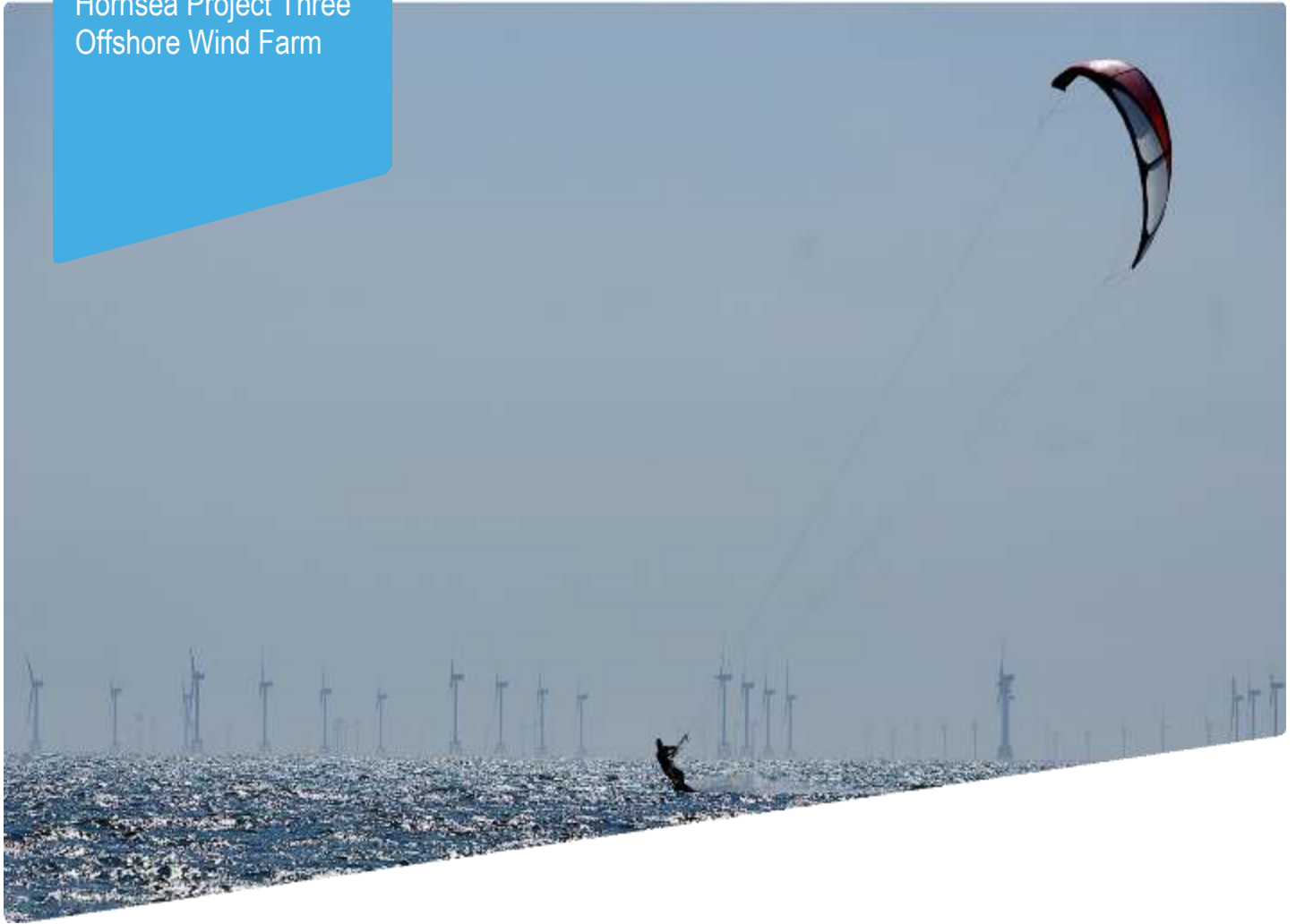


Hornsea Project Three
Offshore Wind Farm



Hornsea Project Three Offshore Wind Farm

Appendix 16 to Hornsea Three Deadline I Submission: Applicant's Response to Ex.A Question Q1.15.3

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Front cover picture: Kite surfer near a UK offshore wind farm © Ørsted Hornsea Project Three (UK) Ltd., 2018.

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1. Introduction

1.1 This note sets out the Applicant's response to Ex.A Question Q1.15.3:

Q1.15.3: The lists of other plans or projects and maximum design scenarios for the cumulative effect assessments of each principal ES chapter do not account for the change in status of more recent projects such as Norfolk Vanguard and Thanet Extension.

Please provide updated tables and assessments that take into account all relevant plans and projects that have emerged since the application was submitted.

1.2 This note provides an update to the Hornsea Three cumulative effects assessment (CEA) taking into account those projects which were considered in the Hornsea Three CEA but have either changed in status or have made changes to project parameters and/or updated impact assessments since the Hornsea Three Development Consent Order (DCO) application. This note also considers any new projects which have entered the planning process since the Hornsea Three DCO application.

1.3 This note is structured as follows:

- Section 2: Provides the list of onshore and offshore projects which were considered in the updated CEA and the process by which these were identified;
- Section 3: Presents an updated CEA Screening Matrix for those projects identified in section 2 (this is in line with the CEA Screening Matrix presented in Volume 4, Annex 5.2: Cumulative Effects Screening Matrix of the Environmental Statement (APP-097)).
- Section 4: Presents a summary of the implications of the new and/or updated projects on the Hornsea Three CEA for each of the onshore and offshore topics screened in section 3.

2. Projects to be considered in the Updated CEA

2.1 This section outlines the projects that have been identified for consideration in the updated Hornsea Three CEA and provides a description of the changes to each of the projects that have occurred since the Hornsea Three DCO application was submitted. The updated Hornsea Three CEA considered both onshore and offshore aspects of the assessment and whether changes or updates to these projects have an effect on the conclusions of the Hornsea Three CEA.

Identification of projects: onshore

2.2 Relevant onshore plans, projects or activities to be considered within this updated Hornsea Three CEA were identified through identification of new planning applications and identification of updated project information for those projects considered within the original Hornsea Three CEA. Planning Application Monitoring was undertaken to identify any new planning applications and/or Local Planning Authority allocations submitted since the submission of the Hornsea Three application that should be considered within this updated CEA. In addition, new planning applications or projects specifically identified by the relevant local planning authorities in post submission discussions were also considered within this note. These included updates to two outline planning permissions which were considered within the original Hornsea Three CEA (i.e. 2013/1793 and 2013/1494; see Volume 4, Annex 5.2: Cumulative Effects Screening Matrix of the Environmental Statement). On review of the updated information within these two outline planning applications, it was concluded that the updates would not result in any changes to the conclusions of the Hornsea Three CEA and as a result these two projects were not considered further.

2.3 Projects listed in Volume 4, Annex 5.2 Cumulative Effects Screening Matrix of the Environmental Statement (APP-097) were reviewed to identify any changes or updates to their design parameters which may materially change the CEA undertaken in the onshore topic chapters of the Environmental Statement. The projects listed in Volume 4, Annex 5.2: Cumulative Effects Screening Matrix of the Environmental Statement were first screened to identify those projects which were most likely to influence the CEA. Projects were screened out from the review based on the following criteria:

- Projects whose construction timeframe does not overlap with Hornsea Three construction;
- Projects not screened into any environmental topic assessments in the Environmental Statement;
- Smaller housing projects with fewer than 50 houses; and
- Projects whose design parameters have not been updated/changed.

2.4 Following a review of projects from paragraphs 2.2 to 2.3, those projects listed below were identified as the only projects which have the potential to materially affect the CEA (e.g. potentially lead to a change in the significance of effect):

- 2018/1640 – Gas powered electricity generator and related infrastructure at land off Mangreen Hall Lane. This is a new application submitted in July 2018 and would be considered to be a Tier 2 project;
- 2018/2017 – 49.9 MW battery storage facility, fencing and access road on land east of Norwich Main Substation. This is a new application submitted in September 2018 and would be considered to be a Tier 2 project;
- 20180963 – Food retail unit, care home, assisted residential dwellings, club house and associated infrastructure at Old Station Yard, Reepham. This is a new application submitted in June 2018 and would be considered to be a Tier 2 project.
- Norfolk Vanguard – The Hornsea Three CEA considered Norfolk Vanguard Offshore Wind Farm based on the information available in the Norfolk Vanguard Offshore Wind Farm Preliminary Environmental Information Report (PEIR) and as such, this was considered to be a Tier 3 project (see section 5.4 of Volume 1, Chapter 5: Environmental Impact Assessment Methodology of the Environmental Statement (APP-060)). As noted by the Ex.A, this project has now submitted a DCO application and accompanying final Environmental Statement to the Planning Inspectorate, which has now been accepted for Examination and can therefore be considered to be a Tier 2 project. Specific changes to the Norfolk Vanguard project description and impact assessments relevant to each of the Hornsea Three onshore topics are considered below in Table 4.1 (onshore).

