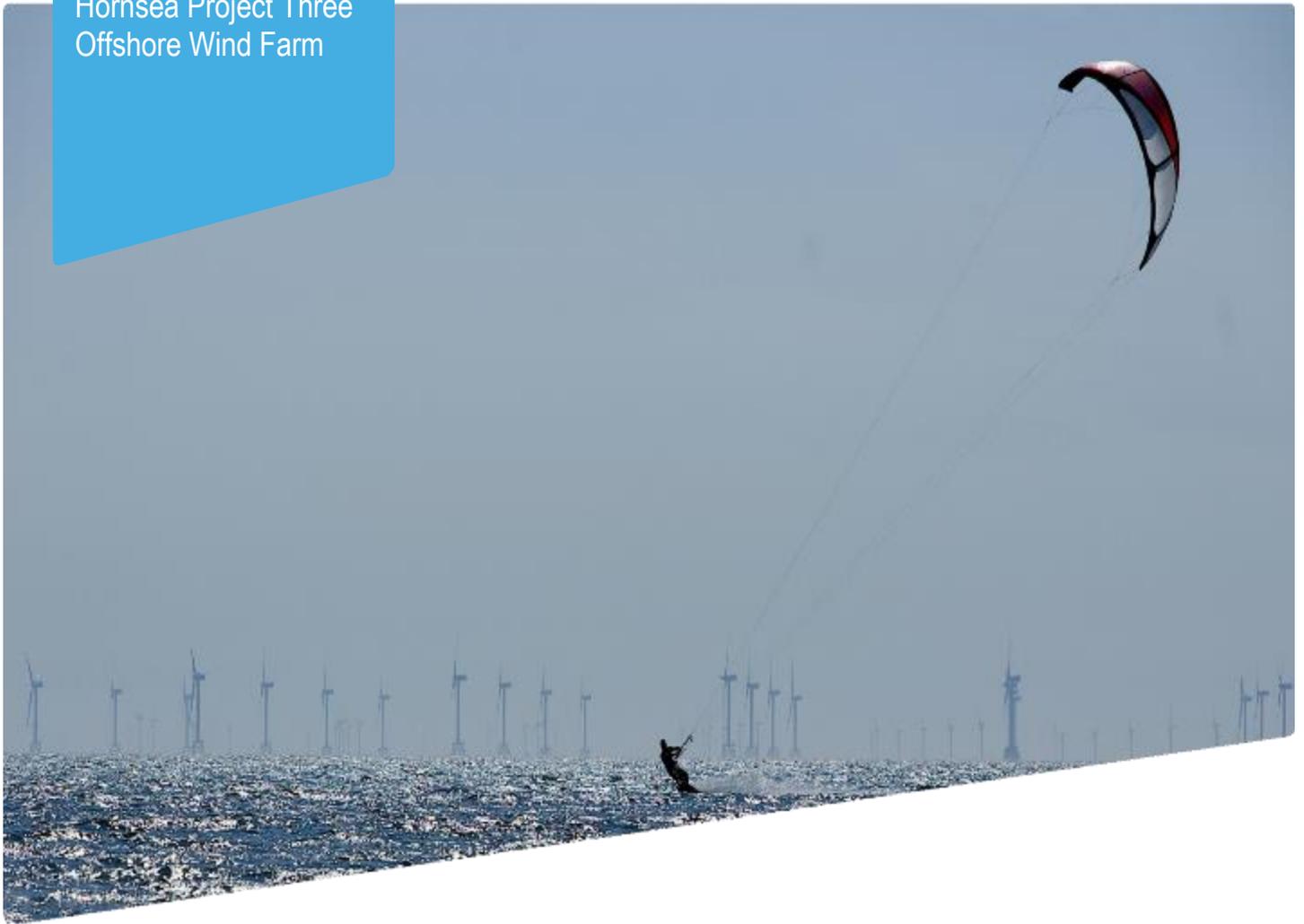


Hornsea Project Three
Offshore Wind Farm



Hornsea Project Three Offshore Wind Farm

Appendix 31 to Deadline 7 submission -
Applicant's response to ExA Rule 17 to MCA

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Applicant response to ExA Rule 17 questions

- 1.1 The Applicant's notes that these questions are addressed to the Maritime and Coastguard Agency (MCA), however the Applicant would like to provide responses to the questions set out below:

PINS Ref. No.	ExA Question	Applicant's Response to ExA question
F1.1	<p>Helicopter Refuge Areas (Principle 5)</p> <p>The Applicant has commented in response to Q2.5.5 [REP4-012] that fitting automatic identification transmitters on selected turbines would aid orientation for search and rescue (SAR) pilots. The Applicant suggests that that, in poor visibility (less than 1000m), a refuge area would not assist with orientation because the spacing of turbines would be such that the refuge area would not be visible in any event.</p>	<p>Response to Agenda Item 3a in the ISH</p> <p>The Applicant has committed to a Helicopter Refuge Area (HRA) of between 0.5399 and 1 nm. This combined with 1km minimum spacing and the provision of AIS transponders (dedicated for SAR use) in the Applicant's technical opinion (including the technical evidence we have submitted) is sufficient to aid orientation, access and turning of SAR helicopters.</p> <p>Development Principle 5 has now been agreed with the MCA and Trinity House (see Appendix 23 (Development Principles) to the Applicant's DL7 submission dated 14 March 2019).</p>

PINS Ref. No.	ExA Question	Applicant's Response to ExA question
F1.2	<p>Width of development lanes (Principle 8)</p> <p>The Applicant has suggested that your Deadline 3 comments on the Applicant's response to Q1.5.4 [REP3-084] imply that, in SAR operations, only a visual search is effective.</p>	<p>Response to Agenda Item 3b in the ISH</p> <p>It is noted that the Applicant in order to agree the Development Principles has conceded that tolerance shall have a maximum of +/- 100m. This is without prejudice to the Applicant's case that its technical evidence continues to demonstrate that the +/- 150m tolerance does not prevent SAR being effectively undertaken within the array.</p> <p>Technical evidence demonstrates that the development lanes are searchable given the sophisticated level of equipment fitted to SAR helicopters. The MCA's responses imply that the only effective search is a visual search, but that does not take account of the actual capability of the suite of sensors fitted to their SAR contractor's helicopters.</p> <p>Development Principle 8 has now been agreed with the MCA and Trinity House (see Appendix 23 (Development Principles) to the Applicant's DL7 submission dated 14 March 2019).</p>

PINS Ref. No.	ExA Question	Applicant's Response to ExA question
F1.3	<p>Lines of orientation (Principle 3)</p> <p>You have acknowledged in response to Q2.5.1 [REP4-129] that previous offshore wind farms have been approved with a single line of orientation but you consider that those examples were undesirable. We understand that Hornsea Project 1 and Hornsea Project 2 were approved with a single line of orientation.</p>	<p>Response to Agenda Item 3c in the ISH</p> <p>The Applicant (from the early stages of the consent process) took a new approach to layout approval to ease the post consent process. This desire and approach has been clearly demonstrated (including being driven by other constraints and energy capture) to the MCA and Trinity House and several consultation meetings and technical reports have been used along the process to support this objective. The Applicant has made it clear throughout consultation meetings that the NRA included the safety case (required by MGN543) for a Single Line of Orientation ("SLoO") and has undertaken work since 2016 to consult, assess and demonstrate that it is safe.</p> <p>The Applicant believes the issue with Principle 3 to be one of process rather than one of safety; and that Hornsea Three does have a demonstrable safety case for a SLoO. The Applicant is confident that the evidence and assessment within the NRA (and subsequent technical assessments) demonstrate that a SLoO does allow safe access into the array for surface and air navigation. Two lines of orientation remain a preference but not prerequisite to the MCA and Trinity House. Further detail on the safety case was presented at Deadline 5 (REP5-017).</p> <p>However following discussion in the ISH8 on 7 March 2019 and as per the actions agreed the Applicant will resubmit to the ExA the relevant sections of the NRA and the additional technical evidence submitted as part of the examination process in a single document. No new evidence will be included in that submission. It is hoped that this representation of the evidence submitted to date will assist the ExA, MCA and TH in understanding the safety case that has been submitted in support of Development Principle 3 including a SLoO.</p>

