



Norfolk Boreas Offshore Wind Farm

Appendix 5.3

Habitats Regulations Assessment Screening Matrices

Applicant: Norfolk Boreas Limited Document Reference: 5.3.5.3

Pursuant to: APFP Regulation: 5(2)(g)

Author: Royal HaskoningDHV

Revision: Version 1 Date: June 2019

Photo: Ormonde Offshore Wind Farm





Date	Issue No.	Remarks / Reason for Issue	Author	Checked	Approved
25/03/2019	01D	First draft for Norfolk Boreas Limited review	GS/JL/MT	DT	JL
15/05/2019	02D	Second draft for Norfolk Boreas Limited Review	GS/JL/MT	DT	JL
22/05/2019	01F	Final for DCO submission	GS/JL/MT	KC/DT	JL





Table of Contents

1	Introduction	
2	Screening Matrices	
2.1	Effects considered	
2.2	Sites considered	3
2.3	Assessment of potential effects	9





1 INTRODUCTION

1. This document provides the Habitats Regulations Assessment (HRA) screening matrices for Norfolk Boreas Offshore Wind Farm. The matrices summarise 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).





2 SCREENING MATRICES

2.1 Effects considered

2. Potential effects upon the European sites which are considered within the submitted Information to Support HRA report are provided in Table 2.1.

Table 2.1 Potential Effects consider in Screening

Site Type	Feature(s)	Potential Effects
Special Protection Area (SPA)	All birds	Offshore effects
Special Area of Conservation/Site of Community Importance (SAC/SCI)	Benthic habitats	 Indirect effects on ex-situ 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





2.2 Sites considered

- 3. The methodology for screening of sites and effects is discussed in Appendix 5.1 of the Information to Support HRA report.
- 4. The following sites displayed in Table 2.2 were included in the Screening stage.

Table 2.2 Sites included in Screening

	cluded in Screening					
Norfolk Boreas Reference Number	Designated site	Ornithology	Marine Mammals	Benthic Habitats	Fish	Terrestrial
1	Abberton Reservoir SPA & Ramsar	✓				
2	Abers - Côtes des légendes SAC		✓			
3	Agger Tange, Nissum Bredning, Skibsted Fjord og Agerø SAC		✓			
4	Ålborg Bugt, Randers Fjord Og Mariager Fjord SAC		✓			
5	Alde, Ore and Butley Estuaries SAC			✓		
6	Alde-Ore Estuary SPA & Ramsar	✓				
7	Anholt og havet nord for SAC		✓			
8	Archipel des Glénan SAC		✓			
9	Baie De Canche Et Couloir Des Trois Estuaires SAC		✓		✓	
10	Baie de Morlaix SAC		✓			
11	Baie de Seine Occidentale SAC		✓			
12	Baie de Seine Occidentale SPA	✓				
13	Baie de Seine Orientale SAC	✓	✓			
14	Baie du Mont Saint-Michel SAC		✓			
15	Balgö SAC		✓			
16	Bancs Des Flandres SAC		✓	✓		
17	Bancs Des Flandres SPA	✓				
18	Bassurelle Sandbank SAC			✓		
19	Benfleet and Southend Marshes SPA & Ramsar	✓				
20	Berwickshire and North Northumberland Coast SAC		✓	✓		
21	Blackwater Estuary (Mid- Essex Coast Phase 4) SPA & Ramsar	✓				
22	Borkum-Riffgrund SCI		✓		✓	
23	Borkum-Riffgrund SPA	✓				
24	Braemar Pockmarks SAC			✓		
25	Breydon Water SPA & Ramsar	✓				





Naufall.	eurer					
Norfolk						
Boreas Reference	Designated site	Ornithology	Marine Mammals	Benthic Habitats	Fish	Terrestrial
Number			iviammais	парітату		
	Dune dland CDA & Dameson	√				
26	Broadland SPA & Ramsar	∨				
27	Bruine Bank pSPA	V				
28	Buchan Ness to Collieston	✓				
20	Coast SPA	√				
29	Calf of Eday SPA	√				
30	Cap Gris Nez SPA	V	√			
31	Cap Sizun SAC					
32	Chausey SAC	✓	✓			
33	Chaussée de Sein SAC		✓			
34	Chesil Beach and The Fleet SPA & Ramsar	✓				
35	Chichester and Langstone Harbours SPA & Ramsar	✓				
2.0	Colne Estuary (Mid-Essex	√				
36	Coast Phase 2) SPA & Ramsar	•				
37	Copinsay SPA	✓				
38	Coquet Island SPA	✓				
39	Côte de Granit Rose-Sept Iles SAC	✓	✓			
40	Côtes de Crozon SAC		✓			
41	Cromarty Firth SPA & Ramsar	√				
	Crouch and Roach Estuaries					
42	(Mid-Essex Coast Phase 3)	√				
	SPA & Ramsar					
43	Deben Estuary SPA & Ramsar	✓				
4.4	Dengie (Mid-Essex Coast	√				
44	Phase 1) SPA & Ramsar	•				
45	Doggerbank SCI		✓			
46	Doggersbank SCI		√			
47	Dornoch Firth and Loch Fleet SPA & Ramsar	✓				
48	Dornoch Firth and Morrich More SAC		✓			
49	Dråby Vig SAC		√			
50	Duinen Ameland SAC		√			
30	Duinen en Lage Land Texel					
51	SAC		✓			
52	Duinen Goeree & Kwade Hoek SAC		✓			
53	Duinen Terschelling SAC		✓			
54	Duinen Vlieland SAC		✓			
55	Dünenlandschaft Süd-Sylt SAC		✓			
56	Dunes De La Plaine Maritime Flamande SAC		✓	√		
57	Dunes de l'Authie et Mollières de Berck SAC		✓			
58	East Caithness Cliffs SPA	√				
		•		√		
59	Essex Estuaries SAC			v		





Norfolk	uner					
Boreas			Marine	Benthic		
Reference	Designated site	Ornithology	Mammals	Habitats	Fish	Terrestrial
Number						
60	Estuaire de la Canche, dunes picardes plaquées sur l'ancienne falaise, forêt d'Hardelot et falaise d'Equihen SAC		√			
61	Estuaire de la Seine SCI		✓			
62	Estuaires et Littoral Picards (baies de Somme et d'Authie) SAC		✓		✓	
63	Exe Estuary SPA & Ramsar	✓				
64	Fair Isle SPA	✓				
65	Falaise du Bessin Occidental SPA	✓				
66	Falaises du Cran Aux Oeufs et du Cap Gris-Nez, Dunes du Chatelet, Marais de Tardinghen et Dunes de Wissant SAC		✓	√		
67	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			√		
68	Faray and Holm of Faray SAC		✓			
69	Farne Islands SPA	✓				
70	Fetlar SPA	✓				
71	Firth of Forth SPA & Ramsar	✓				
72	Firth of Tay & Eden Estuary SPA & Ramsar	✓				
73	Firth of Tay & Eden Estuary SAC		✓			
74	Flamborough and Filey Coast SPA	✓				
75	Flamborough Head SAC			✓		
76	Forth Islands SPA	✓				
77	Foula SPA	✓				
78	Foulness (Mid-Essex Coast Phase 5) SPA & Ramsar	✓				
79	Fowlsheugh SPA	✓				
80	Frisian Front pSPA	✓				
81	Gibraltar Point SPA & Ramsar	✓				
82	Great Yarmouth North Denes SPA	✓				
83	Greater Wash SPA	✓				
84	Grevelingen SAC		✓			
85	Gule Rev SCI		✓			
86	Gullmarsfjorden SAC		✓			
87	Haisborough, Hammond and Winterton SAC			✓		





Norfolk Boreas Reference Number	Designated site	Ornithology	Marine Mammals	Benthic Habitats	Fish	Terrestrial
88	Hallands Väderö SAC		✓			
89	Hamburgisches Wattenmeer SCI		✓			
90	Hamford Water SPA & Ramsar	✓				
91	Havet og kysten mellem Præstø Fjord og Grønsund SAC		✓			
92	Havet omkring Nordre Rønner SAC		✓			
93	Helgoland mit Helgoländer Felssockel SAC		✓			
94	Hermaness, Saxa Vord and Valla Field SPA	✓				
95	Hesselø med omliggende stenrev SAC		✓			
96	Hirsholmene, havet vest herfor og Ellinge Å's udløb SAC		✓			
97	Hornsea Mere SPA	✓				
98	Hoy SPA	✓				
99	Humber Estuary SAC		✓	✓	✓	
100	Humber Estuary SPA & Ramsar	✓				
101	Hund und Paapsand SCI		✓			
102	Imperial Dock Lock, Leith SPA	✓				
103	Inner Dowsing, Race Bank and North Ridge SCI			✓		
104	Inner Moray Firth SPA & Ramsar	✓				
105	Isle of May SAC		✓			
106	Klaverbank SAC		✓			
107	Kosterfjorden-Väderöfjorden SAC		✓			
108	Kungsbackafjorden SAC		✓			
109	Küsten- und Dünenlandschaften Amrums SAC		✓			
110	Lindisfarne SPA & Ramsar	✓				
111	Littoral Seino-Marin SPA	✓				
112	Loch of Strathbeg SPA & Ramsar	✓				
113	Løgstør Bredning, Vejlerne og Bulbjerg SAC		✓			
114	Lovns Bredning, Hjarbæk Fjord og Skals, Simested og Nørre Ådal, Skravad Bæk SAC		√			
115	Malmöfjord SAC		✓			





Norfolk	ther					
Boreas			Marine	Benthic		
Reference	Designated site	Ornithology	Mammals	Habitats	Fish	Terrestrial
Number						
116	Marais du Cotentin et du Bessin - Baie des Veys SAC		✓			
117	Margate and Long Sands SCI			✓		
118	Marwick Head SPA	√				
119	Måseskär SAC		✓			
120	Medway Estuary and Marshes SPA & Ramsar	✓				
121	Minsmere-Walberswick SPA & Ramsar	✓				
122	Montrose Basin SPA & Ramsar	✓				
123	Moray and Nairn Coast SPA & Ramsar	✓				
124	Mousa SPA	✓				
125	Mousa SAC		✓			
126	Nationalpark Niedersächsisches Wattenmeer SAC		✓			
127	Nibe Bredning, Halkær Ådal og Sønderup Ådal SAC		✓			
128	Nidingen SAC		✓			
129	Noordzeekustzone SAC		✓	✓	✓	
130	Nordre älvs estuarium SAC		✓			
131	Nordvästra Skånes havsområde SAC		✓			
132	Norfolk Valley Fens SAC					✓
133	North Caithness Cliffs SPA	✓				
134	North Norfolk Coast SPA & Ramsar	✓				
135	North Norfolk Sandbanks and Saturn Reef SAC			✓		
136	Northumbria Coast SPA & Ramsar	✓				
137	Noss SPA	✓				
138	NTP S-H Wattenmeer und angrenzende Küstengebiete SAC		✓			
139	Oosterschelde SAC		✓			
140	Orfordness - Shingle Street SAC			✓		
141	Östliche Deutsche Bucht SPA	✓				
142	Ouessant-Molène SAC		✓			
143	Outer Thames Estuary SPA	✓				
144	Papa Stour SPA	✓				
145	Papa Westray (North Hill and Holm) SPA	✓				
146	Paston Great Barn SAC					✓
147	Pater Noster-skärgården SAC		✓			
148	Pentland Firth Islands SPA	✓				





Norfolk						
Boreas	Designated site	Ornithology	Marine	Benthic	Fish	Terrestrial
Reference	Designated site	Ormanology	Mammals	Habitats	11311	Terrestriai
Number	Portsmouth Harbour SPA &					
149	Ramsar	✓				
150	Presqu'ile de Crozon SAC		✓			
	Ramsar-Gebiet S-H					
151	Wattenmeer und	✓				
	angrenzende Küstengebiete SPA					
	Récifs et marais arrière-		,			
152	littoraux du Cap Lévi à la Pointe de Saire SAC		✓			
	Récifs Gris-Nez Blanc-Nez					
153	SAC		✓	√		
	Ridens et dunes hydrauliques					
154	du détroit du Pas-de-Calais		✓	✓		
	SAC					
155	River Derwent SAC				✓	
156	River Wensum SAC		,			✓
157	Roches de Penmarch SAC		✓			
158	Ronas Hill - North Roe and Tingon SPA	✓				
159	Rousay SPA	✓				
160	Sälöfjorden SAC		✓			
161	Sanday SAC		✓			
162	SBZ 1 / ZPS 1 SAC		✓			
163	SBZ 2 / ZPS 2 SAC	✓				
164	SBZ 3 / ZPS 3 SAC	✓				
165	Scanner Pockmark SAC			✓		
166	Seevogelschutzgebiet Helgoland SPA	✓				
167	Skagens Gren og Skagerrak SAC		√			
168	Solent and Southampton Water SPA & Ramsar	✓				
169	Soteskär SAC		✓			
170	Southern North Sea SAC		✓			
171	St Abb`s Head to Fast Castle SPA	✓				
172	Steingrund SAC		✓			
173	Store Rev SCI		√			
	Stour and Orwell Estuaries					
174	SPA & Ramsar	✓				
175	Strandenge på Læsø og havet		√			
170	syd herfor SAC	√				
176	Sumburgh Head SPA	*	√			
177	Sydlige Nordsø SAC	√	∨			
178	Sylter Außenriff SCI Teesmouth and Cleveland	v	V			
179	Coast SPA & Ramsar	✓				





Norfolk Boreas Reference Number	Designated site	Ornithology	Marine Mammals	Benthic Habitats	Fish	Terrestrial
180	Thames Estuary and Marshes SPA & Ramsar	✓				
181	Thanet Coast and Sandwich Bay SPA & Ramsar	✓				
182	Thanet Coast SAC			✓		
183	The Broads SAC					✓
184	The Swale SPA & Ramsar	✓				
185	The Wash and North Norfolk Coast SAC		✓	✓		
186	The Wash SPA & Ramsar	✓				
187	Tregor Goëlo SAC		✓			
188	Troup, Pennan and Lion`s Heads SPA	✓				
189	Unterems und Außenems SCI		✓			
190	Vadehavet med Ribe Å, Tved Å og Varde Å vest for Varde SAC		√			
191	Venø, Venø Sund SAC		✓			
192	Vlaamse Banken SAC		✓	✓	✓	
193	Vlakte van de Raan SCI/SAC		✓		✓	
194	Voordelta SAC and SPA	✓	✓	✓	✓	
195	Vrångöskärgården SAC		✓			
196	Waddenzee SPA	✓				
197	Waddenzee SAC		✓	✓		
198	West Westray SPA	✓				
199	Westerschelde & Saeftinghe SAC				✓	
200	Winterton – Horsey Dunes SAC		✓			
201	Yell Sound Coast SAC		✓			
202	Ythan Estuary, Sands of Forvie and Meikle Loch SPA	✓				

2.3 Assessment of potential effects

- 5. 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. 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. Where effects are not applicable to a particular feature they are greyed out.





Site 1 Name of European Site: **Abberton Reservoir SPA and Ramsar** Distance to Norfolk Boreas (km) 171 Site Features Likely effect(s) of Norfolk Boreas Collision mortality Displacement/Disturbance **Barrier Effect** Cumulative/In-combination С 0 D С 0 С 0 С 0 D D D Wintering and passage waterbird N (a) N (c) N (c) N (c) 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 Breeding cormorant *Phalacrocorax* N (b) carbo

- (a) Survey data show no evidence of the SPA features found at that site occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (b) Maximum foraging range of breeding cormorants from their colonies is 35km (Thaxter et al. 2012); the Norfolk Boreas 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 Boreas site in the nonbreeding season as they mostly overwinter in freshwater habitat in southern England.
- (c) The predicted effect attributable to Norfolk Boreas 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.





Site	2	2													
Name of European Site:	Abers - C	Abers - Côtes Des Legendes SAC													
Distance to Norfolk Boreas (km)	684	84													
Site Features	Likely eff	kely effect(s) of Norfolk Boreas													
	Underw	ater noi	se	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
Grey seal Halichoerus grypus	N (a)	N (a)	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 potenti	al impact rai	nge of N	orfolk Bo	oreas and	the exte	ent of any	effect o	n individu	uals from	this site v	would re:	sult in no	potential	for LSE.	

Site	3	3													
Name of European Site:	Agger Ta	Agger Tange, Nissum Bredning, Skibsted Fjord og Agerø SAC													
Distance to Norfolk Boreas (km)	509	509													
Site Features	Likely eff	kely effect(s) of Norfolk Boreas													
	Underw	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 seal <i>Phoca vitulina</i>	N (a)	N (a)	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 potenti	al impact ra	nge of N	orfolk Bo	oreas and	the exte	nt of any	effect o	n individເ	ials from	this site v	vould res	sult in no	potential	for LSE.	