Identification of projects: offshore

- 2.5 Following review of the projects considered within the CEA for Hornsea Three, the following offshore wind farm projects were identified as the only projects which have the potential to materially affect the CEA (e.g. potentially lead to a change in the significance of effect) through changes in status (e.g. submission of DCO application) or recent changes in their design parameters:

- Norfolk Vanguard – The Hornsea Three CEA considered Norfolk Vanguard Offshore Wind Farm based on the information available in the Norfolk Vanguard Offshore Wind Farm Preliminary Environmental Information Report (PEIR) and as such, this was considered to be a Tier 3 project (see section 5.4 of Volume 1, Chapter 5: Environmental Impact Assessment Methodology of the Environmental Statement) (APP-060). As noted by the Ex.A, this project has now submitted a DCO application and accompanying Environmental Statement to the Planning Inspectorate, which has now been accepted for Examination and can therefore be considered to be a Tier 2 project. Specific changes to the Norfolk Vanguard project description and impact assessments relevant to each of the Hornsea Three offshore topics are considered below in Table 4.2 (offshore).
- Thanet Extension – As with Norfolk Vanguard, the Hornsea Three CEA considered this project based on the information available in the Thanet Extension PEIR and as such, this was considered to be a Tier 3 project. This project has also recently submitted a DCO application and accompanying Environmental Statement to the Planning Inspectorate, which has also been accepted for Examination and can therefore be considered to be a Tier 2 project. Specific changes to the Thanet Extension project description and impact assessments relevant to each of the Hornsea Three offshore topics are considered in Table 4.2 (offshore) below;
- Dogger Bank Creyke Beck A and B – In July 2018, this project submitted an application for Non-Material Change (NMC) for the parameters outlined below. These changes to the project parameters relevant to each of the Hornsea Three offshore topics are considered in Table 4.2 (offshore) below:
 - Increase in maximum wind turbine rotor diameter from 215 m, in the original Environmental Statement, to 280 m in the NMC;
 - Increase in maximum hammer energy for monopile turbine foundations from 3,000 kJ, in the original Environmental Statement, to 4,000 kJ in the NMC; and
 - Increase in maximum monopile diameter from 10 m, in the original Environmental Statement, to 12 m in the NMC.
- Sofia Offshore Wind Farm (formally Teesside B) – In July 2018, this project submitted an application for Non-Material Change (NMC) for the parameters outlined below. These changes to the project parameters relevant to each of the Hornsea Three offshore topics are considered in Table 4.2 (offshore) below:
 - Increase in maximum wind turbine rotor diameter from 215 m, in the original Environmental Statement, to 288 m in the NMC;
 - Increase in maximum hammer energy for monopile turbine foundations from 3,000 kJ, in the original Environmental Statement, to 5,500 kJ in the NMC;
 - Increase in foundation options for offshore platforms to include monopile foundations in the NMC, previously only included jacket and gravity base foundations in the original Environmental Statement;
 - Maximum hammer energy for monopile foundations for substations to be up to 5,500 kJ in the NMC (previously 1,900 kJ for driven piles in the original Environmental Statement) and to have a pile diameter of up to 12 m in the NMC (2.75 m for driven piles in the original Environmental Statement); and

- Increase the maximum capacity from 1.2 GW in the original Environmental Statement to 1.4 GW in the NMC.
- Seagreen Phase 1 (formerly Seagreen Alpha and Bravo) – In September 2018, this project submitted an application to Marine Scotland for Section 36 consents and marine licences for the optimised Seagreen Phase 1 project, with the changes to the project parameters outlined below. These changes to the project parameters relevant to each of the Hornsea Three offshore topics are considered in Table 4.2 (offshore) below:
 - Decrease in the number of turbines from 75 for each project (up to 150 in total in the original Environmental Statement) to up to 70 turbines in each project. A total of up to 120 turbines across Phase 1 in the Environmental Impact Assessment Report (EIAR);
 - Increase in the maximum rotor diameter from 167 m, in the original Environmental Statement, to 220 m in the EIAR;
 - Increase in the blade tip height from 209.7 m, in the original Environmental Statement, to 280 m in the EIAR;
 - Increase in the minimum blade tip clearance from 29.8 m, in the original Environmental Statement, to 32.5 m in the EIAR; and
 - Expansion of the foundation options to include monopile foundation options at up to 70 locations in the EIAR, previously the original Environmental Statement only included jacket and gravity base foundations.
- Neart na Gaoithe – In March 2018 this project submitted a new application to Marine Scotland for Section 36 consent and marine licences including an updated design for offshore elements of the project to incorporate advances in technology. These changes to the project parameters relevant to each of the Hornsea Three offshore topics are considered in Table 4.2 (offshore) below:
 - Decrease in the number of turbines from 75, in the original Environmental Statement, to up to 54 turbines in the EIAR;
 - Increase in the rotor tip height from 197 m, in the original Environmental Statement, to 208 m in the EIAR;
 - Increase in hub height from 115 m, in the original Environmental Statement, to 126 m in the EIAR;
 - Increase in the maximum rotor diameter from 154 m, in the original Environmental Statement, to 167 m in the EIAR;
 - Increase in the minimum spacing between turbines from 450 m, in the original Environmental Statement, to 800 m in the EIAR;
 - Increase in the minimum blade tip clearance from 30.5 m, in the original Environmental Statement, to 35 m in the EIAR;
 - Increase in the maximum number of piles per foundation for jackets from 4 piles, in the original Environmental Statement, to 6 piles in the EIAR;
 - Reduction of the foundation options to jackets only, the original Environmental Statement included both gravity base structures and jackets;

- Increase from 6 turbines per collector circuit, in the original Environmental Statement, to 10 turbines per collector circuit in the EIAR for inter-array cables;
 - Decrease from up to 15 circuits, in the original Environmental Statement, to up to 14 circuits in the EIAR for inter-array cables;
 - An increase in the maximum level of Offshore Substation Platforms (OSPs) above Lowest Astronomical Tide (LAT) from 18 m, in the original Environmental Statement, to 21 m in the EIAR; and
 - An increase in the length of the export cable from 33 km to 43 km.
- Inch Cape – In August 2018, this project submitted an application to Marine Scotland for Section 36 consents and accompanying marine licences for an updated project, with the changes to the project parameters outlined below. These changes to the project parameters relevant to each of the Hornsea Three offshore topics are considered in Table 4.2 (offshore) below:
 - Decrease in the number of turbines from 110 in the original Environmental Statement to 72 turbines in the EIAR;
 - Increase in the blade tip height from 215 m in the original Environmental Statement to 291 m in the EIAR;
 - Removal of two met masts in the Environmental Statement from the development parameters in the EIAR (i.e. there will no longer be any met masts);
 - Decrease in the number of offshore substation platforms from 5 in the original Environmental Statement, to 2 in the EIAR;
 - Decrease in the inter-array cabling length from 353 km in the original Environmental Statement to 190 km in the EIAR; and
 - Decrease in the number of export cables from 6 in the original Environmental Statement to 2 in the EIAR.
- Moray West - The Hornsea Three CEA considered Moray West Offshore Wind Farm based on the information available in the Moray West Offshore Wind Farm Scoping Report and as such, this was considered to be a Tier 3 project (see section 5.4 of Volume 1, Chapter 5: Environmental Impact Assessment Methodology of the Environmental Statement) (APP-060). This project has now submitted a Marine Licence application and accompanying Environmental Statement to Marine Scotland, which is currently in determination and can therefore be considered to be a Tier 2 project. Specific changes to the Moray West project description and impact assessments relevant to each of the Hornsea Three offshore topics are considered below in Table 4.2 (offshore) below.

3. Cumulative Effects Screening Matrix

- 3.1 A fundamental requirement of undertaking the Hornsea Three CEA was to identify those projects, plans and activities with which Hornsea Three may interact to produce a cumulative impact. These interactions may arise within the construction, operation and maintenance or decommissioning phases. To undertake a comprehensive CEA, a long list of relevant projects, plans and activities occurring within extensive onshore and offshore search areas was produced for the Hornsea Three DCO Application (see Volume 4, Annex 5.2: Cumulative Effects Screening Matrix of the Environmental Statement – APP097). Once the CEA long list was collated, all projects, plans and activities were then individually screened, based on the level of detail available at that time, as well as the potential for interactions on a conceptual, physical and temporal basis, with specific reference to each onshore and offshore topic of the Environmental Statement. Those that were 'screened in' were then carried forward into the CEA of the relevant topic chapters of the Environmental Statement.
- 3.2 The update of the Hornsea Three CEA in response to the Ex.A questions, focuses on projects that have changed since the Hornsea Three DCO application was submitted (i.e. those listed in section 2 above). This screening matrix is presented in Appendix A to this document which identifies those projects which were 'screened in' for each onshore and offshore topic based on the potential for conceptual, physical and temporal overlap. The implications of the changes and updates to the relevant onshore and offshore projects outlined identified in section 2 are discussed in section 4 below.

4. Implications for Hornsea Three CEA

- 4.1 Table 4.1 and Table 4.2 below provide updates to the Hornsea Three CEA for onshore and offshore topics, respectively. The topics considered below are those which were screened in via the Cumulative Effects Screening Matrix in Appendix A to this document, for those projects identified in section 2. These provide narratives on the implications of these changes to the Hornsea Three CEA, including any potential changes to conclusions of significance in EIA terms.

Table 4.1: Summary of Hornsea Three CEA based on updated project information – Onshore

CEA Impact Title	Update to Hornsea Three CEA
Volume 3, Chapter 1: Geology and Ground Conditions of the Environmental Statement (APP-073)	
Impacts of construction may result in the loss of mineral resources within Mineral Safeguarding Areas	<p>The pertinent changes to the Norfolk Vanguard maximum design scenario between the PEIR and final Environmental Statement are as follows:</p> <ul style="list-style-type: none"> • Reduction in the maximum working width of the onshore cable corridor from 100 m to 45 m; and • Reduction in the onshore cable corridor maximum footprint 6,000,000 m² to 2,700,000 m². <p>The above reduction in the area affected by the Norfolk Vanguard would mean a reduction in Mineral Safeguarding Areas affected cumulatively and represent a smaller proportion of Norfolk's sand and gravel resources than indicated at the PEIR stage. This has not affected the Norfolk Vanguard assessment of the loss of mineral resources, which is assessed as minor adverse in both its PEIR and Environmental Statement.</p> <p>As with Hornsea Three, the Norfolk Vanguard onshore cable corridor does not represent permanent development and the resource could be extracted, as part of any future mineral extraction activity, following decommissioning of the Norfolk Vanguard onshore cable corridor.</p> <p>Overall, changes to the Norfolk Vanguard maximum design scenario between PEIR and Environmental Statement and different tier classification do not materially affect the cumulative assessment in Volume 3, Chapter 1: Geology and Ground Conditions of the Environmental Statement (APP-073).</p> <p>2018/1640 and 2018/2017 were screened into this CEA, however given the nature of the projects, a gas powered electricity generator and a battery storage facility, and in particular the limited extent of these (0.32 ha and 0.56 ha respectively), the significance of effects assigned in Volume 3, Chapter 1: Geology and Ground Conditions of the Environmental Statement is unlikely to change.</p>
Impacts of construction, including horizontal directional drilling (HDD), may cause disturbance or contamination of principal aquifers or surface waters fed by groundwater	<p>The pertinent changes to the Norfolk Vanguard maximum design scenario between the PEIR and Environmental Statement are as follows:</p>

