









Date	Issue No.	Remarks / Reason for Issue	Author	Checked	Approved
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1 SCREENING MATRICES

1.1 Introduction

- This document provides the <u>updated</u> Habitats Regulations Assessment (HRA) screening matrices for Norfolk Vanguard Offshore Wind Farm. The matrices summarise <u>the</u> information provided in Appendix 5.1 (Offshore Habitats Regulations Assessment (HRA) Screening) of the Information to Support HRA report (document 5.3 of the application).
- 1. The following European sites have been included in the screening matrices in response to advice received from the French Agency for Biodiversity during the Norfolk Vanguard Examination:

2.____

- Bancs Des Flandres Special Protection Area (SPA), and
- Cap Gris Nez SPA.
- The screening matrices for t∓he following European sites have been updated in response to advice received from Natural England during the Norfolk Vanguard Examination
 - Breydon Water SPA and Ramsar,
 - •
 - Broadland SPA and Ramsar,
 - Flamborough and Filey Coast potential Special Protection Area (pSPA),
 - North Norfolk Coast SPA and Ramsar, and
 - Outer Thames Estuary SPA and pSPA extension

1.2 Effects Considered

2.4. Potential effects upon the European sites which are considered within the submitted Information to Support HRA report are provided in Table 1.1.

Table 1.1 Potential Effects consider in Screening

Site Type	Feature(s)	Potential Effects
Special Protection Area (SPA)	All birds	Offshore effects Collision mortality Displacement/Disturbance Barrier effect Cumulative/ In-combination Onshore effects
		Direct effects within SPA boundary Direct effects on ex-situ habitats Indirect effects within SPA boundary Indirect effects on ex-situ habitats

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Site Type	Feature(s)	Potential Effects
Special Area of Conservation/Site of Community Importance (SAC/SCI)	Benthic habitats	 Permanent loss (and introduction of new sediment where applicable) Temporary physical disturbance Smothering due to increased suspended sediment Re- mobilisation of contaminated sediments Underwater noise and vibration Cumulative/ In-combination
	Marine mammals	 Underwater noise Vessel Interactions Indirect effects on prey Changes to water quality Cumulative/ In-combination
	Fish	 Permanent loss (and introduction of new sediment where applicable) Temporary physical disturbance Smothering due to increased suspended sediment Re- mobilisation of contaminated sediments Underwater noise and vibration Electromagnetic fields (EMF) Cumulative/ In-combination
	Terrestrial	Direct effects (e.g. habitat loss) Impacts on ex-situ habitats functionally connected to the SAC Impacts from alterations to geology and land contamination Disturbance due to groundwater / hydrology changes Impacts from noise disturbance Impacts from changing air quality Impacts from light disturbance Impacts from visual disturbance

1.3 Sites Considered

- 3.5. The methodology for screening of sites and effects is discussed in Appendix 5.1 of the Information to Support HRA report.
- 4.6. The following sites were included in the Screening stage.

Norfolk Vanguard Reference Number	Designated site	Ornithology	Marine Mammals	Benthic Habitats	Fish	Terrestrial
1	Abberton Reservoir SPA & Ramsar	✓				
2	Abers - Côtes des légendes SAC		✓			
3	Alde, Ore and Butley Estuaries SAC			✓		
4	Alde-Ore Estuary SPA & Ramsar	✓				
5	Archipel des Glénan SAC		✓			
6	Baie De Canche Et Couloir Des Trois Estuaires SCI		✓		✓	
7	Baie de Morlaix SAC		✓			
8	Baie de Seine Occidentale SCI		✓			
9	Baie de Seine Occidentale SPA	✓				
10	Baie de Seine Orientale SAC	-√				





	Together					
Norfolk Vanguard Reference Number	Designated site	Ornithology	Marine Mammals	Benthic Habitats	Fish	Terrestrial
11	Bancs Des Flandres SAC		✓	✓		
12	Bancs Des Flandres SPA	✓				
13 12	Bassurelle Sandbank SCI			✓		
<u>1413</u>	Benfleet and Southend Marshes SPA & Ramsar	✓				
<u>15</u> 44	Berwickshire and North Northumberland Coast SAC		✓	✓		
<u>1615</u>	Blackwater Estuary (Mid-Essex Coast Phase 4) SPA & Ramsar	✓				
<u>1716</u>	Borkum-Riffgrund SCI		✓		✓	
<u>18</u> 17	Borkum-Riffgrund SPA	✓				
<u>19</u> 18	Braemar Pockmarks SAC			✓		
<u>2019</u>	Breydon Water SPA & Ramsar	✓				
<u>21</u> 20	Broadland SPA & Ramsar	✓				
<u>2221</u>	Bruine Bank pSPA	✓				
<u>2322</u>	Buchan Ness to Collieston Coast SPA	✓				
<u>2423</u>	Calf of Eday SPA	✓				
25 24	Cap Sizun SAC		✓			
<u></u>	Caps Gris Nez SPA	✓				
27 25	Chausey SCI	<u>−</u>				
28 26	Chesil Beach and The Fleet SPA & Ramsar	✓				
<u>29</u> 27	Chichester and Langstone Harbours SPA & Ramsar	✓				
<u>3028</u>	Colne Estuary (Mid-Essex Coast Phase 2) SPA & Ramsar	✓				
<u>3129</u>	Copinsay SPA	✓				
<u>32</u> 30	Coquet Island SPA	-√				
<u>33</u> 31	Côte de Granit Rose-Sept Iles SAC	✓				
<u>3432</u>	Cromarty Firth SPA & Ramsar	✓				
<u>35</u> 33	Crouch and Roach Estuaries (Mid- Essex Coast Phase 3) SPA & Ramsar	✓				
<u>36</u> 34	Deben Estuary SPA & Ramsar	✓				
<u>3735</u>	Dengie (Mid-Essex Coast Phase 1) SPA & Ramsar	-√				
<u>38</u> 36	Doggerbank SCI		✓			
39 37	Doggersbank SCI		✓			
<u>40</u> 38	Dornoch Firth and Loch Fleet SPA & Ramsar	-√				
<u>4139</u>	Dünenlandschaft Süd-Sylt SAC		✓			
<u>42</u> 40	Dunes De La Plaine Maritime Flamande SAC		✓	√		
<u>43</u> 41	East Caithness Cliffs SPA	✓				
4442	Essex Estuaries SAC			✓		
45 43	Estuaire de la Canche, dunes picardes plaquées sur l'ancienne		√			





Norfolk Vanguard Reference Number falaise, forêt d'Hardelot et falaise d'Equihen SCI 4644 Estuaire de la Seine SCI 4245 Estuaires Et Littoral Picards SAC 4846 Exe Estuary SPA & Ramsar 4947 Falaises Du Cran Aux Qeufs et du 5149 Falaises Du Cran Aux Qeufs et du Marsia de Tardinghen et Dunes de Wissant SCI Falaises Polunes du Chatelet, Marais de Tardinghen et Dunes de Wissant SCI Falaises et Pelouses du Cap Blanc Ner, du Mont d'Hubert, des Noires Mottes, du Fond de la Forge et du Mont de couple SCI 5259 Farme islands SPA 5755 Firth of Tay & Eden Estuary SPA & Ramsar 5765 Firth of Tay & Eden Estuary SPA & Samsar 5866 Firth of Forb SPA & Ramsar 5765 Foulnes (Mid-Essex Coast Phase 5764 Greater Wash SPA 6046 Fosses Gibraltar Point SPA & Ramsar 60564 Great Yarmouth North Denes SPA 7068 Guile Rev SCI 7068 Forth SPA & Ramsar 7068 Guile Rev SCI 7068 Forth SPA & Ramsar 7076 Greater Wash SPPA 7089 Hamborough, Hammond and 7089 Winterton SAC 7088 Hamburgisches Wattenmeer SCI 7088 Humber Estuary SPA & Ramsar 7089 Humber Estuary SPA & Ramsar 7097 Hegoland mit Helgoländer 71804 Humber Estuary SPA & Ramsar 71805 Humber Estuary SPA & Ramsar 71806 Humber Estuary SPA & Ramsar 71807 Humber Estuary SPA & Ramsar 71807 Humber Estuary SPA & Ramsar 71807 Humb	Enhancing Society	Together					
falaise, forêt d'Hardelot et falaise d'Equihen SCI 4644 Estuaire de la Seine SCI 4745 Estuaires Et Littoral Picards SAC 4846 Exe Estuary SPA & Ramsar 4947 Fair Isle SPA 5048 Falaise du Bessin Occidental SPA Falaises Du Cran Aux Oeufs et du Cap Gris-Nez, Dunes du Chatelet, Marais de Tardinghen et Dunes de Wissant SCI Falaises et Pelouses du Cap Blanc Nez, du Mont d'Hubert, des Noires Mottes, du Fond de la Forge et du Mont de couple SCI 5250 Noires Mottes, du Fond de la Forge et du Mont de couple SCI 5351 Faray and Holm of Faray SAC 5452 Farre Islands SPA 5553 Fettar SPA 5554 Firth of Forth SPA & Ramsar 5755 Firth of Forth SPA & Ramsar 5856 Firth of Forth SPA & Ramsar 5856 Forth Islands SPA 5957 Flamborough and Filey Coast pSPA 5958 Forth Islands SPA 5059 Forth Slands SPA 5059 Greater Wash pSPA 5059 Greater Wash pSPA 5060 Greater Wash pSPA 5070 Greater Wash pSPA 5070 Foliaber SPA 5070 Greater Wash pSPA 5070 Foliaber SPA 5070	Vanguard	Designated site	Ornithology			Fish	Terrestrial
d'Equihen SCI 4644 Estuaire de la Seine SCI 4745 Estuaires Et Littoral Picards SAC 4846 Exe Estuary SPA & Ramsar 4947 Fair Isle SPA 5048 Falaise du Bessin Occidental SPA Falaises Du Cran Aux Oeufs et du Cap Gris-Nez, Dunes du Chatelet, Marais de Tardinghen et Dunes de Wissant SCI Falaises et Pelouses du Cap Blanc Nez, du Mont d'Hubert, des Noires Mottes, du Fond de la Forge et du Mont de couple SCI 5351 Faray and Holm of Faray SAC 5452 Farne Islands SPA 5654 Firth of Forth SPA & Ramsar 5856 Filamborough Head SAC 5088 Forth Islands SPA 5959 Foula SPA 6098 Forth Islands SPA 6098 Forth Samsar 6099 Foula SPA 6099 Foul	Number						
### Stuaires Et Littoral Picards SAC #### Stuaires Et Littoral Picards SAC ####################################		l · · · · · · · · · · · · · · · · · · ·					
4846 Exe Estuary SPA & Ramsar 4947 Fair Isle SPA 5048 Falaise Du Cran Aux Oeufs et du Cap Gris-Nez, Dunes du Chatelet, Marais de Tardinghen et Dunes de Wissant SCI Falaises Du Cran Hond Ges Wissant SCI Falaises Du Cran Hond Ges Noires Mottes, du Fond de la Forge et du Mont de Couple SCI 5250 Nez, du Mont d'Hubert, des Noires Mottes, du Fond de la Forge et du Mont de couple SCI 5254 Farne Islands SPA	<u>46</u> 44	Estuaire de la Seine SCI		✓			
1924 Fair Isle SPA 5048 Falaise du Bessin Occidental SPA Falaises Du Cran Aux Oeufs et du Cap Gris-Nez, Dunes du Chatelet, Marais de Tardinghen et Dunes de Wissant SCI Falaises et Pelouses du Cap Blanc Nez, du Mont d'Hubert, des Noires Mottes, du Fond de la Forge et du Mont de couple SCI 5259 Sa54 Farne Islands SPA 5654 Firth of Forth SPA & Ramsar Firth of Tay & Eden Estuary SPA & Ramsar 5856 Flamborough Head SAC 5058 Forth Islands SPA 5059 Foul SPA 5059 Foul SPA 5050 F	<u>4745</u>	Estuaires Et Littoral Picards SAC		✓		✓	
5048 Falaise du Bessin Occidental SPA Falaises Du Cran Aux Oeufs et du Cap Gris-Nez, Dunes du Chatelet, Marais de Tardinghen et Dunes de Wissant SCI Falaises et Pelouses du Cap Blanc Nez, du Mont d'Hubert, des Noires Mottes, du Fond de la Forge et du Mont de couple SCI Faray and Holm of Faray SAC 5452 Farne Islands SPA 5554 Fettar SPA 5554 Firth of Forth SPA & Ramsar Firth of Forth SPA & Ramsar 5255 Flamborough and Filey Coast pSPA 5554 Flamborough Head SAC 5554 Foula SPA 5555 Foulas SPA 5555 Foulas SPA 5556 Forth Islands SPA 5557 Flamborough Head SAC 5559 Foulas SPA 5550 Greater Wash pSPA 5550 Great Yarmouth North Denes SPA 5550 Great Wash pSPA 5550 Great Wash pSPA 5550 Greater Wash pSPA 5550 Great Wash pSPA 5550 Gr	<u>4846</u>	Exe Estuary SPA & Ramsar	✓				
Falaises Du Cran Aux Oeufs et du Cap Gris-Nez, Dunes du Chatelet, Marais de Tardinghen et Dunes de Wissant SCI Falaises et Pelouses du Cap Blanc Nez, du Mont d'Hubert, des Noires Mottes, du Fond de la Forge et du Mont de couple SCI 5354 Faray and Holm of Faray SAC 5452 Farne Islands SPA 5554 Firth of Tay & Eden Estuary SPA & Ramsar 5755 Firth of Tay & Eden Estuary SPA & Ramsar 5866 Flamborough and Filey Coast pSPA 6159 Forth Islands SPA 7 Foula SPA 7 Foula SPA 7 Foula SPA 7 Foulas PA 7 Foulas PA 7 Foulas PA 7 Foulas PA 7 Four SPA 7 Foulas PA 8 Foulas PA 9 Foulas P	<u>49</u> 47	Fair Isle SPA	✓				
S149 S149 S149 Cap Gris-Nez, Dunes du Chatelet, Marais de Tardinghen et Dunes de Wissant SCI Falaises et Pelouses du Cap Blanc Nez, du Mont d'Hubert, des Noires Mottes, du Fond de la Forge et du Mont de couple SCI Falaises et Pelouses du Cap Blanc Nez, du Mont d'Hubert, des Noires Mottes, du Fond de la Forge et du Mont de couple SCI Fare Islands SPA S1554 Faray and Holm of Faray SAC S15554 Fetlar SPA S1564 Firth of Forth SPA & Ramsar Firth of Tay & Eden Estuary SPA & Ramsar S15654 Firth of Tay & Eden Estuary SPA & Ramsar S15654 Filamborough and Filey Coast pSPA S1585 Foula SPA S1585 Foula SPA S1585 Foula SPA S1586 Foula SPA S1586 Foula SPA S1586 S1586 Foula SPA S1587 S1588 S1	<u>50</u> 48	Falaise du Bessin Occidental SPA	✓				
Nez, du Mont d'Hubert, des Noires Motres, du Fond de la Forge et du Mont de couple SCI	<u>5149</u>	Cap Gris-Nez, Dunes du Chatelet, Marais de Tardinghen et Dunes de		✓	✓		
\$\frac{5452}{5553}\$ Farne Islands SPA \$\frac{\sqrt{\sq}\sqrt{\sqrt{\sqrt{\sqrt{\sq}}}}}}}\sqrt{\sint{\	<u>52</u> 50	Nez, du Mont d'Hubert, des Noires Mottes, du Fond de la			√		
5553 Fetlar SPA 5654 Firth of Forth SPA & Ramsar 5755 Firth of Tay & Eden Estuary SPA & Ramsar 5755 Firth of Tay & Eden Estuary SPA & Ramsar 5856 Flamborough and Filey Coast pSPA 5957 Flamborough Head SAC 5058 Forth Islands SPA 6159 Foula SPA 5199 Foula SPA 6260 Foulness (Mid-Essex Coast Phase 5) SPA & Ramsar 6361 Fowlsheugh SPA 5199 Faw Spa Ramsar 6364 Frowlsheugh SPA 65663 Gibraltar Point SPA & Ramsar 6664 Great Yarmouth North Denes SPA 6765 Greater Wash pSPA 6866 Gule Rev SCI 6967 Haisborough, Hammond and Winterton SAC 7068 Hamburgisches Wattenmeer SCI 7169 Hamford Water SPA & Ramsar 7270 Helgoland mit Helgoländer Felssockel SAC 7371 Hornsea Mere SPA 7573 Hoy SPA 7674 Humber Estuary SAC 77575 Humber Estuary SPA & Ramsar	<u>53</u> 51	Faray and Holm of Faray SAC		✓			
\$5654 Firth of Forth SPA & Ramsar \$\footnote{3}\$ Sa565 Firth of Tay & Eden Estuary SPA & Ramsar \$\footnote{3}\$ Poula SPA \$\footnote{3}\$ Foula SPA \$\footnote{3}\$ Poula SPA \$\footnote{3}\$ Ramsar \$\footnote{3}\$ SyA & Ramsar \$\footnote{3}\$ Ramsar \$\footnote{3}\$ SyA & Ramsar \$\footnote{3}\$	<u>5452</u>	Farne Islands SPA	✓				
5755 Firth of Tay & Eden Estuary SPA & Ramsar 5856 Flamborough and Filey Coast pSPA 5957 Flamborough Head SAC 6058 Forth Islands SPA 6159 Foula SPA 704 Foulness (Mid-Essex Coast Phase S) SPA & Ramsar 6364 Fowlsheugh SPA 61640 Frisian Front pSPA 61664 Great Yarmouth North Denes SPA 61666 Gule Rev SCI 61666 Gule Rev SCI 61667 Hamborough, Hammond and Winterton SAC 7068 Hamburgisches Wattenmeer SCI 7169 Hamford Water SPA & Ramsar 7270 Helgoland mit Helgoländer Felssockel SAC 7177 Hornsea Mere SPA 7177 Hornsea Mere SPA 7177 Humber Estuary SPA & Ramsar 7177 Humber Estuary SPA & Ramsar 7177 Humber Estuary SPA & Ramsar	<u>55</u> 53	Fetlar SPA	✓				
Ses Flamborough and Filey Coast pSPA Ses Flamborough Head SAC Sos Forth Islands SPA Soula SPA Foulness (Mid-Essex Coast Phase S) SPA & Ramsar Soula SPA Foulness (Mid-Essex Coast Phase S) SPA & Ramsar Gas Frisian Front pSPA Soula SPA Gas Gibraltar Point SPA & Ramsar Gas Gibraltar Point SPA & Ramsar Great Yarmouth North Denes SPA Great Wash pSPA Gas Gula Rev SCI Haisborough, Hammond and Winterton SAC 7068 Hamburgisches Wattenmeer SCI 7169 Hamford Water SPA & Ramsar Telegoland mit Helgoländer Felssockel SAC Hermaness, Saxa Vord and Valla Field SPA Total Total Foundation	<u>56</u> 54	Firth of Forth SPA & Ramsar	✓				
Substitute	<u>57</u> 55	· · · · · · · · · · · · · · · · · · ·	✓				
6058 Forth Islands SPA 6159 Foula SPA 7001ness (Mid-Essex Coast Phase 5) SPA & Ramsar 6364 Fowlsheugh SPA 6462 Frisian Front pSPA 6563 Gibraltar Point SPA & Ramsar 6664 Great Yarmouth North Denes SPA 6765 Greater Wash pSPA 6967 Haisborough, Hammond and Winterton SAC 7068 Hamburgisches Wattenmeer SCI 7169 Hamford Water SPA & Ramsar 7270 Felssockel SAC 7374 Hermaness, Saxa Vord and Valla Field SPA 7472 Hornsea Mere SPA 7573 Hoy SPA 7674 Humber Estuary SAC 77876 Humber Estuary SPA & Ramsar 7876 Hund und Paapsand SCI	<u>5856</u>	Flamborough and Filey Coast pSPA	✓				
6159 Foula SPA 6260 Foulness (Mid-Essex Coast Phase 5) SPA & Ramsar 6361 Fowlsheugh SPA 6462 Frisian Front pSPA 6563 Gibraltar Point SPA & Ramsar 6664 Great Yarmouth North Denes SPA 6765 Greater Wash pSPA 6866 Gule Rev SCI 6967 Haisborough, Hammond and Winterton SAC 7068 Hamburgisches Wattenmeer SCI 7169 Hamford Water SPA & Ramsar 7270 Felssockel SAC 7371 Hermaness, Saxa Vord and Valla Field SPA 7472 Hornsea Mere SPA 7573 Hoy SPA 7674 Humber Estuary SAC 77876 Humber Estuary SAC 77876 Hund und Paapsand SCI	<u>59</u> 57	Flamborough Head SAC			✓		
Foulness (Mid-Essex Coast Phase 5) SPA & Ramsar 6361 Fowlsheugh SPA 6462 Frisian Front pSPA 6563 Gibraltar Point SPA & Ramsar 6664 Great Yarmouth North Denes SPA 6765 Greater Wash pSPA 6866 Gule Rev SCI 6967 Haisborough, Hammond and Winterton SAC 7068 Hamburgisches Wattenmeer SCI 7169 Hamford Water SPA & Ramsar 7270 Felssockel SAC 7371 Hermaness, Saxa Vord and Valla Field SPA 7472 Hornsea Mere SPA 7573 Hoy SPA 7876 Humber Estuary SAC 7876 Humber Estuary SAC 7876 Hund und Paapsand SCI	<u>60</u> 58	Forth Islands SPA					
5) SPA & Ramsar 6361 Fowlsheugh SPA 6462 Frisian Front pSPA 6563 Gibraltar Point SPA & Ramsar 6664 Great Yarmouth North Denes SPA 6765 Greater Wash pSPA 6866 Gule Rev SCI 6967 Haisborough, Hammond and Winterton SAC 7068 Hamburgisches Wattenmeer SCI 7169 Hamford Water SPA & Ramsar 7270 Felssockel SAC Hermaness, Saxa Vord and Valla Field SPA 7472 Hornsea Mere SPA 7573 Hoy SPA 7674 Humber Estuary SAC 77876 Hund und Paapsand SCI	<u>61</u> 59	Foula SPA	✓				
6462 Frisian Front pSPA 6563 Gibraltar Point SPA & Ramsar 6664 Great Yarmouth North Denes SPA 6765 Greater Wash pSPA 6866 Gule Rev SCI 6967 Haisborough, Hammond and Winterton SAC 7068 Hamburgisches Wattenmeer SCI 7169 Hamford Water SPA & Ramsar 7270 Helgoland mit Helgoländer Felssockel SAC 7371 Hermaness, Saxa Vord and Valla Field SPA 7472 Hornsea Mere SPA 7573 Hoy SPA 7674 Humber Estuary SAC 77876 Hund und Paapsand SCI	<u>62</u> 60	`	✓				
6563 Gibraltar Point SPA & Ramsar 6664 Great Yarmouth North Denes SPA 6765 Greater Wash pSPA 6866 Gule Rev SCI 6967 Haisborough, Hammond and Winterton SAC 7068 Hamburgisches Wattenmeer SCI 7169 Hamford Water SPA & Ramsar 7270 Helgoland mit Helgoländer Felssockel SAC 7371 Hermaness, Saxa Vord and Valla Field SPA 7472 Hornsea Mere SPA 7573 Hoy SPA 7674 Humber Estuary SAC 77876 Hund und Paapsand SCI	<u>63</u> 61	Fowlsheugh SPA	✓				
6664 Great Yarmouth North Denes SPA 6765 Greater Wash pSPA 6866 Gule Rev SCI 6967 Haisborough, Hammond and Winterton SAC 7068 Hamburgisches Wattenmeer SCI 7169 Hamford Water SPA & Ramsar 7270 Helgoland mit Helgoländer Felssockel SAC 7371 Hermaness, Saxa Vord and Valla Field SPA 7472 Hornsea Mere SPA 7573 Hoy SPA 7674 Humber Estuary SAC 77876 Hund und Paapsand SCI	<u>6462</u>	Frisian Front pSPA	✓				
6765 Greater Wash pSPA 6866 Gule Rev SCI 6967 Haisborough, Hammond and Winterton SAC 7068 Hamburgisches Wattenmeer SCI 7169 Hamford Water SPA & Ramsar 7270 Helgoland mit Helgoländer Felssockel SAC 7371 Hermaness, Saxa Vord and Valla Field SPA 7472 Hornsea Mere SPA 7573 Hoy SPA 7674 Humber Estuary SAC 7876 Hund und Paapsand SCI	<u>65</u> 63	Gibraltar Point SPA & Ramsar	✓				
6866 Gule Rev SCI 6967 Haisborough, Hammond and Winterton SAC 7068 Hamburgisches Wattenmeer SCI 7169 Hamford Water SPA & Ramsar 7270 Helgoland mit Helgoländer Felssockel SAC 7371 Hermaness, Saxa Vord and Valla Field SPA 7472 Hornsea Mere SPA 7573 Hoy SPA 7674 Humber Estuary SAC 7775 Humber Estuary SPA & Ramsar 7876 Hund und Paapsand SCI	<u>66</u> 64	Great Yarmouth North Denes SPA	✓				
Haisborough, Hammond and Winterton SAC 7068 Hamburgisches Wattenmeer SCI 7169 Hamford Water SPA & Ramsar 7270 Helgoland mit Helgoländer Felssockel SAC 7371 Hermaness, Saxa Vord and Valla Field SPA 7472 Hornsea Mere SPA 7573 Hoy SPA 7674 Humber Estuary SAC 7775 Humber Estuary SPA & Ramsar 7876 Hund und Paapsand SCI	<u>6765</u>	Greater Wash pSPA	✓				
Winterton SAC 7068 Hamburgisches Wattenmeer SCI 7169 Hamford Water SPA & Ramsar 7270 Helgoland mit Helgoländer Felssockel SAC 1371 Hermaness, Saxa Vord and Valla Field SPA 7472 Hornsea Mere SPA 7573 Hoy SPA 7674 Humber Estuary SAC 7876 Humber Estuary SAC 7876 Hund und Paapsand SCI	<u>68</u> 66	Gule Rev SCI		✓			
7169 Hamford Water SPA & Ramsar 7270 Helgoland mit Helgoländer Felssockel SAC 7371 Hermaness, Saxa Vord and Valla Field SPA 7472 Hornsea Mere SPA 7573 Hoy SPA 7674 Humber Estuary SAC 7775 Humber Estuary SPA & Ramsar 7876 Hund und Paapsand SCI	<u>69</u> 67	_ ·			√		
7270 Helgoland mit Helgoländer Felssockel SAC 7371 Hermaness, Saxa Vord and Valla Field SPA 7472 Hornsea Mere SPA 7573 Hoy SPA 7674 Humber Estuary SAC 71775 Humber Estuary SPA & Ramsar 7876 Hund und Paapsand SCI	<u>70</u> 68	Hamburgisches Wattenmeer SCI		✓			
Felssockel SAC 7374 Hermaness, Saxa Vord and Valla Field SPA 7472 Hornsea Mere SPA 7573 Hoy SPA 7674 Humber Estuary SAC 77775 Humber Estuary SPA & Ramsar 7876 Hund und Paapsand SCI	<u>7169</u>	Hamford Water SPA & Ramsar	✓				
73-74 Field SPA ✓ 74-72 Hornsea Mere SPA ✓ 75-73 Hoy SPA ✓ 76-74 Humber Estuary SAC ✓ ✓ 77-75 Humber Estuary SPA & Ramsar ✓ 78-76 Hund und Paapsand SCI ✓	<u>72</u> 70			✓			
T573	<u>73</u> 71	·	✓				
7674 Humber Estuary SAC	<u>74</u> 72	Hornsea Mere SPA	✓				
7275 Humber Estuary SPA & Ramsar 7876 Hund und Paapsand SCI	<u>75</u> 73	Hoy SPA	✓				
7876 Hund und Paapsand SCI ✓	<u>76</u> 74	Humber Estuary SAC		✓	✓	✓	
75,0 Halla and Lapsana Ser	<u>77</u> 75	Humber Estuary SPA & Ramsar	✓				
	<u>7876</u>	Hund und Paapsand SCI		✓			
	<u>79</u> 77	Imperial Dock Lock, Leith SPA	✓				





