Rampion 2 WIND FARM

Rampion 2 Wind Farm

Category 7:
Other Documents

Outline Offshore Operations and Maintenance Plan (clean)

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Document revisions

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A	04/08/2023	Final for DCO Application	GoBe	RED	RED
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C	09/07/2024	Updates at Deadline 5	GoBe	RED	RED

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1. Introduction

1.1 Overview

1.1.1 This document provides a description of the reasonably foreseeable offshore maintenance activities at Rampion 2. This Outline Offshore Operation and Maintenance Plan (the Outline OOMP) for Rampion 2 will be developed further and finalised post-consent (as required under the deemed Marine License (dML) Condition 11 in Schedules 11 and 12 of the Development Consent Order (DCO)). A list of activities to be undertaken during the operation and maintenance phase is provided in **Appendix A: Operations and maintenance list**. This information is taken from the **Chapter 4: The Proposed Development, Volume 2** of the ES (Document Reference: 6.2.4).

1.1.2 Rampion Extension Development Limited (hereafter referred to as 'RED') (the Applicant) is developing the Rampion 2 Offshore Wind Farm Project (Rampion 2) located adjacent to the existing Rampion Offshore Wind Farm Project ('Rampion 1') in the English Channel.

1.1.3 Rampion 2 will be located between 13km and 26km from the Sussex Coast in the English Channel and the offshore array area will occupy an area of approximately 160km^2.

1.1.4 The key offshore elements of the Proposed Development will be as follows:

- up to 90 offshore wind turbine generators (WTGs) and associated foundations;
- blade tip of the WTGs will be up to 325m above Lowest Astronomical Tide (LAT) and will have a 22m minimum air gap above Mean High Water Springs (MHWS);

1. inter-array cables connecting the WTGs to up to three offshore substations;

- up to two offshore interconnector export cables between the offshore substations;

2. up to four offshore export cables each in its own trench, will be buried under the seabed within the final cable corridor; and

- the export cable circuits will be High Voltage Alternating Current (HVAC), with a voltage of up to 275kV.

1.1.5 The key onshore elements of the Proposed Development will be as follows:

3. a single landfall site near Climping, Arun District, connecting offshore and onshore cables using Horizontal Directional Drilling (HDD) installation techniques;

- buried onshore cables in a single corridor for the maximum route length of up to 38.8km using:
  - trenching and backfilling installation techniques; and

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- trenchless and open cut crossings.

- a new onshore substation, proposed near Cowfold, Horsham District, which will connect to an extension to the existing National Grid Bolney substation, Mid Sussex, via buried onshore cables; and
- extension to and additional infrastructure at the existing National Grid Bolney substation, Mid Sussex District to connect Rampion 2 to the national grid electrical network.

1.1.6 A full description of the Proposed Development is provided in **Chapter 4: The Proposed Development, Volume 2** of the ES (Document Reference: 6.2.4).

1.2 Purpose of this Outline Offshore Operations and Maintenance Plan

1.2.1 The purpose of this document is to provide an outline of reasonably foreseeable offshore maintenance activities and the broad approach to be taken for each activity associated with Rampion 2.

1.2.2 This Outline OOMP has been drafted with specific reference to the interpretation of the definition of "maintain" within the Rampion 2 draft **Development Consent Order (DCO)** (Document Reference: 3.1). The definition includes inspect and survey, upkeep, repair, adjust, and alter and further includes remove, reconstruct and replace.

1.2.3 A Final OOMP will be provided to the MMO, at least four months prior to the completion of construction of the authorised scheme, in accordance with Condition 3 of the dML, Schedules 11 and 12 of the **draft DCO Rev C** (document reference 3.1).

1.2.4 Following the commissioning of Rampion 2, operation and maintenance activities can be divided into two main categories:

- scheduled maintenance; and
- unscheduled maintenance: during the operational phase it is anticipated that unscheduled maintenance activity may be required to deal with fault finding and repairs of the turbines, cable repair/replacement and associated offshore infrastructure repair/replacement.

1.2.5 Scheduled and unscheduled maintenance activities will require access to the wind turbine generators (WTGs) 365 days per year.

