

Norfolk Vanguard Offshore Wind Farm Summary of Norfolk Boreas Environmental Statement Information with respect to Cumulative Impacts

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Photo: Kentish Flats Offshore Wind Farm

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Table of Contents

1	Introduction	1
1.1	Purpose of this document	1
2	Summary of Norfolk Boreas Environmental Statement.....	2
2.1	Ground Conditions and Contamination	2
2.2	Water Resources and Flood Risk.....	3
2.3	Land Use and Agriculture	3
2.4	Onshore Ecology	4
2.5	Onshore Ornithology.....	4
2.6	Traffic and Transport.....	5
2.7	Noise and Vibration	6
2.8	Air Quality.....	7
2.9	Human Health	8
2.10	Onshore Archaeology and Cultural Heritage	8
2.11	Landscape and Visual Assessment (LVIA).....	9
2.12	Tourism and Recreation	11
2.13	Socio-economics	11
2.14	Norfolk Boreas Cumulative Impacts Summary	12

Glossary of Acronyms

CIA	Cumulative Impact Assessment
dDCO	Draft Development Consent Order
DCO	Development Consent Order
EIA	Environmental Impact Assessment
ES	Environmental Statement
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
LCU	Landscape Character Unit
NB	Norfolk Boreas
NV	Norfolk Vanguard
OCoCP	Outline Code of Construction Practice
OLEMS	Outline Landscape and Ecological Management Plan
PEIR	Preliminary Environmental Information Report
WSI	Written Scheme of Investigation

1 INTRODUCTION

1.1 Purpose of this document

1. This document has been created in response to the Secretary of State's requests for additional information published on 5th July 2021 which stated:

"...the Secretary of State requests that the Applicant should provide any additional information on the cumulative impacts of the proposed Norfolk Vanguard project that will assist him in considering the impacts of the proposals to locate the Norfolk Vanguard substation(s) at Necton. The additional information should include but not necessarily be limited to assessments of landscape and visual effects, construction and operational noise effects, the impacts of artificial lighting at the substation sites and any potential water run-off from the substations. That information might include any material which was produced as part of the application, or during the examination, of the Norfolk Boreas project which the Applicant considers may be relevant to the Secretary of State's consideration of the cumulative effects of the substation infrastructure (including any proposed mitigation)."

2. This document provides a summary of the information from the Norfolk Boreas Environmental Statement for all topics which are relevant to potential cumulative impacts at the onshore project substation.
3. Each section contains reference to the documents submitted as part of the Norfolk Boreas Application which are relevant to the Norfolk Vanguard re-determination; the Norfolk Boreas examination library reference is given in square brackets with the prefix NB. The Norfolk Boreas Examination Library can be accessed using the following [Link](#). The sections also contain references to documents from the Norfolk Vanguard Examination Library which are given in square brackets with the prefix NV and can be accessed using the following [Link](#).
4. A full list of all the documents from the Norfolk Boreas development consent application process and referred to by the Applicant in response to the Secretary of State's request for additional information, with links to the documents in the Norfolk Boreas examination library, is presented in document 'Norfolk Boreas Document Index' (ExA.AS-4.D11.V1) submitted by the Applicant on the 2 August.

2 SUMMARY OF NORFOLK BOREAS ENVIRONMENTAL STATEMENT

5. This section summarises the information from the Norfolk Boreas Environmental Statement (ES) (ES Chapters 19 to 29, [NB APP-232 to APP-242]) relating to potential cumulative impacts from the Norfolk Boreas and Norfolk Vanguard onshore project substations for each of the relevant Environmental Impact Assessment (EIA) topics.
6. The information presented here pertains to Norfolk Boreas Scenario 1 which is the scenario assessed in the Norfolk Boreas ES whereby both Norfolk Vanguard and Norfolk Boreas projects proceed to construction. Under the alternative Scenario 2, Norfolk Vanguard does not proceed to construction and therefore there would be no cumulative impacts with Norfolk Boreas.
7. For details on EIA and Cumulative Impact Assessment (CIA) methodology please refer to the Norfolk Boreas ES Chapter 6 EIA Methodology [NB APP-219] and Chapter 33 Onshore Cumulative Impact Assessment [NB APP-246]. For further information relating to the CIA approach relevant to the individual onshore EIA topic chapters please refer to the relevant ES Chapter referenced in the section summaries below.
8. The Applicant also submits for consideration the accompanying Norfolk Boreas ES Figures which show the location of the Norfolk Boreas Scenario 1 onshore project substation and the shared onshore cable route (as amended during the Norfolk Vanguard examination) and the relevant Norfolk Boreas ES Appendices which contain updated or new information.

