

# **Vattenfall Wind Power Ltd**

## **Thanet Extension Offshore Wind Farm**

Appendix 41 to Deadline 1 Submission: Shipping  
and Navigation: Schedule of Mitigation

Relevant Examination Deadline: 1

Submitted by Vattenfall Wind Power Ltd

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Revision A

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Type	Mitigation	ES ref.	NRA ref.	Where secured in the DCO:	Outline of mechanism to secure:
Embedded mitigation	Formal consultation on the PEIR and NRA the project array boundary has been reduced by a quarter in the north-west corner to reduced interaction with shipping and navigation receptors.	Volume 2, Chapter 10, Table 10.8	8.5.1 (Table 20 – Embedded risk controls)	Schedule 1, Part 1.	The reduced project boundary formed part of the final project design, the details and coordinates of which are secured in Schedule 1, Part 1 – <b>Authorised Development</b> .
Embedded mitigation	Following formal consultation on the PEIR and draft NRA the OECC boundary has been amended in proximity to Ramsgate harbour and the approach channel to reduce interaction with shipping and navigation receptors.	Volume 2, Chapter 10, Table 10.8	8.5.1 (Table 20 – Embedded risk controls)	Schedule 1, Part 1.	The reduced project boundary formed part of the final project design, the details and coordinates of which are secured in Schedule 1, Part 1 – <b>Authorised Development</b> .

Type	Mitigation	ES ref.	NRA ref.	Where secured in the DCO:	Outline of mechanism to secure:
Embedded mitigation	Information dissemination via Notice to Mariners and Navigation Information Broadcasts to ensure construction/decommissioning and maintenance activities are widely known and passage plans are assessed accordingly.	Volume 2, Chapter 10, Table 10.8	8.5.2 (Table 21 – additional risk controls)	Schedule 11, Part 4, Condition 6 (8)(9); Schedule 12, Part 4, Condition 5 (8)(9)	<p><b>Notifications and inspections</b></p> <p><i>(8) A notice to mariners must be issued at least ten days prior to the commencement of the licensed activities or any part of them advising of the start date of [Work No. 1 (wind turbine generators or other offshore construction activities including array cables)]/[Works Nos 3,3A and 3B] and the expected vessel routes from the construction ports to the relevant location. Copies of all notices must be provided to the MMO and UKHO within five days.</i></p> <p><i>(9) The notices to mariners must be updated and reissued at weekly intervals during construction activities and at least five days before any planned operations and maintenance works and supplemented with VHF radio broadcasts agreed with the MCA in accordance with the construction programme approved under condition 12(b). Copies of all notices must be provided to the MMO and UKHO within five days.</i></p>
				Schedule 11, Part 4, Condition 20 Schedule 12, Part 4, Condition 20	Decommissioning activities will be undertaken pursuant to a decommissioning plan: <b>Decommissioning</b>

Type	Mitigation	ES ref.	NRA ref.	Where secured in the DCO:	Outline of mechanism to secure:
					<p>—(1) No decommissioning activities may commence until a plan for the carrying out of the activities has been submitted to and approved in writing by the MMO.</p> <p>(2) The plan must be submitted for approval at least six months before the intended start of the decommissioning activities, except where otherwise stated or unless otherwise agreed in writing by the MMO.</p> <p>(3) The plan must be implemented as approved.</p>

Type	Mitigation	ES ref.	NRA ref.	Where secured in the DCO:	Outline of mechanism to secure:
Embedded mitigation	WTGs will be marked in accordance with Marine Guidance Notes (MGN) 543 and to comply with International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) standards.	Volume 2, Chapter 10, Table 10.8	2.3.3	<p>Schedule 11, Part 4, Conditions 7; Schedule 12, Part 4, Condition 6.</p> <p>Schedule 11, Part 4, Conditions 7; Schedule 12, Part 4, Condition 6.</p> <p>Schedule 11, Part 4, Condition 12(j); Schedule 12, Part 4, Condition 10(k).</p>	<p>The <b>Aids to navigation</b> condition requires the undertaker to exhibit: <i>such lights, marks, sounds, signals and other aids to navigation, and take such other steps for the prevention of danger to navigation as Trinity House may from time to time direct.</i> This condition also requires the undertaker to report to Trinity House on the availability of aids to navigation in accordance with the frequencies set out in the <b>aids to navigation management</b> plan.</p> <p>A sub-condition within the <b>Aids to navigation</b> condition requires <i>the undertaker to colour all structures yellow (colour code RAL 1023) from at least highest astronomical tide to a height directed by Trinity House and to paint the remainder of the structures submarine grey (colour code RAL 7035).</i></p> <p>The undertaker is also required to submit, for approval by the MMO, in consultation with Trinity House, an <b>aids to navigation management</b> plan, and report to Trinity House in accordance with this plan.</p>