1.2.6 The maximum assessment assumptions for operational and maintenance activities which have been assessed in **Chapter 6: Coastal processes, Volume 2** to **Chapter 13: Shipping and navigation, Volume 2** of the ES (Document References: 6.2.6 – 6.2.13) are included as **Appendix B**. Additional details of the operational and maintenance activities can be found in **Chapter 4: The Proposed Development, Volume 2** of the ES (Document Reference: 6.2.4).

Overarching embedded environmental measures for operation maintenance

1.2.7 Overarching project embedded environmental measures for Rampion 2 include:

- C237 - Risk Assessment Method Statement (RAMS) will be used as part of operating procedures to plan operation and maintenance activities. For example, the RAMS will include measures for working in increasingly high temperatures, prolonged wet weather and set out adequate planning for extreme weather events such as flooding and wildfire.

1.2.8 Full details of the embedded environmental measures can be found in the **Commitments Register** (Document Reference: 7.22)

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2. Discharging the consent condition

2.1.1 The list of anticipated maintenance activities (including scheduled maintenance unscheduled maintenance up to assessed parameters, as set out in paragraph 1.2.4) to be undertaken during the operation and maintenance phase is provided as **Appendix A: Operations and maintenance list.** This list is a live document which will be updated for the Final OOMP and agreed with the Marine Management Organisation (MMO) as required.

2.1.2 For each activity, a 'traffic light system' will be used to provide clarity as to those activities that can be carried out under the dMLs contained within the DCO.

- **Green** indicates that an additional Marine Licence is not required, however notification should be provided to the MMO on works being undertaken;
- **Amber** indicates that an additional Marine Licence may be required if proposed works exceed those assessed within the Environmental Statement or described within the DCO; and
- **Red** indicates that an additional Marine Licence could be required dependant on the type of works to be undertaken.

2.1.3 Additional activities not outlined in this document (including **Appendix A: Operations and maintenance list**) may, if relevant, require future consents such as a Marine Licence under the Marine and Coastal Access Act (2009). Such activities will be discussed with the MMO, with Marine Licences secured, where appropriate, prior to undertaking works.

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3. Glossary of terms and abbreviations

Table 3-1 Glossary of terms and abbreviations

Term	Definition
Development Consent Order (DCO)	This is the means of obtaining permission for developments categorised as Nationally Significant Infrastructure Projects, under the Planning Act 2008.
dML	Deemed Marine Licence
Environmental Statement (ES)	The written output presenting the full findings of the Environmental Impact Assessment.
JUV	Jack-Up Vessel
MMO	Marine Management Organisation
OOMP	Offshore Operation and Maintenance Plan
SNCB	Statutory Nature Conservation Body
(Wind Turbine Generators) WTGs	The components of a wind turbine, including the tower, nacelle, and rotor.

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4. References

Marine and Coastal Access Act 2009, (2009). [Online] Available at: https://www.legislation.gov.uk/ukpga/2009/23/contents [Accessed 04 May 2023]

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Appendix A Operations and maintenance list

Potential offshore maintenance activity	Relevant dML	Included in the ES	Location in the application document	Additional Licence likely to be required	Consultation Required with the MMO and relevant SNCB
Wind turbines					
Annual wind turbine maintenance	Generation	Assessed in the ES	All Environmental Statement Chapters are in Volume 2 (Document Reference: 6.2) **Chapter 4: The Proposed Development** (Document Reference:6.2.4) **Chapter 6: Coastal processes** (Document Reference: 6.2.6) **Chapter 7: Other marine users** (Document Reference: 6.2.7) **Chapter 8: Fish and shellfish ecology** (Document Reference: 6.2.8) **Chapter 9: Benthic, subtidal and intertidal ecology** (Document Reference: 6.2.9) **Chapter 10: Commercial fisheries** (Document Reference: Number: 6.2.10) **Chapter 11: Marine mammals** (Document Reference: 6.2.11) **Chapter 12: Offshore and intertidal ornithology** (Document Reference: 6.2.12) **Chapter 13: Shipping and navigation** (Document Reference: 6.2.13)	No	No
Wind turbine troubleshooting	Generation	Assessed in the ES		No	No
Wind turbine repair	Generation	Assessed in the ES		No	No
Blade inspection	Generation	Assessed in the ES		No	No
Blade and hub repair	Generation	Assessed in the ES		No	No
Blade replacement	Generation	Assessed in the ES		No	No
Transition piece repair	Generation	Assessed in the ES		No	No
Transition piece maintenance	Generation	Assessed in the ES		No	No
Transformer replacement	Generation	Assessed in the ES		No	No
Gearbox repair and replacement	Generation	Assessed in the ES		No	No
Generator replacement painting, cleaning (including marine growth and guano), and repair	Generation	Assessed in the ES, refer to maximum assessment assumptions in **Appendix B**		No	No
Sacrificial anode (and ancillary parts) repair and replacement	Generation	Assessed in the ES, refer to maximum assessment assumptions in **Appendix B**		No	No
J-Tube and ladder repair and inspection	Generation	Assessed in the ES, refer to maximum assessment assumptions in **Appendix B**		No	No

