

Hornsea Offshore Wind Farm

Project Two

Summary of Oral Case – Issue Specific Hearing 16 September 2015

**Appendix J to the Response submitted for Deadline III
Application Reference: EN010053**

24 September 2015

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**SUMMARY OF ISSUE SPECIFIC HEARING HELD ON 16th SEPTEMBER 2015
SUBMITTED FOR DEADLINE III**

1.	Welcome
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- 1.1 Following an introduction from the Ex. A, the Applicant, along with other parties in attendance, introduced its representatives.

2.	Ecology Offshore - Ornithology
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Scope of Natura 2000 sites within Application

- 2.1 The Ex. A initially queried the scope of the Natura 2000 sites considered within the Applicant's assessment. Specifically, the Ex. A asked Natural England whether the existing Flamborough Head and Bempton Cliffs SPA should be included within the assessment as well as the Flamborough and Filey Coast (FFC) pSPA.
- 2.2 Natural England responded that as the Flamborough Head and Bempton Cliffs SPA is still in existence and the FFC pSPA is not yet formally adopted, both of those sites should be subject to an Appropriate Assessment.
- 2.3 In response, the Applicant clarified that consideration of both the existing SPA and the FFC pSPA were included within the Applicant's assessment and that the approach adopted was agreed with Natural England.
- 2.4 It was noted in the HRA screening report (Document reference 12.6.2, paragraph 5.4.55) that: *Any conclusions drawn in relation to Flamborough and Filey Coast pSPA also apply to Flamborough Head and Bempton Cliffs SPA. The qualifying features at the pSPA are analogous with those at the existing SPA and as such any conclusions drawn are valid for both sites.*
- 2.5 It is understood that both Natural England and the RSPB agree that all of the features of the existing SPA have been addressed, as these are a subset of those which are proposed for inclusion in the FFC pSPA. It was agreed by the Applicant that the RIES matrices would be updated to include relevant information regarding the outcomes of screening and assessment for the existing SPA. An updated RIES document will be submitted at Deadline IV.
- 2.6 The Ex. A noted the Applicant had provided an update to the Habitats Regulations Assessment (HRA) Screening and Integrity Matrices (Version 2) at Appendix P to its submission of 27 April 2015. The Ex. A noted that there remained certain anomalies within the updated matrices, noting in particular references to Hornsea Project One, and requested that the Applicant review and provide updated corrected replacement matrices if considered necessary. The Applicant will review the matrices and make certain amendments to correct any residual typographical errors if required. The further updated HRA Screening and Integrity Matrices (Version 3) will be submitted in the Applicant's response to Deadline IV.

Update on position reached between the Applicant, Natural England and the RSPB

- 2.7 The Ex. A queried the current status of progress between the Applicant, Natural England and the RSPB, noting that it had anticipated an updated Offshore Ornithology SoCG (v3) between the Applicant and Natural England in advance of the Hearing.
- 2.8 The Applicant confirmed that there had been a number of discussions between the Applicant and Natural England, and between the Applicant and RSPB, but that it had not been possible to submit an update to the SoCG in time for the Hearing. In lieu of such an updated SoCG, the Applicant suggested that it narrate the areas of agreement with Natural England and,

- separately, the RSPB to the Ex. A, which could then be reflected and supplemented in an updated SoCG to be submitted for Deadline III.
- 2.9 The Applicant first summarised the position reached with Natural England and confirmed that in relation to the matters still under discussion as identified in section 3.3 of the SoCG between the parties (Appendix R of the Applicant's response to Deadline II) it had been agreed between the parties in relation to the below species:
- 2.9.1 *Gannet* – for collision and displacement impacts the Applicant and Natural England agree that there is no potential adverse effect from Project Two alone and in-combination with other plans or projects;
- 2.9.2 *Guillemot* – for displacement impacts the Applicant and Natural England agree that there is no potential adverse effect from Project Two alone or in-combination with other projects;
- 2.9.3 *Razorbill* – for displacement impacts the Applicant and Natural England agree that there is no potential adverse effect from Project Two alone or in-combination with other projects;
- 2.9.4 *Puffin* – for displacement impacts the Applicant and Natural England agree that there is no potential adverse effect from Project Two alone or in-combination with other projects on the seabird assemblage feature; and
- 2.9.5 *Kittiwake* – for collision impacts for Project Two alone and in-combination with other projects, Natural England currently cannot conclude that there is no potential adverse effect on the integrity of the FFC pSPA. The Applicant confirmed that both bodies will continue to explore this issue and are committed to providing further information through the examination.
- 2.10 An updated signed SoCG (Offshore Ornithology) between the Applicant and Natural England, reflecting the above, is provided at Appendix Y of the Applicant's response to Deadline III.
- 2.11 The Applicant then sought to summarise the position reached with the RSPB and confirmed that the parties had met recently and are now broadly in agreement on the baseline data and the methods by which the Applicant has quantified the impacts on the relevant species. The Applicant, however, noted that the parties were not in a position to reach agreement on the significance of effect conclusions for each species. Again, the Applicant noted its intention to provide a SoCG to capture these points of agreement/disagreement and this is provided as Appendix Z of the Applicant's response to Deadline III.

Agreement between the Applicant, Natural England and the RSPB on baseline data issues

- 2.12 The Applicant noted that agreements reached between the Applicant and Natural England regarding baseline data issues are presented in Section 3.2 of the Statement of Common Ground submitted at Appendix R of the Applicant's response to Deadline II.
- 2.13 It has been agreed that the Applicant has provided to Natural England all data used for the different analyses that informed assessment in Appendix L of the Applicant's response to Deadline I. This Appendix included raw data, population estimates and associated confidence limits at the appropriate spatial scales relevant for the associated analyses. An updated version of Appendix L was submitted at Deadline II (Appendix K of the Applicant's Deadline 2 submission (PINS ref REP2-029) which contained a number of minor corrections.
- 2.14 Natural England have agreed that for collision risk modelling, density data from the Year 2 December boat-based survey should be applied in December of Year 1 to account for limited survey coverage in this month. Natural England have further agreed that the Year 2 November survey data should also be used in the assessments. The Applicant notes that Natural England will base its assessment on the available data with a caveat that the uncertainty in the data should be considered when assessing impacts for razorbill.
- 2.15 It has been agreed that Appendix L of the Applicant's Deadline 1 submission has addressed Natural England's concerns regarding the methods used to derive population estimates from baseline survey data and that the data is appropriate for use within the assessment.

- 2.16 The Applicant and Natural England have also discussed the treatment of unidentified species within baseline surveys. It is agreed with Natural England that the method used to assign unidentified species to species level is appropriate and the figures derived are suitable for use within the Ornithology assessment and the HRA. The Applicant noted the RSPB requested documentation detailing the methodology applied and this was provided in the Applicant's response to Deadline IIA (Appendix S); the suitability of the methodology was agreed with RSPB on 15 September 2015 (as presented in the SoCG submitted as Appendix Z of the Applicant's response to Deadline III).
- 2.17 The RSPB and the Applicant agree that baseline data issues have been broadly addressed through the clarification notes provided at Deadlines I, II and IIA (as presented in the SoCG – Appendix Z of the Applicant's response to Deadline III). The Applicant noted the RSPB have requested further detail on the way in which Generalised Linear Modelling (GLM) was used to establish population estimates and densities and associated measures of variability. The Applicant has provided this information and this matter is now resolved and agreed between the parties – see Appendix Z of the Applicant's response to Deadline III).