2.1 Ground Conditions and Contamination

9. This section summarises the findings presented in the Norfolk Boreas ES Chapter 19 Ground Conditions and Contamination [NB APP-232] relevant to potential cumulative impacts from the proposed Norfolk Vanguard and Norfolk Boreas onshore project substations on ground conditions and contamination. See also Norfolk Boreas ES Figures 19.1 to 19.6 [NB APP-416 to APP-421].
10. Impacts during Operation & Maintenance were scoped out of the EIA in accordance with the Norfolk Boreas EIA Scoping Report (Royal HaskoningDHV, 2017), Ground Conditions and Contamination Method Statement (Royal HaskoningDHV, 2018, unpublished) and Preliminary Environmental Information Report (PEIR) (Norfolk Boreas Limited, 2018).
11. Cumulative impacts with Norfolk Vanguard during construction were assessed in section 19.8.1.1.1 of ES Chapter 19 [NB APP-232] and summarised in section 33.4.1 of ES Chapter 33 [NB APP-246]. The assessment considered that simultaneous developments could lead to a larger land take and increased potential for impacts on water quality within the secondary aquifer during construction, however the proposed mitigation (outlined in section 19.7 and secured in section 11 of the Outline Code of Construction Practice (OCoCP) [NB REP18-019] will prevent any significant adverse impacts on ground conditions and reduce contamination risks. The same mitigation is also detailed in Norfolk Vanguard ES Chapter 19 [NV APP-343], section 19.7 and is secured in the Norfolk Vanguard OCoCP [NV REP09-010].

12. As such, and as detailed in Table 33.4 of ES Chapter 33 [NB APP-246], the cumulative assessment concluded **no impact** on ground conditions and contamination as a result of Norfolk Vanguard and Norfolk Boreas. These findings are consistent with those presented in the Norfolk Vanguard ES.

2.2 Water Resources and Flood Risk

13. This section summarises the findings presented in the Norfolk Boreas ES Chapter 20 Water Resources and Flood Risk [NB APP-233] relevant to potential cumulative impacts from the proposed Norfolk Vanguard and Norfolk Boreas onshore project substations on water resources and flood risk. See also Norfolk Boreas ES Figures 20.1 to 20.6 [NB APP-422 to APP-427] and Appendices 20.1 to 20.2 and 20.4 [NB APP-586 to APP-587, APP-589].
14. The potential cumulative impacts as a result of the construction of the Norfolk Boreas and Norfolk Vanguard onshore project substations were assessed in section 20.8.1 [NB APP-233] and are summarised in section 33.4.2 of ES Chapter 33 [NB APP-246]. The assessment considered all impacts during construction of Norfolk Boreas as negligible to minor adverse, with a minor adverse cumulative impact on the river catchment in which the onshore project substations would be located. The cumulative impact, following the mitigation detailed in the OCoCP [NB REP8-019] and secured by dDCO Requirement 20, is therefore considered to be **minor adverse**. The same mitigation is detailed in the Norfolk Vanguard OCoCP [NV REP09-010] and secured by dDCO Requirement 20.
15. The potential cumulative impacts as a result of the operation of the Norfolk Boreas and Norfolk Vanguard onshore project substations were assessed in section 20.8.2 [NB APP-233] and are summarised in section 33.4.2 of ES Chapter 33 [NB APP-246]. The assessment concluded the operational cumulative impact to be **negligible to minor adverse**.
16. As such, and as detailed in Table 33.5 of ES Chapter 33 [NB APP-246], the cumulative assessment concluded **no significant impact** on Water Resources and Flood Risk as a result of Norfolk Vanguard and Norfolk Boreas. These findings are consistent with those presented in the Norfolk Vanguard ES.

2.3 Land Use and Agriculture

17. This section summarises the findings presented in the Norfolk Boreas ES Chapter 21 Land Use and Agriculture [NB APP-234] relevant to potential cumulative impacts from the proposed Norfolk Vanguard and Norfolk Boreas onshore project substations on land use and agriculture. See also ES Figures 21.1 to 21.6 [NB APP-428 to APP-433].
18. Cumulative impacts with Norfolk Vanguard during construction were assessed in section 21.8.1 of ES Chapter 21 [NB APP-234] and summarised in section 33.4.3 of ES Chapter 33 [NB APP-246]. Potential cumulative impacts related to intrusive groundworks from the two projects. Mitigation measures outlined in section 21.7.1 of the OCoCP [NB REP18-019] and secured by dDCO Requirement 20) would reduce the magnitude of effect to low, and would reduce the residual impact to **minor adverse**. The same mitigation is detailed in the Norfolk Vanguard OCoCP [NV REP9-010] and secured by dDCO Requirement 20.

