

Hornsea Project Three
Offshore Wind Farm



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Appendix 12 to Deadline 7 submission -
Position Statement on Ornithology Mitigation Options

Date: 14th March 2019

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Offshore Wind Farm

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| Document Control | | | |
|----------------------------|---|--------|---|
| Document Properties | | | |
| Organisation | Ørsted Hornsea Project Three | | |
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| Title | Appendix 12 to Deadline 7 submission - Position Statement on Ornithology Mitigation Options | | |
| PINS Document Number | n/a | | |
| Version History | | | |
| Date | Version | Status | Description / Changes |
| 14/03/2019 | A | Final | Submitted at Deadline 7 (14 th Mar 2019) |
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Front cover picture: Kite surfer near a UK offshore wind farm © Ørsted Hornsea Project Three (UK) Ltd., 2019.

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1. Introduction

At Issue Specific Hearing 7 the Applicant presented potential mitigation option, in the form of increases to the minimum rotor tip height, that could serve to reduce (or mitigate) ornithology impacts (collision risk) to key species of concern. The Applicant noted during this presentation that any such constraint on the design envelope whilst clearly delivering ornithological impact benefit, would have the potential to impact on the project and therefore, it must not be considered without careful consideration by the Examining Authority and Secretary of State as to whether such mitigation is both necessary and proportionate. It was agreed that the Applicant would produce this note for Deadline 7 to provide the Examining Authority with information regarding potential project implications associated with this form of mitigation.

2. Potential Mitigation Options and Ornithological Benefits

Potential Mitigation Options

- 2.1 It should be noted that the existing minimum lower tip height as stated in the Project Description, and as assessed as part of the EIA is 33.17m MS (mean sea level). This in itself is considerably higher than the consented levels for a number of recently consented projects (such as East Anglia Three and East Anglia One) as well as many operational projects.
- 2.2 The Applicant's position is that mitigation for ornithological receptors is not necessary in either EIA or HRA terms as evidenced through the application and subsequent clarifications provided to date throughout the examination process. Notwithstanding this, given that there remain areas of disagreement between the Applicant and Natural England in relation to parameterisation used for the Collision Risk Model (CRM) which have implications for the potential level of collision risk associated with the project, the Applicant has investigated potential mitigation options on a without prejudice basis. The two project refinements that could be considered with a view to reducing collision risk for birds are as follows;
- Raising lower tip height to 37.5 metres MSL; and
 - Raising lower tip height to 40 metres MSL.
- 2.3 Whilst the Applicant does not consider any refinement to be necessary to reach a conclusion of no adverse effect on integrity (AEOI), the Applicant would accept an increase in lower tip height to 37.5m (MSL) if the Examining Authority (in making its recommendation) or the Secretary of State (in making its decision) consider it necessary and proportionate to apply this level of mitigation to reach a positive conclusion on HRA matters.

- 2.4 With regard to the option to raise lower tip height further to 40m (MSL), as explained at ISH 7, the Applicant's position is that the 40m option is far beyond what is necessary to address any potential adverse effects in this case. For this to be required, it would be necessary to reject any proposed refinement of the in-combination baseline and accept all of NE's parameters, which the Applicant considers to be extreme. However, the Applicant will not object should the Examining Authority (in making its recommendation) or the Secretary of State (in making its decision) consider it essential to apply this level of mitigation to reach a positive conclusion on HRA matters. However, the Applicant wishes to stress the importance of considering the wider implications of restricting the design to this extent in order to ensure that mitigation is proportionate and not excessive.

3. Consequence for other Design Parameters

- 3.1 The design envelope for wind turbine generators (WTGs) and their associated foundation are set out within Sections 3.6.3 to 3.6.5 of the Project Description (APP-058). Applicant can confirm that the application of either increase in minimum lower tip height will not affect any other defined parameter for the scheme (including maximum tip height and rotor diameter). The Applicant would therefore, be content to be bound by the existing design limits as defined within the current draft DCO.
- 3.2 If determined to be necessary, the mitigation could be captured within the DCO through a change to the existing defined lower tip height which would be changed from 33.17m (MSL) to 37.5m (MSL) or, if more extreme parameters advocated by NE are adopted, 40m (MSL).
- 3.3 The Applicant can confirm that neither option has any implications for the impact assessment for Ornithology save for the reduction in collision mortality. Regarding other receptors considered within the Environmental Statement (Volume 2, Chapters 1 to 11), the Applicant can confirm that no other impact identified within the Environmental Statement cites minimum lower tip height as a component of the maximum design scenario that informed the relevant impact assessments. Accordingly, for either of the refinements to the minimum lower tip height outlined above, the maximum design scenarios used for the original assessments still stand and therefore the conclusions of the Environmental Statement and RIAA are not altered.

4. Impact on the Project

- 4.1 The initial design envelope set out within the Project Description (APP-058) was based on established and foreseeable technology and installation methodologies plus operation and maintenance practices for the construction and operational dates identified.
- 4.2 In considering the necessity of these refinements the Examining Authority and the Secretary of State should have in mind and give due consideration to the impacts and economic cost they may present to the project, which in turn can affect the ability of the project to successfully compete in the highly competitive commercial landscape that exists for future Contracts for Difference (CfD) auction rounds in the UK. In addition to this impact on commercial edge, there also exists a considered reduction in optioneering and flexibility for the installation and maintenance requirements associated with the physical parameters of the turbine altering, which in this case largely relate to hub height.