Site	4															
Name of European Site:	Ålborg B	ugt, Ran	ders Fjo	rd og Ma	riager Fj	ord SAC										
Distance to Norfolk Boreas (km)	755															
Site Features	Likely eff	y effect(s) of Norfolk Boreas														
	Underwa	derwater noise Vessel Interactions Indirect effects on 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)	

a) The distance between the potential impact range of Norfolk Boreas 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 Boreas (km)	5 Alde, O 113	re and	Butley I	Estuarie	s SAC													
Site Features	Likely e	· · ·		Tempo disturb	orary pł	nysical	increa	ering du sed nded sec			obilisation minated ents			water n bration	oise	In-con	nbinatio	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 (a) The distance between	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a) SE.	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)





ite		6

Name of European Site: Alde-Ore Estuary SPA and Ramsar

Site Features	Likely eff	ect(s) of No	orfolk Bore	as								
	Collision	mortality		Displacer	ment/Distu	ırbance	Barrier E	ffect		Cumulati	ve/In-coml	oination
	С	0	D	С	0	D	С	0	D	С	0	D
Breeding lesser black-backed gulls <i>Larus</i> 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 <i>Philomachus pugnax</i> , avocet, redshank <i>Tringa totanus</i>		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 Boreas site during bird surveys. It is highly unlikely that avocets from this SPA will migrate through the Norfolk Boreas 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 Boreas 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 Boreas site.
- (f) Breeding Sandwich tern has a maximum foraging range of 54km from colonies, so would have no connectivity with the Norfolk Boreas site. Only very small numbers of terns of any species were observed in the Norfolk Boreas 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.





Name of European Site: Alde-Ore Estuary SPA and Ramsar

- (g) Ruff, avocet and redshank have not been observed during bird surveys at the Norfolk Boreas site. It is highly unlikely that these birds would migrate through the Norfolk Boreas 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 Boreas site their flight height is likely not to be at collision risk height.
- (h) The predicted effect attributable to Norfolk Boreas 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	7														
Name of European Site:	Anholt	og have	t nord f	or SAC											
Distance to Norfolk Boreas (km)	812														
Site Features	Likely e	ely effect(s) of Norfolk Boreas derwater noise Vessel Interactions Indirect effects on prey Changes to water In-combination													
	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
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 Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.





Site	8															
Name of European Site:	Archipe	el des Gl	énan SA	ıc .												
Distance to Norfolk Boreas (km)	838															
Site Features	Likely e															
	Underv	ly effect(s) of Norfolk Boreas lerwater noise														
	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 potential impact range of Norfolk Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.





Name of European Site: Baie de Canche et couloir des trois estuaires SAC

Distance to Norfolk Boreas (km) 240

Marine Mammals

Site Features	Likely e	effect(s) o	f Norfolk	Boreas											
	Underv	vater nois	se	Vessel	Interactio	ons	Indirec	t 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 porpoise <i>Phocoena</i> phocoena	N (a)	N (a)	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 Bor	eas																
Features	Perma loss	nent ha	abitat	Tempo disturb	orary pł oance	nysical	Smoth increa susper sedime	nded	ue to		obilisation minated ents			water n bration		Electro fields	omagne [.] (EMF)	tic	In-con	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)





Name of European Site: Baie de Canche et couloir des trois estuaires SAC

Site Features	Likely	effect(s) of Nor	folk Bor	eas																
	Perma loss	nent ha	abitat	Tempo disturi	orary phoance	nysical	Smoth increa susper sedime	nded	ue to	_	obilisati minated ents			water n bration		Electro fields	omagne (EMF)	tic	In-con	nbinatio	n
	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 (a)
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 (a)
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 (a)

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





Site	10														
Name of European Site:	Baie D	e Morlai	x SAC												
Distance to Norfolk Boreas (km)	637														
Site Features	Likely 6	effect(s)	of Norfo	lk Boreas	i										
	Under	water no	ise	Vessel I	nteractio	ns	Indirect	t effects o	on prey	Change	s to wate	er	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	al impact	range of	Norfolk	Boreas a	nd the ex	tent of ar	ny effect o	on individ	luals fron	n this site	would re	sult in no	potentia	l for LSE.	

Site	11														
Name of European Site:	Baie d	e Seine (Occident	ale SAC											
Distance to Norfolk Boreas (km)	422														
Site Features	Likely (effect(s)	of Norfo	lk Boreas	5										
	Under	Likely effect(s) of Norfolk Boreas 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
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	al impact	range of	Norfolk	Boreas a	nd the ex	tent of ar	ny effect	on individ	luals fron	n this site	would re	sult in no	potentia	for LSE.	





Site	12											
Name of European Site:	Baie de	e Seine	Occide	ntale SPA								
Distance to Norfolk Boreas (km)	422											
Site Features		effect(s) on mort		folk Borea Displace	ns ment/Dist	turbance	Barrier	Effect		C	umulative/In-cor	nbination
	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 Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas 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 422km, the chances of birds from this SPA moving through the Norfolk Boreas site are extremely small.

Site	13														
Name of European Site:	Baie de	e Seine (Orientale	SAC											
Distance to Norfolk Boreas (km)	398														
Site Features		effect(s) water no		lk Boreas 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)
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 Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.

⁽b) The predicted effect attributable to Norfolk Boreas 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	14														
Name of European Site:	Baie d	u Mont	Saint-Mi	chel SAC											
Distance to Norfolk Boreas (km)	569														
Site Features	Under	water no	oise		nteractio			t effects (, ,	Change quality	s to wate	1	In-coml		
	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)
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 potenti	al impact	range of	Norfolk	Boreas a	nd the ex	tent of ar	ny effect	on individ	duals fron	n this site	would re	sult in no	potentia	l for LSE.	

Site	15														
Name of European Site:	Balgö S	SAC													
Distance to Norfolk Boreas (km)	814														
Site Features				lk Boreas											
	Under	water no	oise	Vessel I	nteractio	ns	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 potentia	l impact	range of	Norfolk	Boreas a	nd the ex	tent of ar	y effect	on individ	luals fron	n this site	would re	sult in no	potentia	for LSE.	





Name of European Site: Bancs des Flandres SAC

Distance to Norfolk Boreas (km) 152

Marine Mammals

Site Features	Likely 6	effect(s)	of Norfo	lk Borea	S										
	Under	derwater noise Vessel Interactions Indirect effects on prey Changes to water quality In-combination													1
	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	5	Tempo disturb	rary phy ance	sical		ering due ed suspe ent		Re- mo contar sedime		n of	Underv vibratio	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 Boreas 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	17											
Name of European Site:	Banc Des	Flandres S	SPA									
Distance to Norfolk Boreas (km)	162											
Site Features	Likely eff	ect(s) of No	orfolk Bore	as								
	Collision	mortality		Displacer	ment/Distu	rbance	Barrier E	ffect		Cumulati	ve/In-comb	oination
	С	0	D	С	0	D	С	0	D	С	О	D
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, rednecked grebe, kittiwake, common eider, Arctic skua, omarine skua, common tern, little tern, Sandwich tern, Arctic tern, guillemot		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
Breeding little tern		N(c)		N(c)	N(c)	N(c)	N(c)	N(c)	N(c)	N(b)	N(b)	N(b)

- a) Many of the named species have not been recorded on the Norfolk Boreas 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 Boreas 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 risks to the SPA populations due to Norfolk Boreas are very small
- b) The predicted effect attributable to the proposed Norfolk Boreas 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 Boreas. 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 Boreas site.





Name of European Site: Bassurelle Sandbank SAC

Distance to Norfolk Boreas (km)

Site	Likely C	11000(3) 0	f Norfolk	Dorcas														
Features	Perma	nent loss	;	Tempo disturb	orary phy pance	rsical		ering du sed susp ent			obilisation ninated ents	n of		water no bration	ise	In-con	nbination	
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Sandbank s 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)





Name of European Site: Benfleet & Southend Marshes SPA and Ramsar

Distance to Norfolk Boreas (km)

Site Features	Likely eff	ect(s) of N	orfolk Bore	eas								
	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
Wintering and passage waterbird assemblage including as named features brent goose <i>Branta bernicla</i> , dunlin <i>Calidris alpina</i> , knot <i>Calidris canutus</i> , ringed plover <i>Charadrius hiaticula</i> , grey plover <i>Pluvialis squatarola</i>		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 Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site during migration.

⁽b) The predicted effect attributable to Norfolk Boreas 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.





Name of European Site: Berwickshire and North Northumberland Coast SAC

Distance to Norfolk Boreas (km) 374

Marine Mammals

Site	e Features	Likely e	ffect(s)	of Norfo	lk Boreas	5										
		Underv	derwater noise Vessel Interactions Indirect effects on quality In-combination													
		С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Gre	ey 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 loss	5	Tempo disturb	rary phy ance	sical		ering due ed suspe nt			bilisation ninate d nts	n of	Underv vibratio	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
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	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 Boreas 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: Blackwater Estuary (Mid-Essex Coast Phase 4) SPA and Ramsar

Distance to Norfolk Boreas (km) 1

Site Features	Likely e	ffect(s) c	of Norfolk E	Boreas								
	Collisio	n mortal	ity	Displacer	ment/Distu	ırbance	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, ringed plover, black-tailed godwit <i>Limosa limosa limosa</i> , 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 Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (b) Survey data show no evidence of Blackwater Estuary SPA feature (hen harrier) occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (c) Survey data show no evidence of Blackwater Estuary SPA feature (pochard) occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (d) Survey data show no evidence of Blackwater Estuary SPA feature (ringed plover) occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (e) Breeding little tern has a maximum foraging range of 11km from colonies, so would have no connectivity with the Norfolk Boreas 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 Boreas site.
- (f) The predicted effect attributable to Norfolk Boreas 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.





Name of European

Borkum-Riffgrund (Borkum Reef Ground) SCI

Site:

Distance to Norfolk

219

Boreas (km)

Marine mammals

Site Features	Likely ef	fect(s) of	Norfolk Bo	reas											
	Underw	ater noise	!	Vessel Ir	nteraction	S	Indirect	effects or	n 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 Features	Permanent habitat loss		Temporary Smothering due to increased disturbance suspended sediment			Re- mobilisation of contaminated sediments			Underwater noise and vibration			Electromagnetic fields (EMF)			In-combination						
	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 Boreas 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	23											
Name of European Site:	Borkum-Riffgrund SPA											
Distance to Norfolk Boreas (km)	218											
Site Features	Likely effect(s) of Norfolk Boreas											
	Collision mortality			Displace	ment/Dist	urbance	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 <i>Gavia arctica</i> , redthroated diver <i>Gavia stellata</i> , common gull <i>Larus canus</i> , lesser black-backed gull, great black-backed gull <i>Larus marinus</i> , little gull <i>Larus minutus</i> , kittiwake <i>Rissa tridactyla</i> , common tern <i>Sterna hirundo</i> , Arctic tern <i>Sterna paradisaea</i> , Sandwich tern, gannet <i>Morus bassanus</i> , guillemot <i>Uria aalge</i>		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 Boreas 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 Boreas is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Borkum-Riffgrund SPA.





Name of European Site:

Braemar Pockmarks SAC

Distance to Norfolk Boreas (km)

Site Features	Likely et	Likely effect(s) of Norfolk Boreas																
	Permanent loss			Temporary physical disturbance			Smothering due to increased suspended sediment			Re- mobilisation of contaminated sediments			Underwater noise and vibration			In-combination		
	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.





Name of European Site: Breydon Water SPA and Ramsar

Site Features	Likely effect(s) of Norfolk Boreas											
	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 Bewick's swan Cygnus columbianus bewickii, ruff, golden plover Pluvialis		Y (a)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	Y (a)	N (b)
apricaria, avocet, lapwing Vanellus vanellus												
Breeding common tern		N (c)		N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (d)	N (d)	N (d)

- (a) Natural England consider that there is potential for connectivity during migration and therefore LSE cannot be screened out.
- (b) Survey data show no evidence of Breydon Water SPA features occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site during migration.
- (c) 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 Boreas site are likely to be extremely small relative to BDMPS.
- (d) The predicted effect attributable to Norfolk Boreas 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.





Site 26	26												
Name of European Site: Br	roadland SPA and Ramsar												
Distance to Norfolk Boreas (km) 76 (offshore project area)													
Site Features	Likely eff	Likely effect(s) of Norfolk Boreas offshore project area											
	Collision	Collision mortality			Displacement/Disturbance			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, wigeon, gadwall, Bewick's swar whooper swan, ruff	,	Y (a)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (c)	Y (a)	N (c)	

- (a) Natural England consider that there is potential for connectivity during migration and therefore LSE cannot be screened out.
- (b) Survey data show no evidence of Broadland SPA features occurring in the proposed Norfolk Boreas 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 incombination assessment for these features at Broadland SPA and Ramsar.





Site	26											
Name of European Site:	Broadla	nd SPA and	l Ramsar									
Distance to Norfolk Vanguard (km)	3.6 (ons	hore proje	ct area)									
Site Features	Likely ef	fect(s) of N	Iorfolk Bor	eas onshor	e project a	irea						
		fects with		Direct e	effects 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 (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 (<i>Cygnus cygnus</i>)	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)





Site	26											
Name of European Site:	Broadlar	nd SPA and	Ramsar									
Distance to Norfolk Vanguard (km)	3.6 (onsh	nore projec	ct area)									
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	27												
Name of European Site:	Bruine Bank	(Brown Ri	dge) pSPA										
Distance to Norfolk Boreas (km)	ca.20km (a)	0km (a)											
Site Features	Likely eff	Likely effect(s) of Norfolk Boreas											
	Collision	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>Uria</i> aalge and razorbills <i>Alca torda</i>		N (b)		N (c)	N (d)	N (d)	N (d)						





Name of European Site: Bruine Bank (Brown Ridge) pSPA

Distance to Norfolk Boreas (km) ca.20km (a)

- (a) It should be noted that the distance from the Norfolk Boreas 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 Boreas 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 Boreas site on migration as it lies west rather than north of the pSPA. Therefore, displacement, disturbance and barrier effect at the Norfolk Boreas site will not be likely to affect birds on Bruine Bank pSPA.
- (d) The predicted effect attributable to Norfolk Boreas 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	28											
Name of European Site:	Buchan Nes	s to Collies	ton Coast	SPA								
Distance to Norfolk Boreas (km)	53											
Site Features	Likely eff	Likely effect(s) of Norfolk Boreas										
	Collision mortality Displacement/Disturbance Barrier Effect Cumulative/In-combination											bination
	С	0	D	С	0	D	С	0	D	С	0	D
Breeding seabird assemblage, including as named features kittiwake, shag <i>Phalacrocorax aristotelis</i> , fulmar, guillemot, herring gull <i>Larus argentatus</i>		N (a)		N (a)	N (b)	N (b)	N (b)					





Name of European Site: Buchan Ness to Collieston Coast SPA

Distance to Norfolk Boreas (km) 553

- (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 Boreas site are likely to be very small relative to BDMPS.
- (b) The predicted effect attributable to Norfolk Boreas 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 29

Name of European Site: Calf of Eday SPA

Site Features	Likely eff	ect(s) of N	orfolk Bore	eas								
	Collision	Collision mortality			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 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 Boreas site are likely to be very small relative to BDMPS.
- (b) The predicted effect attributable to Norfolk Boreas 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	30											
Name of European Site:	Caps Gris	Nez SPA										
Distance to Norfolk Boreas (km)	210											
Site Features	Likely eff	ect(s) of No	orfolk Borea	as								
	Collision	mortality		Displacer	ment/Distu	rbance	Barrier Et	ffect		Cumulati	ve/In-comb	ination
	С	0	D	С	0	D	С	О	D	С	0	D
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 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		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)





Site	30						
Name of European Site:	Caps Gris	Nez SPA					
Distance to Norfolk Boreas (km)	210						
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							

- a) Many of the named species have not been recorded on the Norfolk Boreas 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 Boreas has been assessed in terms of the wider Biologically Defined Minimum Population Scales 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 risks to the SPA populations due to Norfolk Boreas are very small
- b) The predicted effect attributable to the proposed Norfolk Boreas 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 31 **Cap Sizun SAC** Name of European Site: 764 Distance to Norfolk Boreas (km) Likely effect(s) of Norfolk Boreas Site Features Underwater noise **Vessel Interactions** Indirect effects on prey Changes to water In-combination quality С С 0 С 0 D 0 D С 0 D D С 0 D Grey seal N(a) a) The distance between the potential impact range of Norfolk Boreas 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 Boreas (km)	32 Chause 544	y SAC													
Site Features		Likely effect(s) of Norfolk Boreas 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
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 Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.





Name of European Site: Chaussée de Sein SAC

Distance to Norfolk Boreas (km)

762

Site Features	Likely e	ffect(s)	of Norfo	lk Boreas											
	Underv	vater no	ise	Vessel I	nteractio	ns	Indirect	effects c	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)														

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

Site	34													
Name of European Site:	Ches	il Beach an	d The Flee	t SPA & Ra	msar									
Distance to Norfolk Boreas (km)	441													
Site Features		Likely effect(s) of Norfolk Boreas												
		Collision	Collision mortality Displacement/Disturbance Barrier Effect Cumulative/In-combination											
		С												
Nonbreeding brent goose			N (a) N (a) N (a) N (a) N (b) N (b)											
(a) Curvou data shaw little	05 50 6	المحمد مامانيي	Chasil Das	ala O Tha r	I a a t CD A f	/l			+ la - N f	alle Danasa	a:4a a.aala		مدام: مام	

⁽a) Survey data show little or no evidence of Chesil Beach & The Fleet SPA feature (brent goose) occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.