CEA Impact Title	Update to Hornsea Three CEA
	<ul style="list-style-type: none"> • Reduction in the maximum working width of the onshore cable corridor from 100 m to 45 m; and • Selection of HVDC transmission. <p>As a result of the changes above the maximum potential extent of geographical overlap between the onshore cable corridors for Hornsea Three and Norfolk Vanguard would be decreased.</p> <p>Also, selection of HVDC transmission has resulted a reduction in the number of circuits required in the Norfolk Vanguard onshore cable corridor. This has not affected the assessment of the disturbance or contamination of principal aquifers, which was assessed as minor adverse in both the PEIR and Environmental Statement for Norfolk Vanguard.</p> <p>Overall, changes to the Norfolk Vanguard maximum design scenario between PEIR and Environmental Statement and different tier classification would not increase the significance of effect assigned in Volume 3, Chapter 1: Geology and Ground Conditions of the Environmental Statement.</p> <p>2018/1640 and 2018/2017 were screened into this CEA, however given the nature of the projects, a gas powered electricity generator and a battery storage facility, and in particular the limited extent of these (0.32 ha and 0.56 ha respectively), the significance of effects assigned in Volume 3, Chapter 1: Geology and Ground Conditions of the Environmental Statement is unlikely to change.</p>
<p>Impacts of operation may affect groundwater quality from thermal effects of underground power cables</p>	<p>Selection of HVDC transmission by Norfolk Vanguard has resulted a reduction in the number of circuits required in the Norfolk Vanguard onshore cable corridor between the PEIR and Environmental Statement. In addition, the HVAC transmission option represents the maximum design scenario in terms of thermal pollution effects on principal aquifers from operation of cables.</p> <p>Overall, changes to the Norfolk Vanguard maximum design scenario between PEIR and Environmental Statement and different tier classification would not change the significance of effect assigned in Volume 3, Chapter 1: Geology and Ground Conditions of the Environmental Statement.</p>
<p>Volume 3, Chapter 2: Hydrology and Flood Risk of the Environmental Statement (APP-074)</p>	
<p>The impacts of construction may affect flood risk.</p>	<p>The pertinent changes to the Norfolk Vanguard maximum design scenario between the PEIR and Environmental Statement are as follows:</p>

CEA Impact Title	Update to Hornsea Three CEA
	<ul style="list-style-type: none"> • Reduction in the maximum working width of the onshore cable corridor from 100 m to 45 m; • Reduction in the onshore cable corridor maximum footprint 6,000,000 m² to 2,700,000 m²; • Selection of HVDC transmission; • Decrease in temporary land take for the substation extension and overhead line modification from 444,709 m² to 241,746 m²; and • Increase in permanent land take for the substation extension from 47,850 m² to 49,300 m². <p>Selection of the HVDC transmission has resulted in an overall reduction the land take and infrastructure required for Norfolk Vanguard thereby possibly reducing any impact to surface water runoff and consequently flood risk within the site or the surrounding areas. The assessment for increased surface water runoff and flood risk in the PEIR and Environmental Statement for Norfolk Vanguard remained negligible to minor adverse.</p> <p>Given the reductions in the Norfolk Vanguard maximum design scenario and mitigation measures implemented by both projects, changes to the Norfolk Vanguard parameters are unlikely to affect the significance of the cumulative effect assigned in Volume 3, Chapter 2: Hydrology and Flood Risk of the Environmental Statement would not be affected.</p>
<p>The impacts of construction HDD techniques may affect main surface watercourses.</p>	<p>The rivers identified as being crossed by HDD as part of the Norfolk Vanguard Project, which are also identified as being crossed by HDD as part of Hornsea Three, remain the same at both PEIR and Environmental Statement stage of Norfolk Vanguard. The cumulative assessments for direct disturbance of surface water bodies, and increased sediment supply have changed from negligible to minor, to negligible to moderate adverse between PEIR and Environmental Statement stage for Norfolk Vanguard. However, as the rivers being crossed by both Hornsea Three and Norfolk Vanguard have not changed, and given the mitigation implemented by both projects, the significance of effect assigned in Volume 3, Chapter 2: Hydrology and Flood Risk of the Environmental Statement would not be affected.</p>
<p>The impacts of open cut, temporary bridging and culverts may affect surface watercourses.</p>	<p>The rivers identified as being crossed by open cut techniques as part of the Norfolk Vanguard Project, which are also identified as being crossed by open cut techniques as part of Hornsea Three, remain very similar at PEIR and Environmental Statement stage of Norfolk Vanguard, with the number of being crossed by open cut reducing by one (Wending Beck (upstream)). The cumulative assessments for direct disturbance of surface water bodies, and increased sediment supply have changed from negligible to minor, to negligible to moderate adverse between PEIR and Environmental Statement stage for Norfolk Vanguard. However, as the rivers being crossed by HDD by Norfolk Vanguard has increased, and given the mitigation implemented by both projects, the significance of effect assigned in Volume 3, Chapter 2: Hydrology and Flood Risk of the Environmental Statement would not increase.</p>

CEA Impact Title	Update to Hornsea Three CEA
<p>The impacts of construction may affect field drainage and irrigation.</p> <p>The impacts of construction may affect drainage pipeline infrastructure.</p>	<p>Pertinent changes to the Norfolk Vanguard maximum design scenario between the PEIR and Environmental Statement are as follows:</p> <ul style="list-style-type: none"> • Reduction in the maximum working width of the onshore cable corridor from 100 m to 45 m; • Reduction in the onshore cable corridor maximum footprint 6,000,000 m² to 2,700,000 m²; and • Selection of HVDC transmission resulting in less infrastructure and fewer cable trenches. <p>Cumulative impacts on field drainage, irrigation and drainage pipeline infrastructure would only occur where development limits coincide with Hornsea Three. The above reductions in the maximum design scenario for Norfolk Vanguard between the PEIR and Environmental Statement would mean that the area where development limits of Hornsea Three and Norfolk Vanguard coincide is reduced and therefore would not increase the significance of effect assigned in Volume 3, Chapter 2: Hydrology and Flood Risk of the Environmental Statement.</p>
<p>Volume 3, Chapter 3: Ecology and Nature Conservation of the Environmental Statement (APP-075)</p>	
<p>Potential for open cut trenching and installation of cables and associated temporary construction compounds to habitat loss and/or severance for a number of species</p>	<p>The pertinent changes to the Norfolk Vanguard maximum design scenario between the PEIR and final Environmental Statement are as follows:</p> <ul style="list-style-type: none"> • Reduction in the maximum working width of the onshore cable corridor from 100 m to 45 m; • Reduction in the onshore cable corridor maximum footprint 6,000,000 m² to 2,700,000 m²; • Reduction in the gaps between hedgerows from 54 m to 20 m; • Increase in the number of hedgerows to be removed from 100 to 165; • Reduction in total construction window for the onshore cable corridor from 7 years to 6 years; and • Selection of HVDC transmission resulting in less infrastructure and fewer cable trenches. <p>Given that cumulative effects between Hornsea Three and Norfolk Vanguard are only likely to occur where and to the extent the two projects overlap (in a physical and temporal sense), the only area which would be cumulatively impacted is where the two onshore cable corridors cross. There are no other Tier 2 developments in the immediate vicinity of where the onshore cable corridors of Hornsea Three and Norfolk Vanguard cross. Therefore, Norfolk Vanguard being considered as a Tier 2 development does not affect or change the significance of effect assigned in Volume 3, Chapter 3: Ecology and Nature Conservation of the Environmental Statement (APP-075).</p>

CEA Impact Title	Update to Hornsea Three CEA
	<p>Other than the number of hedgerows removed, all aspects of Norfolk Vanguard maximum design scenario relating to the onshore cable corridor have been reduced between the PEIR and Environmental Statement. The Norfolk Vanguard assessment of habitats and species at the PEIR stage did not include any mitigation and ranged from moderate to major. At the Environmental Statement stage cumulative impacts relating to habitat loss and severance species range from minor to moderate adverse. As outlined above, cumulative impacts as a result of Hornsea Three and Norfolk Vanguard would occur where the two onshore cable corridors cross. From approximately 1.5 km north of the Norfolk Vanguard cable corridor to 1 km south all but one hedgerow would be crossed by Horizontal Directional Drilling, along with other ecological resources. Therefore, there would be very little habitat fragmentation as a result of Hornsea Three in the vicinity of where the onshore cable route cross. Overall, the significance of effect assigned in Volume 3, Chapter 3: Ecology and Nature Conservation of the Environmental Statement would not be affected.</p> <p>2018/1640 and 2018/2017 were screened into this CEA, however given the relatively small scale of the projects (0.32 ha and 0.56 ha respectively) and therefore the limited extent of any loss or severance of habitats, the significance of effects assigned in Volume 3, Chapter 3: Ecology and Nature Conservation of the Environmental Statement is unlikely to change.</p>
<p>Potential for operation to result in low-level visual disturbance, and noise and vibration disturbance of habitats and wildlife during routine maintenance operations</p>	<p>The selection of a HVDC transmission by Norfolk Vanguard between the PEIR and Environmental Statement has resulted in less infrastructure for that project, e.g. no Cable Relay Station. Therefore, any cumulative impacts related to operational maintenance work are. The significance of operational effects for Norfolk Vanguard assessed in the PEIR were negligible and have remained so in the Environmental Statement. Overall, the significance of effect assigned in Volume 3, Chapter 3: Ecology and Nature Conservation of the Environmental Statement would not be affected.</p> <p>2018/1640 and 2018/2017 were screened into this CEA, however due to the relatively small scale of these projects (0.32 ha and 0.56 ha respectively), the likely visual and noise disturbance on habitats and wildlife is unlikely to change the significance of effects assigned in Volume 3, Chapter 3: Ecology and Nature Conservation of the Environmental Statement.</p>
<p>Potential for decommissioning of onshore HVAC booster station and onshore HVDC converter/HVAC substation to affect designated sites, habitats and species</p>	<p>The significance of decommissioning effects for Norfolk Vanguard at the PEIR were similar to those of construction and have remained so in the Environmental Statement. The significance of effect assigned in Volume 3, Chapter 2: Ecology and Nature Conservation of the Environmental Statement for decommissioning impacts are would not be increased by changes to the Norfolk Vanguard maximum design scenario between the PEIR and Environmental Statement.</p> <p>2018/1640 and 2018/2017 were screened into this CEA, however given the relatively small scale of the projects (0.32 ha and 0.56 ha respectively), the significance of effects assigned in Volume 3, Chapter 3: Ecology and Nature Conservation of the Environmental Statement is unlikely to change.</p>