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Potential offshore maintenance activity	Relevant dML	Included in the ES	Location in the application document	Additional Licence likely to be required	Consultation Required with the MMO and relevant SNCB
Cables					
Cable repair /replacement	Generation, Transmission	Assessed in the ES, refer to maximum assessment assumptions in **Appendix B**	All Environmental Statement Chapters are in Volume 2 (Document Reference: 6.2) **Chapter 4: The Proposed Development** (Document Reference:6.2.4) **Chapter 6: Coastal processes** (Document Reference: 6.2.6) **Chapter 7: Other marine users** (Document Reference: 6.2.7) **Chapter 8: Fish and shellfish ecology** (Document Reference: 6.2.8) **Chapter 9: Benthic, subtidal and intertidal ecology** (Document Reference: 6.2.9) **Chapter 10: Commercial fisheries** (Document Reference: 6.2.10) **Chapter 11: Marine mammals** (Document Reference: 6.2.11) **Chapter 13: Shipping and navigation** (Document Reference: 6.2.13)	Only if above maximum assessment assumptions in **Appendix B**	Yes
Cable inspection	Generation, Transmission	Assessed in the ES		No	Yes
New cable protection – beyond the maximum, in terms of both volume of material and area covered, set out in Schedule 11, Part 2 (6) of the **draft DCO** **(document reference 3.1)** for the 10 years of licensed activities, or it is installed more than 10 years after the commencement of the licenced activities.	Generation, Transmission	Assessed in the ES, refer to maximum assessment assumptions in **Appendix B**		Only if above maximum assessment assumptions in **Appendix B and as set out in DCO**	Yes
Replacement or addition to cable protection in the same area as cable protection installed during construction, including protection at J tubes and cable crossings	Generation, Transmission	Assessed in the ES, refer to maximum assessment assumptions in **Appendix B**		No	Yes
Cable re-burial	Generation, Transmission	Assessed in the ES, refer to maximum assessment assumptions in **Appendix B**		No	Yes
Cable repair	Generation, Transmission	Assessed in the ES, refer to maximum assessment assumptions in **Appendix B**		No	Yes
Wind turbine platform foundations					
Foundation inspection	Generation	Assessed in the ES	All Environmental Statement Chapters are in Volume 2 (Application Reference Number 6.2) **Chapter 4: The Proposed Development** (Document Reference:6.2.4) **Chapter 6: Coastal processes** (Document Reference: 6.2.6) **Chapter 7: Other marine users** (Document Reference: 6.2.7)	No	No
Foundation repair	Generation	Assessed in the ES		No	No