PINS Ref. No.	ExA Question	Applicant's Response to ExA question
F1.4	<p>Lines of orientation (Principle 3)</p> <p>In relation to any comparison with Hornsea Project 1 and Hornsea Project 2, the Applicant states that the location of Hornsea Project 3 would be further offshore (thus likely to have fewer small craft), would have a lower traffic density and the spacing of the turbines would be greater – factors the Applicant considers make it more suitable for a single line of orientation [REP6-009]. How do you respond?</p>	<p>Response to Agenda Item 3c in the ISH</p> <p>As per the Applicant's response to Deadline 5 (REP5-017), contrary to the MCA's and Trinity House's unsubstantiated assertion that the safest way to navigate through an offshore wind farm is when multiple lines of orientation are in place, technical evidence demonstrates that vessels (fishing and recreational) navigating existing wind farms opt to take alternative routes which do not consider the lines of orientation i.e. follow defined rows and columns (REP4-093). It is noted that the MCA have not provided any technical evidence to support their view; and that Trinity House agreed at ISH8 on 7 March 2019 that they could not disagree with the Applicant's evidence in this regard.</p> <p>Based on the information submitted as part of the NRA, levels of vessel density for Hornsea Three are lower than that for either Hornsea Project One or Hornsea Project Two wind farms which have SLoOs.</p> <p>Minimum internal spacing committed to by the Applicant in respect of Hornsea Three is larger than other existing constructed consented or Round Three developments giving vessels more sea room to navigate and manoeuvre within the Hornsea Three array area (when considering turning circles and rates of turn). Traffic levels and conditions are less than those at Hornsea One and Hornsea Two.</p>
F1.5	<p>Lines of orientation (Principle 3)</p> <p>The Applicant has set out a safety case for a single line of orientation in answer to our WQ2.5.1 [REP4-012]. The points made include low numbers of vessels, consultation feedback, the minimum spacing of turbines being greater than other Round 3 offshore wind farms and the advice of its SAR specialist.</p> <p>What is your response to the Applicant's safety case?</p>	<p>Response to Agenda Item 3c in the ISH</p> <p>The Applicant's SAR helicopter specialist considers there not to be a risk to SAR operations associated with SLoOs when considering the 1,000m / 1 kilometre (km) minimum spacing. The issues raised by the MCA concerning turning area are more relevant to current smaller wind farms and consented wind farms.</p> <p>If the visibility is >1000 m then the helicopter will be able to see the next</p>

PINS Ref. No.	ExA Question	Applicant's Response to ExA question
		<p>turbine ahead or laterally and turn without risk. If the visibility is lower than 1,000m then the helicopter will be flying at reduced airspeed, further reducing the distance required to turn within a SAR lane.</p> <p>The MCA conflates the issues of poor visibility and strong winds, whilst in reality they tend to be mutually exclusive over water. Scrutiny of the Spirit Energy met data over 1 year showed no events with visibility <1000m and windspeed >30 kt, whilst seven years of data from Hornsea Project One, sampled at 10 minute intervals, found that the combination of >30 kt and <1km visibility occurred on 0.0166% of the time. <1500m visibility and >30kts of wind occurred on 0.041% of the time. We demonstrate a safety case, as it is unlikely that a SAR event will also occur during that 0.016% of the time.</p> <p><u>Search and Rescue Data</u></p> <p>As the Applicant places the highest priority on safety, it has taken an evidence based approach to investigating if a SLoO and 1km turbine spacing is safe for SAR operations. The available evidence supports the Applicant's position that Hornsea 3 is at least as safe, or safer due to the distance between turbines, than existing and under construction offshore wind farms.</p> <p>The MCA has provided trial data which has either not supported their own case, or disproved it. The first example is a trial conducted on Loch Ness in calm weather, where the orbits were either not flown at a consistent angle of bank, or the wind was not as stated. This trial data was then withdrawn. A second trial shown in the MCA's submission to Deadline 6 (REP6-076) contains two diagrams. The first diagram shows a turn into a 40kt wind with the wind 30° to the right of track. The radius of turn for a 180° turn coincides with the Applicant's calculations, i.e. 0.12nm. A second diagram with the 40 kt wind 90° to the right shows a reduced turning radius for a 180° turn of 0.1nm. As mentioned above, the MCA conflates the issues of poor visibility</p>