Enhancing Society	Together					
Norfolk Vanguard Reference	Designated site	Ornithology	Marine Mammals	Benthic Habitats	Fish	Terrestrial
Number			Widillinais	Habitats		
	Inner Dowsing, Race Bank and			,		
<u>80</u> 78	North Ridge SCI			✓		
<u>81</u> 79	Inner Moray Firth SPA & Ramsar	✓				
<u>82</u> 80	Isle of May SAC		✓			
<u>83</u> 81	Klaverbank SCI		✓			
<u>8482</u>	Knudegrund SAC		✓			
<u>85</u> 83	Kosterfjorden-Väderöfjorden SAC		✓			
<u>86</u> 84	Küsten- und Dünenlandschaften Amrums SAC		✓			
<u>8785</u>	Lindisfarne SPA & Ramsar	✓				
<u>88</u> 86	Littoral Cauchois SAC		✓			
<u>89</u> 87	Littoral Seino-Marin SPA	✓				
<u>90</u> 88	Loch of Strathbeg SPA & Ramsar	✓				
<u>91</u> 89	LØnstrup RØdgrund SAC		✓			
<u>92</u> 90	Margate and Long Sands SCI			✓		
<u>93</u> 91	Marwick Head SPA	✓				
<u>9492</u>	Medway Estuary and Marshes SPA & Ramsar	✓				
<u>95</u> 93	Minsmere-Walberswick SPA & Ramsar	✓				
<u>96</u> 94	Montrose Basin SPA & Ramsar	✓				
<u>97</u> 95	Moray and Nairn Coast SPA & Ramsar	✓				
<u>98</u> 96	Mousa SPA	✓				
<u>99</u> 97	Muhlenberger Loch/Nesssand SCI		✓			
<u>100</u> 98	Nationalpark Niedersächsisches Wattenmeer SCI		✓			
<u>101</u> 99	Noordzeekustzone SAC		✓	✓	✓	
<u>102</u> 100	Norfolk Valley Fens SAC					✓
<u>103</u> 101	North Caithness Cliffs SPA	✓				
<u>104102</u>	North Norfolk Coast SPA & Ramsar	✓				
<u>105</u> 103	North Norfolk Sandbanks and Saturn Reef SAC			✓		
<u>106</u> 104	Northumbria Coast SPA & Ramsar	✓				
<u>107</u> 105	Noss SPA	✓				
<u>108</u> 106	NTP S-H Wattenmeer und angrenzende Küstengebiete SAC		✓			
<u>109</u> 107	Oosterschelde SAC		✓			
<u>110108</u>	Orfordness - Shingle Street SAC			✓		
<u>111</u> 109	Östliche Deutsche Bucht SPA	✓				
<u>112</u> 110	Ouessant-Molène SAC		✓			
<u>113</u> 111	Outer Thames Estuary SPA	✓				
<u>114112</u>	Panache De La Gironde Et Plateau Rocheux De Cordouan SAC		✓			
<u>115</u> 113	Papa Stour SPA	✓				
<u>116</u> 114	Papa Westray (North Hill and Holm) SPA	✓				





Enhancing Society	Together					
Norfolk Vanguard Reference	Designated site	Ornithology	Marine Mammals	Benthic Habitats	Fish	Terrestrial
Number						
<u>117</u> 115	Paston Great Barn SAC					✓
<u>118</u> 116	Pentland Firth Islands SPA	✓				
<u>119</u> 117	Pertuis Charentais SAC		✓			
<u>120118</u>	Portsmouth Harbour SPA & Ramsar	✓				
<u>121</u> 119	Presqu'ile De Crozon SAC		✓			
<u>122120</u>	Ramsar-Gebiet S-H Wattenmeer und angrenzende Küstengebiete SPA	-√				
<u>123</u> 121	Récifs Gris-Nez Blanc-Nez SCI		✓	✓		
<u>124122</u>	Ridens et dunes hydrauliques du détroit du Pas-de-Calais SCI		✓	✓		
125 123	River Derwent SAC				✓	
<u>126</u> 124	River Wensum SAC					✓
<u>127125</u>	Ronas Hill - North Roe and Tingon SPA	✓				
<u>128</u> 126	Rousay SPA	✓				
<u>129127</u>	Sandbanker ud for Thorsminde SAC		✓			
130 128	Sandbanker ud for Thyboron SAC		✓			
<u>131</u> 129	SBZ 1 / ZPS 1 SAC		✓			
<u>132</u> 130	SBZ 2 / ZPS 2 SAC		✓			
<u>133</u> 131	SBZ 3 / ZPS 3 SAC		✓			
<u>134132</u>	Scanner Pockmark SAC			✓		
<u>135</u> 133	Schleswig-Holsteinisches Elbastuar und angrenzende Flachen SAC		✓			
<u>136134</u>	Seevogelschutzgebiet Helgoland SPA	✓				
<u>137</u> 135	Skagens Gren og Skagerrak SAC		✓			
<u>138</u> 136	Solent and Southampton Water SPA & Ramsar	✓				
<u>139</u> 137	Southern North Sea cSAC		✓			
<u>140</u> 138	St Abb`s Head to Fast Castle SPA	✓				
<u>141</u> 139	Steingrund SAC		✓			
<u>142</u> 140	Store Rev SCI		✓			
<u>143</u> 141	Stour and Orwell Estuaries SPA & Ramsar	✓				
<u>144</u> 142	Sumburgh Head SPA	✓				
<u>145</u> 143	Sydlige Nordsø SAC		✓			
<u>146</u> 144	Sylter Außenriff SCI	✓				
<u>147</u> 145	Teesmouth and Cleveland Coast SPA & Ramsar	✓				
<u>148146</u>	Thames Estuary and Marshes SPA & Ramsar	√				
<u>149</u> 147	Thanet Coast and Sandwich Bay SPA & Ramsar	✓				
<u>150</u> 148	Thanet Coast SAC			✓		





Enhancing Society	Together					
Norfolk Vanguard Reference Number	Designated site	Ornithology	Marine Mammals	Benthic Habitats	Fish	Terrestrial
<u>151</u> 149	The Broads SAC					✓
<u>152</u> 150	The Swale SPA & Ramsar	✓				
<u>153</u> 151	The Wash and North Norfolk Coast SAC		✓	✓		
<u>154152</u>	The Wash SPA & Ramsar	✓				
<u>155</u> 153	Thyboron Stenvolde SCI		✓			
<u>156</u> 154	Tregor Goëlo SAC		✓			
<u>157155</u>	Troup, Pennan and Lion`s Heads SPA	✓				
<u>158</u> 156	Unterelbe SCI		✓			
<u>159</u> 157	Unterems und Außenems SCI		✓			
<u>160</u> 158	Vadehavet med Ribe Å, Tved Å og Varde Å vest for Varde SAC		√			
<u>161</u> 159	Vlaamse Banken SAC		✓	✓	✓	
<u>162160</u>	Vlakte van de Raan SCI/SAC		✓		✓	
<u>163</u> 161	Voordelta SAC and SPA	✓	✓	✓	✓	
<u>164162</u>	Waddenzee SPA	✓				
<u>165</u> 163	Waddenzee SAC		✓	✓		
<u>166</u> 164	West Westray SPA	✓				
<u>167</u> 165	Westerschelde & Saeftinghe SAC		✓		✓	
<u>168</u> 166	Ythan Estuary, Sands of Forvie and Meikle Loch SPA	✓				





1.4 Key to effects

- 5-7. A summary of the evidence presented in the determination of the risk of likely significant effects (LSE) on the relevant qualifying features of a site is detailed within the footnotes to the screening matrices below.
- **6.8**. The following abbreviations are used within the screening matrices:
 - Y = LSE cannot be excluded
 - N = LSE can be excluded
 - C = construction
 - O = operation
 - D = decommissioning
- 7.9. Where effects are not applicable to a particular feature they are greyed out.





Emilianeing society rogether													
Site													
Name of European Site:	Abberton	Reservoir	SPA and R	amsar									
Distance to Norfolk Vanguard (km)	150												
Site Features Likely effect(s) of Norfolk Vanguard													
	Collision	mortality		Displacer	ment/Distu	rbance	Barrier E	ffect		Cumulative/In-combination			
	С	0	D	С	0	D	С	0	D	С	0	D	
Wintering and passage waterbird assemblage including as named features shoveler Anas clypeata, teal Anas crecca, wigeon Mareca penelope, gadwall Mareca strepera, pochard Mareca strepera, tufted duck Aythya fuligula, goldeneye Bucephala clangula, mute swan Cygnus olor, coot Fulica atra, great crested grebe Podiceps cristatus		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)	
Breeding cormorant Phalacrocorax carbo		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	

- (a) Survey data show no evidence of the SPA features found at that site occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (b) Maximum foraging range of breeding cormorants from their colonies is 35km (Thaxter et al. 2012); the Norfolk Vanguard site is therefore located far beyond the maximum range and so has no breeding season connectivity. It is extremely unlikely that cormorants from Abberton Reservoir SPA would visit the Norfolk Vanguard site in the nonbreeding season as they mostly overwinter in freshwater habitat in southern England.
- (c) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Abberton Reservoir SPA and Ramsar.





Abers - C	rs - Côtes Des Legendes SAC													
667														
Likely effe	ect(s) of	Norfolk	Vanguar	d										
Underwater noise		Vessel	Interacti	ons				_	Changes to water quality In combination			bination		
С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)		N (a)	N (a)	N (a)	N (a)
	Abers - Co 667 Likely effor Underwa	Abers - Côtes Dec 667 Likely effect(s) of Underwater nois	Abers - Côtes Des Legence 667 Likely effect(s) of Norfolk Underwater noise C O D	Abers - Côtes Des Legendes SAC 667 Likely effect(s) of Norfolk Vanguar Underwater noise Vessel C O D C	Abers - Côtes Des Legendes SAC 667 Likely effect(s) of Norfolk Vanguard Underwater noise Vessel Interacti C O D C O	Abers - Côtes Des Legendes SAC 667 Likely effect(s) of Norfolk Vanguard Underwater noise Vessel Interactions C O D C O D	Abers - Côtes Des Legendes SAC 667 Likely effect(s) of Norfolk Vanguard Underwater noise	Abers - Côtes Des Legendes SAC 667 Likely effect(s) of Norfolk Vanguard Underwater noise	Abers - Côtes Des Legendes SAC 667 Likely effect(s) of Norfolk Vanguard Underwater noise	Abers - Côtes Des Legendes SAC 667 Likely effect(s) of Norfolk Vanguard Underwater noise	Abers - Côtes Des Legendes SAC 667 Likely effect(s) of Norfolk Vanguard Underwater noise	Abers - Côtes Des Legendes SAC 667 Likely effect(s) of Norfolk Vanguard Underwater noise	Abers - Côtes Des Legendes SAC 667 Likely effect(s) of Norfolk Vanguard Underwater noise	Abers - Côtes Des Legendes SAC 667 Likely effect(s) of Norfolk Vanguard Underwater noise





Site Name of European Site:	3 Alde,	Ore and	l Butley	Estuari	es SAC													
Distance to Norfolk Vanguard (km)	68																	
Site Features	Likely	effect(s) of Nor	folk Var	guard													
	Perma	anent lo	SS	Tempo	orary phoance	nysical	increa	ering di sed nded sei			obilisation minated ents			water n bration	oise	In com	binatio	n
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Offshore habitats																		
Mudflats and sandflats not covered by seawater at low tide	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)
Estuaries	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)





Site												
Name of European Site:	Alde-Ore E	stuary SPA	and Ramsa	ar								
Distance to Norfolk Vanguard (km)	2											
Site Features	Likely ef	fect(s) of N	orfolk Van	guard								
	Collision	mortality		Displace	ment/Dist	urbance	Barrier	Effect		Cumula	tive/In-cor	nbination
	С	0	D	С	0	D	С	0	D	С	0	D
Breeding lesser black-backed gulls Larus fuscus		Y (a)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (h)	Y (a)	N (h)
Breeding marsh harrier Circus aeruginosus		N (c)		N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (h)	N (h)	N (h)
Breeding avocet Recurvirostra avosetta		N (d)		N (d)	N (d)	N (d)	N (d)	N (d)	N (d)	N (h)	N (h)	N (h)
Breeding little tern Sternula albifrons		N (e)		N (e)	N (e)	N (e)	N (e)	N (e)	N (e)	N (e)	N (e)	N (e)
Breeding Sandwich tern Sterna sandvicensis		N (f)		N (f)	N (f)	N (f)	N (f)	N (f)	N (f)	N (h)	N (h)	N (h)
Nonbreeding ruff Philomachus pugnax, avocet, redshank Tringa totanus		N (g)		N (g)	N (g)	N (g)	N (g)	N (g)	N (g)	N (h)	N (h)	N (h)

- (a) Model predictions of collision mortality indicate that LSE cannot be ruled out at screening and so requires further consideration.
- (b) Evidence indicates that lesser black-backed gulls are not affected by displacement, disturbance or barrier effects at offshore wind farms.
- (c) Marsh harrier is a migrant species. Satellite tracking suggests that marsh harriers migrate overland to the south coast of England and over the Channel to France, rather than across the North Sea.
- (d) Avocet has not been observed in the Norfolk Vanguard site during bird surveys. It is highly unlikely that avocets from this SPA will migrate through the Norfolk Vanguard site, and if they did, their flight height is likely not to be at collision risk height.
- (e) Breeding little tern has a maximum foraging range of 11km from colonies, so would have no connectivity with the Norfolk Vanguard site. Migrating little terns are considered to be 'extremely coastal on passage with very few sightings in open ocean or inland' (Forrester et al. 2007), so are unlikely to pass through the Norfolk Vanguard site.
- (f) Breeding Sandwich tern has a maximum foraging range of 54km from colonies, so would have no connectivity with the Norfolk Vanguard site. Only very small numbers of terns of any species were observed in the Norfolk Vanguard site in surveys. Migrating Sandwich terns from this SPA population will form a very small fraction of the very small total numbers of terns passing the site on passage.
- (g) Ruff, avocet and redshank have not been observed during bird surveys at the Norfolk Vanguard site. It is highly unlikely that these birds would migrate through the Norfolk Vanguard site as their migration is likely to take a coastal route and cross sea at narrow points such as The English Channel. If they did migrate through the Norfolk Vanguard site their flight height is likely not to be at collision risk height.





Site
Name of European Site:

Alde-Ore Estuary SPA and Ramsar

Distance to Norfolk Vanguard (km) 92

(h) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Alde-Ore Estuary SPA and Ramsar.

Site	5														
Name of European Site:	Archip	el des G	lénan S <i>A</i>	ıc											
Distance to Norfolk Vanguard (km)	713														
Site Features	Likely e	ffect(s)	of Norfo	lk Vangu	ard										
	Underv	vater no	ise	Vessel I	nteractio	ns	Indirect	t effects o	n prey	_	s to wate	r	In comb	oination	
										quality					
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
a) The distance between the potentia	l impact i	ange of	Norfolk	Vanguard	d and the	extent o	f any effe	ct on indi	viduals fr	om this si	te would	result in	no poten	tial for LS	E.





Site																					
Name of Euro	pean Si	te:		Baie o	de Canc	he et co	uloir de	s trois e	stuaires	SAC											
Distance to N	orfolk V	anguar	d (km)	254																	
Marine Mam	mals																				
Site Features			Lil	cely effe	ect(s) of	Norfolk	Vangua	rd													
			U	nderwat	er noise	9	Vesse	l Intera	ctions		Indirect	effects o	n prey	Chang qualit	es to w	ater		In comb	ination		
			С	(0	D	С	0	D		С	0	D	С	0	D		С	0	D	
Harbour porp	oise Pho	ocoena	N	(a) [N (a)	N (a)	N (a)	N (a) N (a)	N (a)	N (a)	N (a)	N (a)		N	(a)	N (a)	N (a)	N (a)	
Harbour (com	mon) se	al Phoc	a N	(a) [N (a)	N (a)	N (a)	N (a) N (a)	N (a)	N (a)	N (a)	N (a)		N	(a)	N (a)	N (a)	N (a)	
Grey seal			N	(a) [N (a)	N (a)	N (a)	N (a) N (a)	N (a)	N (a)	N (a)	N (a)		N	(a)	N (a)	N (a)	N (a)	
Fish																					
Site	Likely	effect(s) of Nor	folk Van	guard																
Features	Perma loss	nent ha	abitat	Tempo	orary pł bance	nysical	Smoth increase susper sedime	nded	ue to		nobilisat aminateo nents			water no bration	oise	Electr	omagne (EMF)	etic	In com	nbinatio	n
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Salmon Salmo salar	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)
Site Features	Likely	effect(s) of Nor	folk Van	guard	•	•				·	•		,			•	•	•	•	





Site	۵.			6																	
Name of Euro Distance to No			d (km)	254	ie Canci	ne et co	uloir de	s trois e	stuaires	SAC											
	Perma loss	inent ha	bitat	Tempo	orary phoance	iysical	Smoth increa susper sedime	nded	ue to	_	obilisation minated ents			water n bration	oise	Electro	omagne (EMF)	tic	In com	nbinatio	1
	С	0	D	С	0	С	0	С	0	С	0	D	С	0	D	С	0	D	С	0	D
Sea lamprey Petromyzon marinus	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N
River lamprey Lampetra fluviatilis	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N
Allis shad Alosa alosa	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N





Site	7														
Name of European Site:	Baie De	Morlai	x SAC												
Distance to Norfolk Vanguard (km)	622														
Site Features	Likely e	effect(s)	of Norfo	lk Vangu	ard										
	Underv	vater no	ise	Vessel I	nteractio	ns	Indirect	effects o	on prey	Change quality	s to wate	r	In comb	oination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
a) The distance between the potentia	l impact r	ange of	Norfolk	Vanguard	and the	extent of	f any effe	ct on indi	viduals fr	om this s	ite would	result in	no poten	tial for LS	E.

Site	8														
Name of European Site:	Baie de	e Seine C	Occident	ale SAC											
Distance to Norfolk Vanguard (km)	429														
Site Features	Likely 6	effect(s)	of Norfo	lk Vangu	ard										
	Under	water no	ise	Vessel I	nteractio	ins	Indirect	t effects o	on prey	Change	s to wate	r	In comb	ination	
										quality					
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
a) The distance between the potentia	l impact	range of	Norfolk	Vanguard	d and the	extent of	any effe	ct on indi	viduals fr	om this si	te would	result in	no poten	tial for LS	E.





Site	9											
Name of European Site:	Baie de S	eine Occid	entale SPA									
Distance to Norfolk Vanguard (km)	429											
Site Features	Likely eff	ect(s) of No	rfolk Vang	uard								
	Collision	mortality		Displacer	nent/Distu	rbance	Barrier Ef	fect		Cumulati	ve/In-comb	oination
	С	0	D	С	0	D	С	0	D	С	0	D
Breeding, wintering and passage waterbirds		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)

- (a) Survey data show little or no evidence of Baie de Seine Occidentale SPA features occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site, as most migrant waterfowl moving between northern breeding areas and southern wintering areas and using staging areas such as Baie de Seine Occidentale in France pass along the west European flyway along the continental coast rather than crossing the North Sea to the UK. At a distance of 429km, the chances of birds from this SPA moving through the Norfolk Vanguard site are extremely small.
- extremely small.

 (b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Baie de Seine Occidentale SPA.





Site Name of European Site:	10 Baie de	Seine (Orientale	SAC											
Distance to Norfolk Vanguard (km)	408														
Site Features	Likely e	effect(s)	of Norfo	lk Vangu	ard										
	Underv	vater no	ise	Vessel I	Interactio	ons	Indirect	t effects o	on prey	Change quality	s to wate	r	In comb	ination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)





Site 11
Name of European Site: Bancs des Flandres SAC

Distance to Norfolk Vanguard (km) 162

Marine Mammals

Site Features	Likely e	effect(s)	of Norfo	lk Vangu	ard										
	Underv	water no	oise	Vessel	Interact	ions	Indirec prey	t effects	on	Change quality	es to wa	ter	In com	bination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
Harbour seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)

Benthic Habitats

Site Features	Permai	nent loss	i	Tempo disturb	rary phy ance	rsical	Smothe increas sedime				bilisation ninate d ents	n of	Underv	vater no on	ise and	In com	bination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Sandbanks which are slightly covered by sea water all the time	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)		N (b)	N (b)		N (b)	N (b)	N (b)	N (b)

a) The distance between the potential impact range of Norfolk Vanguard and the extent of any effect on individuals from this site would result in no potential for LSE.

b) The distance between the offshore project area and the designated site is beyond the range of any potential LSE.





Ennancing society logether												
Site	<u>12</u>											
Name of European Site:	Banc Des	Flandres S	<u>SPA</u>									
Distance to Norfolk Vanguard (km)	<u>162</u>											
<u>Site Features</u>	Likely eff	ect(s) of No	rfolk Vang	<u>uard</u>								
	Collision	mortality		Displacer	nent/Distu	rbance	Barrier Ef	<u>fect</u>		Cumulati	ve/In-comb	oination
	<u>c</u>	<u>o</u>	<u>D</u>	<u>c</u>	<u>o</u>	<u>D</u>	<u>c</u>	<u>o</u>	<u>D</u>	<u>c</u>	<u>o</u>	<u>D</u>
Wintering and passage species: razorbill, brent goose, great skua, black tern, fulmar, red-throated diver, black-throated diver, Mediterranean gull, little gull, velvet scoter, common scoter, red-breasted merganser, gannet, Leach's storm petrel, great crested grebe, red- necked grebe, kittiwake, common eider, Arctic skua, omarine skua, common tern, little tern, Sandwich tern, Arctic tern, guillemot		<u>N (a)</u>		<u>N (a)</u>	<u>N (b)</u>	<u>N (b)</u>	<u>N (b)</u>					
Breeding little tern		N(c)		<u>N(c)</u>	<u>N(c)</u>	<u>N(c)</u>	<u>N(c)</u>	<u>N(c)</u>	<u>N(c)</u>	<u>N(b)</u>	<u>N(b)</u>	<u>N(b)</u>

a) Many of the named species have not been recorded on the Norfolk Vanguard site and are not ones associated with offshore locations. With respect to species named as nonbreeding features of the SPA, these consist of many of the seabird species which pass through the southern North Sea and English Channel on migration. As such the potential impacts on those species recorded at Norfolk Vanguard has been assessed in terms of the wider Biologically Defined Minimum Population Scales (BDMPS) populations (see Furness 2015). The Applicant considers this to be the appropriate population scale for nonbreeding impacts on the species named at this SPA, since the majority of individuals will not be resident at the SPA but will instead pass through. Furthermore, given the relative size of the SPA population estimates for the migratory species compared with the total passage populations, the effectrisks ton the SPA populations due to Norfolk Vanguard would be negligible. are very small b) The predicted effect attributable to the proposed Norfolk Vanguard project is so small that it would not significantly contribute to or alter the overall in-combination

assessment for these features at Bancs des Flandres SPA.

c) Breeding little tern has a maximum foraging range of 11km from colonies, so would have no connectivity with Norfolk Vanguard. Migrating little terns are considered to be 'extremely coastal on passage with very few sightings in open ocean or inland' (Forrester et al. 2007), so are unlikely to pass through the Norfolk Vanguard site.





Site Name of Eu	ıropean S	ite:		132 Bassure	elle Sand	oank SAC												
Distance to	Norfolk '	Vanguard	l (km)	235														
Site Likely effect(s) of Norfolk Vanguard Features Permanent loss Temporary physical Smothering due to Re-mobilisation of Underwater noise In combination																		
Features	Perma	nent loss		Tempo disturb		sical		sed susp			ninated	n of		water no bration	ise	In com	bination	
	C O D C C						С	0	D	С	0	D	С	0	D	С	0	D
Sandbanks which are slightly covered by sea water all the time	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)		N (a)	N (a)		N (a)	N (a)	N (a)	N (a)





Site 1.43 Name of European Site: Ber	nfleet & So	uthend Ma	arshes SPA	and Rams	ar								
Distance to Norfolk Vanguard (km) 182	2												
Site Features			orfolk Vang		ment/Distu	ırbance	Barrier F	ffect		Cumulati	ve/In-com	bination	
	С	Collision mortality Displacement/Disturbance Barrier Effect Cumulative/In-cor C O D C D C D D C D D											
Wintering and passage waterbird assemblage including as named features brent goose Branta bernicla, dunlin Calidris alpina, knot Calidris canutus, ringed plover Charadrius hiaticula, grey plover Pluvialis squatarola		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	

- (a) Survey data show little or no evidence of Benfleet & Southend Marshes SPA features occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site during migration.

 (b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Benfleet & Southend Marshes SPA and Ramsar.





Enhancing Society Together																		
Site			1 <u>5</u> 4															
Name of European Site:			Berwick	shire an	d North	Northur	nberland	d Coast S	AC									
Distance to Norfolk Van	guard (km)	368															
Marine Mammals																		
Site Features	Likely e	effect(s)	of Norfo	lk Vangu	ıard													
	Underv	vater no	ise	Vessel	Interact	ions	Indirec	t effects	on	Change	es to wa	ter	In com	binatior	1			
	СО				0	D	С	0	D	С	0	D	С	0	D			
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)			
Benthic Habitats																•		
Site Features	Perma	nent los	5	Tempo	rary phy ance	rsical		ering du sed susp ent			bilisatio ninate d ents	n of	Under	water no	oise and	In com	bination	I
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Coastal lagoons	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)		N (b)	N (b)		N (b)	N (b)	N (b)	N (b)
Submerged or partially submerged sea caves	pastal lagoons N (b) N (b sbmerged or partially N (b) N (b					N (b)	N (b)	N (b)	N (b)	N (b)		N (b)	N (b)		N (b)	N (b)	N (b)	N (b)

- a) The distance between the potential impact range of Norfolk Vanguard and the extent of any effect on individuals from this site would result in no potential for LSE.
- b) The distance between the offshore project area and the designated site is beyond the range of any potential LSE.





Name of European Site: Blacks	vater Estu	ary SPA	and Ramsa	ar								
Distance to Norfolk Vanguard (km) 152												
Site Features	Likely e	effect(s) o	of Norfolk	Vanguard								
	Collisio	n mortal	ity	Displace	ment/Distu	urbance	Barrier E	ffect		Cumulat	ive/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Wintering and passage waterbird assemblage including as named features brent goose, dunlin, ringed plover, black-tailed godwit Limosa limosa limosa, grey plover		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (f)	N (f)	N (f)
Nonbreeding hen harrier Circus cyaneus		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (f)	N (f)	N (f)
Breeding pochard		N (c)		N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (f)	N (f)	N (f)
Breeding ringed plover		N (d)		N (d)	N (d)	N (d)	N (d)	N (d)	N (d)	N (f)	N (f)	N (f)
Breeding little tern		N (e)		N (e)	N (e)	N (e)	N (e)	N (e)	N (e)	N (e)	N (e)	N (e)

- (a) Survey data show little or no evidence of Blackwater Estuary SPA features occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (b) Survey data show no evidence of Blackwater Estuary SPA feature (hen harrier) occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (c) Survey data show no evidence of Blackwater Estuary SPA feature (pochard) occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (d) Survey data show no evidence of Blackwater Estuary SPA feature (ringed plover) occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (e) Breeding little tern has a maximum foraging range of 11km from colonies, so would have no connectivity with the Norfolk Vanguard site. Migrating little terns are considered to be 'extremely coastal on passage with very few sightings in open ocean or inland' (Forrester et al. 2007), so are unlikely to pass through the Norfolk Vanguard site.
- (f) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Blackwater Estuary SPA and Ramsar.





Borkum-Riffgrund (Borkum Reef Ground) SCI

Distance to Norfolk Vanguard (km)

Marine mammals															
Site Features	Likely ef	fect(s) of I	Norfolk Va	inguard											
	Underw	ater noise		Vessel Ir	nteraction	s	Indirect	effects on	prey	Changes	to water	quality	In-comb	ination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour porpoise	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)		N (a)	N (a)	N (a)	N (a)
Harbour (common) seal	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)		N (a)	N (a)	N (a)	N (a)
Grey seal	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)		N (a)	N (a)	N (a)	N (a)

Site Features	habitat loss physical disturbance			Smother increase suspen sedime	ed	ue to		obilisati ninateo ents			water n		Electro fields	omagne (EMF)	tic	In com	nbinatio	ın			
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Twaite shad Alosa fallax	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)

a) The distance between the potential impact range of Norfolk Vanguard and the extent of any effect on individuals from this site would result in no potential for LSE. b) The distance between the offshore project area and the designated site is beyond the range of any potential LSE.

HRA Screening Matrices

Norfolk Vanguard Offshore Wind Farm

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Enhancing Society Together														
Site	1 <u>8</u> 7													
Name of European Site:	Borkum-Rif	fgrund SP	Α											
Distance to Norfolk Vanguard (km)	234													
Site Features	Likely effect	t(s) of Nor	folk Vangu	ıard										
	Collision mo	sion mortality Displacement/Disturbance Barrier Effect Cumulative/In-combination												
	С	0	D	С	0	D	С	0	D	С	0	D		
Nonbreeding seabird assemblage including as named features black-throated diver Gavia arctica, red-throated diver Gavia stellata, common gull Larus canus, lesser black-backed gull, great black-backed gull Larus marinus, little gull Larus minutus, kittiwake Rissa tridactyla, common tern Sterna hirundo, Arctic tern Sterna paradisaea, Sandwich tern, gannet Morus bassanus, guillemot Uria aalge		N (a)		N (a)	N (b)	N (b)	N (b)							

- a) Migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site during migration relative to the size of Biologically Defined Minimum Population Scale (BDMPS) regional populations. Not only are the sites 234km apart, but much of the seasonal movement of birds avoids crossing of the North Sea so that birds on the continental side of the North Sea are more likely to move along the continental coast rather than crossing to the UK.
- b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Borkum-Riffgrund SPA.





Site 198 Braemar Pockmarks SAC Name of European Site: Distance to Norfolk Vanguard (km) Likely effect(s) of Norfolk Vanguard Site Features Permanent loss Temporary physical Smothering due to Re- mobilisation of Underwater noise In combination disturbance increased suspended contaminated and vibration sediment sediments D С 0 D 0 D С 0 D 0 D 0 D N (a) Submarine structures made by leaking

a) The distance between the offshore project area and the designated site is beyond the range of any potential LSE.