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Potential offshore maintenance activity	Relevant dML	Included in the ES	Location in the application document	Additional Licence likely to be required	Consultation Required with the MMO and relevant SNCB
			Chapter 8: Fish and shellfish ecology (Document Reference: 6.2.8) **Chapter 9: Benthic, subtidal and intertidal ecology** (Document Reference: 6.2.9) **Chapter 10: Commercial fisheries** (Document Reference: 6.2.10) **Chapter 11: Marine mammals** (Document Reference: 6.2.11) **Chapter 13: Shipping and navigation** (Document Reference: 6.2.13)		
Foundation replacement	Generation	No	N/A	Yes	Yes
Additional scour protection around foundations, within the limits set out in Schedule 11, Part 2 (1)(6) the **draft DCO** **(document reference 3.1)** as part of the licensed activities.	Generation	Assessed in the ES, refer to maximum assessment assumptions in **Appendix B**	All Environmental Statement Chapters are in Volume 2 (Application Reference Number 6.2) **Chapter 4: The Proposed Development** (Document Reference:6.2.4) **Chapter 6: Coastal processes** (Document Reference: 6.2.6) **Chapter 7: Other marine users** (Document Reference: 6.2.7) **Chapter 8: Fish and shellfish ecology** (Document Reference: 6.2.8) **Chapter 9: Benthic, subtidal and intertidal ecology** (Document Reference: 6.2.9) **Chapter 10: Commercial fisheries** (Document Reference: 6.2.10) **Chapter 11: Marine mammals** (Document Reference: 6.2.11) **Chapter 13: Shipping and navigation** (Document Reference: 6.2.13)	No	Yes
Offshore substation platforms					
Inspections	Transmission	Assessed in the ES	All Environmental Statement Chapters are in Volume 2 (Application Reference Number 6.2) **Chapter 4: The Proposed Development** (Document Reference:6.2.4) **Chapter 6: Coastal processes** (Document Reference: 6.2.6) **Chapter 7: Other marine users** (Document Reference: 6.2.7) **Chapter 8: Fish and shellfish ecology** (Document Reference: 6.2.8)	No	No
Scheduled general maintenance work, for example: oil replacement, mechanical works	Transmission	Assessed in the ES		No	No
Anode (and ancillary parts), repair and replacement	Transmission	Assessed in the ES		No	No
Access ladders repair and replacement	Transmission	Assessed in the ES		No	No

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Potential offshore maintenance activity	Relevant dML	Included in the ES	Location in the application document	Additional Licence likely to be required	Consultation Required with the MMO and relevant SNCB
Painting and cleaning (including marine growth and guano)	Transmission	Assessed in the ES	**Chapter 9: Benthic, subtidal and intertidal ecology** (Document Reference: 6.2.9) **Chapter 10: Commercial fisheries** (Document Reference: Number: 6.2.10) **Chapter 11: Marine mammals** (Document Reference: 6.2.11) **Chapter 13: Shipping and navigation** (Document Reference: 6.2.13) **Shipping and navigation**	No	No
Major component replacement	Transmission	Assessed in the ES		No	No
J-tube maintenance	Transmission	Assessed in the ES		No	No
Ancillary parts repair/ replacement	Transmission	Assessed in the ES		No	No
Other					
Re-fuelling of generator on the substation	Generation	Assessed in the ES		No	No
Grout and corrosion works	Generation	Assessed in the ES		No	No

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Appendix B Maximum assessment assumptions for operational and maintenance activities

Table B-1 provides the maximum assessment assumptions for offshore operational and maintenance activities and the maximum offshore vessels and logistics assessment assumptions for the operation and maintenance phase for Rampion 2. This information is taken from **Chapter 4: The Proposed Development, Volume 2** of the ES (Document Reference: 6.2.4).

Table B-1 Maximum assessment assumptions for operational and maintenance activities

Assessment assumptions	Maximum value
WTG maintenance	
Maximum number of full painting events – lifetime quantity	225 (1 full event every 10 years)
Maximum number of cleaning events (bird waste and marine growth removal) – lifetime quantity	13,500 (up to 5 cleaning events per WTG per year)
Major WTG component replacement	
Maximum number of exchange events – lifetime quantity	315 (assumes on average 3.5 events per WTG over the lifetime)
Footprint of seabed disturbance via jacking-up activities per exchange event	1,100m^2 (assumes 1,000m^2 from construction vessel plus 10%)
WTG access ladder replacement	
Maximum number of ladder replacement events – lifetime quantity	450 (assumes replacement every 5 years)
Maximum footprint of seabed disturbance if Jack-Up Vessel (JUV) required	1,100m^2 (assumes 1,000m^2 from construction vessel plus 10%)
WTG anode replacement (and associated ancillary anode equipment e.g. cages)	

