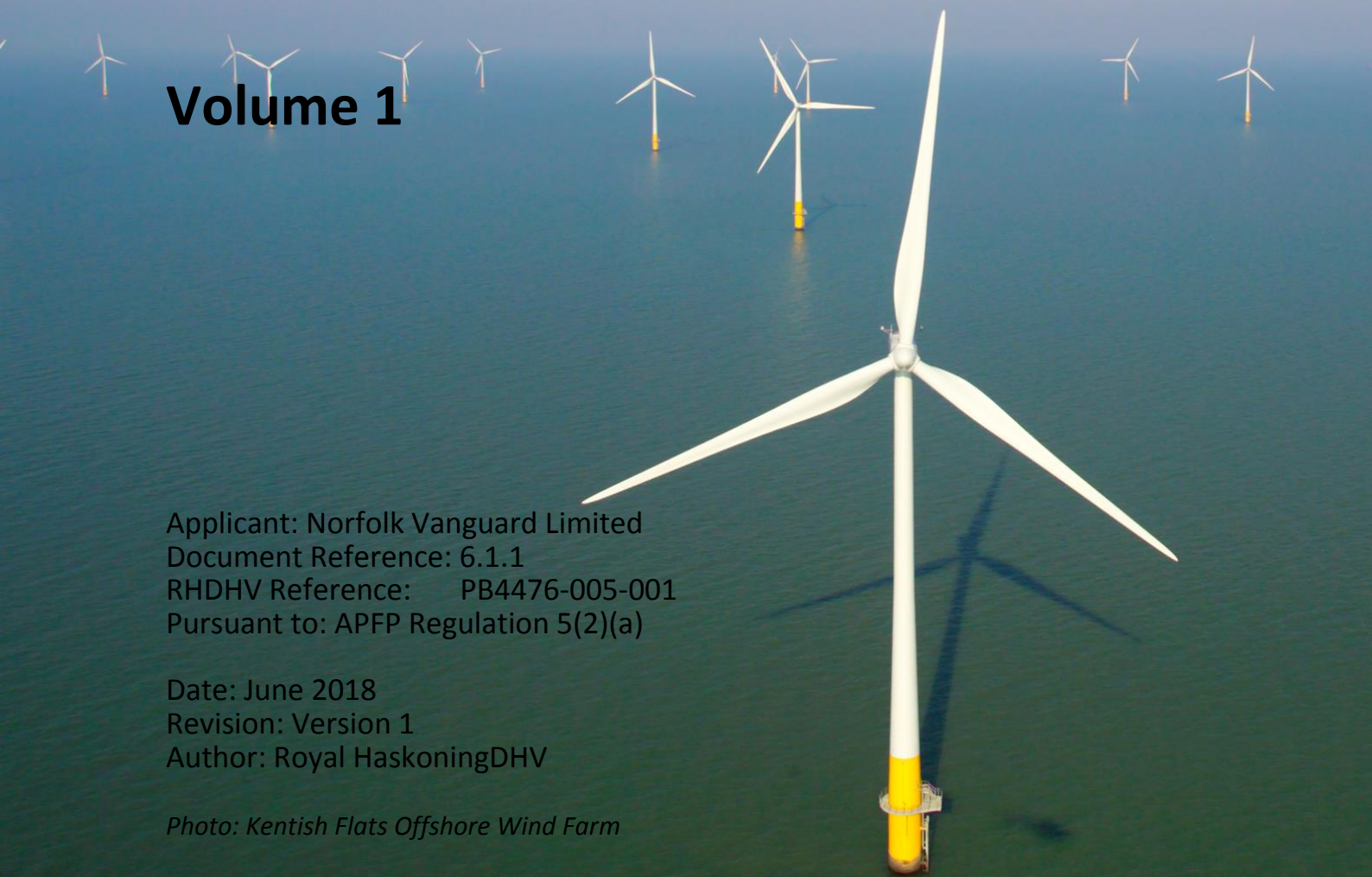
Norfolk Vanguard Offshore Wind Farm

Chapter 1
Introduction

Environmental Statement

Volume 1



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Environmental Impact Assessment
Environmental Statement