Site	<u>2019</u>												
Name of European Site:	Brey	don Water	SPA and R	amsar									
Distance to Norfolk Vanguard (km)	53												
Site Features		Likely eff	ect(s) of N	orfolk Van	guard								
	Collision mortality							Barrier Et	ffect		Cumulati	ve/In-com	bination
		С	0	D	С	0	D	С	0	D	С	0	D
Wintering and passage waterbird assemblage including as named featur Bewick's swan Cygnus columbianus	es		<u>Y (a)</u> N (a)		<u>N (b)</u> N (a)	N (b)N (a)	N (b)N (a)	N (b)N (a)	N (b)N (a)	N (b)N (a)	N (b)N (c)	<u>Y (a)</u> N (c)	N (b)N (c)
bewickii, ruff, golden plover Pluvialis apricaria, avocet, lapwing Vanellus vanellus													
Breeding common tern			N (c)N (b)		N (c)N (b)	N (c)N (b)	N (c)N (b)	N (c)N (b)	N (c)N (b)	N (c)N (b)	N (d)N (c)	N (d)N (c)	N (d)N (c)

(a) Natural England consider that there is potential for connectivity during migration and therefore LSE cannot be screened out.
(a)(b) Survey data show no evidence of Breydon Water SPA features occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site during migration.

SPA is far beyond the maximum foraging range of common tern (30km) so has no breeding season connectivity.

Numbers of SPA common tern migrating through the Norfolk Vanguard site are likely to be extremely small relative to BDMPS.

_The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Breydon Water SPA and Ramsar.





Enhancing Society Together												
Site	2 <u>1</u> 0											
Name of European Site:	Broadland SP.	A and Rams	ar									
Distance to Norfolk Vanguard (km)	53 (offshore p	roject area	; 3.6 (onsh	ore projec	t area)							
Site Features	Likely e	ffect(s) of N	Iorfolk Van	guard offs	hore proje	ct area						
	Collisio	n mortality		Displace	ment/Dist	urbance	Barrier E	ffect		Cumulat		
	С	0	D	С	0	D	С	0	D	С	0	D
Wintering and passage waterbird assemblage including as named feature shoveler, wigeon, gadwall, Bewick's sw whooper swan, ruff Wintering and passage waterbird assemblage includir as named features shoveler, wigeon, gadwall, Bewick's swan, whooper swar Cygnus cygnus, ruff	ran,	<u>Y (a)</u> N (a)		<u>N (b)</u> N (a)	<u>N (b)</u> N (a)	<u>N (b)</u> N (a)	N (b)N (a)	N (b)N (a)	N (b)N (a)	<u>N (c)</u> N (e)	<u>Y (a)</u> N (e)	<u>N (c)</u> N (e)
Nonbreeding hen harrier		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (e)	N (e)	N (e)
Breeding bittern Botaurus stellaris		N (c)		N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (e)	N (e)	N (e)
Breeding marsh harrier		N (d)		N (d)	N (d)	N (d)	N (d)	N (d)	N (d)	N (e)	N (e)	N (e)
(a) Natural England consider	that there is	notential for	r connectiv	ity during	migration :	and therefor	ore ISE car	anot he cor	ooned out	Dotontial f	or connect	rivity

- (a) Natural England consider that there is potential for connectivity during migration and therefore LSE cannot be screened outPotential for connectivity during migration therefore LSE cannot be screened out.
- (b) Survey data show no evidence of Broadland SPA features occurring in the proposed Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site during migration.
- (c) The predicted effect attributable to the proposed Norfolk Vanguard project is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Broadland SPA and Ramsar.
- (a) Survey data show no evidence of Broadland SPA features occurring in the onshore project area, and migrations of birds from this SPA are likely to result in negligible numbers passing through the onshore project area during migration.
- (b) Survey data show no evidence of hen harrier occurring in the onshore project area, and migrations of birds from this SPA are likely to result in negligible numbers passing through the onshore project area during migration, since birds breeding in UK mostly remain within UK throughout the year.





- (c) Survey data show no evidence of bittern occurring in the onshore project area, and migrations of birds from this SPA are likely to result in negligible numbers passing through the onshore project area during migration.
- (d) Marsh harrier is a migrant species. Satellite tracking suggests that marsh harriers migrate overland to the south coast of England and over the Channel to France, rather than across the North Sea.
- (e)(d) ______ The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in combination assessment for these features at Broadland SPA and Ramsar.





Enhancing Society Together												
Site	21											
Name of European Site:	Broadla	nd SPA and	Ramsar									
Distance to Norfolk Vanguard (km)	53 (offs l	ore projec	:t area); 3 .6	(onshore	project are	ea)						
Site Features	Likely ef	fect(s) of N	lorfolk Van	guard onsh	nore projec	t area						
		ffects withi		Direct e	ffects on e	x-situ		effects wit site bound		Indirect of habitats	effects on (ex-situ
	С	0	D	С	0	D	С	0	D	С	0	D
Bewick's Swan (Cygnus columbianus bewickii)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
Bittern (Botaurus stellaris)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
Hen Harrier (Circus cyaneus)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
Ruff (Philomachus pugnax)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
Whooper Swan (Cygnus cygnus)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
Gadwall (Anas strepera)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
Shoveler (Anas clypeata)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
Widgeon (Anas penelope)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
Pink-footed Goose (Anser brachyrhynchus)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
Wildfowl assemblage	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
Tundra Swan (Cygnus columbianus)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
Eurasian wigeon (Anas penelope)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
Gadwall (Anas strepera)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)





Elimanicing society together												
Site	21											
Name of European Site:	Broadla	nd SPA and	Ramsar									
Distance to Norfolk Vanguard (km)	53 (offsl	ore projec	t area); 3.6	(onshore	project are	ea)						
Northern shoveler (Anas clypeata)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
Pink-footed goose (Anser brachyrhynchus)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
Greylag goose (Anser anser)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)

- a) The Broadland SPA and Ramsar is located 3.6km from the onshore project area, and so the SPA is beyond the range of potential impact.
- b) Surveys recorded waterbird counts that are considered to not be of a scale of national or greater importance, or to be a significant component of the Broadland SPA and Ramsar. Consequently, these ex-situ habitats are not considered to be important habitats for the qualifying features of the Broadland SPA and Ramsar.





Site	2 <u>2</u> 1	<u>2</u> 4												
Name of European Site:	Brui	Bruine Bank (Brown Ridge) pSPA												
Distance to Norfolk Vanguard (km) ca.20km (a)														
Site Features	e Features Likely effect(s) of Norfolk Vanguard													
		Collision mortality			Displacement/Disturbance			Barrier Effect			Cumulative/In-combination			
		С	0	D	С	0	D	С	0	D	С	0	D	
Nonbreeding common guillemots <i>Urio</i> aalge and razorbills Alca torda	2		N (b)		N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (d)	N (d)	N (d)	

- (a) It should be noted that the distance from the Norfolk Vanguard site to the pSPA is uncertain as the boundaries of the pSPA are under consultation at present.
- (b) The designated features of Bruine Bank pSPA are likely to be common guillemot and razorbill, species for which low flight height results in low risk of collision with offshore wind turbines. Furthermore, birds wintering on Bruine Bank are likely to remain at the pSPA because it is a high-quality feeding habitat (i.e. the reason why this concentration of birds is being proposed for SPA status), and so these birds are unlikely to be at risk of collision at the Norfolk Vanguard site.
- (c) Bruine Bank is high quality feeding habitat for nonbreeding piscivorous seabirds from breeding areas further north, so the birds in that pSPA are unlikely to pass through the Norfolk Vanguard site on migration as it lies west rather than north of the pSPA. Therefore, displacement, disturbance and barrier effect at the Norfolk Vanguard site will not be likely to affect birds on Bruine Bank pSPA.
- (d) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Bruine Bank pSPA.





Site 2	12											
Name of European Site: B	uchan Ness t	o Colliesto	on Coast SF	A								
Distance to Norfolk Vanguard (km) 5	6											
Site Features	Likely eff	ect(s) of N	orfolk Van	guard								
	Collision	mortality		Displacer	ment/Distu	ırbance	Barrier E	ffect		Cumulati	ve/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Breeding seabird assemblage, including as named features kittiwake, shag Phalacrocorax aristotelis, fulmar, guillemot, herring gull Larus argentatus		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)

- (a) Buchan Ness to Collieston Coast SPA is beyond maximum foraging range of designated seabird species so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Vanguard site are likely to be very small relative to BDMPS.
 (b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination
- assessment for these features at Buchan Ness to Collieston Coast SPA.





Site 24	3											
Name of European Site: Ca	lf of Eday S	PA										
Distance to Norfolk Vanguard (km) 76	0											
Site Features	Likely eff	fect(s) of N	orfolk Van	guard								
	Collision	mortality		Displace	ment/Distu	urbance	Barrier E	ffect		Cumulat	ive/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Breeding seabird assemblage including as named features cormorant, fulmar Fulmarus glacialis, guillemot, kittiwake and great black-backed gull		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
						·						

- (a) Calf of Eday SPA is beyond maximum foraging range of designated seabird species so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Vanguard site are likely to be very small relative to BDMPS.
 (b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Calf of Eday SPA.





Site	2 <u>5</u> 4														
Name of European Site:	Cap Siz	un SAC													
Distance to Norfolk Vanguard (km)	711														
Site Features	Likely e	ffect(s)	of Norfo	lk Vangu	ard										
	Underv	vater no	ise	Vessel I	nteractio	ins	Indirect	t effects o	n prey	Change	s to wate	er	In comb	ination	
										quality					
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a

Site	<u>26</u>											
Name of European Site:	Caps Gris	Nez SPA										
Distance to Norfolk Vanguard (km)	210											
<u>Site Features</u>	Likely effe	ect(s) of No	orfolk Vang	<u>uard</u>								
	Collision	mortality		Displacer	ment/Distu	rbance_	Barrier Ef	<u>fect</u>		Cumulati	ve/In-comb	ination
	<u>c</u>	<u>o</u>	<u>D</u>	<u>c</u>	<u>o</u>	<u>D</u>	<u>c</u>	<u>o</u>	<u>D</u>	<u>c</u>	<u>o</u>	<u>D</u>
Wintering and passage species: razorbill, kingfisher, pintail, white- fronted goose, greylag goose, short- eared owl, greater scaup, bittern, brent goose, sanderling, dunlin, purple sandpiper, Scopoli's shearwater, great skua, Kentish plover, little ringed plover, ringed plover, whiskered tern, black tern, white stork, marsh harrier, hen		<u>N (a)</u>		<u>N (a)</u>	<u>N (b)</u>	<u>N (b)</u>	<u>N (b)</u>					

HRA Screening Matrices

Norfolk Vanguard Offshore Wind Farm

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VATTENFALL 🛑

Elimantelly society rogether							
Site	<u>26</u>						
Name of European Site:		Nez SPA					
Distance to Norfolk Vanguard (km)	<u>210</u>						
harrier, little egret, merlin,							
peregrine, puffin, fulmar, black-							
throated diver, great northern diver,							
red-throated diver, common crane,							
oystercatcher, black-winged stilt,							
storm petrel, red-backed shrike,							
Mediterranean gull, bar-tailed							
godwit, woodlark, velvet scoter,							
common scoter, smew, red-breasted							
merganser, black kite, red kite,							
gannet, curlew, whimbrel, osprey,							
honey buzzard, shag, cormorant,							
ruff, spoonbill, golden plover, grey							
plover, Slavonian grebe, great							
crested grebe, red-necked grebe,							
black-necked grebe, Manx							
shearwater, avocet, kittiwake, eider,							
long-tailed skua, Arctic skua,							
pomarine skua, little tern, roseate							
tern, common tern, Arctic tern,							
Sandwich tern, wood sandpiper,							
guillemot, lapwing							l





Site 2

Name of European Site: Caps Gris Nez SPA

Distance to Norfolk Vanguard (km) 210

a) Many of the named species have not been recorded on the Norfolk Vanguard site and are not ones associated with offshore locations. With respect to seabird species named as nonbreeding features of the SPA, these consist of many of the seabird species which pass through the southern North Sea and English Channel on migration. As such the potential impacts on those species recorded at Norfolk Vanguard has been assessed in terms of the wider Biologically Defined Minimum Population Scales (BDMPS) populations (see Furness 2015). The Applicant considers this to be the appropriate population scale for nonbreeding impacts on the species named at this SPA, since the majority of individuals will not be resident at the SPA but will instead pass through. Furthermore, given the relative size of the SPA population estimates for the migratory species compared with the total passage populations, the effects on risks to the SPA populations due to Norfolk Vanguard would be negligible are very small

b) The predicted effect attributable to the proposed Norfolk Vanguard project is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Caps Griz Nez SPA.

Site Name of European Site:	2 <u>7</u> 5 Chause	ey SCI													
Distance to Norfolk Vanguard (km)	509														
Site Features	Likely 6	effect(s)	of Norfo	olk Vangu	ard										
	Under	water no	oise	Vessel I	nteractio	ins	Indirect	t effects o	on prey	Change quality	s to wate	r	In comb	ination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
a) The distance between the potentia	l impact	range of	Norfolk	Vanguard	d and the	extent of	f any effe	ct on indi	viduals fr	om this si	ite would	result in	no poten	tial for LS	E.





Site	2 <u>8</u> 6												
Name of European Site:	Chesil Be	each and	The Flee	t SPA & Ra	msar								
Distance to Norfolk Vanguard (km)	420												
Site Features	Lik	kely effe	ct(s) of No	orfolk Vang	guard								
	Co	ollision n	nortality		Displacer	nent/Distu	rbance	Barrier Ef	ffect		Cumulat	ive/In-com	bination
	С		0	D	С	0	D	С	0	D	С	0	D
Nonbreeding brent goose			N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)

- (a) Survey data show little or no evidence of Chesil Beach & The Fleet SPA feature (brent goose) occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.(b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination
- assessment for these features at Chesil Beach & The Fleet SPA and Ramsar.





Enhancing Society Together													
Site	2 <u>9</u> 7												
Name of European Site:	Chich	ester and	Langstone	Harbours	SPA & Ram	ısar							
Distance to Norfolk Vanguard (km)	313												
Site Features		Likely eff	ect(s) of N	orfolk Van	guard								
		Collision	mortality		Displacer	ment/Distu	rbance	Barrier Et	ffect		Cumulati	ve/In-com	bination
		С	0	D	С	0	D	С	0	D	С	0	D
Migratory waterbird assemblage inclu as named features pintail Anas acuta, showeler, teal, wigeon, turnstone Aren interpres, brent goose, sanderling Calialba, dunlin, ringed plover, bar-tailed godwit Limosa lapponica, red-breasted merganser Mergus serrator, curlew Numenius arquata, grey plover, sheldu Tadorna tadorna, redshank	aria dris		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)
Breeding little tern, common tern, Sandwich tern			N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)

- (a) Survey data show little or no evidence of Chichester & Langstone Harbour SPA features occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (b) Little tern, common tern and Sandwich tern have maximum foraging ranges from colonies of 11km, 30km and 54km respectively, so there is no connectivity between the SPA and Norfolk Vanguard site. Furthermore, these species tend to forage in coastal waters rather than offshore. Therefore, collision risk, displacement and barrier effects can be excluded.
- (c) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Chichester & Langstone Harbour SPA and Ramsar.





30	2020												
50	<u>3028</u>												
Colne Estuary SPA and Ramsar	Colne Es	tuary SPA	and Rams	ar									
144	144												
Site Features		Likely eff	ect(s) of N	lorfolk Van	guard								
		Collision	mortality		Displace	ment/Dist	urbance	Barrier E	ffect		Cumulat	ive/In-com	bination
		С	0	D	С	0	D	С	0	D	С	0	D
Nonbreeding brent goose			N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (g)	N (g)	N (g)
Nonbreeding redshank			N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (g)	N (g)	N (g)
Nonbreeding hen harrier			N (c)		N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (g)	N (g)	N (g)
Breeding pochard			N (d)		N (d)	N (d)	N (d)	N (d)	N (d)	N (d)	N (g)	N (g)	N (g)
Breeding ringed plover			N (e)		N (e)	N (e)	N (e)	N (e)	N (e)	N (e)	N (g)	N (g)	N (g)
Breeding little tern			N (f)		N (f)	N (f)	N (f)	N (f)	N (f)	N (f)	N (f)	N (f)	N (f)

- (a) Survey data show no evidence of Colne Estuary SPA feature (brent goose) occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (b) Survey data show no evidence of Colne Estuary SPA feature (redshank) occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (c) Survey data show no evidence of Colne Estuary SPA feature (hen harrier) occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (d) Survey data show no evidence of Colne Estuary SPA feature (pochard) occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (e) Survey data show no evidence of Colne Estuary SPA feature (ringed plover) occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (f) Breeding little tern has a maximum foraging range of 11km from colonies, so would have no connectivity with the Norfolk Vanguard site. Migrating little terns are considered to be 'extremely coastal on passage with very few sightings in open ocean or inland' (Forrester et al. 2007), so are unlikely to pass through the Norfolk Vanguard site.
- (g) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Colne Estuary SPA and Ramsar.





<u>129</u>											
pinsay SP	A										
25											
Likely eff	ect(s) of N	orfolk Van	guard								
Collision	mortality		Displacer	ment/Distu	ırbance	Barrier E	ffect		Cumulati	ve/In-com	bination
С	0	D	С	0	D	С	0	D	С	0	D
	N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
	ppinsay SP. 25 Likely effor Collision	copinsay SPA 25 Likely effect(s) of No Collision mortality C O	opinsay SPA 25 Likely effect(s) of Norfolk Van Collision mortality C O D	Diplinary SPA 25 Likely effect(s) of Norfolk Vanguard Collision mortality Displaces C D C	Depinsary SPA 25 Likely effect(s) of Norfolk Vanguard Collision mortality C D C D C O D C O	Displacement/Disturbance	Displacement/Disturbance	Displacement/Disturbance Barrier Effect C O D C O D C O	Displacement/Disturbance	Displacement/Disturbance	Displacement/Disturbance

- (a) Copinsay SPA is beyond maximum foraging range of designated seabird species so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Vanguard site are likely to be very small relative to BDMPS.
 (b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Copinsay SPA.





Site 32	9											
Name of European Site: Co	quet Island	I SPA										
Distance to Norfolk Vanguard (km) 36	6											
Site Features	Likely ef	fect(s) of N	orfolk Van	guard								
	Collision	mortality		Displace	ment/Dist	urbance	Barrier E	ffect		Cumulat	ive/In-cor	nbination
	С	0	D	С	0	D	С	0	D	С	0	D
Breeding roseate tern <i>Sterna dougallii</i> , Arctic tern, common tern, Sandwich tern		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
(a) Coquet Island SPA is heyond i	navimum f	oraging rai	nge of desi	anated se	ahird specie	se (all loss	than 55km	so has no	hreeding	season co	nnectivity	

- (a) Coquet Island SPA is beyond maximum foraging range of designated seabird species (all less than 55km) so has no breeding seas on connectivity.
 Proportions of these populations migrating through the Norfolk Vanguard site are likely to be very small relative to BDMPS.
 (b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination
- assessment for these features at Coquet Island SPA.





Site	3 <u>3</u> 4														
Name of European Site:	Cote D	e Granit	Rose-Se	pt-Iles S	AC .										
Distance to Norfolk Vanguard (km)	583														
Site Features	Likely 6	effect(s)	of Norfo	olk Vangu	ard										
	Under	water no	oise	Vessel I	nteractio	ins	Indirect	t effects (on prey	Change quality	s to wate	r	In comb	oination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)





Enhancing Society Together												
Site 3	42											
Name of European Site:	romarty Firt	h SPA & R	amsar									
Distance to Norfolk Vanguard (km) 6	64											
Site Features	Likely ef	fect(s) of N	lorfolk Van	guard								
	Collision	mortality		Displace	ment/Dist	urbance	Barrier E	ffect		Cumula	tive/In-cor	nbination
	С	0	D	С	0	D	С	0	D	С	0	D
Wintering and passage waterbird assemblage including as named features curlew, dunlin, grey-lag goose Anser anser, pintail, red-breasted merganser, whooper swan, bar-tailed godwit, oystercatcher Haematopus ostrolegus, wigeon, scaup Aythya marila, knot and redshank		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (d)	N (d)	N (d)
Breeding common tern		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (d)	N (d)	N (d)
Breeding osprey Pandion haliaetus		N (c)		N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)

- (a) Survey data show little or no evidence of Cromarty Firth SPA features occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (b) SPA is beyond maximum foraging range of common tern (30km), and so has no breeding season connectivity. Numbers of SPA common tern migrating through the Norfolk Vanguard site are likely to be extremely small relative to BDMPS.
- (c) Osprey has not been observed in the Norfolk Vanguard site, and it is improbable than any ospreys from the SPA migrate through the Norfolk Vanguard site
- (d) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Cromarty Firth SPA and Ramsar.





Site	3 <u>5</u> 8												
Name of European Site:	Cro	uch and R	oach Estua	ries SPA &	Ramsar								
Distance to Norfolk Vanguard (km)	167												
Site Features		Likely eff	ect(s) of N	orfolk Van	guard								
		Collision	mortality		Displacer	ment/Distu	ırbance	Barrier E	ffect		Cumulati	ive/In-com	bination
		С	0	D	С	0	D	С	0	D	С	0	D
Nonbreeding brent goose			N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)
Nonbreeding hen harrier			N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (c)	N (c)	N (c)

- (a) Survey data show little or no evidence of Crouch & Roach Estuary SPA feature (brent goose) occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (b) Survey data show no evidence of Crouch & Roach Estuary SPA feature (hen harrier) occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (c) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Crouch & Roach Estuary SPA and Ramsar.





Site 3 <u>6</u>	4											
Name of European Site: De	ben Estuar	y SPA & Ra	amsar									
Distance to Norfolk Vanguard (km) 10	7											
Site Features	Likely eff	ect(s) of N	orfolk Van	guard								
	Collision	mortality		Displacer	ment/Distu	ırbance	Barrier E	ffect		Cumulati	ive/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Nonbreeding dark-bellied brent goose Branta bernicla bernicla		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)
Nonbreeding avocet		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (c)	N (c)	N (c)

- (a) Survey data show little or no evidence of Deben Estuary SPA features (brent goose) occurring in the Norfolk Vanguard site, and migrations of birds from the SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site, and numbers migrating through the site are likely to be negligible.

 (b) Survey data show no evidence of avocets occurring within the Norfolk Vanguard site, and numbers migrating through the site are likely to be negligible.

 (c) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for
- these features at Deben Estuary SPA and Ramsar.





375 Dengie SPA 155	& Ramsar										
155	& Ramsar										
Likely e											
LIKETY C	ffect(s) of N	orfolk Van	guard								
Collisio	mortality		Displace	ment/Distu	ırbance	Barrier E	ffect		Cumulat	ive/In-com	nbination
С	0	D	С	0	D	С	0	D	С	0	D
	N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
	N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
	N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
	N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
		N (a) N (a) N (a)	C O D N (a) N (a) N (a)	C O D C N (a)	C O D C O N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a)	C O D C O D N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a)	C O D C O D C N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a)	C O D C O D C O N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a)	C O D C O D C O D N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a) N (a)	C O D C O D C O D C O D C C O	C O D C O D C O D C O D C O D C O D C O D C O D C O D C O D C O D D C D D D D

- (a) Survey data show little or no evidence of Dengie SPA features (brent goose, knot, grey plover, hen harrier) occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
 (b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for
- these features at Dengie SPA and Ramsar.





Site Name of European Site:	3 <u>8</u> 6 Dogger	bank SC	1												
Distance to Norfolk Vanguard (km)	281														
Site Features	Underv	vater no	ise		nteractio		Indirect	effects o		quality	s to wate		In comb		
	C	0	D	C	0	D		0	D	C	0	D		0	D
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
Harbour seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
a) The distance between the potentia	l impact i	ange of	Norfolk	Vanguard	and the	extent of	any effe	ct on indi	viduals fr	om this si	te would	result in	no poten	tial for LS	E.





Site Name of European Site:	3 <u>9</u> 7 Dogge	rsbank S	cı												
Distance to Norfolk Vanguard (km)	149														
Site Features	Likely	effect(s)	of Norfo	olk Vangu	ard										
	Under	water no	oise	Vessel I	nteractio	ins	Indirec	t effects (on prey	Change quality	s to wate	r	In comb	oination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a
Harbour seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a





Site	<u>40</u> 38												
Name of European Site:	Dorn	och Firth a	nd Loch Fl	eet SPA &	Ramsar								
Distance to Norfolk Vanguard (km)	669												
Site Features		Likely eff	ect(s) of N	orfolk Van	guard								
		Collision	mortality		Displacer	ment/Distu	ırbance	Barrier Et	ffect		Cumulati	ve/In-com	bination
		С	0	D	С	0	D	С	0	D	С	0	D
Wintering and passage waterbird assemblage including as named featur curlew, dunlin, greylag goose, wigeon bar-tailed godwit, teal, oystercatcher			N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)
Breeding osprey			N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)

- (a) Survey data show little or no evidence of Dornoch Firth & Loch Fleet SPA features occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.

 (b) Osprey has not been observed in the Norfolk Vanguard site, and it is improbable than any ospreys from the SPA migrate through the Norfolk Vanguard.
- site.
- (c) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Dornoch Firth & Loch Fleet SPA & Ramsar.





Site Name of European Site:	39<u>41</u> Dünen	landscha	aft Süd-S	ylt SAC											
Distance to Norfolk Vanguard (km)	399														
Site Features		effect(s)		lk Vangu	ard Interactio	inc	Indirec	t effects o	on prev	Change	s to wate	ar.	In comb	ination	
	Onderv	water no	nse	vesseri	interactio	1115	munec	i enecis (on prey	quality	s to wate	:1	III COIIIL	mation	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a





Site		4	10 <u>42</u>															
Name of European Site:		[Dunes D	e La Plai	ne Marit	ime Flar	nande S	AC										
Distance to Norfolk Van	guard (I	km) ¹	185															
Marine Mammals																		
Site Features	Likely 6	effect(s)	of Norfo	ılk Vangı	uard													
	Under	water no	oise	Vessel	Interact	ions	Indirec	t effects	on	Change	es to wa	iter	In com	bination	1			
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D			
Harbour seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)			
Benthic Habitats	1																	
Site Features	Perma	nent loss	5	Tempo	rary phy ance	rsical		ering du sed susp ent			bilisatio ninate d ents		Under	water no	oise and	In com	bination	I
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Sandbanks which are slightly covered by sea water all the time	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)		N (b)	N (b)		N (b)	N (b)	N (b)	N (b)
Mudflats and sandflats not covered by seawater at low tide	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)		N (b)	N (b)		N (b)	N (b)	N (b)	N (b)

- a) The distance between the potential impact range of Norfolk Vanguard and the site is beyond that of potential for ofb) The distance between the offshore project area and the designated site is beyond the range of any potential LSE.





Site 41	<u>43</u>											
Name of European Site: Ea	st Caithnes	s Cliffs SPA	\									
Distance to Norfolk Vanguard (km) 68	5											
Site Features	Likely eff	fect(s) of N	orfolk Van	guard								
	Collision	mortality		Displace	ment/Distu	urbance	Barrier E	ffect		Cumulat	ive/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Breeding seabird assemblage including as named features cormorant, guillemot, herring gull, puffin <i>Fratercula arctica</i> , razorbill, shag, fulmar and great blackbacked gull		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)
Breeding peregrine Falco peregrinus		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)

- (a) East Caithness Cliffs SPA is beyond maximum foraging range of designated seabird species so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Vanguard site are small relative to BDMPS.

 (b) Peregrines breeding in the UK normally remain close to their breeding areas throughout the year, and are therefore very unlikely to migrate offshore.

 (c) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for
- these features at East Caithness Cliffs SPA.





Site Essex Estuaries SAC Name of European Site: Distance to Norfolk Vanguard (km) Likely effect(s) of Norfolk Vanguard Features Permanent loss Temporary physical Smothering due to Re- mobilisation of Underwater noise In combination disturbance increased suspended contaminated and vibration sediment sediments 0 D С 0 D С 0 D С 0 D С 0 С 0 N (a) Estuaries N (a) Mudflats and sandflats not covered by seawater at low (a) The distance between the offshore project area and the designated site is beyond the range of any potential LSE.