CEA Impact Title	Update to Hornsea Three CEA
Volume 3, Chapter 4: Landscape and Visual Resources of the Environmental Statement (APP-076)	
<p>Potential for construction of the onshore cable corridor to affect landscape and visual receptors</p>	<p>The pertinent changes to the Norfolk Vanguard maximum design scenario between the PEIR and Environmental Statement are as follows:</p> <ul style="list-style-type: none"> • Reduction in the maximum working width of the onshore cable corridor from 100 m to 45 m; • Reduction in the onshore cable corridor maximum footprint 6,000,000 m² to 2,700,000 m²; • Reduction in the gaps between hedgerows from 54 m to 20 m; • Increase in the number of hedgerows to be removed from 100 to 165; • Reduction in total construction window for the onshore cable corridor from 7 years to 6 years; • Selection of HVDC transmission resulting in less infrastructure and fewer cable trenches; and • Reduction in the number joint pits from 450 to 150. <p>Despite the reductions in the Norfolk Vanguard maximum design scenario above, there remains the potential for cumulative effects on landscape and visual receptors, to the north of Reephram, where the Hornsea Three and the Norfolk Vanguard onshore cable corridors cross. However, the significance of effect assigned in Volume 3, Chapter 4: Landscape and Visual Resources of the Environmental Statement will not be affected.</p> <p>2018/1640 and 2018/2017 were screened into this CEA however, the potential for combined or sequential views is unlikely due to intervening vegetation between and around them. Cumulative landscape and visual effects are unlikely to occur.</p>

CEA Impact Title	Update to Hornsea Three CEA
Volume 3, Chapter 5: Historic Environment of the Environmental Statement (APP-077)	
<p>Construction works of the onshore elements of Hornsea Three (including any stripping required for storage areas, compounds and accesses) could result in cumulative permanent loss of or damage to, buried archaeological remains</p>	<p>The pertinent changes to the Norfolk Vanguard maximum design scenario between the PEIR and final Environmental Statement are as follows:</p> <ul style="list-style-type: none"> • Reduction in the maximum working width of the onshore cable corridor from 100 m to 45 m; • Reduction in the onshore cable corridor maximum footprint 6,000,000 m² to 2,700,000 m²; • Reduction in the gaps between hedgerows from 54 m to 20 m; • Increase in the number of hedgerows to be removed from 100 to 165; and • Selection of HVDC transmission resulting in less infrastructure and fewer cable trenches. <p>The discovery of archaeological remains by either Hornsea Three or Norfolk Vanguard in the area where the onshore cable corridors extents overlap is likely to result in their removal, and therefore any impact by Hornsea Three alone is likely to be similar to the cumulative effect. Given that between the PEIR and final Environmental Statement of Norfolk Vanguard the maximum design scenario has narrowed, the area which could be impacted has reduced. The Norfolk Vanguard assessment of archaeological remains is Moderate – Major at PEIR (no mitigation included for PEIR) and is negligible to major adverse in the Environmental Statement stage. Following the implementation of project-wide geophysical survey, targeted metal detecting and field walking, and trail trenching impacts are considered to be not significant. The significance of effect assigned for the cumulative assessment in Volume 3, Chapter 5: Historic Environment of the Environmental Statement is not affected.</p> <p>2018/1640 and 2018/2017 were screened into this CEA. A planning condition has been assigned to the consent of 2018/1640 (and a similar condition is likely to be attached to 2018/2017) which requires a WSI to be prepared and implemented before construction. Therefore, the significance of effect is unlikely to change from that reported Volume 3, Chapter 5: Historic Environment of the Environmental Statement.</p>

CEA Impact Title	Update to Hornsea Three CEA
<p>Construction, operation and decommissioning works at the site of the onshore HVAC booster station and HVDC converter/HVAC substation could potentially result in temporary cumulative impacts on the settings of heritage assets including Scheduled Monuments (SMs), listed buildings, Conservation Areas, Registered Parks and Gardens and on the overall historic landscape.</p>	<p>The pertinent changes to the Norfolk Vanguard maximum design scenario between the PEIR and Environmental Statement are as follows:</p> <ul style="list-style-type: none"> • Reduction in the maximum working width of the onshore cable corridor from 100 m to 45 m; • Reduction in the onshore cable corridor maximum footprint 6,000,000 m² to 2,700,000 m²; • Reduction in the gaps between hedgerows from 54 m to 20 m; • Increase in the number of hedgerows to be removed from 100 to 165; • Selection of HVDC transmission resulting in less infrastructure and fewer cable trenches; • Increase in onshore project substation land take for temporary works area from 15,000 m² to 20,000 m²; • Increase in onshore project substation construction duration 18 months to 30 months. • Decrease in temporary land take for the substation extension and overhead line modification from 444,709 m² to 241,746 m²; • Increase in National Grid extension and overhead line modification construction duration 18 months to 30 months; and • Increase in permanent land take for the substation extension from 47,850 m² to 49,300 m².
<p>Construction, operation and decommissioning works at Hornsea Three landfall area, along the onshore cable corridor (including compounds, storage areas and accesses) could result in temporary cumulative impacts on the settings of heritage assets including SMs, listed buildings, Conservation Areas, Registered Parks and Gardens and on the overall historic landscape.</p>	<p>The other developments included in the cumulative assessment in section 5.12 of Volume 3, Chapter 5: Historic Environment of the Environmental Statement are either distant to Norfolk Vanguard or small in scale. Therefore, Norfolk Vanguard being considered as a Tier 2 development would not affect the significance of effect assigned in Volume 3, Chapter 5: Historic Environment of the Environmental Statement.</p> <p>In terms of cumulative impacts as a result of Hornsea Three and Norfolk Vanguard, the greatest impact will be where the onshore cable corridors cross. The settings of historic assets in that locality were not assessed at PEIR for Norfolk Vanguard but between PEIR and Environmental Statement the maximum design scenario for the Norfolk Vanguard onshore cable corridor has reduced. However, overall the significance of effect assigned in Volume 3, Chapter 5: Historic Environment of the Environmental Statement is not changed.</p> <p>2018/1640 and 2018/2017 was screened into this CEA as there are a number of listed buildings in the vicinity, however the significance of effect is unlikely to change from that reported Volume 3, Chapter 5: Historic Environment of the Environmental Statement.</p>
<p>Volume 3, Chapter 6: Land Use and Recreation of the Environmental Statement (APP-078)</p>	
<p>Impacts of construction on Agricultural Land Classification and farm holdings</p>	<p>The pertinent changes to the Norfolk Vanguard maximum design scenario between the PEIR and Environmental Statement are as follows:</p>

CEA Impact Title	Update to Hornsea Three CEA
	<ul style="list-style-type: none"> • Reduction in the maximum working width of the onshore cable corridor from 100 m to 45 m; • Reduction in the onshore cable corridor maximum footprint 6,000,000 m² to 2,700,000 m²; • Reduction in the gaps between hedgerows from 54 m to 20 m; • Increase in the number of hedgerows to be removed from 100 to 165; • Reduction in the number joint pits from 450 to 150; • Selection of HVDC transmission resulting in less infrastructure and fewer cable trenches; • Increase in onshore project substation land take for temporary works area from 15,000 m² to 20,000 m²; • Increase in onshore project substation construction duration 18 months to 30 months; • Decrease in temporary land take for the substation extension and overhead line modification from 444,709 m² to 241,746 m²; • Increase in National Grid extension and overhead line modification construction duration 18 months to 30 months; and • Increase in permanent land take for the substation extension from 47,850 m² to 49,300 m². <p>The significance of impacts of construction on Agricultural Land Classification and farm holdings for Norfolk Vanguard at the PEIR were negligible to minor adverse and have remained the same in their Environmental Statement. Volume 3, Chapter 6: Land Use and Recreation of the Environmental Statement outlines how cumulative impacts to Agricultural Land Classification and farm holdings would occur where the Hornsea Three onshore cable corridor crosses the cable corridor of the Norfolk Vanguard and concludes that as remediation work would be undertaken by both developments, no cumulative permanent losses of agricultural land. Overall, Norfolk Vanguard maximum design scenario reduces between the PEIR and Environmental Statement but overall the significance of effect assigned in Volume 3, Chapter 6: Land Use and Recreation of the Environmental Statement for decommissioning impacts are not affected.</p> <p>Given the above, the significance of effect assigned in Volume 3, Chapter 6: Land Use and Recreation of the Environmental Statement would not be affected.</p>
Cumulative temporary impact on PRowS and other linear routes	<p>The pertinent changes to the Norfolk Vanguard maximum design scenario between the PEIR and Environmental Statement are as follows:</p> <ul style="list-style-type: none"> • Reduction in the maximum working width of the onshore cable corridor from 100 m to 45 m; • Reduction in the onshore cable corridor maximum footprint 6,000,000 m² to 2,700,000 m²; <p>The significance of impacts of construction of Norfolk Vanguard on PRowS and other linear routes in the PEIR were minor adverse and now as identified as negligible to minor adverse in the Environmental Statement.</p>

CEA Impact Title	Update to Hornsea Three CEA
	<p>Despite the reductions in the Norfolk Vanguard maximum design scenario above, there is the potential for cumulative effects on Reepham FP18, Marriott's Way and the B1145, to the north of Reepham, where the Hornsea Three and the Norfolk Vanguard onshore cable corridors cross. However, as the above changes to the Norfolk Vanguard maximum design scenario between the PEIR and Environmental Statement do not affect the approach to be implemented by the Applicant (HDD under Marriott's Way and the B1145 and open-cut across Reepham FP18) and so the significance of effect assigned in Volume 3, Chapter 6: Land Use and Recreation of the Environmental Statement (APP-078) is unchanged.</p> <p>However, with regard to Station Road Reepham (planning reference 20180963; see paragraph 2.4 of this document), due to the vicinity of 20180963 to Marriots Way, there is potential for a cumulative impact with Hornsea Three to Marriots Way. However, 20180963 is located on the other side of Reepham to Hornsea Three and is unlikely to result in a significant cumulative impact to Marriots Way. The nature of the development (care home and assisted housing) suggests that it will not result in a significant level of increase in users of the route, and even if there was, measures will be put in place by the Applicant (to be set out in the final CoCP and agreed with the relevant planning authority) to manage the interface between non-motorised users and construction traffic. In addition, the Old Station Yard development is committed to making drainage improvements to that part of Marriott's Way adjacent to the development which will have an overall benefit to the route.</p> <p>2018/1640 was screened into this CEA as the land is currently used for agriculture, however given the size of the site, the significance of effect assigned in Volume 3, Chapter 6: Land Use and Recreation of the Environmental Statement will not be affected.</p>
<p>Volume 3, Chapter 7: Traffic and Transport of the Environmental Statement (APP-079)</p>	
<p>Cumulative temporary impacts on local highway network and shared routes</p>	<p>The Applicant is currently working with Norfolk Vanguard to update the CEA on traffic and transport, air quality and noise and vibration. Although highway threshold levels on shared roads have not been agreed at Deadline 1, material headway has been made and both projects in this regard and the Applicant is confident that agreement can be reached in the short term.</p> <p>There may be cumulative impacts on a small number of shared road links during construction of Hornsea Project Three and Norfolk Vanguard. Both parties continue to work together to ensure alignment of highway threshold levels applied by each project, i.e. traffic capacity of each road link before significant impacts are expected, and alignment as to the scope of appropriate traffic management measures that may be required as thresholds are reached – i.e. confirming: -</p> <ul style="list-style-type: none"> • Thresholds on each street (or part of street) where no or limited (“soft”) traffic management measures would be required, such as controls on daily traffic demand, driver induction, community liaison;