Type	Mitigation	ES ref.	NRA ref.	Where secured in the DCO:	Outline of mechanism to secure:
Embedded mitigation	Emergency Response Co-operation Plans (ERCoP) to outline general safety procedures and provide guidance on emergency response procedures to include emergency rotor shut down guidance in the event of SAR operations.	Volume 2, Chapter 10, Table 10.8	8.5.1 (Table 20 – Embedded risk controls)	Schedule 11, Part 4, Condition 14(4); Schedule 12, Part 4, Condition 12(3).	<p><b>Pre-construction plans and documentation</b></p> <p><i>No part of the authorised scheme may commence until the MMO, in consultation with the MCA, has given written approval of an Emergency Response Co-operation Plan (ERCoP) which includes full details of the plan for emergency response and co-operation for the construction, operation and decommissioning phases of that part of the authorised scheme in accordance with the MCA recommendations contained within MGN543 “Offshore Renewable Energy Installations (OREIs) – Guidance on UK Navigational Practice, Safety and Emergency Response Issues”, and has confirmed in writing that the undertaker has taken into account and, so far as is applicable to that part of the authorised scheme, adequately addressed all MCA recommendations contained within MGN543 and its annexes.</i></p>

Type	Mitigation	ES ref.	NRA ref.	Where secured in the DCO:	Outline of mechanism to secure:
Embedded mitigation	Inclusion of Thanet Extension and its associated cable routes on navigational charts so vessels are aware of areas to be avoided.	Volume 2, Chapter 10, Table 10.8	8.5.1 (Table 20 – Embedded risk controls)	Schedule 11, Part 4, Condition 6(10); Schedule 12, Part 4, Condition 5(10)	<p><b>Notifications and Inspections</b></p> <p><i>The undertaker must notify the UK Hydrographic Office both of the commencement (within ten days), progress and completion of construction (within ten days) of the licensed activities in order that all necessary amendments to nautical charts are made and the undertaker must send a copy of such notifications to the MMO. Copies of all notices must be provided to the MMO within 5 days.</i></p>



Type	Mitigation	ES ref.	NRA ref.	Where secured in the DCO:	Outline of mechanism to secure:
Embedded mitigation	Incidents and near misses are reported and investigated by developer and operators.	Volume 2, Chapter 10, Table 10.8	8.5.1 (Table 20 – Embedded risk controls)	<p>The reporting of incidents and near misses is a requirement of any undertaker’s company policy and the Applicant would only ever engage with such contractors and companies that would undertake such construction practices.</p> <p>This is also required under health and safety legislation including the Health and Safety at Work Act 1974, the Management of Health and safety at Work Regulations 1999 and the Reporting of Incidents, Diseases and Dangerous Occurrences Regulations (RIDDOR) 2013. This legislation all requires reporting of accidents and the keeping of an accident book and records. RIDDOR specifically requires employers, and others responsibility for health and safety within a workplace, to report and keep records of work-related deaths, serious injuries and certain ‘dangerous occurrences (<i>near miss accidents</i>)’.</p> <p>Duty holders of offshore installations, offshore well operators and employers, are required to report certain incidents to the Offshore Safety Directive Regulator (OSDR) in <b>relation to near misses/dangerous occurrences</b> in relation to RIDDOR and also Regulation 9 of the Offshore Installations and Wells (Design and Construction, etc.) Regulations 1996 (DCR) and Regulation 21B of the Offshore Installations and Pipelines Work (Management and Administration) Regulations 1995 (MAR). Additionally, Merchant Shipping (Accident Reporting and Investigation) Regulations 2012 (and the MGN 458 guidance which supports it) requires reporting of marine incidents: A marine incident incorporates the 2005 Regulations definition of hazardous incidents.</p>	

Type	Mitigation	ES ref.	NRA ref.	Where secured in the DCO:	Outline of mechanism to secure:
				<p>These can include 'near misses', stemming from failure of procedures in shipboard operations, material defects, fatigue and human errors.</p> <p>Fundamentally the undertaker and the principal contractor would be in dereliction of their duties under health and safety legislation were they to not monitor, record and proactively respond to incidents and near misses. The method of reporting will be informed by the International Maritime Organisation's reporting guidelines.</p> <p>The Applicant does not therefore consider it necessary to reflect this control within the DCO, given the existing legal requirements under health and safety legislation.</p>	

