Hornsea Offshore Wind Farm

Project Two

The Applicant's Response to the Whale and Dolphin Conservation's Written Representation

Appendix F to the Response submitted for Deadline II

Application Reference: EN010053

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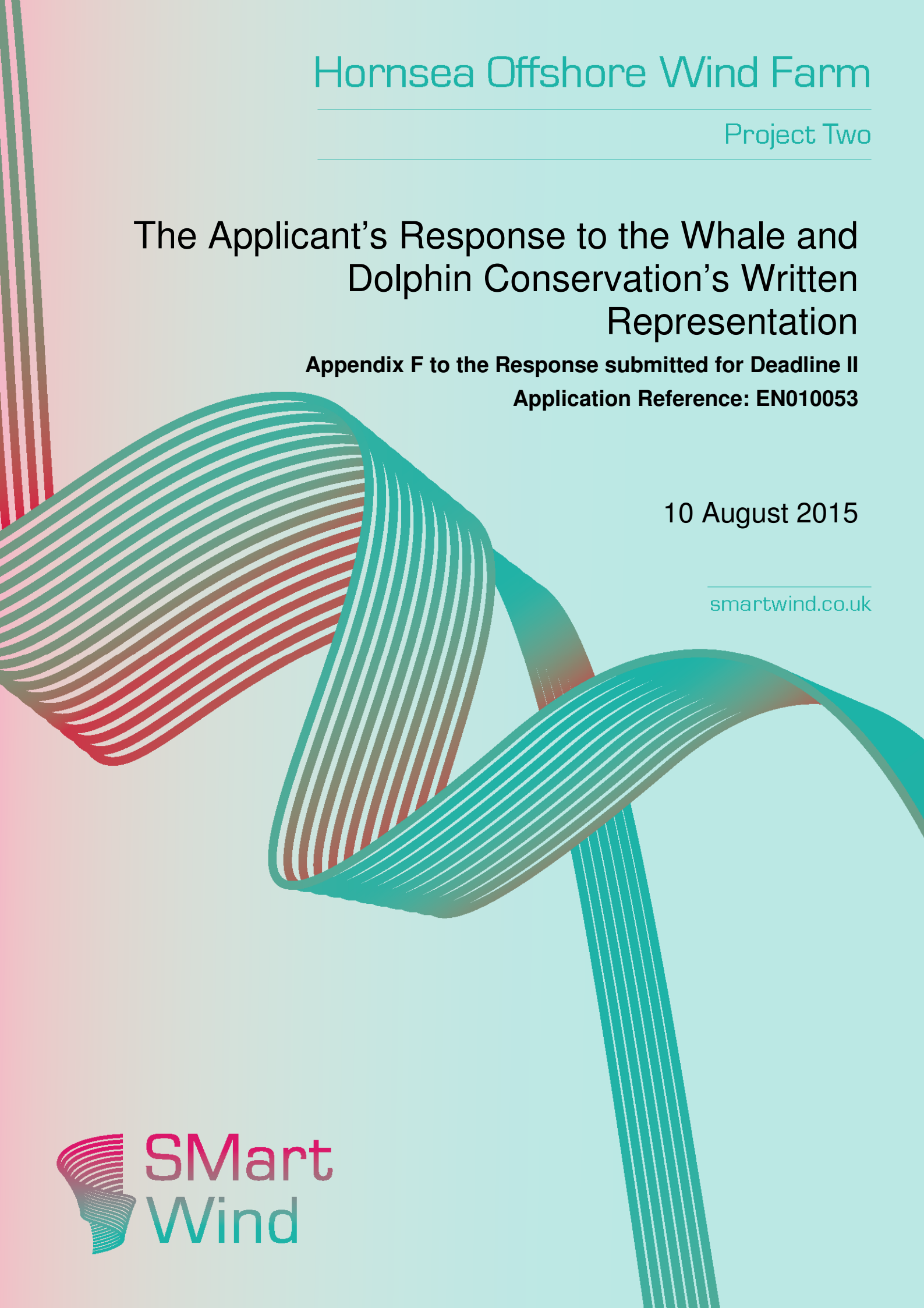