Agreement between the Applicant, Natural England and the RSPB on methodological issues

Collision Risk Modelling

- 2.18 The Applicant confirmed to the Ex. A that a collision risk assessment has been undertaken for the Project involving the use of the Band (2012) collision risk model.
- 2.19 The Applicant would note that the Band (2012) model incorporates two approaches to calculating the risk of collision referred to as the 'Basic' and 'Extended' versions of the model. The Applicant noted that it has presented a range of appropriate outputs from the CRM within the assessment and that this is a point agreed with Natural England and the RSPB.
- 2.20 The Applicant notes the key difference between the options within the Band model is the extent to which they account for the flight height patterns of seabirds (Band 2012):
- “13. Taking account of bird flight height distribution. Seabirds mostly fly at relatively low heights over the sea surface. The height distribution varies from species to species and may depend on the site and its ecology and related bird behaviour. The basic model considers the risk only to birds flying at risk height (above the minimum and below the maximum height of the rotors) and of these, only those which pass through the rotors. However within these limits it assumes a uniform distribution of bird flights. There are three consequences of a skewed distribution of flights with height:*
- *the proportion of birds flying at risk height decreases as the height of the rotor is increased;*
 - *more birds miss the rotor, where flights lie close to the bottom of the circle presented by the rotor; and*
 - *the collision risk, for birds passing through the lower parts of a rotor, is less than the average collision risk for the whole rotor.*
- This guidance now includes, in addition to the basic model, an extended model (March 2012) which enables flight height distributions to be incorporated in the calculation, for use in circumstances where flight height data is available and adequately robust.”*
- 2.21 As the Basic version of the model simply assumes a uniform distribution of birds at potential collision risk height (PCH), a key input variable is the proportion of birds observed at PCH. All those birds though are assumed to be at a similar risk of collision. The model variant referred to as Option 1 is, therefore, the simplest and most approximate indicator of likely collision risk.
- 2.22 The Extended version of the model takes account of the flight height distribution of seabirds and calculates the differential risk to these at 1 metre intervals. This model variant requires more detailed information on the flight height distribution of birds. Option 3 of the model makes use of a series of 'generic' flight height distributions included in the model and based on the work of Cook et al. (2012).

- 2.23 With respect to the use of the different options of the model the guidance indicates (Band 2012 paras 63 & 64):
- “63. Caution is needed in deploying this generic data. It is entirely possible that the ecological circumstances of a particular site differ from those in the sites used to generate the generic data, and hence bird behaviours and flight heights may not be well represented by the generic data. Before using generic data, consideration should be given to whether*
- is the site survey data compatible with the generic data? Does it indicate that the generic data reasonably represents the observations at this site?*
 - are there particular ecological circumstances which might be expected to lead to non-standard behaviour, e.g. proximity to breeding sites?”*
- 2.24 As detailed in Table 3.1 of the SoCG (Appendix Y of the Applicant’s response to Deadline III) and confirmed at the Hearing, Natural England do not believe it is appropriate to use site specific flight height information derived in relation to the Project within collision risk modelling. However, the Applicant submits that in the Project’s Application, there is sufficient survey data to inform a site-specific understanding of the flight height distributions of key species at risk of collision. The Applicant considers the combination of the Extended version of the model with site-specific flight height data produces as accurate a prediction of the risk to seabirds as is possible with current information and risk assessment tools. In contrast, the Basic version of the model only approximates collision rates, in a highly precautionary way, because, amongst other things, it fails to fully take account of the way that birds are distributed over the sea surface.
- 2.25 Table 3.2 of the SoCG details a further disagreement as Natural England considers that there are currently no agreed appropriate avoidance rates to use within the Extended Model for kittiwake and gannet (Cook et al., 2014). Although Cook et al (2014) did not feel able to recommend a specific avoidance rate for kittiwake and gannet for the Extended Model the review by SMart Wind & Forewind (2013) (submitted as Appendix Z of the Applicant’s response to Deadline I) also considers what precautionary avoidance rates should be used in the Extended version of the model and concludes on the basis of a comparison of the rates predicted by the Basic version of the model and the directly observed levels of avoidance at coastal and offshore wind farms that an avoidance rate of 98% is sufficiently precautionary.
- 2.26 The Applicant confirmed, therefore, that it considers the use of an avoidance rate of 98% with the Extended version of the model to be appropriate.
- 2.27 The Applicant further states that it does not consider that attempting to record flight heights more accurately could possibly lead to greater overall inaccuracy in flight height estimation than might be the case if surveyors had used wider flight height recording bands (for instance, 10m instead of 5m). The Applicant considers that any attempt to record data more accurately should improve the data set, or at the very least not lead to greater inaccuracy.
- 2.28 The Applicant was asked whether the survey approach had followed industry standards. It was noted that the surveys were undertaken in a manner that was consistent with relevant guidance (Camphuysen et al. 2004). The Applicant noted that although 5m was at the lower end of the range of flight height bands used, it was not unusual to use such bands. The Applicant has provided a table at Appendix L to its response to Deadline III which provides information on the flight height bands used by surveyors for boat-based surveys in recent Applications. It can be seen from this table that there is little consistency between projects, with surveyors using bands of different sizes, but also that it is not unusual to use 5m bands.
- 2.29 Notwithstanding these differences between the views of the Applicant and Natural England, the Applicant has presented a range of outputs based on the full extent of the Basic and Extended Models and agreement has been reached that there are no adverse effects on integrity with respect to the gannet feature of the FFC pSPA (or the gannet component of the seabird assemblage of the Flamborough Head and Bempton Cliffs SPA) either alone or in combination.
- 2.30 The Applicant further notes Natural England referred to an error with regards to the kittiwake numbers presented in Appendix P of the Applicant’s response to Deadline 2A. To clarify, in Table 1.3 and Table 1.7 of Appendix P, a value of 106.2 collisions is quoted for Natural England’s position. This estimate was calculated using Option 2 collision risk estimates from

May to July at an avoidance rate of 99.2% and the Option 2 collision risk estimate from April at an avoidance rate of 98.9%. This collision risk estimate should have been calculated using a 98.9% avoidance rate for all months giving an estimate of 136.3 collisions in the breeding season.

Collision risk modelling for migratory birds

- 2.31 The Applicant confirmed that theoretical collision risk modelling was undertaken within the EIA for migratory species that may not be recorded adequately by baseline snapshot surveys. Natural England, while recognising that it is unlikely to lead to a significant issue (Natural England's Written submission for Deadline II; PINS ref REP2-009), have requested clarification on the methodology applied to calculate collision risk impacts for migratory species. This will be provided by the Applicant for Deadline IV.