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Glossary

AfL	Agreement for Lease
DCO	Development Consent Order
EAOW	The Consortium Company, East Anglia Offshore Wind Ltd
EIA	Environmental Impact Assessment
ES	Environmental Statement
EU	European Union
GW	Gigawatt
HVDC	High Voltage Direct Current
IEMA	Institute of Environmental Management and Assessment
MW	Megawatt
NSIP	Nationally Significant Infrastructure Project
NTS	Non-Technical Summary
NV East	Norfolk Vanguard East
NV West	Norfolk Vanguard West
OWF	Offshore Wind Farm
PEIR	Preliminary Environmental Information Report
SPR	ScottishPower Renewables
VPWL	Vattenfall Wind Power Limited
ZDA	Zone Development Agreement

Terminology

National Grid substation extension	The permanent footprint of the National Grid substation extension
Onshore cable route	The 45m easement which will contain the buried export cables as well as the temporary running track, topsoil storage and excavated material during construction.
Offshore export cables	The cables which bring electricity from the offshore electrical platform to the landfall.
Offshore cable corridor	The area from the offshore wind farm sites to the landfall, where the offshore export cables will be located
Offshore project area	The overall offshore area of Norfolk Vanguard East, Norfolk Vanguard West and the offshore cable corridor
Landfall	Where the offshore cables come ashore at Happisburgh South
Necton National Grid substation	The existing 400kV substation at Necton, which will be the grid connection location for Norfolk Vanguard
Onshore project substation	A compound containing electrical equipment to enable connection to the National Grid. The substation will convert the exported power from HVDC to HVAC, to 400kV (grid voltage). This also contains equipment to help maintain stable grid voltage.
The Offshore Wind Farm (OWF) sites	The two distinct offshore wind farm areas, Norfolk Vanguard East and Norfolk Vanguard West.
The project	Norfolk Vanguard Offshore Wind Farm, including the onshore and offshore infrastructure.

1 INTRODUCTION

1.1 The Purpose of this Document

1. This document is the Environmental Statement (ES) for the Norfolk Vanguard Offshore Wind Farm (herein 'Norfolk Vanguard' or 'the project'). A full project description is given in Chapter 5 Project Description.

2. This ES describes the potential environmental impacts associated with Norfolk Vanguard including the associated infrastructure both onshore and offshore, which may arise from construction, operation (including maintenance activities) and decommissioning of the project.

3. The purpose of this ES is to provide the necessary information and impact assessments undertaken as required by the Environmental Impact Assessment (EIA) Directive (85/337/EEC) as amended and more specifically under the 'The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017' (the EIA Regulations 2017).

4. This ES has been informed by a Scoping Opinion from the Planning Inspectorate that was received in November 2016. This ES also builds upon, and updates the information previously provided within the Preliminary Environment Information Report (PEIR) for Norfolk Vanguard, which was submitted for stakeholder consultation in October 2017 under Section 42 of the Planning Act 2008. Feedback from this consultation has been used to inform the final design and impact assessment of the project and the associated ES.

5. The ES is being submitted as part of an application for a Development Consent Order (DCO) as required under Section 37 of the Planning Act 2008. Further information on the legislative context for Norfolk Vanguard is provided in Chapter 3 Policy and Legislative Context.

1.2 Background

6. In December 2009, as part of the UK Offshore Wind Round 3 tender process, The Crown Estate awarded the joint venture company East Anglia Offshore Wind (EAOW) Ltd the rights to develop Zone 5 (later called the 'East Anglia zone'). These rights were granted through a Zone Development Agreement (ZDA). EAOW Ltd. was a 50:50 joint venture owned by Vattenfall Wind Power Ltd (VWPL) and ScottishPower Renewables (UK) Limited (SPR).

7. Under the ZDA, the joint venture consented East Anglia ONE, and commenced the EIA process for East Anglia THREE (prior to the project being taken forward to

submission by SPR) and East Anglia FOUR (up to submission of a request for Scoping Opinion in 2012).

8. In December 2014, a decision was taken to split the zone, with Vattenfall Wind Power Ltd (VWPL) having development rights within the north of the former East Anglia Zone, and SPR continuing to develop the southern part. In agreement with The Crown Estate, the ZDA was effectively dissolved in 2016 and subsequently, new Agreement for Lease (AfL) areas have separately been awarded by The Crown Estate within the former Zone, to VWPL and its affiliate companies, and SPR and its affiliates.

