



Sofia Offshore Wind Farm

Environmental Appraisal of Increase in Hammer Energy

Appendix E: Information provided by Sofia Offshore Wind Farm Limited (SOWFL) to inform a Habitats Regulation Assessment

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1. Introduction

- 1.1 This document has been prepared by Sofia Offshore Wind Farm Limited (SOWFL) to support the application (referred to as ‘the Application’) by SOWFL under paragraph 2 of Schedule 6 to the Planning Act 2008 for a non-material change to The Dogger Bank Teesside A and B Offshore Wind Farm Order 2015 (“the DCO”). Innogy, who own 100% of Teesside B under a new subsidiary, SOWFL, has renamed Teesside B to Sofia Offshore Wind Farm (“the Project”).
- 1.2 SOWFL have provided this document in anticipation that a Habitats Regulation Assessment may be required for the Application following a request from BEIS in their letter dated 29 November 2018. This letter from BEIS related to a previous application for an increase in hammer energy for the project, which was subsequently withdrawn by SOWFL in February 2019. In their letter relating to the SOWFL’s previous application for an increase in hammer energy, BEIS advised:
- 1.3 *“Given the proposed reliance on mitigation measures to remove the need for an Appropriate Assessment of impacts on both marine mammals and fish, the Secretary of State is not satisfied that full account has been taken of the judgment of the Court of Justice of the European Union in Case C-323/17 People over Wind that was referred to in my letter of 2 November 2018. The Secretary of State requests that the Applicant, Natural England and MMO update the Secretary of State on whether full account had been taken of that judgment and whether the statements above need to be revised. The Secretary of State also considers it necessary to undertake an HRA to assess the materiality of the Application. The Secretary of State notes that the need for an Appropriate Assessment is not necessarily of itself determinative of whether a change should be considered material. In the circumstances, the Secretary of State requests that the Applicant provides further information (for instance, in the form of an updated shadow HRA/report to inform the HRA) to inform the decision on materiality, including the possible effects of the consent, if amended, on the Southern North Sea cSAC/SCI”.*
- 1.4 This document clarifies the effects of the Project in relation to the Southern North Sea (SNS) Special Area of Conservation (SAC; the site was adopted as a full SAC in January 2019) and the current application, by SOWFL to increase the hammer energy for monopole installation to 4,000 kJ.

2. The Application

- 2.1 This Application follows withdrawal of the hammer energy increase from a previous application submitted in June 2018. The current Application requests an increase in the consented hammer energy to 4,000 kJ. The previous application was for an increase to 5,500kJ. This Application is accompanied by the reports detailed within Table 1 below. SOWFL consider that Statements of Common Ground (SoCG) between SOWFL and Natural England and the Marine Management Organisation (MMO) agreed for the previous application are relevant to this Application.

Table 1 Application Reports

Document Title	Ecodoc reference	Appendices	Ecodoc reference
Environmental appraisal of increased hammer energy	003230484-02	Appendix A- Additional underwater noise modelling at Sofia offshore wind farm, Dogger Bank	003230547-01
		Appendix B - Auditory Injury Assessment: cumulative exposure to piling noise	003230610-01
		Appendix C - Environmental Appraisal of Increased Hammer Energy Addendum: Assessment of fish receptors	003230411-01

Document Title	Ecodoc reference	Appendices	Ecodoc reference
		Appendix D – Summary of Consultation	003230672-01