Site Name of European Site:	4 <u>845</u> Estuaii	re De La	Canche,	Dunes Pi	cardes Pl	aquees S	ur L'anci	enne Fala	ise, Fore	t D'harde	lot Et Fal	aise D'eq	uihen SA(3	
Distance to Norfolk Vanguard (km)	241														
Site Features	Likely e	effect(s)	of Norfo	ılk Vangu	ard										
	Under	water no	oise	Vessel I	nteractio	ins	Indirec	t effects o	on prey	Change	s to wate	er	In comb	ination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a





Site Name of European Site:	44 <u>46</u> Estuair	re de la s	Seine SC	CI .											
Distance to Norfolk Vanguard (km)	394														
Site Features	Likely e	effect(s)	of Norfo	olk Vangu	ard										
	Under	water no	oise	Vessel I	nteractio	ins	Indirec	t effects o	on prey	Change quality	s to wate	er	In comb	ination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a





Estuaires et littoral picards (baies de Somme et d'Authie) SAC

Distance to Norfolk Vanguard (km) 275

Marine	Mammals
--------	---------

Name of European Site:

iviarine iviammais																
Site Features	Likely ef	fect(s) of I	Norfolk Va	inguard												
	Underwa	erwater noise Vessel Interactions Indirect effects on prey Changes to water quality In combination														
	С	O D C O D C O D C O D														
Harbour porpoise	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)		N (a)	N (a)	N (a)	N (a)	
Harbour seal	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)		N (a)	N (a)	N (a)	N (a)	

Site	Likely	effect(s) of Nor	folk Van	guard																
Features	Perma loss	nent ha	abitat	Tempo	orary phoance	ıysical	Smoth increa susper sedime	nded	ue to		obilisation minated ents			water n	oise	Electro fields	omagnet (EMF)	tic	In com	ibinatio	1
	С	0	D C 0			D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
River lamprey	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)

a) The distance between the potential impact range of Norfolk Vanguard and the extent of any effect on individuals from this site would result in no potential for LSE.





Enhancing Society Together												
Site 4 <u>8</u>	5											
Name of European Site: Exc	Estuary SI	PA & Rams	ar									
Distance to Norfolk Vanguard (km) 47)											
Site Features	Likely eff	ect(s) of N	orfolk Van	guard								
	Collision	mortality		Displacer	ment/Distu	rbance	Barrier Et	ffect		Cumulati	ve/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Migratory waterbird assemblage including as named features brent goose, dunlin, oystercatcher, black-tailed godwit, grey plover, Slavonian grebe <i>Podiceps auritus</i> , avocet		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)

- (a) Survey data show little or no evidence of Exe Estuary SPA features occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
 (b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for
- these features at Exe Estuary SPA & Ramsar.





Elitation g society regenter												
Site 4	<u>9</u> 7											
Name of European Site:	air Isle SPA											
Distance to Norfolk Vanguard (km) 7	62											
Site Features	Likely ef	fect(s) of N	orfolk Van	guard								
	Collision	mortality		Displacer	ment/Distu	ırbance	Barrier E	ffect		Cumulati	ve/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Breeding seabird assemblage including as named features Arctic skua <i>Stercorarius</i> <i>parasiticus</i> , fulmar, gannet, great skua <i>Stercorarius</i> skua, puffin, razorbill, Arctic tern, guillemot, kittiwake, shag		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)
Fair Isle wren		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)

- (a) Fair Isle SPA is beyond maximum foraging range of designated seabird species so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Vanguard site are likely to be very small relative to BDMPS.
- (b) Fair Isle wren is a resident Shetland subspecies that is thought never to leave the island.
 (c) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Fair Isle SPA.





City	4050											
Site	4 <u>850</u>											
Name of European Site:	Falaise du Be	ssin Occide	ental SPA									
Distance to Norfolk Vanguard (km)	445											
Site Features	Likely ef	fect(s) of N	orfolk Van	guard								
	Collision	mortality		Displace	ment/Dist	urbance	Barrier I	ffect		Cumula	tive/In-cor	nbination
	С	0	D	С	0	D	С	0	D	С	0	D
Breeding kittiwake, herring gull, lesser black-backed gull, fulmar		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (g)	N (g)	N (g)
Nonbreeding red-throated diver		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (g)	N (g)	N (g)
Nonbreeding cormorant, shag, red- breasted merganser		N (c)		N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (g)	N (g)	N (g)
Nonbreeding guillemot, razorbill		N (d)		N (d)	N (d)	N (d)	N (d)	N (d)	N (d)	N (g)	N (g)	N (g)
Nonbreeding peregrine, short-eared owl Asio flammeus		N (e)		N (e)	N (e)	N (e)	N (e)	N (e)	N (e)	N (g)	N (g)	N (g)
Breeding Dartford warbler Sylvia undata		N (f)		N (f)	N (f)	N (f)	N (f)	N (f)	N (f)	N (f)	N (f)	N (f)

- (a) Falaise du Bessin Occidental SPA is far beyond maximum foraging range of designated seabird species so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Vanguard site are likely to be extremely small relative to BDMPS, as these species are likely to migrate into the Atlantic rather than northwards into the North Sea in autumn, and are unlikely to pass through the North Sea in spring.
- (b) Nonbreeding red-throated divers at this SPA are likely to include birds from Scandinavia and the UK, especially juveniles which winter further south than adults. Their migrations between breeding grounds and the SPA probably take most individuals along the continental coast of Europe rather than across the North Sea. Small numbers may cross the North Sea towards the UK or Icelandic breeding grounds. However, red-throated divers tend to fly low over the sea so will be at very low risk of collision. Red-throated divers strongly avoid disturbance and offshore wind farms and so may have to fly further by flying around the Norfolk Vanguard site rather than through the wind farm. However, in the context of a migration of over 1000km, the extra distance flown to pass an offshore wind farm represents a negligible increase in energy expenditure for the very few individuals that might be affected.
- (c) Commorants, shags and red-breasted mergansers do not normally occur at the Norfolk Vanguard site based on bird survey data. Furthermore, these species tend to fly low over the sea and so would be at negligible risk of collision, and do not show displacement or barrier effects. Indeed, cormorants seem to benefit from offshore wind farm structures permitting them to extend foraging range offshore, and the same may be true for shag and red-breasted merganser which may also benefit from foraging opportunities around turbine bases.





Elinancing society logether	me of European Site: Falaise du Bessin Occidental SPA														
Site	48 <u>50</u>														
Name of European Site:	Falais	se du Bes	sin Occide	ntal SPA											
Distance to Norfolk Vanguard (km) 445															
Site Features Likely effect(s) of Norfolk Vanguard															
	С	Collision r	mortality		Displacer	nent/Distu	rbance	Barrier Et	ffect		Cumulat	ive/In-com	bination		
	С	С	0	D	С	0	D	С	0	D	С	0	D		
(d) Nonbreeding guillemots and razo	,														

- (d) Nonbreeding guillemots and razorbills fly low over the sea and so are at very low risk of collision. However, they are partially displaced from offshore wind farms and may fly around rather than through offshore wind farms. A very small proportion of the guillemots and razorbills from this SPA might migrate through the Norfolk Vanguard site towards breeding areas further north, but the area of foraging habitat lost to these birds if they avoid the Norfolk Vanguard site would be negligible in relation to the wider area of the North Sea and Channel over which they forage, and the increase in migration distance to fly around rather than through the wind farm would be negligible in relation to a migration distance of hundreds of kilometres.
- (e) Peregrines in western Europe do not normally migrate, so would be extremely unlikely to move between this SPA and the Norfolk Vanguard site. Short-eared owls are more migratory, and sometimes cross the North Sea, but since this SPA is 445km from the Norfolk Vanguard site, the chances of a short-eared owl from the SPA passing through the Norfolk Vanguard site are extremely small.
- (f) Dartford warbler is a resident species that is unlikely to move from this SPA.
- (g) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Falaise du Bessin Occidental SPA.





Site	49 <u>51</u>																	
Name of European Site:	Falaise	s du Cra	ın aux O	eufs et d	u Cap Gi	ris-Nez,	Dunes d	u Chatel	et, Mara	is de Tai	rdingher	et Dun	es de Wi	ssant S/	AC			
Distance to Norfolk Vanguard (km)	217																	
Marine Mammals																		
Site Features	Likely	effect(s)	of Norfo	lk Vangu	ard													
	Underwater noise																	
	Prey Quality Prey Prey Quality Prey Prey																	
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)			
Harbour (common) seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)			
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)			
Benthic Habitats																		
Site Features	Perma	nent los	S	Tempo	rary phy oance	rsical		ering du ed susp ent			bilisatio ninate d ents	n of	Underv	water no on	ise and	In com	bination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Sandbanks which are slightly covered by sea water all the time	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)		N (b)	N (b)		N (b)	N (b)	N (b)	N (b)
Mudflats and sandflats not covered by seawater at low tide	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)		N (b)	N (b)		N (b)	N (b)	N (b)	N (b)
Reefs	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)		N (b)	N (b)		N (b)	N (b)	N (b)	N (b)





Name of European Site: Falaises du Cran aux Oeufs et du Cap Gris-Nez, Dunes du Chatelet, Marais de Tardinghen et Dunes de Wissant SAC

Distance to Norfolk Vanguard (km)

a) The distance between the potential impact range of Norfolk Vanguard and the extent of any effect on individuals from this site would result in no potential for LSE.

b) The distance between the offshore project area and the designated site is beyond the range of any potential LSE.

5<u>2</u>0

Distance to Norfo	olk Vang	uard (km	1)	212														
Site Features	Likely 6	effect(s)	of Norfo	lk Vangu	ard													
	Permanent loss C O D			Temp distur	orary ph bance	ysical	Smoth increa suspe sedim	nded	ue to		obilisatio minated ents	on of		water n	oise	In con	nbination	1
	N(a) N(a) N(a)			С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Mudflats and sandflats not covered by seawater at low tide	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)		N (a)	N (a)		N (a)	N (a)	N (a)	N (a)
Reefs	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)		N (a)	N (a)		N (a)	N (a)	N (a)	N (a)

Falaises et Pelouses du Cap Blanc Nez, du Mont d'Hubert, des Noires Mottes, du Fond de la Forge et du Mont de couple SAC

(a) The distance between the offshore project area and the designated site is beyond the range of any potential LSE.





Site Name of European Site:	5 <mark>34</mark> Faray a	ınd Holn	n of Fara	y SAC											
Distance to Norfolk Vanguard (km)	762														
Site Features	Likely e	effect(s)	of Norfo	lk Vangu	ard										
	Underv	water no	ise	Vessel I	nteractio	ns	Indirect	effects o	on prey	Change quality	s to wate	r	In comb	ination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
a) The distance between the potentia	l impact ı	ange of	Norfolk	Vanguard	and the	extent of	any effe	ct on indi	viduals fr	om this s	ite would	result in	no poten	tial for LS	E.

Site	5 <u>42</u>											
Name of European Site:	Farne Island	ls SPA										
Distance to Norfolk Vanguard (km)	393											
Site Features	Likely ef	fect(s) of N	orfolk Vang	guard								
	Collision	mortality		Displace	ment/Distu	ırbance	Barrier E	ffect		Cumulati	ve/In-coml	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Breeding Arctic tern, common tern, Sandwich tern		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)

- (a) Farne Islands SPA is beyond maximum foraging range of these designated seabird species so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Vanguard site are likely to be very small relative to BDMPS.
- (b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Farne Islands SPA.





Site 5	<u>:</u> 3											
Name of European Site: Fo	tlar SPA											
Distance to Norfolk Vanguard (km) 8	5 9											
Site Features	Likely ef	fect(s) of N	orfolk Van	guard								
	Collision	mortality		Displace	ment/Dist	ırbance	Barrier E	ffect		Cumulati	ive/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Breeding seabird assemblage including as named features Arctic skua, fulmar, great skua, Arctic tern		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)
Breeding dunlin, whimbrel <i>Numenius</i> phaeopus, red-necked phalarope <i>Phalaropus lobatus</i>		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)

- (a) Fetlar SPA is beyond the maximum foraging range of designated seabird species so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Vanguard site are small relative to BDMPS.
- (b) Dunlin, whimbrel and red-necked phalarope have not been observed migrating through the Norfolk Vanguard site. Red-necked phalaropes from Fetlar SPA have been tracked by geolocator and migrate from Shetland to the Pacific Ocean via Iceland, Greenland and Canada, and so would not pass near to Norfolk Vanguard. Dunlin and whimbrel from Fetlar SPA migrate south, but are unlikely to pass through the Norfolk Vanguard site.
- (c) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Fetlar SPA.





Site 5	5 <u>6</u> 4												
Name of European Site: F	Firth of Forth SPA & Ramsar												
Distance to Norfolk Vanguard (km) 463													
Site Features Likely effect(s) of Norfolk Vanguard													
	Collision mortality			Displacement/Disturbance				Barrier Effect			Cumulative/In-combination		
	С	0	D	С	0	D	С	0	D	С	0	D	
Wintering and passage waterbird assemblage including as named features curlew, dunlin, goldeneye, great crested grebe, knot, lapwing, mallard Anas platyrhynchos, pink-footed goose Anser brachyrhynchus, red-breasted merganser, ringed plover, Sandwich tern, Slavonian grebe, turnstone, wigeon, common scoter Melanitta nigra, golden plover, longtailed duck Clangula hyemalis, redshank, shelduck, bar-tailed godwit, cormorant, eider Somateria mollissima, grey plover, oystercatcher, red-throated diver, scaup, velvet scoter Melanitta fusca		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	

⁽a) Migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site during migration. Therefore, proportions of these populations migrating through the Norfolk Vanguard site are likely to be extremely small relative to BDMPS.

⁽b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Firth of Forth SPA & Ramsar.





Site 57	5											
Name of European Site: Fin	th of Tay & Eden Estuary SPA & Ramsar											
Distance to Norfolk Vanguard (km) 503												
Site Features Likely effect(s) of Norfolk Vanguard												
	Collision mortality			Displacement/Disturbance			Barrier Effect			Cumulative/In-combination		
	С	0	D	С	0	D	С	0	D	С	0	D
Wintering and passage waterbird assemblage including as named features common scoter, cormorant, eider, goosander <i>Mergus merganser</i> , grey plover, long-tailed duck, red-breasted merganser, sanderling, velvet scoter, dunlin, greylag goose, redshank, oystercatcher, bar-tailed godwit, goldeneye, Icelandic black-tailed godwit <i>Limosa limosa islandica</i> , pink-footed goose		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (d)	N (d)	N (d)
Breeding marsh harrier		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)
Breeding little tern		N (c)		N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)

- (a) Survey data show little or no evidence of Firth of Tay & Eden Estuary SPA features occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (b) Marsh harrier is a migrant species. Satellite tracking suggests that marsh harriers from Scotland migrate overland to the south coast of England and over the Channel to France, rather than across the North Sea, and so are unlikely to pass through the Norfolk Vanguard site.
- (c) Breeding little tern has a maximum foraging range of 11km from colonies, so would have no connectivity with the Norfolk Vanguard site. Migrating little terns are considered to be 'extremely coastal on passage with very few sightings in open ocean or inland' (Forrester et al. 2007), so are unlikely to pass through the Norfolk Vanguard site.
- (d) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Firth of Tay & Eden Estuary SPA & Ramsar.





Site	5 <u>8</u> 6	3 <u>8</u> 6											
Name of European Site:	Flamboroug	amborough and Filey Coast pSPA											
Distance to Norfolk Vanguard (km) 205													
Site Features	Likely 6	Likely effect(s) of Norfolk Vanguard											
	Collisio	Collision mortality			Displacement/Disturbance			Barrier Effect			Cumulative/In-combination		
	С	0	D	С	0	D	С	0	D	С	0	D	
Breeding kittiwake		<u>Y (a)</u> ¥ (a)		<u>N (b)</u> N	<u>N (b)</u> H (b)	<u>N (b)</u> N	<u>N (b)</u> H	<u>N (b)</u> H	<u>N (b)</u> N	<u>N (c)</u> N (i)	<u>Y (a)</u> ¥ (a)	<u>N (c)</u> N (i)	
Breeding gannet		<u>Y (a)</u> ¥ (c)		<u>N (gd)</u> N (d)	<u>Y (d)</u> V	<u>N (gd)</u> N (d)	<u>N (e)</u> N	<u>N (e)</u> N (d)	<u>N (e)</u> N (d)	<u>N (c)</u> N	<u>Y (a)</u> ¥ (c)	<u>N (c)</u> N (i)	
Breeding common guillemot		<u>N (f)</u> N (e)		<u>N (g)</u> N (f)	<u>Y (h)</u> N (f)	<u>N (g)</u> N (f)	<u>N (g)</u> N (f)	<u>N (i)</u> N	<u>N (g)</u> N (f)	<u>N (c)</u> N	<u>Y (h)</u> N (i)	<u>N (c)</u> N (i)	
Breeding razorbill		<u>N (f)</u> N (e)		<u>N (g)</u> N (f)	<u>Y (h)</u> N (f)	<u>N (g)</u> N (f)	<u>N (g)</u> N (f)	<u>N (i)</u> N (f)	<u>N (g)</u> N (f)	<u>N (c)</u> N	<u>Y (h)</u> N (i)	<u>N (c)</u> N	
Breeding <u>puffin</u> herring gull		<u>N (f)</u> N (g)		<u>N (g)</u> N (h)	<u>Y (h)</u> N (h)	<u>N (g)</u> N (h)	<u>N (g)</u> N (h)	<u>N (i)</u> N (h)	<u>N (g)</u> N (h)	<u>N (c)</u> N	<u>Y (h)</u> N (i)	<u>N (c)</u> N	

- (a) Band model estimates of collision mortality indicate that LSE cannot be ruled out at the Screening stage.
- (b) Kittiwakes are not considered to be at risk of disturbance and displacement or barrier effects at offshore wind farms therefore LSE can be ruled out.
- (c) The predicted effect attributable to the proposed Norfolk Vanguard project is so small that it would not significantly contribute to or alter the overall incombination assessment for these features at Flamborough and Filey Coast SPA.
- (d) Flamborough and Filey Coast SPA is 205km from Norfolk Vanguard. Thaxter et al. (2012) report a mean foraging range of breeding gannets as 92.5km, and a maximum recorded distance of 590km. Norfolk Vanguard is therefore considerably beyond the mean foraging range of breeding gannets, but within their maximum range. Breeding gannets from Flamborough & Filey Coast SPA may therefore be affected by displacement. Searle et al. (2014) found that even for offshore wind farms considerably closer to a gannet breeding colony than under consideration here, impacts of displacement were negligible for this species because of its very long foraging range and large area used for foraging. Similarly, impacts of displacement during migration are considered likely to be negligible. Nonetheless, Natural England consider that an LSE cannot be ruled out at the Screening stage.
- (e) Gannets are not considered at risk of barrier effects due to their wide ranging habits (see d), and migrating gannets cover very large distances, extending from the North Sea to West Africa, so that slight local effects would be negligible in the context of their large migrations and area use, therefore LSE can be ruled out.
- (f) Common guillemots, razorbills and puffins tend to fly low over the sea so have a very low risk of collision mortality, therefore LSE can be ruled out.



Name of European Site:



Site 586

Flamborough and Filey Coast pSPA

Distance to Norfolk Vanguard (km)

- (g) Construction and decommissioning impacts are temporary and localised therefore LSE can be ruled out.
- (h) Flamborough and Filey Coast SPA is 205km from Norfolk Vanguard, Thaxter et al. (2012) report a mean foraging range of breeding common guillemots as 37.8km. and a maximum recorded distance of 135km. Thaxter et al. (2012) report a mean foraging range of breeding razorbills as 23.7km, and a maximum recorded distance of 95km. Thaxter et al. (2012) report a mean foraging range of breeding puffin as 4km, and a maximum recorded distance of 200km. Norfolk Vanguard is therefore considerably beyond the normal foraging range of these species from Flamborough and Filey Coast SPA. It is therefore unlikely that any breeding adults from Flamborough and Filey Coast SPA will be present at Norfolk Vanguard during the breeding season. During the nonbreeding season, birds from Flamborough and Filey Coast SPA are likely to be mixed with the large BDMPS populations of these species so that apportioning of the impact of the low level of displacement mortality generates a negligible impact to Flamborough and Filey Coast SPA. Nonetheless, Natural England consider that an LSE cannot be ruled out at the Screening stage.
- (a)—Since Norfolk Vanguard is beyond the normal foraging range of breeding common guillemots, razorbills and puffins from Flamborough and Filey Coast SPA, there will be no breeding season barrier impact for those populations. During the nonbreeding period birds from Flamborough and Filey Coast SPA are likely to be mixed with the large BDMPS populations of these species so that apportioning of the impact of the low level of displacement to this very large BDMPS population apportions a negligible impact to Flamborough and Filey Coast SPA. Band model estimates of collision mortality indicate that LSE cannot be ruled out at the Screening stage.
- (b) Flamborough and Filey Coast pSPA is 205km from the Norfolk Vanguard site. Thaxter et al. (2012) report a mean foraging range of breeding kittiwakes as 24.8km, and a maximum recorded forgaing distance of 120km. RSPB have recorded one or two even longer foraging distances. However, it is highly exceptional for breeding kittiwakes to travel more than 200km from the colony when foraging. The Norfolk Vanguard site therefore represents no bi loss of foraging habitat for breeding kittiwakes at Flamborough and Filey Coast pSPA. Migrating birds may avoid the wind farm, so could be affected by a barrier effect or loss of foraging habitat. However, since many kittiwakes from UK colonies migrate to Canadian waters, the scale of any habitat loss or barrier effect is negligible for this species in the context of migrations over tens of thousands of kilometres.
- (c) Band model estimates of collision mortality indicate that LSE cannot be ruled out at the Screening stage.
- (d) Flamborough and Filey Coast pSPA is 205km from the Norfolk Vanguard site, Thaxter et al. (2012) report a mean foraging range of breeding gannets as 92.5km. and a maximum recorded distance of 590km. The Norfolk Vanguard site is therefore considerably beyond the mean foraging range of breeding gannets, but within their maximum range. Breeding gannets from Flamborough & Filey Coast pSPA may therefore be affected by displacement and barrier effects. However, Searle et al. (2014) found that even with offshore wind farms located considerably closer to a gannet breeding colony, impacts of displacement and barrier effects were negligible for this species because of its very long foraging range and large area used for foraging. Similarly, impacts of displacement or barrier effect can be ruled out for migrating gannets since they use a very large range extending from the North Sea to West Africa so that slight local effects would be negligible in the context of their large migrations and area use.
- (e) Common guillemots and razorbills tend to fly low over the sea so have a very low risk of collision mortality. Flamborough and Filey Coast pSPA is 205km from the Norfolk Vanguard site. Thaxter et al. (2012) report a mean foraging range of breeding common guillemots as 37.8km, and a maximum recorded distance of 135km. Thaxter et al. (2012) report a mean foraging range of breeding razorbills as 23.7km, and a maximum recorded distance of 95km. The Norfolk Vanguard site is therefore considerably beyond the normal foraging range of breeding common guillemots and razorbills from Elamborough and Eiley Coast nSPA. It is



Name of European Site:



Site 586

Flamborough and Filey Coast pSPA

Distance to Norfolk Vanguard (km)

therefore unlikely that any breeding adults from Flamborough and Filey Coast pSPA are at collision risk at the Norfolk Vanguard site during the breeding season, During the nonbreeding season, birds from Flamborough and Filey Coast pSPA are likely to be mixed with the large BDMPS populations of these species so that apportioning of the impact of the low level of collision mortality apportions a negligible impact to Flamborough and Filey Coast pSPA.

- (f) Since the Norfolk Vanguard site is beyond the normal foraging range of breeding common guillemots and razorbills from Flamborough and Filey Coast pSPA, there will be no breeding season displacement or barrier impact for those populations. During the nonbreeding period, birds from Flamborough and Filey Coast pSPA are likely to be mixed with the large BDMPS populations of these species so that apportioning of the impact of the low level of displacement to this very large BDMPS population apportions a negligible impact to Flamborough and Filey Coast pSPA.
- (g) Flamborough and Filey Coast pSPA is 205km from the Norfolk Vanguard site. Thaxter et al. (2012) report a mean foraging range of breeding herring gulls as 10.5km, and a maximum recorded distance of 92km. Therefore, breeding herring gulls from Flamborough and Filey Coast pSPA will not be at risk of collision at the Norfolk Vanguard site during the breeding season. Apportioning of collision mortality to this SPA from the levels estimated during the nonbreeding season results in a negligible impact on the Flamborough and Filey Coast pSPA herring gull population.
- (h) The evidence indicates that herring gulls are not affected by displacement or barrier effects at offshore wind farms.
- (i) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in combination assessment for these features at Flamborough and Filey Coast nSPA





Site 5<u>9</u>7 Flamborough Head SAC Name of European Site: 199 Distance to Norfolk Vanguard (km) Likely effect(s) of Norfolk Vanguard Site Features Permanent loss Temporary physical Smothering due to Re- mobilisation of Underwater noise In combination disturbance increased suspended contaminated and vibration sediment sediments С С 0 D С 0 D С 0 D С 0 D 0 D С 0 D N (a) Submerged or partially submerged sea caves

⁽a) The distance between the offshore project area and the designated site is beyond the range of any potential LSE.





Site <u>6</u>	<u>)58</u>											
Name of European Site:	orth Islands	SPA										
Distance to Norfolk Vanguard (km) 4	71											
Site Features	Likely ef	fect(s) of N	orfolk Van	guard								
	Collision	mortality		Displace	ment/Distu	ırbance	Barrier E	ffect		Cumulat	ive/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Breeding seabird assemblage including as named features gannet, kittiwake, lesser black-backed gull, roseate tern, Sandwich tern, guillemot, razorbill, fulmar, common tern, Arctic tern, cormorant, herring gull, puffin, shag		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)

⁽a) Forth Islands SPA is beyond maximum foraging range of designated seabird species so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Vanguard site are small relative to BDMPS.

⁽b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Forth Islands SPA.





Site 55	<u>61</u>											
Name of European Site: Fo	ula SPA											
Distance to Norfolk Vanguard (km) 83	3											
Site Features	Likely eff	ect(s) of N	orfolk Van	guard								
	Collision	mortality		Displace	ment/Distu	ırbance	Barrier E	ffect		Cumulati	ive/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Breeding seabird assemblage including as named features Arctic tern, fulmar, guillemot, razorbill, red-throated diver, Arctic skua, kittiwake, shag, Leach's storm-petrel Oceanodroma leucorhoa, great skua, puffin		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)

⁽a) Foula SPA is beyond maximum foraging range of designated seabird species so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Vanguard site are small relative to BDMPS.

⁽b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Foula SPA.





Site 62	0											
Name of European Site: Fo	ulness SPA	and Rams	ar									
Distance to Norfolk Vanguard (km) 15	8											
Site Features	Likely eff	ect(s) of N	orfolk Van	guard								
	Collision	mortality		Displace	ment/Distu	ırbance	Barrier E	ffect		Cumulat	ive/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Wintering and passage waterbird assemblage including as named features brent goose, knot, oystercatcher, bartailed godwit, grey plover, avocet, redshank		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (e)	N (e)	N (e)
Nonbreeding hen harrier		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (e)	N (e)	N (e)
Breeding ringed plover, avocet		N (c)		N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)
Breeding little tern, common tern, Sandwich tern		N (d)		N (d)	N (d)	N (d)	N (d)	N (d)	N (d)	N (d)	N (d)	N (d)

- (a) Survey data show little or no evidence of Foulness SPA features occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site during migration.
- (b) Survey data show no evidence of hen harrier occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site during migration, as the species is likely to migrate overland rather than over sea where the option is available.
- (c) Ringed plover and avocet have not been observed during bird site-specific surveys. It is highly unlikely that these birds would migrate through the Norfolk Vanguard site as their migration is likely to take a coastal route and cross sea at narrow points such as The English Channel. If they did migrate through the Norfolk Vanguard site their flight height is likely not to be at collision risk height.
- (d) Little tern, common tern and Sandwich tern have maximum foraging ranges from colonies of 11km, 30km and 54km respectively, so there is no connectivity between the SPA and Norfolk Vanguard site. Furthermore, these species tend to forage in coastal waters rather than offshore. Therefore, collision risk, displacement and barrier effects can be excluded.
- (e) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Foulness SPA and Ramsar.





Site 6	11												
Name of European Site: Fo	wlsheugh S	PA											
Distance to Norfolk Vanguard (km) 52	25												
Site Features	Likely eff	Likely effect(s) of Norfolk Vanguard											
	Collision	mortality		Displace	ment/Distu	urbance	Barrier E	ffect		Cumulati	ive/In-com	bination	
	С	0	D	С	0	D	С	0	D	С	0	D	
Breeding seabird assemblage including as named features fulmar, guillemot, kittiwake, razorbill, herring gull		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	

⁽a) Fowlsheugh SPA is beyond maximum foraging range of designated seabird species so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Vanguard site are likely to be very small relative to BDMPS.

⁽b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Fowlsheugh SPA.





Site 64	2												
Name of European Site: Fri	sian Front p	SPA											
Distance to Norfolk Vanguard (km) ca.	100km*												
Site Features	Likely eff	ikely effect(s) of Norfolk Vanguard											
	Collision	mortality		Displacer	ment/Distu	ırbance	Barrier E	ffect		Cumulati	ve/In-com	bination	
	С	0	D	С	0	D	С	0	D	С	0	D	
Nonbreeding common guillemot, great skua, great black-backed gull, lesser black-backed gull		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	

^{*}Distance from the Norfolk Vanguard site is uncertain as the boundaries of the pSPA are under consultation at present.

⁽a) Migrations of birds from this pSPA are likely to result in negligible numbers passing through the Norfolk Vanguard site during migration relative to the size of BDMPS regional populations.

⁽b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Frisian Front pSPA.





