

# FIVE ESTUARIES OFFSHORE WIND FARM

VOLUME 5, REPORT 4.3: HABITATS REGULATIONS ASSESSMENT SCREENING MATRICES – REVISION B (CLEAN)

Application Reference
Application Document Number
Revision
Pursuant to
Ecodoc Number
Date

EN010115 5.4.3 B Deadline 5 005076721-03 January 2025



COPYRIGHT © Five Estuaries Wind Farm Ltd All pre-existing rights reserved.

In preparation of this document Five Estuaries Wind Farm Ltd has made reasonable efforts to ensure that the content is accurate, up to date and complete for the purpose.

Revision	Date	Status/Reason for Issue	Originator	Checked	Approved
Α	Mar-24	ES	GoBe	GoBe	VE OWFL
В	Jan-25	Deadline 5	GoBe	GoBe	VE OWFL



#### **CONTENTS**

1	Matrix key	8
	Index to matrices	
3	Effects considered	13
4	References	147



#### **MATRICES**

HRA	Screening Matrix 1: Vlaamse Banken (Special Area of Conservation (SAC))	30
HRA	Screening Matrix 2: Thanet Coast (SAC)	32
	Screening Matrix 3: Bancs des Flandres (SAC)	
HRA	Screening Matrix 4: Margate and Long Sands (SAC)	35
HRA	Screening Matrix 5: Alde, Ore and Butley Estuaries (SAC)	36
HRA	Screening Matrix 6: Orfordness – Shingle Street (SAC)	37
HRA	Screening Matrix 7: Essex Estuaries SAC	38
HRA	Screening Matrix 8: Deben Estuary Ramsar	39
HRA	Screening Matrix 9: Deben Estuary SPA	40
	Screening Matrix 10: Dengie (Mid-Essex Coast Phase 1) SPA	
HRA	Screening Matrix 11: Dengie (Mid-Essex Coast Phase 1) Ramsar	42
HRA	Screening Matrix 12: Stour and Orwell Estuaries Ramsar	43
HRA	Screening Matrix 13: Colne Estuary (Mid-Essex Coast Phase 2) Ramsar	44
	Screening Matrix 14: Alde-Ore Estuary Ramsar	
HRA	Screening Matrix 15: Foulness (Mid-Essex Coast Phase 5) Ramsar	47
	Screening Matrix 16: Berwickshire and North Northumberland Coast SAC	
HRA	Screening Matrix 17: Humber Estuary SAC	49
	Screening Matrix 18: Humber Estuary Ramsar	
	Screening Matrix 19: Moray Firth SAC	
	Screening Matrix 20: Southern North Sea SAC	
	Screening Matrix 21: Wash and North Norfolk Coast SAC	
	Screening Matrix 22: Transboundary sites for Harbour porpoise	
	Screening Matrix 23: Transboundary Sites for Seals	
	Screening Matrix 24: Outer Thames Estuary SPA	
	Screening Matrix 25: Alde-Ore Estuary SPA	
	Screening Matrix 26: Minsmere-Walberswick SPA	
	Screening Matrix 27: Minsmere-Walberswick Ramsar	
	Screening Matrix 28: Hamford Water SPA	
	Screening Matrix 29: Thanet Coast and Sandwich Bay SPA	
	Screening Matrix 30: Greater Wash SPA	
	Screening Matrix 31: Colne Estuary (Mid-Essex Coast Phase 2) SPA	
	Screening Matrix 32: Foulness (Mid-Essex Coast Phase 5) SPA	
	Screening Matrix 33: Breydon Water SPA	71
	Screening Matrix 34: Blackwater Estuary SPA	
	Screening Matrix 35: Blackwater Estuary Ramsar	
	Screening Matrix 36: Medway Estuary and Marshes SPA	
	Screening Matrix 37: Dungeness, Romney Marsh and Rye Bay SPA	
	Screening Matrix 38: North Norfolk Coast SPA	
	Screening Matrix 39: North Norfolk Coast Ramsar	
HRA	Screening Matrix 40: The Wash SPA	79
HKA	Screening Matrix 41: Gibraltar Point SPA	80
	of Matrix 41HRA Screening Matrix 42: Humber Estuary SPA	
	Screening Matrix 43: Flamborough and Filey Coast SPA	
	Screening Matrix 44: Teesmouth and Cleveland Coast SPA	
	Screening Matrix 45: Northumbria Coast SPA	
	Screening Matrix 46: Northumbria Coast Ramsar	
пΚА	Screening Matrix 47: Northumberl and Marine SPA	ŏ/



HRA	Screening	Matrix	48:	Coquet Island SPA	88
HRA	Screening	Matrix	49:	Farne Islands SPA	89
HRA	Screening	Matrix	50:	Aberdaron Coast and Bardsey Island SPA	91
				Lindisfarne SPA	
HRA	Screening	Matrix	52:	Skomer Skokholm and the Seas off Pembrokeshire	93
				St Abb's Head to Fast Castle SPA	
	_			Grassholm SPA	
				Imperial Dock Lock, Leith SPA	
				Forth Islands SPA	
				Ailsa Craig SPA	
				Fowlsheugh SPA	
	_			Isles of Scilly SPA	
				Ythan Estuary, of Sands of Foryie and Meikle Loch SPA	
				Ythan Estuary, Sands of Foryie and Meikle Loch Ramsar	
				Buchan Ness to Collieston Coast SPA	
				Rathlin Island SPA	
				Loch of Strathbeg SPA	
				Troup, Pennan and Lion's Heads SPA	
				Inner Moray Firth SPA	
				Cromarty Firth SPA	
				Rum SPA	
				East Caithness Cliffs SPA	
				North Caithness Cliffs SPA	
				Copinsay SPA	
				Mingulay and Berneray SPA	
				Hoy SPA	
				Auskerry (UK) SPAHanda SPA	
				Shiant Isles SPA	
				Calf of Eday SPA	
				Calf of Eday SPA	
				Rousay SPA	
					121
				Fair Isle SPA	
				West Westray SPA	
				Papa Westray (North Hill and Holm) SPA	
				Sule Skerry and Sule Stack SPA	
	_			Sumburgh Head SPA	
				Mousa SPA	
				Noss SPA	
				Flannan Isles SPA	
				St Kilda SPA	
				North Rona and Sula Sgeir SPA	
				Foula SPA	
				Papa Stour SPA	
				Fetlar SPA	
				Ronas Hill-North Roe and Tingon SPA	
				Hermaness, Saxa Vord and Valla Field SPA	
HRA	Screening	Matrix	96.	Ramna Stacks and Gruney SPA	137



HRA Screening Matrix 97: Southern Waters of Gibraltar SPA	138
HRA Screening Matrix 98: Vlakte van de Raan	139
HRA Screening Matrix 99: Westerschelde & Saeftinghe	140
HRA Screening Matrix 100: Voordelta	141
HRA Screening Matrix 101: Hamford Water SAC	142
HRA Screening Matrix 102: Hamford Water Ramsar	143
HRA Screening Matrix 103: Stour and Orwell Estuaries SPA and RAMSAR	144
HRA Screening Matrix 104: Abberton Reservoir SPA	145
HRA Screening Matrix 105: Abberton Reservoir Ramsar	146
Table 2.1 Index to matrices	9
Table 3.1: Potential effects on the European site considered in the matrices	13



#### **DEFINITION OF ACRONYMS**

Term	Definition
EMF	Electromagnetic Field
ECC	Export Cable Corridor
HRA	Habitats Regulations Assessment
INNS	Invasive Non-Native Species
LSE	Likely Significant Effect
OWF	Offshore Wind Farm
PEIR	Preliminary Environmental Impact Report
PINS	Planning Inspectorate
RIAA	Report to Inform Appropriate Assessment
SAC	Special Area of Conservation
SPA	Special Protected Area
VE	Five Estuaries
VEOWFL	Five Estuaries Offshore Windfarm Limited
WTG	Wind Turbine Generator
Zol	Zone of Influence

### **UNITS**

Units	Definition	
km	Kilometre	
cm	Centimetre	
m	Metre	
ha	Hectare	
kg	Kilogram	



#### 1 MATRIX KEY

√ = Likely Significant Effect cannot be excluded

X = Likely Significant Effect can be excluded

Evidence for, or against adverse effects on European site qualifying feature and Likely Significant Effect is detailed within the footnotes to the integrity matrices

C = construction

O = operation and maintenance

D = decommissioning



= Effect not relevant to feature (no pathway)



#### 2 INDEX TO MATRICES

2.1.1 This appendix presents the Screening matrices for Five Estuaries Offshore Wind Farm (OWF, hereafter 'VE') prompted by Five Estuaries Offshore Windfarm Limited (hereafter 'the Applicant') in accordance with the structure and format specified in PINS Advice Note 10 (version 8, from November 2022).

Table 2.1 Index to matrices

Matrix Number	European site included within the assessment
1	Vlaamse Banken SAC
2	Thanet Coast SAC
3	Bancs des Flandres SAC
4	Margate and Long Sands (SAC)
5	Alde, Ore and Butley Estuaries SAC
6	Orfordness – Shingle Street SAC
7	Essex Estuaries SAC
8	Deben Estuary Ramsar
9	Dengie (Mid-Essex Coast Phase 1) Ramsar
10	Stour and Orwell Estuaries Ramsar
11	Colne Estuary (Mid-Essex Coast Phase 2) Ramsar
12	Alde-Ore Estuary Ramsar
13	Foulness (Mid-Essex Coast Phase 5) Ramsar
14	Berwickshire and North Northumberland Coast SAC
15	Humber Estuary SAC
16	Humber Estuary Ramsar
17	Moray Firth SAC
18	Southern North Sea SAC
19	Wash and North Sea SAC
20	Transboundary sites for Harbour porpoise
21	Transboundary Sites for Seals
22	Outer Thames Estuary SPA
23	Alde-Ore Estuary SPA
24	Minsmere- Walberswick SPA
25	Hamford Water SPA



Matrix Number	European site included within the assessment
26	Thanet Coast and Sandwich Bay SPA
27	Greater Wash SPA
28	Colne Estuary (Mid-Essex Coast Phase 2) SPA
29	Foulness (Mid-Essex Coast Phase 5) SPA
30	Breydon Water SPA
31	Blackwater Estuary SPA
32	Medway Estuary and Marshes SPA
33	Dungeness, Romney Marsh and Rye Bay SPA
34	North Norfolk Coast SPA
35	North Norfolk Coast Ramsar
36	The Wash SPA
37	Gibraltar Point SPA
39	Humber Estuary SPA
40	Flamborough and Filey Coast SPA
41	Northumbria Coast SPA
42	Northumbria Coast Ramsar
43	Northumberl and Marine SPA
44	Coquet Island SPA
45	Farne Islands SPA
46	Aberdaron Coast and Bardsey Island SPA
47	Lindisfarne SPA
48	Skomer Skokholm and the Seas off Pembrokeshire
49	St Abb's Head to Fast Castle SPA
50	Grassholm SPA
51	Imperial Dock Lock, Leith SPA
52	Forth Islands SPA
53	Ailsa Craig SPA
54	Fowlsheugh SPA
55	Isles of Scilly SPA
56	Ythan Estuary, of Sands of Foryie and Meikle Loch SPA
57	Ythan Estuary, Sands of Foryie and Meikle Loch Ramsar
58	Buchan Ness to Collieston Coast SPA



Matrix Number	European site included within the assessment
59	Rathlin Island SPA
60	Loch of Strathbeg SPA
61	Troup, Pennan and Lion's Heads SPA
62	Inner Moray Firth SPA
63	Cromarty Firth SPA
64	Rum SPA
65	East Caithness Cliffs SPA
66	North Caithness Cliffs SPA
67	Copinsay SPA
68	Mingulay and Berneray SPA
69	Hoy SPA
70	Auskerry (UK) SPA
71	Handa SPA
72	Shiant Isles SPA
73	Cape Wrath SPA
74	Calf of Eday SPA
75	Rousay SPA
76	Marwick Head SPA
77	Fair Isle SPA
78	West Westray SPA
79	Papa Westray (North Hill and Holm) SPA
80	Sule Skerry and Sule Stack SPA
81	Sumburgh Head SPA
82	Mousa SPA
83	Noss SPA
84	Flannan Isles SPA
85	St Kilda SPA
86	North Rona and Sula Sgeir SPA
87	Foula SPA
88	Papa Stour SPA
89	Fetlar SPA
90	Ronas Hill-North Roe and Tingon SPA



Matrix Number	European site included within the assessment
91	Hermaness, Saxa Vord and Valla Field SPA
92	Ramna Stacks and Gruney SPA
93	Southern Waters of Gibraltar SPA
94	Vlakte van de Raan
95	Westerschelde & Saeftinghe
96	Voordelta
97	Hamford Water SAC
98	Hamford Water Ramsar
99	Stour and Orwell Estuaries SPA
100	Abberton Reservoir SPA
101	Abberton Reservoir Ramsar



#### 3 EFFECTS CONSIDERED

Potential effects on European sites which are considered within the submitted Information to Support the Report to Inform Appropriate Assessment for the Habitats Regulation Assessment (HRA) of VE are provided in Table 3.1 below.