Calculation of Displacement Rates

- 2.32 The Applicant has provided species (and season) specific favoured rates for both displacement and mortality within the Project's assessment.
- 2.33 The Applicant notes that Natural England consider that there is uncertainty in displacement levels and has recommended that the potential number of bird deaths be considered over a range of displacement (30 – 70%) and mortality rates (1 – 10%). The Applicant has provided (within the HRA Report (Doc ref No 12.6) and Offshore Ornithology ES chapter (Doc ref No 7.2.5)) displacement results following the matrix approach in line with guidance provided by JNCC and Natural England (2013). This allows the assessment to be made as stated by Natural England to “enable a judgment to be made regarding the likelihood that, given the range of possible outcomes, mortality arising from displacement could give rise to a significant adverse impact”.
- 2.34 Within clarification notes submitted at Deadline IIA, the Applicant has interpreted displacement at the Applicant's favoured rates in parallel to the maximum rates in the ranges advocated by Natural England (i.e. 70 % displacement and 10 % mortality).
- 2.35 Notwithstanding the above differences, the Applicant and Natural England have reached agreement on all species from FFC pSPA considered for assessment of displacement effects. It has been agreed that there are no adverse effects on integrity for the Project alone and in combination with other projects for guillemot, razorbill and puffin (see Appendix Y of the Applicant's response to Deadline III).
- 2.36 The Applicant notes that its favoured rates for both displacement and mortality for each species lie comfortably within the range advocated by Natural England to inform their conclusions on site integrity.
- 2.37 The RSPB have agreed that the Applicant has provided the appropriate displacement analysis outputs (see Appendix Z of the Applicant's response to Deadline III). The RSPB also noted they favour the consideration of a range of displacement and mortality rates although consider that 70% displacement and 10% mortality as an appropriate metric to inform the assessment (rather than considering this as the maximum end of the range to be considered).
- 2.38 The Ex. A asked whether it was appropriate to sum the displacement impacts calculated for each season to derive a total annual displacement impact. It was agreed by all parties that this was overly precautionary, as it is unlikely that displacement effects impact on a population in this way. The Applicant pointed out that it was, in fact, a highly arbitrary way to derive an annual magnitude of impact, as it is dependent on how many seasons are defined. The Applicant considers that if the impact were calculated in this way then there would need to be some consideration of the duration of the effect in each season. The Applicant's approach is, therefore, considered to be precautionary, as the magnitude of the displacement impact is assumed to be the largest number of birds displaced at any time over the year, with it then assumed that this number of birds is permanently displaced from the site. In

practice there will be significant parts of the year where far fewer birds will actually be displaced.

- 2.39 The Ex. A also asked whether it was appropriate to sum the effects of collision mortality and displacement for gannet. It was agreed by all parties that whilst it was important to consider the impact of collision mortality and displacement on the gannet population, simply adding the effects together was problematic and was unnecessary for this assessment. This was because there is a risk of double counting effects and also because the methods for evaluating the magnitude of the impact in each case are not compatible with one another. The Applicant noted at the Hearing that whilst the RSPB were previously concerned about the potential for displacement of kittiwakes, this was no longer of a material concern to the RSPB and they were not expecting this to be assessed in this application.

Population Viability Analysis (PVA) and Potential Biological Removal (PBR)

- 2.40 The Applicant noted that to inform the interpretation of the effect of predicted impacts on FFC pSPA populations, both population viability analysis (PVA) and potential biological removal (PBR) has been used. Whilst both are considered by the Applicant to be useful and relevant tools for understanding the consequences for populations of predicted impacts, interpretation has focused on PVA, as discussed with Natural England.
- 2.41 PVA modelling was undertaken for gannet, kittiwake, guillemot, razorbill and puffin populations. Appropriate demographic data were identified and agreed with Natural England as were the range of model outputs. The most appropriate outputs on which to base interpretation are considered to be:
- The difference between the growth rate of the population that is predicted to occur without additional mortality compared to that predicted with additional mortality; and,
 - The difference between the median population size after 25 years that is predicted to occur without additional mortality compared to that predicted with additional mortality.
- 2.42 The Applicant noted that it provided a PVA modelling report which presents these indicators for a range of additional mortality levels (see Appendix M of the Applicant's response to Deadline IIA). Two versions of the PVA model were produced within this report: a density independent version which does not assume any compensatory effects on the productivity or survival rates in the population with increasing or decreasing population size; and, a density-dependent version which assumes that productivity changes with population size. Whilst the density-dependent population version of the model is considered by the Applicant to more realistically reflect the behaviour of the populations being modelled, discussions with Natural England have focused on the more precautionary density independent version of the model.
- 2.43 The Applicant confirmed that Natural England agree that the Applicant has appropriately parameterised the models and have presented the required outputs (see the updated SoCG submitted as Appendix Y of the Applicant's response to Deadline III).
- 2.44 The Applicant can confirm post Hearing that the RSPB agree that the Applicant has addressed all previous issues raised by RSPB within the PVA modelling and the outputs are appropriate for determining the potential affect for the Project on the features of the FFC pSPA (see the SoCG submitted as Appendix Z of the Applicant's response to Deadline III).
- 2.45 The RSPB also agrees that PVA modelling has been appropriately undertaken and welcomed the focus on CPS25 as a key model output. They queried, however, how additional mortality was factored in to modelling and specifically how mortality was applied across age classes. This has now been clarified with the RSPB and the RSPB agree their concerns raised in relation to the PVA have been addressed (see paragraph 3.2.5 of the SoCG between the Applicant and the RSPB at Appendix Z of the Applicant's response to Deadline III).

Tiering/relevant projects for cumulative and in-combination effects assessment

- 2.46 The Ex. A queried the rationale behind the Applicant's two tier approach for in-combination and cumulative assessments.

- 2.47 The Applicant explained that it has assigned plans and projects into 2 tiers reflecting their current stage within the planning and development process: Tier 1 includes projects that are operational, under construction, consented and/or submitted to the PINS system. Tier 2 includes projects not yet in the PINS planning system but which are likely to be submitted in the near future.
- 2.48 The Applicant noted Natural England noted within their Relevant Representation (RR-021) (paragraph 132) that they “do not have any serious concerns about the use of a two ‘tier’ in-combination assessment.” The Applicant further noted it has been agreed with Natural England that the use of two tiers within the in-combination and cumulative assessment is not of material concern and there is no requirement for additional work to be completed with regard to applying further tiers to the cumulative assessment.
- 2.49 The Applicant confirmed that it has provided updated cumulative and in-combination collision figures for gannet and kittiwake and displacement figures for guillemot, razorbill and puffin at Deadline IIA (Appendices N to R). These include the full suite of projects, including operational projects as requested by Natural England.
- 2.50 The Applicant further confirmed that it has used the full consented capacity figure for each of the projects within the in-combination assessment, notwithstanding any confirmation from the relevant developers that less than the consented amount will be built out.