⁽b) The predicted effect attributable to Norfolk Boreas 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.





Name of European Site: Chichester and Langstone Harbours SPA & Ramsar

Site Features	Likely eff	ect(s) of No	orfolk Bore	eas								
	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
Migratory waterbird assemblage including as named features pintail Anas acuta, shoveler, teal, wigeon, turnstone Arenaria interpres, brent goose, sanderling Calidris alba, dunlin, ringed plover, bar-tailed godwit Limosa lapponica, red-breasted merganser Mergus serrator, curlew Numenius arquata, grey plover, shelduck Tadorna tadorna, 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)

- (a) Survey data show little or no evidence of Chichester & Langstone Harbour SPA features occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas 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 Boreas 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 Boreas 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.





Name of European Site: Colne Estuary (Mid-Essex Coast Phase 2) SPA and Ramsar

Distance to Norfolk Boreas

164

п				٦
•	v	m	a	п
u	м	ш	ш	
u				u

Site Features	Likely eff	ect(s) of N	orfolk Bore	eas								
	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
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 Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (b) Survey data show no evidence of Colne Estuary SPA feature (redshank) occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (c) Survey data show no evidence of Colne Estuary SPA feature (hen harrier) occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (d) Survey data show no evidence of Colne Estuary SPA feature (pochard) occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (e) Survey data show no evidence of Colne Estuary SPA feature (ringed plover) occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (f) Breeding little tern has a maximum foraging range of 11km from colonies, so would have no connectivity with the Norfolk Boreas 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 Boreas site.
- (g) The predicted effect attributable to Norfolk Boreas 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.





Site 3	7													
Name of European Site:	Copinsay SP	Α												
Distance to Norfolk Boreas (km) 7	18													
Site Features	Likely eff	kely effect(s) of Norfolk Boreas												
	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 fulmar, guillemot, kittiwake and great black-backed gull		N (a)		N (a)	N (b)	N (b)	N (b)							

- (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 Boreas site are likely to be very small relative to BDMPS.
- (b) The predicted effect attributable to Norfolk Boreas is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Copinsay SPA.

Site 38															
Name of European Site: Co	quet Island	SPA													
Distance to Norfolk Boreas (km) 37	3														
Site Features	Likely eff	ect(s) of N	orfolk Bore	eas											
	Collision	ly effect(s) of Norfolk Boreas ision mortality Displacement/Disturbance Barrier Effect Cumulative/In-combination													
	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 beyond r	naximum fo	oraging rar	ge of desig	gnated sea	bird specie	s (all less t	han 55km	so has no	breeding s	eason con	nectivity.				

Proportions of these populations migrating through the Norfolk Boreas site are likely to be very small relative to BDMPS.





Name of European Site: Coquet Island SPA

Distance to Norfolk Boreas (km) 373

(b) The predicted effect attributable to Norfolk Boreas 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 Name of European Site:	39 Côte D	e Granit	Rose-Se	pt-Iles SA	AC										
Distance to Norfolk Boreas (km)	596														
Site Features	Likely 6	kely effect(s) of Norfolk Boreas													
	Under	water no	ise	Vessel I	nteractio	ins	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 potential impact range of Norfolk Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.





Site 40 **Côtes de Crozon SAC** Name of European Site: 744 Distance to Norfolk Boreas (km) Likely effect(s) of Norfolk Boreas **Site Features** Indirect effects on prey Changes to water Underwater noise **Vessel Interactions** In-combination quality С 0 D С 0 С 0 D С 0 D С 0 D D Grey seal N(a) a) The distance between the potential impact range of Norfolk Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.

Site 4	1												
Name of European Site: C	romarty Firt	h SPA & Ra	ımsar										
Distance to Norfolk Boreas (km) 6	64												
Site Features	Likely eff	fect(s) of N	orfolk Bore	eas									
	Collision	llision mortality Displacement/Disturbance Barrier Effect Cumulative/In-com											
	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 ostralegus,		N (a)		N (a)	N (d)	N (d)	N (d)						





Site	41											
Name of European Site:	Cromarty Firt	h SPA & Ra	amsar									
Distance to Norfolk Boreas (km)	664											
wigeon, scaup <i>Aythya marila</i> , knot and redshank												
Breeding common tern		N (b)		N (b)	N (d)	N (d)	N (d)					
Breeding osprey Pandion haliaetus		N (c)		N (c)								

- (a) Survey data show little or no evidence of Cromarty Firth SPA features occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas 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 Boreas site are likely to be extremely small relative to BDMPS.
- (c) Osprey has not been observed in the Norfolk Boreas site, and it is improbable than any ospreys from the SPA migrate through the Norfolk Boreas site.
- (d) The predicted effect attributable to Norfolk Boreas 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	42													
Name of European Site:	Crouch	and Roa	ach Estua	ries (Mid-E	ssex Coast	t Phase 3) S	SPA & Ram	sar						
Distance to Norfolk Boreas (km)	187													
Site Features	Lik	ikely effect(s) of Norfolk Boreas												
	Col	ollision mortality Displacement/Disturbance Barrier Effect Cumulative/In-combination												
	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)	





Name of European Site: Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA & Ramsar

- (a) Survey data show little or no evidence of Crouch & Roach Estuary SPA feature (brent goose) occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (b) Survey data show no evidence of Crouch & Roach Estuary SPA feature (hen harrier) occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (c) The predicted effect attributable to Norfolk Boreas 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 43	:													
Name of European Site: De	eben Estuar	y SPA & Ra	amsar											
Distance to Norfolk Boreas (km) 12	.8													
Site Features	Likely eff	ly effect(s) of Norfolk Boreas												
	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 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 Boreas site, and migrations of birds from the SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (b) Survey data show no evidence of avocets occurring within the Norfolk Boreas site, and numbers migrating through the site are likely to be negligible.
- (c) The predicted effect attributable to Norfolk Boreas 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.





Site	44															
Name of European Site:	Der	ngie (Mid-l	Essex Coas	t Phase 1)	SPA & Ran	nsar										
Distance to Norfolk Boreas (km)	175	;														
Site Features		Likely eff	ect(s) of N	orfolk Bore	eas											
		Collision	llision mortality Displacement/Disturbance Barrier Effect Cumulative/In-combination													
		С	O D C O D C O D													
Nonbreeding brent goose			N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)			
Nonbreeding knot			N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)			
Nonbreeding grey plover			N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)			
Nonbreeding hen harrier			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 Dengie SPA features (brent goose, knot, grey plover, hen harrier) occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.

⁽b) The predicted effect attributable to Norfolk Boreas 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	45														
Name of European Site:	Dogger	bank SC	1												
Distance to Norfolk Boreeas (km)	249														
Site Features	Likely e	effect(s)	of Norfo	lk Boreas	;										
	Underv	vater no	ise	Vessel I	nteractio	ns	Indirec	t effects c	n prey	Change	s to wate	r	In-comb	oination	
										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)





Site 45 **Doggerbank SCI** Name of European Site: 249 Distance to Norfolk Boreeas (km) N(a) Harbour seal a) The distance between the potential impact range of Norfolk Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.

Site 46 **Doggersbank SCI** Name of European Site: 128 Distance to Norfolk Boreas (km) Site Features Likely effect(s) of Norfolk Boreas Indirect effects on prey Underwater noise **Vessel Interactions** Changes to water In-combination quality С С 0 С 0 С 0 С 0 D 0 D D D D Harbour porpoise N(a) Grey seal N(a) N(a) N(a) N(a) N(a) N(a) N(a) N(a) N(a) Harbour seal N(a) N(a)

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

Norfolk Boreas Screening Matrices June 2019





Site 47												
Name of European Site: Do	rnoch Firth a	and Loch Fl	eet SPA &	Ramsar								
Distance to Norfolk Boreas (km) 66	3											
Site Features	Likely ef	fect(s) of N	orfolk Bore	eas								
	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 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 Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (b) Osprey has not been observed in the Norfolk Boreas site, and it is improbable than any ospreys from the SPA migrate through the Norfolk Boreas site.
- (c) The predicted effect attributable to Norfolk Boreas 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	48														
Name of European Site:	Dorno	h Firth a	and Mor	rich More	SAC										
Distance to Norfolk Boreas (km)	696														
Site Features	Likely e														
	Underv	ikely effect(s) of Norfolk Boreas Inderwater 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 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



Site 48

Name of European Site: Dornoch Firth and Morrich More SAC

Distance to Norfolk Boreas (km) 696

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

Site 49 **Dråby Vig SAC** Name of European Site: 572 Distance to Norfolk Boreas (km) Likely effect(s) of Norfolk Boreas Site Features Indirect effects on prey Changes to water Underwater noise **Vessel Interactions** In-combination quality С 0 С 0 С 0 D C 0 D С 0 D D D

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

N(a)





Site 50 **Duinen Ameland SAC** Name of European Site: 174 **Distance to Norfolk Boreas (km)** Likely effect(s) of Norfolk Boreas Site Features Indirect effects on prey Changes to water In-combination Underwater noise **Vessel Interactions** quality С С 0 С 0 0 С D 0 D D D C D 0 Grey seal N(a) a) The distance between the potential impact range of Norfolk Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.

Site Name of European Site:	51 Duiner	ı en Lag	e Land To	exel SAC												
Distance to Norfolk Boreas (km)	102															
Site Features	Likely 6	effect(s)	of Norfo	lk Boreas												
	Under	water no	ffect(s) of Norfolk Boreas vater noise													
	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 potential	al impact	range of	Norfolk	Boreas ar	nd the ex	tent of an	y effect	on individ	uals from	this site	would re	sult in no	potentia	for LSE.		





Site 52 **Duinen Goeree & Kwade Hoek SAC** Name of European Site: 132 Distance to Norfolk Boreas (km) Likely effect(s) of Norfolk Boreas Site Features Indirect effects on prey Changes to water Underwater noise **Vessel Interactions** In-combination quality С 0 D С 0 D С 0 D C 0 D С 0 D Grey seal N(a) Harbour seal a) The distance between the potential impact range of Norfolk Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.

Site Name of European Site:	53 Duiner	n Terscho	elling SA	С											
Distance to Norfolk Boreas (km)	144														
Site Features	Likely 6	effect(s)	of Norfo	lk Boreas	5										
	Under	effect(s) of Norfolk Boreas water noise													
	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	al impact	range of	Norfolk	Boreas aı	nd the ex	tent of ar	y effect	on individ	uals from	this site	would re	sult in no	potentia	for LSE.	





Site 54 **Duinen Vlieland SAC** Name of European Site: 125 Distance to Norfolk Boreas (km) Site Features Likely effect(s) of Norfolk Boreas Indirect effects on prey Changes to water Underwater noise **Vessel Interactions** In-combination quality С 0 D С 0 С 0 D С 0 D С 0 D D Grey seal N(a) a) The distance between the potential impact range of Norfolk Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.

Site Name of European Site:	55 Dünen	landscha	aft Süd-S	ylt SAC												
Distance to Norfolk Boreas (km)	382															
Site Features	Likely 6	effect(s)	``													
	Under															
	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	Boreas a	nd the ex	tent of ar	y effect o	n individ	uals from	this site	would re	sult in no	potentia	for LSE.		





Name of European Site: Dunes De La Plaine Maritime Flamande SAC

Distance to Norfolk Boreas (km) 182

Marine Mammals

Site Features	Likely e	effect(s)	of Norfo	lk Boreas	5										
	Underv	water no	ise	Vessel	Interacti	ions	Indirect prey	t effects	on	Change quality	s to wat	er	In-com	bination	l
	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

Site Features	Permai	nent loss	5	Tempo disturb	rary phy ance	sical		ering due ed suspe ent			bilisatior ninate d nts	n of	Underw vibratio	vater no on	ise and	In-com	bination	
	С	O D C) N (b) N (b) N			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 Boreas and the site is beyond that of potential for direct or indirect effects.
- b) The distance between the offshore project area and the designated site is beyond the range of any potential LSE.





Site 57 Dunes de l'Authie et Mollières de Berck SAC Name of European Site: 261 Distance to Norfolk Boreas (km) Site Features Likely effect(s) of Norfolk Boreas Indirect effects on prey Underwater noise **Vessel Interactions** Changes to water In-combination quality С 0 D С 0 D С 0 D С 0 D С 0 D N(a) Harbour seal N(a) a) The distance between the potential impact range of Norfolk Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.

Site 58												
Name of European Site: Ea	st Caithnes	s Cliffs SPA										
Distance to Norfolk Boreas (km) 68	2											
Site Features	Likely eff	ect(s) of N	orfolk Bore	eas								
	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 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)





Name of European Site: East Caithness Cliffs SPA

Distance to Norfolk Boreas (km) 682

Breeding peregrine Falco peregrinus 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 Boreas 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 Boreas 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 59

Name of European Site: Essex Estuaries SAC

Site	Likely e	ffect(s) o	f Norfolk	Boreas														
Features	Perma	nent loss		Tempo disturb	orary phy oance	sical		ering due sed suspe 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
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)
Mudflats and sandflats not covered	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)		N (a)	N (a)		N (a)	N (a)	N (a)	N (a)
by seawater																		





Site Name of	Jame of European Site: Distance to Norfolk Boreas (km)			59 Essex E	stuaries :	SAC									
Distance	to Norfoll	k Boreas ((km)	164											
at low tide															
(a) Th	he distance	e betweer	the offs	shore proj	ect area	and the d	esignate	d site is b	eyond the	range o	f any pote	ential LSE			

60														
Estuair	e De La	Canche,	Dunes Pi	cardes Pl	aquees S	ur L'ancie	enne Fala	ise, Fore	t D'harde	lot Et Fala	aise D'eq	uihen SA	С	
215														
Likely 6	effect(s)	of Norfo	olk Boreas	5										
Under	water no	oise	Vessel I	nteractio	ons	Indirec	t effects o	on prey	Change quality	s to wate	er	In-com	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)
	215 Likely 6 Underv	Likely effect(s) Underwater no	Likely effect(s) of Norfo Underwater noise C O D	215 Likely effect(s) of Norfolk Boreas Underwater noise Vessel (C O D C	Estuaire De La Canche, Dunes Picardes P	Estuaire De La Canche, Dunes Picardes Plaquees S 215 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interactions C O D C O D	215 Likely effect(s) of Norfolk Boreas Underwater noise	Estuaire De La Canche, Dunes Picardes Plaquees Sur L'ancienne Fala 215 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interactions Indirect effects of C O D C O	Estuaire De La Canche, Dunes Picardes Plaquees Sur L'ancienne Falaise, Fore 215 Likely effect(s) of Norfolk Boreas Underwater noise	Estuaire De La Canche, Dunes Picardes Plaquees Sur L'ancienne Falaise, Foret D'harde 215 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interactions Indirect effects on prey Change quality C O D C O D C	Estuaire De La Canche, Dunes Picardes Plaquees Sur L'ancienne Falaise, Foret D'hardelot Et Falaise 215 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interactions Indirect effects on prey Changes to water quality C O D C O D C O D C O	Estuaire De La Canche, Dunes Picardes Plaquees Sur L'ancienne Falaise, Foret D'hardelot Et Falaise D'eq 215 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interactions Indirect effects on prey Changes to water quality C O D C O D C O D C O D	Estuaire De La Canche, Dunes Picardes Plaquees Sur L'ancienne Falaise, Foret D'hardelot Et Falaise D'equihen SAC 215 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interactions Indirect effects on prey Changes to water quality C O D C O D C O D C	Estuaire De La Canche, Dunes Picardes Plaquees Sur L'ancienne Falaise, Foret D'hardelot Et Falaise D'equihen SAC 215 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interactions Indirect effects on prey Changes to water quality C O D C O D C O D C O D C O

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





Site	61														
Name of European Site:	Estuaire	e de la S	eine SC	ı											
Distance to Norfolk Boreas (km)	393														
Site Features	Likely e	ffect(s)	of Norfo	lk Boreas											
	Underw	ater no	ise	Vessel I	nteractio	ns	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

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

N(a)

Site 62

Name of European Site: Estuaires et littoral picards (baies de Somme et d'Authie) SAC

N(a)

N(a)

N(a)

N(a)

Distance to Norfolk Boreas (km) 261

Marine Mammals

Harbour seal

Cita Faaturas	Likely e	ffoot(s) of	Norfall D	25000											
Site Features	Likely e	nect(s) or	Norfolk B	oreas											
	Underw	ater noise	9	Vessel I	nteraction	ıs	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
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)



Name of European Site:



Site 62

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

Distance to Norfolk Boreas (km)

261

Site	Likely	effect(s) of Nor	folk Bor	eas																
Features	Perma loss	nent ha	abitat	Tempo disturb	orary phoance	nysical	Smoth increase susper sedime	nded	ue to	_	obilisati minated ents	-		water n bration		Electro fields	omagne (EMF)	tic	In-con	nbinatio	'n
	C O 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 between the potential impact range of Norfolk Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.