SMart Wind

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General

1. With regard to the concerns raised by WDC with respect to the consideration of alternative foundation types, the Applicant notes that the Rochdale Envelope presented in Table 4.17 of Volume 2, Chapter 4: Marine Mammals of the ES (Doc ref No 7.2.4) considered a range of different foundation types in the assessment, including gravity bases. The Rochdale envelope approach ensures that for each potential impact, the foundation type leading to the greatest magnitude of effect is considered. Thus, for subsea noise the foundations for monopiles (as the maximum adverse spatial scenario) and jackets (as the maximum adverse temporal scenario) are assessed in Section 6 of Volume 2 and Chapter 4 of the ES for impacts of underwater noise from piling impacts. In the assessment, gravity bases were considered to lead to the greatest magnitude of potential effects due to increased suspended sediments arising from seabed preparation for the foundations (Table 4.17 of Volume 2, Chapter 4 of the ES). The Applicant notes that Natural England, in response to the Ex. A's first written question (EOMM8), are satisfied that the assessment considers the worst case spatial and temporal scope of predicted impacts.
2. With regard to the concerns raised by WDC with respect to the levels of uncertainty in relation to understanding the potential effects of offshore wind farm developments on marine mammals, the assessment was based on the worst case scenarios to assess potential effects on sensitive receptors. In addition to this, the assessment adopts a highly precautionary approach by adding layers of conservatism at each stage of the assessment process. In the SoCG between the Applicant and Natural England (see Appendix XX of the Applicant's Response to Deadline I), it was agreed that a precautionary approach has been applied to the noise modelling in order to account for some of the uncertainties, and it was further agreed that precaution has been applied throughout the impact assessment (see paragraph 7.2.8 of Appendix XX to the Applicant's Response to Deadline I). In addition, the Applicant's response to EOMM6 of the First Response specifically addresses the issue of uncertainty and the approach adopted in the assessment.

Location of Project Two

3. With regard to the concerns raised by WDC with respect to the harbour porpoise draft Special Areas of Conservation (dSACs), the Applicant is committed to maintaining a watching brief and acknowledges that consideration of the designation of dSACs may be required (see Applicant's Response to EOMM22 at Deadline I).

EPS

4. With regard to WDC's comment on the wording in the JNCC *et al.* (2010) guidelines on EPS, the Applicant notes that this is an issue that WDC has as a criticism of the JNCC report and not a specific concern in respect to the Project. The Applicant further notes that no specific reference to the wording quoted by WDC in their written representation has been made within Volume 2 and Chapter 4 of the ES. The Applicant will defer to relevant appropriate guidelines from the SNCBs on the appropriate approach for assessing effects on EPS. However, the Applicant further notes that the assessment of the effects on Favourable Conservation Status (FCS) is undertaken on a case-specific basis,

using the most up-to-date information on the population and status of EPS at the time of assessment.

Survey methodologies

5. With regard to the concerns raised by WDC with respect to the methodology employed for boat based surveys, the Applicant maintains their position that the approach used was appropriate for the Project's site-specific surveys. In Natural England's response to the Ex. A's first written questions (EOMM1, EOMM2, and EOMM4), the Applicant notes that Natural England are satisfied with the survey approach taken and that "*It is also unlikely that undertaking further standalone surveys (now) would significantly change the advice provided by the SNCBs*". In response to WDC's concern that the numbers may be under-representative of the true numbers of marine mammals, the Applicant highlights that the methodology taken using distance analysis (using Distance software; Thomas *et al.,* 2010) does not make the assumption that all animals, other than those directly on the transect line, are counted by the surveyors. Therefore, even if some individuals are not counted, the analysis corrects for this. In addition, where possible a correction factor was applied such that absolute (rather than relative) densities could be calculated to account for animals that were not available to be counted (i.e., because they were below the surface when the boat passed by).
6. With regard to the concerns raised by WDC with respect to the use of SCANS survey data in assessing populations and potential impacts, the Applicant notes that the assessment used the correct reference populations within Management Units for each species, following advice from the SNCBs. This is a matter agreed in the SoCG between the Applicant and Natural England (paragraphs 7.2.6 and 7.2.17 of Appendix XX of the Applicant's Response to Deadline I). The Applicant highlights that further reference to SCANS data in the assessment was made to provide contextual information in the baseline between site-specific densities of cetaceans compared to densities in the wider region (SCANS block U). At present, the SCANS-II data provides the most useful nationwide dataset for marine mammals in British waters. This is expected to be updated with Joint Cetacean Protocol (JCP) data but the JCP dataset is not publically available as yet.
7. With regard to the concerns raised by WDC with respect to the scope of the survey area for the site-specific surveys, the Applicant notes that this was discussed with the statutory authorities and an approach was agreed to conservatively estimate the densities of marine mammals in the areas not covered by the surveys (see paragraph 4.6.71 in Volume 2, Chapter 4 of the ES).
8. In response to WDC's written representation on the limited robust baseline data, the Applicant highlights that the baseline dataset was based on three years of monthly boat-based surveys, using a survey protocol agreed with the SNCBs. The Applicant further notes that Natural England, in response to Ex. A's EOMM2 first written question, agrees with this approach. The Applicant therefore maintains their position that the marine mammal impact assessment was made on the basis of a robust dataset and also the best available site-specific and regional data available.