Update on assessment of collision and displacement impacts and extent of agreement on any adverse integrity effects for relevant species on the FFC pSPA

- 2.51 The Applicant referred back to its summary at the start of the Hearing and confirmed that the Applicant and Natural England have reached agreement that there are no adverse effects on the integrity of the FFC pSPA, with the exception of kittiwake which is still under discussion, in respect of impacts from the Project alone and in-combination with other plans and projects.
- 2.52 The Applicant confirms that the assessment of collision risk impacts on the FFC pSPA has been undertaken using the Band (2012) collision risk model presented results from Options 1-4. The Applicant considers collision risk estimates from Option 4 to have the greatest associated level of confidence as these incorporate the more sophisticated Extended model of Band (2012). However, within the assessment documents submitted by the Applicant, collision risk estimates calculated using Option 2 of Band (2012) are also presented.
- 2.53 The assessment of impacts from displacement on the FFC pSPA has been undertaken in accordance with interim guidance from Natural England. Displacement mortality using the displacement and mortality rates advocated by the Applicant and Natural England are presented for all species. As noted, the Applicant does not consider it appropriate to sum seasonal displacement mortality.
- 2.54 The Applicant confirms that plans and projects to be considered in-combination with the Project in the breeding season are identified using species-specific foraging ranges agreed through consultation with Natural England. In non-breeding seasons projects are identified using the relevant Biologically Defined Minimum Population Scale from Furness (2015).
- 2.55 The apportioning values applied for non-breeding seasons have been calculated based on the contribution of the applicable species Flamborough and Filey Coast pSPA population to the seasonally relevant non-breeding season BDMPS population in Furness (2015).
- 2.56 The Applicant refers the Ex. A to the updated SoCG with Natural England (Appendix Y of the Applicant’s response to Deadline III), where the detail of the assessment and ultimate outcomes for each of the five species originating from FFC pSPA is provided. Figures presented include the position of the Applicant and also Natural England. These are based on results presented in the various ‘apportioning’ clarification notes (Appendices N to R) submitted at Deadline IIA. However, Natural England have provided minor updates during a meeting with the Applicant on 10th September 2015; these updates are reflected in the results detailed in the updated SoCG.

Extent of agreement on likely significant effects on EIA species

- 2.57 The Applicant explained to the Ex. A that, to date, the Applicant and Natural England have dedicated their resources to reaching resolution on the features of the FFC pSPA which are considered to be those of key concern. The Applicant explained that both parties have identified the issues that need to be resolved and are committed to providing a road map to reach similar resolution on EIA species; this road map is included at Appendix Y of the Applicant's response to Deadline III.
- 2.58 The RSPB noted that it is concerned with the use of PBR within the EIA assessment and would prefer PVA to be used. The Applicant noted that it has not produced PVA for those populations and would in any case have concerns about producing models at this stage for the meta-populations that are the focus of these assessments. The Applicant has agreed with Natural England that PBR will be used for this purpose.

Offshore ornithological impacts of alternative turbine MW sizes

- 2.59 The Ex. A queried whether the Applicant has given any thought to refining the Project's Rochdale Envelope, referring by way of example to a reduction to the turbine size parameters within Hornsea Project One.
- 2.60 The Applicant noted that lessons had been learned from Hornsea Project One and that the Project's Rochdale Envelope did not include the smaller turbine size that was removed from Hornsea Project's One Envelope within that project's examination. The Applicant noted that it considers the Project's Rochdale Envelope to be realistic at this stage of the Project's design. The Applicant further notes that its' HRA and EIA predict no adverse effect on the integrity of any European sites and in EIA terms no significant effect and, by consequence, the Applicant considers the Project to be consentable in its current form.
- 2.61 Neither Natural England nor the RSPB had any additional comment to make on this matter.

Mitigation Measures, monitoring for the full life cycle of the project, and the adequacy of DCO requirements and DML conditions

- 2.62 The Applicant confirmed that it does not consider there to be any adverse effects on site integrity or likely significant effects as a result of the Project. Therefore no mitigation measures have been deemed necessary. The Applicant also notes that the agreements reached to date with Natural England have not relied on any mitigation measures.
- 2.63 The Ex. A asked that, if an edge-weighted layout is considered to be the worst-case scenario for development layouts, would it be the case that not using such a layout might reduce the impact of displacement. The Applicant noted that the tools used for assessing displacement impacts did not provide sufficient resolution to quantify the differences in the magnitude of displacement impacts arising from different layout scenarios (as the tools assume uniform displacement across the wind farm and 2km buffer). Rather, the edge-weighted layout was selected as the worst case on qualitative grounds, on the basis that a higher density of turbines at the periphery of the wind farm would be expected to result in greater avoidance of those areas than would be the case if the layout was unweighted (although such an effect is expected to be relatively slight and, due to the methods used, unmeasurable). It should be noted though that the spacing of turbines, even within the areas of higher turbine density at the periphery, would be similar to that of the wind farms from which evidence for displacement effects has been obtained and so the displacement levels applied are considered appropriate.
- 2.64 The Ex. A queried the provision of monitoring within the draft DCO and the Applicant noted that it is committed to providing an Ornithological Monitoring Plan (OMP) within Condition 10(2)(k) of Schedules H and J of the draft DCO. The Applicant explained it was necessary and appropriate to retain a degree of flexibility as to the detail of this plan so as to allow it to be targeted according to the final project design, final consent and industry knowledge/knowledge gaps at the time of approval (prior to construction). The Applicant

notes that the RSPB agreed with the principle of retaining flexibility within such a monitoring plan at this stage of the process.

- 2.65 The Applicant argued that any post-construction monitoring would need only continue for sufficient duration to detect the operational effects of the wind farm, including any habituation to the presence of the wind farm. On this basis, the Applicant considers it unnecessary to continue monitoring the wind farm throughout its operational life, nor is it necessary to monitor in every year. For example, it was suggested that monitoring on a non-consecutive basis i.e., Years 1, 3 & 5 and Years 1, 5 & 10 etc. following completion of construction would be sufficient to understand post-construction effects.

Residual Trans-boundary Ornithological Issues

- 2.66 The Applicant and other Parties confirmed that there are no residual trans-boundary issues in relation to the Project in terms of offshore ornithology.

3.	Ecology Onshore and Inter-tidal
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Requirements of the Water Framework Directive

- 3.1 The Ex. A queried whether there were any outstanding issues between the Applicant and the Environment Agency regarding the Water Framework Directive. The Applicant notes that the Environment Agency confirmed that the Applicant had provided all the additional information and clarification required and that this matter is now resolved. The Applicant would refer the Ex. A to the SoCG between the Applicant and the Environment Agency for confirmation of the same (see Appendix NN of the Applicant's response to Deadline I).

Updates on positions of interested parties on currency of data (onshore and inter-tidal)

- 3.2 The Ex. A queried whether the Environment Agency had any outstanding issues in relation to the coastal/intertidal area. The Environment Agency confirmed that they did not as the Applicant had provided all the required information/clarification and had further confirmed the Environment Agency as a consultee to the pre-approval process for the Ecological Management Plan pursuant to Requirement 7 of the draft DCO.
- 3.3 The Ex. A further queried whether the intertidal will require any cable burial protection. The Applicant confirmed in response that the intertidal cable will be buried and there will be no cable protection in this area.
- 3.4 The Applicant would also highlight that the sufficiency of the intertidal baseline data has been agreed with Natural England, as part of discussions with regards to the Habitats Regulations Assessment Evidence Plan (Doc ref No 12.6.1). This was further confirmed by Natural England in the Examining Authority's first round of written questions, specifically EL4. The Applicant would refer the Ex. A to the SoCG between the Applicant and Natural England for confirmation relating to the agreement that the baseline environment is appropriate and based on the best available data at the time of writing/submission of the Application for Development Consent, including site-specific survey data (see Appendix XX of the Applicant's response to Deadline I).