Name of European Site: G	5 3 ibraltar Poir 33	nt SPA and	Ramsar									
Site Features	•	fect(s) of N	orfolk Van		ment/Distu	ırbance	Barrier E	ffect		Cumulati	ve/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Nonbreeding sanderling, bar-tailed godwit, grey plover		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)
Breeding little tern		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)

- (a) Survey data show no evidence of Gibraltar Point SPA features (sanderling, bar-tailed godwit, grey plover) occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site during migration.
- (b) Breeding little tern has a maximum foraging range of 11km (Thaxter et al. 2012) from colonies, so would have no connectivity with the Norfolk Vanguard site. Migrating little terns are considered to be 'extremely coastal on passage with very few sightings in open ocean or inland' (Forrester et al. 2007), so are unlikely to pass through the Norfolk Vanguard site.
- (c) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Gibraltar Point SPA and Ramsar.





Site	6 <u>6</u> 4													
Name of European Site:	Great \	Yarmout	th and No	rth Denes S	SPA									
Distance to Norfolk Vanguard (km)	49													
Site Features	Li	Likely effect(s) of Norfolk Vanguard												
	Co	Collision r	mortality		Displacer	ment/Distu	ırbance	Barrier E	ffect		Cumulati	ve/In-com	bination	
	С		0	D	С	0	D	С	0	D	С	0	D	
Breeding little tern			N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	

- (a) Great Yarmouth & North Denes SPA is beyond the maximum foraging range of little tern (11km) and foraging tends to be coastal so has no breeding season connectivity. Proportions of this population migrating through the Norfolk Vanguard site are likely to be small as the species is thought to remain close to shore during much of its migration through UK waters.
- (b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Great Yarmouth & North Denes SPA.





Site	6 <u>7</u> 5												
Name of European Site:	Gre	ater Wash	SPA										
Distance to Norfolk Vanguard (km)	ca.	36km*											
Site Features		Likely eff	ect(s) of N	orfolk Vang	guard								
	Collision mortality							Barrier E	ffect		Cumulati	ive/In-com	bination
		С	0	D	С	0	D	С	0	D	С	0	D
Breeding seabirds (little tern, common tern, Sandwich tern)			N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)
Nonbreeding red-throated diver			N (b)		Y (c)	<u>Y</u> H (<u>i</u> d)	N (d)	N (b)	N (b)	N (b)	Y (c)	<u>Y</u> 4 (<u>i</u> h)	N (h)
Nonbreeding little gull			Y (e)		N (f)	N (f)	N (f)	N (f)	N (f)	N (f)	N (h)	Y (e)	N (h)
Nonbreeding common scoter			N (g)		N (g)	N (g)	N (g)	N (g)	N (g)	N (g)	N (h)	N (h)	N (h)

^{*}Note that this distance refers to the Norfolk Vanguard site. The export cable will pass through the SPA.

- (a) Little tern, common tern and Sandwich tern have maximum foraging ranges from colonies of 11km, 30km and 54km respectively, which suggests potential connectivity between the SPA and the Norfolk Vanguard site. However, the tern colonies are at locations along the Norfolk coast which are beyond these foraging distances from the Norfolk Vanguard site. Therefore, connectivity between the SPA and Norfolk Vanguard site is ruled out on the basis of distance. Furthermore, these species tend to forage in coastal waters rather than offshore. Hence, collision risk, displacement and barrier effects can be excluded.
- (b) Red-throated divers fly close to the sea surface and are therefore at extremely low risk of collisions or barrier effects.
- (c) LSE cannot be ruled out at screening for impacts of Displacement/Disturbance to nonbreeding red-throated divers as a result of construction work (specifically for export cable laying operations through part of the Greater Wash SPA).
- (d) Displacement/Disturbance of red-throated diver during operation and decommissioning is considered negligible as the increase in vessel traffic within the SPA due to Norfolk Vanguard will be negligible compared to the current baseline.
- (e) There is potential for little gull connectivity between the SPA and the Norfolk Vanguard site, therefore LSE cannot be ruled out at screening for collision risk impacts to nonbreeding little gull.
- (f) Displacement of little gulls by offshore wind farms appears to be negligible **, indicating no LSE for this SPA feature as a consequence of displacement or barrier effects.
- (g) Surveys found no common scoters in the Norfolk Vanguard site since this species favours waters <20m in depth. Common scoter was also only present at very low densities along the export cable route, therefore no LSE for this SPA feature is predicted.
- (h) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Greater Wash pSPA.





(h)(i)

Following advice from Natural England it is considered that Operations and Maintenance vessels may disturb red-

throated divers whilst transiting through the SPA therefore an LSE cannot be screened out.

** Dierschke, V., Furness, R.W. and Garthe, S. 2016. Seabirds and offshore wind farms in European waters: Avoidance and attraction. Biological Conservation 202, 59-68

Site Name of European Site:	6 <mark>86</mark> Gule Ro	ev SCI													
Distance to Norfolk Vanguard (km)	571														
Site Features	Likely e	derwater noise Vessel Interactions Indirect effects on prey Changes to water In combination													
	Underv	vater no	ise	Vessel I	nteractio	ns	Indirect	effects c	n prey	Change quality	s to wate	r	In comb	ination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)

a) The distance between the potential impact range of Norfolk Vanguard and the extent of any effect on individuals from this site would result in no potential for LSE.





Site Name of Eu Distance to			l (km)	6 <mark>97</mark> Haisbor 0	ough, Ha	ımmond	and Wint	terton SA	.C									
Site Features	Permanent Temporary physical disturbance new sediment C O D C O D					sical		ering du sed susp ent			obilisation ninated ents	n of		water no	ise	In com	bination	
	С	0	D	С	0	D	С	0	D	С	О	D	С	0	D	С	0	D
Sandbanks which are slightly covered by sea water all the time	Y (a)	Y (a)	Y (a)	Y (a)	Y (a)	Y (a)	Y (a)	Y (a)	Y (a)	Y (a)		Y (a)	Y (a)		Y (a)	Y (a)	Y (a)	Y (a
Reefs	Y (a)	Y (a)	Y (a)	Y (a)	Y (a)	Y (a)	Y (a)	Y (a)	Y (a)	Y (a)		Y (a)	Y (a)		Y (a)	Y (a)	Y (a)	Y (a





Site	<u>70</u> 68														
Name of European Site:	Hamb	urgische	s Watter	nmeer SC											
Distance to Norfolk Vanguard (km)	361														
Site Features	Likely	effect(s)	of Norfo	olk Vangu	ard										
	Under	nderwater noise Vessel Interactions Indirect effects on prey Changes to water In combination													
		derwater noise Vessel Interactions Indirect effects on prey Changes to water quality In combination													
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
a) The distance between the potentia	l impact	range of	Norfolk	Vanguard	and the	extent of	any effe	ct on indi	viduals fr	om this s	ite would	result in	no poten	tial for LS	E.





Site 6	9 <u>71</u>											
Name of European Site:	amford Wa	ter SPA and	d Ramsar									
Distance to Norfolk Vanguard (km) 1	27											
Site Features	=======================================											
	Collision	mortality		Displace	ment/Distu	ırbance	Barrier E	ffect		Cumulati	ve/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Wintering and passage waterbird assemblage including as named features teal, brent goose, ringed plover, blacktailed godwit, grey plover, avocet, shelduck, redshank		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)
Breeding little tern		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)

- (a) Survey data show little or no evidence of Hamford Water SPA features occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site during migration.
- (b) Breeding little tern has a maximum foraging range of 11km from colonies, so would have no connectivity with the Norfolk Vanguard site. Migrating little terns are considered to be 'extremely coastal on passage with very few sightings in open ocean or inland' (Forrester et al. 2007), so are unlikely to pass through the Norfolk Vanguard site.
- (c) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Hamford Water SPA and Ramsar.





Site Name of European Site:	70 72 Helgol	and mit	Helgolar	nder Felss	ockel SA	С									
Distance to Norfolk Vanguard (km)	343														
Site Features	Likely 6	effect(s)	of Norfo	lk Vangu	ard										
	Under	ley effect(s) of Norfolk Vanguard derwater noise Vessel Interactions Indirect effects on prey Changes to water quality In combination quality													
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
Harbour seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)

a) The distance between the potential impact range of Norfolk Vanguard and the extent of any effect on individuals from this site would result in no potential for LSE.





Site 73	1												
Name of European Site: He	rmaness, S	axa Vord a	nd Valla Fi	eld SPA									
Distance to Norfolk Vanguard (km) 88	1												
Site Features	Likely eff	Likely effect(s) of Norfolk Vanguard											
	Collision	mortality		Displacer	ment/Distu	ırbance	Barrier E	ffect		Cumulati	ve/In-com	bination	
	С	0	D	С	0	D	С	0	D	С	0	D	
Breeding seabird assemblage including as named features gannet, guillemot, red- throated diver, puffin, fulmar, kittiwake, great skua, shag		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	

⁽a) Hermaness, Saxa Vord & Valla Field SPA is beyond the maximum foraging range of designated seabird species so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Vanguard site are likely to be very small relative to BDMPS.

⁽b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Hermaness, Saxa Vord & Valla Field SPA.





Site	7 <u>4</u> 2														
Name of European Site:	Hornsea Mer	e SPA													
Distance to Norfolk Vanguard (km)	197														
Site Features	Likely ef	Likely effect(s) of Norfolk Vanguard													
	Collision	mortality		Displace	ment/Distu	urbance	Barrier E	ffect		Cumulati	ve/In-com	bination			
	С	0	D	С	0	D	С	0	D	С	0	D			
Nonbreeding gadwall, mute swan		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)			

⁽a) Survey data show no evidence of Hornsea Mere SPA features (gadwall, mute swan) occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.

⁽b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Hornsea Mere SPA.





7<u>5</u>3 Site Name of European Site: **Hoy SPA** Distance to Norfolk Vanguard (km) 733 Likely effect(s) of Norfolk Vanguard Site Features Collision mortality Displacement/Disturbance Barrier Effect Cumulative/In-combination 0 D 0 D 0 D С N (a) N (a) Breeding seabird assemblage including as N (a) N (a) N (a) N (a) N (a) N (c) N (c) N (c) named features Arctic skua, great blackbacked gull, guillemot, kittiwake, redthroated diver, fulmar, puffin, great skua Breeding peregrine N (b) N (b)

⁽a) Hoy SPA is beyond maximum foraging range of designated seabird species so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Vanguard site are small relative to BDMPS.

⁽b) Peregrines breeding in the UK normally remain close to their breeding areas throughout the year, and are very unlikely to migrate offshore in the UK.

⁽c) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Hoy SPA.





Site					7 <u>6</u>	4															
Name of Eu					Ηι 14		stuary :	SAC													
Distance to	Norfoll	(Vangu	ard (kn	1)	14	9															
Marine Ma	mmals																				
Site Feature	es	_		ect(s) of																	
		U	nderwa	iter nois	e		sturban	eraction ce at sea		Ind	irect ef	ects on	prey	Char	nges to	water q	luality	In co	mbinati	on	
		С	C O D N (a) N (a)					0	D	С	()	D	С	0		D	С	0		D
Grey seal				Υ(b)	N (a)	N (a)	N (a	a) (e	l (a)	N (a)	N (a)			N (a)	N (a)	N (a)	N (a)		
Fish																					
Site	Likely	effect(s) of Noi	folk Var	nguard																
Features	Likely effect(s) of Norfolk Vanguard Permanent habitat Temporary ph disturbance				nysical	Smoth increa suspe sedim	nded	ue to	-	obilisat minateo ents			water n	oise		omagne (EMF)	tic	In con	nbinatio	n n	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Sea Lamprey	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a
River lamprey	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a





Site 7<u>6</u>4

Name of European Site: Humber Estuary SAC

Distance to Norfolk Vanguard (km) 149

Benthic habitats

Site Features	Perma	anent lo	ss	Tempo distur	orary pł bance	nysical	Smoth increa suspe sedim	nded	ue to	110	obilisati minate ents			water ribration		In com	nbinatio	n
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Estuaries	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)
Mudflats and sandflats not covered by seawater at low tide	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)
Sandbanks which are slightly covered by sea water all the time	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)
Coastal lagoons	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)

- a) The distance between the potential impact range of Norfolk Vanguard and the extent of any effect on individuals from this site would result in no potential for LSE.
- b) Potential for vessel interactions and disturbance at seal haul-out sites if a port to the north of the offshore project area is selected and therefore LSE cannot be ruled out at the screening stage.
- c) The distance between the offshore project area and the designated site is beyond the range of any potential LSE.





Ennancing Society Together												
Site 7	<u>7</u> 5											
Name of European Site:	lumber Esti	uary SPA a	nd Ramsar									
Distance to Norfolk Vanguard (km) 1	49											
Site Features	Likely eff	ect(s) of N	orfolk Vang	guard								
	Collision	mortality		Displace	ment/Distu	ırbance	Barrier E	ffect		Cumulati	ve/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Wintering and passage waterbird assemblage including as named features teal, wigeon, mallard, turnstone, pochard, scaup, bittern, brent goose, goldeneye, sanderling, dunlin, knot, ringed plover, oystercatcher, bar-tailed godwit, blacktailed godwit, curlew, golden plover, grey plover, avocet, shelduck, redshank, lapwing, whimbrel, ruff, greenshank <i>Tringa nebularia</i>		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (g)	N (g)	N (g)
Nonbreeding hen harrier		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (g)	N (g)	N (g)
Breeding bittern		N (c)		N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (g)	N (g)	N (g)
Breeding marsh harrier		N (d)		N (d)	N (d)	N (d)	N (d)	N (d)	N (d)	N (d)	N (d)	N (d)
Breeding avocet		N (e)		N (e)	N (e)	N (e)	N (e)	N (e)	N (e)	N (g)	N (g)	N (g)
Breeding little tern		N (f)		N (f)	N (f)	N (f)	N (f)	N (f)	N (f)	N (f)	N (f)	N (f)

- (a) Survey data show little or no evidence of Humber Estuary SPA features occurring in the Norfolk Vanguard sites, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site during migration.
- (b) Survey data show no evidence of Humber Estuary SPA feature hen harrier occurring in the Norfolk Vanguard sites, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site during migration as UK birds are likely to migrate overland rather than over the sea where possible.
- (c) Bittern has not been observed during bird surveys at Norfolk Vanguard, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site during migration.
- (d) Marsh harrier is a migrant species. Satellite tracking suggests that marsh harriers migrate overland to the south coast of England and over the Channel to





Site 7<u>75</u>

Humber Estuary SPA and Ramsar

Distance to Norfolk Vanguard (km)

Name of European Site:

France, rather than across the North Sea.

- (e) Avocet has not been observed during bird site specific surveys. It is highly unlikely that these birds would migrate through the Norfolk Vanguard site as their migration is likely to take a coastal route and cross sea at narrow points such as The English Channel. If they did migrate through the Norfolk Vanguard site their flight height is likely not to be at collision risk height.
- (f) Breeding little tern has a maximum foraging range of 11km from colonies, so would have no connectivity with Norfolk Vanguard. Migrating little terns are considered to be 'extremely coastal on passage with very few sightings in open ocean or inland' (Forrester et al. 2007), so are unlikely to pass through the Norfolk Vanguard site.
- (g) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Humber Estuary SPA and Ramsar.

Site Name of European Site:	7 <u>8</u> 6 Hund u	nd Paap	sand SC	ı											
Distance to Norfolk Vanguard (km)	261														
Site Features	Likely e	ely effect(s) of Norfolk Vanguard derwater noise Vessel Interactions Indirect effects on prey Changes to water In combination													
	Underv	vater no	ise	Vessel I	nteractio	ins	Indirect	effects o	n prey	Change quality	s to wate	r	In comb	oination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)





Site	<u>9</u> 7													
Name of European Site:	mperial Docl	k Lock, Leit	h SPA											
Distance to Norfolk Vanguard (km)	91													
Site Features	Likely ef	ikely effect(s) of Norfolk Vanguard Collision mortality Displacement/Disturbance Barrier Effect Cumulative/In-combination												
	Collision	mortality		Displace	ment/Dist	urbance	Barrier E	ffect		Cumula	tive/In-cor	nbination		
	С	0	D	С	0	D	С	0	D	С	0	D		
Breeding common tern		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)		
(a) Imperial Dock Lock SPA is by population migrating through (b) The predicted effect attributes assessment for these feature	table to Norfo	lk Vanguar folk Vangua	d site is like ard is so sn	ely to be ex	tremely si	mall relativ	e to BDMP	S.			•	of the		





Site Name of Eur Distance to			l (km)	7 8 <u>0</u> Inner D 44	owsing, I	Race Ban	k and No	rth Ridge	: SCI									
Site Features		ffect(s) o nent loss	f Norfolk		rary phy	rsical		ering du			obilisation ninated	n of		water no bration	ise	In com	bination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Sandbanks which are slightly covered by sea water all the time	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)		N (a)	N (a)		N (a)	N (a)	N (a)	N (a)
Reefs	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)		N (a)	N (a)		N (a)	N (a)	N (a)	N (a)





Site 8	<u>1</u> 79											
Name of European Site:	ner Moray	Firth SPA 8	k Ramsar									
Distance to Norfolk Vanguard (km) 6	52											
Site Features	Likely ef	fect(s) of N	orfolk Van	guard								
	Collision	mortality		Displace	ment/Distu	urbance	Barrier E	ffect		Cumulat	ive/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Wintering and passage waterbird assemblage including as named features bar-tailed godwit, curlew, goldeneye, greylag goose, redshank, wigeon, goosander, teal, red-breasted merganser cormorant, oystercatcher, scaup		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (d)	N (d)	N (d)
Breeding osprey		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)
Breeding common tern		N (c)		N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (d)	N (d)	N (d)
() 6 1 1 1 1 1 1	٠.											

- (a) Survey data show little or no evidence of Inner Moray Firth SPA features occurring in the Norfolk Vanguard site, and migrations of birds from this SPA and Ramsar are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (b) Osprey has not been observed in the Norfolk Vanguard site, and it is extremely unlikely that any ospreys from the Inner Moray Firth SPA migrate through the Norfolk Vanguard site.
- (c) Inner Moray Firth SPA is far beyond maximum foraging range of common tern so has no breeding season connectivity. The proportion of the population migrating through the Norfolk Vanguard site is likely to be extremely small relative to BDMPS.
- (d) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Inner Moray Firth SPA & Ramsar.





Site Name of European Site:	8 <u>2</u> 0 Isle of	May SA	С												
Distance to Norfolk Vanguard (km)	478														
Site Features	Likely 6	.,													
	Under	rwater noise Vessel Interactions Indirect effects on prey Changes to water quality													
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
a) The distance between the potentia	l impact	range of	Norfolk	Vanguard	and the	extent of	any effe	ct on indi	viduals fr	om this s	ite would	result in	no poten	tial for LS	E.





Site Name of European Site:	8 <u>3</u> 4 Klaver	oank SCI													
Distance to Norfolk Vanguard (km)	93														
Site Features	Likely 6	effect(s)	of Norfo	lk Vangu	ard										
	Under	water no	ise	Vessel I	nteractio	ns	Indirect	effects o	on prey	Change quality	s to wate	r	In comb	oination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
Harbour seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)

a) The distance between the potential impact range of Norfolk Vanguard and the extent of any effect on individuals from this site would result in no potential for LSE.





Site Name of European Site:	8 <u>42</u> Knude	grund S	AC												
Distance to Norfolk Vanguard (km)	675														
Site Features	Likely effect(s) of Norfolk Vanguard														
	Under	water no	ise	Vessel I	Vessel Interactions Indirect effects on prey Changes to water quality					er	In combination				
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)





Site Name of European Site:	8 <u>5</u> 3 Koster	fjorden-'	Väderöf _]	jorden SA	ıC										
Distance to Norfolk Vanguard (km)	800														
Site Features	Likely effect(s) of Norfolk Vanguard														
	Underwater no				nteractio	ns	Indirect	t effects o	on prey	Change quality	s to wate	er	In combination C O E		
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)





Site Name of European Site:	8 <u>6</u> 4 Küsten	64 üsten- und Dünenlandschaften Amrums SAC														
Distance to Norfolk Vanguard (km)	395															
Site Features	Likely effect(s) of Norfolk Vanguard Underwater noise Vessel Interactions Indirect effects on prey Changes to water In combination															
										quality						
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)	
a) The distance between the potentia	l impact	range of	Norfolk	Vanguaro	d and the	extent of	any effe	ct on indi	viduals fr	om this si	ite would	result in	no poten	tial for LS	E.	





	8 <mark>75</mark> Lindisfarne S	PA and Rar	nsar										
·	Distance to Norfolk Vanguard (km) 398												
Site Features	Likely effect(s) of Norfolk Vanguard												
	Collision	Collision mortality			ment/Distu	urbance	Barrier E	ffect		Cumulative/In-combination			
	С	О	D	С	0	D	С	0	D	С	0	D	
Wintering and passage waterbird assemblage including as named features wigeon, greylag goose, brent goose, sanderling, dunlin, ringed plover, goldeneye, whooper swan, black-tailed godwit, common scoter, red-breasted merganser, golden plover, grey plover, eider, shelduck, redshank		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)	
Breeding little tern, roseate tern		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	

- (a) Survey data show little or no evidence of Lindisfarne SPA features occurring in the Norfolk Vanguard OWF sites, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (b) Breeding little tern has a maximum foraging range of 11km from colonies, so would have no connectivity with Norfolk Vanguard. Migrating little terns are considered to be 'extremely coastal on passage with very few sightings in open ocean or inland' (Forrester et al. 2007), so are unlikely to pass through the Norfolk Vanguard site. Breeding roseate tern has a maximum foraging range of 30km from colonies, so would have no connectivity with Norfolk Vanguard. Migrating roseate terns are unlikely to pass through the Norfolk Vanguard site as their migration tends to be coastal.
- (c) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Lindisfarne SPA and Ramsar.





8 <u>8</u> 6 Littoral	Caucho	is SAC												
314														
												ination		
С	0	D	С	0	D	С	0	D	quality	0	D	С	0	D
														_
N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
	Littoral 314 Likely e Underv	Littoral Caucho 314 Likely effect(s) Underwater no	Littoral Cauchois SAC 314 Likely effect(s) of Norfo Underwater noise C O D	Littoral Cauchois SAC 314 Likely effect(s) of Norfolk Vangue Underwater noise Vessel I C O D C	Littoral Cauchois SAC 314 Likely effect(s) of Norfolk Vanguard Underwater noise Vessel Interaction C O D C O	Littoral Cauchois SAC 314 Likely effect(s) of Norfolk Vanguard Underwater noise Vessel Interactions C O D C O D	Littoral Cauchois SAC 314 Likely effect(s) of Norfolk Vanguard Underwater noise	Littoral Cauchois SAC 314 Likely effect(s) of Norfolk Vanguard Underwater noise	Littoral Cauchois SAC 314 Likely effect(s) of Norfolk Vanguard Underwater noise Vessel Interactions Indirect effects on prey C O D C O D C O D	Littoral Cauchois SAC 314 Likely effect(s) of Norfolk Vanguard Underwater noise	Littoral Cauchois SAC 314 Likely effect(s) of Norfolk Vanguard Underwater noise	Littoral Cauchois SAC 314 Likely effect(s) of Norfolk Vanguard Underwater noise	Littoral Cauchois SAC 314 Likely effect(s) of Norfolk Vanguard Underwater noise	Littoral Cauchois SAC 314 Likely effect(s) of Norfolk Vanguard Underwater noise





Elmuncing society logether														
Site 8	7													
Name of European Site: Li	toral Seino	-Marin SP	4											
Distance to Norfolk Vanguard (km) 315														
Site Features	Likely ef	fect(s) of N	Iorfolk Van	guard										
	Collision	Collision mortality			ment/Distu	urbance	Barrier E	Barrier Effect			Cumulative/In-combination			
	С	0	D	С	0	D	С	0	D	С	0	D		
Breeding seabirds including fulmar, shag, gannet, herring gull, great black-backed gull, kittiwake		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (f)	N (f)	N (f)		
Nonbreeding winter and passage seabird assemblage including as named features red-throated diver, black-throated diver, great crested grebe, fulmar, gannet, cormorant, shag, pomarine skua Stercorarius pomarinus, great skua, Mediterranean gull Larus melanocephalus, little gull, lesser blackbacked gull, herring gull, great blackbacked gull, kittiwake, Sandwich tern, common tern, guillemot, razorbill		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (f)	N (f)	N (f)		
Nonbreeding little egret, spoonbill Platalea leucorodia, honey buzzard Pernis apivorus, hen harrier, merlin Falco columbarius, peregrine, avocet		N (c)		N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)		
Breeding peregrine		N (d)		N (d)	N (d)	N (d)	N (d)	N (d)	N (d)	N (d)	N (d)	N (d)		
Nonbreeding woodlark Lullula arborea		N (e)		N (e)	N (e)	N (e)	N (e)	N (e)	N (e)	N (e)	N (e)	N (e)		

⁽a) The Norfolk Vanguard site is within the theoretical maximum foraging range of breeding gannets from the Littoral Seino-Marin SPA, but tracking data show that breeding gannets from the SPA do not reach the Norfolk Vanguard site. The SPA is far beyond maximum foraging range of other designated seabird species so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Vanguard site are likely to be





Site 897

Name of European Site: Littoral Seino-Marin SPA

Distance to Norfolk Vanguard (km) 31

extremely small relative to BDMPS.

- (b) Proportions of these populations migrating through the Norfolk Vanguard site are likely to be extremely small relative to BDMPS, not only because the SPA is 315km from the Norfolk Vanguard site, but also because birds on the continental side of the Channel and North Sea are likely to tend to migrate up the continental coast rather than crossing the North Sea to the UK.
- (c) None of these species has been recorded during bird surveys at the Norfolk Vanguard site. It is unlikely that birds from the SPA will migrate through the Norfolk Vanguard site, as these species are generally scarce migrants in the UK, and their migrations tend to be coastal rather than over open sea.
- (d) Breeding peregrines in western Europe tend to remain close to their breeding site throughout the year so it is extremely unlikely that any from the SPA would reach Norfolk Vanguard site.
- (e) Woodlark is a very scarce migrant to the UK, so it is very unlikely that individuals from the SPA would reach the Norfolk Vanguard site.
- (f) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Littoral Seino-Marin SPA.





Site Name of European Site: Loch of Strathbeg SPA & Ramsar Distance to Norfolk Vanguard (km) 581 Likely effect(s) of Norfolk Vanguard Site Features Collision mortality Displacement/Disturbance **Barrier Effect** Cumulative/In-combination 0 D С 0 D 0 D С 0 N (a) N (a) Wintering and passage waterbird N (a) N (a) N (a) N (a) N (a) N (c) N (c) N (c) assemblage including as named features greylag goose, pink-footed goose, teal, Svalbard barnacle goose Branta leucopsis, whooper swan N (b) Breeding Sandwich tern N (b) N (b) N (b) N (b) N (b) N (b) N (c) N (c) N (c)

- (a) Survey data show little or no evidence of Loch of Strathbeg SPA features occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (b) Loch of Strathbeg SPA is far beyond maximum foraging range of Sandwich tern (54km, Thaxter et al. 2012) so has no breeding season connectivity. Proportion of the population migrating through the Norfolk Vanguard site is likely to be extremely small relative to BDMPS.
- (c) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Loch of Strathbeg SPA & Ramsar.





Site Name of European Site:	89 <u>91</u> Lønstr	up Rødg	rund SA	С											
Distance to Norfolk Vanguard (km)	648														
Site Features	Likely effect(s) of Norfolk Vanguard Underwater noise												ination		
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
a) The distance between the potentia	l impact	range of	Norfolk	Vanguard	and the	extent of	any effe	ct on indi	viduals fr	om this s	ite would	result in	no poten	tial for LS	E.





te 92

9<u>2</u>0

Name of European Site: Margate and Long Sands SCI

Distance to Norfolk Vanguard (km)

99

Site	Likely e	ffect(s) o	f Norfolk	Vanguard	k													
Features	Perma	nent loss		Tempo disturb	orary phy oance	sical		ering du sed susp ent			obilisation ninated ents	n of		water no bration	ise	In com	bination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Sandbanks which are slightly covered by sea water all the time	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)		N (a)	N (a)		N (a)	N (a)	N (a)	N (a)

⁽a) The distance between the offshore project area and the designated site is beyond the range of any potential LSE.





<u>3</u> 4											
larwick Hea	ad SPA										
67											
Likely et	fect(s) of N	Norfolk Van	guard								
Collision	n mortality		Displace	ement/Dist	urbance	Barrier E	ffect		Cumula	tive/In-cor	nbination
С	0	D	С	0	D	С	0	D	С	0	D
	N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
	Likely ef	Arwick Head SPA 67 Likely effect(s) of I Collision mortality C O	Arwick Head SPA 67 Likely effect(s) of Norfolk Van Collision mortality C O D	Arwick Head SPA Collision mortality Collision D Collision D	Alarwick Head SPA 67 Likely effect(s) of Norfolk Vanguard Collision mortality Displacement/Dist C O D C	Alarwick Head SPA 67 Likely effect(s) of Norfolk Vanguard Collision mortality Displacement/Disturbance C O D D	Alarwick Head SPA Collision mortality Displacement/Disturbance Barrier E	Alarwick Head SPA Collision mortality Displacement/Disturbance Barrier Effect	Alarwick Head SPA Collision mortality Displacement/Disturbance Barrier Effect	Alarwick Head SPA Collision mortality Displacement/Disturbance Barrier Effect Cumulate	Alarwick Head SPA Collision mortality

migrating through the Norfolk Vanguard site are small relative to BDMPS.