Site 63

Name of European Site: Exe Estuary SPA & Ramsar

Distance to Norfolk Boreas (km) 491												
Site Features	Likely eff	ect(s) of N	orfolk Bore	eas								
	Collision	mortality		Displacer	ment/Distu	rbance	Barrier Et	ffect		Cumulati	ve/In-coml	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)





Name of European Site: Exe Estuary SPA & Ramsar

Distance to Norfolk Boreas (km) 491

- (a) Survey data show little or no evidence of Exe Estuary SPA features occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (b) The predicted effect attributable to Norfolk Boreas 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.

Site 64

Name of European Site: Fair Isle SPA

Site Features	Likely eff	ect(s) of N	orfolk Bore	eas								
	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 Stercorarius parasiticus, fulmar, gannet, great skua Stercorarius 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 Boreas 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 Boreas is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Fair Isle SPA.



Breeding Dartford warbler Sylvia undata



Site	65											
Name of European Site:	Falaise du B	essin Occi	dental SPA									
Distance to Norfolk Boreas (km)	463											
Site Features	Likely ef	fect(s) of N	orfolk Bor	eas								
	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 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)

(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 Boreas 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.

N (f)

- (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 Boreas 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) Cormorants, shags and red-breasted mergansers do not normally occur at the Norfolk Boreas 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.





Site	65													
Name of European Site:	Falaise du B	Bessin Occi	dental SPA											
Distance to Norfolk Boreas (km)	463													
Site Features	Likely ef	fect(s) of N	orfolk Bore	eas										
	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		

- (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 Boreas site towards breeding areas further north, but the area of foraging habitat lost to these birds if they avoid the Norfolk Boreas 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 Boreas site. Short-eared owls are more migratory, and sometimes cross the North Sea, but since this SPA is 445km from the Norfolk Boreas site, the chances of a short-eared owl from the SPA passing through the Norfolk Boreas 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 Boreas 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.





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 Boreas (km) 199

Marine Mammals

	Site Features	Likely e	effect(s)	of Norfo	lk Borea	S										
		Underv	vater 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
F	larbour 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)
C	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)
F	larbour 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	;	Tempo disturb	rary phy ance	sical		ering due ed suspe ent			bilisation ninate d nts	n of	Underv vibratio	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)
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 199

Boreas (km)

- a) The distance between the potential impact range of Norfolk Boreas 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 Name of Europea Distance to Norfo		as (km)		67 Falaises 225	et Pelou	ıses du C	Cap Bland	: Nez, du	Mont d	Hubert,	des Noi	res Motto	es, du Fo	ond de la	Forge et	du Mon	it de cou	ple SAC
Site Features	Likely e	effect(s)	of Norfo	lk Boreas	;													
	Permanent loss					ysical	Smoth increa suspe sedim	nded	ue to	_	obilisati minated ents	-		water n ibration	oise	In-con	nbinatio	n
	С	0	D	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)

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





68														
Faray a	and Holr	n of Fara	ay SAC											
757														
Likely 6	effect(s)	of Norfo	olk Borea	S										
Under	water no	oise	Vessel	Interactio	ons	Indirec	t effects	on prey	Change quality	s to wate	er	In-com	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)
	Faray a 757 Likely a Under	Faray and Holi 757 Likely effect(s) Underwater no	Faray and Holm of Fara 757 Likely effect(s) of Norfo Underwater noise C O D	Faray and Holm of Faray SAC 757 Likely effect(s) of Norfolk Borea Underwater noise Vessel C O D C	Faray and Holm of Faray SAC 757 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interaction C O D C O	Faray and Holm of Faray SAC 757 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interactions C O D C O D	Faray and Holm of Faray SAC 757 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interactions Indirect C O D C O D C	Faray and Holm of Faray SAC 757 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interactions Indirect effects of C O D C O D C O	Faray and Holm of Faray SAC 757 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interactions Indirect effects on prey C O D C O D C O D	Faray and Holm of Faray SAC 757 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interactions Indirect effects on prey Change quality C O D C O D C O D C	Faray and Holm of Faray SAC 757 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interactions Indirect effects on prey Changes to water quality C O D C O D C O D C O	Faray and Holm of Faray SAC 757 Likely effect(s) of Norfolk Boreas Underwater noise	Faray and Holm of Faray SAC 757 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interactions Indirect effects on prey Changes to water quality C O D C O D C O D C	Faray and Holm of Faray SAC 757 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interactions Indirect effects on prey Changes to water quality C O D C O D C O D C O D C O

Site	69											
Name of European Site:	Farne	e Islan	ds SPA									
Distance to Norfolk Boreas (km)	397											
Site Features	Likely	effec	t(s) of	Norfolk	Boreas							
	Collis mort	_		Displac	cement/Disturbance		Barrie	Effe	t		ulativ binatio	-
	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 Boreas site are likely to be very small relative to BDMPS.
- (b) The predicted effect attributable to Norfolk Boreas is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Farne Islands SPA.





Name of European Site: Fetlar SPA

Site Features	Likely eff	ect(s) of N	orfolk Bor	eas								
	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 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 Phalaropus lobatus		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 Boreas site are small relative to BDMPS.
- (b) Dunlin, whimbrel and red-necked phalarope have not been observed migrating through the Norfolk Boreas 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 Boreas. Dunlin and whimbrel from Fetlar SPA migrate south, but are unlikely to pass through the Norfolk Boreas site.
- (c) The predicted effect attributable to Norfolk Boreas is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Fetlar SPA.





Site	71												
Name of European Site:	Firth of Fort	:h SPA & R	amsar										
Distance to Norfolk Boreas (km)	468												
Site Features	Likely eff	fect(s) of N	orfolk Bor	eas									
	Collision	Ollision mortality Displacement/Disturbance Barrier Effect Cumulative/In-combination C O D C O D											
	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 (b)	N (b)	N (b)						

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

⁽b) The predicted effect attributable to Norfolk Boreas 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.





Name of European Site: Firth of Tay & Eden Estuary SPA & Ramsar

Site Features	Likely eff	ect(s) of N	orfolk Bore	eas								
	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 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 Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas 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 Boreas site.
- (c) Breeding little tern has a maximum foraging range of 11km from colonies, so would have no connectivity with the Norfolk Boreas 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 Boreas site.
- (d) The predicted effect attributable to Norfolk Boreas 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 73 Firth of Tay & Eden Estuary SAC Name of European Site: 487 Distance to Norfolk Boreas (km) Likely effect(s) of Norfolk Boreas Site Features Indirect effects on Changes to water In-combination Vessel interactions Underwater noise quality prey С 0 С 0 С 0 D С 0 D С 0 D D D N (a) Harbour seal (a) The distance between the potential impact range of Norfolk Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.

Site	74														
Name of European Site:	Flamb	orough a	nd Filey	Coast pSPA	λ.										
Distance to Norfolk Boreas (km)	216														
Site Features	L	Likely effect(s) of Norfolk Boreas													
	C	Ollision mortality Displacement/Disturbance Barrier Effect Cumulative/In-combinat													
	C		0	D	С	0	D	С	0	D	С	0	D		
Breeding kittiwake		,	Y (a)		N (b)	N (c)	Y (a)	N (c)							
Breeding gannet		,	Y (a)		N (d)	Y (d)	N (d)	N (e)	N (e)	N (e)	N (c)	Y (a)	N (c)		
Breeding common guillemot			N (f)		N (g)	Y (h)	N (g)	N (g)	N (i)	N (g)	N (c)	Y (h)	N (c)		
Breeding razorbill		1	N (f)		N (g)	Y (h)	N (g)	N (g)	N (i)	N (g)	N (c)	Y (h)	N (c)		
Breeding puffin			N (f)		N (g)	Y (h)	N (g)	N (g)	N (i)	N (g)	N (c)	Y (h)	N (c)		





Name of European Site: Flamborough and Filey Coast pSPA

- (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 Boreas project 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 SPA.
- (d) Flamborough and Filey Coast SPA is 216km from Norfolk Boreas. Thaxter et al. (2012) report a mean foraging range of breeding gannets as 92.5km, and a maximum recorded distance of 590km. Norfolk Boreas 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.
- (g) Construction and decommissioning impacts are temporary and localised therefore LSE can be ruled out.
- (h) Flamborough and Filey Coast SPA is 216km from Norfolk Boreas. 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 Boreas 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 Boreas 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.
- (i) Since Norfolk Boreas 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.





Name of European Site: Flamborough Head SAC

Distance to Norfolk Boreas (km)

213

Site	Likely e	ffect(s) o	f Norfolk	Boreas														
Features	Perma	nent loss		Tempo disturb	orary phy pance	/sical	increa	ering du sed nded sed			obilisatio minated ents	n of		water no bration	oise	In-combinatio		ı
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Submerged or partially submerged sea caves	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (a)		N (a)	N (a)		N (a)	N (a)	N (a)	N (a)

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





Site 76													
Name of European Site: Fo	rth Islands	SPA											
Distance to Norfolk Boreas (km) 47	6												
Site Features	Likely eff	Likely effect(s) of Norfolk Boreas											
	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 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 Boreas site are small relative to BDMPS.
- (b) The predicted effect attributable to Norfolk Boreas 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	77													
Name of European Site:	oula SPA													
Distance to Norfolk Boreas (km)	322													
Site Features	Likely ef	ikely effect(s) of Norfolk Boreas												
	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 as named features Arctic tern, fulmar, guillemot, razorbill, red-throated diver,		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)		





Site	77
Name of European Site:	Foula SPA
Distance to Norfolk Boreas (km)	822
Arctic skua, kittiwake, shag, Leach's storm-petrel <i>Oceanodroma leucorhoa</i> , great skua, puffin	

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

Site	78													
Name of European Site:	oulness (N	lid-Essex Co	oast Phase	5) SPA and	Ramsar									
Distance to Norfolk Boreas (km)	186													
Site Features														
	Collision	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 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)		





Name of European Site: Foulness (Mid-Essex Coast Phase 5) SPA and Ramsar

- (a) Survey data show little or no evidence of Foulness SPA features occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site during migration.
- (b) Survey data show no evidence of hen harrier occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas 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 Boreas 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 Boreas 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 Boreas 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 Boreas 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	79											
Name of European Site:	Fowlsheugh	SPA										
Distance to Norfolk Boreas (km)	524											
Site Features	Likely ef	fect(s) of N	Iorfolk Bor	eas								
	Collision mortality Displacement/Disturbance Barrier Effect Cumulative/In-coml									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 (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 Boreas site are likely to be very small relative to BDMPS.
- (b) The predicted effect attributable to Norfolk Boreas is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Fowlsheugh SPA.





Site 80														
Name of European Site: Fri	sian Front	SPA												
Distance to Norfolk Boreas (km) ca.	100km*													
Site Features	Likely eff	ikely effect(s) of Norfolk Boreas												
	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		
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 Boreas 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 Boreas site during migration relative to the size of BDMPS regional populations.
- (b) The predicted effect attributable to Norfolk Boreas is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Frisian Front pSPA.

Site	81														
Name of European Site:	Gibraltar P	oint SPA ar	nd Ramsar												
Distance to Norfolk Boreas (km)	161														
Site Features	Likely ef	Likely effect(s) of Norfolk Boreas													
	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			
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)			





Name of European Site: Gibraltar Point SPA and Ramsar

- (a) Survey data show no evidence of Gibraltar Point SPA features (sanderling, bar-tailed godwit, grey plover) occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas 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 Boreas 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 Boreas site.
- (c) The predicted effect attributable to Norfolk Boreas 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	82													
Name of European Site:	Great Yarm	outh and N	North Dene	s SPA										
Distance to Norfolk Boreas (km)	73													
Site Features	Likely ef	Likely effect(s) of Norfolk Boreas												
	Collision	mortality		Displace	ment/Distu	ırbance	Barrier E	ffect		Cumulati	ve/In-com	bination		
	С													
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 Boreas 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 Boreas 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	83													
Name of European Site:	Greater Wa	ish SPA												
Distance to Norfolk Boreas (km)	ca. 59km*	59km*												
Site Features	Likely ef	Likely effect(s) of Norfolk Boreas												
	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		
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)	Y (i)	N (d)	N (b)	N (b)	N (b)	Y (c)	Y (i)	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 Boreas 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 Boreas site. However, the tern colonies are at locations along the Norfolk coast which are beyond these foraging distances from the Norfolk Boreas site. Therefore, connectivity between the SPA and Norfolk Boreas 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 Boreas will be negligible compared to the current baseline.
- (e) There is potential for little gull connectivity between the SPA and the Norfolk Boreas 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 Boreas 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 Boreas is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Greater Wash SPA.
- (i) Following advice from Natural England it is considered that Operations and Maintenance vessels may disturb red-throated divers whilst transiting through the





Name of European Site: Greater Wash SPA

Distance to Norfolk Boreas (km) ca. 59km*

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:	84 Grevel	ingen S/	AC												
Distance to Norfolk Boreas (km)	132														
Site Features	Likely 6	rely effect(s) of Norfolk Boreas Inderwater noise Vessel Interactions Indirect effects on prey Changes to water In-combination													
	Under	water no	oise	Vessel	Interactio	ons	Indirec	t effects (on prey	Change quality	s to wate	er	In-com	bination	
	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)
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 Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.





Site	85														
Name of European Site:	Gule R	lev SCI													
Distance to Norfolk Boreas (km)	541														
Site Features	Likely	effect(s)	of Norfe	olk Borea	S										
	Under	water no	oise	Vessel	Interactio	ons	Indirec	t effects	on prey	Change quality	s to wate	er	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)
a) The distance between the potent	al impact	range o	f Norfol	k Boreas	and the e	xtent of	any effec	t on indiv	/iduals fro	m this si	te would	result in	no poten	tial for LS	E.

Site Name of European Site:	86 Gullma	arsfjorde	en SAC												
Distance to Norfolk Boreas (km)	769														
Site Features	Likely (effect(s)	of Norfo	olk Borea	S										
	Under	water no	oise	Vessel	Interactio	ons	Indirec	t effects	on prey	Change quality	s to wate	er	In-com	bination	
	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 potenti	al impact	range o	f Norfoll	Roreas a	and the e	xtent of a	any effec	t on indiv	iduals fro	m this si	te would	result in	no poten	tial for LS	E.





Name of European Site: Haisborough, Hammond and Winterton SAC

Distance to Norfolk Boreas (km)

37

Site	цкеју е	ffect(s) o	T INORTOIK	Boreas														
Features		nent troductio ediment	on of	Tempo disturb	orary phy pance	rsical	increa	ering du sed nded sed		_	obilisation ninated ents	n of		water no bration	oise	In-con	nbination	
	С	0	D	С	0	D C a) Y(a) Y		0	D	С	0	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

⁽a) Site overlaps with the Norfolk Boreas offshore cable corridor and therefore LSE cannot be ruled out at the screening stage.





Site 88 Hallands Väderö SAC Name of European Site: 885 Distance to Norfolk Boreas (km) Likely effect(s) of Norfolk Boreas Site Features Indirect effects on prey Changes to water In-combination Underwater noise **Vessel Interactions** quality С 0 С 0 С 0 D D 0 D С D С 0 D Harbour seal N(a) a) The distance between the potential impact range of Norfolk Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.

Site Name of European Site:	89 Hambı	urgische	s Watte	nmeer SC	il										
Distance to Norfolk Boreas (km)	350														
Site Features	Likely 6	effect(s) of Norfolk Boreas water noise													
	Under														
	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)





Name of European Site: Hamburgisches Wattenmeer SCI

Distance to Norfolk Boreas (km) 350

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

Site	90											
Name of European Site:	Hamford W	ater SPA a	nd Ramsar									
Distance to Norfolk Boreas (km)	146											
Site Features	Likely ef	fect(s) of N	orfolk Bore	eas								
	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
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 Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site during migration.
- (b) Breeding little tern has a maximum foraging range of 11km from colonies, so would have no connectivity with the Norfolk Boreas 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 Boreas site.
- (c) The predicted effect attributable to Norfolk Boreas 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:	91 Havet	og kyste	n melle	m Præstø	s Fjord ဝဋ	g Grønsui	nd SAC								
Distance to Norfolk Boreas (km)	1,036														
Site Features	Likely (effect(s)	of Norfo	olk Borea	S										
	Under	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)
a) The distance between the potent	ial impact	range o	f Norfoll	· Boreas a	and the e	xtent of a	any effec	t on indiv	iduals fro	m this sit	e would	result in	no poten	tial for LS	E.

Site Name of European Site:	92 Havet	omkring	; Nordre	Rønner S	SAC										
Distance to Norfolk Boreas (km)	739														
Site Features	Likely 6	ly effect(s) of Norfolk Boreas erwater noise													
	Under														
	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)
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 potenti	al impact	range o	f Norfoll	Boreas a	and the e	xtent of a	any effect	on indiv	iduals fro	m this sit	e would	result in i	no poten	tial for LS	E.





Site Name of European Site:	93 Helgol	and mit	Helgola	nder Fels	sockel SA	NC									
Distance to Norfolk Boreas (km)	330														
Site Features	Likely	effect(s)	of Norfo	olk Borea	S										
	Under	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 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 Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.