9. This ES is for Norfolk Vanguard, one of the AfL areas in the north of the former Zone. The offshore wind farm (OWF) comprises two distinct areas, Norfolk Vanguard East (NV East) and Norfolk Vanguard West (NV West) ('the OWF sites') within which wind turbines will be located. The offshore wind farm will be connected to the shore by offshore export cables installed within the offshore cable corridor (Chapter 5 Project Description, Figure 5.1). A full project description is given in Chapter 5 Project Description.

10. The onshore project area comprises a landfall (where the offshore cables are brought ashore and jointed to the onshore cables within transition pits), the onshore cable route (within which the onshore export cables will be located), an onshore project substation and an extension to the existing Necton National Grid substation (Chapter 5 Project Description, Figure 5.2).

11. A subsidiary of VWPL also holds an AfL for a second offshore wind farm, Norfolk Boreas, which will be the subject of a separate DCO application and EIA process. Norfolk Boreas will also connect to the grid at the existing Necton National Grid substation. If, as anticipated, Norfolk Vanguard is constructed first, cable ducts for Norfolk Boreas will be installed as part of the Norfolk Vanguard installation works within a single cable corridor (see Chapter 5 Project Description). These works are considered within the Norfolk Vanguard EIA as 'associated development' (as defined under section 115 of the Planning Act 2008). By installing all the ducts required for both Norfolk Vanguard and Norfolk Boreas in one phase of work, environmental impacts and disturbance are minimised. Other onshore infrastructure, for example the Norfolk Boreas onshore project substation, will be consented under a separate Norfolk Boreas DCO process. The cumulative impacts of Norfolk Boreas and Norfolk Vanguard are summarised within each technical chapter (Chapters 8 – 31), and summarised in Chapter 33 Offshore Cumulative and Transboundary Impacts and Chapter 34 Onshore Cumulative Impacts.

12. Norfolk Vanguard and Norfolk Boreas each have a capacity of up to 1800MW, providing a total, combined offshore wind farm generation capacity of up to 3600MW (3.6GW), enough for 2.6 million UK households.

1.3 The Developer and Project Team

13. Norfolk Vanguard Limited (an affiliate company of VWPL) is the Applicant undertaking the development of Norfolk Vanguard.

14. Vattenfall, the ultimate parent company of VWPL and Norfolk Vanguard Ltd, is the Swedish state-owned utility company and one of Europe's largest generators of electricity and heat. Vattenfall is also the second largest developer in the global offshore wind sector. Vattenfall's purpose is to power climate smarter living and the company is strongly committed to significant growth in wind energy, both onshore and offshore.

15. Vattenfall has invested over £3bn in the UK, mainly in onshore and offshore wind, since 2008 and now has nearly 1GW in operation onshore and offshore. Vattenfall plans to invest €5bn in renewables, mainly offshore wind, in Northern Europe by 2020 with an overall ambition to have 4GW of operational capacity by 2020 and 7GW by 2025 (Vattenfall, 2016). The company has the ambition that the UK will continue to be a growth market for Vattenfall, with Norfolk Vanguard and Norfolk Boreas providing a significant next step.

16. Vattenfall has world leading experience in offshore wind, as owner of Kentish Flats, Kentish Flats Extension and Thanet Offshore Wind Farms, all operating in the southern North Sea, Dan Tysk and Sandbank in the German North Sea and Ormonde Offshore Wind Farm in the Irish Sea. Vattenfall is also developing a number of European offshore wind farms, including the European Offshore Wind Deployment Centre located in Aberdeen Bay; this innovative offshore wind scheme will trial next generation technology.

17. Royal HaskoningDHV has been commissioned by Norfolk Vanguard Limited as the consultant to lead the Norfolk Vanguard EIA. Royal HaskoningDHV is supported through the EIA process by a number of additional consultants who are responsible for particular specialist topics. Royal HaskoningDHV is an environmental and engineering consultancy with significant expertise in offshore renewable energy.

18. Royal HaskoningDHV has provided environmental, development and consenting support on over 14GW of renewable energy projects across 26 UK offshore wind farms. Their EIA activities and ESs are accredited by the Institute of Environmental Management and Assessment (IEMA) under the EIA Quality Mark Scheme. This

demonstrates Royal HaskoningDHV's commitment to ensuring EIA is maintained at high quality and in accordance with best practice.

