

Page 1/45

Natural England International House Dover Place Ashford Kent TN23 1HU

## Department

Your reference: 5829 Consultation 250933 Date: 1 October 2018 (adapted July 2019) Our reference: ECO DOC No. 002748390-01

**Contact: Harriet Thomas** 

E-mail: harriet.thomas@innogy.com

Subject: Dogger Bank Sofia Offshore Wind Farm (OWF): Non Material Change Application – Natural England Consultation Response: 5829 Consultation 250933

Dear Ms. Nilova,

We are writing in reply to the Natural England consultation response (5829 Consultation 250933) (dated 24 July 2018) on the Sofia Offshore Wind Farm (OWF): Non Material Change (NMC) Application. This letter provides our response to the queries raised and explains our position in relation to the materiality of the changes proposed. The letter also refers to the outcome of the telephone discussion with Natural England on 26 September 2018.

We understand you will now be the Sofia OWF's Case Officer with Martin Kerby as Senior Advisor, taking over from Rebecca Wincott who was the author of the Natural England letter regarding the Sofia OWF NMC application on 24th July 2018.

For ease of reference, the following documents have been appended to this letter:

Appendix A - Review of Previous NMC Applications

Appendix B - Option 3 assessment for large gulls using the 98.9% AR

Appendix C – Point 1.2 (b) Clarification of Collision risk with increased turbine height

Appendix D - Point 1.2 (c) Clarification of collision risk calculations within NMC application

Appendix E - Infrastructure Dogger Bank SAC Seabed Footprint Review

Appendix F - Technical Marine Mammal Clarifications

## Materiality of changes

Innogy notes Natural England's comment in their letter of the 24 July 2018 on the marine mammal assessment (Section 3.1) that the changes proposed should be considered as material:

"The Applicant has concluded that there will be no overall increase to the impacts presented at the time of consent due to there being no increase in the magnitude of impact for any species assessed. However, Natural England wishes to highlight that the current proposals fall outside of the original assessment

### Sofia Offshore Wind Farm Limited



Page 2/45

parameters/Rochdale envelope and therefore we advise that a further full assessment and HRA should be undertaken alone and in-combination with other projects in order to consider the true extent of impact. Therefore, Natural England would argue that it is a material change to the original application (based on the requirements 1 & 2 listed at section 6, outlined in the 2015 Guidance)".

Natural England have subsequently provided clarification of their role in an email to the Planning Inspectorate dated 25 September 2018 which states that "our remit is to provide advice on the likely impacts to the natural environment of the proposed changes detailed in the application. We do not believe it is within our remit to advise on whether something constitutes a material or non material change. This does not affect our advice contained in that letter on the content and conclusions of the assessment supporting the application but we consider that we went beyond our remit in commenting on the material nature of the changes proposed. We consider that it is for the regulator to determine whether a proposed change is material or non material according to the DCLG Planning Act 2008: Guidance on Changes to Development Consent Orders Government 2015."

Nonetheless, Innogy have provided an outline of their understanding of a NMC application and the outcomes of required assessments in relation to the consideration of materiality for completeness.

You will be aware that there is no statutory definition of what constitutes a 'material' or 'non-material' change to a development consent order (DCO). So far as decisions on whether a proposed change is material or non-material, the DCLG *Planning Act 2008: Guidance on Changes to Development Consent Orders Government 2015* Guidance notes that it is not possible to set out precise, comprehensive and exhaustive guidance on whether a change is material or non-material. The Guidance (2015) states that:

"there may be certain characteristics that indicate that a change to a consent is more likely to be treated as a material change. Some examples of these characteristics are set out below <u>alt-hough these only form a starting point for assessing the materiality of a change</u>" (emphasis added).

There are four example characteristics set out in the Guidance:

- 1. "The change would require an updated Environmental Statement (from that at the time the original DCO was made) to take account of new, or materially different, likely significant effects on the environment.
- 2. The change would invoke a need for a Habitats Regulations Assessment. Similarly, the need for a new or additional licence in respect of European Protected Species is also likely to be indicative of a material change.
- 3. The change would require authorisation of the compulsory acquisition of any land, or an interest in or rights over land that was not authorised through the existing DCO.
- 4. The change has a potential impact on local people and businesses."

For the proposed amendments to the Sofia Offshore Wind Farm DCO and deemed Marine Licences for the array, points 3 and 4 are not relevant.