Table 3.1: Potential effects on the European site considered in the matrices

Potential effects on the European site considered in the matrices		
Designations	Impacts Considered in Matrices	
	Physical habitat loss/ disturbance	
	Suspended sediment/ deposition	
	Accidental pollution	
	Invasive Non-native species (INNS)	
Vlaamse Banken SAC	EMF	
Vidailise Balikeii SAC	Changes to physical processes	
	Underwater noise	
	Collision risk	
	Changes to prey	
	Disturbance at haul out	
	Physical habitat loss/ disturbance	
	Suspended sediment/ deposition	
Thanet Coast SAC	Accidental pollution	
Thanet Coast SAC	Invasive Non-native species (INNS)	
	EMF	
	Changes to physical processes	
	Physical habitat loss/ disturbance	
	Suspended sediment/ deposition	
	Accidental pollution	
	Invasive Non-native species (INNS)	
	EMF	
Bancs des Flandres SAC	Changes to physical processes	
	Underwater noise	
	Collision risk	
	Changes to prey	
	Disturbance at haul out	
	Barrier effect	



Potential effects on the European site co	nsidered in the matrices
	Physical habitat loss/ disturbance
	Suspended sediment/ deposition
	Accidental pollution
Margate and Long Sands (SAC)	Invasive Non-native species (INNS)
	EMF
	Changes to physical processes
	Physical habitat loss/ disturbance
	Suspended sediment/ deposition
	Accidental pollution
Alde, Ore and Butley Estuaries SAC	Invasive Non-native species (INNS)
	EMF
	Changes to physical processes
	Physical habitat loss/ disturbance
	Suspended sediment/ deposition
Orfondo do Obio do Otro de OAO	Accidental pollution
Orfordness – Shingle Street SAC	Invasive Non-native species (INNS)
	EMF
	Changes to physical processes
	Physical habitat loss/ disturbance
	Suspended sediment/ deposition
Facey Faturaries CAC	Accidental pollution
Essex Estuaries SAC	Invasive Non-native species (INNS)
	EMF
	Changes to physical processes
	Physical habitat loss/ disturbance
	Suspended sediment/ deposition
Deben Estuary Ramsar	Accidental pollution
	Invasive Non-native species (INNS)
	EMF
	Changes to physical processes
	Collision risk
Deben Estuary Ramsar	Changes in prey availability and behaviour



Potential effects on the European site considered in the matrices	
	Direct disturbance and displacement  Barrier effects  Changes to physical processes
Dengie (Mid-Essex Coast Phase 1) SPA	Collision risk
Dengie (Mid-Essex Coast Phase 1) Ramsar	Physical habitat loss/ disturbance Suspended sediment/ deposition Accidental pollution Invasive Non-native species (INNS) EMF Changes to physical processes Collision risk
Stour and Orwell Estuaries Ramsar	Physical habitat loss/ disturbance Suspended sediment/ deposition Accidental pollution Invasive Non-native species (INNS) EMF Changes to physical processes Collision risk
Colne Estuary (Mid-Essex Coast Phase 2) Ramsar	Physical habitat loss/ disturbance Suspended sediment/ deposition Accidental pollution Invasive Non-native species (INNS) EMF Changes to physical processes Collision risk
Alde-Ore Estuary Ramsar	Physical habitat loss/ disturbance Suspended sediment/ deposition Accidental pollution Invasive Non-native species (INNS) EMF Changes to physical processes Collision risk



Potential effects on the European site considered in the matrices	
	Changes to prey
	Barrier effect
	Physical habitat loss/ disturbance
	Suspended sediment/ deposition
Foulness (Mid-Essex Coast Phase 5)	Accidental pollution
Ramsar	Invasive Non-native species (INNS)
	EMF
	Changes to physical processes
	Underwater noise
	Collision risk
Berwickshire and North Northumberland	Changes to prey
Coast SAC	Physical habitat loss/ disturbances
	Accidental pollution
	Disturbance at haul out
	Underwater noise
	Collision risk
Liverban Faturani CAC	Changes to prey
Humber Estuary SAC	Physical habitat loss/ disturbance
	Accidental pollution
	Disturbance at haul out
	Underwater noise
	Collision risk
Llumbar Catuary Damaar	Changes to prey
Humber Estuary Ramsar	Physical habitat loss/ disturbance
	Accidental pollution
	Disturbance at haul out
	Underwater noise
Moray Firth SAC	Collision risk
	Changes to prey
	Accidental pollution
Southern North Sea SAC	Underwater noise
	Collision risk



Potential effects on the European site considered in the matrices	
	Physical habitat loss/ disturbance
	Changes to prey
	Accidental pollution
	Underwater noise
	Collision risk
	Changes to prey
Wash and North Sea SAC	Physical habitat loss/ disturbance
	Accidental pollution and water quality
	Disturbance at haul out
	Underwater noise
	Collision risk
Decree of the Lord of the Levil	Changes to prey
Doggersbank (Netherlands) SAC	Physical habitat loss/ disturbance
	Accidental pollution
	Disturbance at haul out
	Underwater noise
	Collision risk
Manage and COI	Changes to prey
Klaverbank SCI	Physical habitat loss/ disturbance
	Accidental pollution
	Disturbance at haul out
	Underwater noise
	Collision risk
Noord-solvistons CCI	Changes to prey
Noordzeekustone SCI	Physical habitat loss/ disturbance
	Accidental pollution
	Disturbance at haul out
	Underwater noise
SBZ 1 SCI	Collision risk
	Changes to prey
	Physical habitat loss/ disturbance
	Accidental pollution



Potential effects on the European site considered in the matrices	
	Disturbance at haul out
	Underwater noise
	Collision risk
	Changes to prey
SBZ 2 SCI	Physical habitat loss/ disturbance
	Accidental pollution
	Disturbance at haul out
	Underwater noise
	Collision risk
CD7 2 CCI	Changes to prey
SBZ 3 SCI	Physical habitat loss/ disturbance
	Accidental pollution
	Disturbance at haul out
	Underwater noise
	Collision risk
Voordelta SCI	Changes to prey
Voordeita SCI	Accidental pollution and water quality
	Physical habitat loss/ disturbance
	Disturbance at haul out
	Underwater noise
	Collision risk
Waddenzee SCI	Changes to prey
Waddenzee SCI	Accidental pollution and water quality
	Physical habitat loss/ disturbance
	Disturbance at haul out
	Underwater noise
Westerschelde & Saeftinghe	Collision risk
	Changes to prey
	Accidental pollution and water quality
	Physical habitat loss/ disturbance
	Disturbance at haul out
Outer Thames Estuary SPA	Changes in prey availability and behaviour



Potential effects on the European site considered in the matrices	
Alde-Ore Estuary SPA	Disturbance and displacement Direct disturbance and displacement Barrier effect Habitat loss Collision risk Changes in prey availability and behaviour Direct disturbance and displacement
•	Barrier effect Collision risk Changes in prey availability and behaviour
Minsmere-Walberswick SPA	Direct disturbance and displacement  Barrier effect  Collision risk
Minsmere-Walberswick Ramsar	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effects Collision risk
Hamford Water SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk Pollution (water quality) Pollution (air quality) Decreases in water quantity Loss of foraging and roosting habitat outside of the SPA
Thanet Coast and Sandwich Bay SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect
Greater Wash SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk



Potential effects on the European site considered in the matrices	
Colne Estuary (Mid-Essex Coast Phase 2) SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk Physical habitat loss/ disturbance Suspended sediment/ deposition Accidental pollution INNS Changes to physical processes
Foulness (Mid-Essex Coast Phase 5) SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect
Breydon Water SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect
Blackwater Estuary (Mid-Essex Coast Phase 4) SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk Loss of foraging and roosting habitat outside the SPA Disturbance/ displacement of birds outside SPA Water quality Decreases in water quantity Decreases in air quality
Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk Loss of foraging and roosting habitat outside the SPA Disturbance/ displacement of birds outside



Potential effects on the European site cor	nsidered in the matrices
	Water quality
	Decreases in water quantity
	Decreases in air quality
	Changes in prey availability and behaviour
Medway Estuary and Marshes SPA	Direct disturbance and displacement
	Barrier effect
	Changes in prey availability and behaviour
Dungeness, Romney Marsh and Rye Bay SPA	Direct disturbance and displacement
SPA	Barrier effect
	Changes in prey availability and behaviour
North Norfolk Coast SPA	Direct disturbance and displacement
	Barrier effect
	Changes in prey availability and behaviour
The Wash SPA	Direct disturbance and displacement
	Barrier effect
	Changes in prey availability and behaviour
Gibraltar Point SPA	Direct disturbance and displacement
	Barrier effect
	Changes in prey availability and behaviour
Humber Estuary SPA	Direct disturbance and displacement
	Barrier effect
	Changes in prey availability and behaviour
	Collision risk
Flamborough and Filey Coast SPA	Direct disturbance and displacement
	Barrier effect
	In-combination
Teesmouth and Cleveland Coast SPA	Changes in prey availability and behaviour
	Direct disturbance and displacement
	Barrier effects
	Changes in prey availability and behaviour
Northumbria Coast SPA	Direct disturbance and displacement
	Barrier effect



Potential effects on the European site con	sidered in the matrices
Northumbria Coast Ramsar	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect
Northumberl and Marine SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect
Coquet Island SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect
Farne Islands SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect
Aberdaron Coast and Bardsey Island SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect
Lindisfarne SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect
Skomer Skokholm and the Seas off Pembrokeshire	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect
St Abb's Head to Fast Castle SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect
Grassholm SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect
Imperial Dock Lock, Leith SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk
Forth Islands SPA	Changes in prey availability and behaviour



Potential effects on the European site considered in the matrices	
	Direct disturbance and displacement  Barrier effect
	Collision risk
Ailsa Craig SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk
Fowlsheugh SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk
Isles of Scilly SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk
Ythan Estuary, of Sands of Foryie and Meikle Loch SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk
Ythan Estuary, Sands of Foryie and Meikle Loch Ramsar	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk
Buchan Ness to Collieston Coast SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk
Rathlin Island SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk
Loch of Strathbeg SPA	Changes in prey availability and behaviour



Potential effects on the European site con	nsidered in the matrices
	Direct disturbance and displacement  Barrier effect  Collision risk
Troup, Pennan and Lion's Heads SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk
Inner Moray Firth SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk
Cromarty Firth SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk
Rum SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk
East Caithness Cliffs SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk
North Caithness Cliffs SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk
Copinsay SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk
Mingulay and Berneray SPA	Changes in prey availability and behaviour



Potential effects on the European site considered in the matrices	
	Direct disturbance and displacement
	Barrier effect
	Collision risk
	Changes in prey availability and behaviour
Hoy SPA	Direct disturbance and displacement
	Barrier effect
	Collision risk
	Changes in prey availability and behaviour
Auskerry (UK) SPA	Direct disturbance and displacement
, rusinony (enty en yr	Barrier effect
	Collision risk
	Changes in prey availability and behaviour
Handa SPA	Direct disturbance and displacement
Tianda of A	Barrier effect
	Collision risk
	Changes in prey availability and behaviour
Shiant Isles SPA	Direct disturbance and displacement
Small isles of A	Barrier effect
	Collision risk
	Changes in prey availability and behaviour
Cape Wrath SPA	Direct disturbance and displacement
Cape Wall St A	Barrier effect
	Collision risk
	Changes in prey availability and behaviour
Calf of Eday SPA	Direct disturbance and displacement
	Barrier effect
	Collision risk
Rousay SPA	Changes in prey availability and behaviour
	Direct disturbance and displacement
	Barrier effect
	Collision risk
Marwick Head SPA	Changes in prey availability and behaviour



Potential effects on the European site con	nsidered in the matrices
	Direct disturbance and displacement
	Barrier effect
	Collision risk
	Changes in prey availability and behaviour
Fair Isle SPA	Direct disturbance and displacement
rail isle SFA	Barrier effect
	Collision risk
	Changes in prey availability and behaviour
West Westray SPA	Direct disturbance and displacement
West Westlay SFA	Barrier effect
	Collision risk
	Changes in prey availability and behaviour
Dana Wastray (North Hill and Holm) CDA	Direct disturbance and displacement
Papa Westray (North Hill and Holm) SPA	Barrier effect
	Collision risk
	Changes in prey availability and behaviour
Sula Skarry and Sula Stock SDA	Direct disturbance and displacement
Sule Skerry and Sule Stack SPA	Barrier effect
	Collision risk
	Changes in prey availability and behaviour
Sumburgh Head SPA	Direct disturbance and displacement
Sumburgh Flead SFA	Barrier effect
	Collision risk
	Changes in prey availability and behaviour
Mousa SPA	Direct disturbance and displacement
Wousa SFA	Barrier effect
	Collision risk
	Changes in prey availability and behaviour
Noss SPA	Direct disturbance and displacement
INUSS SEA	Barrier effect
	Collision risk
Flannan Isles SPA	Changes in prey availability and behaviour



Potential effects on the European site co	nsidered in the matrices
	Direct disturbance and displacement  Barrier effect  Collision risk
St Kilda SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk
North Rona and Sula Sgeir SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk
Foula SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk
Papa Stour SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk
Fetlar SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk
Ronas Hill-North Roe and Tingon SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk
Hermaness, Saxa Vord and Valla Field SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk
Ramna Stacks and Gruney SPA	Changes in prey availability and behaviour



Potential effects on the European site cor	nsidered in the matrices
	Direct disturbance and displacement  Barrier effect  Collision risk
Southern Waters of Gibraltar SPA	Changes in prey availability and behaviour Direct disturbance and displacement Barrier effect Collision risk
Vlakte van de Raan	Physical habitat loss/ disturbance Suspended sediment/ deposition Accidental pollution INNS EMF Underwater noise Changes to prey
Westerschelde & Saeftinghe	Physical habitat loss/ disturbance Suspended sediment/ deposition Accidental pollution INNS EMF Underwater noise Changes to prey
Voordelta	Physical habitat loss/ disturbance Suspended sediment/ deposition Accidental pollution INNS EMF Underwater noise Changes to prey
Hamford Water SAC	Impacts on supporting populations, food plant and potential habitat outside of the SAC  Water quality: pollution from site run-off affecting habitat quality  Decreases in water quality