CEA Impact Title	Update to Hornsea Three CEA
	<ul style="list-style-type: none"> • Thresholds on each street (or part of street) which would trigger further “soft” traffic management measures, such as timing of deliveries, hazard signage, restricted periods, and temporary speed restrictions; and • Thresholds on each street (or part of street) which would trigger further “harder” traffic management measures -such as flow control, pedestrian crossing points, parking restrictions and other traffic management measures, in some instances physical interventions such as localised widening or passing places. <p>Any mitigation measures identified for these shared links would be secured through each project’s final Construction Traffic Management Plans to be developed post-consent. These would be developed with, and required to be approved by, Norfolk County Council as Highways Authority under requirement 18 of the draft DCO (Version 1, as submitted for Deadline 1).</p> <p>Whilst these workstreams are ongoing, the locations which require further consideration due to the potential cumulative impact of both projects is limited to:-</p> <ul style="list-style-type: none"> • The Street (linking B1149 with Oulton Street); • Along B1149, in particular through the settlement of Horsford; and • Along B1145, in particular through the settlement of Cawston. <p>No cumulative impacts are predicted on the Strategic Road Network managed by Highways England.</p> <p>Hornsea Three and Norfolk Vanguard will be looking to reach an agreement on these matters and engage with Norfolk County Council as the highways authority to reach a shared common point of agreement. Although these measures have not been agreed at Deadline 1, material headway has been made and both projects are confident that agreement can be reached in the short term.</p> <p>If Construction Traffic Management Plan (CTMP) measures are required along these stretches of road, these measures will be captured in a revised Outline CTMP to be submitted in due course into the Hornsea Three examination.</p>

CEA Impact Title	Update to Hornsea Three CEA
Volume 3, Chapter 8: Noise and Vibration of the Environmental Statement (APP-080)	
The temporary impact of cable installation during construction may affect receptors sensitive to noise or vibration.	<p>The pertinent changes to the Norfolk Vanguard maximum design scenario between the PEIR and Environmental Statement are as follows:</p> <ul style="list-style-type: none"> • Reduction in the maximum working width of the onshore cable corridor from 100 m to 45 m; and • Reduction in the onshore cable corridor maximum footprint 6,000,000 m² to 2,700,000 m². • Reduction in the number joint pits from 450 to 150; and • Selection of HVDC transmission resulting in less infrastructure and fewer cable trenches. <p>The significance of noise impacts for the construction of Norfolk Vanguard ranged from no impact to negligible at the PEIR and from no impact to minor adverse in the Environmental Statement.</p> <p>The Applicant is currently working with Norfolk Vanguard to update the CEA on noise and vibration in relation to traffic and transport impacts at the main construction compound. Although highway threshold levels on shared roads have not been agreed at Deadline 1, material headway has been made and both projects in this regard and the Applicant is confident that agreement can be reached in the short term. When this workstream has concluded, the Applicant can review the conclusions reached in the relevant sections of the noise and vibration ES assessment.</p> <p>Hornsea Three onshore HVDC converter/HVAC substation is approximately 30 km from Norfolk Vanguard at its closest point. Therefore, cumulative impacts resulting from Norfolk Vanguard and the construction of Hornsea Three onshore HVDC converter/HVAC substation are unlikely. There is also limited potential for cumulative impacts where the Hornsea Three and Norfolk Vanguard onshore cable corridors cross. The significance of effect assigned in Volume 3, Chapter 8: Noise and Vibration of the Environmental Statement is unlikely to be affected by the information submitted in the Norfolk Vanguard Environmental Statement.</p> <p>2018/1640 and 2018/2017 were screened into this CEA, however the noise and vibration impacts from the projects are unlikely to changes the significance of effects as reported in Volume 3, Chapter 8: Noise and Vibration of the Environmental Statement.</p>
The temporary impact of cable installation by HDD (including duct installation at Hornsea Three landfall area) may affect receptors sensitive to noise or vibration.	
The temporary impact of constructing the construction accesses on the Hornsea Three onshore cable corridor may affect receptors sensitive to noise or vibration.	
The temporary impacts of onshore HVDC converter/HVAC substation construction, operation or decommissioning may affect receptors sensitive to noise or vibration.	

CEA Impact Title	Update to Hornsea Three CEA
Volume 3, Chapter 9: Air Quality of the Environmental Statement (APP-081)	
<p>Temporary impacts during construction and decommissioning of Hornsea Three that may affect receptors sensitive to dust (human and ecological).</p>	<p>The pertinent changes to the Norfolk Vanguard maximum design scenario between the PEIR and Environmental Statement are as follows:</p> <ul style="list-style-type: none"> • Reduction in the maximum working width of the onshore cable corridor from 100 m to 45 m; and • Reduction in the onshore cable corridor maximum footprint 6,000,000 m² to 2,700,000 m². • Reduction in the number joint pits from 450 to 150; and • Selection of HVDC transmission resulting in less infrastructure and fewer cable trenches. <p>The significance of construction air quality effects for Norfolk Vanguard were not significant as assessed in the PEIR (ecological sites not assessed) and remain not significant in the Environmental Statement.</p> <p>The greatest potential for cumulative impacts as a result of Hornsea Three and Norfolk Vanguard would be where the onshore cable corridors cross. Between PEIR and Environmental Statement the maximum design scenario for the Norfolk Vanguard onshore cable corridor has reduced.</p> <p>The significance of cumulative effects assigned in Volume 3, Chapter 9: Air Quality of the Environmental Statement is unlikely to be affected.</p> <p>2018/1640 and 2018/2017 would be screened into the cumulative assessment, however due to the scale of these developments (0.32 ha and 0.56 ha respectively), the dust emission impacts from the projects are unlikely to changes the significance of effects as reported in Volume 3, Chapter 9: Air Quality of the Environmental Statement.</p>
<p>Temporary impacts due to traffic that may affect human and ecological receptors during the construction and decommissioning phases</p>	<p>The construction traffic air quality effects for Norfolk Vanguard were assessed as not significant in the PEIR (ecological sites not assessed) and remain not significant in the Environmental Statement.</p> <p>The Applicant is currently working with Norfolk Vanguard to update the CEA on air quality, specifically in relation to traffic and transport impacts at the main construction compound. Although highway threshold levels on shared roads have not been agreed at Deadline 1, material headway has been made and both projects in this regard and the Applicant is confident that agreement can be reached in the short term. If measures are required they will be captured in a revised Outline CTMP to be submitted in due course into the Hornsea Three examination. When this workstream has concluded, the Applicant can review the conclusions reached in the relevant sections of the air quality ES assessment.</p>

CEA Impact Title	Update to Hornsea Three CEA
	<p>The selection of HVDC transmission by Norfolk Vanguard maximum design scenario between the PEIR and Environmental Statement would result in less infrastructure and fewer cable trenches. This is likely to reduce the traffic movements for Norfolk Vanguard. The changes in the Norfolk Vanguard maximum design scenario between the PEIR and Environmental Statement would not affect the significance of effect assigned in Volume 3, Chapter 9: Air Quality of the Environmental Statement.</p>
<p>Volume 3, Chapter 10: Socio-economics of the Environmental Statement (APP-082)</p>	
<p>The cumulative impact of construction of Hornsea Three on access to construction-related employment and GVA considered together with the construction and operation of other planned nearby wind farm projects.</p>	<p>Overall, the selection of HVDC transmission for Norfolk Vanguard within the final DCO application results in fewer cable trenches, when compared to the PEIR stage. However, given the scale of the development involved this change in the Norfolk Vanguard maximum design scenario between the PEIR and Environmental Statement is unlikely to affect the significance of effect assigned in Volume 3, Chapter 10: Socio-economics of the Environmental Statement.</p>
<p>The cumulative impact of construction of Hornsea Three on the performance of the renewable energy sector considered together with the construction and operation of other planned nearby wind farm projects.</p>	
<p>The cumulative impact of construction of Hornsea Three on the demand for housing, accommodation and local services considered together with the construction and operation of other planned nearby wind farm projects.</p>	
<p>The cumulative impact of construction of Hornsea Three on offshore and coastal tourism and recreation activity</p>	
<p>The significance of community infrastructure impacts during construction for Norfolk Vanguard are minor adverse at PEIR and not assessed in the Environmental Statement.</p> <p>Norfolk Vanguard maximum design scenario between the PEIR and final Environmental Statement is unlikely to affect the significance of effect assigned in Volume 3, Chapter 10: Socio-economics of the Environmental Statement.</p>	