19. The potential cumulative impacts as a result of the operation of the Norfolk Boreas and Norfolk Vanguard onshore project substations were assessed in section 21.8.2 [APP-233]. The assessment concluded the operational cumulative impact to be **minor adverse**.
20. As such, and as detailed in Table 33.6 of ES Chapter 33 [NB APP-246], the cumulative assessment concluded **no significant impact** on land use and agriculture as a result of the construction and operation of Norfolk Vanguard and Norfolk Boreas. These findings are consistent with those presented in the Norfolk Vanguard ES.

2.4 Onshore Ecology

21. This section summarises the findings presented in the Norfolk Boreas ES Chapter 22 Onshore Ecology [NB APP-235] relevant to potential cumulative impacts from the proposed Norfolk Vanguard and Norfolk Boreas onshore project substations on onshore ecology. See also Norfolk Boreas ES Figures 22.1 to 22.9 [NB APP-434 to APP-442] and Appendices 22.1, 22.2 to 22.5, 22.8 and 22.10 [NB APP-592, APP-595, APP-599, APP-600 to APP-603, APP-606 and APP-608].
22. The potential cumulative impacts as a result of the construction of the Norfolk Boreas and Norfolk Vanguard onshore project substations were assessed in section 22.8.1 NB [APP-230] and summarised in section 33.4.4 of ES Chapter 33 [NB APP-246]. The assessment concluded that the residual impact, following mitigation secured in the Outline Landscape and Ecological Management Strategy (OLEMS) [NB REP14-020], for construction would range from **no impact** to **minor adverse** dependent of the specific receptors, varying by location, flora and fauna. The same mitigation is secured in the Norfolk Vanguard OLEMS [NV REP9-014].
23. The operational assessment in section 22.8.2 of ES Chapter 22 Onshore Ecology [NB APP-235] and summarised in section 33.4.4 of ES Chapter 33 [NB APP-246] concluded that operational impacts would be **minor adverse**.
24. As such, and as detailed in Table 33.7 of ES Chapter 33 [NB APP-246], the cumulative assessment concluded **no significant impact** on onshore ecology as a result of the construction and operation of Norfolk Vanguard and Norfolk Boreas. These findings are consistent with those presented in the Norfolk Vanguard ES.

2.5 Onshore Ornithology

25. This section summarises the findings presented in the Norfolk Boreas ES Chapter 23 Onshore Ornithology [NB APP-236], relevant to potential cumulative impacts from the proposed Norfolk Vanguard and Norfolk Boreas onshore project substations on onshore ornithology. See also Norfolk Boreas ES Figure 23.1 [NB APP-446] and Appendix 23.1 [NB APP-610].
26. Cumulative impacts with Norfolk Vanguard during construction were assessed in section 23.8.1 of ES Chapter 23 [NB APP-236] and summarised in section 33.4.5 of ES Chapter 33 [NB APP-246].
27. No qualifying ornithological features were recorded wintering or on passage within 300m of the onshore project substations. Additionally, the onshore project substations are at least

2km from any designated sites and 5km from any nationally designated sites (section 23.7.5.1 of ES Chapter 23 [NBAPP-236]).

28. The potential cumulative impacts as a result of the construction of the proposed Norfolk Boreas and Norfolk Vanguard onshore project substations were assessed in section 22.8.1 [NB APP-230] and summarised in section 33.4.5 of ES Chapter 33 [NB APP-246]. The assessment concluded that for construction the impacts would be, as a worst case, **minor adverse** following the mitigation secured in the OLEMS [NB REP14-020]. The same mitigation is secured in the Norfolk Vanguard OLEMS [NV REP9-014].
29. The operational assessment in section 23.8.2 of ES Chapter 23 Onshore Ornithology [NB APP-236] and summarised in section 33.4.5 of ES Chapter 33 [APP-246] concluded that the worst case operational impacts would be **minor adverse**.
30. Therefore, and as detailed in Table 33.8 of ES Chapter 33 [NB APP-246], the cumulative assessment concluded there would be **no significant impacts** on onshore ornithology as a result of the construction and operation of Norfolk Vanguard and Norfolk Boreas. These findings are consistent with those presented in the Norfolk Vanguard ES.