Site)4													
Name of European Site:	lermaness,	Saxa Vord	and Valla	Field SPA										
Distance to Norfolk Boreas (km)	86													
Site Features	Likely eff	ly effect(s) of Norfolk Boreas Displacement/Disturbance Barrier Effect Cumulative/In-combination												
	Collision	lision 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 gannet, guillemot, redthroated 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 Boreas site are likely to be very small relative to BDMPS.

⁽b) The predicted effect attributable to Norfolk Boreas 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	95 Hesseld	ø med o	mliggen	de stenre	ev SAC										
Name of European Site: Distance to Norfolk Boreas (km)	878														
Site Features	Likely e			olk Borea	s 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)





Site 95 Hesselø med omliggende stenrev SAC Name of European Site: 878 **Distance to Norfolk Boreas (km)** N(a) Harbour seal a) The distance between the potential impact range of Norfolk Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.

Site Name of European Site:	96 Hirsho	olmene,	havet ve	st herfor	og Elling	e Å's udl	øb SAC								
Distance to Norfolk Boreas (km)	719														
Site Features	Likely	ely effect(s) of Norfolk Boreas derwater noise													
	Under	water no	oise	Vessel	Interactio	ons	Indirec	t effects	on prey	Change quality		er	In-com	bination	
	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)
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 Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.





Site	97													
Name of European Site:	Hornsea Me	ere SPA												
Distance to Norfolk Boreas (km)	215	ally offact(s) of Norfalk Parage												
Site Features	Likely ef	ikely effect(s) of Norfolk Boreas												
	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 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 Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (b) The predicted effect attributable to Norfolk Boreas is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Hornsea Mere SPA.

Site 9	8											
Name of European Site:	loy SPA											
Distance to Norfolk Boreas (km) 7	28											
Site Features	Likely eff	ect(s) of N	orfolk Bore	eas								
	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 seabird assemblage including as named features Arctic skua, great black- backed gull, guillemot, kittiwake, red- throated diver, fulmar, puffin, great skua		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)





Name of European Site: Hoy SPA

- (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 Boreas 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 Boreas is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Hoy SPA.

Site				99												
Name of Eu	ropean Site	e:		Humb	er Estu	ary SAC										
Distance to	Norfolk Bo	reas (km)		112												
Marine Ma	mmals															
Site Feature	es	Likely ef	ffect(s) of	Norfolk B	oreas											
		Underw	ater nois	е		l Interaction bance at sea		Indirect	effects or	prey	Change	s to wate	er quality	In-cor	nbination	
		С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Grey seal		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)
Fish																
Site	Likely effe	ct(s) of No	orfolk Bor	eas												
Features	Permanen loss	t habitat	Tempo physica disturb	ıl	in su	mothering d creased ispended ediment	ue to	Re- mobili contamina sediments	ited	Underv and vib	vater nois oration		ectromagne elds (EMF)	tic	In-combin	ation





Site					99																
Name of Eu	ıropean	Site:			Ηι	ımber E	stuary	SAC													
Distance to	Norfoll	k Borea	s (km)		11	2															
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Sea Lamprey	N(b)	N(b)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	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(b)	N(b)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	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 hab	bitats																				
Site Feature	es			Perma	anent lo)SS	Temp distur	orary p bance	hysical	Smoth increa suspe sedim	nded	lue to		obilisati minate ents			water i		In-con	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 ar covered by				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)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (c)
Coastal lago	oons			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)
-	tential e			derwat	er noise	e; vesse	lintera	ctions; c	hanges	to wate	er qualit	y; chan	ges to p	rey res	ources;	and dis	turband	e at sea	al haul-c	out sites	;





Humber Estuary SAC Name of European Site:

112 Distance to Norfolk Boreas (km)

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

Site 100

Name of European Site: **Humber Estuary SPA and Ramsar**

Distance to Norfolk Boreas (km) 19	90											
Site Features	Likely eff	ect(s) of N	orfolk Bor	eas								
	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
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, black-tailed 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)





Site	100											
Name of European Site:	Humber Est	uary SPA a	and Ramsa	r								
Distance to Norfolk Boreas (km)	190											
Breeding bittern		N (c)		N (c)	N (g)	N (g)	N (g)					
Breeding marsh harrier		N (d)		N (d)								
Breeding avocet		N (e)		N (e)	N (g)	N (g)	N (g)					
Breeding little tern		N (f)		N (f)								

- (a) Survey data show little or no evidence of Humber Estuary SPA features occurring in the Norfolk Boreas sites, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site during migration.
- (b) Survey data show no evidence of Humber Estuary SPA feature hen harrier occurring in the Norfolk Boreas sites, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas 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 Boreas, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas 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 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 Boreas 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 Boreas 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 Boreas. 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 Boreas site.
- (g) The predicted effect attributable to Norfolk Boreas 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:	101 Hund (ınd Paaı	osand SC	CI											
Distance to Norfolk Boreas (km)	255														
Site Features	Likely	effect(s)	of Norfo	olk Borea	S										
	Under	water no	oise	Vessel	nteractio	ons	Indirec	t effects	on prey	Change quality	s to wate	er	In-com	bination	
	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 potent	ial impact	range o	f Norfoll	k Boreas a	and the e	xtent of	any effec	t on indiv	iduals fro	m this sit	e would	result in	no poten	tial for LS	šE.

Site 10	2														
Name of European Site:	perial Dock	Lock, Leit	h SPA												
Distance to Norfolk Boreas (km) 49	8														
Site Features	Likely eff	Likely effect(s) of Norfolk Boreas													
	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 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 beyond the maximum foraging range of common tern (30km) so has no breeding season connectivity. The proportion of the population migrating through the Norfolk Boreas site is likely to be extremely small relative to BDMPS.
- (b) The predicted effect attributable to Norfolk Boreas is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Imperial Dock Lock SPA.

Site 103

Name of European Site: Inner Dowsing, Race Bank and North Ridge SCI

Distance to Norfolk Boreas (km)

44

Site	Likely e	ffect(s) o	f Norfolk	Boreas														
Features	Perma	nent loss	5	Tempo disturb	orary phy pance	/sical	increa	ering du sed nded sed			obilisatio minated ents	n of		water no bration	oise	In-con	nbination	l
	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 distance between the offshore project area and the designated site is beyond the range of any potential LSE.





Name of European Site: Inner Moray Firth SPA & Ramsar

Site Features	Likely eff	ect(s) of N	orfolk Bore	eas								
	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 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)

- (a) Survey data show little or no evidence of Inner Moray Firth SPA features occurring in the Norfolk Boreas site, and migrations of birds from this SPA and Ramsar are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (b) Osprey has not been observed in the Norfolk Boreas site, and it is extremely unlikely that any ospreys from the Inner Moray Firth SPA migrate through the Norfolk Boreas 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 Boreas site is likely to be extremely small relative to BDMPS.
- (d) The predicted effect attributable to Norfolk Boreas 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 105 Isle of May SAC Name of European Site: 460 Distance to Norfolk Boreas (km) Likely effect(s) of Norfolk Boreas Site Features Underwater noise Indirect effects on prey Changes to water **Vessel Interactions** In-combination quality С 0 D С 0 С С 0 С 0 D D 0 D D Grey seal N(a) a) The distance between the potential impact range of Norfolk Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.

Site Name of European Site:	106 Klaver	bank SC													
Distance to Norfolk Boreas (km)	67														
Site Features	Likely 6	effect(s)	of Norfo	olk Borea	S										
	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
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	Y(b)	Y(b)	Y(b)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)
Harbour seal	Y(b)	Y(b)	Y(b)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)		N(a)	N(a)	N(a)	N(a)





Name of European Site:

Klaverbank SCI

Distance to Norfolk Boreas (km)

67

- a) The distance between the potential impact range of Norfolk Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.
- b) Screened in for grey and harbour seal as the site is within the identified foraging range for both species. The potential for disturbance to foraging seals as a result of underwater noise will be assessed.

Site Name of European Site:		fjorden-	Väderöf	jorden S <i>l</i>	AC										
Distance to Norfolk Boreas (km)	781														
Site Features	Likely 6	rwater noise Vessel Interactions Indirect effects on prey Changes to water In-combination													
	Under	• •													
	С	0	D	С	0	D	С	0	D	C	0	D		0	D
											Ü				
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 potential impact range of Norfolk Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.





Site	108															
Name of European Site:	Kungsl	backafjo	rden SA	C												
Distance to Norfolk Boreas (km)	831															
Site Features	Likely	Likely effect(s) of Norfolk Boreas														
	Under	water no	oise	Vessel	Interactio	ons	Indired	t effects	on prey	Change quality	es to wate	er	In-com	bination		
	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 potenti	al impact	range o	f Norfol	k Boreas a	and the e	xtent of	any effec	t on indiv	iduals fro	m this si	te would	result in	no poten	tial for LS	E.	

Site Name of European Site:	109 Küsten	- und Di	inenlan	dschafter	ո Amrum	s SAC										
Distance to Norfolk Boreas (km)	380															
Site Features	Likely 6	Likely effect(s) of Norfolk Boreas														
	Under	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	
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	al impact	range o	f Norfolk	Boreas a	and the e	xtent of	anv effec	t on indiv	iduals fro	m this sit	e would	result in	no poten	tial for LS	E.	



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

Breeding little tern, roseate tern

Site



Name of European Site:	Lindisfarne	SPA and R	amsar												
Distance to Norfolk Boreas (km)	403														
Site Features	Likely ef	Likely effect(s) of Norfolk Boreas													
	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		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)			

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

N (b)

- (b) Breeding little tern has a maximum foraging range of 11km from colonies, so would have no connectivity with Norfolk Boreas. 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 Boreas site. Breeding roseate tern has a maximum foraging range of 30km from colonies, so would have no connectivity with Norfolk Boreas. Migrating roseate terns are unlikely to pass through the Norfolk Boreas site as their migration tends to be coastal.
- (c) The predicted effect attributable to Norfolk Boreas 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.

110

N (b)





Name of European Site: Littoral Seino-Marin SPA

Site Features	Likely eff	ect(s) of N	orfolk Bore	eas								
	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 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 Boreas 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 Boreas 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 Boreas site are likely to be extremely





Name of European Site: Littoral Seino-Marin SPA

Distance to Norfolk Boreas (km) 329

small relative to BDMPS.

- (b) Proportions of these populations migrating through the Norfolk Boreas site are likely to be extremely small relative to BDMPS, not only because the SPA is 315km from the Norfolk Boreas 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 Boreas site. It is unlikely that birds from the SPA will migrate through the Norfolk Boreas 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 Boreas 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 Boreas site.
- (f) The predicted effect attributable to Norfolk Boreas 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 112												
Name of European Site: Lock	of Strathb	eg SPA & F	lamsar									
Distance to Norfolk Boreas (km) 576												
Site Features	Likely eff	ect(s) of N	orfolk Bore	eas								
	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 greylag goose, pink-footed goose, teal, Svalbard barnacle goose <i>Branta leucopsis</i> , whooper swan		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)
Breeding Sandwich tern		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (c)	N (c)	N (c)





Name of European Site: Loch of Strathbeg SPA & Ramsar

Distance to Norfolk Boreas (km) 576

- (a) Survey data show little or no evidence of Loch of Strathbeg SPA features occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas 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 Boreas site is likely to be extremely small relative to BDMPS.
- (c) The predicted effect attributable to Norfolk Boreas 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:	113 Løgstø	r Bredni	ng, Vejle	erne og B	Sulbjerg S	AC										
Distance to Norfolk Boreas (km)	582															
Site Features	Likely	Likely effect(s) of Norfolk Boreas														
	Underwater noise Vessel Interactions Indirect effects on prey quality In-com												bination			
	C O D C O D C O D C O													D		
Harbour seal	N(a) N(a) N(a) N(a) N(a) N(a) N(a) N(a)													N(a)		
a) The distance between the potent	al impact	range o	f Norfoll	k Boreas a	and the e	xtent of a	any effec	t on indiv	iduals fro	m this sit	e would	result in	no poten	tial for LS	iE.	

June 2019





Site Name of European Site: Distance to Norfolk Boreas (km)	114 Lovns 610	Brednin	g, Hjarba	æk Fjord	og Skals,	Simeste	d og Nøri	re Ådal, S	kravad B	æk SAC						
Site Features	•	Inderwater noise Vessel Interactions Indirect effects on prey Changes to water In-combination														
	Under	Underwater noise Vessel Interactions Indirect effects on prey quality 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)	
a) The distance between the potenti	al impact	range o	f Norfoll	Boreas a	and the e	xtent of a	any effec	t on indiv	iduals fro	om this si	te would	result in	no poten	tial for LS	E.	

Site	115															
Name of European Site:	Malmo	ofjord S <i>l</i>	AC													
Distance to Norfolk Boreas (km)	764															
Site Features	Likely	ikely effect(s) of Norfolk Boreas														
	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 seal	N(a) N(a) N(a) N(a) N(a) N(a) N(a) N(a)													N(a)		
a) The distance between the potenti	al impact	range o	f Norfoll	Boreas a	and the e	xtent of a	ny effec	t on indiv	iduals fro	m this sit	te would	result in	no poten	tial for LS	E.	





Site Name of European Site:	116 Marais	du Cote	entin et	du Bessin	ı - Baie d	es Veys S	AC									
Distance to Norfolk Boreas (km)	442															
Site Features	Likely 6	Likely effect(s) of Norfolk Boreas														
	Under	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)	
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 potenti	al impact	range o	f Norfolk	Boreas a	and the e	xtent of a	any effec	t on indiv	iduals fro	m this sit	e would	result in I	no poten	tial for LS	E.	

Site Name of Eu	ng Sands	s SCI																
Distance to	Norfolk	Boreas (l	cm)	136														
Site	Likely e	ffect(s) o	f Norfolk	Boreas														
Features	, , ,			Tempo disturb	orary phy pance	/sical	increa	ering du sed nded sed			obilisatio minated ents	n of		water no bration	oise	In-con	nbination	l
	С	0	D	С	C O D			0	D	С	0	D	С	0	D	С	0	D
Sandbanks which are	N (a)	N (a)	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	n Site:		117 Margat	e and Lo	ng Sands	s SCI						
Distance to Norfo	k Boreas (I	cm)	136									
slightly covered by sea water all the time												

Site 1	18												
Name of European Site:	Marwick He	ad SPA											
Distance to Norfolk Boreas (km)	'61												
Site Features	Likely eff	tely effect(s) of Norfolk Boreas											
	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 guillemot and kittiwake		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)	

- (a) Marwick Head SPA is beyond maximum foraging range of designated seabird species so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Boreas site are small relative to BDMPS.
- (b) The predicted effect attributable to Norfolk Boreas 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 Name of European Site:	119 Måses	kär SAC													
Distance to Norfolk Boreas (km)	752														
Site Features	Likely	effect(s)	of Norfe	olk Borea	s										
	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
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 potenti	al impact	range o	f Norfol	k Boreas a	and the e	xtent of a	any effec	t on indiv	iduals fro	m this si	e would	result in	no poten	tial for LS	E.

Site	120													
Name of European Site:	Medway Es	tuary & M	arshes SPA	and Ram	sar									
Distance to Norfolk Boreas (km)	210													
Site Features	Likely ef	ly effect(s) of Norfolk Boreas Cumulative Displacement Disturbance Parrier Effect Cumulative In combination												
	Collision													
	С	O D C O D C C O D C C O D D C O D C O D C O D C O D D C O D D C O D D C O D D C O D D C O D D D C O D D D 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		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (d)	N (d)	N (d)		





Site	120										
grebe, avocet, shelduck, greenshank, redshank											
Breeding avocet		N (b)									
Breeding little tern, common tern		N (c)									

- (a) Survey data show little or no evidence of Medway Estuary & Marshes SPA features occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (b) Avocet has not been observed during bird site-specific surveys. It is highly unlikely that these birds would migrate through the Norfolk Boreas 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 Boreas 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 Boreas. 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 Boreas site. Breeding common tern has a maximum foraging range of 30km from colonies (Thaxter et al. 2012), so would have no connectivity with Norfolk Boreas. Migrating common terns are unlikely to pass through the Norfolk Boreas site as their migration tends to be coastal where that is an option.
- (d) The predicted effect attributable to Norfolk Boreas 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	121											
Name of European Site:	Minsmere -	Walbersw	ick SPA an	d Ramsar								
Distance to Norfolk Boreas (km)	96											
Site Features	Likely eff	kely effect(s) of Norfolk Boreas										
	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
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,		N (c)		N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (g)	N (g)	N (g)





Site	121											
Name of European Site:	Minsmere -	Walbersw	ick SPA an	d Ramsar								
Distance to Norfolk Boreas (km)	96											
avocet												
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 Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (b) Survey data show no evidence of hen harrier occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas 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 Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (d) Survey data show no evidence of nightjar occurring in the Norfolk Boreas OWF sites, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas 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 Boreas. 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 Boreas site.
- (g) The predicted effect attributable to Norfolk Boreas is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Minsmere-Walberswick SPA and Ramsar.





Name of European Site: Montrose Basin SPA & Ramsar

Site Features	Likely eff	fect(s) of N	orfolk Bore	eas								
	Collision				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 Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.