CEA Impact Title	Update to Hornsea Three CEA
and associated economic value considered together with the construction and operation of other planned nearby wind farm projects.	
The cumulative impact of construction of Hornsea Three on local tourism and recreational resources, including PRow considered together with the construction and operation of other planned nearby wind farm projects.	
The cumulative impact of operation and maintenance of Hornsea Three on access to operation and maintenance-related employment and GVA considered together with the construction and operation of other planned nearby wind farm projects.	<p>The significance of job creation effects during operation of Norfolk Vanguard were assessed as major beneficial (direct and supply chain) in the PEIR and minor beneficial (direct and supply chain) at Environmental Statement stage.</p> <p>Overall, the selection of HVDC transmission for Norfolk Vanguard within the final DCO application resulting in less infrastructure, when compared to the project assessed in the PEIR, stage is likely to result in smaller increases to capacity in the supply chain and the labour market. The possibility of the catalytic effect on the development of the renewable energy sector may also be reduced. However, given the scale of the developments involved this change in the Norfolk Vanguard maximum design scenario between the PEIR and final Environmental Statement is unlikely to affect the significance of effect assigned in Volume 3, Chapter 10: Socio-economics of the Environmental Statement in isolation.</p>
The cumulative impact of operation and maintenance of Hornsea Three on the performance of the renewable energy sector considered together with the construction and operation of other planned nearby wind farm projects.	
The cumulative impact of operation and maintenance of Hornsea Three on the demand for housing, accommodation and local services considered together with the construction and operation of	<p>The significance of community infrastructure impacts during operation of Norfolk Vanguard were assessed as negligible in the PEIR and not assessed at Environmental Statement stage.</p> <p>The selection of HVDC transmission resulting in less infrastructure is likely to reduce the number of operational staff required to deliver Norfolk Vanguard and therefore the demand for housing, accommodation and local services. However, Norfolk Vanguard</p>

CEA Impact Title	Update to Hornsea Three CEA
other planned nearby wind farm projects.	maximum design scenario between the PEIR and Environmental Statement is unlikely to affect the significance of effect assigned in Volume 3, Chapter 10: Socio-economics of the Environmental Statement.
The cumulative impact of operation and maintenance of Hornsea Three on offshore and coastal tourism and recreation activity and associated economic value considered together with the construction and operation of other planned nearby wind farm projects.	The cumulative effects on the receptor would be driven by effects in Volume 3, Chapter 4: Landscape and Visual Resources of the Environmental Statement (APP-076), Chapter 6: Land Use and Recreation of the Environmental Statement (APP-078), Chapter 7: Traffic and Transport of the Environmental Statement (APP-079), and Chapter 8: Noise and Vibration of the Environmental Statement (APP-080). Above it is concluded that the significance of effect assigned in topics are unlikely to be affected by the Norfolk Vanguard maximum design scenario or by considering Norfolk Vanguard as a Tier 2 development. Therefore, the significance of effect assigned in Volume 3, Chapter 10: Socio-economics of the Environmental Statement would not be affected.

Table 4.2: Summary of Hornsea Three CEA based on updated project information – Offshore

CEA Impact Title	Update to Hornsea Three CEA
Volume 2, Chapter 3: Fish and Shellfish Ecology of the Environmental Statement (APP-063)	
<p>Construction phase: Cumulative effect of underwater noise from piling operations at other offshore wind farm sites</p>	<p>Norfolk Vanguard was originally considered as a Tier 3 project within the CEA. However, based on the application for Norfolk Vanguard being accepted for examination it would now be considered in Tier 2 within the CEA Assessment. The overall duration of piling at Norfolk Vanguard has increased, which increases the overall duration of piling activities for all Tier 1, 2 and 3 offshore wind farm projects from 1,261 days (as stated in paragraph 3.13.2.52 of Volume 2, Chapter 3: Fish and Shellfish Ecology of the Environmental Statement) to 1,283 days. This remains approximately 25% of the 14 year cumulative construction period (as predicted in Volume 2, Chapter 3: Fish and Shellfish Ecology of the Environmental Statement). While there were no changes to the maximum hammer energy in the Norfolk Vanguard Environmental Statement, revised noise modelling resulted in reductions to the predicted impact ranges for fish (Vattenfall Wind Power Ltd., 2018).</p> <p>Dogger Bank Creyke Beck A and B and Sofia (formally Dogger Bank Teesside B) were considered as Tier 2 projects for the Hornsea Three CEA on fish and shellfish ecology. Within the original Creyke Beck A and B impact assessment, the potential for fish to be impacted was assessed on the basis of maximum duration of piling events. The maximum design scenario was based on a maximum number of foundations being installed on jacket / multi-pile foundations with a maximum of six pin-piles per foundation using a maximum hammer energy of 2,300 kJ. The proposed amendments to the hammer energy required for monopiles (as outlined in paragraph 2.5 above) does not significantly alter the maximum design scenario assessed with respect to fish for Creyke Beck A and B (SSE and Equinor, 2018). A revised assessment using the latest Popper <i>et al</i> 2014 criteria has been undertaken for Creyke Beck A and B, the results of which have demonstrated that fish injury ranges for the 4,000 kJ hammer energy result in smaller injury ranges than were predicted in the original Creyke Beck A and B impact assessment (SSE and Equinor, 2018). While the greater hammer energy in the NMC applications for Dogger Bank Creyke Beck A and B result in increases in behavioural response ranges, these represent relatively small increases on those predicted in the original Creyke Beck A and B impact assessments (as presented in Volume 2, Chapter 3: Fish and Shellfish Ecology of the Environmental Statement). As a result, the maximum design scenario for Creyke Beck has not changed (i.e. it remains piling for pin piles using 2,300 kJ hammer; SSE and Equinor, 2018).</p> <p>The potential for fish to be impacted by Dogger Bank Sofia (formally Dogger Bank Teesside B) was considered within paragraph 3.13.2.47 of Volume 2, Chapter 3: Fish and Shellfish Ecology of the Environmental Statement, on the basis of maximum duration of piling events. This assumed a maximum duration of piling events for Dogger Bank Sofia of 202 days, based on the piling duration for pin-pile (multi-leg) foundations. The inclusion of monopile foundations in the NMC, as outlined in paragraph 2.5 above, would not affect the maximum duration assumed within the original assessment, as this type of foundation would have considerably shorter</p>

CEA Impact Title	Update to Hornsea Three CEA
	<p>piling durations (i.e. 71 days). The Sofia NMC Environmental Report (Innogy Renewables UK, 2018) reports that proposed hammer energy amendments has not changed the piling durations assessed in the original impact assessment and therefore there is no change in the maximum design scenario.</p> <p>The changes to the Norfolk Vanguard, Dogger Bank Creyke Beck A and B and Sofia impact assessments have not resulted in material changes (i.e. significant increases in either the extent or duration of the impact) to the Hornsea Three CEA for Tier 2 projects. As such, there is no change to the conclusion of minor adverse significance due to cumulative effects of underwater noise from Tier 2 piling operations on fish and shellfish ecology (as presented in paragraph 3.13.2.74 of Volume 2, Chapter 3: Fish and Shellfish Ecology of the Environmental Statement). As noted in paragraph 3.13.2.67 of Volume 2, Chapter 3: Fish and Shellfish Ecology of the Environmental Statement, this is particularly the case, given that the Hornsea Three assessment was considered to be highly precautionary due to piling events, in most cases, likely being shorter and simultaneous piling operations (between and within offshore wind farm sites) also resulting in a reduction in the total piling duration.</p>
<p>Volume 2, Chapter 4: Marine Mammals of the Environmental Statement (APP-064)</p>	
<p>Construction phase: Underwater noise from foundation piling and other construction activities (e.g. drilling of piles) within the Hornsea Three with underwater noise arising during construction of other projects has the potential to cause injury or disturbance to marine mammals.</p>	<p>Norfolk Vanguard, Thanet Extension and Moray West were considered as Tier 3 projects within the Hornsea Three marine mammal CEA (see Table 4.56 of Volume 2, Chapter 4 – Marine Mammals of the Environmental Statement). Based on the application documents for both Norfolk Vanguard and Thanet Extension being accepted for Examination, and the submission of an application for Moray West to Marine Scotland, these projects have now been considered within Tier 2 within the CEA. For the purposes of this CEA (i.e. cumulative effects of underwater noise from piling on marine mammals), the revised applications for the Seagreen (Firth of Forth), Inch Cape and Neart na Gaoithe projects, were considered as Tier 3 projects in the Hornsea Three marine mammal CEA (see Table 4.55 of Volume 2, Chapter 4: Marine Mammals of the Environmental Statement). As these have now been submitted as revised applications to Marine Scotland, these projects have now been considered within Tier 2 within the CEA. Tier 1 remains unchanged.</p> <p>In addition, as a result of changes in maximum hammer energy parameters resulting from the NMC applications for Dogger Bank Creyke Beck A and B, and Sofia (remaining as Tier 2 projects), revised predictions of the magnitude of impact on marine mammal receptors have become available since the Hornsea Three CEA was carried out. Therefore, the quantitative assessment of the effect of underwater noise generated by construction activities for marine mammals has also been revised in line with these changes.</p> <p>The assessment of significance in the marine mammal chapter was based on the sequential scenario as it was considered unrealistic that multiple projects would be in a position to operate with multiple vessels concurrently (for example, a total of 28 piling vessels would be required to realise all the concurrent piling scenarios within Tier 1 and 2 combined). The inclusion of the predicted levels of disturbance resulting from the Norfolk Vanguard, Thanet Extension, Moray West and revised Forth and Tay projects in Tier 2 and the</p>

CEA Impact Title	Update to Hornsea Three CEA
	<p>revision from the change in design parameters from the NMC applications from the other existing Tier 2 projects would increase the total summed numbers of harbour porpoises potentially affected in Tier 1 and 2 from 22,546 (assuming all sequential piling scenarios), which is equivalent to 7 % of the North Sea Management Unit reference population, to 41,150 (11.9 % of the North Sea Management Unit). It is important to note that these numbers are summed across all projects regardless of the degree of temporal and spatial overlap in pile driving and this approach does not provide any information on how the total magnitude is predicted to vary over time. These maximum summed numbers of animals impacted will never be reached as there is no point at which all of these individual projects could be overlapping and the maximum magnitude of impact at any one time will be significantly lower than this. Taking into account the spatial overlap in impacted areas within each year, which could be considerable for some areas, e.g. the three Dogger Bank, the two Hornsea projects and the Forth and Tay projects would further significantly reduce the total number of animals potentially affected. On this basis, this level of disturbance is not expected to have a significant effect on the size or trajectory of the harbour porpoise population and therefore the impact is still considered low magnitude. As such, there is no change in impact significance in the Hornsea Three CEA for the effect of underwater construction activities on harbour porpoises considering a revised Tier 2.</p> <p>For minke whales, the revised Tier 2 total summed numbers of animals potentially affected by disturbance from pile driving increases from 368 under sequential piling scenarios (representing a total of 1.6 % of the Celtic and Greater North Sea Management Unit reference population), to 796, representing a total of 3.4 % of the reference population. As discussed for harbour porpoises above, this summed magnitude will never be realised at any single time and in any given year, the magnitude of impact will be much lower. This magnitude of impact is still considered low therefore there is no change in impact significance in the Hornsea Three CEA for minke whales.</p> <p>For white beaked dolphins the Tier 2 total summed numbers of animals potentially affected by disturbance from pile driving presented in the original assessment was 14 under sequential piling scenarios, which at the time of assessment, represented a total of 0.1% of the Celtic and Greater North Sea Management Unit reference population. However to update the assessment for Tier 2, which now includes the Scottish projects in the Forth and Tay region (Near na Gaoithe, Inch Cape and Seagreen), it is necessary to reconsider the appropriate abundance value for the white beaked dolphin reference population. The Forth and Tay projects are situated in Block R of the SCANS III survey design. The total estimated abundance of Block R from the SCANS III surveys carried out in 2016 is 15,694, which almost as much as the previous abundance estimate for the whole of the Celtic and Greater North Sea Management Unit (15,895, which was recommended by the Inter Agency Marine Mammal Working Group, in 2015, based on SCANS II survey data). In light of this, a revised SCANS III-based abundance for the entire management unit has since been calculated at 36,287 (excluding the Irish Sea portion of the management unit for which data is not yet available). Taking this into account, the previous Tier 2 estimate of 14 animals represents 0.04% of the updated reference population. The revised Tier 2 summed impact incorporating</p>