Potential impacts

9. The Applicant acknowledges that WDC agrees with the assessment of harbour porpoise, minke whale and white-beaked dolphin as internationally important Valued Ecological Receptors (VERs). With regards to the concerns raised by

WDC with respect to noise disturbance and uncertainties around the consequences of behavioural disturbance, the Applicant notes that the assessment in Volume 2 and Chapter 4 of the ES adopted a highly precautionary approach in the impact assessment, in order to deal with uncertainty. With regards to the concerns raised by WDC with respect to referencing DEPONS, the Applicant draws the Ex. A and WDC's attention to the context in which the information provided by the DEPONS model was applied to the impact assessment. The preliminary results of the model (van Beest *et al.,* 2015) were provided to build a picture of the potential disturbance effects of pile-driving in the North Sea on harbour porpoise and not to wholly inform the impact assessment. Discussion of this document is heavily caveated throughout Volume 2 and Chapter 4 of the ES, saying that "*The model is still in the development state and therefore no firm conclusions can be drawn at this stage".* Irrespective of the limitations of the preliminary results, the results from DEPONS, interpreted together with results from other published scientific work, are useful in building knowledge and understanding within this area that subsequently supports the conclusion that no long-term effects are likely to occur as a result of pile-driving.

Pile-driving

10. With regard to the concerns raised by WDC with respect to the use of pile-driving, the Applicant notes that the assessment within Volume 2 and Chapter 4 of the ES considers a range of different foundation types. At this stage, the project design specification has not been refined and a decision on the most appropriate foundation and installation method is not possible until further geotechnical investigation and engineering modelling has been completed post consent. With regard to the concerns raised by WDC with respect to the extent of potential effects of subsea noise on sensitive species from pile-driving, the Applicant draws attention to the detailed site-specific modelling presented in the Subsea Noise Technical Report (Volume 4, Annex 4.3.2 (Doc ref No 7.4.3.2), which gives the predicted ranges of effect for each species. The assessment is based on these site-specific predicted ranges and as described above, adopts a precautionary approach by overlaying the noise contours on the areas of highest marine mammal density.
11. With regard to the concerns raised by WDC with respect to the extent of the construction period, the Applicant emphasises that this is the total duration of construction and that piling would occur in phases within this period. The total duration of construction includes periods of weather downtime, returns to port and 20% contingency time (see Table 4.17 in Volume 2, Chapter 4: Marine Mammals). The piling phases are presented in Appendix O of the Applicant's Response to Deadline I. Within these phases, the actual duration of piling will only make up a fraction of the time. This is described in the design envelope in Table 4.17 of Volume 2, Chapter 4 of the ES, which states that the maximum duration of piling (for the worst case temporal scenario) will be 1.32 years undertaken in up to four phases over the 4 to 5 year construction period. If food resources are plentiful, it is likely that marine mammals will return to the area during periods of non-piling, unless resources are plentiful outside the disturbed area in which case there would be less need to return quickly and population-level effects would not be expected anyway (see paragraph 4.6.128 of Volume 2, Chapter 4 of the ES).
12. With regard to the concerns raised by WDC with respect to the consideration of two vessels piling at the same time in the CIA, the Applicant draws WDC's

attention to the design envelope (Table 4.17 in Volume 2, Chapter 4 of the ES) which clearly states that the maximum adverse spatial scenario assumes piling of two vessels concurrently with a maximum separation distance of 20 km. In the CIA, it is this maximum adverse spatial scenario that is taken forward to consider with other plans or projects within the CIA regional study area.

13. With regard to the concerns raised by WDC with respect to the use of Southall *et al*., (2007) for the noise modelling assessment, the Applicant highlights that this is a peer-reviewed published scientific paper and has formed the basis of many offshore wind farm subsea noise assessments in the UK. The thresholds presented in Southall *et al*., (2007) are considered to be precautionary and fit-for-purpose for assessing potential impacts. The subsea noise model for the Project applied more recent and conservative published thresholds for harbour porpoise (Lucke *et al.,* 2009). The thresholds used in the assessment were based on the best available published information and agreed with the SNCBs.
14. With regard to the concerns raised by WDC with respect to the assessment of sensitivity of marine mammals, the Applicant notes that the criteria defined in Table 4.18 of Volume 2, Chapter 4 of the ES were applied to the assessment of sensitivity of marine mammals. The sensitivity of marine mammals was judged on the basis of published studies on responses to and recovery from pulsed noise, using these precautionary noise thresholds. The literature suggests that marine mammals are likely to show behavioural response to subsea noise (with the most adverse reaction defined as displacement) but that recovery following cessation of piling is rapid. This is further supported by population models such as the Moray Firth Harbour Seal Framework (Thompson *et al*., 2013) where the population of harbour seals was predicted to recover following cessation of piling. In addition, the results from the interim DEPONS model (see Section 4.2 in Appendix AA of the Applicant's response to Deadline I), although preliminary, suggest that harbour porpoise populations will recover following cumulative piling at offshore wind farms in the North Sea (van Beest *et al*., 2015).