3. Southern North Sea (SNS) SAC

Introduction

- 3.1 As set out within the DCLG Planning Act 2008: Guidance on Changes to Development Consent Orders Government 2015 (DCLG, 2015, paragraph 11), the Application has considered the potential effects of the proposed Project change in relation to whether it would be considered material, rather than the effects of the Project as a whole on the SNS SAC. Specifically this has required consideration of the increase in hammer energy and the use of monopoles for the offshore platform as well as the Wind Turbine Generators (WTGs).
- 3.2 This document confirms the findings reported in the Application documents and SoCGs agreed for a hammer energy of 5,5000 kJ and clarifies the effects of the Project on the Conservation Objectives of the SNS SAC which are:
- 3.3 *“To avoid deterioration of the habitats of the harbour porpoise or significant disturbance to the harbour porpoise, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to maintaining Favourable Conservation Status for the UK harbour porpoise.*
- To ensure for harbour porpoise that, subject to natural change, the following attributes are maintained or restored in the long term:*
1. *The species is a viable component of the site.*
 2. *There is no significant disturbance of the species.*
 3. *The supporting habitats and processes relevant to harbour porpoises and their prey are maintained.”*
- 3.4 The findings of the assessments undertaken for the Application are also considered in relation to the outcome of the Habitats Regulation Assessment (HRA) and Appropriate Assessment (AA) undertaken by the Secretary of State (SoS) for the Dogger Bank Teesside A and B Offshore Wind Farm in 2015¹.

SNS SAC Conservation Objective: The species is a viable component of the Site

- 3.5 This Conservation Objective is designed to minimise the risk posed to harbour porpoise viability resulting from activities occurring within the site, such as activities that could kill, injure or significantly disturb harbour porpoise. Harbour porpoise are considered to be a viable component of the site if they are able to live successfully within it.

¹ <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010051/EN010051-002090-Habitats%20Regulations%20Assessment.pdf>

- 3.6 Within the Sofia Offshore Wind Farm (January 2020a) Environmental Appraisal of Increased Hammer Energy: Main Report (Document Ref: 003230484-02) and the Sofia Offshore Wind Farm (updated January 2020b) Environmental Appraisal of Increased Hammer Energy: Appendix A: Additional underwater noise modelling at Sofia offshore wind farm, Dogger Bank (Report prepared by Subacoustech) (Document Ref: 003230547-01), an assessment was undertaken on the likely effects from underwater noise on harbour porpoise (and other relevant marine mammal species). As far as possible the assessment was a “like for like” appraisal of the increased hammer energy with the work undertaken in the Environmental Statement (ES) in order to establish whether the Project would result in injury or significant disturbance to harbour porpoise (or other relevant marine mammal species). Therefore, for this main report the reference populations and densities used were as presented in the ES (noting that the densities were based on the site specific surveys undertaken to inform the EIA for cetaceans and SMRU seal usage maps were used for grey seals). Information relating to this is presented within Section 6.3 of the Environmental Appraisal report.
- 3.7 It is acknowledged that following consultations on a draft of this report with Natural England and the MMO, updated modelling was undertaken (as presented in Sofia Offshore Wind Farm (January 2020c) Environmental Appraisal of Increased Hammer Energy: Appendix B: Auditory Injury Assessment: cumulative exposure to piling noise (Document Ref: 003230610-01)) using more contemporary metrics. Given that no ‘like for like’ comparison with ES outputs could be undertaken with this modelling, it was agreed that where relevant, updated reference populations would also be used (the detail of which is presented within Section 2.4 of that Appendix).
- 3.8 The findings of these assessments in relation to changes in impact ranges have been presented below, both on a like for like basis using, for harbour porpoise, the Lucke *et al.* (2009) criteria adopted in the ES and the more contemporary National Oceanic and Atmospheric Administration (NOAA) criteria. For the new NOAA criteria, the potential change in impacts has then been considered in relation to the effects on the North Sea Management Unit population of harbour porpoise. The results of this are presented in Table 2 (like for like assessment) and Table 3 (updated criteria and reference population).
- 3.9 The findings presented in Table 2 and Table 3 clearly demonstrate that there is no significant difference in effects resulting from the proposed increase in hammer energy from the consented Project. From this it can be concluded that the Application will not have an adverse effect on the integrity of the SNS SAC. No additional mitigation over and above that defined under the existing deemed Marine Licence (dML) for the Project (see below for the Marine Mammal Mitigation Protocol) is required for the Application. As such, there has been no reliance on mitigation to screen the Project from an appropriate assessment and no conflict with the judgment of the Court of Justice of the European Union in Case C-323/17 People over Wind.
- 3.10 As noted above, the current Application assessed a proposed increase in hammer energy for monopoles from 3,000kJ to 4,000kJ. As stated in paragraph 3.5.2 of the SoCG between SOWFL and Natural England (the Parties) for a proposed increase in hammer energy to 5,500kJ, “It is agreed between the Parties, that the increase in hammer energy results in no new, materially different, likely significant effects on grey seal (*Halichoerus grypus*), harbour porpoise (*Phocoena phocoena*), minke whale (*Balaenoptera acutorostrata*) and white-beaked dolphin (*Agenorhynchus albirostris*).” Further it is noted in the latest letter from the MMO on 11th December 2018 (Ref DCO/2013/00011) (Appendix 1 to this document) that “The MMO is satisfied that SOWF has adequately demonstrated