2.6 Traffic and Transport

31. This section summarises the findings presented in the Norfolk Boreas ES Chapter 24 Traffic and Transport [NB APP-237] relevant to potential cumulative impacts from the proposed Norfolk Vanguard and Norfolk Boreas onshore project substations on traffic and transport. Also see Norfolk Boreas ES Figures 24.1 to 24.2, 24.4 to 24.8 and 24.11 [NB APP-452 to APP-453, APP-455 to APP-459 and APP-462] and Appendices 24.2 to 24.18, 24.32 and 24.35 [NB APP-617 to APP-633, APP-647 and APP-650].
32. Cumulative impacts with Norfolk Vanguard during construction were assessed in section 24.8.1.2 of ES Chapter 24 [NB APP-237] and summarised in section 33.4.6 of ES Chapter 33 [NB APP-246]. The assessment concluded that the cumulative traffic demand of these projects together would not result in a greater impact than that of the assessed worst case for either project alone. This is consistent with the findings presented in the Norfolk Vanguard ES, section 24.8.1.1 [NV APP-234] which concluded that any potential cumulative impacts associated with Norfolk Boreas would be no greater than the assessed worst case for Norfolk Vanguard alone.
33. The worst case traffic assessments for Norfolk Boreas and Norfolk Vanguard concluded there would be no significant residual impact on road links associated with the onshore project substation, following mitigation secured in the Outline Traffic Management Plan [NB APP-699] [NV REP08-13], Outline Travel Plan [NB APP-700] [NV APP-033] and Outline Access Management Plan [NB REP10-016] [NV REP8-048] secured in Requirements 21 and 22 of the dDCOs. Furthermore, there would be no cumulative impacts on local or minor roads relating to the onshore project substations due to the use of the Strategic Road (Trunk Road) Network for these works (as detailed in section 24.6.1 of Norfolk Vanguard ES Chapter 24 [NV APP-234] and shown in Appendix 24.1 [NV APP-256]).

34. Impacts during Operation & Maintenance were scoped out of the EIA in accordance with the Norfolk Boreas EIA Scoping Report (Royal HaskoningDHV, 2017), Traffic and Transport Method Statement (Royal HaskoningDHV, 2018, unpublished) and PEIR (Norfolk Boreas Limited, 2018).
35. As such, and as detailed in Table 33.9 of ES Chapter 33 [NB APP-246], the cumulative assessment concluded **no significant impacts** on traffic and transport during the construction phase as a result of Norfolk Vanguard and Norfolk Boreas. These findings are consistent with those presented in the Norfolk Vanguard ES.

2.7 Noise and Vibration

36. This section summarises the findings presented in the Norfolk Boreas ES Chapter 25 Noise and Vibration [NB APP-238] relevant to potential cumulative impacts from the proposed Norfolk Vanguard and Norfolk Boreas onshore project substations on noise and vibration. See also Norfolk Boreas ES Figures 25.1 and 25.2 [NB APP-469 and APP-470] and Appendices 25.2 and 25.3 [NB APP-658 and APP-659].
37. Cumulative impacts of Norfolk Boreas and Norfolk Vanguard during construction were assessed in section 25.9.1.1.1 of ES Chapter 25 [NB APP-238] and summarised in section 33.4.7 of ES Chapter 33 [NB APP-246]. The assessment considered the potential impacts associated with construction road traffic noise and from the construction activities.
38. As detailed in section 25.9.1.1.1 [NB APP-238] the potential impacts of road traffic noise at noise sensitive receptors are predicted to have a minor adverse impact for Norfolk Boreas and at worst moderate adverse (on three links during 2022) for Norfolk Vanguard. Through the implementation of a Traffic Management Plan for Norfolk Boreas [NB APP-699] and Norfolk Vanguard [NV REPO8-13] (secured in Requirement 21 the dDCOs), resultant noise contributions will be reduced to at worst a **minor adverse** impact. The potential cumulative impacts as a result of the construction activities of the Norfolk Boreas and Norfolk Vanguard onshore project substations were assessed in section 25.9.1.1.1 [NB APP-238]. The assessment identified that at the onshore project substations during the primary works for Norfolk Boreas and the electrical plant installation and commissioning for Norfolk Vanguard the impact magnitude was no impact at all noise sensitivity receptors, which represents an impact of negligible significance. The assessment also identified that during the pre-construction works for Norfolk Boreas and the primary works for Norfolk Vanguard the impact magnitude was no impact at all receptors, also representing an impact of negligible significance.
39. The operational noise assessment was presented in section 25.8.6.1.2 of ES Chapter 25 [NB APP-238] and assumed, as a worst case approach, that both the Norfolk Vanguard and the existing Dudgeon substations would be fully operational and would have implemented their agreed mitigation. The operational assessment demonstrates that the mitigated cumulative noise emissions from the onshore project substations, specifically, operational noise from Norfolk Boreas, Norfolk Vanguard and Dudgeon does not exceed the noise levels specified by Breckland Council and secured by Requirement 27 of the dDCOs, which are;