Extent of agreement between NE and the Applicant on any adverse integrity effects for relevant (a) ornithological species and (b) habitats for the Humber Estuary SPA, Ramsar and SAC sites, for the project alone, and in combination with other projects

- 3.5 The Applicant confirmed that there are a number of issues relating to the intertidal Annex I habitats included within the HRA Report which currently remain under discussion with Natural

England, specifically with regard to construction and operational and maintenance access across Annex I sand dune habitat. The Applicant noted that in response to Natural England's comments, it had recently revisited the Project landfall site to get a better understanding of their concerns. The Applicant confirmed that, once the findings from this site visit have been digested, the Applicant will provide further clarification to Natural England on the issue of access. The Applicant would highlight that it is our understanding that this matter can be readily resolved through this clarification and also through the Project committing to an Intertidal Access Management Plan within the draft DCO. This clarification information, updated draft DCO wording and confirmation of agreement on this matter with Natural England will be submitted in the Applicant's response to Deadline IV.

- 3.6 The Ex. A then sought to query the implication of the Greater Wash pSPA on the Project's assessment. The Applicant noted that very initial discussions had been held with Natural England and that further discussion would be had about the implications of the proposed classification of the Greater Wash as an SPA for the Project. Natural England confirmed, in any case, that, at this stage, it was likely only red-throated diver that was of potential relevance to the Project. With respect to this feature it was only the potential disturbance of rafting birds by vessels that was of concern and that there are, in any case, well established protocols for fully mitigating any impact. The Applicant suggested, in the first instance, that a screening exercise, based on the information available in the current consultation documents was undertaken and that this "shadow screening" exercise was included in the RIES report to assist the ExA to understand the potential implications for the Project. For clarity the Applicant notes that NE confirmed that they were not seeking any amendments to the draft DCO in light of the Greater Wash pSPA.

Approaches to minimising cumulative onshore and inter-tidal ecological impacts of the Project and Hornsea Project One

- 3.7 The Ex. A queried the nature of the rights sought against plot 33 on the Land Plans. The Applicant confirmed that the DCO sought the power to seek permanent rights over this plot for the purposes of access to the intertidal area (detailed in Schedule E to the draft DCO). The Applicant clarified that no permanent roadway was intended for this area and it was purely sought for construction use and temporary inspection purposes during the operation and maintenance phase of the Project, noting that any material put down for temporary track use would be removed following completion of that activity. The Applicant confirmed that this plot and the intended activities on it formed part of the discussions on the intertidal access management plan.

Nature of impacts of the project on other designated sites (including SSSIs, NNRs and LNRs)

- 3.8 The Ex. A sought confirmation from Natural England that all the relevant sites had been included in the Project's assessment.
- 3.9 Natural England confirmed they were satisfied that all the necessary sites had been included from their perspective, but deferred to the local planning authorities (LPAs) in relation to the local nature reserves.
- 3.10 The Applicant confirmed that no issues had been raised by the LPAs in relation to any local nature reserves.
- 3.11 In addition, through the SoCG between SMart Wind Ltd. and Natural England (Appendix XX of the Applicant's response to Deadline I) in relation to non-offshore ornithology matters, it has been agreed that:
- The approach adopted in Volume 3, Chapter 3: Ecology and Nature Conservation of the ES (Doc ref No. 7.3.3) is appropriate to assess the magnitude and range of impacts from the Project on VERs of ecology and nature conservation interest (paragraph 8.2.16);

- The matrix approach to the assessment that has been adopted in Table 3.15 of Volume 3, Chapter 3 of the ES ensures that all subjective determinations of impact significance are transparent and suitable (paragraph 8.2.17); and
 - The impact assessment in Volume 3, Chapter 3 of the ES covers all the relevant onshore ecological issues (paragraph 8.2.18).
- 3.12 No matters relating to the assessment of the impact on designated sites remain under discussion, or not agreed between the Applicant and Natural England.
- 3.13 In the Applicant's SoCG with The Wildlife Trusts (Appendix OO of the Applicant's response to Deadline I) it is agreed that the onshore ecology and nature conservation, benthic subtidal and intertidal ecology and marine mammal baselines have been characterised and described in the Environmental Statement using the best available data and advice at the time the assessment was carried out (as described in Section 3.5 of Volume 3, Chapter 3 of the ES, Section 2.5 of Volume 2, Chapter 2: Benthic Subtidal and Intertidal Ecology of the ES (Doc ref No 7.2.2) and Section 4.5 of Volume 2, Chapter 4: Marine Mammals of the ES (Doc ref No 7.2.4) respectively) (see paragraph 3.2.4 of Appendix OO). It is also agreed that Lincolnshire Wildlife Trust has no comments to make on survey methodologies or the approach adopted in Volume 3, Chapter 3 of the ES to assess the magnitude and range of impacts from the proposed project on Valued Ecological Receptors of ecology and nature conservation interest (paragraph 4.2.9 of Appendix OO).
- 3.14 No matters relating to the assessment of the impact on designated sites remain under discussion, or not agreed between the Applicant and The Wildlife Trusts.

Hedgerow impacts: cable installation options

- 3.15 The Ex. A queried what issues would determine whether the Applicant would consider trenchless installation.
- 3.16 The Applicant noted that it would predominantly be a decision for the contractor at the time of installation. The Applicant clarified that it would not always be a commercial or environmental decision and can often depend on land and/or engineering requirements. The Applicant confirmed that it would consider trenchless installation, but is not something that could be committed to at this stage of the Project's design. The Applicant confirmed that to mitigate against this uncertainty, the Project had assessed the worst case scenario – the removal of all hedgerows within the cable corridor.
- 3.17 The Ex. A further queried whether community considerations would be taken into account as part of this decision; citing for instance noise considerations associated with trenchless techniques. The Applicant confirmed this is a further example of points that will be considered at the appropriate time. The Applicant confirmed that uniform trenchless technique for the onshore cable installation is not common practice, but is technically feasible were it considered appropriate by the contractor at the time.
- 3.18 The Applicant notes that it is agreed with all the LPAs in the respective SoCGs with the Applicant that the landscape issues along the route have been fully assessed in Volume 3, Chapter 5: Landscape and Visual Resources of the ES (Doc ref No 7.3.5) and that the, mitigation details can be found in the Outline Landscape Scheme and Management Plan (Outline LSMP) (Doc ref No 12.9).
- 3.19 In addition, it is agreed with North Lincolnshire Council (NLC) that the mitigation measures proposed within the Outline LSMP minimise the impacts in relation to Landscape and Visual Resources assessed within Volume 3, Chapter 5 of the ES and are adequate and appropriate. It is also agreed with NLC that Requirement 9, Landscaping, of the draft DCO provides NLC adequate control over the approval of the detailed landscaping scheme.
- 3.20 In addition it is agreed with North East Lincolnshire Council (NELC) that the mitigation which can be found in the Outline LSMP, as secured by Requirement 9 of the draft DCO, is appropriate and that Requirement 10 of the draft DCO provides control over the implementation and maintenance of that scheme.

- 3.21 There are no landscape and visual matters not agreed or under discussion with NLC, NELC or East Lindsey District Council (ELDC).
- 3.22 Within the NLC Local Impact Report (LIR), NLC recognises that the construction phases of the Project will result in impacts on some receptors, but that mitigation, in landscape terms, will not be achievable given the short timescales. NLC also recognise that once the Project is operational/the cable has been installed, there will be limited impacts on visual receptors and there will be no visible signs of the cable other than marker posts.
- 3.23 NELC and ELDC raise no specific points in respect of hedgerows or mitigation in their LIRs.