### Sofia Offshore Wind Farm Limited



Page 3/45

For point 1, if the proposed changes would not result in new likely significant effects on the environment, then this indicates that the changes should be considered non-material. Even if the changes sought are outside the parameters of the consent ("the Rochdale envelope") for the project, if the assessment of the change demonstrates the same or reduced effects i.e. no new likely significant effects on the environment that have not previously been taken into account, then the application should still be considered non-material. This is the approach that has been taken by the SoS and Natural England in previous applications for 'non-material' change as supported by the review of NMC applications presented in Appendix A. For example, in 2015, Galloper Offshore Wind Farm¹ was granted consent for an increase to the maximum permitted monopole diameter which required an increase in the maximum hammer blow energy. However, the change was non-material because the updated noise propagation modelling concluded that all predicted impact ranges were equal to or less than those presented in the original Environmental Statement (ES).

In 2016, East Anglia One was granted consent to enable it to have the option to change to a High Voltage Electrical Current transmission system which resulted in an increase to the height of electrical equipment at the onshore substation. Whilst there was an increased impact on a small number of parameters as a result of the change, there was no increase in the extent of any environmental impacts and therefore no updated ES was required. Also in 2016, Hornsea Project 2 secured a change to its DCO to significantly increase the size of its substation platforms. Although outside of the original assessment envelope, Natural England's consultation response and the SoS's decision confirmed that there would be no new significant effects or materially different effects from those assessed and therefore no updated ES was required. Furthermore, the three NMC decisions for proposed changes to Hinkley Point C New Nuclear Power Station demonstrate clearly that the focus in considering materiality is on whether the proposed changes result in impacts within the range of those originally assessed rather than whether those changes are within the consent's Rochdale envelope.

In relation to point 2, a Habitats Regulation Assessment (HRA) was undertaken as part of the determination of the application for the Dogger Bank Teesside A & B<sup>2</sup> which was taken into account by the Competent Authority (the SoS) in its Appropriate Assessment (AA)<sup>3</sup> as part of the DCO decision. The Competent Authority noted that the Southern North Sea was on a list of sites recommended as draft Special Area of Conservation (dSAC) and as a result, the effects of Teesside A & B on this site were considered as part of the AA. Paragraph 4.35 of the SoS HRA (2015) states that the "The SoS considers that there is an LSE on harbour porpoise, a qualifying feature of the recommended Southern North Sea (d)SAC during both construction and operation of the project due to dredging, piling, noise, vibration and loss of foraging habitat. She will consider this further in the appropriate assessment section of this report." Paragraph

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<sup>&</sup>lt;sup>1</sup> https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010003/EN010003-000037-Secretary%20of%20State%20for%20Energy%20and%20Climate%20Change%20Decision%20Letter.pdf

<sup>&</sup>lt;sup>2</sup> https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010051/EN010051-000351-5.2%20Habitats%20Regulations%20Assessment%20Report.pdf

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



Page 4/45

12.22 of the SoS AA (2015) then presents the conclusions to the AA and it was concluded<sup>4</sup> that with mitigation and monitoring secured through the deemed Marine Licences for the offshore generation and transmission there would not be an Adverse Effect on Integrity (AEoI) of the Harbour Porpoise feature of the proposed Southern North Sea dSAC.

The effects of the proposed change in hammer energy on Harbour Porpoise and the now designated, Southern North Sea SAC and Site of Community Importance (SCI), were considered within *Appendix B Sofia Offshore Wind Farm: Environmental Appraisal of Increased Hammer Energy (Innogy Ltd., 2018*). It was concluded that there is no potential risk of the original conclusions presented within the AA being affected by the proposed hammer energy increase. If changes proposed to a project do not result in any increase in the environmental impacts, or in any new, materially different, likely significant effects additional to those considered as part of the AA, an updated HRA would not be required. This has been the approach taken by the SoS in its previous decisions as shown by the review of previous applications for 'non-material' change presented in Appendix A. In particular, this was the case for Galloper Offshore Wind Farm, East Anglia One (as it was not the proposed changes that required an update to the HRA) and Hinkley Point C as highlighted above.

In the absence of any new, materially different, likely significant effects, an updated HRA is not required to address new projects that may have entered the planning system since the consent was granted. Those projects will consider Sofia as part of their HRA and in any AA. During the teleconference held with Natural England on 26 September, it was agreed that following further consideration of the issue and the analysis given by Innogy, updated HRAs were not required for either marine mammals or ornithology.