Potential effects on the European site	considered in the matrices
	Decreases in air quality
	In-combination
	Disturbance of birds outside the Ramsar
Hamford Water Ramsar	Water quality: pollution from site run-off affecting prey availability
	Decreases in water quantity
	Disturbance of birds outside of the SPA
	Water quality: pollution from site run-off affecting prey availability
Ctour and Omisell Fatuarian CDA	Decreases in water quantity
Stour and Orwell Estuaries SPA	Decreases in air quality
	Loss of foraging and roosting habitat outside the Ramsar
	In-combination
	Disturbance of birds outside of the SPA Water quality: pollution from site run-off affecting habitat quality
Abberton Reservoir SPA	Decrease in air quality
	Loss of foraging and roosting habitat outside the Ramsar
	In-combination
	Disturbance of birds outside the Ramsar
	Water quality: pollution from sire run-off affecting prey availability
Abberton Reservoir Ramsar	Decrease in air quality
	Loss of foraging and roosting habitat outside the Ramsar
	In-combination



#### HRA Screening Matrix 1: Vlaamse Banken (Special Area of Conservation (SAC))

Name of European site:	Vlaa	ımse	Bank	en S <i>l</i>	AC																									
EU Code:	BEN	BEMNZ000  34.75 km to array area																												
Distance to Project:	34.7	'5 km	to arra	ay are	ea																									
Likely Effects of Project	t																													
Effect	Physical habitat loss/ disturbance sediment/ deposition Accidental pollution hative Species (INNS)										L	L N		Changes	to physical processes			Underwater noise			Collision risk			Citatiges to prey		Disturbance at haul out				
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	O	D
Reefs	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa												
Sandbanks which are slightly covered by sea water all the time	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa												
Harbour porpoise							Xb		Xb										Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb			
Harbour seal; and Grey seal	√c	Xd	√c				Xd	Xd	Xd										√e	Xd	√e	√f	√f	√f	√g	√g	√g	√h	√h	√h
River lamprey; and Sea Lamprey	Xi	Xi	Xi	Xi	Xi	Xi	Xi	Xi	Xi	Xi	Xi	Xi	Xi	Xi	Xi				Xj	Xj	Xj				Xi	Xi	Xi			
Twaite shad	Xi	Xi	Xi	Xi	Xi	Xi	Xi	Xi	Xi	Xi	Xi	Xi	Xi	Xi	Xi				√k		√k									

#### **Evidence supporting conclusions:**

- Xa There is no potential for LSE as the sit sits beyond the benthic subtidal study area as defined by the secondary Zone of Influence (ZoI) and therefore has been screened out.
- Xb There is no potential for LSE. The site has been screened out based on a lack of evidence to suggest connectivity (site not within 26km of VE).
- √c The location of the project relative to the at sea usage area of seals together with connectivity to the SAC indicates the potential for seal habitat loss (caused by potential disturbance and barrier effects as a result of increases in underwater noise).
- Xd No potential for LSE. These features have been screened out from assessment as a result of the distance between VE and the designated site, and the scale of the potential change.
- Ve Potential for site connectivity is indicated from seal use at sea data. Therefore, there is the potential for some level of interaction between seals and underwater noise associated with VE.
- ✓f The location of the project relative to the at sea usage area of seals together with connectivity to the SAC may result in increased collision risk of seals (with vessels associated with activity relating to VE).
- √g Potential for site connectivity is indicated from seal use at sea data. Therefore, there is the potential for some level of interaction between seals and changes in prey associated with VE.
- It is not possible to screen out potential disturbance impacts at haul out sites for seals of this SAC since information on vessel use (movements, routes and levels of traffic) and the associated ports to be used is not yet available.



#### Cont. on next page

- Xi No potential for LSE. These features have been screened out from assessment as a result of the distance between VE and the designated site.
- Xj The range between the array areas and designated site combined with the low sensitivity of lamprey to underwater noise (Popper et al., 2014) mean that there is no potential for LSE for these species at this site.
- The range between the array areas and designated site combined with the high sensitivity of Twaite Shad to underwater noise (Popper et al., 2014) mean that there is a potential for LSE for this species at this site during pile driving and UXO clearance.



# HRA Screening Matrix 2: Thanet Coast (SAC)

Name of European site:	Thane	t Coast S	SAC															
EU Code:	UK001	3107																
Distance to Project:	56.14 k	km to arra	ay area															
Likely Effects of Project																1		
Effect	Physical habitat loss/	disturbance		Suspended sediment/deposition			Accidental			Invasive Non- Native Species	(SNNS)		EMF			Changes to physical	o cessaes	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Reefs	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa
Submerged or partially submerged sea caves	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa

# **Evidence supporting conclusions:**

Xa There is no potential for LSE as the site sits beyond the benthic subtidal study area as defined by the ZoI and therefore has been screened out.



#### HRA Screening Matrix 3: Bancs des Flandres (SAC)

Name of European site:	Ban	cs de	s Fla	ndre	s SA	C																											
EU Code:	FR3	10200	)2																														
Distance to Project:	49.1	1 km	to arr	ay aı	rea																												
Likely Effects o	f Pro	ject		I						1															1						1		
Effect	Physical habitat	loss/ disturbance		Suspended	sediment/ deposition		Accidental	pollution		Invasive	Species (INNS)		EMF			Changes to	processes		Underwater	noise			Collision risk			Changes to prey		Disturbance	מו		Barrier	effect	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Sandbanks which are slightly covered by seawater at low tide	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa															
Harbour porpoise	Xb		Xb				Xb		Xb										Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb						
Harbour seal; and Grey seal	√c	Xd	√c				Xd		Xd										√e	Xd	√e	√f	√f	√f	√g	√g	√g	√h	√h	√h			
Northern gannet	Xi	Xi	Xi																				Xi		Xi	Xi	Xi					Xi	
Razorbill	Xi	Xi	Xi																						Xi	Xi	Xi						

#### **Evidence supporting conclusions:**

- Xa There is no potential for LSE as the site sits beyond the benthic subtidal study area as defined by the ZoI and therefore has been screened out.
- Xb No potential for LSE. The site has been screened out based on a lack of evidence to suggest connectivity (site not within 26km of VE).
- The location of the project relative to the at sea usage area of seals together with connectivity to the SAC indicates the potential for seal habitat loss (caused by potential disturbance and barrier effects as a result of increases in underwater noise).
- Xd No potential for LSE. These features have been screened out from assessment as a result of the distance between VE and the designated site, and the scale of the potential change.
- ✓e Potential for site connectivity is indicated from seal use at sea data. Therefore, there is the potential for some level of interaction between seals and underwater noise associated with VE.
- The location of the project relative to the at sea usage area of seals together with connectivity to the SAC may result in increased collision risk of seals (with vessels associated with activity relating to VE).



- √g Potential for site connectivity is indicated from seal use at sea data. Therefore, there is the potential for some level of interaction between seals and changes in prey associated with VE.
- It is not possible to screen out potential impacts at haul out sites for seals of this SAC since information on vessel use (movements, routes and levels of traffic) and the associated ports to be used is not yet available.
- Xi The significance of effect at a population level is considered to decrease with distance and the severity of the effect experienced locally. The likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on this site after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



# HRA Screening Matrix 4: Margate and Long Sands (SAC)

Name of European site:	Marg	ate and	d Long S	Sands (S	AC)													
EU Code:	UK00	30371																
Distance to Project:	23.61	km to	array are	ea														
Likely Effects of Project																		
Effect	Physical habitat	loss/ disturbance		Suspended	sediment		Accidental	pollution		Invasive Non-Native	Opecies (IIAINO)		EMF			Changes to	physical processes	
Stage of Development	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	√a	√a	√a	√a	√a	√a	√a	√a	√ a	√a	√a	√a		√a			√a	

# **Evidence supporting conclusions:**

√a Effects cannot be screened out at this stage and therefore there is a potential for LSE.



# HRA Screening Matrix 5: Alde, Ore and Butley Estuaries (SAC)

Name of European site:	Alde,	Ore and	d Butle	y Estu	ıaries S	AC														
EU Code:	UK00	30076																,		
Distance to Project:	37.44	37.44 km to array area																		
Likely Effects of Project																				
Effect		rnysical nabitat loss/ disturbance			Suspended sediment/deposition			Accidental pollution			Invasive Non- Native Species (INNS)		EMF		Changes to physical processes					
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D		
Estuaries	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa		
Mudflats and sandflats not covered by seawater at low tide	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa		
Atlantic salt meadows	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa		

# **Evidence supporting conclusions:**

Xa There is no potential for LSE as the site sits beyond the benthic subtidal study area as defined by the ZoI and therefore has been screened out.



### HRA Screening Matrix 6: Orfordness – Shingle Street (SAC)

Name of European site:	Orfor	dness –	Shingle	Street	SAC													
EU Code:	UK00	14780																
Distance to Project:	37.31	km to ar	ray area															
Likely Effects of Project																		
Effect	Physical habitat	loss/ disturbance			Suspended sediment/ deposition	-		Accidental poliution		Invasive Non-Native	Species (INNS)		L	I MI		Changes to	processes	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Coastal lagoons	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa
Annual vegetation of drift lines	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa
Perennial vegetation of stony banks	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb		Xb		Xb	Xb	Xb

## **Evidence supporting conclusions:**

- Xa There is no potential for LSE as the site sits beyond the benthic subtidal study area as defined by the ZoI and therefore has been screened out.
- Xb Feature located outside the reach of waves and at a distance from project boundary. No potential for LSE.



## HRA Screening Matrix 7: Essex Estuaries SAC

Name of European site:	Esse	x Estuar	ies SAC	;														
EU Code:	UK00	13690																
Distance to Project:	64.27	7 km to ar	ray area	ì														
Likely Effects of Project																		
Effect	D Suspended sediment/deposition O Accidental pollution O Accidental pollution O Changes to physical processes															physical processes		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Estuaries	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a		√a			√a	
Mudflats and sandflats not covered by seawater at low tide	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a		√a			√a	
Salicornia and other annuals colonizing mud and sand	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a		√a			√a	
Spartina swards	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a		√a			√a	
Atlantic salt meadows	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a		√a			√a	
Mediterranean and thermo-Atlantic halophilous scrubs	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a		√a			√a	
Sandbanks which are slightly covered by sea water all the time	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a		√a			√a	

## **Evidence supporting conclusions:**

√a Effects cannot be screened out at this stage and therefore there is a potential for LSE.



#### HRA Screening Matrix 8: Deben Estuary Ramsar

Name of European site:	Debe	en Estua	ary Ram	sar																	
EU Code:	UK11	1018																			
Distance to Project:	48.32	2 km to a	array are	a																	
Likely Effects of Project																					
Effect	Physical babitat	loss/ disturbance		Suspended sediment/	deposition		-	Accidental pollution		avise Non-Native	Species (INNS)			EMF		Changes to	processes		Collision	TISK X	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Ramsar criterion 2: Vertigo angustior	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa			
Wintering population of: Dark-bellied brent goose																				√b	

#### **Evidence supporting conclusions:**

Xa No potential for LSE as the site sits beyond the benthic subtidal study area as defined by the ZoI and therefore has been screened out.

While this Ramsar is a significant distance from the VE array area and previous assessments (WWT, 2014) of migratory non-seabirds at a cumulative scale have shown impacts at a population level are unlikely, these species have the potential to migrate through the array areas (according to the migration zones presented in Wright et al (2012)) and therefore there is the potential for collision. Therefore, LSE cannot be discounted in relation to effects alone.



#### HRA Screening Matrix 9: Deben Estuary SPA

Name of European site:	Deben Es	stuary Ram	sar									
EU Code:	UK11018											
Distance to Project:	48.32 km	to array are	a									
Likely Effects of Project												
Effect	Changes in prey availability and behaviour			Direct disturbance and	displacement		Barrier effects			Collision		
Stage of Development	С	0	D	С	0	D	С	О	D	С	О	D
Avocet	Xa	Xa	Xa	Xb	Xb	Xb	Xb	Xb	Xb		√c	
Wintering population of: Dark-bellied brent goose											√c	

#### **Evidence supporting conclusions:**

- Xa The pathway to effects due to insufficient prey resource is weak for this highly mobile receptor. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Therefore, LSE can be discounted in relation to effect alone.
- Migratory birds may pass windfarms during their migrations; however, are at low risk of adverse impacts from displacement and barrier effect. The cost of one-off avoidances during migration are trivial, accounting for less than 2% of available fat reserves (Speakman et al., 2009 sandwich tern). Therefore, LSE can be discounted for displacement impacts in the array areas alone. The SPA is not within MMF+1SD of the offshore ECC. Therefore, effects can be ruled out at this stage for displacement in the offshore ECC. Therefore, LSE can be discounted for this impact alone.
- √c While this Ramsar is a significant distance from the VE array area and previous assessments (WWT, 2014) of migratory non-seabirds at a cumulative scale have shown impacts at a population level are unlikely, these species have the potential to migrate through the array areas (according to the migration zones presented in Wright et al (2012)) and therefore there is the potential for collision. Therefore, LSE cannot be discounted in relation to effects alone.