- The noise rating level (defined as set out in BS4142:2014¹) from the operation of the substation shall not exceed 35 dB LAeq, (5 minutes) at any time at a free field location immediately adjacent to any noise sensitive location; and
 - Noise from the operation of the substation shall not exceed a limit value of 32 dB LLeq (15 minutes) in the 100 Hz third octave band, at any time at a free field location immediately adjacent to any noise sensitive location.
40. Therefore, at all noise sensitive receptors in proximity to the onshore project substations, a cumulative impact of **negligible** significance is predicted.
41. Both Norfolk Boreas Limited and Norfolk Vanguard Limited have committed to providing a final design of the projects which is able to meet the rigorous standards of low noise emissions expected by both the UK regulatory bodies and stakeholders and comply with the operational noise levels. Noise reduction technology and design approach is discussed in section 25.8.6.2 [NB APP-238] and concludes there are many proven mitigation options that, through the detailed design process, can be combined to create a design that will meet the required low noise emissions.
42. Therefore, and as detailed in Table 33.10 of ES Chapter 33 [NB APP-246], any potential cumulative impacts associated with construction or operational noise of Norfolk Boreas and Norfolk Vanguard are considered to be **not significant**. These findings are consistent with those presented in the Norfolk Vanguard ES.

2.8 Air Quality

43. This section summarises the findings presented in the Norfolk Boreas ES Chapter 26 Air Quality [NB APP-239] relevant to potential cumulative impacts from the proposed Norfolk Vanguard and Norfolk Boreas onshore project substations on air quality. Also see Norfolk Boreas ES Figures 26.3 and 26.4 [NB APP-473 and APP-474] and Appendixes 26.2 to 26.4 [NB APP-662 to APP-664].
44. Impacts during operation and maintenance were scoped out of the EIA in accordance with the Norfolk Boreas EIA Scoping Report (Royal HaskoningDHV, 2017), Air Quality Method Statement (Royal HaskoningDHV, 2018, unpublished) and PEIR (Norfolk Boreas Limited, 2018).
45. Cumulative impacts with Norfolk Vanguard during construction are assessed in section 26.8.1 of ES Chapter 26 [NB APP-239] and summarised in section 33.4.8 of ES Chapter 33 [NB APP-246]. The assessment considered that potential for impacts on air quality could result from both increased vehicle emissions and increased levels of fine dust or particulate matter generated during earth moving works but concluded that with the application of measures set out and secured in the OCoCP [NB REP18-019] air quality would be maintained within accepted levels throughout construction and would not be significant in EIA terms. The same mitigation is secured in the Norfolk Vanguard OCoCP [NV REP9-010].

¹ British Standard (Bs) 4142:2014 “Method for Rating and Assessing Industrial and Commercial Sound”

46. As such, and as detailed in Table 33.11 of ES Chapter 33 [NB APP-246], the cumulative assessment concluded **no significant impact** on air quality as a result of the Norfolk Vanguard and Norfolk Boreas construction works. The findings are consistent with those presented in the Norfolk Vanguard ES.

2.9 Human Health

47. This section summarises the findings presented in the Norfolk Boreas ES Chapter 27 Human Health [NB APP-240] relevant to potential cumulative impacts from the proposed Norfolk Vanguard and Norfolk Boreas onshore project substations on human health.
48. The potential cumulative impacts as a result of the construction of the Norfolk Boreas and Norfolk Vanguard onshore project substations were assessed in section 27.7.2 of ES Chapter 27 [NB APP-24] and summarised in section 33.4.9 of ES Chapter 33 [NB APP-246]. This assessed all potential human health impacts during construction of Norfolk Boreas and Norfolk Vanguard as ranging between no impact to minor adverse. The cumulative impact was therefore considered to be **minor adverse**.
49. The potential cumulative human health impacts as a result of the operation of the Norfolk Boreas and Norfolk Vanguard onshore project substations were assessed in section 27.7.2 [NB APP-240]. This assessed the operational cumulative impact to be **negligible to minor adverse**.
50. As such, and as detailed in Table 33.12 of ES Chapter 33 [NB APP-246], the cumulative assessment concluded **no significant impact** on human health as a result of the construction and operation of Norfolk Vanguard and Norfolk Boreas. The findings are consistent with those presented in the Norfolk Vanguard ES.

