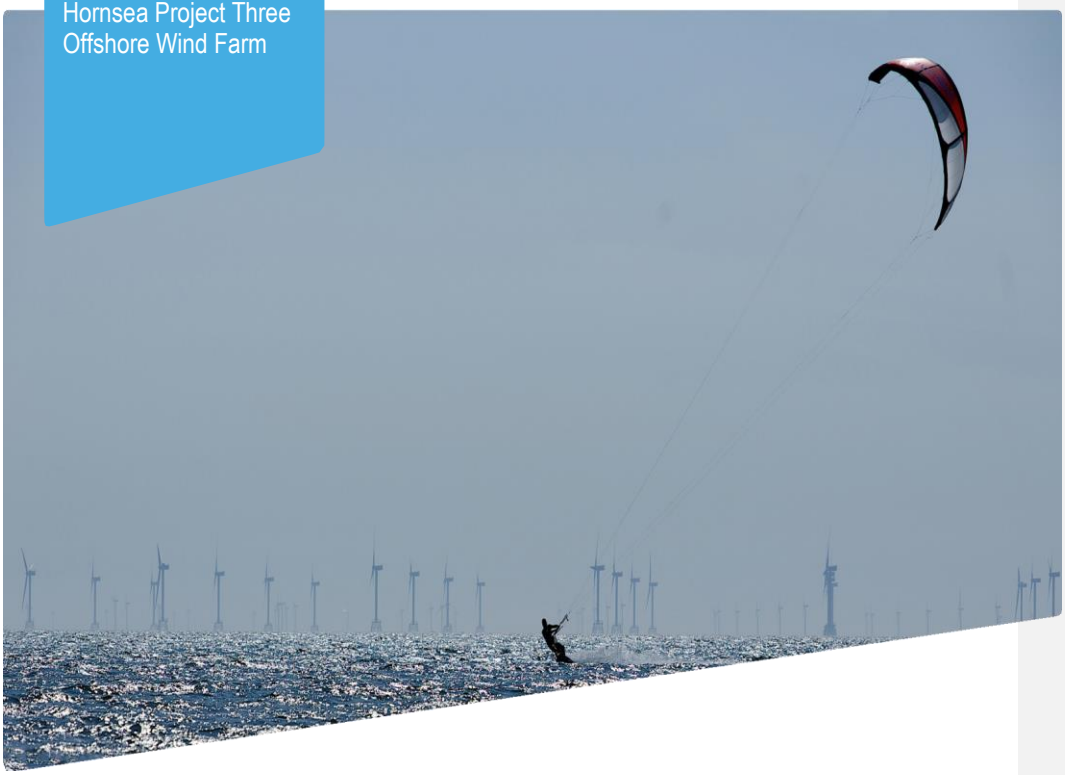
Hornsea Project Three
Offshore Wind Farm



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Appendix 2 to deadline 9 submission – Final Agreed Layout Development Principles

Date: 26th March 2019

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Document Control			
Document Properties			
Organisation	Ørsted Hornsea Project Three		
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Approved by	Andrew Guyton		
Title	Appendix 2 to deadline 9 submission – Final Agreed Layout Development Principles		
Document Number	APP-091, REP4-075		
Version History			
Date	Version	Status	Description / Changes
14/05/2018	1	Final	Submitted with the Application APP-091
15/01/2019	A	Final	Submitted at Deadline 4 (15/01/2019) REP4-075
26/03/2019	B	Final	Submitted at Deadline 9 (26/03/2019)

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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. Glossary of Terms

Table 1.1: Defined terms.

Term	Definition
Hornsea Three Array Area	Consented development area where Surface Infrastructure shall be installed.
Surface Infrastructure	Includes for the purpose of these principles wind turbines, substations, accommodation platforms and Bridge Linked Platforms.
Bridge Linked Platform	Surface Infrastructure connected by a bridge link; are assumed to be a single unit of Surface Infrastructure for the purpose of these principles.
Phase	Refers to a defined portion of developed area within the Hornsea Three Array Area.
Search and Rescue (SAR) Asset	Surface or air based resource tasked to a SAR event.
Helicopter Refuge Area	A lane that is clear of any Surface Infrastructure and at a notably different angle to the direction of the SAR Access Lanes. The Helicopter Refuge Area shall allow entry/exit across the array (or as an alternative provide multiple short lanes to allow access from opposing sides of the array).
Line of Orientation	Consistent transit lines on the same bearing throughout the Hornsea Three Array Area or a Phase. The Lines of Orientation form the centre lines of the SAR Access Lanes.
SAR Access Lane	A defined lane which allows a SAR Asset to transit safely along a Line of Orientation through the Hornsea Three Array Area or a Phase.
Internal Development Lane	A defined straight lane within which Surface Infrastructure shall be constructed.
Close Proximity	For the purpose of these rules close proximity for SAR Assets is defined as no closer than 250m minimum radius around any SAR Asset measured from] the blade tips that are transverse to the SAR Lanes or the external point of any structure.
Perimeter Development Lane	A defined lane around the perimeter of the Hornsea Three Array Area or a Phase in which Infrastructure shall be constructed.
Defined Navigation Corridor	A corridor intended for the purposes of navigation, between Hornsea Project One, Hornsea Project Two and Hornsea Three. A vessel is defined to be within the Defined Navigation Corridor when it has Surface Infrastructure on its beam to both port and starboard, and leaves the Defined Navigation Corridor when it no longer has Surface Infrastructure on its beam (port and starboard), but abaft of its beam.