⁽b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Marwick Head SPA.





Site 94	2											
Name of European Site: Me	edway Estu	ary & Mar	shes SPA a	nd Ramsa	r							
Distance to Norfolk Vanguard (km) 19	0											
Site Features	Likely eff	ect(s) of N	orfolk Van	guard								
	Collision	mortality		Displace	ment/Distu	ırbance	Barrier E	ffect		Cumulat	ive/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Wintering and passage waterbird assemblage including as named features pintail, shoveler, teal, wigeon, turnstone, brent goose, dunlin, knot, ringed plover Bewick's swan, oystercatcher, black-tailed godwit, curlew, grey plover, great crested grebe, avocet, shelduck, greenshank, redshank		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (d)	N (d)	N (d)
Breeding avocet		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)
Breeding little tern, common tern		N (c)		N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)

- (a) Survey data show little or no evidence of Medway Estuary & Marshes SPA features occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (b) Avocet has not been observed during bird site-specific surveys. It is highly unlikely that these birds would migrate through the Norfolk Vanguard site as their migration is likely to take a coastal route and cross sea at narrow points such as The English Channel. If they did migrate through the Norfolk Vanguard site their flight height is likely not to be at collision risk height.
- (c) Breeding little tern has a maximum foraging range of 11km from colonies (Thaxter et al. 2012), so would have no connectivity with Norfolk Vanguard. Migrating little terns are considered to be 'extremely coastal on passage with very few sightings in open ocean or inland' (Forrester et al. 2007), so are unlikely to pass through the Norfolk Vanguard site. Breeding common tern has a maximum foraging range of 30km from colonies (Thaxter et al. 2012), so would have no connectivity with Norfolk Vanguard. Migrating common terns are unlikely to pass through the Norfolk Vanguard site as their migration tends to be coastal where that is an option.
- (d) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Medway Estuary & Marshes SPA and Ramsar.





Site	9 <u>5</u> 2											
Name of European Site:	Minsmere	- Walbersw	ick SPA an	d Ramsar								
Distance to Norfolk Vanguard (km)	75											
Site Features	Likely e	fect(s) of N	Iorfolk Van	guard								
	Collision	mortality		Displace	ement/Dist	urbance	Barrier	Effect		Cumula	tive/In-cor	nbination
	С	0	D	С	0	D	С	0	D	С	0	D
Wintering shoveler, gadwall, white- fronted goose		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (g)	N (g)	N (g)
Nonbreeding hen harrier		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (g)	N (g)	N (g)
Breeding shoveler, teal, gadwall, bittern, avocet		N (c)		N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (g)	N (g)	N (g)
Breeding nightjar Caprimulgus europaeus		N (d)		N (d)	N (d)	N (d)	N (d)	N (d)	N (d)	N (g)	N (g)	N (g)
Breeding marsh harrier		N (e)		N (e)	N (e)	N (e)	N (e)	N (e)	N (e)	N (e)	N (e)	N (e)
Breeding little tern		N (f)		N (f)	N (f)	N (f)	N (f)	N (f)	N (f)	N (f)	N (f)	N (f)

- (a) Survey data show no evidence of Minsmere-Walberswick SPA features shoveler, gadwall or white-fronted goose occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (b) Survey data show no evidence of hen harrier occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site as UK birds are likely to migrate overland rather than over the sea where possible.
- (c) Survey data show no evidence of Minsmere-Walberswick SPA features shoveler, teal, gadwall, bittern or avocet occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (d) Survey data show no evidence of nightjar occurring in the Norfolk Vanguard OWF sites, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site as UK birds are likely to migrate overland rather than over the sea where possible and make short sea crossings from southern England to France.
- (e) Marsh harrier is a migrant species. Satellite tracking suggests that marsh harriers migrate overland to the south coast of England and over the Channel to France, rather than across the North Sea.
- (f) Breeding little tern has a maximum foraging range of 11km from colonies (Thaxter et al. 2012), so would have no connectivity with Norfolk Vanguard. Migrating little terns are considered to be 'extremely coastal on passage with very few sightings in open ocean or inland' (Forrester et al. 2007), so are unlikely to pass through the Norfolk Vanguard site.
- (g) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for





Site 9<u>5</u>3

Name of European Site: Minsmere - Walberswick SPA and Ramsar

Distance to Norfolk Vanguard (km) 75

these features at Minsmere-Walberswick SPA and Ramsar.

	64 Iontrose Bas	sin SPA & F	lamsar									
Distance to Norfolk Vanguard (km) 52	20											
Site Features	Likely eff	fect(s) of N	orfolk Van	guard								
	Collision	mortality		Displace	ment/Distu	ırbance	Barrier E	ffect		Cumulati	ve/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Wintering and passage waterbird assemblage including as named features dunlin, eider, knot, shelduck, wigeon, pink-footed goose, greylag goose, redshank, oystercatcher		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)

⁽a) Survey data show little or no evidence of Montrose Basin SPA features occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.

⁽b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Montrose Basin SPA and Ramsar.





	<u>7</u> 5											
	/loray and N	airn Coast	SPA & Ran	ısar								
Distance to Norfolk Vanguard (km)	24											
Site Features	Likely ef	fect(s) of N	Iorfolk Van	guard								
	Collision	mortality		Displace	ment/Distu	urbance	Barrier E	ffect		Cumulat	ive/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Wintering and passage waterbird assemblage including as named features common scoter, long-tailed duck, oystercatcher, bar-tailed godwit, wigeon, pink-footed goose, red-breasted merganser, redshank, velvet scoter, greylag goose, dunlin		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)
Breeding osprey		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)

- (a) Survey data show little or no evidence of Moray & Nairn Coast SPA features occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (b) Osprey has not been observed in the Norfolk Vanguard site, and it is improbable that any ospreys from the SPA migrate through the Norfolk Vanguard site.
- (c) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Moray & Nairn Coast SPA and Ramsar.





Site	9 <u>8</u> 6											
Name of European Site:	Mousa SPA											
Distance to Norfolk Vanguard (km)	807											
Site Features	Likely ef	fect(s) of N	orfolk Van	guard								
	Collision	mortality		Displace	ment/Distu	ırbance	Barrier E	ffect		Cumulati	ve/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Breeding Arctic tern		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)
Breeding European storm-petrel Hydrobates pelagicus		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)

- (a) Mousa SPA is beyond maximum foraging range of Arctic tern (30km, Thaxter et al. 2012) so has no breeding season connectivity. The proportion of the population migrating through the Norfolk Vanguard site is likely to be extremely small relative to BDMPS.
- (b) European storm-petrels were not observed in the Norfolk Vanguard site, and are rarely seen anywhere in the southern North Sea, so evidence suggests that this species migrates from its breeding site on Mousa into the North Atlantic and not normally through the North Sea.
- (c) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Mousa SPA.





Site Name of European Site:	9 <mark>97</mark> Muhle	nberger	Loch/Ne	esssand S	СІ										
Distance to Norfolk Vanguard (km)	448														
Site Features		effect(s) water no		Vessel I	ard nteractio	ons	Indirec	t effects o	on prey	Change quality	s to wate	r	In comb	ination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)

Site Name of European Site:			liedersä	chsisched	Watten	meer SAC									
Distance to Norfolk Vanguard (km)	246														
Site Features	Likely effect(s) of Norfolk Vanguard Underwater noise Vessel Interactions Indirect effects on prey Changes to water In con-														
	Under	water no	oise	Vessel I	nteractio	ns	Indirec	t effects o	on prey	Change	s to wate	r	In comb	ination	
										quality					
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
Harbour seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)

a) The distance between the potential impact range of Norfolk Vanguard and the extent of any effect on individuals from this site would result in no potential for LSE.





<u>10199</u> Site Noordzeekustzone SAC Name of European Site: 98 Distance to Norfolk Vanguard (km) **Marine Mammals** Site Features Likely effect(s) of Norfolk Vanguard Vessel Interactions and Underwater noise Indirect effects on prey Changes to water quality In combination disturbance at seal haul outs С С D С 0 С 0 D С 0 D 0 D 0 D N (a) N (a) N (a) Harbour porpoise N (a) Grey seal N (a) Harbour seal N (a) Fish Site Likely effect(s) of Norfolk Vanguard Features Re-mobilisation of Permanent habitat Temporary physical Smothering due to Underwater noise Electromagnetic In combination loss disturbance increased contaminated and vibration fields (EMF) suspended sediments sediment С 0 D С 0 D 0 D С 0 D С 0 D С 0 D С 0 D Sea N(a) Lamprey Allis Shad N(a) N(a)





Site				<u>10</u>	<u>)1</u> 99																
Name of Eu	ıropean	Site:		N	oordzee	ekustzo	ne SAC														
Distance to	Norfolk	(Vangu	ard (km	1) 98	3																
Twaite Shad	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a		
Benthic hal	bitats																				
Site Feature	ite Features			Perma	anent lo	oss	Temp distur	orary pl bance	nysical	Smoth increa suspe sedim	nded	ue to		obilisati minate ents			water r		In con	nbinatic	on
				С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
	andbanks which are slightly overed by sea water all the ime				N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b
	udflats and sandflats not overed by seawater at low tide				N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(k

LSE.

b) The distance between the offshore project area and the designated site is beyond the range of any potential LSE.





Site				10 <u>2</u> 0																				
Name of Europe	ean Sit	e:		Norfo	lk Va	lley Fe	ns SA	С																
Distance to No. (km)	rfolk Va	angua	ard	0.6+ (:	17 sit	tes, wi	th 5 si	tes wi	thin 5l	cm of t	he onshore	e proje	ct area)										
	Likely	y effe	ct(s) o	f Norf	olk Va	anguar	ď																	
	Direct (e.g. loss) withi	habit on la	at nd n	Impac featur outsid the or projec	es le 5ki ishor	m of e	situ h funct	cts on nabitat ionally ected AC	s /	grour	rbance due ndwater / ology chang n 5km		Impac noise o within	distu	rbance	Impac changi quality 5km	ing ai	ir			m light within	Impact visual within	distu	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Alkaline fens	N(a)		N(a)	N(b)		N(b)	N(b)	N(b)	N(b)	Y(c)	Y(c)	Y(c)	N(e)		N(e)	Y(c)		Y(c)	N(e)		N(e)	N(e)		N(e)
Northern Atlantic wet heaths with <i>Erica tetralix</i>	N(a)		N(a)	N(b)		N(b)	N(b)	N(b)	N(b)	Y(c)	Y(c)	Y(c)	N(e)		N(e)	Y(c)		Y(c)	N(e)		N(e)	N(e)		N(e)
European dry heaths	N(a)		N(a)	N(b)		N(b)	N(b)	N(b)	N(b)	Y(c)	Y(c)	Y(c)	N(e)		N(e)	Y(c)		Y(c)	N(e)		N(e)	N(e)		N(e)
Semi-natural dry grassland and scrubland facies on calcareous substrates (Festuco-Brometalia)	N(a)		N(a)	N(b)		N(b)	N(b)	N(b)	N(b)	N(d)	N(d)	N(d)	N(e)		N(e)	N(d)		N(d)	N(e)		N(e)	N(e)		N(e)
Molinia meadows on calcareous,	N(a)		N(a)	N(b)		N(b)	N(b)	N(b)	N(b)	Y(c)	Y(c)	Y(c)	N(e)		N(e)	Y(c)		Y(c)	N(e)		N(e)	N(e)		N(e)



mouthed whorl



Site 1020 Name of European Site: **Norfolk Valley Fens SAC** Distance to Norfolk Vanguard 0.6+ (17 sites, with 5 sites within 5km of the onshore project area) Likely effect(s) of Norfolk Vanguard Direct effects Impacts on Impacts on ex-Disturbance due to Impacts from Impacts from Impacts from light | Impacts from (e.g. habitat features situ habitats groundwater / noise disturbance changing air disturbance within visual disturbance within 5km loss) on land outside 5km of functionally hydrology changes within 5km quality within 5km within 5km the onshore connected to within 5km 5km project area the SAC С 0 D С 0 D С 0 С 0 D С 0 D С 0 D С 0 D С 0 D D peaty or clayeysilt-laden soils (Molinion caeruleae) N(b) N(b) N(b) N(b) Y(c) Calcareous fens N(a) N(a) N(b) Y(c) **Y(c)** N(e) N(e) Y(c) Y(c) N(e) N(e) N(e) N(e) with Cladium mariscus and species of the Caricion davallianae N(a) N(b) Alluvial forests N(a) N(b) N(b) N(b) N(b) Y(c) Y(c) **Y(c)** N(e) N(e) Y(c) Y(c) N(e) N(e) N(e) N(e) with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) N(a) N(a) N(b) N(b) N(b) N(b) N(b) Y(c) Y(c) Y(c) N(e) N(e) Y(c) Y(c) N(e) N(e) N(e) N(e) Narrow-





Site 1020 Name of European Site: **Norfolk Valley Fens SAC** Distance to Norfolk Vanguard 0.6+ (17 sites, with 5 sites within 5km of the onshore project area) Likely effect(s) of Norfolk Vanguard Direct effects Impacts on Impacts on ex-Disturbance due to Impacts from Impacts from Impacts from light | Impacts from (e.g. habitat features situ habitats groundwater / noise disturbance changing air disturbance within visual disturbance outside 5km of functionally hydrology changes quality within 5km within 5km loss) on land within 5km within 5km the onshore connected to within 5km 5km project area the SAC С 0 С С 0 С 0 D 0 С D С 0 D 0 D D 0 D С С D 0 D snail N(e) N(a) N(a) N(b) N(b) N(b) N(b) N(b) N(d) N(d) N(d) N(e) N(e) N(d) N(d) N(e) N(e) N(e) Desmoulin's whorl snail Vertigo moulinsiana

- a) Direct impacts on features within 5km of the onshore project area have been screened out as they are beyond the range of potential direct impact.
- b) Direct impacts on the features of the Norfolk Valley Fens SAC beyond 5km of the onshore project area have been screened out due to distance from the onshore project area. Effects of the project on ex-situ habitats functionally connected to the SAC have been screened out from further assessment as qualifying features of the SAC are all habitats or non-mobile species.
- c) Potential indirect effects of Norfolk Vanguard on the Norfolk Valley Fens SAC are alterations to the groundwater/hydrology regime and air quality effect upon qualifying habitats of the SAC present within 5km of the onshore project area (5 component SSSIs have therefore been screened in to further assessment).
- d) Feature is not located within the 5 sites within 5km of the onshore project area, therefore is not screened in for further assessment (see footnote (b)).
- e) The qualifying features of the Norfolk Valley Fens SAC are not sensitive to noise, visual, or light disturbance and therefore there is no potential LSE and these have been screened out.





Enhancing Society Together												
Site	10 <u>3</u> 4											
Name of European Site:	North Cait	hness Cliff:	s SPA									
Distance to Norfolk Vanguard (km)	708											
Site Features	Likely eff	ect(s) of N	orfolk Van	guard								
	Collision	mortality		Displace	ment/Dist	urbance	Barrier E	ffect		Cumulat	tive/In-cor	nbination
	С	0	D	С	0	D	С	0	D	С	0	D
Breeding seabird assemblage including as named features fulmar, guillemot, kittiwake, razorbill, puffin		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)
Breeding peregrine		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)

⁽a) North Caithness Cliffs SPA is far beyond the maximum foraging range of designated seabird species so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Vanguard site are small relative to BDMPS.

⁽b) Peregrines breeding in the UK normally remain close to their breeding areas throughout the year, and are very unlikely to migrate offshore from the UK.

⁽c) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at North Caithness Cliffs SPA.





Site 10	<u>42</u>											
Name of European Site: N	orth Norfol	k Coast SPA	A and Ram	sar								
Distance to Norfolk Vanguard (km) 80)											
Site Features	Likely ef	fect(s) of N	orfolk Van	guard								
	Collision	mortality		Displace	ment/Distu	ırbance	Barrier E	ffect		Cumulat	ive/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Wintering and passage waterbird assemblage including as named features wigeon, pink-footed goose, brent goose, knot, avocet		<u>Y (a)</u> V		<u>N (b)</u> N (a)	<u>N (b)</u> N (a)	<u>N (b)</u> N (a)	<u>N (b)</u> N (a)	<u>N (b)</u> N (a)	<u>N (b)</u> N (a)	<u>N (g)</u> N (f)	<u>Y (a)</u> N (f)	<u>N (g)</u> N (f)
Breeding bittern		<u>N (c)</u> N (b)		<u>N (c)</u> N (b)	<u>N (c)</u> N (b)	<u>N (c)</u> N (b)	<u>N (c)</u> N (b)	<u>N (c)</u> N (b)	<u>N (c)</u> N (b)	<u>N (g)</u> N (f)	<u>N (g)</u> N (f)	<u>N (g)</u> N (f)
Breeding marsh harrier		<u>N (d)</u> N (c)		N (d)N (c)	<u>N (d)</u> N (c)	<u>N (d)</u> N (c)	<u>N (d)</u> H	N (d)N (c)	<u>N (d)</u> N	<u>N (g)</u> N (c)	N (g)N (c)	<u>N (g)</u> N (c)
Breeding avocet		<u>N (e)</u> N (d)		<u>N (e)</u> N (d)	<u>N (e)</u> N (d)	<u>N (e)</u> N (d)	<u>N (e)</u> N (d)	<u>N (e)</u> N (d)	<u>N (e)</u> N (d)	<u>N (g)</u> N (f)	N (g)N (f)	<u>N (g)</u> N (f)
Breeding little tern, common tern, Sandwich tern		<u>N (f)</u> N (e)		<u>N (f)</u> N (e)	<u>N (f)</u> N (e)	N (f)N (e)	<u>N (f)</u> N	<u>N (f)</u> N (e)	<u>N (f)</u> N (e)	<u>N (g)</u> N (e)	<u>N (g)</u> N (e)	<u>N (g)</u> N (e)
(a) Following advice from Natur (a)(b) goose, knot, avocet occurrin the Norfolk Vanguard site du (b)(c) site, and migrations of birds (c)(d) coast of England and over th (d)(e) and migrations of birds from	g in the Nor ring migrat from this SF e Channel t	Survey d folk Vangu ionSurvey d A are likelyMarsh h o France, rSurvey d	ata show I ard site, ar ata show r y to result i arrier is a r ather than ata show r	ittle or no and migration of evidence in negligible migrant speciacross the no evidence	evidence o ons of birds e of North e numbers ecies. Satel North Sea e of North	f North No from this Norfolk Co passing th lite trackin Norfolk Co	orfolk Coas SPA are lik wast SPA fea arough the ag suggests wast SPA fea	t SPA featurely to resurt the sture bitte Norfolk Valthat mars	ires wigeor It in neglig rn occurrir anguard sit h harriers r	n, pink-foo ible number og in the No e. migrate ov	ers passing orfolk Vang erland to t	through guard he south





(e)(f)
Little tern, common tern and Sandwich tern have maximum foraging ranges from colonies of 11km, 30km and 54km respectively (Thaxter et al. 2012), so there is no connectivity between the SPA and Norfolk Vanguard site. Furthermore, these species tend to forage in coastal waters rather than offshore. Therefore, collision risk, displacement and barrier effects can be excluded.

(f)(g)
The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or

alter the overall in-combination assessment for these features at North Norfolk Coast SPA and Ramsar.

Site Name of Eu Distance to			l (km)	10 <u>5</u> 3 North N 2	Norfolk S	andbanks	s and Sat	urn Reef	SAC									
Site Features		ffect(s) o nent loss		Vanguard Tempo disturb	orary phy	rsical		ering du sed susp ent			obilisation ninated ents	n of		water no bration	ise	In com	bination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Sandbanks which are slightly covered by sea water all the time	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)		N (a)	N (a)		N (a)	N (a)	N (a)	N (a)
Reefs	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)		N (a)	N (a)		N (a)	N (a)	N (a)	N (a)

⁽a) The magnitude of any impact on the features of this site is negligible and would result in no potential for LSE.





Site 10 Name of European Site: No Distance to Norfolk Vanguard (km) 30	rthumbria	Coast SPA	and Ramsa	ar										
Site Features	<u> </u>	effect(s) of Norfolk Vanguard on mortality Displacement/Disturbance Barrier Effect Cumulative/In-combination												
	С	0	D	С	0	D	С	0	D	С	0	D		
Nonbreeding turnstone, purple sandpiper Calidris maritima		N (a)		N (a)	N (c)	N (c)	N (c)							
Breeding little tern		N (b)		N (b)										

- (a) Survey data show little or no evidence of Northumbria Coast SPA features (turnstone, purple sandpiper) occurring in the Norfolk Vanguard OWF sites, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (b) Breeding little tern has a maximum foraging range of 11km from colonies (Thaxter et al. 2012), so would have no connectivity with Norfolk Vanguard. Migrating little terns are considered to be 'extremely coastal on passage with very few sightings in open ocean or inland' (Forrester et al. 2007), so are unlikely to pass through the Norfolk Vanguard site.
- (c) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Northumbria Coast SPA and Ramsar.





10 <u>7</u> 5													
Noss SPA													
816													
Likely ef													
Collision	mortality		Displace	ment/Distu	ırbance	Barrier E	ffect		Cumulati	ve/In-com	bination		
С	0	D	С	0	D	С	0	D	С	0	D		
,	N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)		
	Collision	Noss SPA 816 Likely effect(s) of N Collision mortality C O N (a)	Noss SPA 816 Likely effect(s) of Norfolk Vang Collision mortality C O D N (a)	Noss SPA 816 Likely effect(s) of Norfolk Vanguard Collision mortality C O D C N (a) N (a)	Noss SPA 816 Likely effect(s) of Norfolk Vanguard Collision mortality C Displacement/Disturb C N (a) N (a) N (a)	Noss SPA 816 Likely effect(s) of Norfolk Vanguard Collision mortality Displacement/Disturbance C O D N (a) N (a) N (a) N (a)	Noss SPA 816 Likely effect(s) of Norfolk Vanguard Collision mortality Displacement/Disturbance Barrier E C N (a) N (a) N (a) N (a) N (a)	Noss SPA	Noss SPA	Noss SPA Barrier Effect Cumulati C O D </td <td>Noss SPA Likely effect(s) of Norfolk Vanguard Collision mortality Displacement/Disturbance Barrier Effect Cumulative/In-com C O D C O D C O N (a) N (a) N (a) N (a) N (a) N (b) N (b)</td>	Noss SPA Likely effect(s) of Norfolk Vanguard Collision mortality Displacement/Disturbance Barrier Effect Cumulative/In-com C O D C O D C O N (a) N (a) N (a) N (a) N (a) N (b) N (b)		

- (a) Noss SPA is beyond maximum foraging range of designated seabird species so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Vanguard site are likely to be extremely small relative to BDMPS.
- (b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Noss SPA.

Site Name of European Site:	10 <mark>86</mark> NTP S-	H Watte	nmeer u	ınd angre	nzende K	Custengel	oiete SAC								
Distance to Norfolk Vanguard (km)	365														
Site Features		effect(s) water no		Vessel I	ard nteractio	ins	Indirect	t effects o	on prey	Change quality	s to wate	r	In comb	oination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
Harbour seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)

a) The distance between the potential impact range of Norfolk Vanguard and the extent of any effect on individuals from this site would result in no potential for LSE.





Site Name of European Site:	10 <mark>97</mark> Ooster	schelde	SAC												
Distance to Norfolk Vanguard (km)	130														
Site Features		effect(s) water no		lk Vangu Vessel I	ard nteractio	ons	Indirec	t effects o	on prey	Change quality	s to wate	r	In comb	oination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
a) The distance between the potential	l impact i	range of	Norfolk	Vanguard	d and the	extent of	any effe	ct on indi	viduals fr	om this si	ite would	result in	no poten	tial for LS	iΕ.

Site Name of E	uropean	Site:		1 <u>1</u> 08 Orford	ness - Shi	ngle Stre	et SAC											
Distance to	o Norfoll	(Vangua	rd (km)	70														
Site	Likely e	ffect(s) o	f Norfolk	Vanguard	d													
Features	Perma	nent loss		Tempo disturb	orary phy pance	sical		ering due sed suspe ent			obilisatior ninated ents	n of		water no bration	ise	In com	bination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Coastal lagoons	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)		N (a)	N (a)		N (a)	N (a)	N (a)	N (a)





Ennancing Society logether												
Site :	<u>11</u> 09											
Name of European Site:	Östliche De	utsche Buc	ht SPA									
Distance to Norfolk Vanguard (km)	345											
Site Features	Likely eff	ect(s) of N	orfolk Van	guard								
	Collision	mortality		Displace	ment/Distu	ırbance	Barrier E	ffect		Cumulat	ive/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Nonbreeding seabirds (razorbill, fulmar, black-throated diver, red-throated diver, herring gull, common gull, lesser blackbacked gull, great black-backed gull, little gull, black-headed gull <i>Chroicocephalus</i>		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
ridibundus, common scoter, great crested grebe, kittiwake, common tern, Arctic tern, sandwich tern, gannet, guillemot)												

- (a) Migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site relative to the size of BDMPS regional populations, not only because the sites are 345km apart, but also because seabirds and waterbirds from this SPA are likely to migrate predominantly along the continental coast of the North Sea towards northern breeding grounds rather than across the southern North Sea.
- (b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Östliche Deutsche Bucht SPA.

reactives at Ostilerie Deatserie Baciles	. ,														
Site Features	Likely e	effect(s) o	of Norfol	k Vangua	rd										
	Underv	water noi	ise	Vessel	Interaction	ons	Indirec	t effects	on prey	Chai	nges to w quality	ater	In	combina	tion
	C O D C O C O C									С	0	D	С	0	
Marine Mammals															
Harbour porpoise	N(c)	N(c)	N(c)				N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)
Grey seal	N(c)	N(c)	N(c)				N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)





COMMISSION CONTRACTOR CONTRACTOR															
Site	1 <u>11</u> 09														
Name of European Site:	Östliche D	eutsche	Bucht SP	A											
Distance to Norfolk Vanguard (km)	345														
Harbour seal	N(c)	N(c)	N(c)				N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)
c) The distance between the pote	ntial impact	range of	Norfolk \	/anguard	and the	extent of	any effe	ct on inc	lividuals	rom this	site wou	ld result	in no pot	ential fo	r LSE.

Site Name of European Site:	11 <u>2</u> 9 Ouessa	int-Mole	ene SAC												
Distance to Norfolk Vanguard (km)	698														
Site Features	Likely 6	effect(s)	of Norfo	lk Vangu	ard										
	Under	water no	oise	Vessel I	nteractio	ns	Indirect	t effects o	on prey	Change quality	s to wate	er	In comb	ination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
a) The distance between the potentia	l impact	range of	Norfolk	Vanguard	d and the	extent of	any effe	ct on indi	viduals fr	om this s	ite would	result in	no poten	tial for LS	E.





Site	11 <u>3</u> 4															
Name of European Site:	Outer Thame	s Estuary S	PA and pSI	PA extensi	on											
Distance to Norfolk Vanguard (km)	21															
Site Features	Likely ef	Likely effect(s) of Norfolk Vanguard Collision mortality Displacement/Disturbance Barrier Effect Cumulative/In-combin														
	Collision	mortality		Displace	ment/Distu	urbance	Barrier E	ffect		Cumulati	ive/In-com	bination				
	С	0	D	С	0	D	С	0	D	С	0	D				
Nonbreeding red-throated divers		N (a)		N (b)	<u>Y (f)</u> N (c)	N (c)	N (a)	N (a)	N (a)	N (e)	N (e) <u>Y</u> (f)	N (e)				
Breeding little tern and common tern		N (d)		N (d)	N (d)	N (d)	N (d)	N (d)	N (d)	N (d)	N (d)	N (d)				

- (a) Red-throated divers fly close to the sea surface and are therefore at extremely low risk of collisions or barrier effects. Survey data indicate a negligible risk of collision mortality or of a barrier effect.
- (b) Great Yarmouth may be used as a port for construction vessels for the Norfolk Vanguard site; this port is located very close to the northern extent of the SPA however is outside the main concentrations of red-throated divers. This, together with the extent of existing vessel movements in the area means the addition of construction traffic as a result of Norolk Vanguard will make little difference to the existing baseline and therefore the potential for LSE is considered to be negligible.
- (c) Displacement/Disturbance during operation and decommissioning is considered negligible as the increase in vessel traffic within the SPA due to Norfolk Vanguard will be negligible compared to the existing baseline.
- (d) Little tern and common tern have maximum foraging ranges from colonies of 11km and 30km respectively (Thaxter et al. 2012), which suggests there could be connectivity between the SPA and Norfolk Vanguard site, however this is the distance to the seaward edge of the SPA, and the coastal colonies are beyond foraging range of the Norfolk Vanguard OWF sites. Furthermore, these species tend to forage in coastal waters rather than offshore and since the breeding colonies are beyond foraging range connectivity can be ruled out. Therefore, collision risk, displacement and barrier effects can be excluded.
- (e) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Outer Thames Estuary SPA.

(e)(f) Following advice from Natural England it is considered that Operations and Maintenance vessels may disturb red-throated divers whilst transiting through the SPA therefore an LSE cannot be screened out.





