

Hornsea Project Three
Offshore Wind Farm



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Appendix 1 to Deadline 10 submission -
Summary Statement on MCA and the Array Development
Principles

Date: 1st April 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. Position Summary

Process and Context

- 1.1 The Environmental Impact Assessment (EIA) process for National Significant Infrastructure Projects (NSIP) is an iterative process reflective of size and complexity of the projects it is assessing. National Policy Statement (NPS) EN-3 states (paragraph 2.6.43) that the Infrastructure Planning Commission (IPC) should ‘*accept that wind farm operators are unlikely to know precisely which turbines will be procured for the site until sometime after the consent has been granted*’ and therefore assessment to date has focussed on the maximum or minimum parameters which result in a worst case assessment for each chapter rather than the arrangement of those worst case parameters within the array.
- 1.2 During early rounds of offshore wind farm development where wind turbines were smaller, in terms of physical size and power (megawatts), and the total number of wind turbines was less than 50, this assessment process (worst case) offered a workable solution that met the needs of both developers and regulators.
- 1.3 As the size of proposed developments has increased, including the number and power of wind turbines, as well as changes to the funding process, there has been a 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). This has led to earlier and greater focus on the type (i.e. foundation) and layout of turbines, which have become more critical to the process and required more variation between different projects.
- 1.4 The historic approach of the developer and the Marine Management Organisation (MMO) (in conjunction with Maritime and Coastguard Agency (MCA) and Trinity House (TH)) agreeing a final layout post consent 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 well with the expectations of current regulator guidance in the MCA’s Marine Guidance Note (MGN) 543 (MCA, 2016) and its technical appendix (Annex 5 (MCA, 2018)).
- 1.5 There is also no clear approach to how any technical differences between parties are resolved. Significant delays to the project have therefore arisen at critical times such as during financial closure and Contract for Difference deadlines. This has impeded post consent decision making and progress towards the Government’s renewable energy ambitions.

Purpose of Layout Development Principles

- 1.6 The Applicant has therefore taken a step to provide a greater level of detail (than minimum and maximum numbers) in the form of the Layout Development Principles, similar to those already agreed as part of the Development Consent Orders (DCO) for Dogger Bank Creyke Beck and Dogger Bank Teesside A & B.

- 1.7 The Applicant accepts that this process has taken some time. However; this time has been incorporated within the NSIP process and timescales, rather than incurred post consent. In other words negotiation of the Layout Development Principles has been efficiently progressed in parallel to the consent process, rather than follow the sequential approach of the past. The Applicant's ambition is that this will expedite post-consent approval of detailed layout by the MMO, in consultation with the MCA and TH.
- 1.8 The purpose of the Layout Development Principles has been designed 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, rather than within the minimum and maximum parameters used on past approvals. Indeed, Hornsea Three engineers have adopted the Layout Development Principles in their work in the expectation the Principles would be agreed, including the implementation of a Single Line of Orientation (SLoO) layout which was initially agreed in a consultation meeting with the MCA in March 2018.
- 1.9 It is noted that the MCA and TH still have the ability to comment on the layout after this point as per the relevant Deemed Marine Licence (DML) condition, including final agreement through the MMO. The Layout Development Principles should be seen as advantageous to all parties because, not only do they provide confidence at this early stage that the detailed design proposed by the Applicant will accord with the expectations of the MMO, MCA and TH, but they will also ensure less resource (from the MCA, TH and MMO) is required at the approval stage.
- 1.10 Following identification of issues within early layout discussions (with the MCA) regarding Search and Rescue (SAR) helicopter access, the Applicant took the step to engage a specialist, Mark Prior, in SAR helicopter operations.

2. Principles 5, 8 and 11

Consultation

- 2.1 The Applicant, MCA and TH have continued to engage to resolve, where possible, outstanding issues with the principles. In August 2018, and as part of early discussions around the Statement of Common Ground (SoCG), the Applicant undertook a meeting to ascertain which matters were agreed and which remained outstanding; this included the Layout Development Principles.
- 2.2 During the examination process, dialogue and technical assessment on the Applicant's part continued with the following agreements reached with the MCA prior to Issue Specific Hearing 8 (ISH 8) on the 7th March 2019:
- **Principle 5** *The Applicant has committed to a Helicopter Refuge Area of between 0.5399 and 1 nm. This combined with 1 kilometre (km) minimum spacing and the provision of Automatic Identification System (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.*
 - **Principle 8** *The Applicant, in order to assist with getting the Layout Development Principles agreed, has conceded that tolerance shall have a maximum of +/- 100 m.*

- **Principle 11** *The Applicant amended the wording of this condition to rule out the potential for curved boundaries with a caveat that other constraints may cause them to seek further agreement from the MCA post consent.*