In relation to the reference to European Protected Species (EPS) within Point 2, no such licences are yet in place or have been applied for. A Marine Mammal Mitigation Protocol (MMMP) will be produced for the project as required under the DCO through consultation with regulators. Within this condition, there is a requirement for the MMMP to ensure that the undertaker demonstrates that measures are in place (if required) to ensure there will be no adverse effect on integrity of the SNS SCI<sup>5</sup>. As part of the preparation of this MMMP a consideration of available mitigation will be required to ensure that it adequately mitigates the risk to marine mammals. This will also involve, as appropriate, applications for EPS licences with the necessary supporting information to meet the three legal tests. It should be noted that

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<sup>&</sup>lt;sup>4</sup> "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."

<sup>&</sup>lt;sup>5</sup> "A marine mammal mitigation protocol with appropriate monitoring surveys in accordance with the offshore in principle monitoring plan, to be agreed in writing by the MMO in consultation with the relevant statutory nature conservation body and the Royal Society of Wildlife Trusts(a), the intention of which is to prevent, amongst other things,......
.....adversely affecting the integrity, within the meaning of the Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007(a), of a European offshore marine site or a European site (defined in regulations 15 and 24 of those Regulations respectively), to the extent that marine mammals are a protected feature of that site"



Page 5/45

this would also have been required if no change was proposed to the hammer energy levels secured within the DCO. It is appropriate that the MMMP is developed post-consent and during the detailed design phase of the project such that the actual up-to-date effects of construction and operation can be appropriately mitigated. This is supported by paragraph 12.21 of the SoS AA (2015) where it is stated "NE, in their written response on the 20th November 2014, highlighted that due to the use of a Rochdale envelope the eventual project design may alter and the proposed mitigation allows them to ensure appropriate mitigation in accordance with final details at a later date". The MMMP will also consider the output of the ongoing BEIS Review of Consents for the Southern North Sea SAC if available. During the teleconference on 26 September, Natural England advised that they are satisfied that the MMMP, required under the DCO and deemed Marine Licences (dMLs), will address mitigation for noise propagation for the project alone and cumulatively/in combination and note that this may include noise reduction measures.

The examples provided above identify that the approach that has been applied by the SoS and Natural England to-date, as to whether a proposed change to the DCO should be deemed "material", relates to whether the proposed amendment gives rise to new, materially different, likely significant effects on the environment rather than simply considering if the proposed changes fall outside of the original assessment parameters/Rochdale envelope. As such, Innogy would assert that given the outcome of the assessments for ornithology and marine mammals, the amendments proposed in our NMC application are not material.

## Responses to detailed comments

1. Ornithology Detailed Comments:

# N/A

2. Benthic impacts through increased suspended sediment

#### N/A

- 3. Impacts to Marine mammals: Increased hammer energy from 3,000 kJ to 5,500 kJ
- "3.1 Comments on the Supporting Information Environmental Report"

Innogy points out that the 'significant reduction in piling duration from 202 to 71 days' as raised by Natural England represent the difference in the number of WTGs foundations when considering jackets and monopole solutions (i.e. if jackets were used then the duration of piling would be 202 days as opposed to 71 days if monopole solutions were used). This difference was present within the original consent application and has not changed as a result of the NMC application.

Innogy acknowledges that Natural England endorse the approach to the assessments (i.e., that they have been carried out using the NMFS (NOAA) guidelines).

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## Page 6/45

Innogy can confirm that the PTS zones presented within Appendix B Sofia Offshore Wind Farm: Environmental Appraisal of Increased Hammer Energy (Innogy Ltd., 2018) are within the mitigation ranges of contemporary MMMP options. Innogy cross refers Natural England to the PTS values (for 5,500kJ hammer energy) in Tables 6.3, 6.6 and 6.3 respectively:

- Harbour porpoise = 1.1km (Table 6.3);
- White-beaked dolphin = <50m (Table 6.6);
- Minke Whale = 60m (Table 6.9); and
- Grey seal = 210m (Table 6.12).

Innogy confirms that any subsequent documentation will reflect that the Southern North Sea SAC is a fully designated site (i.e., a Site of Community Importance (SCI)), where appropriate.

Innogy has responded on the materiality of changes in relation to parameters set out within the original assessment above.