there will be no significant change in impact for marine mammals from what was assessed in the original Environmental Statement (ES).” As such, these statements support the conclusion that the Project will not have an adverse effect upon the integrity of the SNS SAC with the proposed increase in hammer energy to 4,000kJ.

Table 2 Like for like comparison using the ES criteria (Lucke *et al.*, 2009) and the INSPIRE model showing the predicted impact range, number of harbour porpoise and % of reference population of a 3,000 kJ and 4,000 kJ hammer energy

Species	Permanent Threshold Shift range (PTS) ²		Temporary Threshold Shift range (TTS)/fleeing response ³		Possible avoidance of area ⁴ (pulse SEL 145 re 1 µPa ² s)	
	3,000 kJ in ES	4,000 kJ	3,000 kJ in ES	4,000 kJ	3,000 kJ in ES	4,000 kJ
Harbour porpoise	700 m 0.961 individuals (<0.001 %)	850 m 1.575 individuals (<0.001 %)	6.0 km 69.180 individuals (<0.1 %)	6.9 km 104 individuals (<0.1 %)	2,740 km ² 1,755.13 individuals (0.8 %)	3,160 km ² 2,262.6 Individuals (<1 %)
Impact Assessment conclusion	No significant impacts predicted		No significant impacts predicted		No significant impacts predicted	
NMC conclusion	No significant difference between 3,000kJ and 4,000kJ		No significant difference between 3,000kJ and 4,000kJ		No significant difference between 3,000kJ and 4,000kJ	

Table 3 Comparison of impacts from Lucke *et al.* (2009) and NMFS (2016) for harbour porpoise⁵

Species	PTS range ⁶		TTS/fleeing response range ⁷	
	4,000 kJ (Lucke <i>et al.</i> , 2009)	4,000 kJ (NMFS, 2016)	4,000 kJ (Lucke <i>et al.</i> , 2009)	4,000 kJ (NMFS, 2016)
Harbour porpoise	850 m 1.6 individuals (0.001 %)	590 m 0.8 individuals (<0.001 %)	6.9 km 104 individuals (<0.1 %)	1.3 km 3.8 individuals (<0.1 %)
Impact Assessment conclusion	No significant impacts predicted		No significant impacts predicted	
NMC conclusion	No significant difference between 3,000 kJ and 4,000 kJ		No significant difference between 3,000 kJ and 4,000 kJ	

SNS SAC Conservation Objective: There is no significant disturbance of the species.

- 3.11 The measure of ‘significant disturbance’ within the SNS SAC for this Conservation Objective is based on a standard Effective Deterrent Radius (EDR) of 26 km as advocated by the Statutory Nature Conservation Bodies (SNCBs). The EDR is an empirically derived generic distance of 26 km

² Ranges taken from Table 6.3; population impacts taken from Table 6.5 of SOWFL (2020a)

³ Ranges taken from Table 6.4; population impacts taken from Table 6.5 of SOWFL (2020a)

⁴ Taken from table 6.5 of SOWFL (2020a)

⁵ It is noted that the NOAA criteria does not provide behavioural effect criteria and therefore, it was not possible to undertake a comparison exercise for this effect.