Operational noise

15. With regard to the question raised by WDC of long-term monitoring of operational noise on marine mammals, the Applicant notes that the assessment concluded that marine mammals are of low sensitivity to operational noise (supported by scientific evidence from long-term monitoring around operational offshore wind farm studies) and that there would be no significant effects on marine mammals (see paragraph 4.6.330 of Volume 2, Chapter 4 of the ES). The Applicant therefore considers that there is no need to monitor the operational effects of the Project.

Cumulative assessment

16. With regard to the concerns raised by WDC with respect to the screening in of projects for the CIA, the Applicant notes that it has been agreed between the Applicant and Natural England, that the projects screened into the CIA are appropriate and reasonable to undertake the CIA (see paragraph 7.2.17 of Appendix XX of the Applicant's Response to Deadline I). As described above, the assessment takes into account concurrent piling at the Project both in the assessment of the Project alone and in the CIA. WDC quotes Natural England's relevant representation (section 5.2.2.2) in relation to presentation of populations for SCANS Block U as a reference, however, since this relevant representation, it has been agreed between the Applicant and Natural England that this is not an appropriate approach to take. Instead, it was agreed between the Applicant and Natural England that it was more appropriate to present the

areas of effect for each project in the CIA as a proportion of SCANS Block U, and these are shown in Appendix 8 of Appendix XX to the Applicant's response to Deadline I.

Mitigation methods

17. With regard to the concerns raised by WDC with respect to mitigation methods, the Applicant notes that the mitigation commitments in Schedules H, I, J and K, Condition 10(2)(e) of the draft DCO are in line with the JNCC *et al.* (2010b) guidelines for best practice for mitigation of piling noise. The Applicant highlights that the Marine Mammal Mitigation Zone (MMMZ) should be determined based on the distance out to which injurious effects are likely to occur and that this is based on the instantaneous Permanent Threshold Shift (PTS) zone for the soft start hammer energy. The assessment demonstrates that the radius of injurious effect is <500 m for all species and therefore 500 m is considered to be adequate in this respect. The DML makes provision for consideration of the current guidelines as appropriate and the MMMP will subsequently be developed in consultation with the SNCBs.
18. With regard to behavioural effects, the Applicant notes that no long term significant effects are predicted at population level and therefore, the suggestion from WDC for a commitment to use alternative foundation solutions to pile driven solutions is not justified. The Applicant notes that it is agreed with Natural England that appropriate mitigation and controls within the draft DCO are in place for marine mammals (see paragraphs 7.2.1 and 7.2.25 of the SoCG between the Applicant and Natural England as submitted at Appendix XX at Deadline I). Notwithstanding this, pursuant to Schedules H, I, J and K, Condition 10(2)(e) of the draft DCO, the Applicant has made a commitment to consider the use of noise reduction technologies prior to construction. This is highlighted in Table 10.1 in the SoCG between the Applicant and TWT and Lincolnshire Wildlife Trust (LWT) (see Appendix OO of the Applicant's response to Deadline I).

Monitoring

19. The Applicant highlights, in response to WDC's written representation on monitoring, that Schedules H and J , Condition 10(2)(h) of the draft DCO makes provision for a marine mammal monitoring plan, which will set out the need for an approach to any marine mammal monitoring. It is anticipated that this monitoring will be achieved through ongoing strategic studies into the consequence of behavioural disturbance, such as DEPONS. The need for any site specific monitoring will be determined based on the outputs from such strategic studies and a consideration as to whether any site specific work could provide any meaningful outputs (with regard to the consequence of disturbance question. This is agreed in the SoCG between the Applicant and Natural England (paragraph 7.2.13 of Appendix XX of the Applicant's Response to Deadline I), and discussed by the Applicant's in response to EOMM21 in the Applicant's Response to Deadline I. The details of the monitoring will be agreed post-consent using the latest guidance at the time and in consultation with the SNCBs (see Natural England's response to EOMM21).

Decommissioning

20. The Applicant notes WDC's comment in relation to decommissioning and confirms that the Project Description (Volume 1, Chapter 3 (Doc ref No 7.1.3) does not include the use of explosives during this phase of the Project.

References

Joint Nature Conservation Committee (JNCC), Natural England (NE) and Countryside Council for Wales (CCW) (2010a). *The protection of marine European Protected Species from injury and disturbance – Draft guidance for the marine area in England and Wales and the UK offshore marine area*. March 2010

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