1.4 Purpose of the Project

19. Climate change is a global issue as a result of the anthropogenic increase of carbon emissions into the atmosphere. Generating and harnessing energy from low carbon, renewable sources, such as offshore wind, is one of the solutions available to substantially reduce carbon emissions whilst answering the challenges of meeting energy demand as part of a balanced energy portfolio. The UK has an ambitious target of reducing greenhouse gas emissions by 57% relative to 1990 levels by 2030, and by 80% by 2050. Offshore wind currently generates 5% of the UK's electricity and this is expected to double by 2021.

20. Norfolk Vanguard would make a significant contribution both to the achievement of UK decarbonisation targets and to global commitments to mitigating climate change. By generating low carbon, renewable electricity in the UK, Norfolk Vanguard will also help to reduce the UK's reliance on imported energy. Further detail is provided in Chapter 2 Need for the Project and Chapter 3 Policy and Legislative Context.

1.5 EIA Process

21. The overall objective of the EIA is to identify potentially significant adverse impacts resulting from a project in order for them to be avoided or minimised where possible, as well as identifying opportunities for beneficial impacts.

22. EIA is a procedure required under the terms of European Union (EU) Directive 85/337/EEC (as amended by Directive 97/11/EC), on assessment of the effects of certain public and private projects on the environment. It has been transposed into English law for Nationally Significant Infrastructure Projects (NSIPs) by The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009, which have since been revised to 'The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017' (the EIA Regulations 2017).

23. Norfolk Vanguard has a planned capacity of up to 1,800MW and is therefore above the threshold for offshore development projects to be considered as NSIPs. An EIA, in accordance with the 2017 Regulations has therefore been completed for the project; this is explained in further detail in Chapter 6 Environmental Impact Assessment Methodology.

1.6 ES Structure

24. The ES covers Norfolk Vanguard, including the onshore and offshore infrastructure. The ES comprises three volumes:

- Volume 1: ES chapters (chapter list shown in Table 1.1*)*;
- Volume 2: Figures; and
- Volume 3: Appendices.

Table 1.1 ES Volume 1 chapter list

Introductory	Chapter 1 Introduction Chapter 2 Need for the Project Chapter 3 Policy and Legislative Context Chapter 4 Site Selection and Assessment of Alternatives Chapter 5 Project Description Chapter 6 EIA Methodology Chapter 7 Technical Consultation
Offshore	Chapter 8 Marine Geology, Oceanography and Physical Processes Chapter 9 Marine Water and Sediment Quality Chapter 10 Benthic and Intertidal Ecology Chapter 11 Fish and Shellfish Ecology Chapter 12 Marine Mammals Chapter 13 Offshore Ornithology Chapter 14 Commercial Fisheries Chapter 15 Shipping and Navigation Chapter 16 Aviation and Radar Chapter 17 Offshore and Intertidal Archaeology and Cultural Heritage Chapter 18 Infrastructure and Other Users
Onshore	Chapter 19 Ground Conditions and Contamination Chapter 20 Water Resources and Flood Risk Chapter 21 Land Use and Agriculture Chapter 22 Onshore Ecology Chapter 23 Onshore Ornithology Chapter 24 Traffic and Transport Chapter 25 Noise and Vibration Chapter 26 Air Quality Chapter 27 Human Health Chapter 28 Onshore Archaeology and Cultural Heritage
Scheme Wide Aspects	Chapter 29 Landscape and Visual Impact Assessment Chapter 30 Tourism and Recreation Chapter 31 Socio-economics
Summary chapters	Chapter 32 Offshore Cumulative and Transboundary Impacts Chapter 33 Onshore Cumulative Impacts Chapter 34 Summary

25. In addition, a separate stand-alone Non-Technical Summary (NTS) is available which summarises the key baseline data and findings of the ES.

1.7 References

RenewableUK (undated). Wind Energy Statistics Explained. Available at: http://www.renewableuk.com/page/UKWEDExplained [Accessed: 22/03/17].
Royal HaskoningDHV (2016). Norfolk Vanguard Offshore Wind Farm Environmental Impact Assessment Scoping Report.
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