CEA Impact Title	Update to Hornsea Three CEA
	<p>Norfolk Vanguard, Thanet Extension, Moray West and the Forth and Tay projects, is 1,494 animals summed over all projects, representing 4.1% of the reference population. This increase results mainly from the numbers of white beaked dolphins predicted to be disturbed by the Forth and Tay projects in Scotland which are proposed in an area of relatively high white beaked dolphin density. As discussed for harbour porpoises and minke whales above, this summed magnitude will never be realised at any single time and in any given year, the magnitude of impact will be much lower. This is still considered low magnitude therefore there is no change in impact significance in the Hornsea Three CEA for white beaked dolphins.</p>
<p>For the construction, operation and maintenance and decommissioning phases the following effects were considered: Changes in prey species Increased traffic</p>	<p>Norfolk Vanguard, Thanet Extension and Moray West were considered as Tier 3 projects within the Hornsea Three marine mammal CEA (see Table 4.56 of Volume 2, Chapter 4 – Marine Mammals of the Environmental Statement). Based on the application documents for both Norfolk Vanguard and Thanet Extension now being accepted for Examination, and the submission of an application for Moray West and revised applications for Neart na Gaoithe, Inch Cape and Seagreen to Marine Scotland, for revised additional quantitative information on the potential magnitude of vessel related impacts have become available.</p> <p>In the absence of specific quantitative information to include at the time of carrying out the Hornsea CEA, the assumption was made that that number of additional vessel movements for Norfolk Vanguard, Thanet Extension and Moray West would be similar to other projects of similar scale (e.g. for Norfolk Vanguard it was assumed that based on the installation of up to 257 turbines, there would be a potential 5,000-6,000 additional vessel movements during construction and 700 during operation). The assumptions adopted in the Hornsea Three marine mammal CEA were precautionary when compared with the details presented within the project ESs (e.g. the Norfolk Vanguard ES assessed 1,180 vessel movements compared to the 5,000-6,000 assessed within the Hornsea Three CEA). Therefore, there is no change to the Hornsea Three CEA conclusions for the effect of increased vessel traffic on marine mammals.</p> <p>The specific parameters for which Dogger Bank Creyke Beck A and B, and Sofia, are seeking a NMC, and the revised parameters within the revised applications for Seagreen (Firth of Forth), Inch Cape and Neart na Gaoithe, did not result in any changes to the parameters under consideration in the Hornsea Three CEA for assessment of the effects of increased vessel traffic, therefore there is no change to the Hornsea Three CEA conclusions for these effects on marine mammals.</p> <p>As outlined above, the changes to the projects outlined above did not result in an increase in the significance of effects on fish and shellfish receptors when considered cumulatively with Hornsea Three, therefore there is no change to the CEA for Hornsea Three for the effects of changes in prey species on marine mammals.</p>

CEA Impact Title	Update to Hornsea Three CEA
Volume 2, Chapter 4: Ornithology of the Environmental Statement (APP-065)	
<p>Construction and decommissioning phases: The impact of construction activities such as increased vessel activity and underwater noise, may result in direct disturbance or displacement from important foraging and habitat areas of birds</p>	<p>Norfolk Vanguard, Thanet Extension and Moray West were considered as Tier 3 projects within the Hornsea Three offshore ornithology CEA (see Table 5.38 of Volume 2, Chapter 5 – Offshore Ornithology of the Environmental Statement). Thanet Extension and Moray West are highly unlikely to act cumulatively/in-combination with Hornsea Three due to the distances of those projects from Hornsea Three. Norfolk Vanguard was considered as part of the CEA with the magnitude of any effects considered to be equivalent to that predicted for the East Anglia Three offshore wind farm (i.e. negligible). There is therefore no change to the Hornsea Three CEA conclusions for this impact on offshore ornithological receptors.</p> <p>The specific parameters for which Dogger Bank Creyke Beck A and B, and Sofia, are seeking a NMC, and the revised parameters within the revised applications for Seagreen (Firth of Forth), Inch Cape and Neart na Gaoithe, did not result in any changes to the parameters under consideration in the Hornsea Three CEA for assessment of the effects of disturbance/displacement in the construction/decommissioning phases and there is therefore no change to the Hornsea Three CEA conclusions for this impact on offshore ornithological receptors.</p>
<p>Operation and maintenance phase: The impact of physical displacement from the Hornsea Three array area during the operational and maintenance phase of the development may result in effective habitat loss and reduction in survival or fitness rates. Collision with rotating turbine blades resulting in mortality of birds</p>	<p>Norfolk Vanguard, Thanet Extension and Moray West were considered as Tier 3 projects within the Hornsea Three offshore ornithology CEA (see Table 5.38 of Volume 2, Chapter 5 – Offshore Ornithology of the Environmental Statement). As the applications for both Norfolk Vanguard and Thanet Extension have been accepted for Examination, and the application for Moray West now in the determination phase, additional quantitative information on the potential magnitude of collision risk and displacement impacts has become available. This now means that these three projects now need to be considered as part of Tier 2 in the Hornsea Three CEA. The implications for the assessments conducted in Volume 2, Chapter 5 – Offshore Ornithology of the Environmental Statement and in the Report to Inform Appropriate Assessment (APP-051) are considered in Appendix 7 to the Applicant's response to Deadline 1.</p> <p>Dogger Bank Creyke Beck A&B, Sofia, Inch Cape and Seagreen Alpha and Bravo were all considered as Tier 2 projects within the Hornsea Three offshore ornithology CEA (see Table 5.38 of Volume 2, Chapter 5 – Offshore Ornithology of the Environmental Statement) whilst Neart na Gaoithe was considered as a Tier 1 project.</p> <p>The specific parameters for which Dogger Bank Creyke Beck A and B, and Sofia, are seeking a NMC, and the revised parameters within the revised applications for Seagreen (Firth of Forth), Inch Cape and Neart na Gaoithe, have the potential to result in changes to the parameters under consideration in the Hornsea Three CEA for the assessment of collision risk only. However, it is important to note that the revised design envelopes proposed by each of these projects still includes the design scenario originally consented and incorporated into the Hornsea Three CEA. There is therefore no change to the Hornsea Three CEA in respect of these projects.</p>

CEA Impact Title	Update to Hornsea Three CEA
	Consideration is however, given in Appendix 7 to the Applicant's response to Deadline 1 to the potential changes to the Hornsea Three CEA that may result if the revised project designs are ultimately constructed.
Volume 2, Chapter 6: Commercial Fisheries of the Environmental Statement (APP-066)	
<p>For the construction, operation and maintenance and decommissioning phases the following effects were considered:</p> <p>Cumulative effects of reduction in access to, or exclusion from, potential and/or established fishing grounds.</p> <p>Cumulative effects of displacement leading to gear conflict and increased fishing pressure on alternative grounds.</p> <p>Cumulative effects of longer steaming distances to alternative fishing grounds.</p> <p>Cumulative effects of changes in shipping routes, leading to interference with fishing activity.</p>	<p>Both Norfolk Vanguard and Thanet Extension were originally considered as Tier 3 projects within the Hornsea Three CEA (see Table 6.15 of Volume 2, Chapter 6: Commercial Fisheries of the Environmental Statement). Based on the applications for both these projects being accepted for examination, these would now be considered as Tier 2 projects within the CEA. Changes to the Norfolk Vanguard and Thanet Extension project design would not have any effect on the Hornsea Three commercial fisheries CEA, as the assessment only considered the presence of these wind farms, rather than any specific design parameters. As the Tier 3 projects in the Hornsea Three CEA did not raise the Tier 2 significance levels, there would similarly be no change in the Tier 2 conclusions with the inclusion of Norfolk Vanguard and Thanet Extension as Tier 2 projects.</p> <p>The specific parameters for which Dogger Bank Creyke Beck A and B, Sofia, Seagreen Phase 1 and Neart na Gaoithe are seeking a NMC are not considered in the Hornsea Three CEA and therefore there is no change to the Hornsea Three CEA for commercial fisheries.</p>
Volume 2, Chapter 7: Shipping and Navigation of the Environmental Statement (APP-067)	
<p>For the construction, operation and maintenance and decommissioning phases the following effects were considered:</p>	<p>Both Norfolk Vanguard and Thanet Extension were originally considered as Tier 3 projects within the Hornsea Three CEA (see Table 7.18 of Volume 2, Chapter 7: Shipping and Navigation of the Environmental Statement). Based on the applications for both these projects being accepted for examination, these would now be considered as Tier 2 projects within the CEA. Changes to the Norfolk Vanguard and Thanet Extension project design would not have any effect on the Hornsea Three shipping and navigation CEA, as the assessment only considered the presence of these wind farms, rather than any specific design parameters. As the Tier 3 projects in</p>