Construction Period

- 4.3 To raise the hub height (resulting from the minimum lower tip height) two parameters are affected with regard to the wind turbine itself, these are:
- Adding additional steel into the wind turbine tower that sits above the sea level, allowing the wind turbine generator (WTG) hub to sit at a higher point; and
 - Adjusting the necessary design parameters for the foundation (for example monopile steel width and length, jacket load-bearing capacity, gravity base load-bearing capacity etc).
- 4.4 The additional turbine tower steel, and foundation steel/concrete (etc) is not a 'free asset' and, while the precise extent of additional cost will depend on various factors (e.g. price of steel at the time), in general terms it will add an additional capital expenditure to every single WTG position within the offshore array. This in turn will lead to a negative impact on the financial business case and competitive nature of the project when considering other offshore renewable energy generating projects.
- 4.5 Increasing the hub height also affects the installation process in terms of lifting the transition piece and the tower in place, and in turn the hub/nacelle onto the highest tower position (remembering this has been raised by the increased minimum lower tip height), and then hoisting/craning the individual WTG bales up to connect to the nacelle.
- 4.6 The common practice for larger offshore wind farm installation in the UK is to transport the hubs/nacelles out as central units on jack-up vessels to the WTG position and accompanying these with the typical 3 blades that would be attached individually once the hub/nacelle has been hoisted and fixed into place.
- 4.7 Increasing the minimum lower tip height, resulting from increased height in the WTG tower, will mean that there is a restriction in the availability of capable jack-up vessels currently available on the market that can reach these heights to allow such installation/construction works to commence. The applicability of an installation vessel for a site depends on the soil conditions and the bathymetry at the site, as well as the hub height. In the current market place the Applicant is aware of one vessel that could be modified to jack-up and crane effectively for installation works to hub heights of 40m (MSL) at the Hornsea Three site. Whilst more vessels may become available in the market in future years, the limited availability of such vessels could mean that charter costs are high (e.g. due to supply and demand factors), and it may take longer to procure such vessels.

Operations and Maintenance Period

- 4.8 With regard to the operational performance of the WTG, there is an optimal balance where the height of the WTG structure, supported by costs associated with steel, concrete etc, is balanced out against the wind resource and yield collected from this. Depending on the final choice of WTG type (e.g. capacity), any increase in hub height has the potential to have the WTG operating and generating sub-optimally, which would decrease revenue and create a reduced and less competitive business case.

- 4.9 Following the installation and commissioning of the WTGs, when any maintenance is required that results in either the removal, adjustment or major works on the hub/nacelle or blades, then in a similar fashion to installation, a jack-up vessel would be required to ensure a sufficient height can be reached by the elevated vessel itself and then the operational crane/s that will be used to undertake the tasks.
- 4.10 In a similar trend to that described under the construction phase, any increase in the minimum lower tip height, resulting from increased height in the WTG tower, will mean that there is a corresponding reduction in the availability of capable jack-up vessels that can reach these heights to undertake maintenance activity. It may be possible to modify and update some existing vessels to enable jack-up and crane operations effectively for maintenance works to hub heights for these wind turbines with larger rotor diameters required by the proposed changes to the lower blade tip height. However, there is a high level of uncertainty regarding the cost and duration that these modifications might take. If the supply of suitable vessels is restricted, the cost and time of procuring them will increase.

Effects on project generally

- 4.11 As designs are finalised for the wind farm, and key elements such as WTG suitability, availability (supply chain considerations), and installation and operation optimisation are considered, then this will need to be accounted for as the project will need to establish a robust business case.
- 4.12 Additional CAPEX and OPEX costs will have direct impacts on the Hornsea Three project, and therefore as these costs increase, the competitive financial nature of the project is reduced, which is not only contrary to the UK Government's aim to drive down costs to reduce the levelized cost of energy (LCoE), a key component in the UK government's support for future CfD auction round, but would also adversely affect the viability and competitiveness of the project.

5. Summary

- 5.1 In summary, it is the Applicant's position that further mitigation to reduce ornithological effects is not required in EIA or HRA terms. Notwithstanding this, the Applicant has presented information to demonstrate both the positive ecological consequence, and potentially negative project consequence of applying two mitigation options that would serve to reduce collision effects on ornithological receptors.
- 5.2 These options are presented on a without prejudice basis and are designed to demonstrate that, in the event that the Applicant's position is not accepted, effective mitigation exists which can be applied in order to conclude no AEOL and to enable the ExA and Secretary of State to reach a positive conclusion on HRA matters, if having taken a balanced view on the arguments put forward by the Applicant and Natural England on ornithological matters, they consider additional mitigation is required to reduce collision impacts to acceptable levels.

- 5.3 While there may be benefits (in the form of a reduction in the predicted level of collision risk) necessary to consider the extent to which there is credible evidence of a real risk of impacts at levels that necessitate mitigation, and to consider the level of mitigation that is proportionate relative to that risk. As can be seen in Appendix 13 to the Applicant's submission to Deadline 7, increasing the lower tip height to more than 37.5m further reduces impacts, however, there is a diminishing return, because the majority of seabirds are distributed at lower flight heights. So, whilst impacts could be further mitigated by increasing the lower tip height (beyond 37.5m), it is considered that the additional benefit of doing so is relatively low.