2.10 Onshore Archaeology and Cultural Heritage

51. This section summarises the findings presented in the Norfolk Boreas ES Chapter 28 Onshore Archaeology and Cultural Heritage [NB APP-241] relevant to potential cumulative impacts from the proposed Norfolk Vanguard and Norfolk Boreas onshore project substations on onshore archaeology and cultural heritage. See also ES Figures 28.1 to 28.7 [NB APP-477 to APP-483] and Appendices 28.4 to 28.8 [NB APP-672 to APP-676].
52. The potential cumulative impacts as a result of the construction of the Norfolk Boreas and Norfolk Vanguard onshore project substations were assessed in section 28.8.1 [NB APP-241] and summarised in section 33.4.10 of ES Chapter 33 [NB APP-246].
53. As detailed in section 28.7.5.3 of ES Chapter 38 [NB APP-241] there are no identified or relevant heritage setting impacts (**no impact**) on heritage assets associated with the onshore project substation construction, due to the distance of any potential assets from the onshore project substation. As detailed in section 28.7.5.4 no impacts on geoarchaeological / paleoenvironmental remains were identified as a result of the construction of the onshore project substation. The potential for the project to encounter currently unrecorded geoarchaeological / palaeoenvironmental remains will be mitigated by means of implementing the additional mitigation measures and commitments (set-out in the project-

specific Outline Written Scheme of Investigation [NB REP5-018]), which includes reference to a project-wide approach to geoarchaeological assessment / palaeoenvironmental survey.

54. As stated in section 28.8.1 [NB APP-241] under Norfolk Boreas Scenario 1 many of the groundworks and construction activities undertaken for Norfolk Vanguard will also serve to facilitate Norfolk Boreas. However, groundworks specific to each project will also be undertaken which could give rise to potential cumulative impacts on above ground and / or buried archaeological remains. Despite this potential, it should be noted that the strategic approach to delivering Norfolk Vanguard and Norfolk Boreas has been devised in such a way so as to contain the extent of potential direct impacts, thus helping to ensure that impacts are minimised as much as possible.
55. The assessment concluded that with the adoption of mitigation strategies by both Norfolk Boreas and Norfolk Vanguard which seek to avoid, reduce or offset impacts upon buried and above ground archaeological remains, the impact significance would be reduced (or offset) to a residual level of **non-significant** in EIA terms. The mitigation strategies are secured in the Outline WSIs for the relevant project [NB REP5-018] [NV REP8-011].
56. The potential cumulative impacts as a result of the operation of the Norfolk Boreas and Norfolk Vanguard onshore project substations relate to the visibility of the onshore project substations to heritage assets. The visualisation prepared from Cultural Heritage Viewpoint No. 1 (CH1) (NB ES Appendix 28.4 [NB APP-672]) indicate a potential for the very slight visibility of both the Norfolk Boreas and Norfolk Vanguard onshore project substations from a location within the northern-most extent of the grounds of the Church of St. Andrew. This is not considered to constitute harm to the heritage significance of the church nor any associated loss of appreciation of the heritage asset's significance. The assessment therefore concludes an effect of negligible magnitude, resulting in a **minor adverse** impact significance, which would very much represent a precautionary worst case scenario. The very slight visibility of the onshore project substations from the grounds of the Church of St Andrew may be further reduced by mitigation plantings embedded within the projects.
57. As such, and as detailed in Table 33.13 of ES Chapter 33 [NB APP-246], the cumulative assessment concluded **no significant impact** on onshore archaeology and cultural heritage as a result of the construction and operation of Norfolk Vanguard and Norfolk Boreas. The findings are consistent with those presented in the Norfolk Vanguard ES.

2.11 Landscape and Visual Assessment (LVIA)

58. This section summarises the Norfolk Boreas ES Chapter 29 Landscape and Visual Impact Assessment [NB APP-242] information relevant to the Norfolk Vanguard and Norfolk Boreas onshore substations. See also ES Figures 29.1 to 29.11 and 29.23 to 29.34 [NB APP-484 to APP-495 and APP-509 to APP-520] and Appendices 29.1 and 29.2 [NB APP-677 and APP-678].
59. Section 29.8 of ES Chapter 29 [NB APP-242] considered potential cumulative impacts with Norfolk Vanguard and other projects. It concluded as the main construction of the Norfolk Vanguard and Norfolk Boreas onshore project substation would be consecutive there would be no cumulative effects during the two construction phases.