2.3 Principle 3 required additional work as noted in the following section, section 3.

3. Principle 3

- 3.1 During the examination process whilst aiming to finalise the Layout Development Principles, the MCA and TH raised issues with the wording of **Principle 3**, including both use of the word ‘single’ line of orientation, rather than ‘minimum’ but also the need for a documented safety justification. The Applicant had believed the SLoO to have been resolved during consultation meetings earlier in the process.
- 3.2 The Applicant has been clear in consultation since the Preliminary Environmental Information Report (PEIR) that the Navigational Risk Assessment (NRA) was intended to ‘*demonstrate that*’ a single line of orientation ‘*was acceptable*’ as per the wording of MGN 543 and was in effect a documented safety justification; however, the MCA has maintained the position that a separate document was required.
- 3.3 Prior to Deadline 4 the Applicant met with the MCA to discuss the Layout Development Principles. The guidance provided in MGN 543 was discussed in relation to the inclusion of a SLoO. As reflected in the MCA’s response, a SLoO would be acceptable if a demonstrable safety case was presented.
- 3.4 Throughout pre-examination and examination the Applicant has maintained the position that a SLoO does allow safe access into the array for surface and air navigation as demonstrated within the NRA, and that two lines of orientation remain a preference but not a prerequisite of the MCA.

Issue Specific Hearing 8

- 3.5 During the ISH 8 on the 7th March 2019, TH confirmed to the Examining Authority (ExA) that they considered the safety justification to consist of the assessment performed within the NRA plus the technical submissions submitted to the examination. With these considered TH agreed that the Applicant had adequately demonstrated that a SLoO was safe for surface navigation. The Applicant agreed to represent the relevant aspects of the NRA, plus examination submissions, in a single document. That document has been provided and accepted by TH.

MCA Response to Rule 17

- 3.6 In the MCA’s response to Rule 17 received on the 15th March 2019, the MCA noted that they expected the following points to be considered within any safety justification presented:
1. *Draws out the relevant aspects of the NRA to support one line with regards to risk;*
 2. *Incorporate the results of any Geotech [sic] / ground conditions / surveys and other constraints leading to just one line of orientation in the layout design;*
 3. *Any additional lines of orientation or area where you could, or have, achieved improvements in the layout, which may not be consistent across the whole area; and*
 4. *Consideration of the impact on SAR with just one line of orientation.*

3.7 The Applicant has addressed these where applicable within the safety justification submitted. The safety justification was approved by the MCA by email on 26th March 2019 on the understanding that a number of residual concerns are resolved. These concerns and accompanying details of how the Applicant has/will address them are provided in **Error! Reference source not found.**

Table 3.1: MCA Residual Concerns and Applicant Responses

Section Title	Section Number	Safety Justification Text	MCA Residual Concern	Applicant Response
Search and Rescue Access Lanes – Lack of Precedent	6.4	No current experience exists with SAR aviation operations in UK offshore wind farm, with only trials undertaken to date which have not incorporated Round 3 offshore wind farms. In particular, there is no experience of conducting a search in an array where the turbines are spaced at least one kilometre (km) apart and current Standard Operating Procedures (SOP) are based on more tightly packed arrays, which will be of limited validity for Hornsea Three. However, the MCA have conducted flights with spacing around 800 to 900 m to explore SAR issues.	Previous comment concerns the Round 3 offshore wind farms further offshore with larger sized turbines i.e. greater than the 3.6 MW turbines at Rampion whose layout is in a grid format and has three lines of orientation. MCA have exercised at Rampion.	Text amended to acknowledge trials undertaken at Rampion Offshore Wind Farm.
Search and Rescue Access Lanes – Lack of Precedent	6.5	It is also worth noting that climactic conditions less favourable for SAR operations may align with climactic conditions less favourable for vessel operations and thus the likelihood of an incident occurring may be lower.	MCA agree with this sentence. If Metocean conditions are such that a SAR response is less favourable then it is logical that they are less favourable for surface vessels therefore the risk of an incident occurring increases.	Text removed.

Section Title	Section Number	Safety Justification Text	MCA Residual Concern	Applicant Response
Search and Rescue Access Lanes – Minimum Spacing	6.16	Given the distance offshore and the presence of project vessels for Hornsea Three the likelihood of a SAR operation in which a widespread search is required being required is very low.	I'd argue that the MCAs concern is around SAR operations period, not just search, although search has formed a large part of that. Access has always been discussed, hence the requirement for refuge areas. SLoO may be acceptable, but it has to be considered in conjunction with other principles, such as refuge areas, to improve access to the middle of the development.	Text amended to acknowledge the Layout Development Principles and their inclusion of access related features.
Historical Incidents	7.1	The NRA considers SAR operations data within the Hornsea Three array area study area and found that in the five-year period between 2011 and 2015 a total of nine SAR operations were recorded, as shown in Figure 7.1 [omitted].	<i>In response to Applicant comment: "Although it cannot be ruled-out, the likelihood that Hornsea Three personnel will end up in the water without a PLB is very low."</i> Even with a PLB, there is still a search until the person is recovered. If the person goes underwater, there is still a search required. If someone jumps, they may not have a PLB and will require a search.	Noted, although the presence of a PLB will significantly increase the speed at which a person can be located by providing live positions.