### HRA Screening Matrix 10: Dengie (Mid-Essex Coast Phase 1) SPA

Name of European site:	Dengie (Mid-Essex Coast Phase 1) SPA		
EU Code:	UK9009242		
Distance to Project:	73.63 km to array area		
Likely Effects of Project			
Effect	Collision risk		
Stage of Development	С	0	D
Dark-bellied brent goose		√a	
Grey plover		√a	
Knot		√a	

### **Evidence supporting conclusions:**

√a While this SPA is a significant distance from the VE array area and previous assessments (WWT, 2014) of migratory non-seabirds at a cumulative scale have shown impacts at a population level are unlikely, these species have the potential to migrate through the array areas (according to the migration zones presented in Wright et al (2012)) and therefore there is the potential for collision. Therefore, LSE cannot be discounted in relation to effects alone.



#### HRA Screening Matrix 11: Dengie (Mid-Essex Coast Phase 1) Ramsar

Name of European site:	Den	gie (Mid	-Essex (	Coast	Phas	e 1) R	amsar														
EU Code:	UK9	009242																			
Distance to Project:	73.6	3 km to	array are	ea																	
Likely Effects of Project																1					
Effect	+0+i+0-i	Physical habitat loss/ disturbance sediment/ deposition Accidental pollution Accidental pollution Changes to physical processes Collision risk															TISK				
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Criterion 1 – saltmarsh	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa			
Criterion 2 – rare plant species and invertebrates	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa			
Criterion 3 – saltmarsh species	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa			
Wintering population of: Dark-bellied brent goose; Grey plover; and Knot.																				√b	

#### **Evidence supporting conclusions:**

Xa No potential for LSE as the site sits beyond the benthic subtidal study area as defined by the ZoI and therefore has been screened out.

While this Ramsar is a significant distance from the VE array area and previous assessments (WWT, 2014) of migratory non-seabirds at a cumulative scale have shown impacts at a population level are unlikely, these species have the potential to migrate through the array areas (according to the migration zones presented in Wright et al (2012)) and therefore there is the potential for collision. Therefore, LSE cannot be discounted in relation to effects alone.



#### HRA Screening Matrix 12: Stour and Orwell Estuaries Ramsar

Name of European site:	Stou	r and C	rwell E	stuarie	s Ran	nsar															
EU Code:	UK90	009121																			
Distance to Project:	54.67	7 km to	array ar	ea																	
Likely Effects of Project																1					
Effect	Dhyeical babitat	loss/ disturbance		Suspended sediment/	deposition			Accidental pollution			Species (INNS)			EMF		Changes to	processes		Collision	J.S.K	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Criterion 2: Zostera noltei; and Spartina maritima	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa			
Other noteworthy and nationally important flora species: Puccinellia rupestris; Sarcocornia perennis; Limonium humile; and Zostera angustifolia	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa			
Noteworthy invertebrate fauna of national importance: Phaonia fusca; Haematopota grandis (Meigen); Arctosa fulvolineata; and Baryphyma duffeya	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa			
Wintering populations of: Black-tailed godwit; Dark-bellied brent goose; Dunlin; Grey plover; Knot; Pintail; Redshank; Important passage populations of Redshank; and Waterbird assemblage																				√b	

#### **Evidence supporting conclusions:**

Xa No potential for LSE as the site sits beyond the benthic subtidal study area as defined by the ZoI and therefore has been screened out.

While this Ramsar is a significant distance from the VE array area and previous assessments (WWT, 2014) of migratory non-seabirds at a cumulative scale have shown impacts at a population level are unlikely, these species have the potential to migrate through the array areas (according to the migration zones presented in Wright et al (2012)) and therefore there is the potential for collision. Therefore, LSE cannot be discounted in relation to effects alone.



#### HRA Screening Matrix 13: Colne Estuary (Mid-Essex Coast Phase 2) Ramsar

Name of European site:	Coln	e Estua	nry (Mid-	Essex	Coa	st Pha	se 2) l	Rams	ar												
EU Code:	UK9	015022																			
Distance to Project:	67 kı	m to arra	ay area																		
Likely Effects of Project																T					
Effect	++;+c;-c;-c;-c;-c;-c;-c;-c;-c;-c;-c;-c;-c;-c	Physical habitat loss/ disturbance disturbance sediment/ deposition  Accidental pollution  Accidental pollution  Changes to physical processes  Collision risk															<b>4</b> 01				
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	О	D
Criterion 1 – saltmarsh	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa			
Criterion 2 – 12 species of nationally scarce plants and invertebrate species	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa			
Criterion 3 – full and representative sequences of saltmarsh plant communities covering range of variation in Britain	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa			
Dark-bellied brent goose; Redshank; and Waterbird assemblage																				√b	

#### **Evidence supporting conclusions:**

Xa No potential for LSE as the site sits beyond the benthic subtidal study area as defined by the ZoI and therefore has been screened out.

While this Ramsar is a significant distance from the VE array area and previous assessments (WWT, 2014) of migratory non-seabirds at a cumulative scale have shown impacts at a population level are unlikely, these species have the potential to migrate through the array areas (according to the migration zones presented in Wright et al (2012)) and therefore there is the potential for collision. Therefore, LSE cannot be discounted in relation to effects alone.



#### HRA Screening Matrix 14: Alde-Ore Estuary Ramsar

Name of European site:	Alde	e-Ore I	Estuar	y Rar	nsar																						
EU Code:	UK1	1002																									
Distance to Project:	37.3	1 km t	o array	area																							
Likely Effects of Project							1																				
Effect	: : :	Physical habitat loss/ disturbance	SA E														Collision	risk		Changes	to prey		Rorrigi	effect			
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Criterion 2 – a number of nationally-scarce plant species and British Red Data Book invertebrates	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa									
Criterion 3 – full and representative sequences of saltmarsh plant communities covering range of variation in Britain	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Ха		Ха	Xa	Xa									
Lesser black-backed gull		Xb																		√c		Xd	Xd	Xd		Xb	
Wintering populations of: Avocent and Redshank																				√e							

#### **Evidence supporting conclusions:**

- Xa No potential for LSE as the site sits beyond the benthic subtidal study area as defined by the ZoI and therefore has been screened out.
- This species has no /very low vulnerability to displacement or disturbance and barrier effects to OWF and vessel disturbance (Bradbury et al., 2014; Fliessbach et al., 2019). Therefore, LSE can be discounted in relation to this effect alone.
- This Ramsar is within the MMF +1SD for lesser back-backed gull and therefore may have connectivity during the breeding season. This species has a very high vulnerability to collision risk with turbines (Bradbury et al., 2014). Given the proximity of VE to the Ramsar, effects cannot be screened out at this stage alone. Therefore, there is potential for LSE.
- The pathway to effects due to insufficient prey resource is weak for this highly mobile receptor. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Therefore, LSE can be discounted in relation to effect alone.
- ✓e While this Ramsar is a significant distance from the VE array area and previous assessments (WWT, 2014) of migratory non-seabirds at a cumulative scale have shown impacts at a population level are unlikely, these species have the potential to migrate through the array areas (according to the migration zones presented in Wright et al (2012)) and therefore there is the



potential for collision. Therefore, LSE cannot be discounted in relation to effects alone.



## HRA Screening Matrix 15: Foulness (Mid-Essex Coast Phase 5) Ramsar

Name of European site:	Foul	ness (Mi	d-Essex	Coast	Phase	e 5) Ran	nsar											
EU Code:	861																	
Distance to Project:	67.34	km to a	rray area	à														
Likely Effects of Project																		
Effect	Physical habitat	Physical habitat loss/ disturbance sediment/ deposition Accidental pollution Species (INNS) Changes to physical processes																
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Criterion 1 – saltmarsh	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa		Xa
Criterion 2 – a number of nationally-scarce plant species and British Red Data Book Invertebrates	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa		Xa
Criterion 3 – full and representative sequences of saltmarsh plant communities covering range of variation in Britain	Xa	Xa	Xa	Xa	Xa	Ха	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa		Ха

## **Evidence supporting conclusions:**

Xa No potential for LSE as the site sits beyond the benthic subtidal study area as defined by the secondary ZoI and therefore has been screened out.



#### HRA Screening Matrix 16: Berwickshire and North Northumberland Coast SAC

Name of European site:	Berwi	ickshire	e and No	orth Nor	thumbe	rland Co	ast SAC											
EU Code:	UK00	17072																,
Distance to Project:	445.9	0 km to	array are	ea														
Likely Effects of Project																		
Effect	Underwater			Collision risk			Changes to prey			Habitat loss			Disturbance	at haul out		Accidental		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Grey seal	√a	Xb	√a	√c	√c	√c	√d	√d	√d	√e	Xb	√e	√f	√f	√f	Xb	Xb	Xb

#### **Evidence supporting conclusions:**

- Va Potential for site connectivity is indicated from seal use at sea data. Therefore, there is the potential for some level of interaction between grey seal and underwater noise associated with VE.
- Xb No potential for LSE. These features have been screened out from assessment as a result of the distance between VE and the designated site, and the scale of the potential change.
- √c The location of the project relative to the sea usage area of grey seal together with connectivity to the SAC may result in increased collision risk of grey seal (with vessels associated with activity relating to VE).
- √d Potential for site connectivity is indicated from seal use at sea data. Therefore, there is the potential for some level of interaction between grey seal and changes in prey associated with VE.
- ✓e The location of the project relative to the at sea usage area of grey seal together with connectivity to the SAC indicates the potential for grey seal habitat loss (caused by potential for disturbance and barrier effects as a result of increases in underwater noise).
- It is not possible to screen out potential disturbance impacts at haul out sites for seals of this SAC since information on vessel use (movements, routes and levels of traffic) and the associated ports to be used is not yet available.



#### HRA Screening Matrix 17: Humber Estuary SAC

Name of European site:	Humb	er Estu	uary SAC	;														
EU Code:	UK00	30170																
Distance to Project:	203.2	2 km to	array are	а														
Likely Effects of Project	I																	
Effect	Underwater			Collision risk			Changes to prey			Physical habitat			Disturbance	at naul out		Accidental		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Grey seal	√a	Xb	√a	√c	√c	√c	√d	√d	√d	√e	Xb	√e	√f	√f	√f	Xb	Xb	Xb

#### **Evidence supporting conclusions:**

- √a Potential for site connectivity is indicated from seal use at sea data. Therefore, there is potential for some level of interaction between grey seal and underwater noise associated with VE.
- Xb No potential for LSE. These features have been screened out form assessment as a result of the distance between VE and the designated site, and the scale of potential change.
- √c The location of the project relative to the at sea usage area of grey seal together with connectivity to the SAC may result in increased collision risk of grey seal (with vessels associated with activity relating to VE).
- Vd Potential for site connectivity is indicated from seal use at sea data. Therefore, there is the potential for some level of interaction between grey seal and changes in prey associated with VE.
- ✓e The location of the project relative to the at sea usage area of grey seal together with connectivity to the SAC indicates the potential for grey seal habitat loss (caused by potential for disturbance and barrier effects as a result of increases in underwater noise).
- It is not possible to screen out potential disturbance impacts at haul out sites for seals of this SAC since information on vessel use (movements, routes and levels of traffic) and the associated ports to be used is not yet available.



#### HRA Screening Matrix 18: Humber Estuary Ramsar

Name of European site:	Humb	er Estu	ary Ram	ısar														
EU Code:	663																	
Distance to Project:	197.19	km to a	array are	a														
Likely Effects of Project																ı		
Effect	Underwater	Collision risk								Physical habitat loss/ disturbance			Disturbance	at naul out		Accidental	water quality	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Grey seal	√a	Xb	√a	√c	√c	√c	√d	√d	√d	√e	Xb	√e	√f	√f	√f	Xb	Xb	Xb

#### **Evidence supporting conclusions:**

- Va Potential for site connectivity is indicated from seal use at sea data. Therefore, there is the potential for some level of interaction between grey seal and underwater noise associated with VE.
- Xb No potential for LSE. These features have been screened out from assessment as a result of the distance between VE and the designated site, and the scale of the potential change.
- The location of the project relative to the at sea usage area of grey seal together with connectivity to the Ramsar may result in increased collision risk of grey seal (with vessels associated with activity relating to VE).
- ✓d Potential for site connectivity is indicated from seal use at sea data. Therefore, there is the potential for some level of interaction between grey seal and changes in prey associated with VE.
- The location of the project relative to the at sea usage area of grey seal together with connectivity to the Ramsar indicates the potential for grey seal habitat loss (caused by potential disturbance and barrier effects as a result of increases in underwater noise).
- It is not possible to screen out potential disturbance impacts at haul out sites for seals of this Ramsar since information on vessel use (movements, routes and levels of traffic) and the associated ports to be used is not yet available.



## HRA Screening Matrix 19: Moray Firth SAC

Name of European site:	Moray F	Firth SAC										
EU Code:	UK0019	808										
Distance to Project:	725.82 I	km to array	area									
Likely Effects of Project												
Effect	Underwater noise			Collision risk			Changes to prey			Accidental pollution		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Bottlenose dolphin	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa

## **Evidence supporting conclusions:**

Xa No potential for LSE. The site has been screened out based on a lack of evidence to suggest connectivity.



## HRA Screening Matrix 20: Southern North Sea SAC

Name of European site:	Southe	ern North	Sea SAC												
EU Code:	UK003	0395													
Distance to Project:	0 km to	array are	a												
Likely Effects of Project															
Effect	Underwater noise			Collision risk			Physical habitat loss/ disturbance			Changes to prey			Accidental		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour porpoise	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a	√a		√a

## **Evidence supporting conclusions:**

√a Effects cannot be screened out at this stage and therefore there is a potential for LSE.



