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VATTENFALL

Norfolk Boreas Offshore Wind Farm

Offshore Transmission Network Review

Applicant: Norfolk Boreas Limited
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Glossary of Acronyms

AEoI	Adverse Effect on Integrity
AOE	Alde-Ore Estuary
BEIS	Department for Business, Energy & Industrial Strategy
DEP	Dudgeon Extension Project
ESO	Electricity System Operator
HRA	Habitats Regulations Assessment
HVDC	High Voltage Direct Current
OFGEM	Office of Gas and Electricity Markets
OTNR	Offshore Transmission Network Review
SEP	Sheringham Shoal Extension Project

1 Offshore Transmission Network Review

1.1 Introduction

1. During an open floor hearing on 2 July 2020 interested parties raised the topic of integrated approach to connections for offshore wind farms is required. Norfolk Boreas Limited (the Applicant) set out its position at that time with regards to an integrated approach to an offshore transmission network for connection of offshore wind farms to the national grid. This position is recorded in point 5 of the Applicant's response to Open Floor Hearing 2 [REP13-014]. Further to this information, which was provided at deadline 13, the Applicant has continued to engage with the Offshore Transmission Network Review (OTNR) and this document describes that engagement.

1.2 Overview of engagement

2. The Applicant is supportive of the Early Opportunities workstream of the OTNR as mentioned in the joint BEIS-OFGEM letter of 18 December 2020. This document describes how the Applicant has identified opportunities for a co-ordinated approach to the design and delivery of the transmission infrastructure for the Norfolk Vanguard and Norfolk Boreas projects, as well as with other projects in the same region.

3. The Applicant has participated proactively in the Offshore Transmission Network Review (OTNR) process, including the 'Early Opportunities' workstream run by the ESO on an 'opt-in' basis, since its initiation in July 2020. The Applicant is supportive of the OTNR's aim to deliver greater coordination of our onshore and offshore transmission networks in order, as far as possible, to reduce environmental impacts and deliver cost savings for consumers as we seek to decarbonise our energy system in line with the Government's target of 40GW of offshore wind by 2030, and potentially 100GW by 2050, to support net zero.

4. To enable the OTNR to design effective interventions that target projects at different stages of their development journeys, The Early Opportunities, Pathway to 2030, and Enduring Regime workstreams divide policy development and industry engagement into three temporal workstreams. The Early Opportunities workstream aims to identify and facilitate opportunities for increased coordination in the near term; focused on in-flight projects which are advanced in their development and where requirements for significant transmission regime change would be inappropriate within project timescales, and which could compromise the Government's ability to meet its 2030 targets.

5. As the Norfolk Boreas project is in very late-stage development, the Applicant has been working with the ESO to explore Early Opportunity options that could be

delivered within the project timelines and which could be incorporated into the existing project as defined by the parameters of the Norfolk Boreas development consent application, existing regulatory frameworks, and using available technology, without risking the delivery of the UK Government's targets.

6. As with all OTNR explorations for solutions under any of the discrete workstreams, including "Early Opportunities", parties enter into discussions with BEIS, OFGEM and the ESO commercially in confidence. However, the Applicant can state that it has identified and put forward solutions that could potentially enhance offshore coordination, and /or reduce the need for onshore grid reinforcement for future projects. For example, should as yet unidentified projects come forward, within an appropriate timeframe, there is a possibility that if infrastructure is consented for Vattenfall's Norfolk Projects this may be engineered to accommodate some additional capacity. The solutions put forward would be accommodated within the parameters of the existing Norfolk Boreas development consent application. Whilst such potential solutions do not currently offer a coordination opportunity to a known party, the Early Opportunities workstream recognises that the identity of all parties involved in any co-ordination opportunity may not be known at this stage. The Applicant remains open to tangible opportunities which could use the Norfolk Boreas infrastructure in the future, and will continue to play a proactive role in the OTNR process.

7. The Applicant would note that, as with many of the examples put forward in OFGEM's consultation document (published 14/07/2021 – "Changes intended to bring about greater coordination in the development of offshore energy networks") – the solutions put forward do not change the principle of needing infrastructure to enable connection of offshore projects into the National Grid.