Monitoring, and long term management of habitats and protected species, in both the EMP and the CoCP

- 3.24 The Applicant would refer the Ex. A to the organogram of the various plans secured within the draft DCO provided at Appendix X of the Applicant's response to Deadline III.

4.	Ecology Offshore – Marine Mammals
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Possible designation of a Special Area of Conservation (SAC) for harbour porpoise

- 4.1 The Ex. A requested an update from Natural England regarding the current status of the potential SAC for harbour porpoise.
- 4.2 The Applicant notes that Natural England confirmed that JNCC and the statutory nature conservation bodies submitted their formal advice in June 2015. Natural England informed that this advice is currently being considered by the administrations before formal consultation will start, at which point the pSAC would become a material consideration. Natural England anticipate a consultation start date of autumn 2015 at the earliest.
- 4.3 The Applicant confirmed that in the respective SoCGs with Natural England (all other matters) (Appendix XX of the Applicant's response to Deadline I), TWT/LWT (Appendix OO of the Applicant's response to Deadline I) and WDC (Appendix P of the Applicant's response to Deadline II), there is agreement that the Applicant is committed to maintaining a watching brief on the status of the harbour porpoise pSACs.
- 4.4 The Ex. A queried whether the Applicant could undertake a shadow assessment for the pSAC based on the present information within the Project's Application.
- 4.5 The Applicant confirmed that it considers that the information presented in the Project's assessment is sufficient to inform an Appropriate Assessment. The Applicant will keep the Ex.A informed on this topic such that should the dSAC consultation material be released prior to the close of the Examination, then a suitable deadline can be identified for submission of relevant HRA information and supporting updates to the RIES matrices.

Adequacy of baseline population information for marine mammals

- 4.6 The Ex. A queried whether the marine mammal study area and survey methodologies were adequate and whether the baseline population estimates from the SCANS data were appropriate. The Ex. A also referenced areas of ongoing discussion with The Wildlife Trusts (TWT), with respect to the consequences of disturbance impacts to marine mammals from underwater noise.
- 4.7 The Applicant confirmed that baseline marine mammal data were collected during three years of monthly boat-based visual and acoustic surveys, over a study area agreed in advance with Natural England and using best practice methods, also agreed with Natural England. The extent of the study area for marine mammal surveys and appropriateness of baseline data collected was agreed in the SoCG with Natural England (all other matters) (Appendix XX of the Applicant's response to Deadline I). The Applicant noted Natural England's agreement on

this point and that Natural England have confirmed, in their response to the Ex. A's questions EOMM2 and EOMM4 at Deadline I, that it was not necessary to undertake standalone marine mammal surveys and the result of further standalone surveys would be unlikely to result in a change in their advice. Regarding the extent of the buffer zone surveyed, the Applicant highlights that a conservative approach to estimating densities of marine mammals, where data gaps existed, were discussed and agreed in advance with the statutory advisors.

- 4.8 The Applicant highlighted that three ESAS accredited surveyors were present on the vessel for the majority of the surveys (with the exception of a small number of days (<10) in each year). The Applicant clarified that distance analysis deals with animals missed during visual surveys, and that, where possible, a correction factor was calculated for animals not available to be counted so that absolute (rather than relative) abundance could be estimated.
- 4.9 The Applicant noted that layers of precaution had been built into the assessment to account for the uncertainty in the consequences of disturbance impacts to marine mammals. The Applicant's response to EOMM6 at Deadline I highlights these layers of precaution, which were adopted at each stage of the assessment, from conservative assumptions built into the noise modelling (paragraph 4.6.37), through to quantification of the numbers of marine mammals likely to be affected (paragraph 4.6.73) (Volume 2, Chapter 4 of the ES (Doc ref No 7.2.4).
- 4.10 The Applicant also confirmed that the estimated population size of the harbour porpoise management unit was based on SCANS data, and that this was the current best available population estimate as recommended by the SNCBs (IAMMWG, 2013).
- 4.11 The Ex. A queried where mitigation measures for corkscrew injuries are secured in the DCO.
- 4.12 The Applicant noted Natural England's response regarding the recent published scientific evidence which suggests that grey seal are largely responsible for corkscrew injury to seals (Thompson *et al.*, 2015). Subsequently, an update to the published guidance was produced in February 2015 (Interim Advice on Risk of Seal Corkscrew Injuries) which suggested that no additional mitigation or monitoring measures would be necessary over and above normal shipping activities, although all possible care should be taken near to seal breeding and haul-out sites. The Applicant confirmed that they will consult with SNCBs regarding best practice measures for vessel operators to minimise the risk of corkscrew injury near to seal breeding and haul out sites. Codes of conduct for vessel operators will be outlined in the Code of Construction Practice (CoCP), which will incorporate the Construction and Monitoring Programme (CMP) required to be submitted to the MMO for approval in consultation with Natural England, pursuant to Schedules H, I, J and K, Part 2, Condition 10(2)(a) of the draft DCO.

Effects of displacement/underwater noise

- 4.13 The Ex. A referenced the Whale and Dolphin Conservation's (WDC) written response to Deadline II and, specifically, queries relating to the use of the Southall *et al.* (2007) noise criteria thresholds in the marine mammal assessment.
- 4.14 The Applicant noted that TWT has no concerns with using Southall *et al.* (2007) as the noise criterial in the assessment and that the issue has only been raised by WDC. The Applicant highlighted that Southall *et al.* (2007) 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. Due to the limitations of using the Southall *et al.* (2007) criteria regarding the application of low frequency multi-pulse sounds to harbour porpoise, a high frequency cetacean, 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.
- 4.15 The Ex. A requested that the Southall *et al.* (2007) paper be submitted at Deadline III (see Appendix O of the Applicant's response to Deadline III). The Applicant has also submitted the

Lucke *et al.* (2009) paper at Appendix P to its submission to Deadline III for sake of completeness.

- 4.16 The Ex. A requested clarification regarding the Applicant's position on long-term marine mammal monitoring.
- 4.17 The Applicant confirmed that a marine mammal monitoring plan, setting out the circumstances in which marine mammal monitoring will be required and the monitoring to be carried out in such circumstances, is secured in Schedules H and J, Part 2, Conditions 10(2)(h), 15(2)(d) and 17(2)(e) of the draft DCO. The Applicant highlighted, that the most appropriate mechanism for delivering a monitoring programme to understand the consequence of behavioural effects of pile-driving is through the strategic DEPONS programme (of which the Applicant is an active participant), much in the way that ORJIP is doing for bird avoidance rates. The Applicant noted that the need for any site-specific monitoring would be linked to the ability of DEPONS to produce outputs as currently scheduled, and agreed in consultation with Natural England. The Applicant confirmed that this has been agreed in the SoCG with Natural England (Appendix XX of the Applicant's response to Deadline I).
- 4.18 The Ex. A requested an update on the current status of the DEPONS and PCOD models.
- 4.19 The Applicant noted that the DEPONS model is currently being updated and it is their understanding that the next report is due to be published in early 2016. The Applicant confirmed that, as such, they are not aware of any additional information that could be used to update the Project's assessment at this point in time. If DEPONS continues to produce outputs on schedule, the Applicant anticipates that in the future there will be more information for the marine mammal monitoring plan to draw on. The Applicant noted Natural England's comment that the next PCOD update is anticipated to be January/February 2016.