As stated above for the ornithological effects, if the outcome of the assessment for the revised parameters indicate that the effects on marine mammals resulting from the increase in hammer energy will be the same as or reduced compared to the original assessment, i.e. there will be no new, materially different, likely significant effects on the environment, no updated HRA is required. On this basis for marine mammals, the conclusions of the in combination assessment for the HRA produced by SoS in 2015 will not change. Appendix B Sofia Offshore Wind Farm: Environmental Appraisal of Increased Hammer Energy (Innogy Ltd., 2018) produced to support the NMC application also had due regard to the HRA and further commentary on this is provided in Appendix F. It should be noted that based on the information presented within this report, that the conclusion presented within the AA undertaken by the Competent



Page 7/45

Authority for the site would not change irrespective of what additional projects have come forward for the three conservation objectives of the now designated Southern North Sea SAC and SCI (see Box 1). During the teleconference on 26 September, Natural England agreed that no further assessment or updated HRA is required for the NMC application.

# Box 1: Conservation Objectives for the Southern North Sea SAC and SCI

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 (FCS) 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.

# "3.2 Comments on Appendix B" and "3.3 Comments on Appendix B – SELcum Assessment"

Innogy refers Natural England to Appendix F for a detailed response to the matters raised.

4. Impacts to fish: Increased hammer energy from 3,000 kJ to 5,500 kJ (section 4.2.1)

Innogy acknowledge that Natural England consider that the potential for fish and shellfish to be impacted by noise was appropriately considered within the Environmental Statement and it remains so. However, as identified above, the 71 days compared to the 202 days relates to a comparison in the number of days piling between monopole and jacket scenarios, which has not changed from the original ES and HRA. During the teleconference on 26 September, Natural England agreed no further assessment is required for the NMC application for fish and shellfish.

Yours faithfully,



Harriet Thomas
Offshore Consents Manager
Sofia Offshore Wind Farm Limited

cc. Robert Pridham, Case Manager, BEIS

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# Appendix A:

# Review of Previous NMC Applications

N/A

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# Appendix B:

Option 3 assessment for large gulls using the 98.9% AR



# **Appendix C:**

# Point 1.2 (b) Clarification of Collision risk with increased turbine height



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# **Appendix D:**

# Point 1.2 (c) Clarification of collision risk calculations within NMC application



# **Appendix E:**

# Infrastructure Dogger Bank SAC Seabed Footprint Review



# Appendix F:

# **Technical Marine Mammal Clarifications**



The following Appendix serves as a Technical Clarification note to the matters raised by Natural England on Appendix B Sofia Offshore Wind Farm: Environmental Appraisal of Increased Hammer Energy (Innogy Ltd., 2018) that supported the NMC application. Comments received by Natural England are presented in *italics*.

## 3.2 Comments on Appendix B

Further clarification is required in order for Natural England to be content with the estimated number of animals impacted. In particular we query what is the density used (and how was it derived) to calculate the numbers of animals potentially affected by PTS, TTS and disturbance?

Within Appendix B Sofia Offshore Wind Farm: Environmental Appraisal of Increased Hammer Energy (Innogy Ltd., 2018) the intention was to undertake a "like for like" appraisal of the increased hammer energy with the work undertaken in the ES. 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.

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 Appendix B: Auditory Injury Assessment: Cumulative Exposure to Piling Noise (Innogy Ltd., 2018)) using more contemporary metrics. Given that no 'like for like' comparison with ES outputs could be undertaken with this modelling, it was noted (during the afore mentioned consultations) that where relevant, updated reference populations would also be used (the detail of which is presented within Section 2.4 of that Appendix).

In paragraph 6.3.1.1 it is noted that the standard JNCC mitigation of 500m being adopted with the possibility of extending to 1.1km with ADDs. The JNCC mitigation is there to protect animals from PTS, therefore it is essential that the mitigation zone is increased to the maximum PTS zone. Therefore other mitigation measures will also need to be adopted to ensure that the impacts are reduced to an acceptable level. Further mitigation measures will also be required to ensure that there is no adverse effect on integrity from disturbance to harbour porpoise both alone and incombination.