#### HRA Screening Matrix 21: Wash and North Norfolk Coast SAC

Name of European site:	Wash	and No	orth Norf	olk Coa	ast SAC													
EU Code:	UK00	17075																
Distance to Project:	126.3	5 km to	array are	а														
Likely Effects of Project													T					
Effect	Underwater			Collision risk			Changes to prey			Physical habitat loss/ disturbance			Disturbance	at naul out		Accidental	pollution and water quality	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour seal	√a	Xb	√a	√c	√c	√c	√d	√d	√d	√e	Xb	√e	√f	√f	√f	Xb	Xb	Xb

#### **Evidence supporting conclusions**

- √a Potential for site connectivity is indicated from seal use at sea data. Therefore, there is the potential for some level of interaction between harbour seal and underwater noise associated with VF.
- Xb No potential for LSE. These features have been screened out from assessment as a result of the distance between VE and the designated site, and the scale of the potential change.
- The location of the project relative to the at sea usage area of harbour seal together with connectivity to the SAC may result in increased collision risk of harbour seal (with vessels associated with activity relating to VE).
- ✓d Potential for site connectivity is indicated from seal use at sea data. Therefore, there is the potential for some level of interaction between harbour seal and changes in prey associated with VE.
- The location of the project relative to the at sea usage area of harbour seal together with connectivity to the SAC indicates the potential for harbour seal habitat loss (caused by potential disturbance and barrier effects as a result of increases in underwater noise).
- It is not possible to screen out potential disturbance impacts at haul out sites for seals of this SAC since information on vessel use (movements, routes and levels of traffic) and the associated ports to be used is not yet available.



## HRA Screening Matrix 22: Transboundary sites for Harbour porpoise

Name of European site:	Transb	oundary s	ites for h	arbour po	orpoise										
EU Code:	Various														
Distance to Project:	Various														
Likely Effects of Project															
Effect	Underwater noise			Collision risk			Changes to prey			Physical habitat	loss/ disturbance		Accidental pollution and	water quality	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Bancs des Flandres SCI	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa
Vlaamse Banken SAC	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa
Doggersbank (Netherlands) SAC	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa
Klaverbank SCI	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa
Noordzeekustone SCI	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa
SBZ 1 SCI	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa
SBZ 2 SCI	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa
SBZ 3 SCI	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa
Vlakte van de Raan SCI	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa
Voordelta SCI	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa
Waddenzee SCI	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa
Westerschelde & Saeftinghe	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa



Name of European site:	Transboundary sites for harbour porpoise	
	*Note that some sites may be considered separately for other feature	(s), notably seals

# Cont. on next page Evidence supporting conclusions:

No potential for LSE. The sites have been screened out based on a lack of evidence to suggest connectivity.



## HRA Screening Matrix 23: Transboundary Sites for Seals

Name of European site:	Trans	bounda	ry sites	for sea	ıls (Harl	bour sea	al; and C	erey sea	al)									
EU Code:	Variou	ıs																
Distance to Project:	Variou	IS																
Likely Effects of Project																		
Effect	Underwater			Collision risk			Changes to prey			Accidental	pollution and water quality		Physical	disturbance		Disturbance at haul out	מני	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Bancs des Flandres SCI	√a							√d	√d	Хb	Хb	Хb	√e	Хb	√e	√ f	√ f	√ f
Vlaamse Banken SAC	√a	√a X b √a √c √c						√d	√d	Хb	Хb	Хb	√e	Хb	√e	√ f	√ f	√ f
Doggersbank (Netherlands) SAC	√a							√d	√d	Хb	Хb	Хb	√e	Хb	√e	√ f	√ f	√ f
Klaverbank SCI	√a	Хb	√a	√c	√c	√c	√d	√d	√d	Хb	Хb	Хb	√e	Хb	√e	√ f	√ f	√ f
Noordzeekustone SCI	√a	Хb	√a	√c	√c	√c	√d	√d	√d	Хb	Хb	Хb	√e	Хb	√e	√ f	√ f	√ f
SBZ 1 SCI	√a	Хb	√a	√c	√c	√c	√d	√d	√d	Хb	Хb	Хb	√e	Хb	√e	√ f	√ f	√ f
SBZ 2 SCI	√a	Хb	√a	√c	√c	√c	√d	√d	√d	Хb	Хb	Хb	√e	Хb	√e	√ f	√ f	√ f
SBZ 3 SCI	√a	Хb	√a	√c	√c	√c	√d	√d	√d	Хb	Хb	Хb	√e	Хb	√e	√ f	√ f	√ f
Vlakte van de Raan SCI	√a	Хb	√a	√c	√c	√c	√d	√d	√d	Хb	Хb	Хb	√e	Хb	√e	√ f	√ f	√ f
Voordelta SCI	√a	Хb	√a	√c	√c	√c	√d	√d	√d	Хb	Хb	Хb	√e	Хb	√e	√ f	√ f	√ f
Waddenzee SCI	√a	Хb	√a	√c	√c	√c	√d	√d	√d	Хb	Хb	Хb	√e	Хb	√e	√ f	√ f	√ f
Westerschelde & Saeftinghe	√a	Хb	√a	√c	√c	√c	√d	√d	√d	Хb	Хb	Хb	√e	Хb	√e	√ f	√ f	√ f
*Note that some sites may be considere	d separately f	or other	feature	(s), nota	bly harb	our porp	ooise											

Cont. on next page



#### **Evidence supporting conclusions:**

- √a Potential for site connectivity is indicated from seal use at sea data. Therefore, there is the potential for some level of interaction between seals and underwater noise associated with VE.
- Xb No potential for LSE. These features have been screened out from assessment as a result of the distance between VE and the designated site, and the scale of the potential change.
- √c The location of the project relative to the at sea usage area of seals together with connectivity to the SAC may result in increased collision risk of seals (with vessels associated with activity relating to VE).
- Vd Potential for site connectivity is indicated from seal use at sea data. Therefore, there is the potential for some level of interaction between seals and changes in prey associated with VE.
- ✓e The location of the project relative to the at sea usage area of seals together with connectivity to the SAC indicates the potential for seal habitat loss (caused by potential disturbance and barrier effects as a result of increases in underwater noise).
- It is not possible to screen out potential disturbance impacts at haul out sites for seals of this SAC since information on vessel use (movements, routes and levels of traffic) and the associated ports to be used is not yet available.



#### HRA Screening Matrix 24: Outer Thames Estuary SPA

Name of European site:	Outer	Thames	Estuary	SPA											
EU Code:	UK902	20309A													
Distance to Project:	17.11	km to arr	ay area												
Likely Effects of Project															
Effect	Changes in prey availability	Changes in prey availability and behaviour disturbance and displacement displacement Collision risk													
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Red-throated diver	Xa	Xa	Xa	√b	√b	√b	√b	√b	√b		Xa				
Common tern	Xc	Xc	Xc	Xd	Xd	Xd	Xd	Xd	Xd	Xd	Xd	Xd	Xe	Xe	Xe
Little tern	Xf	Xf	Xf		Xg		Xg	Xg	Xg		Xh			Xi	

#### **Evidence supporting conclusions:**

- Red-throated divers have a large foraging range, the pathway to effects due to insufficient prey resource is weak for this highly mobile receptor. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Therefore, LSE from VE acting alone can be discounted in relation to changes in prey availability, collision and barrier effects.
- There is potential for disturbance and displacement of non-breeding red-throated divers within the SPA resulting from work activity/ vessel movements within the offshore ECC. Therefore, there is a potential for LSE. However, the VE array areas is beyond the maximum expected extent of displacement/disturbance for red-throated divers, therefore, LSE from VE acting both alone and in-combination can be discounted in relation to this effect.
- Xc The pathway to effects due to insufficient prey resource is weak for this highly mobile receptor. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Therefore, LSE can be discounted in relation to effect alone.
- This species has a very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach et al.,2019). This species also has a low vulnerability to displacement (Bradbury et al. 2014) and barrier effect. Additionally, the ECC overlaps <1% (0.892%) of the Outer Thames Estuary SPA and therefore any displacement from this area during construction will have a negligible effect on habitat availability and prey resource Therefore, LSE from VE acting alone can be discounted in relation to these effects.
- Xe This species has been screened out owing to low numbers recorded within the array (abundance estimate of 3.52 recorded in one month only across the two survey years).
- Xf The pathway to effects due to insufficient prey resource is weak for this highly mobile receptor. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Therefore, LSE can be discounted in relation to effect alone.
- Little tern in Outer Thames Estuary SPA breed on Scroby Sands intertidal sand bank, located 79 km from the ECC. This is well outside of the reported foraging ranges for the species (Thaxter ., 2012, 6.3+-2.4 km (MMF+-SD); Woodward ., 2019, 5 km (MMF)). In addition, little tern were not detected during the bird surveys of the VE site (March 2019 February 2021). The species can thus be considered highly unlikely to have connectivity with the VE ECC, and as such, LSE can be discounted in relation to both alone and in-combination effects.

Cont. on next page



- Xh Migratory birds may pass windfarms during their migrations; however, are at low risk of adverse impacts from displacement and barrier effect. The cost of one-off avoidances during migration are trivial, accounting for less than 2% of available fat reserves (Speakman et al., 2009 sandwich tern). Therefore, LSE can be discounted for displacement impacts in the array areas alone.
- Evidence shows that little tern are a strictly coastal, rather than marine species; they are the most inshore of all tern species, found in shallow waters on passage (BirdLife International, 2022). WWT & MacArthur Green (2014) found that little tern migrate within 10 km of the shoreline. In addition, little tern were not detected during the bird surveys of the VE site (March 2019 February 2021). Based on the information outlined above, the species can thus be considered highly unlikely to have connectivity with the VE array area, and as such, LSE can be discounted in relation to both alone and in-combination effects.



#### HRA Screening Matrix 25: Alde-Ore Estuary SPA

Name of European site:	Alde-Or	e Estuary	SPA									
EU Code:	UK9009	112										
Distance to Project:	37.31 kn	to array a	area									
Likely Effects of Project												
Effect	Changes in prey availability and behaviour			Direct disturbance and	displacement		Barrier effects			Collision risk		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Lesser black-backed gull	Xa	Xa	Xa		Xb			Xb			√c	
Sandwich tern	Xa	Xa	Xa		Xd			Xd			Xd	
Little tern	Xa	Xa	Xa	Xg	Xg	Xg		Xg			Xh	
Avocet	Xa	Xa	Xa	Xg	Xg	Xg		Xg			√i	
Redshank	Xa	Xa	Xa	Xg	Xg	Xg		Xg			√i	
Ruff	Xa	Xa	Xa	Xg	Xg	Xg		Xg			√i	
Marsh Harrier	Xa	Xa	Xa	Xg	Xg	Xg		Xg			Xj	

#### **Evidence supporting conclusions:**

- Xa The pathway to effects due to insufficient prey resource is weak for this highly mobile receptor. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Therefore, LSE can be discounted in relation to effect alone.
- This species has no very low vulnerability to displacement or disturbance and barrier effects from OWF and vessel disturbance (Bradbury et al., 2014; Fliessbach et al., 2019). Therefore, LSE can be discounted in relation to this effect alone.
- √c This SPA is within the MMF+1SD for lesser back-backed gull and therefore there may be connectivity during the breeding season for this species as it has a very high vulnerability to collision risk with turbines (Bradbury et al., 2014). Therefore, there is potential for LSE, consider collision risk with turbines for all seasons within the RIAA.
- This species has been screened out owing to low numbers recorded within the array; only two individuals were recorded throughout the entire two survey years (both birds recorded in year one, in April and October respectively, no birds recorded in year two). Furthermore, Alde Ore Estuary SPA is beyond mean max foraging range (but within mean max foraging range +-1SD) of the VE array.
- ✓e This SPA is within MMF+1SD for sandwich tern of the array areas and therefore may have connectivity during the breeding season. As this species is vulnerable to displacement, barrier effects cannot be ruled out. Therefore, there is a potential for LSE.



- This species has moderate vulnerability to collision risk with turbines (Bradbury et al. 2014). Given the proximity VE to the SPA, effects cannot be screened out at this stage alone. Therefore, there is a potential for LSE.
- Migratory birds may pass windfarms during their migrations; however, are at low risk of adverse impacts from displacement and barrier effect. The cost of one-off avoidances during migration are trivial, accounting for less than 2% of available fat reserves (Speakman et al., 2009 sandwich tern). Therefore, LSE can be discounted for displacement impacts in the array areas alone. The SPA is not within MMF+1SD of the offshore ECC. Therefore, effects can be ruled out at this stage for displacement in the offshore ECC. Therefore, LSE can be discounted for this impact alone.
- Evidence shows that little tern are a strictly coastal, rather than marine species; they are the most inshore of all tern species, found in shallow waters on passage (BirdLife International, 2022). WWT & MacArthur Green (2014) found that little tern migrate within 10 km of the shoreline. In addition, little tern were not detected during the bird surveys of the VE site (March 2019 February 2021). Based on the information outlined above, the species can thus be considered highly unlikely to have connectivity with the VE array area, and as such, LSE can be discounted in relation to both alone and in-combination effects.
- While this SPAis a significant distance from the VE array area and previous assessments (WWT, 2014) of migratory non-seabirds at a cumulative scale have shown impacts at a population level are unlikely, these species have the potential to migrate through the array areas (according to the migration zones presented in Wright et al (2012)) and therefore there is the potential for collision. Therefore, LSE cannot be discounted in relation to effects alone.
- Alde-Ore Estuary SPA lies directly to the west of the VE array. With migratory marsh harrier migrating to Southern Europe and sub-Saharan Africa (i.e. in a southerly direction) (Wright .,2012), it can be considered highly unlikely that migrating marsh harrier from this SPA have connectivity with the VE array located to the east, and as such, LSE can be discounted in relation to both alone and in-combination effect.