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Assessment assumptions	Maximum value
Maximum number of anode replacement events – lifetime quantity	450 (assumes replacement every 5 years)
Maximum footprint of seabed disturbance if JUV required	1,100m^2 (assumes 1,000m^2 from construction vessel plus 10%)
WTG J-tube replacement or modification	
Maximum number of J-tube replacement events - lifetime quantity	180 (assumes 2 per WTG over lifetime)
Maximum footprint of seabed disturbance if JUV required	1,100m^2 (assumes 1,000m^2 from construction vessel plus 10%)
Offshore substation maintenance	
Maximum number of full painting events – lifetime quantity	6 (1 full event every 10 years per platform)
Touch-up painting in addition to full painting events	24 (1 touch-up event every 3 years)
Maximum number of cleaning events (bird waste / and marine growth removal) – lifetime quantity	450 (up to 5 cleaning events per platform per year)
Maximum number of exchange events – lifetime quantity	27 (assumes 9 events per platform)
Maximum footprint of seabed disturbance if JUV required	1,100m^2 (assumes 1,000m^2 from construction vessel plus 10%)
Offshore platform access ladder replacement	
Maximum number of ladder replacement events – lifetime quantity	30 (assumes 3 platforms, 10 ladders per platform over lifetime)
Maximum footprint of seabed disturbance if jack-up vessel required	1,100m^2 (assumes 1,000m^2 from construction vessel plus 10%)
Offshore platform anode replacement	
Maximum number of anode replacement events – lifetime quantity	60 (assumes 4 legs on each of 3 platforms with replacement every 5 years)
Offshore platform J-Tube replacement	

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Assessment assumptions	Maximum value
Maximum number of J-Tube replacement events – lifetime quantity	60 (assumes 2 per J-Tube over lifetime)
Array cable remedial burial	
Maximum number of remedial de-burial /re-burial events for array cable – lifetime quantity	18 (assumes 0.07 reburial events per 1km installed over lifetime, and maximum of 250km of array cables)
Maximum length of cable subject to jetting/ ploughing/ controlled flow excavation remediation de-burial/ re-burial per remedial event	2,000m (rock dumping will also be considered)
Maximum width of disturbed seabed per individual jetting/ ploughing/ controlled flow excavation event	10m
Maximum footprint of (temporary) seabed disturbance per individual jetting/ ploughing/ CFE/de-burial/re-burial exercise (for cable remediation)	200,000m^2
Array cable repairs	
Maximum number of cable repairs - lifetime quantity	6
Cable repair/replacement	600m
Maximum cable trench width	10m
Maximum length of cable pulled from trench repair event	600m
Maximum footprint of seabed disturbance per event	6,000m^2
Predicted duration of each cable repair event	3 months
Footprint of seabed disturbance via jacking-up activities for single cable repair event	2,200m^2
Array cable protection replacement	

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Assessment assumptions	Maximum value
Percentage of original cable protection requiring replacement	25%
Export cable remedial burial	
Maximum number of remedial burial events for export cables – lifetime quantity	3 events per cable (assumes 0.07 reburial events per 1km installed over lifetime)
Maximum length of cable subject to jetting remediation re-burial) per remedial burial event	2,000m
Maximum width of disturbed seabed per individual jetting event	10m
Maximum footprint of (temporary) seabed disturbance per individual jetting/ ploughing/ controlled flow excavation exercise (for cable remediation)	20,000m^2
Export cable repairs	
Maximum number of cable repairs/replacements – lifetime quantity	4
Maximum cable trench width	10m
Maximum length of cable pulled from trench per repair event	600m
Maximum footprint of seabed disturbance per individual jetting/ ploughing/ controlled flow excavation event	6,000m^2
Predicted duration of each cable repair event	3 months
Footprint of seabed disturbance via jacking-up activities for single cable repair event	2,200m^2
Export cable protection replacement	

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Assessment assumptions	Maximum value
Percentage of original cable protection requiring replacement	25%

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