Site 1	23												
Name of European Site:	loray and N	airn Coast	SPA & Ram	nsar									
Distance to Norfolk Boreas (km) 6	22												
Site Features	Likely ef	kely effect(s) of Norfolk Boreas											
	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 common scoter, long-tailed duck,		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)	

⁽b) The predicted effect attributable to Norfolk Boreas 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.





Site 12	3										
oystercatcher, bar-tailed godwit, wigeon, pink-footed goose, red-breasted merganser, redshank, velvet scoter, greylag goose, dunlin											
Breeding osprey		N (b)									

- (a) Survey data show little or no evidence of Moray & Nairn Coast SPA features occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (b) Osprey has not been observed in the Norfolk Boreas site, and it is improbable that any ospreys from the SPA migrate through the Norfolk Boreas site.
- (c) The predicted effect attributable to Norfolk Boreas 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	124												
Name of European Site:	Mousa SPA												
Distance to Norfolk Boreas (km)	793												
Site Features	Likely	y effect(s) of Norfolk Boreas											
	Collisi	on mortality		Displace	ement/Dist	urbance	Barrier I	ffect		Cumulat	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 (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 Boreas site is likely to be extremely small relative to BDMPS.
- (b) European storm-petrels were not observed in the Norfolk Boreas 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 Boreas is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Mousa SPA.





Site 125 **Mousa SAC** Name of European Site: 794 Distance to Norfolk Boreas (km) Likely effect(s) of Norfolk Boreas **Site Features** Indirect effects on prey Changes to water Underwater noise **Vessel Interactions** In-combination quality 0 С 0 D С D С 0 D С 0 D С 0 D Harbour seal N(a) a) The distance between the potential impact range of Norfolk Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.

Site Name of European Site:	126 Nation	alpark N	liedersä	chsisched	d Watten	meer SA	С								
Distance to Norfolk Boreas (km)	240														
Site Features		ly effect(s) of Norfolk Boreas erwater 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)
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 Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.





Site 127 Nibe Bredning, Halkær Ådal og Sønderup Ådal SAC Name of European Site: 608 Distance to Norfolk Boreas (km) Likely effect(s) of Norfolk Boreas **Site Features** Indirect effects on prey Changes to water Underwater noise **Vessel Interactions** In-combination quality 0 С 0 D С D С 0 D С 0 D С 0 D Harbour seal N(a) a) The distance between the potential impact range of Norfolk Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.

Site Name of European Site:	128 Niding	en SAC													
Distance to Norfolk Boreas (km)	790														
Site Features		effect(s) water no		olk Borea Vessel	s Interactio	ons	Indirec	t effects	on prey	Change quality	es to wat	er	In-com	bination	
	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 potent	al impact	range o	f Norfoll	Boreas a	and the e	xtent of	any effec	t on indiv	iduals fro	m this si	te would	result in	no poten	tial for LS	iE.

June 2019





Noordzeekustzone SAC Name of European Site:

94 Distance to Norfolk Boreas (km)

		50. 04	· (,																		
Marine Ma	mmals																				
Site Featur	es	L	ikely ef	fect(s) o	f Norfo	lk Bore	as														
		U	Inderwa	ater noi	se		sturban	teraction		Ind	lirect et	fects or	n prey	Cha	nges to	water (quality	In-co	mbinat	ion	
		С		0	D	С		0	D	С)	D	С	О		D	С	0		D
Harbour po	rpoise	N	I (a)	N (a)	N (a)	N	(a)	N (a)	N (a)	N (a)	V (a)	N (a)	N (a)		N (a)	N (a)	N	(a)	N (a)
Grey seal		Y	(b)	Y (b)	Y (b)	N	(a)	N (a)	N (a)	N (a)	V (a)	N (a)	N (a)		N (a)	N (a)	N	(a)	N (a)
Harbour se								N (a)	N (a)	N (a)	V (a)	N (a)	N (a)		N (a)	N (a)	N	(a)	N (a)
Fish																					
Site	Likely	effect(s	s) of No	rfolk Bo	reas																
Features	Perma	anent h	abitat	Tempo physic distur	al		Smoti increa suspe sedim	nded	lue to	_	obilisa minate ents			water i			romagne (EMF)	etic	In-cor	mbinatio	on
	С	O D C O D C O [D	С	0	D	С	0	D	С	0	D	С	0	D	
Sea Lamprey	ea N(a) N(a) N(a) N(a) N(a) N(a) N(a) N(a									N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)
Allis 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)





Site				12	29																
Name of Eu	ropean	Site:		No	oordzee	ekustzo	ne SAC														
Distance to	Norfolk	k Boreas	s (km)	94	1																
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	Shad Benthic habitats Site Features Sandbanks which are slightly covered by sea water all the			Perma	nent lo)SS	Temp physic distur	cal		Smoth increa suspe sedim	nded	lue to	_	obilisati minate ents	-		water ribration		In-con	nbinatic	on
				С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
				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)
Mudflats ar	seawate	er at lov		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 Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.
- b) Screened in for grey seal as the site is within the identified foraging range of 100km. The potential for disturbance to foraging seals as a result of underwater noise will be assessed.
- c) The distance between the offshore project area and the designated site is beyond the range of any potential LSE.





Site 130 Nordre älvs estuarium SAC Name of European Site: 761 Distance to Norfolk Boreas (km) Likely effect(s) of Norfolk Boreas Site Features Indirect effects on prey Changes to water Underwater noise **Vessel Interactions** In-combination quality С С 0 D С 0 D С 0 D 0 D С 0 D Harbour seal N(a) a) The distance between the potential impact range of Norfolk Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.

Site Name of European Site:	131 Nordv	ästra Sk	ånes hav	vsområde	SAC										
Distance to Norfolk Boreas (km)	860														
Site Features		effect(s) water no		olk Borea Vessel	s Interactio	ons	Indired	t effects	on prey	Change quality	es to wate	er	In-com	bination	
	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)
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 Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.





Name of European Site: **Norfolk Valley Fens SAC**

Distance to Norfolk Boreas 0.6+ (17 sites, with 5 sites within 5km of the onshore project area)

(km)				,																				
	Likely	effe	ct(s) c	f Norf	olk B	oreas																		
	Direct (e.g. loss) withi	habi on la	tat ind m	Impac featur outsid the or projec	es le 5k ishoi	m of re	situ h funct	cts on nabitat ionally ected t AC	s /	grour hydro	rbance du ndwater / plogy chan n 5km		Impact noise disturb within	oanc	e	Impac chang quality 5km	ing a	ir	Impac disturl within	bance		Impac visual within	distu	rbance
	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, peaty or	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)





Name of European Site: Norfolk Valley Fens SAC

Distance to Norfolk Boreas 0.6+ (17 sites, with 5 sites within 5km of the onshore project area)

	Likely	effe	ct(s) o	f Norf	olk B	oreas																		
	Direct (e.g. loss) withi	habit on la	at nd n	Impac featur outsid the or projec	es e 5kı ıshor	m of e	situ h	cts on abitat ionally ected AC	:s /	grour hydro	rbance du ndwater / ology char n 5km		Impac noise disturi within	banc	e	Impac chang quality 5km	ing a	ir	Impac distur within	banc		Impac visual within	distu	rbanc
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
clayey-silt- laden soils (Molinion caeruleae)																								
Calcareous fens with Cladium mariscus and species of the Caricion davallianae	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)
Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion ncanae, 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- mouthed whorl	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)





Name of European Site: Norfolk Valley Fens SAC

Distance to Norfolk Boreas 0.6+ (17 sites, with 5 sites within 5km of the onshore project area)

(km)

	Likely	y effe	ect(s) c	of Norf	olk B	oreas																		
	Direct effects (e.g. habitat loss) on land within 5km the onshore project area					m of e	situ h funct	cts on abitat ionally ected AC	:s /	groun	bance due dwater / logy chang n 5km		Impac noise disturk within	oance	e	Impact changi quality 5km	ng ai	ir	Impac disturl within	bance		Impact visual within	distu	rbance
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	О	D	С	0	D
snail																								
Desmoulin's whorl snail Vertigo moulinsiana	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)

- 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 Boreas 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.





Site	133											
Name of European Site:	North Cait	hness Cliff	s SPA									
Distance to Norfolk Boreas (km)	703											
Site Features	Likely eff	ect(s) of N	orfolk Bore	eas								
	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 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 Boreas 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 Boreas 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 1	L 34											
Name of European Site:	North Norfo	lk Coast SI	PA and Rar	msar								
Distance to Norfolk Boreas (km)	L 42											
Site Features	Likely eff	ect(s) of N	orfolk Bore	eas								
	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 wigeon, pink-footed goose, brent goose, knot, avocet		Y (a)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (g)	Y (a)	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 (g)	N (g)	N (g)
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, common tern, Sandwich tern		N (f)		N (f)	N (f)	N (f)	N (f)	N (f)	N (f)	N (g)	N (g)	N (g)

- (a) Following advice from Natural England, there is potential for connectivity during migration therefore LSE cannot be screened out.
- (b) Survey data show little or no evidence of North Norfolk Coast SPA features wigeon, pink-footed goose, brent goose, knot, avocet occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site during migration.
- (c) Survey data show no evidence of North Norfolk Coast SPA feature bittern occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (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) Survey data show no evidence of North Norfolk Coast SPA feature avocet occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (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 Boreas site. Furthermore, these species tend to forage in coastal waters rather than offshore. Therefore, collision risk, displacement and barrier effects can be excluded.
- (g) The predicted effect attributable to Norfolk Boreas 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.





Name of European Site: North Norfolk Sandbanks and Saturn Reef SAC

Site	Likely e	ffect(s) o	f Norfolk	Boreas														
Features	Perma	nent loss	i	Tempo disturb	orary phy pance	rsical	increa	ering du sed nded sed			obilisatio minated ents	n of		water no bration	oise	In-con	nbination	ı
	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 1	36											
Name of European Site:	Iorthumbri	a Coast SP	A and Ram	sar								
Distance to Norfolk Boreas (km) 3	19											
Site Features	Likely eff	ect(s) of N	orfolk Bore	eas								
	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
Nonbreeding turnstone, purple sandpiper Calidris maritima		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 Northumbria Coast SPA features (turnstone, purple sandpiper) occurring in the Norfolk Boreas OWF sites, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas 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 Boreas. 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 Boreas site.
- (c) The predicted effect attributable to Norfolk Boreas 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.





Site 1	.37											
Name of European Site:	loss SPA											
Distance to Norfolk Boreas (km) 8	802											
Site Features	Likely eff	fect(s) of N	orfolk Bor	eas								
	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 seabird assemblage including as named features gannet, fulmar, guillemot, kittiwake, puffin, great skua		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	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 Boreas site are likely to be extremely small relative to BDMPS.

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

Site	138															
Name of European Site:	NTP S-	H Watte	nmeer ເ	ınd angre	enzende I	Kustenge	biete SA	С								
Distance to Norfolk Boreas (km)	360															
Site Features	Likely 6	effect(s) of Norfolk Boreas vater noise Vessel Interactions Indirect effects on prev. Changes to water In-combination														
	Under	water no	ater 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 Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.





Name of European Site: Oosterschelde SAC

Distance to Norfolk Boreas (km)

141

Site Features	Likely 6	effect(s)	of Norfo	olk Borea	s										
	Under	water no	ise	Vessel I	nteractio	ns	Indirect	t effects o	on prey	Change	s to wate	er	In-com	oination	
										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 Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.

Site 140

Name of European Site: Orfordness - Shingle Street SAC

114

Distance to Norfolk Boreas (km)

Site	Likely e	ffect(s) o	f Norfolk	Boreas														
Features	Perma	nent loss		Tempo disturb	orary phy pance	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
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)

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





Site 1	41											
Name of European Site: Ċ	Östliche De	utsche Buc	ht SPA									
Distance to Norfolk Boreas (km) 3	29											
Site Features	Likely eff	ect(s) of N	orfolk Bore	eas								
	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 Boreas 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 Boreas 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.

Site Features	Likely e	ffect(s) c	of Norfolk	Boreas											
	Underw	ater noi	se	Vessel	Interaction	ons	Indirec	t effects	on prey	Char	nges to w quality	ater/	In-	combina	tion
	С	O D C			0	С	0	D	С	0	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)





141														
Östliche D	eutsche	Bucht SP	A											
329														
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)	N(c)	N(c)	N(c)
	Östliche D 329 N(c)	Östliche Deutsche 329 N(c) N(c)	Östliche Deutsche Bucht SP 329 N(c) N(c) N(c)	Östliche Deutsche Bucht SPA 329 N(c) N(c) N(c)	Östliche Deutsche Bucht SPA 329 N(c) N(c) N(c)	Östliche Deutsche Bucht SPA 329 N(c) N(c) N(c)	Östliche Deutsche Bucht SPA 329 N(c) N(c) N(c) N(c)	Östliche Deutsche Bucht SPA 329 N(c) N(c) N(c) N(c) N(c)	Östliche Deutsche Bucht SPA 329 N(c) N(c) N(c) N(c) N(c) N(c)	Östliche Deutsche Bucht SPA 329 N(c) N(c)	Östliche Deutsche Bucht SPA 329 N(c) N(c)	Östliche Deutsche Bucht SPA 329 N(c) N(c)	Östliche Deutsche Bucht SPA 329 N(c) N(c)	Östliche Deutsche Bucht SPA 329 N(c) N(c) N(c) N(c) N(c) N(c) N(c) N(c)

Site Name of European Site:	142 Ouessa	ant-Mol	ene SAC												
Distance to Norfolk Boreas (km)	712														
Site Features	Likely effect(s) of Norfolk Boreas														
	Under	water no	oise	Vessel	Interaction	ons	Indired	t effects	on prey	Change	s to wat	er	In-com	bination	
	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	143														
Name of European Site:	Outer Thame	es Estuary S	SPA and pS	PA extensi	on										
Distance to Norfolk Boreas (km)	40														
Site Features	Likely et	Likely effect(s) of Norfolk Boreas													
	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			
Nonbreeding red-throated divers		N (a)		N (b)	Y (f)	N (c)	N (a)	N (a)	N (a)	N (e)	Y (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 Boreas 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 Boreas 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 Boreas 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 Boreas site, however this is the distance to the seaward edge of the SPA, and the coastal colonies are beyond foraging range of the Norfolk Boreas 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 Boreas 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.
- (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	144													
Name of European Site:	Papa Stou	r SPA												
Distance to Norfolk Boreas (km)	839													
Site Features	Likely e	ely effect(s) of Norfolk Boreas												
	Collisio	n 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 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 Boreas 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 Boreas site.
- (c) The predicted effect attributable to Norfolk Boreas 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	145													
Name of European Site:	Papa Westr	ay (North	Hill and Ho	lm) SPA										
Distance to Norfolk Boreas (km)	770													
Site Features	Likely ef	xely effect(s) of Norfolk Boreas												
	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)		





Name of European Site: Papa Westray (North Hill and Holm) SPA

- (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 Boreas site are likely to be extremely small relative to BDMPS.
- (b) The predicted effect attributable to Norfolk Boreas 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				146																				
Name of European	Site:			Past	on Gr	eat Ba	rn SAC	:																
Distance to Norfol	k Bore	as (kn	1)	2.9																				
	Likely effect(s)																							
	Direct effects (e.g				effect	s on	Impac	ts fror	n	Distur	bance	due	Impac	ts fron	n	Impac	ts fron	n	Impac	ts fror	n light	Impac	ts fror	n
	habitat loss) on				ı habit	ats	altera [.]	tions t	0	to gro	undwa	ater /	noise	disturk	ance	changi	ing air		distur	bance		visual	distur	bance
	land w	ithin t	:he	functi	onally		geolog	gy and	land	hydro	logy					quality	/							
	SAC bo	ounda	ry	conne	cted t	o the	contai	minati	on	chang	es													
				SAC																				
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Barbastelle bats	N(a)	N(a)	N(a)	N(a)	N(a)	N(a)	N(b)	N(b)	N(b)	Y(c)	Y(c)	Y(c)	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.





Name of European Site: Paston Great Barn SAC

Distance to Norfolk Boreas (km) 2.9

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 147 Pater Noster-skärgården SAC Name of European Site: 751 Distance to Norfolk Boreas (km) Likely effect(s) of Norfolk Boreas Site Features In-combination Underwater noise **Vessel Interactions** Indirect effects on prey Changes to water quality С С С D С 0 D С 0 D 0 D 0 0 D N(a) Harbour seal N(a)

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





Site	148														
Name of European Site:	Pent	and Firth I	slands SPA	L											
Distance to Norfolk Boreas (km)	710														
Site Features		Likely effect(s) of Norfolk Boreas													
		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		
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 beyond maximum foraging range of Arctic tern so has no breeding season connectivity. The proportion of the population migrating through the Norfolk Boreas site is likely to be extremely small relative to BDMPS.

Site	L 49											
Name of European Site:	Portsmouth I	larbour SP	A									
Distance to Norfolk Boreas (km)	347											
Site Features	Likely ef	fect(s) of N	orfolk Bor	eas								
	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
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 Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.

