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Planning Inspectorate
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MMO reference: DCO/2016/00018

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Dear Sir or Madam,

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

On 10 June 2020 the Marine Management Organisation (MMO) received notice that Teesside A Offshore Wind Farm Limited (TAOWFL) 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 Teesside A Offshore Wind Farm only. 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;

The MMO has no objection to the amendments proposed in the non-material change application if the appropriate mitigation is used. 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.

General Comments

1. It is not clear whether the proposal is to increase the maximum hammer energy for monopile installations associated with offshore substations and converter platforms. While it is recognised that the cover letters just refer to the wind turbine generators, understanding whether there is change to the location of offshore substations or platforms and if you are seeking to increase maximum hammer energy required to install any monopiles for the platforms is important. This would help to determine if there could be potential effects upon fish receptors including herring which have not been considered.
2. The MMO notes that Teesside A Offshore Wind Farm will need to produce a Site Integrity Plan to demonstrate that the project alone and in-combination will not impact the Conservation Objectives of the Southern North Sea Special Area of Conservation for

harbour porpoise, given the uncertainty of timeframes of noisy activities for offshore wind farms and other offshore industries. The production of a SIP is mentioned in the Marine Mammal Technical Report which is welcomed. However, this requirement should also be referenced within the Environmental Report.

3. Table 4 on page 19 of the Environmental Report should present the Sound Exposure Level (SELcum) values for each species (as well as Sound Pressure Level peak). Assessments must be based on both criteria. We note that SELcum values are presented in the marine mammal technical note, which therefore could just be referenced within this document.

4. Page 7 of the Annex 1 Underwater Noise Report refers to the Hastie et al. (2019) work on impulsive to non-impulsive noise. This document should also reference Martin et al. (2020). Martin et al. (2020) showed different results to Hastie et al. (2019), highlighting the uncertainties which still exist within this area.

5. Page 13 and Table 3-3 of the Annex 1 Underwater Noise Report discusses the ramp up and hammer strike once every three seconds. However, recent sectoral discussions have indicated that newer hammers cannot be operated at anything but full strike rates and ramp up can only be in power (not strike rate). The MMO requests clarity on whether they will potentially have the same constraints. If so, the modelling may have to be re-run at a later stage to inform the Marine Mammal Mitigation Plan (MMMP), so to ensure that modelled Permanent Threshold Shift (PTS) impact distances are accurate. The MMO does not believe this to be significant when determining the outcome of the NMC application.

6. In relation to the MMMP, The MMO highlights the SELcum Permeant Threshold Shift distances will need to be mitigated for all species.

Fish Receptors

7. The MMO welcomes the inclusion of both the fleeing receptor model and the stationary model for cumulative Sound Exposure Level (SELcum) impact range predictions. The MMO recommends that the modelled predictions for a stationary receptor are primarily considered.

8. The MMO notes potential effects on the Flamborough Head herring spawning have been considered (aside from a comparison of the original ES metrics for the 3,000-kJ and updated 4,000-kJ hammer energies) however no complementary modelling or assessment of behaviour has been included in the submission. Behavioural effects are particularly difficult to assess, since they are highly dependent on behavioural context (Ellison et al., 2012) and responses may not scale with received sound level (Gomez et al., 2016).

9. Temporary Threshold Shift (TTS) modelled stationary fish impact ranges arising from the 4,000-kJ hammer energy has been used to assess potential effects upon Flamborough Head herring, however no behavioural criteria have been used to model the maximum possible impact range. The Popper criteria SELcum 186 re 1 μPa2s threshold is for assessing the onset of TTS and should not be used as a threshold for assessing behaviour. It is recognised that the TTS threshold has not been used to evaluate potential behavioural effects.

10. The Environmental Report (page 24) states that *"in relation to the Flamborough Head (herring) spawning grounds, the Project windfarm array is located approximately 163 km from the high-density spawning grounds. This is based on 10 years of International Herring Larvae Survey data".* The predicted results for a stationary fish receptor and the

4,000-kJ hammer energy with the maximum TTS effect ranges being **21 – 23 km** (based on pile driving sequence 2) and **29 – 30 km** (based on pile driving sequence 3). The MMO does not support the use of a fleeing animal model for fish and believes the stationary model figures should provide the worst-case scenario.

11. While it is recognised that the maximum modelled TTS stationary receptor impact ranges for 4,000 kJ are located 143 km distance from the Flamborough Head herring spawning grounds, the potential behavioural effects upon gravid herring have not been not been modelled and therefore it is difficult to determine what the maximum possible impact range is and how far this extends towards the spawning grounds.

12. 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 behavioural unquantified separation distance offers gravid herring and their eggs and larvae some additional 'buffered space' against the impacts of noise at the Teesside A Offshore Wind Farm site, thus reducing the risk of adverse impacts to some extent.

13. The MMO notes that this this 'buffer' doesn't 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.

14. The MMO highlights an observation that the marine mammal auditory weightings should be applied to the received level (RL), rather than to the source spectrum. The weightings can be applied to the source spectrum with equivalent results, if the propagation is undertaken separately for each frequency (band). This does not impact on the decision on the non-material change as the propagation loss is expected to be frequency dependent.

Conclusion

15. 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.

16. 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.

17. 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

[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.

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.

18. 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 1 July 2020 and is currently processing this. The Planning Inspectorate will be consulted on the DML variation in due course.

Yours Sincerely

[redacted]

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References

Hastie G, Merchand N D, Götz T, Russell D J F, Thompson P, Janik V M (2019). *Effects of impulsive noise on marine mammals: investigating range-dependent risk.* DOI: 10.1002/eap.1906.

Martin et al (2020) *Techniques for distinguishing between impulsive and non-impulsive sound in the context of regulating sound exposure for marine mammals*. JASA 147 (4) pp 2159 – 2176.

Ellison, W. T., Southall, B. L., Clark, C. W., & Frankel, A. S. (2012). *A new context-based approach to assess marine mammal behavioral responses to anthropogenic sounds.* Conservation Biology, 26, 21–28. https://doi.org/10.1111/j.1523-1739.2011.01803.x

Gomez, C., Lawson, J. W., Wright, A. J., Buren, A. D., Tollit, D., & Lesage, V. (2016*). A systematic review on the behavioural responses of wild marine mammals to noise: The disparity between science and policy.* Canadian Journal of Zoology, 94, 801–819. https://doi.org/10.1139/cjz-2016-0098

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.

Hirata K (1999). *Swimming speeds of some common fish.* National Maritime Research Institute (Japan). Data sourced from Iwai T, Hisada M (1998). Fishes – Illustrated Book of Gakken (in Japanese). Accessed on 8th March 2017 at http://www.nmri.go.jp/eng/khirata/fish/general/ speed/speede/htm

Hawkins, A.D., Roberts, L. and Cheesman, S., (2014). *Responses of free-living coastal pelagic fish to impulsive sounds.* The Journal of the Acoustical Society of America, 135(5), pp.3101-3116.

Hawkins, A. D., Johnson, C., and Popper, A. N. (2020). *How to set sound exposure criteria for fishes.* The Journal of the Acoustical Society of America, 147(3), 1762-1777.