#### HRA Screening Matrix 26: Minsmere-Walberswick SPA

Name of European site:	Minsmer	e-Walbers	swick SPA									
EU Code:	UK90091	01										
Distance to Project:	41.75 km	to array a	rea									
Likely Effects of Project												
Effect	Changes in prey availability and behaviour			Direct disturbance and	displacement		Barrier effects			Collision risk		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Little tern	Xa	Xa	Xa	Xb	Xb	Xb		Xa			Xc	
Wintering populations of: Avocet											√d	
Marsh Harrier											Xe	
Nightjar											Xf	
Waterbirds: Bittern; Gadwall; Greater white-fronted goose; Hen harrier; Shoveler; Teal											√g	

#### **Evidence supporting conclusions:**

- Xa The pathway to effects due to insufficient prey resource is weak for this highly mobile receptor. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Therefore, LSE can be discounted in relation to effect alone.
- This SPA is outside of the MMF+1SD for little tern from the array areas area, therefore, there is unlikely to be connectivity during the breeding season. Migratory birds may pass windfarms during their migrations; however, are at low risk of adverse impacts from displacement and barrier effect. The cost of one-off avoidances during migration are trivial, accounting for less than 2% of available fat reserves (Speakman et al., 2009 sandwich tern). Therefore, LSE can be discounted for displacement impacts during all phases alone. The SPA is not within MMF+1SD of the offshore ECC. Therefore, effects can be ruled out at this stage for displacement in the offshore ECC. Therefore, LSE can be discounted for this impact alone.
- Evidence shows that little tern are a strictly coastal, rather than marine species; they are the most inshore of all tern species, found in shallow waters on passage (BirdLife International, 2022). WWT & MacArthur Green (2014) found that little tern migrate within 10 km of the shoreline. In addition, little tern were not detected during the bird surveys of the VE site (March 2019 February 2021). Based on the information outlined above, the species can thus be considered highly unlikely to have connectivity with the VE array area, and as such, LSE can be discounted in relation to both alone and in-combination effects.
- ✓d While this SPAis a significant distance from the VE array area and previous assessments (WWT, 2014) of migratory non-seabirds at a cumulative scale have shown impacts at a population level are unlikely, these species have the potential to migrate through the array areas (according to the migration zones presented in Wright et al (2012)) and therefore there is the potential for collision. Therefore, LSE cannot be discounted in relation to effects alone.
- Minsmere-Walberswick SPA lies directly to the west of the VE array. With migratory marsh harrier migrating to Southern Europe and sub-Saharan Africa (i.e. in a southerly direction) (Wright et al. 2012), it can be considered highly unlikely that migrating marsh harrier from this SPA have connectivity with the VE array located to the east, and as such, LSE can be discounted in relation to both alone and in-combination effects



- Minsmere-Walberswick SPA lies directly to the west of the VE array. Nightjar migrate south to winter in the Democratic Republic of Congo, and tracking data has shown that migrating individuals move in a clear southerly direction (Evens et al., 2017). For that reason, it can be considered highly unlikely to that migrating nightjar from this SPA have connectivity with the VE array located to the east, and as such, LSE can be discounted in relation to both alone and in-combination effects.
- √g Risk of collision on migration.



#### HRA Screening Matrix 27: Minsmere-Walberswick Ramsar

Name of European site:	Minsme	re-Walber	swick Ram	sar								
EU Code:												
Distance to Project:	41.88 kr	n to array a	area									
Likely Effects of Project												
Effect	Changes in prey availability and behaviour			Direct disturbance and	displacement		Barrier effects			Collision risk		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Little tern	Xa	Xa	Xa	Xb	Xb	Xb		Xa		Хс	Xc	Xc
Black headed gull	Xd	Xd	Xd	Xd	Xd	Xd					Xd	
Mediterranean gull	Xd	Xd	Xd	Xd	Xd	Xd					Xd	
Bittern	Xd	Xd	Xd	Xd	Xd	Xd					√e	
Gadwall	Xd	Xd	Xd	Xd	Xd	Xd					√e	
Teal	Xd	Xd	Xd	Xd	Xd	Xd					√e	
Shoveler	Xd	Xd	Xd	Xd	Xd	Xd					√e	
Marsh harrier	Xd	Xd	Xd	Xd	Xd	Xd					√e	
Avocet	Xd	Xd	Xd	Xd	Xd	Xd					√e	
Bearded tit	Xd	Xd	Xd	Xd	Xd	Xd					√e	

#### **Evidence supporting conclusions:**

- Xa The pathway to effects due to insufficient prey resource is weak for this highly mobile receptor. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Therefore, LSE can be discounted in relation to effect alone.
- This Ramsar is outside of the MMF+1SD for little tern from the array areas area, therefore, there is unlikely to be connectivity during the breeding season. Migratory birds may pass windfarms during their migrations; however, are at low risk of adverse impacts from displacement and barrier effect. The cost of one-off avoidances during migration are trivial, accounting for less than 2% of available fat reserves (Speakman et al., 2009 sandwich tern). Therefore, LSE can be discounted for displacement impacts during all phases alone. The Ramsar is not within MMF+1SD of the offshore ECC. Therefore, effects can be ruled out at this stage for displacement in the offshore ECC. Therefore, LSE can be discounted for this impact alone.



- Evidence shows that little tern are a strictly coastal, rather than marine species; they are the most inshore of all tern species, found in shallow waters on passage (BirdLife International, 2022). WWT & MacArthur Green (2014) found that little tern migrate within 10 km of the shoreline. In addition, little tern were not detected during the bird surveys of the VE site (March 2019 February 2021). Based on the information outlined above, the species can thus be considered highly unlikely to have connectivity with the VE array area, and as such, LSE can be discounted in relation to both alone and in-combination effects.
- This Ramsar is outside of the MMF+1SD for these species from the array areas area, therefore, there is unlikely to be connectivity during the breeding season. Migratory birds may pass windfarms during their migrations; however, are at low risk of adverse impacts from displacement and barrier effect. The cost of one-off avoidances during migration are trivial, accounting for less than 2% of available fat reserves (Speakman et al., 2009 sandwich tern). Therefore, LSE can be discounted for displacement impacts during all phases alone. The Ramsar is not within MMF+1SD of the offshore ECC. Therefore, effects can be ruled out at this stage for displacement in the offshore ECC. Therefore, LSE can be discounted for this impact alone.
- While this Ramsar is a significant distance from the VE array area and previous assessments (WWT, 2014) of migratory non-seabirds at a cumulative scale have shown impacts at a population level are unlikely, these species have the potential to migrate through the array areas (according to the migration zones presented in Wright et al. (2012)) and therefore there is the potential for collision. Therefore, LSE cannot be discounted in relation to effects alone.



#### HRA Screening Matrix 28: Hamford Water SPA

Name of European site:	HAN	/IFORE	) WAT	ER SI	PA																			
EU Code:	UK9	00913	1																					
Distance to Project:	51.0	4 km t	o array	area																				
Likely Effects of Project																								
Effect	Changes in	Direct disturbance and displacement displacement water quality)  Pollution (air quality)  Pollution (air quality)  Decreases in water quantity  Loss of foraging and roosting habitat outside the SPA																						
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Little tern	Xa	Xa	Xa	Xb	Xb	Xb		Xc		Xd	Xd	Xd												
Wintering populations of: Avocet; Black-tailed godwit; Dark-bellied brent goose; Grey plover; Redshank; Ringed plover; Shelduck, Teal				√e	√ e	√ e							√f		√f	√g		√g	√h			√h		

#### **Evidence supporting conclusions:**

- Xa The pathway to effects due to insufficient prey resource is weak for this highly mobile receptor. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Therefore, LSE can be discounted in relation to effect alone.
- Xb The SPA is within MMF+1SD of the offshore ECC. Therefore, effects cannot be screened out at this stage for displacement in the offshore ECC. Therefore, there is a potential for LSE.
- Migratory birds may pass windfarms during their migrations; however, are at low risk of adverse impacts from displacement and barrier effect. The cost of one-off avoidances during migration are trivial, accounting for less than 2% of available fat reserves (Speakman et al., 2009 sandwich tern). Therefore, LSE can be discounted for displacement impacts in the array areas alone.
- Evidence shows that little tern are a strictly coastal, rather than marine species; they are the most inshore of all tern species, found in shallow waters on passage (BirdLife International, 2022). WWT & MacArthur Green (2014) found that little tern migrate within 10 km of the shoreline. In addition, little tern were not detected during the bird surveys of the VE site (March 2019 February 2021). Based on the information outlined above, the species can thus be considered highly unlikely to have connectivity with the VE array area, and as such, LSE can be discounted in relation to both alone and in-combination effects.
- ✓e Risk of impacts from disturbance during construction, operation and decommissioning for wintering bird species which occur in or adjacent to the ECC.
- The surface water in the onshore ECC partly drains into the Stour Estuary, giving rise to a low risk of impacts on water quality such as changes natural turbidity, concentration of aqueous contaminants, dissolved oxygen and inorganic nitrogen, with knock-on effects for wintering and passage birds.
- ✓g Potential for LSE on all qualifying features which occur within or near the ECC (currently known to be avocet, black-tailed godwit, dark-bellied brent goose, redshank, shelduck, teal and others in the waterbird assemblage, if these form part of the SPA population).
- The surface water in the ECC partly drains into Hamford Water, giving rise to a low risk of impacts on water quality, such as changes in natural turbidity, concentration of aqueous contaminants, dissolved oxygen and inorganic nitrogen, with knock-on effects for wintering birds.



#### HRA Screening Matrix 29: Thanet Coast and Sandwich Bay SPA

Name of European site:	Thanet Coast and Sandwich Bay SPA															
EU Code:	UK9012071															
Distance to Project:	57.64 km to	array area														
Likely Effects of Project																
Effect	Changes in prey availability and behaviour			Direct disturbance and displacement			Barrier effects									
Stage of Development	С	0	D	С	0	D	С	0	D							
Little tern	Xa	Xa	Xa	Xb	Xb	Xb		Xb								

#### **Evidence supporting conclusions:**

- Xa The pathway to effects due to insufficient prey resource is weak for this highly mobile receptor. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Therefore, LSE can be discounted in relation to effect alone.
- Migratory birds may pass windfarms during their migrations; however, are at low risk of adverse impacts from displacement and barrier effect. The cost of one-off avoidances during migration are trivial, accounting for less than 2% of available fat reserves (Speakman et al., 2009 sandwich tern). Therefore, LSE can be discounted for displacement impacts in the array areas alone. The SPA is not within MMF+1SD of the offshore ECC. Therefore, effects can be ruled out at this stage for displacement in the offshore ECC. Therefore, LSE can be discounted for this impact alone.



#### HRA Screening Matrix 30: Greater Wash SPA

Name of European site:	Greate	r Wash Sl	PA									
EU Code:	UK902	0329										
Distance to Project:	62.77 k	m to array	area									
Likely Effects of Project					_							
Effect	Changes in prey availability	and benaviour		Direct	displacement		Barrier effects			Collision risk		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Sandwich tern	Xa	Xa	Xa	Xa	Xa	Xa		Xa				
Common tern	Xb	Xb	Xb	Xb	Xb	Xb		Xb				
Little tern	Xc	Xc	Xc	Xc	Xc	Xc		Xc				
Little gull	Xd		Xd	Xe	Xe	Xe					Xd	

#### **Evidence supporting conclusions:**

- Xa This SPA is not within the MMF+1SD for sandwich tern and therefore is unlikely to have connectivity during the breeding season. For this SPA impacts on migration are likely to be negligible due to the distance from the SPA to the VE array areas site. Therefore, LSE can be discounted in relation to effects alone.
- This SPA is not within the MMF+1SD for common tern and therefore is unlikely to have connectivity during the breeding season. For this SPA impacts on migration are likely to be negligible due to the distance from the SPA to the VE array areas site. Therefore, LSE can be discounted in relation to effects alone.
- Xc This SPA is not within the MMF+1SD for little tern and therefore is unlikely to have connectivity during the breeding season. For this SPA impacts on migration are likely to be negligible due to the distance from the SPA to the VE array areas site. Therefore, LSE can be discounted in relation to effects alone.
- This species has been screened out based on the fact that Greater Wash SPA is located >62 km north of both the VE array and ECC. As the species breeds north of the SPA, there is no interaction with the VE array and ECC
- Xe Following Bradbury 2014, little gull has moderate collision vulnerability but very low displacement risk.



#### HRA Screening Matrix 31: Colne Estuary (Mid-Essex Coast Phase 2) SPA

Name of European site:	Coln	e Estu	uary (N	/lid-Es	sex C	oast P	hase 2	2) SPA	<b>L</b>																		
EU Code:	UK90	009243	3																								
Distance to Project:	66.5	1 km to	o array	area																							
Likely Effects of Project																											
Effect	Changes in	and behaviour		Direct disturbance and displacement			Collision risk	Collision risk			Physical habitat loss/ disturbance			Suspended sediment/ deposition			Accidental pollution			SNN NNN			physical processes				
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Little tern	Xa	Xa	Xa	Xa	Xa	Xa		Xa																			
Over winter: Dark-bellied brent goose; Pochard; Redshank; Ringed plover; Waterbird assemblage											√b																
Ramsar criterion 1													Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc
Ramsar criterion 2													Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc
Ramsar criterion 3													Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc

#### **Evidence supporting conclusions:**

- This SPA is not within the MMF+1SD for little tern and therefore is unlikely to have connectivity during the breeding season. For this SPA impacts on migration are likely to be negligible due to the distance from the SPA to the VE array areas site. Therefore, LSE can be discounted in relation to effects alone.
- ✓b While this SPA/ Ramsar is a significant distance from the VE array area and previous assessments (WWT, 2014) of migratory non-seabirds at a cumulative scale have shown impacts at a population level are unlikely, these species have the potential to migrate through the array areas (according to the migration zones presented in Wright et al (2012)) and therefore there is the potential for collision. Therefore, LSE cannot be discounted in relation to effects alone.
- Xc No potential for LSE as the site sits beyond the benthic subtidal study area as defined by the secondary Zone of Influence (ZoI) and therefore has been screened out.