⁶ Ranges taken from Table 6.17; population impacts taken from Table 6.19 of SOWFL (2020a)

⁷ Ranges taken from Table 6.18; population impacts taken from Table 6.19 of SOWFL (2020a)

within which deterrence, i.e. displacement, of harbour porpoise is predicted to occur from pile-driving. The measure is applied irrespective to the type or size of pile being installed or the hammer energy applied, having been drawn from empirical studies during percussive piling at a number of offshore wind farm projects across Europe.

- 3.12 In relation to the application of the EDR for the Project, in their letter of the 15 November 2018 (ref: 264763), Natural England advised that:
- 3.13 *"We acknowledge that the 26 km range is based on evidence from what might be considered 'typical' monopiles, and that the turbines being proposed by the current project are larger than typical. However, emerging evidence is indicating that larger piles do not necessarily create more noise, indeed the high frequency component actually may drop with larger piles – it is the high frequency component which is of concern for harbour porpoises. We also understand that the nature of the noise changes over distance from the source and the more damaging/disturbing element, the impulsive noise, is unlikely to extend to the 26 km. Therefore Natural England is currently content for the application of a 26 km EDR irrespective of the hammer energy. This may change if new evidence emerges which would require a re-evaluation of this advice."*
- 3.14 The SoCG between SOWFL and Natural England (the Parties) (dated 15 November, ref 002766136-02) for a proposed increase in hammer energy to 5,500 kJ also states *"It is agreed between the parties that 26 km Effective Deterrence Radius is appropriate for the purposes of assessing impacts on harbour porpoise within this Application"*. SOWFL consider that this response is relevant to the current Application for a 4,000kJ hammer energy.
- 3.15 Using the EDR approach there is no alteration in the disturbance range resulting from the Application compared to the consented Project. In this scenario, the Project may cause displacement over 5.6 % of the 'summer area' of the SCI based on the information presented in the Review of Consents draft HRA for the SNS SAC (BEIS, 2018).
- 3.16 It is noted that the SNS SAC Review of Consents draft HRA (BEIS, 2018) also considers the disturbance effect from modelled outputs. SOWFL consider it important to note the distinction between "possible disturbance / avoidance" as used to describe the maximum extents out to which behavioural responses may occur in EIA terms, and "significant disturbance" as used within the draft conservation advice for this SCI to represent the range out to which the majority of individuals present will actively avoid an area (noting that the SNCB's advocate a 26 km EDR based on empirical evidence for this effect). Therefore, the possible avoidance area (as presented in Table 2 above) is considered to be an over estimate of the potential "significant disturbance" effect. Notwithstanding this, it is noted (from Table 2 of this document) that behavioural effects (as based on underwater noise modelling) are not predicted on more than 1% of the population (as defined within the ES) noting that this equates to less than 1 % of the North Sea Management Unit (against which contemporary assessments predict effects). This level of effect represents a 0.2 % increase from that predicted under the 3,000 kJ scenario, and would not be considered sufficient to affect the conservation status of the species.
- 3.17 Regardless of the assessment approach taken, the proposed increase in hammer energy to 4,000kJ for the Project will not have an adverse effect upon the integrity of the SNS SAC.

SNS SAC Conservation Objective: The supporting habitats and processes relevant to harbour porpoises and their prey are maintained.

