 24-hour period, then the assessment should account for this.

8. The assessment concludes that the cumulative exposure to piling noise will not result in any significant impacts to marine mammal species. The assessment briefly touches on mitigation, and states that a Marine Mammal Mitigation Protocol (MMMP) with a standard 500 metres mitigation zone will be implemented. The MMO advises that the mitigation zone should be the size of the largest Permanent Threshold Shift (PTS) zone, and that mitigation is required to protect marine mammals within the full area of this zone. This should be reflected in the MMMP.

9. Furthermore, the MMO notes the SELcum assessment for PTS within the application. Whilst the harbour porpoise maximum PTS impact range is 250m for monopiles, this extends to over 6 kilometres (km) for pin piles (see Table 3.1 of Appendix B). If SOWFL decides to use pin piles, the MMO advises that the 6km radius should be used within the MMMP.

10. Acoustic Deterrent Devices (ADD's) are also being considered as a potential mitigation option. The MMO advise that efforts should also be made to reduce the noise at source (e.g. noise abatement measures), before adding additional acoustic disturbance into the marine environment.

11. The assessment highlights that for Minke whales, "a further mitigation radii can be provided for through the use of ADDs as part of the MMMP, affording protection to 1.1km or greater, dependent upon the time over which such equipment is deployed. ADDs have been shown to successfully deter minke whales at ranges of at least up to 1.5km (and possibly larger ranges as whales were not tracked beyond this range)

[1] Herring spawning grounds can be recolonised over time and will return to a broad area to spawn annually, but the exact locations change year on year.

(McGarry et al. 2017)". The use of ADDs as mitigation may not be suitable when predicted SELcum PTS impact ranges are 7.3 km (based on maximum range).

Conclusion

The MMO have no major objections to the hammer energy being increased from 3,000 kJ to 4,000 kJ for monopile installation, provided that appropriate mitigation measures are put in place as part of the Marine Mammal Mitigation Protocol (MMMP), to reduce the potential risk of auditory injury in marine mammals. The noise propagation mitigation which may be required may include noise reduction measures.

In terms of the potential impacts on the Flamborough Head herring spawning, the evidence presented within the documents suggest that the risk of significant impact is likely to be low. Appendix C concludes the following: *"all modelling outputs have demonstrated that there will not be any behavioural effects on the* (Flamborough Head) *spawning ground as a result of the use of a maximum hammer energy of 4,000kJ".*

The MMO agrees that the modelling suggests that the risk of significant impact is likely to be low, based on the predicted sound levels that will reach the spawning grounds. However, behavioural thresholds should be treated with caution, and of course, risks and uncertainties remain. Thus, we cannot confidently conclude that there will not be any behavioural effects, as we simply do not know this. Therefore, the MMO concludes that potential impacts to gravid herring and their eggs and larvae are not likely to be high, nor are they negligible.

Finally, the non-material change application will necessitate an application to the MMO to vary the deemed marine licences (DMLs), (Schedules 9 and 11 of the DCO). The MMO received a separate request to vary the DMLs on 13 May 2020 and is currently processing this. The Planning Inspectorate will be consulted on the DML variation in due course.

Yours sincerely,

[redacted]

Ellen Mackenzie

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References

Hawkins et al. (2014) Responses of free-living coastal pelagic fish to impulsive sounds. J. Acoust. Soc. Am., Vol. 135, No. 5.

Popper A N, Hawkins A D, Fay R R, Mann D A, Bartol S, Carlson T J, Coombs S, Ellison W T, Gentry R L, Halvorson M B, Løkkeborg S, Rogers P H, Southall B L, Zeddies D G, Tavolga W N (2014). Sound Exposure Guidelines for Fishes and Sea Turtles. Springer Briefs in Oceanography, DOI 10. 1007/978-3-319-06659-2.