Section Title	Section Number	Safety Justification Text	MCA Residual Concern	Applicant Response
Historical Incidents	7.2	<p>Only one of these SAR operations was recorded within the Hornsea Three array area and all the incidents involved a medical rescue conducted in the daytime without the need for a search. From this data it is evident that the region within the southern North Sea where Hornsea Three is to be located does not endure a high level of marine incidents which require SAR operations. This will be furthered by the presence of Hornsea Three since project vessels will be fully certified very likely be able to render assistance under SOLAS obligations instead in addition to a SAR Asset (see section 7.8 – SOLAS Obligations), and in the case of less protracted incidents may be able to provide a sufficient response without the need for a SAR Asset. Further discussions will take place with the MCA post consent as part of the ERCoP on emergency response requirements.</p>	<p>MCA don't believe a meeting is necessary as it is for the Applicant to confirm their planned vessel operations according to their construction and operation schedule. The point is that this safety justification does not confirm this because these are details to be confirmed post consent.</p>	<p>The planned meeting relates to the developer's emergency response obligations, not its vessel operation.</p>

Section Title	Section Number	Safety Justification Text	MCA Residual Concern	Applicant Response
Historical Incidents	7.5	A total of five unique incidents, with one incident involving two vessels, were reported within the Hornsea Three array area study area, corresponding to an average of one incident every two years. None of these incidents occurred within the Hornsea Three array area. “Accident to Person” was the most frequent incident type and Oil & Gas affiliated vessels were the most frequent casualty type	Accept that there may be a decline in O&G and that this may result in a levelling off of incidents, but O&G is not done yet and it still shows that the presence of the windfarms will create incidents.	Noted, the point here relates to a general low level of activity and therefore the low frequency of occurrence of incidents and accidents.
Historical Incidents	7.5	Footnote 4: It is noted that construction and operations of Hornsea Three may lead to potential industry incidents requiring SAR response; however this is related to the wind farm rather than the internal layout. All wind farm personnel will be required to wear Personal Locator Beacons (PLB) which negate the need for a search.	Please remove or adapt the footnote. This is just not correct. The wearing of PLBs will certainly aid the location of anyone going in the water, but a search is always required until the person is found and recovered, even if it is just going to the location of the PLB. No guarantee the PLB remains with the person. The person may go in the water without a PLB, either voluntarily or by accident. All windfarm personnel will not be wearing a PLB all of the time, although I accept they would during high risk activities.	Text amended to acknowledge that PLBs will be issued, especially during high risk activities and will assist with searches.
Mitigation Measures – Post Submission	8.2	In particular, AIS can pinpoint key locations within the array relevant to a rescue.	Suggested removing this sentence. AIS is an aid to navigation and can be helpful for SAR but essentially it is not a tool to be relied upon.	Text removed.

Section Title	Section Number	Safety Justification Text	MCA Residual Concern	Applicant Response
SOLAS Obligations	8.9	Up to three accommodation platforms or up to four Offshore Support Vessels (OSV) which are likely to carry daughter craft.	MCA commented on their concern with repeated focus on search. They fully agree that this has been a main driver for requesting multiple lines of orientation, but don't believe it has ever been shown as the only reason. SAR operations of any sort benefit from multiple lines.	Noted, although the point of multiple lines and spacing is related to varying courses and manoeuvrability of SAR assets within the array which would most likely be required in the event of a search.
Internal Allision Risk Impact from Navigational Risk Assessment	8.16	The evidence procured since the NRA (in particular the SAR operations work undertaken by Mark Prior) shows agreement with the NRA's findings.	The stripped back version [of the SAR report undertaken by ASC Ltd.] was within the NRA however the standalone version was never accepted and feedback on the comments hasn't yet been received.	The stripped back version within the NRA did include the changes requested by the MCA.
Operation and Maintenance Phase	8.22	It is noted that, given the size of vessels required for the distance offshore of the Hornsea Three array area (65.3 nm), all vessels including small CTVs will be under the command of experienced mariners, more so than previously seen at offshore wind farm developments closer to the coast given vessel certification and coding requirements	<i>In response to Applicant comment: "The Applicant will not be using workboats but rather large merchant vessels which are fully certified as per flag state requirements."</i> It isn't possible to know the experience and qualifications of all Masters and crew in other offshore wind farms so we suggest this sentence is amended to reflect the comment above.	Text amended to reflect previous comment; however it is noted that the Applicant has adopted a qualification matrix to which all vessel operators must adhere to.

4. Summary of Current Position

- 4.1 With the safety justification accepted, the MCA have accepted the Layout Development Principles in full, including **Principle 3**. The finalised Layout Development Principles were consequently submitted at Deadline 9 and included a comment noting the MCA's acceptance email which outlined the outstanding issues summarised in Table 3.1 above.
- 4.2 TH has accepted the Layout Development Principles and the safety justification (from a surface navigation perspective only as SAR is out with their remit).

5. References

MCA (2016). *Marine Guidance Note 543 (Merchant and Shipping), Safety of Navigation: Offshore Renewable Energy Installations (OREIs) – Guidance on UK Navigational Practice, Safety and Emergency Response*. Southampton: MCA.

MCA (2018). *Offshore Renewable Energy Installations: Requirements, Guidance and Operational Considerations for Search and Rescue and Emergency Response*. Version 2.0. Southampton: MCA.