#### HRA Screening Matrix 32: Foulness (Mid-Essex Coast Phase 5) SPA

Name of European site:	Foulness (M	/lid-Essex Co	oast Phase 5	) SPA								
EU Code:	UK9009246											
Distance to Project:	67.36 km to array area											
Likely Effects of Project												
Effect	Changes in prey availability and behaviour			Direct disturbance and displacement			Barrier effects					
Stage of Development	С	0	D	С	0	D	С	0	D			
Sandwich tern	Xa	Xb	Xa	Xa	Xb	Xa		Xb				
Common tern	Xa	Xb	Xa	Xa	Xb	Xa		Xb				
Little tern	Xc	Xc	Xc	Xc	Xc	Xc		Xc				

#### **Evidence supporting conclusions:**

- Xa These species have very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach et al., 2019). Therefore, LSE can be discounted in relation to C&D disturbance and displacement effects alone.
- This SPA is not within the MMF+1SD of the array areas for sandwich tern and therefore is unlikely to have connectivity during the breeding season. For this SPA impacts on migration are likely to be negligible due to the distance from the SPA to the VE array areas site. Therefore, LSE can be discounted in relation to O&M effects alone.
- Xc This SPA is not within the MMF+1SD for little tern and therefore is unlikely to have connectivity during the breeding season. For this SPA impacts on migration are likely to be negligible due to the distance from the SPA to the VE array areas site. Therefore, LSE can be discounted in relation to effects alone.



### HRA Screening Matrix 33: Breydon Water SPA

Name of European site:	Breydon W	ater SPA							
EU Code:	UK9009181								
Distance to Project:	72.55 km to	array area							
Likely Effects of Project				ı					
Effect	Changes in prey availability and behaviour			Direct disturbance and displacement			Barrier effects		
Stage of Development	С	0	D	С	0	D	С	0	D
Common tern	Xa	Xa	Xa	Xa	Xa	Xa		Xa	

## **Evidence supporting conclusions:**

Xa This SPA is not within the MMF+1SD of the array areas and offshore ECC for common tern and therefore is unlikely to have connectivity during the breeding season. For this SPA impacts on migration are likely to be negligible due to the distance from the SPA to the VE array areas site. Therefore, LSE can be discounted in relation to effects alone.



#### HRA Screening Matrix 34: Blackwater Estuary SPA

Name of European site:	Blac	kwate	er Est	tuary	(Mid-l	Essex	Coas	st Pha	ase 4)	SPA																	
EU Code:	UK9	UK9009245																									
Distance to Project:	77.5	5 km 1	to arra	ay are	а																						
Likely Effects of Project																											
Effect	Changes in	prey availability and behaviour		ţosi	disturbance and displacement	-	Barrier effects				Collision risk			Loss of foraging and roosting habitat outside the SPA			Disturbance / displacement of birds outside SPA			יימים קשמוויץ		Decreases in water quantity				air quality	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Little tern	Xa	Xa	Xa	Xa	Xa	Xa		Xa																			
Non-breeding: Black-tailed godwit; Dark-bellied Brent goose; Dunlin; and Grey plover.											√b																
Non-breeding: Black-tailed godwit; Dark-bellied Brent goose; Dunlin; Grey plover; Hen harrier; Waterbird assemblage; Breeding; Pochard; Ringed Plover													√c	√c	√c	√c	√c	√c	Xd	Xd	Xd	Xd	Xd	Xd	Xe	Xe	Xe

#### **Evidence supporting conclusions:**

- This SPA is not within the MMF+1SD of the array areas and offshore ECC for little tern and therefore is unlikely to have connectivity during the breeding season. For this SPA collision impacts on migration are likely to be negligible due to the distance from the SPA to the VE array areas site. Therefore, LSE can be discounted in relation to effects alone.
- While this SPAis a significant distance from the VE array area and previous assessments (WWT, 2014) of migratory non-seabirds at a cumulative scale have shown impacts at a population level are unlikely, these species have the potential to migrate through the array areas (according to the migration zones presented in Wright et al (2012)) and therefore there is the potential for collision. Therefore, LSE cannot be discounted in relation to effects alone.
- √c The Blackwater Estuary SPA is much further from the ECC than the other sites considered above. Nevertheless, two species that make up its qualifying interest (black-tailed godwit, dark-bellied brent goose and dunlin) have been recorded in the onshore ECC and there is potential for individuals to move between the ECC and the Blackwater Estuary. The risk of effects from loss of habitat and disturbance during construction, operation and decommissioning is much lower but not absent.
- Xd There are no or very weak hydrological links (i.e., linked via the sea only) between the ECC and the Blackwater Estuary and so effects from pollution and dewatering can be discounted.
- Xe Given the distance, air quality effects can be discounted.



# HRA Screening Matrix 35: Blackwater Estuary Ramsar

Name of European site:	Blac	ckwat	er Est	tuary	(Mid-	Essex	Coas	st Pha	se 4)	Rams	sar																			
EU Code:	UKS	0092	45																											
Distance to Project:	77.5	55 km	to arra	ay are	а																									
Likely Effects of Pro	ject																													
Effect	Changes in	prey availability and behaviour		çazi	disturbance and displacement		3,000				Collision risk		Loss of foraging	and roosting habitat outside the SPA		Disturbance /	displacement of birds outside	5	Water duality			Decreases in	water quantity		Decreases in	air quality		Impacts on	populations of plants and	invertebrates outside the Ramsar
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	О	D	С	0	D	С	0	D	С	О	D
Little tern	Xa	Xa	Xa	Xa	Xa	Xa		Xa																						
Non-breeding: Black-tailed godwit; Dark-bellied Brent goose; Dunlin; Grey plover; Waterbird assemblage											√b																			
Non-breeding: Black-tailed godwit; Dark-bellied Brent goose; Dunlin; Grey plover; Hen harrier; Waterbird assemblage; Breeding; Pochard; Ringed Plover													√c	√c	√c	√c	√c	√c	Xd	Xd	Xd	Xd	Xd	Xd	Xe	Xe	Xe			
Wetland invertebrate assemblage																												√f	√f	√f
Wetland plant assemblage																												√f	√f	√f

**Evidence supporting conclusions:** 



- Xa This Ramsar is not within the MMF+1SD of the array areas and offshore ECC for little tern and therefore is unlikely to have connectivity during the breeding season. For this Ramsar collision impacts on migration are likely to be negligible due to the distance from the Ramsar to the VE array areas site. Therefore, LSE can be discounted in relation to effects alone.
- ✓b While this Ramsar is a significant distance from the VE array area and previous assessments (WWT, 2014) of migratory non-seabirds at a cumulative scale have shown impacts at a population level are unlikely, these species have the potential to migrate through the array areas (according to the migration zones presented in Wright et al (2012)) and therefore there is the potential for collision. Therefore, LSE cannot be discounted in relation to effects alone.
- The Blackwater Estuary Ramsar is much further from the ECC than the other sites considered above. Nevertheless, two species that make up its qualifying interest (black-tailed godwit, dark-bellied brent goose and dunlin) have been recorded in the onshore ECC and there is potential for individuals to move between the ECC and the Blackwater Estuary. The risk of effects from loss of habitat and disturbance during construction, operation and decommissioning is much lower but not absent.
- Xd There are no or very weak hydrological links (i.e., linked via the sea only) between the ECC and the Blackwater Estuary and so effects from pollution and dewatering can be discounted.
- Xe Given the distance, air quality effects can be discounted.
- √f There is a potential for supporting features to be impacted and therefore LSE is considered.



# HRA Screening Matrix 36: Medway Estuary and Marshes SPA

Name of European site:	Medway Estuary and Marshes SPA										
EU Code:	UK9012031										
Distance to Project:	96.42 km to	array area									
Likely Effects of Project				1			1				
Effect	Changes in prey availability and behaviour			Direct disturbance and displacement			Barrier effects				
Stage of Development	C O D			С	0	D	С	0	D		
Little turn; Common tern	Xa Xa Xa			Xa	Xa	Xa		Xa			

## **Evidence supporting conclusions:**

This SPA is not within the MMF+1SD of the array areas and offshore ECC for common tern and little tern and therefore is unlikely to have connectivity during the breeding season. For this SPA impacts on migration are likely to be negligible due to the distance from the SPA to the VE array areas site. Therefore, LSE can be discounted in relation to effects alone.



# HRA Screening Matrix 37: Dungeness, Romney Marsh and Rye Bay SPA

Name of European site:	Dungeness, Romney Marsh and Rye Bay SPA									
EU Code:	UK9012091									
Distance to Project:	103.34 km t	o array area								
Likely Effects of Project										
Effect	Changes in prey availability and behaviour			Direct disturbance and displacement			Barrier effects			
Stage of Development	С	0	D	С	0	D	С	0	D	
Little turn; Common tern; and Sandwich tern	Xa Xa Xa			Xa	Xa	Xa		Xa		

# **Evidence supporting conclusions:**

This SPA is not within the MMF+1SD of the array areas and offshore ECC for common tern, little tern and sandwich tern and therefore is unlikely to have connectivity during the breeding season. For this SPA impacts on migration are likely to be negligible due to the distance from the SPA to the VE array areas site. Therefore, LSE can be discounted in relation to effects alone.



# HRA Screening Matrix 38: North Norfolk Coast SPA

Name of European site:	North Norfolk Coast SPA										
EU Code:	UK9009031										
Distance to Project:	126.13 km t	o array area									
Likely Effects of Project				1			1				
Effect	Changes in prey availability and behaviour			Direct disturbance and displacement			Barrier effects				
Stage of Development	С	0	D	С	0	D	С	0	D		
Little turn; Common tern; and Sandwich tern	Xa	Xa	Xa	Xa	Xa	Xa		Xa			

# **Evidence supporting conclusions:**

Xa This SPA is not within the MMF+1SD of the array areas and offshore ECC for little tern, common tern and sandwich tern and therefore is unlikely to have connectivity during the breeding season. For this SPA impacts on migration are likely to be negligible due to the distance from the SPA to the VE array areas site. Therefore, LSE can be discounted in relation to effects alone.



# HRA Screening Matrix 39: North Norfolk Coast Ramsar

Name of European site:	North Norf	olk Coast Ra	ımsar						
EU Code:									
Distance to Project:	126.13 km	to array area							
Likely Effects of Project									
Effect	Changes in prey availability and behaviour			Direct disturbance and displacement			Barrier effects		
Stage of Development	С	0	D	С	0	D	С	0	D
Little turn; Common tern; and Sandwich tern	Xa	Xa	Xa	Xa	Xa	Xa		Xa	

# **Evidence supporting conclusions:**

This Ramsar is not within the MMF+1SD of the array areas and offshore ECC for common tern, little tern and sandwich tern and therefore is unlikely to have connectivity during the breeding season. For this Ramsar impacts on migration are likely to be negligible due to the distance from the Ramsar to the VE array areas site. Therefore, LSE can be discounted in relation to effects alone.



# HRA Screening Matrix 40: The Wash SPA

Name of European site:	The Wash	SPA							
EU Code:	UK9008021	1							
Distance to Project:	146.29 km	to array area							
Likely Effects of Project									
Effect	Changes in prey availability and behaviour			Direct disturbance and displacement			Barrier effects		
Stage of Development	С	0	D	С	0	D	С	0	D
Little turn; Common tern	Xa	Xa Xa Xa			Xa	Xa		Xa	

# **Evidence supporting conclusions:**

This SPA is not within the MMF+1SD of the array areas and offshore ECC for common tern and little tern and therefore is unlikely to have connectivity during the breeding season. For this SPA impacts on migration are likely to be negligible due to the distance from the SPA to the VE array areas site. Therefore, LSE can be discounted in relation to effects alone.