8. Notwithstanding the above, as the development of the project began in 2015/16, the Applicant has necessarily worked within the regulatory bounds of the current system, which has been designed around radial offshore connections. Prior to the OTNR, and in consultation with local stakeholders, the Applicant has proactively provided a coordinated '3.6GW Norfolk Project' and has continuously sought to reduce the onshore impact of the transmission works. The alternatives considered in this respect and the decision to take a strategic approach to minimise impacts is summarised in Table 5.1 of the Design and Access Statement (document 8.3, Version 5, [REP14-014]).

1.3 Coordination to date

9. The Applicant considers that, within the confines of the current regulatory regime, delivery of both the Norfolk Vanguard and Norfolk Boreas projects via one shared underground cable corridor and a single landing point for both projects, as well as

one onshore enabling works campaign, with buried ducts being installed in sections for the entire capacity of both projects at the same time, will provide the most coordinated approach to installing 3.6 GW of offshore wind undertaken in the UK to date.

10. Pre-ducting reduces wholesale trenching activities from 8 years to 2 years and a sectionalised approach minimises disruption to a localised area. In addition, the decision to deploy HVDC transmission technology has reduced the width of the onshore temporary easement from 100m to 45m (by 55%) with a reduction in the permanent easement from 54m to 20m (by 63%). This has also reduced the required number of onshore cables from up to 36, to up to 8 cables in total, for both Norfolk Vanguard and Norfolk Boreas.

11. These commitments have the effect of saving resources and energy, minimising impact footprint and reducing installation time, with the overall effect of minimising environmental impacts. In this manner, if both the Vanguard and Boreas projects are consented, the coordinated approach and use of HVDC transmission technology, reduces environmental impacts overall, whilst increasing certainty on delivering renewable energy in line with the UK's targets and providing cost savings to the UK consumer.

1.4 Existing coordination with other projects in development

12. The Applicant is working with other developers to secure appropriate co-ordination of construction activities (and related impact mitigations) at and around the locations where onshore cable corridors will eventually cross. The Applicant is progressing a Co-operation Agreement with the developer of the Hornsea Project Three scheme, addressing a number of areas where there is potential to reduce local onshore impacts. These topics include

    i. co-ordination of construction programmes, to minimise and mitigate periods of co-incident peak haulage activity for the two projects where possible;
    ii. co-ordination of stakeholder engagement plans and activities to minimise stakeholder time investment
    iii. sharing of pre-construction survey works in relation to the crossing point and access routes to minimise on-site activities; and
    iv. shared responsibility for implementation and operation of temporary traffic management schemes in sensitive locations close to the crossing.

13. Many commitments are already secured within the relevant DCO (draft DCO in the case of Norfolk Vanguard and Norfolk Boreas) construction and traffic management

plans where all three parties have sought to take a consistent approach to commitments as far as possible in relation to the themes identified above.

14. The Co-operation Agreement represents the overarching document which will formalise the mechanisms to work together to deliver those commitments secured throughout the project plans.

15. The Applicant and Norfolk Vanguard Limited have also engaged with Equinor to understand proposals in relation to cable crossing points between Norfolk Boreas and Norfolk Vanguard and the Dudgeon and Sheringham Shoal Extension Projects (DEP and SEP).

16. The Applicant (and Norfolk Vanguard Limited) will continue to engage with Equinor with a view to securing a crossing agreement in due course. The Applicant has also responded to the recent DEP and SEP Section 42 consultation to identify key areas of overlap between the projects and will continue to engage on these matters so that any potential for coordination can be identified where appropriate as the construction plans for DEP and SEP (currently in the early stages of development) continue to develop.

17. Finally, the Applicant is continuing to engage, along with Norfolk Vanguard Limited, with ScottishPower Renewables in respect of possible opportunities to deliver HRA compensation jointly with East Anglia ONE North and East Anglia TWO, should compensation be required by the SoS for any of these projects.