Paragraph 6.3.1.1. specifically relates to instantaneous PTS (i.e. resulting from a single strike). Historically mitigation zones within marine mammal mitigation protocols (MMMPs) were typically defined in relation to instantaneous PTS. The prediction of PTS risk from cumulative exposure is inherently much more uncertain and any estimates are therefore extremely precautionary. For harbour porpoise the threshold used in the original ES for PTS was the unweighted single strike SEL Lucke et al (2009) threshold of 179 dB re 1  $\mu$ Pa2s. For this same threshold for the assessment of the increased hammer energy, the resulting impact range is 1.1km. An appropriate MMMP will be prepared, in consultation with Natural England, to ensure that the risk of harbour porpoises being within this range, and therefore at risk of PTS from instantaneous exposure, is negligible. However it is also important to note that impact range for instantaneous PTS using the updated National Marine Fisheries Service (NMFS) (2016) PTS unweighted SPLpeak (202 re 1  $\mu$ Pa) metric to indicate the risk of single strike or instantaneous PTS is lower, at 710 m.



When looking at significant disturbance with regards the southern North Sea SCI (7.1.1.2), the EDR of 26km is referenced and it is stated that it hasn't changed since the time of consent. However, this site would not have been considered in the application. However, we not that this will be considered as part of the Review of Consent process for the Southern north Sea (SNS) SAC.

As identified within the main response letter, the SoS did consider the proposed SNS draft SAC within its HRA and AA that accompanied the consent decision . Innogy presented clarification information within Section 7 of Appendix B Sofia Offshore Wind Farm: Environmental Appraisal of Increased Hammer Energy (Innogy Ltd., 2018) on the implications of the hammer energy increase in relation to the SoS HRA. Within this section it was recognised that the SoS did not have the most up to date conservation objectives to base its decision on and therefore, information was presented within Section 7 on each conservation objective for completeness. With specific regard to the "significant disturbance" conservation objective, Innogy consider that the level of hammer energy is immaterial to the SNCB guidance on the application of a 26km effective deterrent radius (EDR). A 26km EDR was identified based on a wide range of evidence from different piling operations and it was considered a suitably precautionary range to capture "significant disturbance" from piled construction activity in general. The SNCB advocated EDR range does not distinguish between foundation type, or hammer energy, or indeed whether mitigation has been applied or not. Therefore, it was entirely appropriate to conclude that the proposed amendment to hammer energy would not influence the assessment of this conservation objective. Therefore, the conclusion reached within an assessment for the project alone now would be the same as one reached by the SoS within its HRA at the point of decision.

It is recognised that the Southern North Sea SAC RoC process will have regard to the latest conservation objectives.

Natural England advises an updated HRA/AA will be required in order to include an assessment of their development alone, and in combination with other wind farms and activities in the area due to new consented and planned projects coming on line since the original application.

Innogy has responded on this point within the main response letter above. Innogy further notes that (and in reflection of the uncertainty at the point of consent with regard to realistic incombination effects) the existing DCO for Sofia requires the undertaker to have due regard to the potential effects (alone and in-combination) on the SCI prior to commencing construction activity (Deemed Marine Licence (dML) 2, Part 2, Condition 16 (e) and dML 4, Part 2, Condition 13 (e)). As part of these Conditions, the undertaker is required to demonstrate that there will be no risk of adverse effect on site integrity and should there be, to apply appropriate mitigation to remove this risk.

In practice this means that the undertaker (Sofia Offshore Wind Ltd) will undertake an updated HRA (or equivalent information) to support its relevant consent discharge plans (namely the MMMP and construction method statement), and these documents will need to reflect any additional mitigation that is deemed necessary as a result of the outcomes of that HRA (or equivalent document).



For reference the Conditions referred to above are contained within the dMLs at dML2, Part 2, Condition 16 and dML4, Part 2, Condition 13 Pre-construction plans and documentation (e)(iii) "adversely affecting the integrity, within the meaning of the Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007, of a European offshore marine site or a European site (defined in regulations 15 and 24 of those Regulations respectively), to the extent that marine mammals are a protected feature of that site".

During the teleconference on 26 September, Natural England agreed that no further assessment or updated HRA is required for the NMC application.

## 3.3. Appendix B - SELcum Assessment

Natural England is glad to see that this has been undertaken. We note the pin pile worst case SEL-cum PTS impact ranges of 6,500 m for harbour porpoises and 9.5km for minke whales (with monopiles). Mitigation using ADDs would be required to reduce the risk of PTS.