Cumulative Impact; NE concern about impacts from vessel disturbance

- 4.20 The Ex. A referenced the points raised by Natural England in their Relevant Representation with regards to potential tipping points from vessel disturbance and the need for a strategic approach to understanding this issue from a cumulative perspective. The Ex. A queried how this would be achieved.
- 4.21 Both Natural England and the Applicant noted that this issue is not specific to the renewables industry but is part of wider concern regarding the effects of vessel disturbance on marine mammals. On request by Natural England, the Applicant confirmed that it undertook a review of a recent study on bottlenose dolphins in the inner Moray Firth by Pirodda *et al.*, (2015) which looked at possible effects of vessel disturbance on this species. The review of this study was presented in Appendix 4 of the SoCG with Natural England (all other matters) (Appendix XX of the Applicant's response to Deadline I). In summary, the study showed that whilst boats may affect foraging behaviour (as recorded by buzzes associated with foraging), bottlenose dolphin quickly resumed feeding once the boats had moved away. This suggests that the potential impact of vessel disturbance will occur as a series of short term, intermittent events that are reversible. The Applicant notes Natural England's position that the Applicant need not do any further assessment of vessel disturbance.
- 4.22 The Applicant was asked by the Ex.A whether it was part of any strategic groups that could put some thought to this issue. The Applicant can confirm that it is part of the Southern North Sea Offshore Wind Farm (SNSOWF) Group which includes other regional offshore wind farm developers. In addition, DONG Energy/the Applicant is also actively involved in a number of other industry wide incentives in this area, including ORJIP, DEPONS, DECC's coping strategy and the Offshore Wind Accelerator run by the Carbon Trust. This topic has not been discussed in detail to date as it has not been considered to be a significant issue. Furthermore, it is noted that vessel activity in the region is not restricted solely to offshore wind farm developments and therefore, to focus any study on such activity would not be representative. It is suggested that should this point become a key concern in the future that a strategic body (such as the JNCC or potentially the MMO) look into coordinating dialogue on the matter (to which the Applicant would be willing to contribute, where appropriate).

- 4.23 The Applicant highlighted that Codes of Conduct will be developed for vessel operators to ensure that vessels do not approach marine mammals and these will be outlined in the CoCP (Schedules H, I, J and K, Part 2, Condition 10(2) of the draft DCO). In addition, vessels will follow the main shipping routes to/from the Hornsea Zone.
- 4.24 The Ex. A requested a copy of the Pirodda *et al.*, (2015) be submitted into the examination and this is included at Appendix Q of the Applicant's response to Deadline III.
- 4.25 The Ex. A requested clarification from the Applicant regarding the screening of Scottish projects out of the marine mammal Cumulative Impact Assessment (CIA).
- 4.26 The Applicant confirmed that in the SoCGs with WDC and TWT/LWT, the list of projects screened into the CIA is included in matters subject to ongoing discussion. The Applicant stated that the CIA regional study area was defined in order to focus the assessment on those projects that were most likely to result in a significant effect, regardless of the delineation of the reference population. The Applicant highlighted that in the SoCG with Natural England (all other matters) (Appendix XX of the Applicant's response to Deadline I), it was agreed that the projects screened into the CIA are appropriate and reasonable and therefore from this perspective the approach is deemed to be robust. The Applicant confirmed that it has provided further context to Natural England in terms of the maximum areas of effect for each project in the CIA in relation to the total area of the Regional study area.
- 4.27 The Applicant notes Natural England's overall agreement that it would not be practical to assess every project in European waters and that Hornsea Regional study area was appropriate as the basis of the CIA.

Entanglement with anchored profiles

- 4.28 The Ex. A referenced Natural England's concern regarding entanglement with anchored monopiles and queried where taut steel moorings are secured within the DCO.
- 4.29 The Applicant highlighted that following Natural England's Relevant Representation, a review of potential effects from entanglement was undertaken and it was agreed that taut steel moorings would represent a low risk of entanglement to marine mammals (SoCG with Natural England in Appendix XX of the Applicant's response to Deadline I). The Applicant would confirm that details of the anchor wires to be used will be included in the Construction Method Statement required under Condition 10(2)(b) of the DMLs. This plan requires to be submitted to the MMO for approval in consultation with the relevant SNCBs prior to commencement of the works. The Applicant considers there are, therefore, sufficient controls in place to ensure appropriate moorings are used (where necessary) without the need for stating this on the face of the DMLs.

Mitigation/Monitoring

- 4.30 The Ex. A raised the issue of the In Principle Monitoring Plan (IPMP) and including this on the face of the DCO. The Applicant confirmed that it would respond to the Ex. A on the IPMP at Deadline IV, but would confirm in the interim that it is minded to provide for such a requirement in the next version of the draft DCO. The Applicant will continue discussions with the MMO and Natural England in the interim to agree appropriate wording.
- 4.31 The Ex. A queried what noise reduction techniques the Applicant considers may be appropriate for the Project and, noting the amendment to the DCO to include a requirement to consider, where appropriate, the use of noise reduction at source technologies, the Ex. A questioned whether this wording is sufficiently tight and meaningful.
- 4.32 The Applicant confirmed that the MMMP deals with the potential for injurious effects and their position is that mitigation is not necessary for behavioural effects since even under the worst case scenarios assessed, and using the precautionary approach to the impact assessment, no long-term population-level effects on marine mammals are predicted (as agreed in the SoCG with Natural England in Appendix XX of the Applicant's response to Deadline I). With respect to the harbour porpoise pSAC, the Applicant has confirmed that it is committed to

maintaining a watching brief on the status of the pSAC but maintains the position that it would be inappropriate to make conclusions at this stage on the basis that conservation objectives and management measures have not been published.

- 4.33 The Applicant outlined that an MMMP (pursuant to Schedules H, I, J and K, Part 2, Condition 10(2)(e) of the draft DCO) will be developed in consultation with Natural England to ensure that the risk of injury from subsea noise during pile-driving is mitigated. The MMMP will be developed following best practice guidelines, as advised by the statutory nature conservation body. The MMMP will be submitted for approval to the MMO at least four months prior to the intended start of construction. The MMMP will include built-in mitigation measures, including a soft-start prior to ramp up to full power. Soft-start is designed to mitigate for the risk of injury by reducing the zone within which injurious effects could occur. Soft-start is just one measure that may be adopted within the MMMP to reduce the risk of injurious effects. Other measures may include the use of Marine Mammal Observers and Passive Acoustic Monitoring out to an agreed mitigation zone, or the use of Acoustic Deterrent Devices (ADDs), particularly during periods of low visibility or darkness. The Applicant noted that, as part of Offshore Renewables Joint Industry Programme (ORJIP) the efficacy of ADDs are being investigated as a mitigation measure (ORJIP, 2013) and DONG Energy has a degree of involvement in these studies and reviews.
- 4.34 The Applicant confirmed that noise reduction measures at source will be considered, where appropriate, as part of the overall suite of measures to mitigate for injurious effects to marine mammals. The Applicant emphasised that although engineering solutions are currently in existence they may not necessarily be applicable to the specific conditions in the Hornsea site, and have a varied and often poor history of success, noting that the wording of the condition in the DML allows for flexibility to consider, where appropriate, the best available techniques at the time of construction. The Applicant further clarified that any such measures, if appropriate, can only be determined following further geotechnical work to refine the construction techniques and understand the proposed wind turbine location and associated foundation site-specific design.
- 4.35 The Applicant highlighted that in the SoCG with Natural England (all other matters) (Appendix XX of the Applicant's response to Deadline I), Natural England are in agreement that the mitigation in relation to injurious effects, as detailed by the MMMP, is appropriate. The Applicant highlighted that the MMMP deals only with the mitigation protocol, and whilst this *may* involve sightings or recordings of marine mammals (e.g., within a mitigation zone), it does not constitute construction monitoring per se. A marine mammal monitoring plan, setting out the circumstances in which marine mammal monitoring will be required and the monitoring to be carried out in such circumstances, is secured in Schedules H and J, Part 2, Condition 10(2)(h) of the draft DCO.