- 3.18 This Conservation Objective relates to the availability of prey and the supporting habitats for both harbour porpoise and their prey.
- 3.19 The increase in hammer energy will not result in a physical change in the habitat of harbour porpoise. The Application has identified no change in relation to the worst case scenario assessed for fish and therefore there can be no change in the conclusions of the ES with respect to fish ecology. As stated in paragraph 3.5.2 of the SoCG between SOWFL and Natural England (the Parties) (dated 15 November, ref 002766136-02) for a proposed increase in hammer energy to 5,500kJ, *“It was agreed between the Parties, that the Application would not result in any change to the worst case assumptions presented within the original ES for fish and shellfish and therefore, no further assessment is required for the Application.”* Furthermore, it is noted in the latest letter from the MMO on 11th December 2018 on a proposed increase in hammer energy to 5,500kJ (Ref DCO/2013/00011, see Appendix 1) that *“the MMO considers that the risk of a significant impact [on fish] is sufficiently low that a maximum hammer energy of 5,500 kJ can be used in the construction method statement.”* SOWFL consider that these responses are relevant to the current Application for a 4,000kJ hammer energy.
- 3.20 The Application proposes a change to enable monopole foundations to be used on offshore platforms as well as WTGs. However, the total number of monopole foundations to be used on the Project for both the offshore platforms and the WTGs will remain limited to 200, i.e. the same number of monopole foundations currently allowed for WTGs under the existing consent. The maximum diameter for the monopole foundations for both the WTGs and the offshore platforms will not change from that within the consent. In the scenario that the full permitted number of offshore platforms were used, and they utilised monopole foundations, then the overall footprint would be reduced compared to that currently predicted for jacket solutions (worst case) as the number of points of contact with the seabed would be less. As such, the change proposed in the Application will not result in a physical change in benthic habitat greater than that presented within the ES. As stated in paragraph 3.5.2 of the SoCG between SOWFL and Natural England (the Parties) (dated 15 November, ref 002766136-02) for a proposed increase in hammer energy to 5,500kJ, *“It was agreed between the Parties, that the Application would not result in any change to the worst case assumptions presented within the original ES for benthic ecology and therefore, no further assessment is required for the Application.”* SOWFL consider that this response is relevant to the current Application for a 4,000kJ hammer energy.
- 3.21 The Application will not give rise to any additional effects on the SNS SAC in relation to this Conservation Objective compared to the consented Project. As such, the Project will not result in an adverse effect on the integrity of the SNS SAC.
- 3.22 The findings presented within the Application for marine mammals and clarified above clearly demonstrate that there will be no new, materially different likely significant effects resulting from the proposed changes compared to the consented Project.

SoS HRA and AA (2015) and the conclusions of the Application assessment

- 3.23 The SoS undertook a HRA and AA for the Dogger Bank Teesside A and B Offshore Wind Farm in 2015 (DECC, 2015). Of relevance to the Application and in particular marine mammals and fish, this HRA and AA considered the Southern North Sea (SNS) draft SAC (now the SNS SAC). Paragraph 14.2 of the SoS HRA and AA report (DECC, 2015) states that *“The SoS has determined that the Dogger Bank Teesside A & B Offshore Wind Farm will not have an AEoI on any European site either alone or in combination with other plans or projects. She has undertaken a robust assessment using all of the information available to*

her, not least the advice from the SNCB's, the recommendation of the ExA and the views of Interested Parties."