Type	Mitigation	ES ref.	NRA ref.	Where secured in the DCO:	Outline of mechanism to secure:
Embedded mitigation	Layout Plan to be submitted to MMO, in consultation with the MCA and Trinity House, for approval prior to construction.	Volume 2, Chapter 10, Table 10.8	8.5.1 (Table 20 – Embedded risk controls)	Schedule 11, Part 4, Condition 12(1)(a); Schedule 12, Part 4, Condition 10(1)(b).	<p>The <b><i>Pre-construction plans and documentation</i></b> condition, included in both DMLs, requires the undertaker to submit for approval a design plan to the MMO, in consultation with the MCA and Trinity House.</p> <p>Under Schedule 11 (generation assets), this must include:  <i>(i) the proposed location and choice of foundation of all wind turbine generators (in accordance with the recommendations for layout contained in MGN543), the offshore substation and the meteorological masts;</i></p> <p>Under Schedule 12 (export cable system), this must include:  <i>(v) the proposed layout of the offshore substations including any exclusion zones identified under sub-paragraph (1)(i)(iv);</i>  <i>(vi) a plan showing the indicative layout of all offshore substations including all exclusion zones (insofar as not shown in (v) above) and showing the indicative programming of particular works as set out in the indicative programme.</i></p>

Type	Mitigation	ES ref.	NRA ref.	Where secured in the DCO:	Outline of mechanism to secure:
Embedded mitigation	In order to aid both SAR and general navigation within the wind farm, a line of orientation and symmetry will be maintained in line with MGN 543. This includes integration between the turbine spacing of the existing Thanet Offshore Wind Farm and the proposed extension.	Volume 2, Chapter 10, Table 10.8	8.5.1 (Table 20 – Embedded risk controls)	Schedule 11, Part 4, Condition 12(1)(a); Schedule 12, Part 4, Condition 10(1)(b).	The design plan, as secured within these conditions, will include details of the line of orientation and symmetry contained with the layout of the Project.
Embedded mitigation	All those involved in construction, operation and maintenance operations are to be trained and competent persons, using appropriate PPE, with appropriate qualifications given their activities.	Volume 2, Chapter 10, Table 10.8	8.5.1 (Table 20 – Embedded risk controls)	These measures do not need to be secured in the DCO or the DMLs as they form part of the existing legal requirement for contractors to ensure each person adheres to the relevant health and safety documentation for their role. Health and safety compliance is required under the <u>Construction (Design and Management) Regulations 2015</u> and the <u>Personal Protective Equipment (EC Directive) Regulations 1992</u> . It would therefore not be proportionate or appropriate to duplicate legislative requirements by seeking to include them within the DCO or the DMLs.	

Type	Mitigation	ES ref.	NRA ref.	Where secured in the DCO:	Outline of mechanism to secure:
Embedded mitigation	Continuous watch of site by radar, AIS, VHF, DSC and CCTV during construction.	Volume 2, Chapter 10, Table 10.8	8.5.1 (Table 20 – Embedded risk controls)		These measures do not need to be secured in the DCO or the DMLs as they underpin the standard construction practices of a competent contractor and are required by existing legislative requirements. These measures are essential for the coordination of construction and to ensure that the developer is compliant with the <u>International Regulations for Preventing Collisions at Sea 1972</u> . It would therefore not be proportionate or appropriate to duplicate legislative requirements by seeking to include them within the DCO or the DMLs.
Embedded mitigation	Ensure communication is upheld and construction/decommissioning is effectively coordinated to ensure best practice and reduce risks. This includes maintaining a dialogue between the undertaker, sub-contractors and fishing and leisure stakeholder groups, particularly during construction and cable laying.	Volume 2, Chapter 10, Table 10.8	8.5.1 (Table 20 – Embedded risk controls)	Reference to be confirmed by Deadline 2.	These measures will be secured within a 'Shipping and Navigation Liaison plan', which will be required through a condition with both DMLs in the revised draft Order submitted for Deadline 2.