Control of hammer energy/piling

- 4.36 The Ex. A questioned whether it is acceptable to not include a maximum limit on the hammer energy within the draft DMLs as sought by Natural England in their Relevant Representation.
- 4.37 The Applicant responded that it was not standard practice to include this level of detail within the DMLs and that there is provision for limiting the maximum hammer energy through the Construction Method Statement (pursuant to Schedules H, I, J and K, Part 2, Condition 10(2)(b) of the draft DCO) and the MMMP (pursuant to Schedules H, I, J and K, Part 2, Condition 10(2)(e) of the draft DCO). It is agreed in the SoCG with Natural England (all other matters) (Appendix XX of the Applicant's response to Deadline I) that the maximum hammer energy that will be used during the installation of piled foundations will be specified in the Construction Method Statement (CMS) and MMMP, both of which require to be submitted to the MMO for approval in consultation with Natural England prior to the construction of the Project. It is also agreed in the SoCG with Natural England (Appendix XX of the Applicant's response to Deadline I) that there is no need to state the maximum hammer energy on the face of the DMLs. The Applicant notes that it is also agreed in the SoCG with the MMO (Appendix WW of the Applicant's response to Deadline I) that Schedules H, I, J and K, Part 2,

Conditions 10(2)(b) and 10(2)(e) of the draft DCO provide appropriate controls for restricting maximum hammer energy.

- 4.38 The Applicant confirmed that there are certain input parameters that feed into the impact assessment such that hammer energy in itself is not the relevant factor; it is the noise and vibration that is generated (and the quantification of the extent of these effects). Therefore, when the undertaker submits its pre-commencement plans it will be required to confirm that all final designs are within the bounds of the envelope previously assessed in the ES. Therefore, a change in hammer energy to that assessed in the ES would need to be documented with supporting evidence to justify why it does not change the ES predictions within the relevant pre-construction plan(s). The MMO would then consult on this material with relevant stakeholders as part of their approval process. This mechanism ensures there are sufficient controls in place and therefore the existing well established process does not need to be altered in this case. This approach is in line with standard industry practice.

Submission of data to the Defra Marine Noise Registry

- 4.39 The Ex. A requested an update on the current status of discussions relating to the submission of data to the Defra marine noise registry (MNR).
- 4.40 The Applicant confirmed that they are in discussion with the MMO and it is the Applicant's understanding that the MNR is likely to "go live" later this year. In the meantime, the Applicant can confirm that it has agreed a draft condition with the MMO to be included in the next version of the draft DCO at Deadline IV.

Need for a European Protected Species Licence

- 4.41 The Ex. A requested clarification on whether the MMO is satisfied that an EPS licence will be granted.
- 4.42 The Applicant acknowledged that a licence under regulation 49 of the Offshore Marine Conservation (Natural Habitats. &c) Regulations 2007 (power to grant licences) will be required for EPS. Key species for which a licence will be required are harbour porpoise, minke whale and white-beaked dolphin. The Consents Management Plan (Doc ref No 12.10) states that this licence will be progressed outside of the DCO due to the timescales over which the licence is valid.
- 4.43 The Applicant noted that a draft application was submitted as part of the Project's Application (Draft European Protected Species Licence: Method Statement and Supporting Information (Offshore) (Doc ref No 12.2)). The Applicant confirmed that a letter of comfort has been received from the MMO stating that based on information provided to date, it is reasonable to expect that an EPS licence would be granted by the MMO. A copy of this letter was appended to the Draft European Protected Species Licence: Method Statement and Supporting Information (Offshore). Information provided to support the EPS licence application will be in accordance with the latest statutory guidelines (e.g., JNCC, 2010).

Effect on the Humber Estuary SAC grey seal population

- 4.44 The Ex. A queried whether there is agreement relating to the effects on the Humber Estuary SAC grey seal population.
- 4.45 The Applicant confirmed that whilst no specific mitigation or monitoring is required (as per the most recent advice from the SNCBs; February 2015), it is committed to consulting with statutory advisors regarding best practice measures to minimise the risk of corkscrew injury to grey seal near to seal breeding sites and haul-outs. These procedures will be incorporated into the CMP, which will be incorporated into the CoCP, required to be submitted to the MMO for approval in consultation with Natural England under Schedules H, I, J and K, Part 2, Condition 10(2)(a) of the draft DCO.

- 4.46 The Applicant advised that the CoCP will set out specific measures for vessel operators, including advice to ensure vessels do not deliberately approach marine mammals and avoidance of abrupt changes of course or speed in accordance with the latest guidelines (JNCC, 2012).
- 4.47 The Applicant notes Natural England comments in their response at Deadline I stating that the intertidal works will be limited to April to September (as secured in Conditions 20(3) and 20(4) of the DML) and as such will avoid the main pupping season for grey seal breeding in the Humber Estuary SAC. In addition, the area used by the breeding grey population of the Humber Estuary SAC is located within an area of heavy marine traffic and an active bombing range; therefore some acclimation to vessel presence and loud noises should be expected.

Any other matters

- 4.48 The Ex. A requested clarification on the Applicant's position in relation to concerns raised by TWT that deferring the drafting of the MMMP to prior to construction takes it outside of this consenting process.
- 4.49 The Applicant stated that it is necessary for certain elements of the Project's design to be deferred to be undertaken pre-construction (post consent). The Applicant confirmed that they have adopted a consistent approach across the DCO, with consultation focussed on the relevant statutory stakeholders to ensure the necessary level of control of each plan in the most efficient manner. This is essential to maintaining the Project's construction timetable. The Applicant highlighted that the MMO may choose to consult other parties on such matters, where they consider that such consultation would aid them in considering applications to approve plans under conditions.

5.	Ecology Offshore – Marine Processes
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- 5.1 The Ex. A noted that the majority of matters concerning Marine Processes had been addressed in the first day of the Issue Specific Hearing and the Applicant would refer to paragraphs 4.7 to 4.15 of Appendix I of the Applicant's response to Deadline I for a summary of the Applicant's case in this regard.
- 5.2 For sake of completeness, the Ex. A sought to confirm in addition that the Environment Agency did not have any remaining concerns in relation to this subject. The Environment Agency confirmed the Applicant had provided all the necessary clarification and that all issues are resolved to its satisfaction.
- 5.3 Similarly, the MMO confirmed that they were now satisfied and all matters were agreed in relation to the Applicant's evidence concerning the high recoverability of the beachline.