CEA Impact Title	Update to Hornsea Three CEA
<p>Cumulative effects of displacement of vessels leading to increased journey times or distances for all commercial vessels.</p> <p>Cumulative effects of displacement of vessels leading to increased journey times or distances for all vessels (including commercial ferries) during periods of adverse weather.</p>	<p>the Hornsea Three CEA did not raise the Tier 2 significance levels, there would similarly be no change in the Tier 2 conclusions with the inclusion of Norfolk Vanguard and Thanet Extension as Tier 2 projects.</p> <p>The specific parameters for which Dogger Bank Creyke Beck A and B and Sofia are seeking a NMC are not considered in the Hornsea Three CEA, which included red line boundaries for these projects in the CEA presented in section 7.13 of Volume 2, Chapter 7: Shipping and Navigation of the Environmental Statement. Therefore, there is no change to the Hornsea Three CEA for shipping and navigation.</p>
<p>Volume 2, Chapter 8: Aviation, Military and Communication of the Environmental Statement (APP-068)</p>	
<p>Operation: Wind turbines may disrupt radar coverage of Military ADR located at Framingham</p>	<p>Norfolk Vanguard was originally considered as a Tier 3 project within the Hornsea Three CEA (see Table 8.15 of Volume 2, Chapter 8: Aviation, Military and Communication of the Environmental Statement). Based on the application documents for Norfolk Vanguard being accepted for Examination, these would now be considered as Tier 2 projects within the CEA. Changes to the Norfolk Vanguard project design would not have any effect on the Hornsea Three aviation, military and communications CEA, as the assessment only considered the presence of these wind farms, rather than any specific design parameters. As the Tier 3 projects in the Hornsea Three CEA did not raise the Tier 2 significance levels, there would similarly be no change in the Tier 2 conclusions with the inclusion of Norfolk Vanguard as a Tier 2 project. As a result, the significance of effect remains minor adverse.</p>
<p>Volume 2, Chapter 10: Seascape and Visual Resources of the Environmental Statement (APP-070)</p>	
<p>Operation: The cumulative impact upon seascape character, HSC and visual receptors when the operation phase of Hornsea Three is considered together with the construction and operation of other planned nearby wind farm projects, planned</p>	<p>Norfolk Vanguard was originally considered as a Tier 3 project within the Hornsea Three CEA (see Table 10.24 of Volume 2, Chapter 10: Seascape and Visual Resources of the Environmental Statement). Based on the application for Norfolk Vanguard being accepted for Examination, this would now be considered as a Tier 2 project within the CEA. Changes to the Norfolk Vanguard project design would not have any effect on the Hornsea Three seascape and visual resources CEA, as the assessment only considered the presence of these wind farms, rather than any specific design parameters. As the Tier 3 projects in the Hornsea Three CEA did not raise the Tier 2 significance levels, there would similarly be no change in the Tier 2 conclusions with the inclusion of Norfolk Vanguard as a Tier 2 project. As a result, the significance of effect would remain negligible for the East Anglia Shipping Waters NSCA.</p>

CEA Impact Title	Update to Hornsea Three CEA
decommissioning operations for cables and pipelines and applications for aggregate extraction.	The specific parameters for which Dogger Bank Creyke Beck A is seeking a NMC were not considered in the Hornsea Three CEA and therefore there is no change to the Hornsea Three CEA for seascape and visual resources.
Volume 2, Chapter 11: Infrastructure and Other Users of the Environmental Statement (APP-071)	
<p>For the construction, operation and maintenance and decommissioning phases the following effects were considered:</p> <p>Hornsea Three infrastructure, safety zones and advisory safety distances associated with activities within the Hornsea Three array area and along the offshore cable corridor, alongside other plans/projects, may displace recreational craft and recreational fishing vessels resulting in a loss of recreational resource.</p>	<p>Norfolk Vanguard was originally considered as a Tier 3 projects within the CEA assessment. Based on the application being accepted for Examination the project would now be considered in Tier 2. However, it is not considered that the assessment would change as the assessment again only considers the presence of the wind farm rather than any specific aspects of the design. As the Tier 3 projects in the original assessment were considered unlikely to raise the cumulative effect assessed for Tier 2 projects, having Norfolk Vanguard as a Tier 2 project in the CEA would not change the conclusions made within the assessment. As a result, the significance of effect remains minor.</p> <p>The specific parameters for which Dogger Bank Creyke Beck A and B, Sofia are seeking changes are not considered in the Hornsea Three CEA and therefore there is no change to the Hornsea Three CEA for Infrastructure and Other Users.</p>
<p>Construction Phase: The piling of wind turbine and substation foundations, alongside other plans/projects, will generate underwater noise that may acoustically interfere with seismic survey operations.</p>	<p>The cumulative assessment included in the Hornsea Three Environmental Statement was qualitative and did not involve any modelling of hammer energies. The assessment focuses on the management of the impact and the amendments to Norfolk Vanguard, Dogger Bank Creyke Beck A and B and Sofia do not affect this element of the assessment.</p>

Appendix A: Cumulative Effects Screening Matrix

Energy Projects - Spatial and Screening

a	Included as part of the topic baseline and hence not considered within the cumulative impact assessment.
b	Part of the baseline but has an ongoing impact and is therefore considered relevant to the cumulative impact assessment. Screened in to assessment.
c	Potential cumulative impact exists: Screened in to assessment.
d	No conceptual effect-receptor pathway: Screened out of assessment.
e	Low data confidence: Screened out of assessment.
f	No physical effect-receptor overlap: Screened out of assessment.
g	No temporal overlap: Screened out of assessment.

Project	Distance from the Hornsea Three Array Area (km)	Distance from the Hornsea Three Offshore Export Cable Route Corridor (km)	Status of Development	Data Confidence	Marine Processes	Benthic Ecology	Fish & Shellfish Ecology	Marine Mammals	Ornithology	Commercial Fisheries	Shipping & Navigation	Military and Aviation	Marine Archaeology	Seascape and Visual Resources	Infrastructure & Other Users
Offshore Wind Farms															
United Kingdom															
Dogger Bank Creyke Beck A	76	91	Consented	High - Third party project details published in the public domain and confirmed as being 'accurate' by the developer.	f	f	c	c	c	c	c	f	f	c	c
Dogger Bank Creyke Beck B	99	115	Consented	High - Third party project details published in the public domain and confirmed as being 'accurate' by the developer.	f	f	c	c	c	c	c	f	f	f	c
Dogger Bank Teesside B (now Sofia Offshore Wind Farm)	95	108	Consented	High - Third party project details published in the public domain and confirmed as being 'accurate' by the developer.	f	f	c	c	c	c	c	f	f	f	c
Inch Cape Offshore Wind Farm	386	402	Consented and NMC Submitted	High - Third party project details published in the public domain and confirmed as being 'accurate' by the developer.	f	f	f	c	c	c	f	f	f	f	f
Moray West Offshore Wind Farm	554	571	Submitted	High - Third party project details published in the public domain and confirmed as being 'accurate' by the developer.	f	f	f	c	c	f	f	f	f	f	f
Norfolk Vanguard	73	51	Submitted	High - Third party project details published in the public domain and confirmed as being 'accurate' by the developer.	f	f	c	c	c	c	c	c	f	c	c
Nearra na Gaoithe	372	388	Consented and NMC Submitted	High - Third party project details published in the public domain and confirmed as being 'accurate' by the developer.	f	f	f	c	c	c	f	f	f	f	f
SeaGreen Alpha	383	399	Consented and NMC Submitted	High - Third party project details published in the public domain and confirmed as being 'accurate' by the developer.	f	f	f	c	c	c	f	f	f	f	f
SeaGreen Bravo	367	384	Consented and NMC Submitted	High - Third party project details published in the public domain and confirmed as being 'accurate' by the developer.	f	f	f	c	c	c	f	f	f	f	f
Thanet Extension	260	168	Submitted	High - Third party project details published in the public domain and confirmed as being 'accurate' by the developer.	f	f	f	c	c	c	c	f	f	f	f

Onshore Projects - Spatial and Screening

a	Included as part of the topic baseline and hence not considered within the cumulative impact assessment.
b	Part of the baseline but has an ongoing impact and is therefore considered relevant to the cumulative impact assessment: Screened in to assessment.
c	Potential cumulative impact exists: Screened in to assessment.
d	No conceptual effect-receptor pathway: Screened out of assessment.
e	Low data confidence: Screened out of assessment.
f	No physical effect-receptor overlap: Screened out of assessment.
g	No temporal overlap: Screened out of assessment.

Project	Address	District	Data Confidence Assessment	Status of Development	Shortest distance from Hornsea Three	Geology and Ground Conditions	Hydrology and Flood Risk	Ecology and Nature Conservation	Landscape and Visual Resources	Historic Environment	Land Use and Recreation	Traffic and Transport	Noise and Vibration	Air Quality and Health	Socio-Economics
2018/1640 Gas powered electricity generator and related infrastructure.	Land Off Mangreen Hall Lane, Dunston, Norfolk	South Norfolk District Council	High - Third party project details published in the public domain/planning portal.	Approved 18 October 2018	0 m	c	f	c	c	c	c	f	c	c	f
2018/2017 Full planning application for the laying out of a 49.9MW battery storage facility, fencing and access road on land east of the existing Norwich 400kV substation	Norwich Main Substation, Mangreen Hall Lane, Dunston, Norfolk NR14 8PG	South Norfolk District Council	High - Third party project details published in the public domain/planning portal.	Pending Consideration as of 12 October 2018.	0 m	c	f	c	c	c	f	f	c	c	f
20180963 Erection of Food Retail Store (A1 Use), Offices (B1a Use), 70 No Bedroom Care Home (C2 Use), 24 No Assisted Flats (C2 Use), 15 No Assisted Bungalows (C2 Use) Assembly Room/Club House (C2 Use) & Associated Car Parking, Service Yards, Access Roads, Drainage Works & Landscaping	Old Station Yard, Cawston Road /Stoney Lane, Reepham	Broadland District Council	High - Third party project details published in the public domain/planning portal.	Registered as of 5 July 2018.	950m	f	f	f	f	f	c	f	f	f	f
Norfolk Vanguard	The centre of Norfolk Vanguard West is 67km from the Bacton coast and 63km from the Gorleston coast at their nearest point. The centre of Norfolk Vanguard East is 98km from the Bacton coast and 86km from the Gorleston coast at their nearest point. Norfolk Vanguard West is approximately 295km ² , Norfolk Vanguard East being 297km ² .		High - Third party project details published in the public domain/planning portal.	Application submitted on 11 July 2018 and excepted for examination on 24 July 2018.	0m	c	c	c	c	c	c	c	c	c	c