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

⁽b) The predicted effect attributable to Norfolk Boreas 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	150															
Name of European Site:	Presqu	'ile De C	crozon S	AC												
Distance to Norfolk Boreas (km)	749															
Site Features	Likely 6															
	Under	rwater 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	
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	al impact	range o	f Norfoll	k Boreas a	and the e	xtent of	any effec	on indiv	iduals fro	m this sit	e would	result in	no poten	tial for LS	E.	

Site	151											
Name of European Site:	Ramsar-Gek	oiet S-H Wa	attenmeer	und angre	enzende Ki	istengebie	te SPA					
Distance to Norfolk Boreas (km)	355											
Site Features	Likely eff	ect(s) of N	orfolk Bor	eas								
	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
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,		N (b)		N (b)	N (b)	N (b)	N (b)	N (b)	N (b)	N (e)	N (e)	N (e)





Name of European Site: Ramsar-Gebiet S-H Wattenmeer und angrenzende Küstengebiete SPA

Site Features	Likely eff	ect(s) of N	orfolk Bor	eas								
	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
great black-backed gull, Mediterranean gull, black-headed gull, little gull, kittiwake, little tern, common tern, Arctic tern, Sandwich tern, cormorant, guillemot												
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 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		N (c)		N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (e)	N (e)	N (e)
Terrestrial birds (various species)		N (d)		N (d)	N (d)	N (d)	N (d)	N (d)	N (d)	N (d)	N (d)	N (d)

⁽a) The Norfolk Boreas site is beyond maximum foraging range of designated breeding seabird species from this SPA, so has no breeding season connectivity.





Site	151														
Name of European Site:	Ramsar-Ge	biet S-H W	attenmeer	und angre	nzende Kü	istengebie	te SPA								
Distance to Norfolk Boreas (km)	355														
Site Features	Likely ef	fect(s) of N	orfolk Bor	eas											
	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			

Proportions of these populations migrating through the Norfolk Boreas 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 Boreas 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 Boreas OWF sites, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas 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 Boreas is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at this SPA.

Site	152														
Name of European Site:	Récifs	et mara	is arrière	e-littorau	x du Cap	Lévi à la	Pointe d	e Saire S	AC .						
Distance to Norfolk Boreas (km)	425														
Site Features	Likely 6	ely effect(s) of Norfolk Boreas													
	Under	lerwater 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)
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)





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

Distance to Norfolk Boreas (km) 192

	arin			

Site Features	Likely 6	effect(s)	of Norfo	olk Borea	as										
	Under	water n	oise	Vessel	Interact	ions	Indired prey	t effects	on	Change quality	es to wa	ter	In-com	binatior	١
	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	Perma	nent los	S	Tempo disturb	rary phy ance	sical		ering du ed susp ent			bilisatio ninate d ents	n of	Undervand vib	vater no ration	ise	In-com	bination	l
	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)





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

Distance to Norfolk Boreas (km) 192

- a) The distance between the potential impact range of Norfolk Boreas 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.

154 Site Ridens et dunes hydrauliques du detroit du Pas-de-Calais SAC Name of European Site: 192 Distance to Norfolk Boreas (km) **Marine Mammals Site Features** Likely effect(s) of Norfolk Boreas Underwater noise **Vessel Interactions** Indirect effects on Changes to water In-combination quality prey С D С 0 D С 0 0 С 0 D 0 D С D Harbour porpoise N(a) Grey seal N(a) N(a)

Benthic Habitats

Harbour seal

Site Features	Perma	nent los	S	Tempo disturb	rary phy pance		Smoth increase sedime	•			bilisatio ninate d ents	_	Undervand vib	water no oration	oise	In-com	bination	1
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D

N(a)





Site		1	L54													
Sandbanks which are slightly covered by sea water all the time	N (b)															
Reefs	N (b)															

a) The distance between the potential impact range of Norfolk Boreas 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 155

Name of European Site: River Derwent SAC

	Perma loss	nent h	abitat	physi	oorary cal rbance		Smoth increa suspe sedim	nded	due to		obilisati tamina ents			water ibration		Electro fields (_	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
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 Boreas and the extent of any effect from this site would result in no potential for LSE.





Name of European Site: River Wensum SAC

			,	•																				
	Likely	effec	t(s) of I	Norfolk	Borea	as																		
	Direct effects (e.g. habitat loss) on land within the SAC boundary			ex-situ habitats functionally			Impacts from alterations to geology and land contamination					noise disturbance			Impacts from changing air quality			Impacts from light disturbance			t 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





Name of European Site: River Wensum SAC

Distance to Norfolk Boreas (km) 0

to 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.

157														
Roches de Penmarch SAC														
805														
Likely effect(s) of Norfolk Boreas														
Underwater noise			Vessel Interactions			Indirec	t effects	on prey	Change quality	s to wate	er	In-combination		
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)
	Roches 805 Likely o Under	Roches de Pen 805 Likely effect(s) Underwater no	Roches de Penmarch S 805 Likely effect(s) of Norfo Underwater noise C O D	Roches de Penmarch SAC 805 Likely effect(s) of Norfolk Borea Underwater noise Vessel C O D C	Roches de Penmarch SAC 805 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interaction C O D C O	Roches de Penmarch SAC 805 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interactions C O D C O D	Roches de Penmarch SAC 805 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interactions Indirect C O D C O D C	Roches de Penmarch SAC 805 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interactions Indirect effects C O D C O D C O	Roches de Penmarch SAC 805 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interactions Indirect effects on prey C O D C O D C O D	Roches de Penmarch SAC 805 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interactions Indirect effects on prey Change quality C O D C O D C O D C	Roches de Penmarch SAC 805 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interactions Indirect effects on prey Changes to water quality C O D C O D C O D C O	Roches de Penmarch SAC 805 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interactions Indirect effects on prey Changes to water quality C O D C O D C O D	Roches de Penmarch SAC 805 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interactions Indirect effects on prey Changes to water quality C O D C O D C O D C	Roches de Penmarch SAC 805 Likely effect(s) of Norfolk Boreas Underwater noise Vessel Interactions Indirect effects on prey Changes to water quality C O D C O D C O D C O

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





Site	158												
Name of European Site:	Ronas Hill - North Roe and Tingon SPA												
Distance to Norfolk Boreas (km)	852												
Site Features	Likely effect(s) of Norfolk Boreas												
	Collision mortality			Displacement/Disturbance			Barrier E	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 Boreas 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 Boreas 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 Boreas 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 Boreas 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 15	9											
Name of European Site: Ro	usay SPA											
Distance to Norfolk Boreas (km) 75	6											
Site Features	Likely eff	ect(s) of N	orfolk Bore	eas								
	Collision											bination
	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 (b)	N (b)	N (b)					

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

Site	160														
Name of European Site:	Sälöfjo	rden SA	c												
Distance to Norfolk Boreas (km)	755														
Site Features	Likely 6	effect(s)	of Norfo	olk Borea	s										
	Under	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)
a) The distance between the potent	al impact	range o	f Norfoll	Boreas a	nd the e	xtent of a	ny effec	t on indiv	iduals fro	m this si	te would	result in	no poten	tial for LS	E.





Site Name of European Site:	161 Sanda	y SAC													
Distance to Norfolk Boreas (km)	745														
Site Features		effect(s) water no		olk Borea Vessel	s Interactio	ons	Indirec	t effects (on prey	Change quality	s to wate	er	In-coml	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 potentia	al impact	range o	f Norfolk	Boreas a	and the e	xtent of a	any effec	t on indiv	iduals fro	m this sit	e would	result in	no poten	tial for LS	E.

Site Name of European Site:	162 SBZ 1 /	ZPS 1 S	AC (off I	Nieuwpod	ort)										
Distance to Norfolk Boreas (km)	171														
Site Features		kely effect(s) of Norfolk Boreas nderwater noise													
	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 impact range of Norfolk Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.





Site 163 SBZ 2 / ZPS 2 Name of European Site: 168 Distance to Norfolk Boreas (km) Likely effect(s) of Norfolk Boreas Site Features Indirect effects on prey Underwater noise **Vessel Interactions** Changes to water In-combination quality С 0 С 0 D С 0 D С 0 D С 0 D D N(a) a) The distance between the potential impact range of Norfolk Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.

y Change	es to wat	ter	In-com	bination	
quality	,				
С	0	D	С	0	D
N(a)		N(a)	N(a)	N(a)	N(a)
) a)	C N(a)	C O	O C O D A) N(a) N(a)	O C O D C a) N(a) N(a) N(a)	O C O D C O





Name of European Site: Scanner Pockmark SAC

Site	Likely e	ffect(s) o	f Norfolk	Boreas														
Features	Perma	nent loss	i	Tempo disturb	orary phy pance	rsical	increa	ering du sed nded sed			obilisatio ninated ents	n of		water no bration	oise	In-com	nbination	
	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 16	6											
Name of European Site: Se	evogelschu	tzgebiet H	elgoland S	PA								
Distance to Norfolk Boreas (km) 32	9											
Site Features	Likely eff	ect(s) of N	orfolk Bor	eas								
	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 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)





Site	166											
Name of European Site:	Seevogelschu	tzgebiet H	elgoland S	PA								
Distance to Norfolk Boreas (km)	329											
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, eide common tern, Arctic tern, Sandwich ter	er,	N (b)		N (b)	N (c)	N (c)	N (c)					

- (a) Tracking data from gannets breeding on Helgoland show these birds do not travel in the direction of or as far as the Norfolk Boreas site despite this site being within theoretical maximum foraging range of gannet. Norfolk Boreas is beyond the maximum foraging range of other seabird species at Seevogelschutzgebeit Helgoland SPA. Proportions of these populations migrating through Norfolk Boreas 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 Boreas 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 Boreas 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	167														
Name of European Site:	Skager	ns Gren	og Skage	errak SAC											
Distance to Norfolk Boreas (km)	650														
Site Features	Likely	effect(s)	of Norfo	olk Borea	S										
	Under	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 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 potent	al impact	range o	f Norfol	k Boreas a	and the e	xtent of	any effec	t on indiv	/iduals fro	om this si	te would	result in	no poten	tial for LS	E.

Site	168													
Name of European Site:	Solent & S	outhampto	n Water SP	A & Rams	sar									
Distance to Norfolk Boreas (km)	351													
Site Features	Likely e	ffect(s) of N	lorfolk Bor	eas										
	Collisio	mortality Displacement/Disturbance Barrier Effect Cumulative/In-combination												
	С	О	O D C O D C O											
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)		





Name of European Site: Solent & Southampton Water SPA & Ramsar

- (a) Survey data show little or no evidence of Solent & Southampton Water SPA and Ramsar features occurring in the Norfolk Boreas site, and migrations of birds from this site are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (b) No Mediterranean gulls were recorded in the Norfolk Boreas site during bird surveys. This species is scarce in England, although increasing. Birds from the SPA are unlikely to migrate through the Norfolk Boreas 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 Boreas site during breeding.
- (c) Little tern, common tern, roseate tern and Sandwich tern have maximum foraging ranges from colonies of 11km, 30km, 30km, 30km and 54km respectively (Thaxter et al. 2012), so there is no connectivity between the SPA and the Norfolk Boreas 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 Boreas 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	169														
Name of European Site:	Sotesk	är SAC													
Distance to Norfolk Boreas (km)	768														
Site Features	Likely 6	effect(s)	of Norfo	olk Borea	s										
	Under	water no	oise	Vessel	Interactio	ons	Indirec	t effects	on prey	Change quality	es to wat	er	In-com	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)	N(a)

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



associated with this SAC.



Site 170 Southern North Sea SAC Name of European Site: 0 Distance to Norfolk Boreas (km) Site Features Likely effect(s) of Norfolk Boreas Underwater noise **Vessel Interactions** Indirect effects on prev Changes to water In-combination quality С С С 0 D С 0 D 0 D 0 D С 0 D Y(a) Harbour porpoise a) The offshore project area is within the SAC and therefore LSE cannot be ruled out at the screening stage. It is assumed that all harbour porpoise in this area are

Site 171 Name of European Site: St Abb's Head to Fast Castle SPA Distance to Norfolk Boreas (km) 441 **Site Features** Likely effect(s) of Norfolk Boreas Displacement/Disturbance **Barrier Effect** Cumulative/In-combination Collision mortality С C 0 D С 0 D 0 D С 0 D N (a) Breeding seabird assemblage including as N (a) N (a) N (b) N (a) N (a) N (a) N (a) N (b) N (b) named features herring gull, kittiwake, razorbill, guillemot, shag

- (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 Boreas site are likely to be very small relative to BDMPS.
- (b) The predicted effect attributable to Norfolk Boreas 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	172														
Name of European Site:	Steing	rund SA	С												
Distance to Norfolk Boreas (km)	345														
Site Features	Likely	effect(s)	of Norfe	olk Borea	s										
	Under	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)
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 potenti	al impact	range o	f Norfol	k Boreas a	and the e	extent of	any effec	t on indiv	viduals fro	m this si	te would	result in	no poten	tial for LS	E.

Site	173														
Name of European Site:	Store I	Rev SCI													
Distance to Norfolk Boreas (km)	625														
Site Features	Likely	effect(s)	of Norfo	olk Borea	S										
	Under	water no	oise	Vessel	Interactio	ons	Indirec	t effects	on prey	Change quality	s to wate	er	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)
a) The distance between the potenti	al impact	range o	f Norfoll	Boreas a	and the e	xtent of	any effec	t on indiv	iduals fro	m this sit	te would	result in	no poten	tial for LS	,E.





Name of European Site: Stour & Orwell Estuaries SPA and Ramsar

Site Features	Likely eff	ect(s) of N	orfolk Bore	eas								
	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 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 Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (b) Survey data show no evidence of Stour & Orwell Estuaries SPA feature avocet occurring in the Norfolk Boreas OWF sites, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (c) The predicted effect attributable to Norfolk Boreas 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	175														
Name of European Site:	Strand	enge på	Læsø o	g havet sy	yd herfor	SAC									
Distance to Norfolk Boreas (km)	749														
Site Features	Likely	effect(s)	of Norfo	olk Borea	S										
	Under	water no	oise	Vessel	Interactio	ons	Indirec	t effects	on prey	Change quality	s to wate	er	In-com	bination	
	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)
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 potent	al impact	range o	f Norfoll	· Boreas a	and the e	xtent of	anv effec	t on indiv	iduals fro	m this si	te would	result in	no poten	tial for IS	F

Site	.76											
Name of European Site:	Sumburgh H	lead SPA										
Distance to Norfolk Boreas (km)	78											
Site Features	Likely eff	fect(s) of N	orfolk Bore	eas								
	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 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 beyond maximum foraging range of designated seabird species so has no breeding season connectivity. Proportions of these populations migrating through the Norfolk Boreas site are likely to be very small relative to BDMPS.
- (b) The predicted effect attributable to Norfolk Boreas is so small that it would not significantly contribute to or alter the overall in-combination assessment for these features at Sumburgh Head SPA.





Name of European Site: Sydlige Nordsø SAC

Distance to Norfolk Boreas (km) 342

Site Features	Likely 6	effect(s)	of Norfo	olk Borea:	s										
	Under	water no	ise	Vessel I	nteractio	ns	Indirect	t effects o	on prey	Change	s to wate	er	In-comb	oination	
										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 Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.

Site 178

Name of European Site: Sylter Außenriff SCI

Distance to Norfolk Boreas (km) 286

Ornithology

Site Features	Likely	effect(s) of	Norfolk Bo	reas								
	Collisio	n mortalit	.y	Displace	ment/Distເ	ırbance	Barrier Eff	ect		Cumulati	ve/In-combi	nation
	С	0	D	С	0	D	С	0	D	С	0	D
Nonbreeding seabird assemblage		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (b)	N (b)	N (b)
including black-throated diver, red-												
throated diver, common gull, lesser												
black-backed gull, great black-backed												





Site			1	78												
Name of E	uropean Site:		S	ylter Au	ußenriff SCI											
Distance to	o Norfolk Boreas (km)		2:	86												
	gull, gannet, kittiwake, ern, Arctic tern, Sandwic emot	ch														
Marine ma	ammals															
Site Featur	res	Likely	effect(s) of No	rfolk Boreas	;										
		Unde	rwater n	ioise	Vessel	Interaction	ons	Indirec	t effec	ts on prey	Chan quali	ges to wate	r	In-co	mbinatio	n
		С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour p	orpoise	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)
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)
Harbour se	eal	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)
Fish													-			
Site Features	Likely effect(s) of Norf	olk Bore	as													
		Tempor disturba		i	Smothering increased suspended sediment	due to	Re- mol contam sedimer			Underwater and vibration		Electroma fields (EM	_	1	n-combir	nation





Site						178															
Name of E	uropea	ın Site:				Sylter	Außen	riff SCI													
Distance t	o Norfo	olk Bor	eas (km)			286															
	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 Boreas 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 Boreas 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 Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.

Site 1	79											
Name of European Site:	eesmouth a	nd Clevela	nd Coast SI	PA and Ran	nsar							
Distance to Norfolk Boreas (km) 3	01											
Site Features	Likely ef	fect(s) of N	orfolk Bore	eas								
	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 knot, redshank		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (d)	N (d)	N (d)





Site	179											
Name of European Site:	Teesmouth a	nd Clevelar	nd Coast SF	A and Ran	nsar							
Distance to Norfolk Boreas (km)	301											
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 Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas 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 Boreas. However, very few terns of any species were seen in the Norfolk Boreas 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 Boreas 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 Boreas.