60. The potential cumulative impacts as a result of the operation of the Norfolk Boreas and Norfolk Vanguard onshore project substations were assessed in section 29.8.2 of ES Chapter 29 [NB APP-242] and are summarised in section 33.4.11 of ES Chapter 33 [NB APP-246]. For Norfolk Boreas Scenario 1, Norfolk Vanguard formed part of the baseline to the assessment of Norfolk Boreas alone, with the in-combination effects of the two projects development being considered in more detail in section 29.8.2 of ES Chapter 29 [NB APP-242]. As such, the visualisations for Norfolk Boreas Scenario 1 in Norfolk Boreas ES Figures 29.23 to 29.34 [NB APP-509 to APP-520] simulate the potential view of the cumulative infrastructure. These are consistent with the visualisations presented in ES Figures 29.13 to 29.24 [NV APP-613 to APP-628] of the Norfolk Vanguard Application.
61. The assessment of cumulative visual impacts as a result of the operation of the Norfolk Boreas and Norfolk Vanguard onshore project substations on landscape character and visual amenity is detailed in section 29.8.2 of ES Chapter 29 [NB APP-242]. Under Norfolk Boreas Scenario 1, the onshore project substation would be located to the immediate east of the operational Norfolk Vanguard onshore project substation.
62. In section 29.8.2 the assessment concluded that the operation of the Norfolk Boreas and Norfolk Vanguard onshore project substations would only have a **significant** cumulative effect on landscape character in the localised parts of the Landscape Character Unit (LCU) in which the onshore project substations are located (Norfolk Vanguard onshore project substation would be located in the River Wissey Tributary Farmland LCU and the Norfolk Boreas onshore project substation in the Beeston Plateau LCU, see Norfolk Boreas ES Figure 29.2 [NB APP-485]). These effects are localised and reversible, with the mitigation planting proposed for Norfolk Boreas and Norfolk Vanguard reducing the effect to **non significant** after 20 years of growth. These findings are consistent with the findings presented in the Norfolk Vanguard ES.
63. In respect of the representative viewpoints, the assessment concluded that significant cumulative effects would arise at certain non-residential receptors within very localised extents where there would be views of the installed infrastructure, with the majority of viewpoints undergoing **no significant effects** or **no effect**. Significant effects were identified in relation to road-users on a very localised section (10m) of Ivy Todd Road to the south-west, and in relation to walkers along a section (550m) of Lodge Lane to the immediate south of the site.
64. Landscape planting is proposed for both projects (see Norfolk Boreas ES Figure 29.9 [NB APP-492]), which would reduce these localised effects to **not significant** within 20 years in respect of the views from the section of Lodge Lane and 25 years in respect of the opening on Ivy Todd Road west. The proposed planting is part of a strategic approach to enhancing landscape character and biodiversity in the local area, and Norfolk Boreas ES Figure 29.11 [NB APP-495] shows how mitigation planting will contribute to the wider landscape structure of the area and help consolidate green corridors for wildlife. Therefore, beyond the timeframes identified the effect would become beneficial as the mitigation planting would enhance the local visual amenity. These findings are consistent with the findings

presented in the Norfolk Vanguard ES and it should be noted that these are the same visual effects identified at these viewpoints for Norfolk Vanguard alone.

65. The cumulative assessment presented in section 29.8.2 of ES Chapter 29 [NB APP-242], as detailed in Table 33.14 of ES Chapter 33 [NB APP-246], concluded that the landscape and visual effects were in general **not significant** with the exception of a localised **significant** effect on landscape character and from certain locations around the onshore project substations area. It also noted that this localised significant effect is reversible, with the proposed mitigation planting reducing the effect to **non significant** after 20 to 25 years, and becoming a beneficial effect after that time. These findings are consistent with the findings presented in the Norfolk Vanguard ES.