PINS Ref. No.	ExA Question	Applicant's Response to ExA question
		<p>and strong winds, whilst the available evidence proves that these are mutually exclusive events.</p> <p>The MCA makes a number of general comments about searching in a wind farm. These are not applicable to all wind farms, but may be relevant to earlier projects where turbines are more closely spaced. The general comments made, without specific evidence applying to Hornsea 3, are likely to have resulted from a limited number of flights in current wind farms, where the turbines are closely spaced.</p>
F1.6	<p>Is it your view that a safety case for single line of orientation can only be persuasive where (amongst other factors) there is a proposed array layout for you to consider rather than a set of proposed layout principles?</p>	<p>Response to Agenda Item 3c in the ISH</p> <p>As stated under Response F1.4 the Applicant believes the issue to be one of process rather than disagreement on the technical justification behind the safety case for a SLoO.</p> <p>The Applicant will represent the relevant parts of the NRA and subsequent evidence in a single safety case document and this will be submitted by DL8 if not before.</p>
<p>What if the Layout Development Principles are not agreed by the end of the examination?</p>		

PINS Ref. No.	ExA Question	Applicant's Response to ExA question
F1.7	In the event that the Layout Development Principles have not been agreed by the end of the examination would it be appropriate to refer to them in the conditions of the Deemed Marine Licences?	<p>Response to Agenda Item 3d in the ISH</p> <p>As confirmed in the ISH8 only Principle 3 remains not agreed at this stage. However, if Principle 3 remains not agreed, or the ExA/SoS does not accept the Applicant's safety case for a SLoO, it would remain beneficial to the project, particularly in terms of the discharge of Requirements and DML conditions (note the Applicant's submissions in this regard at the ISH8 and summarised at DL4 on 14 March 2019), for the remaining agreed principles to be included within the development consent order (see F1.8).</p> <p>In those circumstances, Principle 3 could still be included but adopt the wording contained within MGN 543, i.e. that 'Developers should plan for at least two lines of orientation unless they can clearly demonstrate that fewer is acceptable'. Even so, the Applicant is confident that the ExA and SoS has sufficient information to reasonably conclude that a safety case for an SLoO has been made.</p>

PINS Ref. No.	ExA Question	Applicant's Response to ExA question
F1.8	<p>If the Deemed Marine Licences did not refer to the Layout Development Principles would the requirement for the array layout to be approved by the Marine Management Organisation (MMO) in consultation with MCA and Trinity House provide the Secretary of State with sufficient assurance in relation to effects on navigation safety and SAR operations?</p>	<p>Response to Agenda Item 3d in the ISH</p> <p>During early rounds of wind farm development where turbines were smaller megawatt size and the total number less than 50 this assessment process (worst case) offered a workable solution that met the needs of both developers and regulators.</p> <p>As the size of proposed developments has increased including the number and megawatt size of turbines, as well as changes to the funding process, the need for developers to explore alternative options to reach a safe and viable solution (including minimising wake effect and achieving the lowest price to end user), focus on the type (i.e. foundation) and layout of turbines has become more variable and more critical to the process.</p> <p>The historic approach of agreeing a final layout has therefore not worked efficiently for more recent large scale offshore projects given that developers are working within the consented parameters (minimum and maximum) which do not align with current regulator guidance.</p> <p>There is also no clear approach to how any technical inconsistencies are resolved leading to a wide divide between the two parties which instigates significant delays to the project, at critical times such as during financial closed Contract for Difference deadlines.</p> <p>The Applicant has taken a step to provide a greater level of detail (than maximum and minimum numbers) in the form of the Development Principles, similar to those already agreed as part of the Development Consent Orders for Dogger Bank Creyke Beck and Dogger Bank Teesside A & B.</p>

PINS Ref. No.	ExA Question	Applicant's Response to ExA question
		<p>The Applicant agrees that this process has taken some time; however this time has been part of the standard examination approach to enable it to be guided and recorded by the formal consultation process.</p> <p>The purpose of the Development Principles is to provide a framework post consent that will ensure engineers working on the project (noting this could be some years after consent) develop initial layouts and undertake surveys within the parameters consented and that are in a general sense acceptable to the regulators. That approach will save time post-consent and enable other Requirements and DML conditions to be discharged expeditiously.</p> <p>It is noted that the MCA and TH still have the ability to comment on the layout after this point as per the relevant DCO condition; including final agreement through the MMO.</p>