- 3.24 In relation to the effects of the Dogger Bank Teesside B Offshore Wind Farm (now renamed Sofia) on marine mammals, the SoS HRA and AA report (DECC, 2015) concluded in paragraph 12.19 that: *"The Applicant considered that the construction and operation of the Project in combination with other plans and projects would not impact harbour porpoise populations. This view has not been challenged during examination. The Panel report notes that NE/JNCC raised no concerns over the Applicant's assessment of harbour porpoise."*
- 3.25 In considering the Conservation Objectives of the site, as noted above, it can be concluded that the Application will not result in an adverse effect on the integrity of the SNS SAC for either the Project alone or in-combination with other projects. This is confirmed in paragraph 3.5.2 of the SoCG between SOWFL and Natural England (the Parties) (dated 15 November, ref 002766136-02) for a proposed increase in hammer energy of 5,500kJ, *"It is agreed between the Parties that the conclusions of the Secretary of State's Habitats Regulation Assessment (HRA) and Appropriate Assessment (AA) that underpinned the DCO are not affected by the proposed changes to the DCO. The proposed changes to the DCO will not result in new, materially different, likely significant effects alone or in-combination on any of the European sites already assessed in the HRA and AA. As such, it is agreed that no new HRA or AA is required in respect of any of the European sites considered in the Secretary of State's HRA and AA."* In particular, for marine mammals, paragraph 3.7.3 of the SoCG states that *"It is therefore agreed between the Parties, that following further analysis of the information provided by SOWFL, that the conclusions of the Secretary of State's HRA and AA for the recommended Southern North Sea draft Special Area of Conservation (SAC) (now the Southern North Sea cSAC and Site of Community Importance (SCI)) are not affected by the proposed changes to the DCO and an updated HRA and AA is not required for marine mammals"*.

Marine Mammal Mitigation Protocol

- 3.26 In the SoS HRA and AA report (DECC, 2015) it was highlighted by Natural England (paragraph 12.21) that *"due to the use of a Rochdale envelope the eventual project design may alter and the proposed mitigation [namely a Marine Mammal Mitigation Protocol (MMMP)] allows them to ensure appropriate mitigation in accordance with final details at a later date."* As such, the preparation of a MMMP was included as a condition within the deemed Marine Licence (dML) for the Dogger Bank Teesside A and B Offshore Wind Farms. On this basis, paragraph 12.22 of the SoS HRA and AA report (DECC, 2015) states that *"The SoS is satisfied that condition 16 of the offshore generation DMLs and conditions 13 of the offshore transmission DMLs will require the Applicant to follow JNCC Guidelines (JNCC, 2010) and are sufficient mitigation measures to protect harbour porpoise. As a result the SoS can conclude that there will not be an AEoI of the Harbour Porpoise feature of the proposed Southern North Sea dSAC with the mitigation and monitoring as secured by those conditions."*
- 3.27 Conditions within the existing dML which require the preparation of a MMMP remain valid for the Application for the same reasons as set out within the SoS HRA and AA (DECC, 2015), namely for Natural England to *"ensure appropriate mitigation in accordance with final details at a later date"* (see paragraph 3.24 above). It has been agreed with the MMO and Natural England through the SoCGs (paragraphs 3.5.2 and 3.5.4 respectively) for a proposed increase in hammer energy to 5,500kJ that the MMMP (developed following final scheme design) will apply appropriate

mitigation to ensure that the risk of lethal and injurious effects are reduced to negligible levels, and note that this may (if necessary) include noise reduction measures. SOWFL consider that these agreements are relevant to the current Application for a 4,000kJ hammer energy. As such, the Project will not result in an adverse effect on the integrity of the SNS SAC. Application of mitigation through the MMMP both for the consented Project and the Application is in accordance with the judgement of the Court of Justice of the European Union in Case C-323/17 People over Wind in that it has been identified as the appropriate means of mitigation following the SoS's AA.