Site Name of European Site:	11 <u>4</u> 2 Panach	ie De La	Gironde	Et Plate	au Roche	ux De Coi	rdouan (S	Système F	Pertuis Gi	ronde) S	AC					
Distance to Norfolk Vanguard (km)	837	y effect(s) of Norfolk Vanguard														
Site Features	Likely 6	effect(s)	of Norfo	ılk Vangu	ard											
	Under	water no	ise	Vessel I	nteractio	ns	Indirec	t effects o	n prey	Change	s to wate	r	In comb	ination		
										quality						
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)	

Site	11 <u>5</u> 3														
Name of European Site:	Papa Stou	r SPA													
Distance to Norfolk Vanguard (km)	851														
Site Features	Likely 6	ely effect(s) of Norfolk Vanguard													
	Collisio	n mortality		Displace	ement/Dist	urbance	Barrier E	ffect		Cumulat	ive/In-con	nbination			
	С	0	D	С	0	D	С	0	D	С	0	D			
Breeding Arctic tern		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)			
Breeding ringed plover		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)			

- (a) Papa Stour SPA is beyond maximum foraging range of Arctic tern so has no breeding season connectivity. The proportion of the population migrating through the Norfolk Vanguard site is very small relative to BDMPS.
- (b) Ringed plovers breeding in Scotland 'tend to winter locally or move only short distances' (Forrester et al. 2007) so birds from Papa Stour are extremely unlikely to reach the Norfolk Vanguard site.
- (c) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Papa Stour SPA.





Site	11 <u>6</u> 4														
Name of European Site:	Papa West	ray (North	Hill and Ho	lm) SPA											
Distance to Norfolk Vanguard (km)	778														
Site Features	Likely ef	ikely effect(s) of Norfolk Vanguard													
	Collision	mortality		Displace	ment/Distu	ırbance	Barrier E	ffect		Cumulati	ive/In-com	bination			
	С	0	D	С	0	D	С	0	D	С	0	D			
Breeding Arctic tern		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)			
Breeding Arctic skua		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)			

⁽a) Papa Westray SPA is beyond the maximum foraging range of Arctic tern or Arctic skua so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Vanguard site are likely to be extremely small relative to BDMPS.

⁽b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Papa Westray SPA.





Site 1175 Name of European Site: **Paston Great Barn SAC** Distance to Norfolk Vanguard (km) 2.9 Likely effect(s) of Norfolk Vanguard Direct effects (e.g. Direct effects on Impacts from Disturbance due Impacts from Impacts from Impacts from light Impacts from habitat loss) on ex-situ habitats alterations to to groundwater / noise disturbance changing air disturbance visual disturbance land within the SAC functionally geology and land hydrology changes quality connected to the contamination boundary SAC С D С С D С 0 D С С D С 0 D С 0 0 D 0 0 D 0 0 D Barbastelle bats N(a) N(a) N(a) N(a) N(a) N(a) N(b) N(b) N(b) N(b) N(b) N(c) N(c) N(c) N(d) N(d) N(d) N(d) N(d)N(d) Y(e) Y(e) Y(e) N(d) N(d) N(d)

- a) Paston Barn SAC is located 2.9km from the onshore project area; the SAC is therefore beyond the range of direct impact.
- b) Barbastelle bats are associated with hedgerow, scrub, woodland and watercourse habitats which will not be affected by changes to the geology or land contamination regime.
- c) Watercourses identified as core foraging areas for the Paston Great Barn barbastelle colony (i.e. drains at Ridlington Street) may be subject to trenching works during the project construction phase, and as such there may be effects upon this ex-situ habitat. Therefore LSE cannot be ruled out and these effects have been screened in for further assessment.
- d) Qualifying features of Paston Great Barn SAC are not sensitive to potential effects from noise, visual disturbance or air quality and so indirect effects upon these qualifying features will not occur and these effects have been screened out of further assessment.
- e) Barbastelle commuting and foraging habitat is located within the potential zone of influence of lighting from the onshore infrastructure and therefore LSE cannot be ruled out at the screening stage.





Site	11 <u>8</u> 6														
Name of European Site:	Pentland Firth	Islands SPA	ν.												
Distance to Norfolk Vanguard (km)	716														
Site Features	Likely ef	Likely effect(s) of Norfolk Vanguard Collision mortality Displacement/Disturbance Barrier Effect Cumulative/In-combination													
	Collision														
	С	0	D	С	0	D	С	0	D	С	0	D			
Breeding Arctic tern		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)			
(a) Pentland Firth Islands SPA is beyong through the Norfolk Vanguard sit (b) The predicted effect attributable these features at Pentland Firth I	e is likely to be to Norfolk Van	extremely	small relat	ive to BDN	1PS.	J			•						

Site Name of European Site:	11 <mark>97</mark> Pertuis	Charen	tais SAC												
Distance to Norfolk Vanguard (km)	767														
Site Features		effect(s) water no		lk Vangu Vessel I	ard nteractio	ons	Indirect	effects o	on prey	Change	s to wate	r	In comb	oination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
a) The distance between the potentia	l impact i	ange of	Norfolk	Vanguard	and the	extent of	any effe	ct on indi	viduals fr	om this s	te would	result in	no poten	tial for LS	E.





Site	<u>2018</u>											
Name of European Site:	ortsmouth	Harbour SP.	A									
Distance to Norfolk Vanguard (km)	326											
Site Features	Likely e	ffect(s) of N	orfolk Van	guard								
	Collisio	n mortality		Displace	ement/Dist	urbance	Barrier E	ffect		Cumulat	ive/In-cor	nbination
	С	0	D	С	0	D	С	0	D	С	0	D
Nonbreeding brent goose, dunlin, black- tailed godwit, red-breasted merganser		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)

- (a) Survey data show little or no evidence of Portsmouth Harbour SPA features occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Portsmouth Harbour SPA.

Site Name of European Site:	1 <u>21</u> 49 Presqu	'ile De C	Crozon S <i>l</i>	AC											
Distance to Norfolk Vanguard (km)	700														
Site Features		effect(s) water no		lk Vangu Vessel I	ard nteractio	ins	Indirect	effects o	on prey	_	s to wate	r	In comb	ination	
		0	D	C	0	D	C	0	D	quality	0	D	C	0	D
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	J	N(a)	N(a)	N(a)	N(a)
a) The distance between the potential	limpact	ange of	Norfolk	Vanguard	d and the	extent of	any effe	ct on indi	viduals fr	om this si	ite would	result in	no poten	tial for LS	E.





Enhancing Society Together												
Site 12	20											
Name of European Site: Rai	nsar-Gebie	t S-H Watt	enmeer ur	nd angrenz	ende Küst	engebiete :	SPA					
Distance to Norfolk Vanguard (km) 36	5											
Site Features	Likely eff	ect(s) of N	orfolk Vang	guard								
	Collision	mortality		Displace	ment/Dist	urbance	Barrier E	ffect		Cumulati	ive/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Breeding seabirds including common gull, lesser black-backed gull, great black-backed gull, Mediterranean gull, black-headed gull, little tern, common tern, Arctic tern, Sandwich tern, black tern, gull-billed tern <i>Gelochelidon nilotica</i>		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (e)	N (e)	N (e)
Nonbreeding seabirds including razorbill, black-throated diver, red-throated diver, common gull, lesser black-backed gull, great black-backed gull, Mediterranean gull, black-headed gull, little gull, kittiwake, little tern, common tern, Arctic tern, Sandwich tern, cormorant, guillemot		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (e)	N (e)	N (e)
Waterbirds including pintail, shoveler, teal, wigeon, mallard, garganey Anas querquedula, grey heron Ardea cinerea, turnstone, bittern, brent goose, barnacle goose, sanderling, dunlin, curlew sandpiper, ringed plover, Kentish plover Charadrius alexandrinus, Bewick's swan, whooper swan, snipe Gallinago gallinago, oystercatcher, black-winged stilt Himantopus himantopus, bar-tailed godwit, black-tailed godwit, common		N (c)		N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (e)	N (e)	N (e)





Site 1220 Name of European Site: Ramsar-Gebiet S-H Wattenmeer und angrenzende Küstengebiete SPA Distance to Norfolk Vanguard (km) Site Features Likely effect(s) of Norfolk Vanguard Cumulative/In-combination Collision mortality Displacement/Disturbance **Barrier Effect** 0 0 D 0 D 0 scoter, red-breasted merganser, curlew, whimbrel, ruff, spoonbill, golden plover, grey plover, red-necked grebe *Podiceps* grisegena, black-necked grebe Podiceps nigricollis, avocet, eider, shelduck, greenshank, redshank, lapwing Terrestrial birds (various species) N (d) N (d)

- (a) The Norfolk Vanguard site is beyond maximum foraging range of designated breeding seabird species from this SPA, so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Vanguard site are likely to be extremely small relative to BDMPS.
- (b) Migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site relative to the size of BDMPS regional populations, not only because of the distance, but also because seabirds and waterbirds from this SPA are likely to migrate predominantly along the continental coast of the North Sea towards northern breeding grounds rather than across the southern North Sea.
- (c) Survey data show little or no evidence of these waterbird features occurring in the Norfolk Vanguard OWF sites, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site, as most of these birds are likely to remain on the continental side of the North Sea.
- (d) Terrestrial birds from this SPA are very unlikely to migrate to the UK; those that do migrate are more likely to follow the west European flyway along the continental coast.
- (e) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at this SPA.





Site 12<u>3</u>4

Name of European Site: Recifs Gris-Nez Blanc-Nez SAC

Distance to Norfolk Vanguard (km) 209

Marine Mammals

Site Features	Likely 6	effect(s)	of Norfo	lk Vangu	ıard										
	Under	water no	oise	Vessel	Seel Interactions Indirect effects on prey Changes to water quality In combination O D C O D C O D										
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour porpoise	N(a)	N(a)	N(a)				N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
Harbour (common) seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)

Benthic Habitats

Site Features	Permai	nent loss	5	Tempo disturb	rary phy ance	sical		ering due ed suspe nt			bilisatior iinate d nts	n of	Underw vibratio	vater noi on	ise and	In com	oination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Sandbanks which are slightly covered by sea water all the time	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)		N (b)	N (b)		N (b)	N (b)	N (b)	N (b)
Reefs	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)		N (b)	N (b)		N (b)	N (b)	N (b)	N (b)

a) The distance between the potential impact range of Norfolk Vanguard and the extent of any effect on individuals from this site would result in no potential for LSE.

b) The distance between the offshore project area and the designated site is beyond the range of any potential LSE.





Site		:	12 <u>42</u>															
Name of European Site		١	Ridens e	t dunes	hydrauli	ques du	detroit (du Pas-d	e-Calais	SAC								
Distance to Norfolk Va	nguard (km) ²	217															
Marine Mammals																		
Site Features	Likely	effect(s)	of Norfo	ılk Vangı	uard													
	Under	water no	oise	Vessel	Interact	ions	Indired prey	t effects	on	Change quality	es to wa	ter	In com	bination	l			
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D			
Harbour porpoise	N(a)	N(a)	N(a)				N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)			
Harbour seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)			
Benthic Habitats	1		1	1												1		
Site Features	Perma	nent los	s	Tempo	rary phy pance	rsical		ering du sed susp ent			bilisatio ninate d ents	n of	Under	water no	ise and	In com	bination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Sandbanks which are slightly covered by sea water all the time	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)		N (b)	N (b)		N (b)	N (b)	N (b)	N (b)
Reefs	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)		N (b)	N (b)		N (b)	N (b)	N (b)	N (b)
a) The distance between	en the p	otential	impact r	ange of	Norfolk '	/anguar	d and th	e extent	of any e	ffect on	individu	als from	this site	would r	esult in r	no poten	tial for L	SE.

The distance between the potential impact range of Norrolk valignated and the extent of any effect of many and this site would result in no poten

b) The distance between the offshore project area and the designated site is beyond the range of any potential LSE.





Site Name of European Site:				12 <u>53</u> River Derwent SAC																	
Distance to Norfolk Vanguard (km) 234																					
Permanent habitat loss			abitat		oorary prbance	ohysical	Smoth increa suspe sedim	nded	due to		obilisati minated ents			water i		Electro fields (_	ic	In con	nbinatio	on
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
River lamprey	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)
a) The distance l	oetwee	n the po	otential	impact	range o	of Norfo	ılk Vang	guard a	nd the e	extent o	f any ef	fect fro	m this s	ite wou	ıld resı	ult in no	potenti	al for LS	SE.	1	





Site 12<u>6</u>4

Name of European Site: River Wensum SAC

Distance to Norfolk Vanguard (km)

Distance to Norfolk Vanguard (km) 0																								
	Likely effect(s) of Norfolk Vanguard																							
	Direct effects (e.g. habitat loss) on land within the SAC boundary			ex-situ habitats functionally			alterations to						noise disturbance			Impacts from changing air quality			Impacts from light disturbance			Impacts from visual disturbance		
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	N(a)		N(a)	Y(b)		Y(b)	Y(b)	Y(b)	Y(b)	Y(b)	Y(b)	Y(b)	N(c)		N(c)	N(c)		N(c)	N(c)		N(c)	N(c)		N(c)
Desmoulin's whorl snail	N(a)		N(a)	Y(b)		Y(b)	Y(b)	Y(b)	Y(b)	Y(b)	Y(b)	Y(b)	N(c)		N(c)	N(c)		N(c)	N(c)		N(c)	N(c)		N(c)
White-clawed (or Atlantic stream) crayfish Austropotamobius pallipes	N(a)		N(a)	N(d)		N(d)	N(d)	N(d)	N(d)	N(d)	N(d)	N(d)	N(d)		N(d)	N(d)		N(d)	N(d)		N(d)	N(d)		N(d)
Brook lamprey Lampetra planeri	N(a)		N(a)	N(d)		N(d)	N(d)	N(d)	N(d)	N(d)	N(d)	N(d)	N(d)		N(d)	N(d)		N(d)	N(d)		N(d)	N(d)		N(d)
Bullhead Cottus gobio	N(a)		N(a)	N (d)		N(d)	N(d)	N(d)	N(d)	N(d)	N(d)	N(d)	N(d)		N(d)	N(d)		N(d)	N(d)		N(d)	N(d)		N(d)

- a) The use of trenchless crossing techniques will ensure no direct effects upon any of the qualifying features of the SAC.
- b) There may be potential effects on features which may be located outside of the SAC boundary but are within areas of land which are functionally connected to





Site 1264

Name of European Site: River Wensum SAC

Distance to Norfolk Vanguard (km)

the River Wensum SAC, including floodplain and grazing marsh habitat and therefore LSE cannot be ruled out at the screening stage.

- c) The qualifying features of the River Wensum SAC are not sensitive to effects arising from these sources.
- d) White-clawed crayfish was identified as absent at the trenchless crossing area at Elsing, therefore would not experience impacts associated with the construction in this area. Ex-situ habitats suitable for supporting brook lamprey and bullhead have not been identified within the onshore project area.

Site	12 <u>7</u> 5														
Name of European Site:	Ronas Hill	Ronas Hill - North Roe and Tingon SPA													
Distance to Norfolk Vanguard (km)	olk Vanguard (km) 866														
Site Features Likely effect(s) of Norfolk Vanguard															
	Collision	mortality	rtality		Displacement/Disturbance			ffect		Cumulative/In-combination					
	С	0	D	С	0	D	С	0	D	С	0	D			
Breeding great skua		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (d)	N (d)	N (d)			
Breeding red-throated diver		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (d)	N (d)	N (d)			
Breeding merlin		N (c)		N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (d)	N (d)	N (d)			

- (a) Ronas Hill, North Roe & Tingon SPA is beyond maximum foraging range of great skua so has no breeding season connectivity. The proportion of the population migrating through the Norfolk Vanguard site is likely to be extremely small relative to BDMPS.
- (b) Ronas Hill, North Roe & Tingon SPA is beyond maximum foraging range of red-throated diver so has no breeding season connectivity. The proportion of the population migrating through the Norfolk Vanguard site is likely to be extremely small relative to BDMPS.
- (c) Merlins from this population are likely to migrate to wintering areas that are predominantly within the UK. A few, mostly young birds, may winter on the European continent so could possibly pass through the Norfolk Vanguard site. However, no merlins have been seen during site specific surveys, and the chances of any from this SPA passing through the site are likely to be extremely low.
- (d) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Ronas Hill, North Roe & Tingon SPA.





Site 12	12 <u>8</u> 6													
Name of European Site: Ro	Rousay SPA													
Distance to Norfolk Vanguard (km) 763														
Site Features	Site Features Likely effect(s) of Norfolk Vanguard													
	Collision mortality			Displace	ment/Distu	ırbance	Barrier E	ffect		Cumulative/In-combination				
	С	0	D	С	0	D	С	0	D	С	0	D		
Breeding seabird assemblage including as named features guillemot, Arctic skua, Arctic tern, kittiwake, fulmar		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)		
(a) Rousay SPA is beyond maxim	um foragina	rango of	docianatod	coabird or	l nacios sa h	os no broo	ding coaco	o connectiv	ity Propo	rtions of th	oso popul	ations		

⁽a) Rousay SPA is beyond maximum foraging range of designated seabird species so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Vanguard site are small relative to BDMPS.

⁽b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Rousay SPA.





Site 1297 Sandbanker ud for Thorsminde SAC Name of European Site: 492 Distance to Norfolk Vanguard (km) Likely effect(s) of Norfolk Vanguard Site Features Underwater noise **Vessel Interactions** Indirect effects on prey Changes to water In combination quality С 0 D С 0 D С 0 D С 0 D С 0 D N(a) N(a) N(a) Harbour porpoise N(a) a) The distance between the potential impact range of Norfolk Vanguard and the extent of any effect on individuals from this site would result in no potential for LSE.

Site Name of European Site:	1 <u>30</u> 28 Sandba	ınker ud	for Thy	boron SA	ıC										
Distance to Norfolk Vanguard (km)	523														
Site Features	Likely e	Likely effect(s) of Norfolk Vanguard													
	Underv	Underwater noise Vessel Interactions Indirect effects on prey Changes to water quality													
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)

a) The distance between the potential impact range of Norfolk Vanguard and the extent of any effect on individuals from this site would result in no potential for LSE.





Site Name of European Site: Distance to Norfolk Vanguard (km)	1 <u>31</u> 29 SBZ 1 / 170		AC (off N	lieuwpoc	ort)											
Site Features	Likely (, , , , , , , , , , , , , , , , , , , ,														
	Under															
		nderwater noise Vessel Interactions Indirect effects on prey Changes to water In combination quality														
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)	
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)	
Harbour seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)	

a) The distance between the potential impact range of Norfolk Vanguard and the extent of any effect on individuals from this site would result in no potential for LSE.





Site 13<u>2</u>0 SBZ 2 / ZPS 2 SAC Name of European Site: 156 Distance to Norfolk Vanguard (km) Likely effect(s) of Norfolk Vanguard Site Features Underwater noise Vessel Interactions In combination Indirect effects on prey Changes to water quality С 0 D С 0 D С 0 D С 0 D С 0 D Harbour porpoise N(a) Grey seal N(a) Harbour seal N(a) a) The distance between the potential impact range of Norfolk Vanguard and the extent of any effect on individuals from this site would result in no potential for LSE.

Site Name of European Site:	13 <mark>34</mark> SBZ 3 /	ZPS 3 S.	AC												
Distance to Norfolk Vanguard (km)	153														
Site Features	Likely	effect(s)	of Norfo	olk Vangu	ard										
	Under	ikely effect(s) of Norfolk Vanguard Underwater noise Vessel Interactions Indirect effects on prey Changes to water quality In combination													
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
Harbour seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)





13<u>42</u>

Scanner Pockmark SAC Name of European Site:

Distance to Norfolk Vanguard (km)

591

Site	Likely e	ffect(s) o	f Norfolk	Vanguard	t													
Features	Permai	nent loss		Tempo disturb	orary phy oance	rsical		ering du sed susp ent			obilisation ninated ents	n of		water no bration	ise	In com	bination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Submarine structures made by leaking gases	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)		N (a)	N (a)		N (a)	N (a)	N (a)	N (a)

⁽a) The distance between the offshore project area and the designated site is beyond the range of any potential LSE.





Site 13<u>5</u>3 Schleswig-Holsteinisches Elbastuar und angrenzende Flachen SAC Name of European Site: 388 Distance to Norfolk Vanguard (km) Likely effect(s) of Norfolk Vanguard Site Features Underwater noise Vessel Interactions In combination Indirect effects on prey Changes to water quality С 0 D С 0 D С 0 D С 0 D С 0 D N(a) N(a) N(a) Harbour seal N(a) a) The distance between the potential impact range of Norfolk Vanguard and the extent of any effect on individuals from this site would result in no potential for LSE.

Site	13 <u>6</u> 4											
Name of European Site:	Seevogelschu	ıtzgebiet H	elgoland SI	PA								
Distance to Norfolk Vanguard (km)	343											
Site Features	Likely ef	fect(s) of N	orfolk Van	guard								
	Collision	mortality		Displace	ment/Dist	urbance	Barrier E	ffect		Cumulati	ve/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Breeding seabird assemblage including a named features razorbill, fulmar, herring gull, lesser black-backed gull, kittiwake, gannet, guillemot		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)
Nonbreeding seabird assemblage including razorbill, black-throated diver, red-throated diver, common gull, lesser black-backed gull, little gull, kittiwake, common scoter, red-necked grebe, eider	,	N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (c)	N (c)	N (c)





The state of the s	
Site	13 <u>6</u> 4
Name of European Site:	Seevogelschutzgebiet Helgoland SPA
Distance to Norfolk Vanguard (km)	343
common tern, Arctic tern, Sandwich ter gannet, guillemot	rn,

- (a) Tracking data from gannets breeding on Helgoland show these birds do not travel in the direction of or as far as the Norfolk Vanguard site despite this site being within theoretical maximum foraging range of gannet. Norfolk Vanguard is beyond the maximum foraging range of other seabird species at Seevogelschutzgebeit Helgoland SPA. Proportions of these populations migrating through Norfolk Vanguard are likely to be very small relative to BDMPS regional populations.
- (b) Migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site during migration relative to the size of BDMPS regional populations, not only because the sites are 343km apart, but also because nonbreeding seabirds from this SPA are likely to migrate predominantly along the continental coast of the North Sea towards northern breeding grounds rather than across the southern North Sea.
- (c) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Seevogelschutzgebeit Helgoland SPA.

Site Name of European Site:	13 <mark>75</mark> Skager	ıs Gren (og Skage	rrak SAC											
Distance to Norfolk Vanguard (km)	680														
Site Features	Likely 6	effect(s)	of Norfo	lk Vangu	ard										
	Under	water no	oise	Vessel I	nteractio	ns	Indirect	t effects o	n prey	Change	s to wate	r	In comb	ination	
										quality					
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
a) The distance between the potentia	l impact i	range of	Norfolk	Vanguaro	d and the	extent of	anv effe	ct on indi	viduals fr	om this si	te would	result in	no poten	tial for LS	E.





Site	13 <u>8</u> 3											
Name of European Site:	Solent & S	outhampto	n Water SP	A & Ram	sar							
Distance to Norfolk Vanguard (km)	331											
Site Features	Likely e	ffect(s) of N	Norfolk Van	guard								
	Collisio	n mortality	Cumula	tive/In-cor	mbination							
	С	0	D	С	0	D	С	0	D	С	0	D
Nonbreeding teal, brent goose, ringed plover, black-tailed godwit		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (d)	N (d)	N (d)
Breeding Mediterranean gull		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)
Breeding little tern, common tern, roseate tern, Sandwich tern		N (c)		N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)

- (a) Survey data show little or no evidence of Solent & Southampton Water SPA and Ramsar features occurring in the Norfolk Vanguard site, and migrations of birds from this site are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (b) No Mediterranean gulls were recorded in the Norfolk Vanguard site during bird surveys. This species is scarce in England, although increasing. Birds from the SPA are unlikely to migrate through the Norfolk Vanguard site. Thaxter et al. (2012) report the maximum foraging range of breeding Mediterranean gulls as 20km, so birds from this SPA will not have connectivity with the Norfolk Vanguard site during breeding.
- (c) Little tern, common tern, roseate tern and Sandwich tern have maximum foraging ranges from colonies of 11km, 30km, 30km and 54km respectively (Thaxter et al. 2012), so there is no connectivity between the SPA and the Norfolk Vanguard site which are 331km apart. Furthermore, these species tend to forage in coastal waters rather than offshore. Therefore, collision risk, displacement and barrier effects can be excluded.
- (d) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Solent & Southampton Water SPA and Ramsar.





Site Name of European Site:	13 <mark>97</mark> Southe	rn Nortl	n Sea cS	AC											
Distance to Norfolk Vanguard (km)	0														
Site Features	Likely 6	effect(s)	of Norfo	olk Vangu	ard										
	Underv	vater no	ise	Vessel I	nteractio	ns	Indirect	t effects o	on prey	Change	s to wate	er	In comb	ination	
										quality					
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour porpoise	Y(a)	Y(a)	Y(a)	Y(a)	Y(a)	Y(a)	Y(a)	Y(a)	Y(a)	Y(a)		Y(a)	Y(a)	Y(a)	Y(a)

a) The offshore project area is within the cSAC and therefore LSE cannot be ruled out at the screening stage. It is assumed that all harbour porpoise in this area are associated with this cSAC.

_	<mark>138</mark> Abb's Head	to Fast Ca	stle SPA												
Distance to Norfolk Vanguard (km) 43	8														
Site Features	Likely eff	ikely effect(s) of Norfolk Vanguard Collision mortality													
	Collision	ollision mortality Displacement/Disturbance Barrier Effect Cumulative/In-combination													
	С	0	D	С	0	D	С	0	D	С	0	D			
Breeding seabird assemblage including as named features herring gull, kittiwake, razorbill, guillemot, shag		N (a)		N (a)	N (b)	N (b)	N (b)								

- (a) St Abbs Head to Fast Castle SPA is beyond maximum foraging range of designated seabird species so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Vanguard site are likely to be very small relative to BDMPS.
- (b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at St Abbs Head to Fast Castle SPA.





Site Name of European Site:	1 <u>41</u> 39 Steing	rund SA(C												
Distance to Norfolk Vanguard (km)	353														
Site Features	Likely 6	effect(s)	of Norfo	lk Vangu	ard										
	Under	ely effect(s) of Norfolk Vanguard derwater noise Vessel Interactions Indirect effects on prey Changes to water quality													
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
a) The distance between the potential	l impact	range of	Norfolk	Vanguard	and the	extent of	any effe	ct on ind	ividuals fr	om this s	ite would	result in	no poten	tial for LS	E.

Site Name of European Site:	14 <u>2</u> 0 Store F	Rev SCI													
Distance to Norfolk Vanguard (km)	654														
Site Features	Likely 6	effect(s)	of Norfo	lk Vangu	ard										
	Under	water no	ise	Vessel I	nteractio	ns	Indirect	t effects o	on prey	Change	s to wate	r	In comb	ination	
										quality					
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
a) The distance between the potentia	limpact	range of	Norfolk	Vanguard	and the	extent of	any effe	ct on indi	viduals fr	om this s	ite would	result in	no poten	tial for LS	E.





Site 1	4 <u>3</u> 4											
Name of European Site:	tour & Orwe	ell Estuarie	s SPA and I	Ramsar								
Distance to Norfolk Vanguard (km) 1	19											
Site Features	Likely ef	fect(s) of N	orfolk Van	guard								
	Collision	mortality		Displace	ment/Distu	ırbance	Barrier E	ffect		Cumulat	ive/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Wintering and passage waterbird assemblage including as named features pintail, wigeon, gadwall, turnstone, brent goose, goldeneye, dunlin, knot, ringed plover, black-tailed godwit, curlew, cormorant, grey plover, great crested grebe, shelduck, redshank, lapwing		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)
Breeding avocet		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (c)	N (c)	N (c)

- (a) Survey data show little or no evidence of Stour & Orwell Estuaries SPA features occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (b) Survey data show no evidence of Stour & Orwell Estuaries SPA feature avocet occurring in the Norfolk Vanguard OWF sites, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (c) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Stour & Orwell Estuaries SPA and Ramsar.





Site	14 <u>4</u> 2											
Name of European Site:	Sumburgh H	lead SPA										
Distance to Norfolk Vanguard (km)	791											
Site Features	Likely ef	fect(s) of N	orfolk Van	guard								
	Collision	mortality		Displace	ment/Distu	ırbance	Barrier E	ffect		Cumulat	ive/In-com	nbination
	С	0	D	С	0	D	С	0	D	С	0	D
Breeding seabird assemblage including as named features kittiwake, fulmar, guillemot, Arctic tern		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
(a) Sumburgh Head SPA is beyor populations migrating throug (b) The predicted effect attribut assessment for these feature	gh the Norfo able to Norf	olk Vangua olk Vangua	rd site are ard is so sn	likely to be	very smal	l relative to	BDMPS.	J				ese

Site Name of European Site:	14 <mark>53</mark> Sydlige	: Nordsø	SAC												
Distance to Norfolk Vanguard (km)	367														
Site Features		effect(s) of Norfolk Vanguard rwater noise													
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
a) The distance between the potentia	l impact i	ange of	Norfolk	Vanguard	and the	extent of	any effe	ct on indi	viduals fr	om this s	ite would	result in	no poten	tial for LS	E.