 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 Boreas site.
- (d) The predicted effect attributable to Norfolk Boreas 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	180												
Name of European Site:	Thames Est	uary and N	/larshes SP	A and Ram	sar								
Distance to Norfolk Boreas (km)	210		s) of Norfolk Boreas										
Site Features	Likely ef	fect(s) of N	orfolk Bore	eas									
	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	
Wintering and passage waterbird assemblage including as named features		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)	





Site	180											
Name of European Site:	Thames Est	uary and N	Marshes SP	A and Rar	nsar							
Distance to Norfolk Boreas (km)	210											
dunlin, knot, ringed plover, black-tailed godwit, grey plover, avocet, redshank												
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 r SPA are likely to result in n (b) Survey data show no evide numbers passing through t (c) The predicted effect attribution for these features at Tham 	egligible num nce of hen ha he Norfolk Bo utable to Norf	bers passir rrier occur oreas site, a folk Boreas	ng through ring in the as the spec is so smal	the Norfo Norfolk B ies is likel I that it wo	lk Boreas s oreas site, y to migrat	site. and migra e overland	tions of bi	rds from th an over sea	nis SPA are a where the	likely to re	esult in neg available.	ligible

Site 18	1													
Name of European Site: Th	anet Coast	and Sandv	vich Bay SF	A and Ran	nsar									
Distance to Norfolk Boreas (km) 18	7													
Site Features	Likely ef	ikely effect(s) of Norfolk Boreas												
	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		
Nonbreeding turnstone, golden 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 little or no evidence of Thanet Coast & Sandwich Bay SPA features turnstone or golden plover occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas 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 Boreas 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 Boreas site.
- (c) The predicted effect attributable to Norfolk Boreas 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.

Site 182
Name of European Site: Thanet Coast SAC

Distance to	I TOTTOIK	DOI Cas (i	,															
Site	Likely e	ffect(s) o	f Norfolk	Boreas														
Features	Perma	nent loss		Tempo disturb	orary phy pance	/sical	increa	ering du sed nded sed		_	obilisatio minated ents	n of		water no bration	oise	In-com	nbination	
	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)
Mudflats and sandflats not	N (a)	N (a)	N (a)	N (a)	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				182												
covered																
by																
seawater																
at low																
tide																
Reefs	N (a)															

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

Site 183

Name of European Site: The Broads SAC

Site Features	Likely ef	fect(s) of 1	Norfolk Bor	eas								
Site i catales		ffects with		1	effects on 6	ex-situ	Indirect	effects wi	thin SAC	Indirect 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)





Name of European Site: The Broads SAC

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)
Ramshorn 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)
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	184											
Name of European Site:	The Sv	vale SPA & Ra	amsar									
Distance to Norfolk Boreas (km)	205											
Site Features	Likel	y effect(s) of	Norfol	k Bore	eas							
	Collis	sion mortality	/	Disp	lacement/Disturbance		Barr	ier Eff	ect	Cumulative, combination		
	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 Boreas site, and migrations of birds from this site are likely to result in negligible numbers passing through the Norfolk Boreas site.
- (b) The predicted effect attributable to Norfolk Boreas 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			185												
Name of European Sit	e:		The I	Norfo	olk Coast	SAC									
Distance to Norfolk Bo	oreas (kr	n)	110 ((33kn	n from o	ffshore	cable	cor	ridor)						
Marine Mammals															
Site Features	Likely e	effect(s)	of Norf	olk B	oreas										
	Underv	water no	oise	dist	sel eractions urbance I haul ou	at	Indir	ect (effects on prey	Change water		У	In-c	combination	1
	С	0	D	С	0	D	С	0	D	С	О	D	С	0	D
Harbour seal	Y (a)	Y (a)	Y (a)	Y	Y (a)	Y (a)	Y (a)	Y	Y (a)	Y (a)		Υ	Υ	Y (a)	Y (a)





Site			185	;														
Name of European Site	e:		The	Norfo	olk Coast	SAC												
Distance to Norfolk Bo	reas (kı	m)	110) (33kr	n from o	ffsho	re cal	ole co	ridor)									
				(a)				(a				(a)	(a)					
Grey seal	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)		
Benthic Habitats										·								
Site Features	ite Features Permanen				oorary cal rbance				g due to increased d sediment	Re- mol of conta d sedim	mina	ate		erwater n vibration	oise	In-comb	ination	
	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)
Large shallow inlets and bays	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) Potential effects from underwater noise; vessel interactions; changes to water quality; changes to prey resources; and disturbance at seal haul-out sites for foraging grey and harbour seal cannot be ruled out.

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.





Name of European Site: The Wash SPA and Ramsar

Site Features		Likely eff	ect(s) of N	orfolk Bore	eas								
		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 assemblage including a pintail, wigeon, gadwa goose, turnstone, brer goldeneye, sanderling Bewick's swan, oyster godwit, black-tailed go scoter, curlew, grey pl redshank	as named features ill, pink-footed nt goose, , dunlin, knot, catcher, bar-tailed odwit, common		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N (a)	N (c)	N (c)	N (c)
Breeding little tern, co	mmon 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 Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas 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 Boreas 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 Boreas 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 187 Tregor Goëlo SAC Name of European Site: 594 Distance to Norfolk Boreas (km) **Site Features** Likely effect(s) of Norfolk Boreas Indirect effects on prey Underwater noise **Vessel Interactions** In-combination Changes to water quality С 0 D С 0 D С 0 D С 0 D С 0 D Grey seal N(a) a) The distance between the potential impact range of Norfolk Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.

Site 1	88													
Name of European Site:	roup, Penn	an and Lic	n`s Heads	SPA										
Distance to Norfolk Boreas (km) 5	93													
Site Features	Likely eff	ely effect(s) of Norfolk Boreas												
	Collision	sion 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 razorbill, fulmar, guillemot, kittiwake, herring gull		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 Boreas site are likely to be very small relative to BDMPS.

⁽b) The predicted effect attributable to Norfolk Boreas 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	189														
Name of European Site:	Untere	ems und	Außene	ms SCI											
Distance to Norfolk Boreas (km)	259														
Site Features	Likely	effect(s)	of Norfo	olk Borea	S										
	Under	water no	oise	Vessel	Interactio	ons	Indirec	t effects	on prey	Change quality	s to wate	er	In-coml	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 potent	al impact	range o	f Norfoll	Boreas a	and the e	xtent of	any effec	on indiv	/iduals fro	m this si	te would	result in	no poten	tial for LS	E.

Site	190														
Name of European Site:	Vadeh	avet me	d Ribe Å	, Tved Å	og Varde	Å vest fo	or Varde	SAC							
Distance to Norfolk Boreas (km)	397														
Site Features	Likely	y effect(s) of Norfolk Boreas erwater noise Vessel Interactions Indirect effects on prey quality In-combination													
	Under														
	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 potent	al impact	range o	f Norfoll	k Boreas a	and the e	xtent of a	any effec	t on indiv	iduals fro	m this sit	e would	result in	no poten	tial for LS	E.





Site	191														
Name of European Site:	Venø,	Venø Su	nd SAC												
Distance to Norfolk Boreas (km)	531														
Site Features	Likely	effect(s)	of Norfo	olk Borea	S										
	Under	water no	oise	Vessel	Interactio	ons	Indirec	t effects	on prey	Change quality	s to wate	er	In-com	bination	
	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 potent	ial impact	range o	f Norfoll	k Boreas a	and the e	xtent of	ny effec	t on indiv	iduals fro	m this sit	e would	result in	no poten	tial for LS	E.

Site 192 Name of European Site: **Vlaamse Banken SAC** Distance to Norfolk Boreas (km) 136 **Marine Mammals** Likely effect(s) of Norfolk Boreas Site Features Underwater noise **Vessel Interactions** Indirect effects on prey Changes to water quality In-combination and disturbance at seal haul outs 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) Fish





Site					192																		
Name of Eu	uropean	Site:			Vlaam	se Banke	n SAC																
Site	Likely	effect(s	s) of No	rfolk Bo	reas																		
Features	Perma	anent h	abitat		oorary p	hysical		ncr oen		ue	of co	mobilisa ontamin ments				water ribration		Electro fields (_		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)
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 ha	bitats						<u> </u>																
Site Feature	es			Perma	nent los	5	Tem phys distu	sica	•	in		ring due ed suspe nt		(cont	mobilisa aminat ments	ation of e d	Unde and v		ter noise ition	In-co	mbinati	on
				С	0	D	С	C	D	С		0	D	(СО)	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 N((b)	N(b)	N(b)	N (b	N(b)	N(b)	N(b)	N(b)
Sandbanks covered by time		_	-	N(b)	N(b)	N(b)	N(b)	N (b	N(b)	N(b)	N(b)	N(b)	(b	N 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 Boreas and the extent of any effect on individuals from this site would result in no potential for LSE.





Name of European Site: Vlaamse Banken SAC

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

Site 193

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

Distance to Norfolk Boreas (km) ______153

Marine Mammals

Site Features	Likely e	ffect(s) of	Norfolk B	oreas											
	Underw	ater noise	2	Vessel I	nteraction	ıs	Indirect	effects or	n prey	Change	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	s) of Nor	rfolk Boı	reas																
Features	Perma loss	anent h	abitat	Tempo disturi	orary pł pance	nysical	Smoth increase susper sedime	nded	ue to		obilisati minated ents			water r bration		Electro fields	omagne (EMF)	tic	In-con	nbinatio	n
	C O D C				0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D





Site					193																
Name of E	Europea	an Site:	:		Vlakt	e van de	e Raan S	CI/SAC													
Distance t	to Norfo	olk Bor	eas (km)	153																
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)							
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)							
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)							

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

Site		194												
Name of European Si	te	Voordelta SF	PA and SAG	С										
Distance to Norfolk B	oreas (km)	118												
Ornithology														
Site Features	Likely effect(s) of Norfolk B	oreas											
			Collision	n mortality	/	Displace	ement/Dis	turbance	Barrier E	Effect		Cumulat combina	·	
			С	0	D	С	0	D	С	0	D	С	0	D
Wintering and passag cormorant, shelduck, goldeneye, sanderling	ringed plover,	dunlin,		N (a)		N (a)	N (a)	N (a)	N (a)	N (a)	N(a)	N (b)	N (b)	N (b)





194 Site Voordelta SPA and SAC Name of European Site 118 Distance to Norfolk Boreas (km) crested grebe, greylag goose, Sandwich tern, avocet, gadwall, Slavonian grebe, spoonbill, redbreasted merganser, pintail, red-throated diver, bar-tailed godwit, oystercatcher, shoveler, wigeon, turnstone, scaup, redshank, common tern, teal, curlew, grey plover, common scoter Marine mammals Likely effect(s) of Norfolk Boreas Site Features Underwater noise Underwater noise Underwater noise Underwater noise Underwater noise С 0 D С 0 D С 0 D С 0 D С 0 D N (c) Harbour porpoise N (c) Grey seal N (c) Harbour seal N (c) Fish Likely effect(s) of Norfolk Boreas





Site				19	94																
Name of I	Europea	an Site		V	oordelta	a SPA ar	nd SAC														
Distance 1	to Norf	olk Bor	eas (km) 1:	18																
Site Features	Perma loss	anent h	abitat		orary pl bance	hysical	Smoth increa suspe sedim	nded	lue to	'''	obilisati minated ents			rwater r ibration			omagne (EMF)	etic	In-con	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(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)
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	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)
Benthic H	abitats	•						•	'									'			
Site	Likely	effect(s	s) of No	rfolk Bo	reas																
Features				Perma	anent lo	SS	Temp distur	orary pł bance	nysical	Smoth increa suspe sedim	nded	ue to		obilisati minate ents			water r	ioise	In-con	nbinatio	ın
				С	0	D	С	0	D	С	О	D	С	0	D	С	0	D	С	0	D





Site	19	94																
Name of European Site	V	oordelta	s SPA an	d SAC														
Distance to Norfolk Boreas (km)	11	18																
Sandbanks which are slightly covered by sea water all the time	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)

- a) Survey data show little or no evidence of Voordelta SPA features occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas site.
- b) The predicted effect attributable to Norfolk Boreas 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 Boreas 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	195														
Name of European Site:	Vrångö	iskärgår	den SAC	:											
Distance to Norfolk Boreas (km)	768														
Site Features	Likely 6	effect(s)	of Norfo	olk Borea	s										
	Under	water no	oise	Vessel	Interactio	ons	Indirec	t effects	on prey	Change quality	s to wat	er	In-com	bination	
	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 potent	al impact	range o	f Norfoll	Boreas a	and the e	xtent of a	ny effec	t on indiv	iduals fro	m this si	te would	result in	no poten	tial for LS	Έ.





Name of European Site: Waddenzee (Wadden Sea) SPA

Site Features	Likely eff	ect(s) of N	orfolk Bore	eas								
	Collision	mortality		Displacer	ment/Distu	ırbance	Barrier E	ffect		Cumulati	ve/In-coml	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 merganser, goosander, curlew, cormorant, spoonbill, golden plover, grey plover, great crested grebe, avocet, eider, shelduck, greenshank, redshank, lapwing		N (c)		N (c)	N (c)	N (c)	N (c)	N (c)	N (c)	N (d)	N (d)	N (d)

⁽a) The Norfolk Boreas 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 Boreas site are likely to be extremely small relative to BDMPS, not only because of





Name of European Site: Waddenzee (Wadden Sea) SPA

Distance to Norfolk Boreas (km) 105

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





Name of European Site: Waddenzee SAC

Distance to Norfolk Boreas (km) 106

Marine Mammals

Site Features	Likely e	effect(s)	of Norfolk E	Boreas											
	Underv	water no	oise	Vessel	Interac	tions	Indired prey	ct effect	ts on	Change quality	es to wa	iter	In-con	nbinatio	n
	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	Perma	nent los	S	Tempo disturl	orary ph	ysical	Smoth increa susper sedim	nded	ue to		bilisatio ninate d ents	_		water no oration	oise	In-com	bination	ı
	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)
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 Boreas 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 198 Name of European Site: **West Westray SPA** Distance to Norfolk Boreas (km) 766 Likely effect(s) of Norfolk Boreas **Site Features** Displacement/Disturbance Cumulative/In-combination Collision mortality Barrier Effect С 0 С D С 0 0 D С 0 D Breeding seabird assemblage including as N (a) N (b) N (b) N (b) named features kittiwake, Arctic tern, fulmar, razorbill, Arctic skua, guillemot

⁽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 Boreas site are likely to be very small relative to BDMPS.

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





Name of European

Westerschelde & Saeftinghe SAC

Site:

Distance to Norfolk

156

Boreas (km)

-		1_	
-	c	n	

Site Features	Likely effect(s) of Norfolk Boreas																				
					disturbance			Smothering due to increased suspended sediment			Re- mobilisation of contaminated sediments			Underwater noise and vibration			Electromagnetic fields (EMF)			In-combination	
	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)
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)

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

Site Name of European Site:	200 Winter	ton – H	orsey Dı	unes SAC												
Distance to Norfolk Boreas (km)	74 (3.2	from ca	ıble corı	idor)												
Site Features		effect(s) water no		olk Borea	s nteractio	ns	Indirect	effects o	n nrev	Change	s to wate	or .	In-com	oination		
	Ollder	vacer ne	,,,,,	V C33C11	vesser interactions			. Circuts (,,, b.c.	quality	s to wate	-1	III-combination			
	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	





Name of European Site: Winterton – Horsey Dunes SAC

Distance to Norfolk Boreas (km)

74 (3.2 from cable corridor)

Grey seal	Y(a)		Y(a)	Y(a)	Y(a)	Y(a)									
-----------	------	------	------	------	------	------	------	------	------	------	--	------	------	------	------

a) The grey seal haul-out site less than 5km from cable landfall site. Potential effects from underwater noise in cable corridor; vessel interactions in cable corridor; changes to water quality in cable corridor; changes to prey resources in cable corridor; and disturbance at seal haul-out sites cannot be ruled out.

Site Name of European Site:	201 Yell So	und Coa	st SAC												
Distance to Norfolk Boreas (km)	832														
Site Features Likely effect(s) of Norfolk Boreas															
	Underwater noise			Vessel Interactions			Indirec	t effects	on prey	Change	s to wate	er	In-combination		
										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 potenti	al impact	range o	f Norfolk	Boreas a	and the e	xtent of a	any effect	t on indiv	iduals fro	m this sit	te would	result in	no poten	tial for LS	E.

June 2019

Norfolk Boreas Screening Matrices





Name of European Site: Ythan Estuary, Sands of Forvie and Meikle Loch SPA

Site Features	Likely eff	Likely effect(s) of Norfolk Boreas												
	Collision	Collision mortality			ment/Distu	ırbance	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 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)		

- (a) Survey data show little or no evidence of Ythan Estuary, Sands of Forvie & Meikle Loch SPA features occurring in the Norfolk Boreas site, and migrations of birds from this SPA are likely to result in negligible numbers passing through the Norfolk Boreas 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 Boreas 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 Boreas 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.