2.12 Tourism and Recreation

66. This section summarises the findings presented in the Norfolk Boreas ES Chapter 30 Tourism and Recreation [NB APP-243] relevant to potential cumulative impacts from the proposed Norfolk Vanguard and Norfolk Boreas onshore project substations on tourism and recreation. See also Norfolk Boreas ES Figures 30.2 to 30.4 [NB APP-534 to APP-536].
67. The potential cumulative impacts related to the construction of the Norfolk Boreas and Norfolk Vanguard onshore project substations were assessed in section 30.8.1 [NB APP-243] and summarised section 33.4.12 of ES Chapter 33 [NB APP-246]. The potential cumulative impacts relevant to the construction of the onshore project substations relate to; the visual impacts of construction activity to tourism recreation assets (section 30.8.1.6 ES Chapter 3 [NB APP-243]) and the obstruction or disturbance to inland tourism and recreation assets (section 30.8.1.8 ES Chapter 3 [NB APP-243]), which are assessed to be **minor adverse** significance, and reduction on tourist accommodation availability due to non-resident work force [section 30.8.1.7 ES Chapter 33 [NB APP-243], which is assessed to be **negligible** significance.
68. The potential cumulative impacts as a result of the operation of the Norfolk Boreas and Norfolk Vanguard onshore project substations on land-based tourism and recreation assets were assessed in section 30.8.2.2 [NB APP-243]. The assessment concluded the operational cumulative impacts would be localised and are of **negligible** significance post mitigation.
69. As such, and as detailed in Table 33.15 of ES Chapter 33 [NB APP-246], the cumulative assessment concluded **no significant impact** on tourism and recreation receptors as a result of Norfolk Vanguard and Norfolk Boreas. The findings and commitments are consistent with those presented in the Norfolk Vanguard ES.

2.13 Socio-economics

70. This section summarises the findings presented in the Norfolk Boreas ES Chapter 31 Socio-economics [NB APP-244] relevant to potential cumulative impacts from the proposed Norfolk Vanguard and Norfolk Boreas onshore project substations on socio-economics. See also Norfolk Boreas ES Appendix 31.3 [NB 1PP-682].

71. Potential socio-economic impacts were considered at the project scale, i.e. how would constructing and operating Norfolk Boreas and Norfolk Vanguard as a whole impact the local economy. Cumulative impacts related to the construction of Norfolk Boreas and Norfolk Vanguard were assessed in section 31.8.1 of ES Chapter 31 [NB APP-241] and summarised in section 33.4.13 of ES Chapter 33 [APP-246]. The assessment identified cumulative impacts during construction of potential **major beneficial** (direct job creation) and **minor adverse** (impacts to community infrastructure), taking into account the Outline Skills and Employment Strategy as secured in dDCO Requirement 33.
72. The potential cumulative impacts as a result of the operational phase of the Norfolk Boreas and Norfolk Vanguard projects were assessed in section 31.8.2 of ES Chapter 31 [NB APP-244] which calculated the cumulative impact of development in the New Anglia LEP. The assessment concluded the potential operational cumulative impact to be **major beneficial**, related to direct employment and supply chain job creation.
73. As such, and as detailed in Table 33.16 of ES Chapter 33 [NB APP-246] the cumulative assessment concluded **no significant adverse impacts** on socio-economics and potential **significant beneficial impacts** (related to job creation and supply chain) as a result of Norfolk Vanguard and Norfolk Boreas. The findings are consistent with those presented in the Norfolk Vanguard ES.

2.14 Norfolk Boreas Cumulative Impacts Summary

74. The assessment of cumulative impacts, including any potential cumulative impacts with Norfolk Vanguard, is provided in the Norfolk Boreas onshore ES Chapters, a summary of the findings is provided in sections 2.1 to 2.13 above and in Norfolk Boreas ES Chapter 33 [NB APP-246].
75. In conclusion, the findings of the Norfolk Boreas cumulative assessment are consistent with those presented in the Norfolk Vanguard ES and the only significant cumulative adverse effect relates to localised and reversible effects on landscape and visual amenity in select locations around the substation area which are the same effects as identified for the projects alone.
76. The Norfolk Boreas ES Chapter 29 LVIA [NB APP-242] demonstrated that despite the scale of the project, any significant effects would occur in relatively contained areas only, with the majority of landscape and visual receptors either undergoing non-significant effects or no effect. Potential significant cumulative effects were identified as a result of the operation of the Norfolk Boreas and Norfolk Vanguard onshore project substations on the localised landscape character in which the onshore project substations would be located and select non-residential receptors within a very localised area, where there would be a view of the installed infrastructure. This is the same as the effects identified for the projects alone. However, landscape mitigation planting is proposed which would reduce the localised effects to non-significant within 20 to 25 years. Beyond these timeframes the cumulative effects would become beneficial as the mitigation planting would enhance the local visual amenity.