Historically MMMPs have been developed to mitigate the risk of instantaneous and not cumulative PTS (as mentioned above the prediction of the latter is much more uncertain and therefore precautionary). Based on data from a range of field based studies, there are current proven ADD technologies that have been demonstrated to reduce observed harbour porpoise densities as measured by passive acoustic monitoring and aerial survey by ~90% in areas in the region of 7.5-15 km from the piling location (e.g. Brandt et al., 2012, Brandt et al., 2013a, Brandt et al., 2013b). In addition, there has been a field study that demonstrated that minke whales exposed to ADD signals responded by moving at least to the limits of the monitored area (>4-5000 m) (McGarry et al., 2017). It is reasonable to assume that animals will continue moving away throughout any period of ADD application and mitigation zones can be determined accordingly. The current assessment has demonstrated that the magnitude of PTS predicted by the increased hammer energy and predicted piling parameters will be negligible (albeit non-zero). For EIA purposes this is sufficient to conclude no significant impact and for HRA purposes this level of impact will not result in an adverse impact on site integrity. The mitigation protocol and piling strategy will be further developed and defined to ensure that the risk of PTS to any EPS is negligible at the appropriate licencing stage.

During the teleconference on 26 September, Natural England advised that they are satisfied that the MMMP, required under the DCO and deemed Marine Licences, will address mitigation for noise propagation for the project alone and cumulatively/in combination and note that this may include noise reduction measures.

It should be highlighted that ADDs are only 100% effective up to approximately 1km, with PTS potential here of up to 9.5km. However, we accept the caveats put forward in section 4 concerning uncertainties and therefore their conclusions in terms of the EIA. However, it should be noted that it may require Innogy to apply for an EPS licence for injury (as well as the usual and expected EPS for disturbance) due to the greater PTS distances.

Innogy would question the underlying assumption in this statement that mitigation protocols must be capable of ensuring that the mitigation zone is 100% free of animals – the standard Statutory Nature Conservation agency protocol for minimising the risk of injury to marine mammals



from piling noise (JNCC 2010) was previously considered the 'best available technique not entailing excessive cost' for the reduction in risk of injury to marine mammals and was deemed appropriate to reduce the risk of injury to negligible within a mitigation zone of 500 m using soft start, marine mammal observers and passive acoustic monitoring. It has been demonstrated that this mitigation cannot be 100% effective due to the inherent limitations of visual and passive acoustic monitoring (reviewed in Herschel et al., 2013). Furthermore the effectiveness of soft start has never actually been empirically demonstrated. However as discussed above, Innogy are confident that a mitigation protocol and associated piling strategy can be developed that represent the best available technique not entailing excessive cost will reduce the risk of PTS to any EPS to negligible.

During the teleconference on 26 September, Natural England advised that they are satisfied that the MMMP, required under the DCO and deemed Marine Licences, will address mitigation for noise propagation for the project alone and cumulatively/in combination and note that this may include noise reduction measures.

## <u>References</u>

Brandt, M. J., C. Hoeschle, A. Diederichs, K. Betke, R. Matuschek, and G. Nehls. 2013a. Seal scarers as a tool to deter harbour porpoises from offshore construction sites. Marine Ecology Progress Series 475:291-302.

Brandt, M. J., C. Hoeschle, A. Diederichs, K. Betke, R. Matuschek, S. Witte, and G. Nehls. 2013b. Far-reaching effects of a seal scarer on harbour porpoises, Phocoena phocoena. Aquatic Conservation-Marine and Freshwater Ecosystems 23:222-232.

Brandt, M. J., C. Höschle, A. Diederichs, K. Betke, R. Matuschek, S. Witte, and G. Nehls. 2012. Effectiveness of a seal scarer in deterring harbour porpoises (Phocoena phocoena). Bioconsult report (project reference number: 0325141). http://bioconsult-sh.de/site/assets/files/1359/1359.pdf.

Herschel, A., S. Stephenson, C. Sparling, C. Sams, and J. Monnington. 2013. ORJIP Project 4, Phase 1: Use of deterrent devices and improvements to standard mitigation during piling. JNCC. 2010. Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise.

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.

McGarry, T., O. Boisseau, S. Stephenson, and R. Compton. 2017. Understanding the Effectiveness of Acoustic Deterrent Devices (ADDs)on Minke Whale (Balaenoptera acutorostrata), a Low Frequency Cetacean. Report for the Offshore Renewables Joint Industry Programme (ORJIP) Project 4, Phase 2. Prepared on behalf of the Carbon Trust.

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.