4. BEIS draft Review of Consented Offshore Wind Farms in the Southern North Sea Harbour Porpoise SCI (BEIS, 2018)

- 4.1 BEIS published the draft Review of Consented Offshore Wind Farms in the Southern North Sea Harbour Porpoise SCI (BEIS, 2018) draft HRA report for consultation on the 1 November 2018. This draft report considers the impacts of the Project based on the consented Project and the proposed change in hammer energy within the Application both alone and in-combination with other projects.
- 4.2 The in-combination assessment presented within the BEIS' draft HRA report considers a number of realistic Project scenarios that could be constructed simultaneously. In relation to the Project, using a proposed 5,500 kJ hammer energy, it includes the following scenarios:
- Teesside A and Teesside B (the Project);
 - Teesside B (the Project) and East Anglia Three;
 - Creyke Beck A and Teesside B (the Project); and
 - Creyke Beck A, Creyke Beck B and Teesside B (the Project).
- 4.3 In addition to offshore wind farm in-combination scenarios, the draft HRA report also considers potential in-combination scenarios from wind farm pile-driving and other activities e.g. geophysical seismic surveys and UXO detonation. For all of these scenarios the draft HRA report concludes, based on the existing mitigation and the use of a Site Integrity Plan (SIP), that there will be no adverse effect on the SNS SAC from Teesside B (the Project) either alone or in-combination with other projects.
- 4.4 The draft HRA report proposes that each relevant project's marine licence be modified by inserting a preconstruction condition that requires the production of a SIP. It is presumed that it is intended, in a similar manner to the MMMP, that the SIP will address mitigation for noise propagation for disturbance for the Project at the final design stage and thus ensure that the Project will not result in an adverse effect on the integrity of the SNS SAC. SOWFL can confirm that they would not object to the inclusion of a condition of this nature, within the deemed Marine Licences for the Project.

5. Point of Clarification: Fish

- 5.1 It is important to note that the extant MMO queries referred to in the SoCG between the MMO and SOWFL (the Parties) (dated 20th November 2018, ref 0027266144-04) for a proposed increase in hammer energy to 5,500kJ related to the potential effects of underwater noise on the Flamborough Head herring spawning ground. It is noted that this does not form a feature or sub-feature of a European site and therefore there will be no effects on the SNS SAC Conservation Objective, "The supporting habitats

and processes relevant to harbour porpoises and their prey are maintained”. As such, the outcome of this assessment is not relevant for consideration for the SNS SAC under the Habitats Regulations. However, further clarification is provided below following subsequent correspondence with the MMO in relation to the outstanding queries that were set out within Section 3.6 of the SoCG between SOWFL and the MMO for a proposed increase in hammer energy to 5,500kJ, primarily relating to the potential requirement for mitigation.

- 5.2 The MMO provided a response to SOWFL on 11th December 2018 (Ref DCO/2013/00011) (see Appendix 1) for a proposed increase in hammer energy to 5,500kJ which concluded that “*the MMO considers that the risk of a significant impact [on fish] is sufficiently low that a maximum hammer energy of 5,500 kJ can be used in the construction method statement.*” Accordingly it is the understanding of SOWFL that the MMO is not seeking any further clarification or commitment from SOWFL in relation to mitigation for the use of a 5,500 kJ hammer energy for the installation of monopole foundations. This confirms that the proposed increase in hammer energy will not result in new, materially different, likely significant effects on fish. On this basis, SOWFL consider that the use of a 4,000kJ hammer energy is acceptable.

6. The BEIS Habitats Regulation Assessment 2019

- 6.1 BEIS undertook a Habitats Regulation Assessment and an Appropriate Assessment which was published in March 2019 (BEIS, 2019) for the project for the previous NMC application submitted in June 2018 for the following parameters:

Parameter	As consented	Refined project design – Non Material Change Application
Wind turbines: rotor diameter		288m
Offshore platforms: foundation type	Gravity base or multileg foundations	Gravity base, multileg or monopole foundations. Monopole foundations may be up to 12m in diameter
Maximum number of monopoles: combined number of WTG and offshore platform monopoles	200	200 (i.e. no change)
Generating capacity: increase of maximum generating capacity up to 1.4 gigawatts (GW)	1.2GW	1.4 GW

- 6.2 The Habitats Regulation Assessment and Appropriate Assessment noted that “*the change application would not result in the project alone or in-combination to have an LSE over the impacts already assessed in the original ES*” (Section 3.2). However, the Secretary of State considered that the Southern North Sea Review of Consents (SNS RoC) process, which was a general and dedicated process for addressing the individual and cumulative effects of existing projects on a new SAC was the appropriate mechanism for ensuring that there would be no adverse effect from the project, and other projects on the integrity of the SNS SAC. As the RoC was not completed at the time of the Habitats Regulation Assessment and Appropriate Assessment, the NMC application for the project parameters detailed above was approved

in March 2019 with the inclusion of the following DCO condition which would ensure that there were no adverse effects on the integrity of the SNS SAC before the conclusion of the RoC:

6.3 41.— *Southern North Sea Special Area of Conservation*

(1) No Project B offshore works or activities associated with them that may have a significant effect on the Southern North Sea Special Area of Conservation may commence until the review of consents has been completed and the Secretary of State has affirmed, modified or revoked the decision in respect of the Project B offshore works under regulation 33(4) of the Conservation of Offshore Marine Habitats and Species Regulations 2017.

(2) In this Requirement, "review of consents" means the review of consents granted prior to the designation of the Southern North Sea as a Special Area of Conservation.

6.4 At the time of writing, the RoC for the SNS SAC has not yet been finalised.

7. References

BEIS (2018) Record of the Habitats Regulation Assessment undertaken under Regulation 65 of the Conservation of Habitats and Species (2017) and Regulation 33 of the Conservation of Offshore Marine Habitats and Species Regulations (2017): Review of Consented Offshore Wind Farms in the Southern North Sea Harbour Porpoise SCI

BEIS (2019) Dogger Bank Teesside A and B Offshore Wind Farm – Non Material Change Application: Regulation 63 of the Conservation of Habitats and Species Regulations 2017, and Regulation 28 of the Conservation of Offshore Marine Habitats and Species Regulations 2017 (The “Habitats Regulations”)

Department of Communities and Local Government (DCLG) (2015) Planning Act 2008: Guidance on Changes to Development Consent Orders Government 2015

Department of Energy and Climate Change (2015) Record Of The Habitats Regulations Assessment Undertaken Under Regulation 61 Of The Conservation Of Habitats And Species Regulations 2010 (As Amended) And Regulation 25 Of The Offshore Habitats Regulations For An Application Under The Planning Act 2008 (As Amended) This report includes a transboundary assessment of impacts; Project Title: Dogger Bank Teesside A and B Offshore Wind Farm

Sofia Offshore Wind Farm (April 2020a) Environmental Appraisal of Increased Hammer Energy: Main Report (Document Ref: 003230484-02).

Sofia Offshore Wind Farm (updated January 2020b) Environmental Appraisal of Increased Hammer Energy: Appendix A: Additional underwater noise modelling at Sofia offshore wind farm, Dogger Bank (Report prepared by Subacoustech) (Document Ref: 003230547-01).

Sofia Offshore Wind Farm (January 2020c) Environmental Appraisal of Increased Hammer Energy: Appendix B Appendix B: Auditory Injury Assessment: cumulative exposure to piling noise (Document Ref: 003230610-01).

Lucke, K., Siebert, U., Lepper, P.A., and Blanchet, M.A. 2009. Temporary shift in masked hearing thresholds in a harbour porpoise (*Phocoena phocoena*) after exposure to seismic airgun stimuli. *J. Acoust. Soc. Am.*, 125(6), pp. 4060-4070.

National Marine Fisheries Service (NMFS). 2016. Technical guidance for assessing the effects of anthropogenic sound on marine mammal hearing: Underwater acoustic thresholds for onset of permanent and temporary threshold shifts. U.S. Dept. of Commer., NOAA. NOAA Technical Memorandum NMFS-OPR-55, pp.178.

The Planning Inspectorate (2015) “The Planning Act 2008 (as amended) Dogger Bank Teesside A and B Offshore Wind Farms Examining Authority’s Report of Findings and Conclusions and Recommendation to the Secretary of State for Energy and Climate Change, Version 1.13, Report to the Secretary of State Dogger Bank Teesside A and B Offshore Wind Farm

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Appendix 1: MMO response to SOWFL on 11th December 2018 (Ref DCO/2013/00011)