2. Development Principles (should be read in conjunction with the glossary)

2.1 These Development Principles have been designed in accordance with the guidance contained within MGN 543.[1] The Development Principles are a refinement of that guidance to specifically meet the requirements of Hornsea Three. The Development Principles are justified on the basis of the technical evidence assessed within the NRA (and an agreed safety justification), submitted into the Hornsea Project Three DCO examination.

2.2 These Development Principles have been agreed in consultation with the Maritime and Coastguard Agency (MCA) and Trinity House (TH) and are considered appropriate only for Hornsea Project Three. Whether or not these Development Principles, in whole or part, may be appropriate for future projects, those developments they will turn on project-specific evidence available at the relevant time.

2.3 Any application to the MMO for the approval of the detailed layout of Hornsea Three shall be prepared and determined in accordance with these Development Principles.

Table 2.1: Development Principles.

Principle	Description	Agreement
Principle 1	All Surface Infrastructure shall be located within the Hornsea Three Array Area and a defined Phase. No blade over sail or structural overhang is permitted outside of the Hornsea Three Array Area.	Agreed
Principle 2	A minimum spacing of 1,000 metres (m) shall be maintained between the centre points of all Surface Infrastructure.	Agreed
Principle 3	On the basis of the NRA (as demonstrated within the documented safety justification submitted to the Hornsea Three DCO examination), the detailed layout shall include SAR Access Lanes parallel to turbine development corridors based on a single line of orientation within the Hornsea Three Array Area and any Phase. The SAR Access Lanes shall satisfy the minimum width of 500m required by MGN 543 to facilitate SAR Asset access.	Agreed

Commented [KL1]: **COMMENT FROM MCA:** Now agreed, although we would like the applicant to be clear on the basis for approving this as per my cover letter.

[1] MGN 543 as published in 2016 and its associated Annex 5 v2.0 published in 2018.

Principle	Description	Agreement
Principle 4	As per MGN 543, SAR Access Lanes shall allow a SAR Asset (at altitudes below 500 feet) to enter the Hornsea Three Array Area from a position outside of the Hornsea Three Array Area (or outside of a Phase) and exit the other side of the Hornsea Three Array Area (or the other side of a Phase) without altering its heading or coming into Close Proximity to any Surface Infrastructure. If Hornsea Three are able to demonstrate that the blades can be rotated and parked (locked) clear of the SAR Access Lane the distance can then be measured from the external point of any structure.	Agreed
Principle 5	If a Phased development, with different SAR Access Lane alignments in each phase is constructed, then a Helicopter Refuge Area (0.5399 to 1 nm width) will be required between adjacent Phase boundaries to enable a SAR Asset to exit the current Phase and the Hornsea Three Array Area (in at least one direction) without coming into close proximity with any surface infrastructure. Where a Phased development is not constructed, and the detailed layout comprises SAR Access Lanes based on a single line of orientation, and exceed 10nm, a Helicopter Refuge Area (0.5399 nm to 1 nm width) shall be required within the Hornsea Three Array Area.	Agreed
Principle 6	Dense boundaries are permitted either around the Hornsea Three Array Area or around individual Phases but they shall comply with Principles 2, 3 and 5.	Agreed
Principle 7	Boundaries between adjacent Phases shall comply with Principles 1, 2 and 5.	Agreed
Principle 8	Surface Infrastructure within an Internal Development Lane shall be positioned to a tolerance of up to 100 m from the centre line of the Internal Development Lane It is agreed that this tolerance is a maximum and any micro-siting required due to sea bed obstructions etc., shall be included within those parameters.	Agreed
Principle 9	Blade over sail is allowed for structures within Internal Development Lanes but shall comply with Principles 3 and 4.	Agreed
Principle 10	SAR Access Lanes shall be principally determined by the boundary Surface Infrastructure, although dependent upon the spacing between the Internal Development Lane boundaries, there may be a requirement for more than one adjacent SAR Access Lane. Any adjacent SAR Access Lanes shall comply with Principles 3 and 4.	Agreed

Principle	Description	Agreement
Principle 11	(a) Subject to (b), the position of Surface Infrastructure within a Perimeter Development Lane around the Hornsea Three Array Area and a Phase shall be arranged in straight lines (to a tolerance of ± 50m) without any dangerously projecting peripheral structures, and shall comply with Principles 1 and 2. (b)A Perimeter Development Lane around the Hornsea Three Array Area and a Phase may be arranged in a curved line where required to manage the interrelationship with existing or proposed offshore infrastructure, subject to the degree of curvature having been agreed with the MMO in consultation with the MCA and TH.	Agreed
Principle 12	The western boundary of the Hornsea Three Array Area (and Phases adjacent to it) shall be aligned broadly parallel to the eastern boundaries of Hornsea Project One and Hornsea Project Two. The Defined Navigation Corridor shall also be no less than 3.91nm and is exempt from Principle 11. Micro siting shall not exceed ±50 m on the western boundary development lane noting the minimum 3.91nm required for the defined navigation corridor. This principle will no longer apply when Hornsea Three is not considered an adjacent Project to Hornsea One and Two i.e. when it no longer needs to comply with minimum width parameters for Defined Navigational Corridors (ref PIANC guidance on vessel manoeuvring).	Agreed
Principle 13	Any perimeter Surface Infrastructure should not project from the Hornsea Three Array Area (or Phases) so as to become isolated or exposed from the rest of the Surface Infrastructure.	Agreed