Harbour seal



1464 Site Sylter Außenriff SCI Name of European Site: Distance to Norfolk Vanguard (km) Ornithology Site Features Likely effect(s) of Norfolk Vanguard Collision mortality Displacement/Disturbance Barrier Effect Cumulative/Incombination С 0 D С 0 D С 0 D С 0 D Nonbreeding seabird assemblage including black-N (a) N (a) N (a) N (a) N (a) N (a) N (b) N (b) N (b) N (a) throated diver, red-throated diver, common gull, lesser black-backed gull, great black-backed gull, little gull, gannet, kittiwake, common tern, Arctic tern, Sandwich tern, guillemot Marine mammals Likely effect(s) of Norfolk Vanguard Site Features Underwater noise Underwater noise Underwater noise Underwater noise Underwater noise С С 0 D С 0 D С 0 D 0 D С 0 D N (c) Harbour porpoise N (c) Grey seal N (c) N (c)

N (c)

N (c)

N (c)

N (c)

N (c)

N (c)

N (c)

N (c)

N (c)

N (c)

N (c)

N (c)

N (c)

N (c)





Site

14<u>6</u>4

Name of European Site:

Sylter Außenriff SCI

Distance to Norfolk Vanguard (km)

311

Fish																					
Site	Likely	effect(s) of Nor	folk Var	guard																
Features	Permanent habitat Temporary physical loss C O D C O I					nysical	Smoth increa susper sedime	nded	ue to		obilisati minated ents			water n		Electro fields	omagne (EMF)	tic	In com	nbinatio	n
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
River lamprey	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)
Twaite shad	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)

- a) Migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site relative to the size of BDMPS regional populations, not only because the sites are 311km apart, but also because nonbreeding seabirds from this SPA are likely to migrate predominantly along the continental coast of the North Sea towards northern breeding grounds rather than across the southern North Sea.
- b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Sylter Außenriff SPA.
- c) The distance between the potential impact range of Norfolk Vanguard and the extent of any effect on individuals from this site would result in no potential for LSE.





Site	14 <u>7</u> 5													
Name of European Site:	Teesmouth a	nd Clevela	nd Coast S	PA and Ra	msar									
Distance to Norfolk Vanguard (km)	289													
Site Features	Likely e	effect(s) of Norfolk Vanguard On mortality Displacement/Disturbance Barrier Effect Cumulative/In-combination												
	Collision	on mortality Displacement/Disturbance Barrier Effect Cumulative/In-combination												
	С	0	D	С	0	D	С	0	D	С	0	D		
Nonbreeding knot, redshank		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (d)	N (d)	N (d)		
Nonbreeding Sandwich tern		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (d)	N (d)	N (d)		
Breeding little tern		N (c)		N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)		

- (a) Survey data show little or no evidence of Teesmouth & Cleveland Coast SPA features knot or redshank occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (b) Nonbreeding Sandwich terns at Teesmouth & Cleveland Coast SPA may migrate between the SPA and wintering areas off west Africa. This could take them near to Norfolk Vanguard. However, very few terns of any species were seen in the Norfolk Vanguard site during bird surveys, and the Sandwich tern tends to migrate close to the coast where that is possible, so there are unlikely to be significant numbers reaching the Norfolk Vanguard site. The few that do will have a very low collision risk due to their generally low flight height and displacement/barrier effects will be negligible in the context of a migration of thousands of kilometres.
- (c) Breeding little tern has a maximum foraging range of 11km from colonies (Thaxter et al. 2012), so would have no connectivity with Norfolk Vanguard. Migrating little terns are considered to be 'extremely coastal on passage with very few sightings in open ocean or inland' (Forrester et al. 2007), so are unlikely to pass through the Norfolk Vanguard site.
- (d) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Teesmouth & Cleveland Coast SPA and Ramsar.





Site	.4 <u>8</u> 6													
Name of European Site:	hames Estu	ary and Ma	rshes SPA	and Rams	ar									
Distance to Norfolk Vanguard (km)	188													
Site Features	Likely ef	fect(s) of N	orfolk Van	guard										
	Collision	sion mortality Displacement/Disturbance Barrier Effect Cumulative/In-combin												
	С	0	D	С	0	D	С	0	D	С	0	D		
Wintering and passage waterbird assemblage including as named features dunlin, knot, ringed plover, black-tailed godwit, grey plover, avocet, redshank		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)		
Nonbreeding hen harrier		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (c)	N (c)	N (c)		

- (a) Survey data show little or no evidence of Thames Estuary & Marshes SPA features occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (b) Survey data show no evidence of hen harrier occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site, as the species is likely to migrate overland rather than over sea where the option is available.
- (c) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Thames Estuary & Marshes SPA and Ramsar.





Site 14<u>9</u>7 Name of European Site: Thanet Coast and Sandwich Bay SPA and Ramsar Distance to Norfolk Vanguard (km) 171 Site Features Likely effect(s) of Norfolk Vanguard Collision mortality Displacement/Disturbance Barrier Effect Cumulative/In-combination С С 0 D С D С 0 D D 0 0 N (a) N (a) N (a) Nonbreeding turnstone, golden plover N (a) N (a) N (a) N (a) N (c) N (c) N (c) Breeding little tern N (b) (a) Survey data show little or no evidence of Thanet Coast & Sandwich Bay SPA features turnstone or golden plover occurring in the Norfolk Vanguard site,

- (a) Survey data show little or no evidence of Thanet Coast & Sandwich Bay SPA features turnstone or golden plover occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (b) Breeding little tern has a maximum foraging range of 11km from colonies (Thaxter et al. 2012), so would have no connectivity with the Norfolk Vanguard site. Migrating little terns are considered to be 'extremely coastal on passage with very few sightings in open ocean or inland' (Forrester et al. 2007), so are unlikely to pass through the Norfolk Vanguard site.
- (c) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Thanet Coast & Sandwich Bay SPA and Ramsar.





te 1<u>50</u>48

Name of European Site: Thanet Coast SAC

Distance to Norfolk Vanguard (km) 1

170

Sandbanks which are slightly covered by sea	Permai C N (a)	nent loss		Tempo disturb	orary phy Dance	sical	Smoth	ering du		Re- mo	bilisation	n of	Under	water no	ise	In com	bination	
Sandbanks which are slightly covered		0	_				sedime	-	ended	contar sedime	ninated ents		and vi	bration				
which are slightly covered	N (a)		D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
water all the time		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)		N (a)	N (a)		N (a)	N (a)	N (a)	N (a)
Mudflats and sandflats not covered by seawater at low tide	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)		N (a)	N (a)		N (a)	N (a)	N (a)	N (a)
Reefs	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)		N (a)	N (a)		N (a)	N (a)	N (a)	N (a)

⁽a) The distance between the offshore project area and the designated site is beyond the range of any potential LSE.





Site 1<u>51</u>49

Name of European Site: The Broads SAC

Distance to Norfolk Vanguard (km) 3.6

Site Features	Likely eff	fect(s) of N	orfolk Vang	guard								
	Direct ef boundar	fects withi Y	n SAC	Direct e	ffects on e	x-situ	Indirect boundar	effects wit	hin SAC	Indirect of habitats	effects on	ex-situ
	С	0	D	С	0	D	С	0	D	С	0	D
Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara spp.</i>	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	Y (e)	Y (e)	Y (e)	N (b)	N (b)	N (b)
Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	Y (e)	Y (e)	Y (e)	N (b)	N (b)	N (b)
Transition mires and quaking bogs	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	Y (e)	Y (e)	Y (e)	N (b)	N (b)	N (b)
Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [Priority feature]	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	Y (e)	Y (e)	Y (e)	N (b)	N (b)	N (b)
Alkaline fens	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	Y (e)	Y (e)	Y (e)	N (b)	N (b)	N (b)
Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [Priority feature]	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	Y (e)	Y (e)	Y (e)	N (b)	N (b)	N (b)
Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	Y (e)	Y (e)	Y (e)	N (b)	N (b)	N (b)
Desmoulin's whorl snail	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)	Y (e)	Y (e)	Y (e)	N (c)	N (c)	N (c)
Fen orchid	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)	Y (e)	Y (e)	Y (e)	N (c)	N (c)	N (c)





Site 1<u>51</u>49 Name of European Site: The Broads SAC Distance to Norfolk Vanguard (km) 3.6 N (c) N (c) N (c) N (c) N (c) N (c) Y (e) Y (e) Y (e) Ramshorn snail N (a) N (a) N (a) Otter N (a) N (a) N (a) Y (d) Y (d) Y (d) Y (e) Y (e) Y (e) Y (d) Y (d) Y (d)

- a) The Broads SAC is located 3.6km from the onshore project area; the SAC is therefore beyond the range of potential impact.
- b) The Annex I qualifying features of The Broads SAC are habitats and not mobile species, and as such are restricted primarily to the SAC boundary. As such, these are beyond the range of potential impact.
- c) Habitats within the onshore project area and within 5km of The Broads SAC are not suitable for supporting these species.
- d) Suitable habitats for supporting otter were recorded within the project area and within 5km of The Broads SAC. Otters have large ranges and may commute from The Broads SAC into the onshore project area and therefore LSE cannot be ruled out at the screening stage.
- e) The potential zone of influence for effects arising from local changes in surface and groundwater encompasses watercourses located within 5km of the Broads SAC. Therefore, indirect effects upon qualifying features of The Broads SAC within the onshore project area arising from local changes in surface and groundwater hydrology are screened in for further assessment.

Site :	15 <u>2</u> 0											
Name of European Site:	The Swale S	PA & Ram	sar									
Distance to Norfolk Vanguard (km)	187											
Site Features	Likely ef	fect(s) of N	orfolk Van	guard								
	Collision	mortality		Displace	ment/Dist	urbance	Barrier E	ffect		Cumulati	ive/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Wintering and passage waterbird assemblage including as named features brent goose, dunlin, redshank		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)

⁽a) Survey data show little or no evidence of The Swale SPA and Ramsar features occurring in the Norfolk Vanguard site, and migrations of birds from this site are likely to result in negligible numbers passing through the Norfolk Vanguard site.





(b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at The Swale SPA and Ramsar.

Site			15 <u>3</u> 4															
Name of European Site			The W	ash and	North N	orfolk C	oast SAC											
Distance to Norfolk Var	nguard	(km)	80 (33	km fron	n offshor	e cable o	corridor)											
Marine Mammals																		
Site Features	Likely 6	effect(s)	of Norfo	lk Vangı	uard													
	Under	water no	oise	distur	bance at	•	Indired prey	ct effect	s on	Chang qualit	ges to w Ty	ater	In con	nbinatio	า			
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D			
Harbour seal	N(a)	N(a)	N(a)	Y (b)	Y (b)	Y (b)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)			
Benthic Habitats																		
Site Features	Likely effect(s) of Nor-Underwater noise C O D N(a) N(a) N(a) Permanent loss C O D N (b) N (b) N (b) N (b) N (b) N (b)		S			sical		ering du ed susp nt			bilisatio ninate d ents	n of	Underw vibratio	ater noi: n	se and	In com	bination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Sandbanks which are slightly covered by sea water all the time	N (b)	Likely effect(s) of Norfolk Vang Underwater noise C O N(a) N(a) N(b) N(b) N(b) Vesse disturt N(a) Vesse disturt Vesse Vesse				N (b)	N (b)	N (b)	N (b)	N (b)		N (b)	N (b)		N (b)	N (b)	N (b)	N (b)
Mudflats and sandflats not covered by seawater at low tide	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)		N (b)	N (b)		N (b)	N (b)	N (b)	N (b)
arge shallow inlets and pays	N (b)	ikely effect(s) of Norfolk Vanguard Underwater noise Vessel Interact disturbance at haul out sites COODY N(a) N(a) N(b) Y(b) Y(b) Permanent loss Temporary phydisturbance COODY N(b) N(b) N(b) N(b) N(b) N(b) N(b) N(b) N(b)				N (b)	N (b)	N (b)	N (b)	N (b)		N (b)	N (b)		N (b)	N (b)	N (b)	N (b)
a) The distance betwe	en the	offshore	project	area and	the des	ignated s	site is be	yond th	e range (of any po	otential I	LSE.						





b) Potential for vessel interactions and disturbance at seal haul-out sites if a port to the north of the offshore project area is selected and therefore LSE cannot be ruled out.

Site	15 <u>4</u> 2											
Name of European Site:	The Wash S	PA and Ra	msar									
Distance to Norfolk Vanguard (km)	120											
Site Features	Likely ef	fect(s) of N	orfolk Van	guard								
	Collision	mortality		Displace	ment/Distu	ırbance	Barrier E	ffect		Cumulat	ive/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Wintering and passage waterbird assemblage including as named features pintail, wigeon, gadwall, pink-footed goose, turnstone, brent goose, goldeneye, sanderling, dunlin, knot, Bewick's swan, oystercatcher, bar-tailed godwit, black-tailed godwit, common scoter, curlew, grey plover, shelduck, redshank		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)
Breeding little tern, common tern		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)

- (a) Survey data show little or no evidence of The Wash SPA features occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (b) Little tern and common tern have maximum foraging ranges from colonies of 11km and 30km respectively (Thaxter et al. 2012), so there is no connectivity between the SPA and Norfolk Vanguard site which are 120km apart. Furthermore, these species tend to forage in coastal waters rather than offshore. Therefore, collision risk, displacement and barrier effects can be excluded.
- (c) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at The Wash SPA and Ramsar.





Site Name of European Site:	15 <mark>5</mark> 3 Thybo	ron Sten	volde S(CI											
Distance to Norfolk Vanguard (km)	506														
Site Features	<u> </u>	effect(s) water no		Vessel I	ard nteractio	ns	Indirec	effects o	on prey	Change quality	s to wate	r	In comb	oination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
a) The distance between the potentia	l impact	range of	Norfolk	Vanguard	and the	extent of	any effe	ct on indi	viduals fr	om this si	ite would	result in	no poten	tial for LS	E.





Site Name of European Site:	15 <mark>6</mark> 4 Tregor	Goëlo S	AC												
Distance to Norfolk Vanguard (km)	571														
Site Features	Likely 6	effect(s)	of Norfo	lk Vangu	ard										
	Under	water no	ise	Vessel I	nteractio	ons	Indirect	effects o	on prey	Change quality	s to wate	r	In comb	oination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
a) The distance between the potentia	l impact i	range of	Norfolk	Vanguard	and the	extent of	any effe	ct on indi	viduals fr	om this s	ite would	result in	no poten	tial for LS	E.





Site	15 <u>7</u> 5											
Name of European Site:	Troup, Penr	an and Lio	n`s Heads	SPA								
Distance to Norfolk Vanguard (km)	597											
Site Features	Likely eff	fect(s) of N	orfolk Van	guard								
	Collision	mortality		Displace	ment/Dist	urbance	Barrier E	ffect		Cumulat	ive/In-con	nbination
	С	0	D	С	0	D	С	0	D	С	0	D
Breeding seabird assemblage including as named features razorbill, fulmar, guillemot, kittiwake, herring gull		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)

- (a) Troup, Pennan & Lion's Heads SPA is beyond maximum foraging range of designated seabird species so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Vanguard site are likely to be very small relative to BDMPS.
- (b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Troup, Pennan & Lion's Heads SPA.

Site Name of European Site:	15 <mark>86</mark> Untere	lbe SCI													
Distance to Norfolk Vanguard (km)	388														
Site Features	Likely 6	effect(s)	of Norfo	ılk Vangu	ard										
	Under	water no	ise	Vessel I	nteractio	ins	Indirect	t effects o	on prey	Change quality	s to wate	r	In comb	oination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)





Site Name of European Site:	15 <mark>97</mark> Untere	ems und	Aussene	ems SCI											
Distance to Norfolk Vanguard (km)	263														
Site Features	Likely 6	effect(s)	of Norfo	lk Vangu	ard										
	Under	water no	ise	Vessel I	nteractio	ns	Indirect	t effects o	n prey	Change	s to wate	r	In comb	ination	
										quality					
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
a) The distance between the potentia	l impact	range of	Norfolk	Vanguard	d and the	extent of	any effe	ct on indi	viduals fr	om this si	ite would	result in	no poten	tial for LS	E.

Site Name of European Site:	1 <u>60</u> 58 Vadeh		d Ribe Å	, Tved Å d	og Varde	Å vest fo	r Varde S	AC								
Distance to Norfolk Vanguard (km)	418															
Site Features	Likely (effect(s)	of Norfo	lk Vangu	ard											
	Under	water no	oise	Vessel I	nteractio	ns	Indirec	t effects o	on prey	Change	s to wate	er	In comb	ination		
		effect(s) of Norfolk Vanguard water noise Vessel Interactions Indirect effects on prey Changes to water In combination quality														
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	
Harbour porpoise	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)	
Harbour seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)	
Grey seal	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)	
a) The distance between the potentia	l impact	range of	Norfolk	Vanguard	d and the	extent of	any effe	ct on indi	viduals fr	om this s	te would	result in	no poten	tial for LS	E.	





16159 Site Vlaamse Banken SAC Name of European Site: 138 Distance to Norfolk Vanguard (km) **Marine Mammals** Site Features Likely effect(s) of Norfolk Vanguard Vessel Interactions and Underwater noise Indirect effects on prey Changes to water quality In combination disturbance at seal haul outs С 0 С 0 С 0 0 D С D С 0 D D D N (a) Ν Ν N (a) Harbour porpoise N (a) (a) (a) N (a) N (a) Harbour seal N (a) Ν Ν (a) (a) Grey seal N (a) Ν Ν N (a) (a) (a) Fish Site Likely effect(s) of Norfolk Vanguard Features Permanent habitat Temporary physical Smothering due to Re- mobilisation of Underwater noise Electromagnetic In combination disturbance increased contaminated and vibration fields (EMF) loss suspended sediments sediment С D С 0 С D 0 С 0 D D 0 D 0 D 0 С D С 0 С Sea N(a) Lamprey





Site					1 <u>61</u> 59	l .															
Name of Eu	ropean	Site:			Vlaam	ise Banl	cen SAC														
Twaite Shad	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a
Benthic hal	oitats									•											
Site Feature	25			Perma	anent lo	SS	Temp distur	orary pl bance	nysical	Smoth increa suspe sedim	nded	ue to	_	obilisati minate ents			water r		In coi	mbinati	ion
				С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Reefs				N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b
Sandbanks covered by		N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)	N(b)		

a) The distance between the potential impact range of Norfolk Vanguard and the extent of any effect on individuals from this site would result in no potential for LSE.

b) The distance between the offshore project area and the designated site is beyond the range of any potential LSE.





16<u>2</u>0 Site

Vlakte van de Raan SCI/SAC Name of European Site:

Distance to Norfolk Vanguard (km)

Marine Mammals															
Site Features	Likely ef	fect(s) of	Norfolk Va	anguard											
	Underw	ater noise	!	Vessel Ir	nteraction	S	Indirect	effects on	prey	Changes	to water	quality	In comb	ination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour porpoise	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)		N (a)	N (a)	N (a)	N (a)
Grey seal	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)		N (a)	N (a)	N (a)	N (a)
Harbour seal	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)		N (a)	N (a)	N (a)	N (a)

Fish

Site	Likely	effect(s) of Nor	folk Var	guard																
Features	Permanent habitat Temporary physic disturbance C O D C O D						Smoth increa susper sedime	nded	ue to	_	obilisati ninated ents			water n bration	ioise	Electro fields	omagne (EMF)	tic	In com	nbinatio	n
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Sea Lamprey	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)
River lamprey	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)





16<u>2</u>9 Site Vlakte van de Raan SCI/SAC Name of European Site: Distance to Norfolk Vanguard (km) Twaite N (a) Shad a) The distance between the potential impact range of Norfolk Vanguard and the extent of any effect on individuals from this site would result in no potential for LSE.

Site	16 <u>3</u> 4													
	Voord	elta SPA and	SAC											
Name of European Sit	te													
Distance to Norfolk V	anguard (km) 106													
Ornithology														
Site Features	Likely effect(s) of Nor	folk Vangua	rd											
		Coll	ision mor	tality		Displace	ment/Dis	turbance	Barrier E	ffect		Cumulat	ive/In-	
												combina	tion	
		С	0	D)	С	0	D	С	0	D	С	0	D
Wintering and passag	e waterbirds including		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N(a)	N (b)	N (b)	N (b)
cormorant, shelduck,	ringed plover, dunlin,													
goldeneye, sanderling	, little gull, eider, great													
crested grebe, greylag	g goose, Sandwich tern,													
avocet, gadwall, Slavo	nian grebe, spoonbill, i	red-												
breasted merganser,	pintail, red-throated div	ver,												
bar-tailed godwit, oys	tercatcher, shoveler,													





Emilaneing socie	ety Together																				
Site				16	<u>3</u> 4																
Name of E	Europea	n Site		Vo	oordelta	SPA an	d SAC														
Distance t	to Norfo	olk Van	guard (k	m) ¹⁰)6																
wigeon, to			•																		
Marine m	ammal	S																			
Site Featu																					
		U	nderwa	ter nois	e	Un	iderwat	er noise		Und	lerwate	er noise		Und	erwater	noise		Unde	rwater	noise	
		С		0	D	С	1	0	D	С	C)	D	С	0		D	С	0	1	D
Harbour s	eal	N	(c)	N (c)	N (c)	N ((c)	N (c)	N (c)	N (c) N	l (c)	N (c)	N (c)			N (c)	N (c)	N (c) I	N (c)
Grey seal		N	(c)	N (c)	N (c)	N ((c)	N (c)	N (c)	N (c) 1	l (c)	N (c)	N (c)			N (c)	N (c)	N (c) I	N (c)
Fish																					
Site	Likely	effect(s) of Nor	folk Van	guard																
Features	Perma loss	nent h	abitat	Tempo disturi	orary ph pance	iysical	Smoth increa suspe sedim	nded	ue to	_	obilisat minated ents			water ribration			omagne (EMF)	tic	In con	nbinatio	on
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Sea Iamprey	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)





Site				16	<u>3</u> 4																
Name of I	Europea	ın Site		V	oordelta	s SPA an	d SAC														
Distance 1	to Norfo	olk Vang	guard (k	m) ¹⁰	06																
River lamprey	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)
Allis shad	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(c)
Twaite shad	M(c) M(c)															N(c)					
Benthic H																					
Site	Likely	effect(s) of Nor	folk Var	nguard																
Features				Perma	nent lo	SS	Tempo distur	orary ph bance	ysical	Smoth increa suspe sedim	nded	ue to	110	obilisati minate (ents			water n bration	oise	In com	nbinatio	n
				С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Sandbank covered b time		U	,	N(d)	N(d)	N(d)	N(d)	N(d)	N(d)	N(d)	N(d)	N(d)	N(d)	N(d)	N(d)	N(d)	N(d)	N(d)	N(d)	N(d)	N(d)
, i	n neglig	ible nun	nbers pa	assing th	nrough t	he Nort	folk Van	guard si	ite.	J			Ü	,	J				PA are l	ikely to	

- b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Voordelta SPA.
- c) The distance between the potential impact range of Norfolk Vanguard and the extent of any effect on individuals from this site would result in no potential for LSE.
- d) The distance between the offshore project area and the designated site is beyond the range of any potential LSE.





Site 16	<u>12</u>											
Name of European Site: Wa	ddenzee (Wadden Se	ea) SPA									
Distance to Norfolk Vanguard (km) 113	L											
Site Features	Likely eff	ect(s) of N	orfolk Van	guard								
	Collision	mortality		Displace	ment/Dist	urbance	Barrier	Effect		Cumulat	ive/In-com	bination
	С	0	D	С	0	D	С	0	D	С	0	D
Breeding seabird assemblage including as named features lesser black-backed gull, little tern, common tern, Arctic tern, Sandwich tern		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (d)	N (d)	N (d)
Breeding waterbirds including Kentish plover, ringed plover, marsh harrier, spoonbill, avocet		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (d)	N (d)	N (d)
Wintering and passage waterbirds including pintail, shoveler, teal, wigeon, mallard, gadwall, greylag goose, bean goose Anser fabalis, turnstone, scaup, brent goose, barnacle goose, goldeneye, sanderling, dunlin, knot, curlew sandpiper, ringed plover, black tern Chlidonias niger, hen harrier, Bewick's swan, oystercatcher, bar-tailed godwit, black-tailed godwit, red-breasted		N (c)		N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (d)	N (d)	N (d)





Site	16 <u>4</u> 2
Name of European Site:	Waddenzee (Wadden Sea) SPA
Distance to Norfolk Vanguard (km)	111
merganser, goosander, curlew, cormorant, spoonbill, golden plover, gr plover, great crested grebe, avocet, eid shelduck, greenshank, redshank, lapwir	der,

- (a) The Norfolk Vanguard site is far beyond the mean maximum foraging range of designated breeding seabird species from this SPA, so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Vanguard site are likely to be extremely small relative to BDMPS, not only because of the distance, but also because birds from this SPA are likely to use the west European flyway along the continental coast rather than crossing the southern North Sea. Lesser black-backed gull tracking has shown breeding birds do not cross the North Sea therefore no connectivity is expected for this species.
- (b) Survey data show little or no evidence of Waddenzee SPA breeding waterbird features occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (c) Survey data show little or no evidence of Waddenzee SPA nonbreeding waterbird features occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (d) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Waddenzee SPA.





Site 16<u>5</u>3 Waddenzee SAC Name of European Site:

Distance to Norfolk Vanguard (km)

Marine Mammals Site Features Likely effect(s) of Norfolk Vanguard Changes to water Underwater noise **Vessel Interactions** Indirect effects on In combination quality prey С С 0 0 D 0 D 0 D D С 0 D

Grey seal N(a) Harbour seal N(a) N(a)

Site Features	Permanent loss		Temporary physical disturbance			Smothering due to increased suspended sediment			Re- mobilisation of contaminate d sediments			Underwater noise and vibration			In combination			
	С	О	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Sandbanks which are slightly covered by sea water all the time	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)		N (b)	N (b)		N (b)	N (b)	N (b)	N (b)
Estuaries	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)		N (b)	N (b)		N (b)	N (b)	N (b)	N (b)
Mudflats and sandflats not covered by seawater at low tide	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)		N (b)	N (b)		N (b)	N (b)	N (b)	N (b)

a) The distance between the potential impact range of Norfolk Vanguard and the extent of any effect on individuals from this site would result in no potential for LSE.

b) The distance between the offshore project area and the designated site is beyond the range of any potential LSE.





Site 1	.6 <u>6</u> 4											
Name of European Site:	West Westray SPA											
Distance to Norfolk Vanguard (km) 7	73											
Site Features	Likely effect(s) of Norfolk Vanguard											
	Collision	Collision mortality		Displacement/Disturbance			Barrier Effect			Cumulative/In-combination		
	С	0	D	С	0	D	С	0	D	С	0	D
Breeding seabird assemblage including as named features kittiwake, Arctic tern, fulmar, razorbill, Arctic skua, guillemot		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)

⁽a) West Westray SPA is beyond maximum foraging range of designated seabird species so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Vanguard site are likely to be very small relative to BDMPS.

⁽b) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at West Westray SPA.





16<u>7</u>5 Site Westerschelde & Saeftinghe SAC Name of European Site: 141 Distance to Norfolk Vanguard (km) **Marine Mammals** Likely effect(s) of Norfolk Vanguard Site Features Underwater noise **Vessel Interactions** Indirect effects on prey Changes to water quality In combination С 0 D С 0 D С 0 С 0 D С 0 D N (a) Harbour seal N (a) Fish Site Likely effect(s) of Norfolk Vanguard Features Permanent habitat Smothering due to Re- mobilisation of Underwater noise In combination Temporary physical Electromagnetic loss disturbance increased contaminated and vibration fields (EMF) suspended sediments sediment С 0 D С 0 D D С 0 D С 0 D С 0 D С D 0 River N (a) lamprey Twaite N (a) Shad a) The distance between the potential impact range of Norfolk Vanguard and the extent of any effect on individuals from this site would result in no potential for LSE.





Site 1	16 <u>8</u> 6											
Name of European Site:	than Estuary, Sands of Forvie and Meikle Loch SPA											
Distance to Norfolk Vanguard (km)	56											
Site Features Likely effect(s) of Norfolk Vanguard												
	Collision	Collision mortality			ment/Dist	urbance	Barrier Effect			Cumulative/In-combination		
	С	0	D	С	0	D	С	0	D	С	0	D
Wintering and passage waterbird assemblage including as named features lapwing, eider, pink-footed goose, redshank		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)
Breeding little tern, common tern, Sandwich tern		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)
() 6 1 1 1 1 1 1 1 1 1			–									

- (a) Survey data show little or no evidence of Ythan Estuary, Sands of Forvie & Meikle Loch SPA features occurring in the Norfolk Vanguard site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Vanguard site.
- (b) Little tern, common tern and Sandwich tern have maximum foraging ranges from colonies of 11km, 30km and 54km respectively, so there is no connectivity between the SPA and Norfolk Vanguard site which are 556km apart. Furthermore, these species tend to forage in coastal waters rather than offshore. Therefore, collision risk, displacement and barrier effects can be excluded.
- (c) The predicted effect attributable to Norfolk Vanguard is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Ythan Estuary, Sands of Forvie & Meikle Loch SPA.