Type	Mitigation	ES ref.	NRA ref.	Where secured in the DCO:	Outline of mechanism to secure:
Embedded mitigation	Minimum safe air clearance (between MHWS and WTG rotors) of 22 m in accordance with MGN 543 to mitigate against ship contact risk.	Volume 2, Chapter 10, Table 10.8	8.4.6	Schedule 1, Part 3, Requirement 2(1)(e)	The <b>Detailed offshore design parameters</b> require that <i>the wind turbine generators forming part of the authorised project must not have a draught height of less than 22 metres from MHWS.</i>
Embedded mitigation	Inter-array and export cables will adhere to the appropriate burial depths which will reduce risk associated with cable snagging and ensure an appropriate UKC is maintained.	Volume 2, Chapter 10, Table 10.8	8.5.1 (Table 20 – Embedded risk controls)	Schedule 11, Part 4, Condition 12(1)(g); Schedule 12, Part 4, Condition 10(1)(h).	The <b>Pre-construction plans and documentation</b> condition, included in both DMLs, requires the undertaker to submit for approval a <b>cable specification, installation and monitoring plan</b> to the MMO. This must include: <i>(i) technical specification of offshore cables (including fibre optic cables) below MHWS, including a desk-based assessment of attenuation of electro-magnetic field strengths, shielding and cable burial depth in accordance with industry good practice;</i> <i>(ii) a detailed cable (including fibre optic cables) laying plan for the Order limits, incorporating a burial risk assessment to ascertain suitable</i>
Embedded mitigation	Cable Burial Risk Assessment to determine level of protection or burial along cable route. Protection should not exceed 5% Under Keel Clearance (UKC).	Volume 2, Chapter 10, Table 10.8	8.5.1 (Table 20 – Embedded risk controls)		

Type	Mitigation	ES ref.	NRA ref.	Where secured in the DCO:	Outline of mechanism to secure:
Embedded mitigation	Periodic inspections to be undertaken over the cables life to ensure that the cable does not become exposed.	Volume 2, Chapter 10, Table 10.8	8.5.1 (Table 20 – Embedded risk controls)		<i>burial depths and cable laying techniques, including cable protection;</i> <i>(iii) proposals for monitoring offshore cables (including fibre optic cables) including cable protection during the operational lifetime of the authorised scheme which includes a risk based approach to the management of unburied or shallow buried cables.</i>
Additional mitigation	Adopted safety zones to reduce collision risk.	Volume 2, Chapter 10, Table 10.11	8.5.2 (Table 21 – additional risk controls)	Once the DCO has been made, an application for a safety zone(s) will be made under section 95 of the <u>Energy Act 2004</u> and in accordance with <u>Electricity (Offshore Generating Stations) (Safety Zones) (Applications Procedures and Control of Access) Regulations 2007</u> . Additional information about this application process and the need for safety zones for the Project can be found within the Safety Zone Statement (document reference APP-132).	

Type	Mitigation	ES ref.	NRA ref.	Where secured in the DCO:	Outline of mechanism to secure:
Additional mitigation	Use of Guard Vessel(s) to reduce collision risk.	Volume 2, Chapter 10, Table 10.11	8.5.2 (Table 21 – additional risk controls)	This measure does not need to be secured in the DCO or the DMLs as it underpins the standard construction practices of a competent contractor and is required by existing legislative requirements.	The use of Guard Vessels will be implemented as required. It would not be proportionate to refer to a specific number of Guard Vessels to be deployed on the face of the DCO or DM, as the developer is required to deploy an appropriate number of Guard Vessels for the Project in order to ensure compliance with the <u>International Regulations for Preventing Collisions at Sea 1972</u> . It would therefore not be proportionate or appropriate to duplicate legislative requirements by seeking to include them within the DCO or the DMLs.
Additional mitigation	Cooperation during cable laying with Port of Ramsgate.	Volume 2, Chapter 10, Table 10.11	8.5.2 (Table 21 – additional risk controls)	Schedule 11, Part 4, Condition 6(8)-(9); Schedule 12, Part 4, Condition 5(8)-(9)	The Port of Ramsgate will be notified prior to the commencement of cable laying (Works No. 3, 3A and 3B) by the notice to mariners to be issued under Condition 6(8) of Schedule 11 and Condition 5 (8) of Schedule 12.



Type	Mitigation	ES ref.	NRA ref.	Where secured in the DCO:	Outline of mechanism to secure:
Additional mitigation	Relocation of buoyage where necessary.	Volume 2, Chapter 10, Table 10.11	8.5.2 (Table 21 – additional risk controls)	Schedule 11, Part 4, Conditions 7(1); Schedule 12, Part 4, Condition 6(1)	The <b><i>Aids to navigation</i></b> condition requires the undertaker to exhibit: <i>such lights, marks, sounds, signals and other aids to navigation, and take such other steps for the prevention of danger to navigation as Trinity House may from time to time direct.</i>
Additional mitigation	Development of a Co-operation Plan with the Port of London Authority	Volume 2, Chapter 10, Table 10.11	8.5.2 (Table 21 – additional risk controls)	Reference to be confirmed by Deadline 2.	This will be secured within a 'Shipping and Navigation Liaison plan', which will be required through a condition with both DMLs in the revised draft Order submitted for Deadline 2.