# HRA Screening Matrix 41: Gibraltar Point SPA

Name of European site:	Gibraltar Point SPA											
EU Code:	UK9008022	2										
Distance to Project:	170.97 km t	to array area										
Likely Effects of Project				ı			T					
Effect	Changes in prey availability and behaviour			Direct disturbance and displacement			Barrier effects					
Stage of Development	С	0	D	С	0	D	С	0	D			
Little tern	Xa	Xa	Xa	Xa	Xa	Xa		Xa				

# **Evidence supporting conclusions:**

This SPA is not within the MMF+1SD of the array areas and offshore ECC for little tern and therefore is unlikely to have connectivity during the breeding season. For this SPA impacts on migration are likely to be negligible due to the distance from the SPA to the VE array areas site. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 42: Humber Estuary SPA

Name of European site:	Humber Es	tuary SPA							
EU Code:									
Distance to Project:	197.19 km t	o array area							
Likely Effects of Project				1					
Effect	Changes in prey availability and behaviour			Direct disturbance and displacement			Barrier effects		
Stage of Development	С	0	D	С	0	D	С	0	D
Little tern	Xa	Xa	Xa	Xa	Xa	Xa		Xa	

# **Evidence supporting conclusions:**

Xa This SPA is not within the MMF+1SD of the array areas and offshore ECC for little tern and therefore is unlikely to have connectivity during the breeding season. For this SPA impacts on migration are likely to be negligible due to the distance from the SPA to the VE array areas site. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 43: Flamborough and Filey Coast SPA

Name of European site:	Flamb	orough a	and Filey C	oast SP	A										
EU Code:	UK900	6101													
Distance to Project:	275.50	km to ar	ray area												
Likely Effects of Project															
Effect	Changes in prey availability	and behaviour		Collision risk			Direct	Disturbance and Displacement		Barrier effects				In-combination	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Kittiwake	Xa	Xa	Xa		√b						Xc				
Gannet	√d	√d	√d		√d		√e	√e	√e		Xf		√g	√g	√g
Guillemot							√e	√e	√e						
Razorbill							√e	√e	√e						
Fulmar; Puffin; Herring gull				Xf	Xf	Xf									

#### **Evidence supporting conclusions:**

- Xa Despite the Array being within the species MMF+1SD (Woodward et al. 2019) from this site, tracking data (FAME tracking data collected by the RSPB) and habitat utilisation modelling based on tracking data (Cleasby et al. 2020) show no connectivity during the breeding season. However, there is potential for connectivity during the non-breeding season only.
- This species has high vulnerability to collision risk with turbines (Bradbury et al., 2014). Effects cannot be screened out at this stage alone for this species during the non-breeding season. Therefore, there is a potential for LSE.
- Xc 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 alone.
- √d Based on the proximity of the Array and the MMF+1SD of this species (Woodward et al. 2019) from this site, potential for connectivity during the breeding season has been established. Gannets have shown high avoidance during offshore wind farms post-construction monitoring (Dierschke, Furness & Garth, 2016). Gannets have high collision risk (Bradbury et al., 2014). Therefore, there is a potential for LSE for C&D and O&M displacement and collision risk.
- √e
- Xf Gannets are not considered at risk of barrier effects due to their wide ranging habits, 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 alone.
- According to Furness (2015) it is possible for a project in the southern North Sea to have connectivity with this SPA during the non-breeding season. Therefore, since qualifying breeding features may still be afforded protection outside of the breeding season (the conservation objectives of all breeding seabird SPAs include the requirement to maintain abundance) activities that have the potential to significantly reduce abundance should be assessed regardless of time of year. The combined impacts from both collision risk and displacement will be included within the RIAA.



Peak puffin density in the array areas and 4km buffer was estimated to be 0.01 (0.01); peak fulmar density in the array areas and 4km buffer was estimated to be 0.1; and peak herring gull density in the array areas and 4km buffer was estimated to be 0.14. Given these extremely low densities within the VE site and that these species have very low vulnerabilities to collision and displacement from offshore wind farms (Bradbury et al., 2014) and low vulnerability to vessel traffic (Fliessbach et al., 2019) LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 44: Teesmouth and Cleveland Coast SPA

Name of European site:	Teesmouth and Cleveland SPA											
EU Code:	UK9006061											
Distance to Project:	359.98 km to	o array area										
Likely Effects of Project				T			T					
Effect	Changes in prey availability and behaviour			Direct disturbance and displacement			Barrier effects					
Stage of Development	С	0	D	С	0	D	С	0	D			
Little tern	Xa Xa Xa			Xa	Xa	Xa		Xa				

# **Evidence supporting conclusions:**

Xa This SPA is not within the MMF+1SD of the array areas and offshore ECC for little tern and therefore is unlikely to have connectivity during the breeding season. For this SPA impacts on migration are likely to be negligible due to the distance from the SPA to the VE array areas site. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 45: Northumbria Coast SPA

Name of European site:	Northumbria Coast SPA											
EU Code:	UK9006131	A										
Distance to Project:	377.99 km to	o array area										
Likely Effects of Project												
Effect	Changes in prey availability and behaviour			Direct disturbance and displacement			Barrier effects					
Stage of Development	С	0	D	С	0	D	С	0	D			
Arctic tern; Little tern		Xa			Xa			Xa				

# **Evidence supporting conclusions:**

Xa This SPA is not within the MMF+1SD of the array areas and offshore ECC for little tern and Arctic tern and therefore is unlikely to have connectivity during the breeding season. For this SPA impacts on migration are likely to be negligible due to the distance from the SPA to the VE array areas site. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 46: Northumbria Coast Ramsar

Name of European site:	Northumbr	ia Coast Ran	nsar						
EU Code:	UK9006131								
Distance to Project:	377.99 km t	o array area							
Likely Effects of Project							ı		
Effect	Changes in prey availability and behaviour			Direct disturbance and displacement			Barrier effects		
Stage of Development	С	0	D	С	0	D	С	0	D
Little tern		Xa			Xa			Xa	

# **Evidence supporting conclusions:**

Xa This Ramsar is not within the MMF+1SD of the array areas and offshore ECC for little tern and therefore is unlikely to have connectivity during the breeding season. For this Ramsar impacts on migration are likely to be negligible due to the distance from the Ramsar to the VE array areas site. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 47: Northumberl and Marine SPA

Name of European site:	Northumbe	erl and Marin	e SPA						
EU Code:	UK900610 <sup>2</sup>	1							
Distance to Project:	419.87 km	to array area							
Likely Effects of Project							T		
Effect	Changes in prey availability and behaviour disturbance and displacement Barrier effects								
Stage of Development	С	0	D	С	0	D	С	0	D
Fulmar	Xa Xa Xa Xa Xa							Xa	
Kittiwake; Sandwich tern; Common tern; Arctic tern; Guillemot; Little tern; Puffin; Roseate tern; Black-headed gull; Lesser black-backed gull; Herring gull; Razorbill									

### **Evidence supporting conclusions:**

- For this SPA sites, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.
- This SPA is not within the MMF+1SD of the array areas and offshore ECC for kittiwake, sandwich tern, common tern, Arctic tern and guillemot. For this SPA site, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



#### HRA Screening Matrix 48: Coquet Island SPA

Name of European site:	Coquet Isla	ind SPA							
EU Code:	UK9006031								
Distance to Project:	443.00 km t	o array area							
Likely Effects of Project			I						
Effect	Changes in prey availability and behaviour	Changes in prey availability and behaviour Direct disturbance and displacement							
Stage of Development	С	0	D	С	0	D	С	0	D
Fulmar	Xa	Xa	Xa	Xa	Xa	Xa		Xa	
Kittiwake; Sandwich tern; Common tern; Arctic tern; Guillemot; Little tern; Puffin; Roseate tern; Black-headed gull; Lesser black-backed gull; Herring gull; Razorbill	Xb Xb Xb Xb Xb							Xb	
Puffin	Xc Xc Xc Xc Xc Xc								

## **Evidence supporting conclusions:**

- For these SPA sites, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone.

  Therefore, LSE can be discounted in relation to effects alone.
- This SPA is not within the MMF+1SD of the array areas and offshore ECC for sandwich tern, common tern and Arctic tern. For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.
- Xc This SPA is not within the MMF+1SD of the array areas and offshore ECC for any of this feature. Peak puffin density in the array areas and 4km buffer was estimated to be 0.01 (0.01). Given the extremely low density within the VE site it is considered that there is no potential for LSE.



#### HRA Screening Matrix 49: Farne Islands SPA

Name of European site:	Farne Islan	ds SPA								
EU Code:	UK9006021									
Distance to Project:	472.54 km t	o array area								
Likely Effects of Project	1									
Effect	Changes in prey availability and behaviour disturbance and displacement Barrier effects									
Stage of Development	С	0	D	С	0	D	С	0	D	
Fulmar	Xa	Xa	Xa	Xa	Xa	Xa		Xa		
Kittiwake; Herring gull; Gannet; Arctic tern; Common tern; Sandwich tern; Roseate tern	Xb Xb Xb Xb Xb							Xb		
Puffin	Xc	Xc	Xc	Xc	Xc	Xc		Xc		
Guillemot; Razorbill;	Xd Xd Xd ✓e ✓e Xd									

### **Evidence supporting conclusions:**

- For this SPA sites, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone.

  Therefore, LSE can be discounted in relation to effects alone.
- This SPA is not within the MMF+1SD of the array areas and offshore ECC for any of these features. For these SPA sites, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.
- This SPA is not within the MMF+1SD of the array areas and offshore ECC for any of these features; however, since breeding features are afforded protection outside of the breeding season and there is the potential for these features to winter in southern North Sea (even in very small numbers), there is the potential for connectivity between this SPA and VE, expect for puffin since peak puffin density in the array areas and 4km buffer was estimated to be 0.01 (0.01). Given the extremely low density within the VE site it is considered that there is no potential for LSE on puffin.
- Xd For guillemot and razorbill, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally and for these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible.
- ✓e VE is beyond the MMF +1SD for this species from Farne Islands SPA, there will be no breeding season barrier impact for this population, therefore LSE can be ruled out alone. The pathway to effects due to insufficient prey resource is weak for this highly mobile receptor. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be



sufficient alternative resource available to support the species population. Therefore, LSE can be discounted in relation to effects alone for the breeding season. However, connectivity during the non-breeding season means that LSE cannot be discounted.



### HRA Screening Matrix 50: Aberdaron Coast and Bardsey Island SPA

Name of European site:	Aberdaron	Coast and B	ardsey Isla	and SPA					
EU Code:	UK9013121								
Distance to Project:	466.73 km to	o array area							
Likely Effects of Project									
Effect	Changes in prey availability and behaviour			Direct disturbance and displacement			Barrier effects		
Stage of Development	С	0	D	С	0	D	С	0	D
Manx shearwater	Xa Xa Xa Xa Xa Xa								

## **Evidence supporting conclusions:**

For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Additionally, the site specific maximum foraging range from this SPA for Manx shearwater is 162km (Woodward et al., 2019), therefore the site is unlikely to have connectivity with VE. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 51: Lindisfarne SPA

Name of European site:	Lindisfarno	e SPA							
EU Code:	UK9006011	I							
Distance to Project:	476.16 km	to array area							
Likely Effects of Project									
Effect	Changes in prey availability and behaviour			Direct disturbance and displacement			Barrier effects		
Stage of Development	С	0	D	С	0	D	С	0	D
Little tern; Roseate tern	Xa Xa Xa Xa Xa Xa							Xa	

## **Evidence supporting conclusions:**

This SPA is not within the MMF+1SD of the array areas and offshore ECC for little tern and Roseate tern. For these SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 52: Skomer Skokholm and the Seas off Pembrokeshire

Name of European site:	Skomer Sk	okholm and	the Seas	off Pembrokesh	nire SPA				
EU Code:	UK9014051								
Distance to Project:	478.97 km t	o array area							
Likely Effects of Project									
Effect	Changes in prey availability and behaviour			Direct disturbance and displacement			Barrier effects		
Stage of Development	С	0	D	С	0	D	С	0	D
Manx shearwater	Xa Xa Xa Xa Xa Xa								

## **Evidence supporting conclusions:**

For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 53: St Abb's Head to Fast Castle SPA

Name of European site:	St Abb's He	ead to Fast C	astle SP	<b>A</b>					
EU Code:	UK9004271								
Distance to Project:	515.55 km t	o array area							
Likely Effects of Project									
Effect	Changes in prey availability and behaviour			Direct disturbance and displacement			Barrier effects		
Stage of Development	С	0	D	С	0	D	С	0	D
Kittiwake; Guillemot; Herring gull; and Razorbill	Xa Xa Xa Xa Xa Xa								

## **Evidence supporting conclusions:**

This SPA is not within the MMF+1SD of the array areas and offshore ECC for kittiwake, guillemot, herring gull and razorbill. For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 54: Grassholm SPA

Name of European site:	Grassholm	SPA							
EU Code:	UK9014041								
Distance to Project:	515.55 km	to array area							
Likely Effects of Project									
Effect	Changes in prey availability and behaviour			Direct disturbance and displacement			Barrier effects		
Stage of Development	С	0	D	С	0	D	С	0	D
Gannet	Xa Xa Xa Xa Xa Xa								

## **Evidence supporting conclusions:**

For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Additionally, when considering that seabirds are likely to travel around land masses to forage, the maximum foraging range for gannet is within proximity of VE (Woodward et al., 2019). Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 55: Imperial Dock Lock, Leith SPA

Name of European site:	Imperial	Dock Loc	k, Leith SP <i>I</i>	4								
EU Code:	UK90044	51										
Distance to Project:	563.20 kr	m to array	area									
Likely Effects of Project												
Effect	Changes in prey availability and behaviour			Direct disturbance and			Barrier effects			Sollie Dong Field		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Common tern	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa	

## **Evidence supporting conclusions:**

These SPAs are not within the MMF+1SD of the array areas and offshore ECC for these species. For these SPA sites, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 56: Forth Islands SPA

Name of European site:	Forth Is	slands SP	A									
EU Code:	UK9004	171										
Distance to Project:	547.90	km to arra	y area									
Likely Effects of Project												
Effect	Changes in prey availability and behaviour			Direct disturbance and	displacement		Barrier effects			Collision risk		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Arctic tern; Common tern; Gannet; Guillemot; Kittiwake, Lesser black-backed gull; Herring gull; Razorbill; Sandwich tern; Puffin; and Roseate tern	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa	

## **Evidence supporting conclusions:**

These SPAs are not within the MMF+1SD of the array areas and offshore ECC for these species. For these SPA sites, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 57: Ailsa Craig SPA

Name of European site:	Ailsa Craig SPA											
EU Code:	UK90030	91										
Distance to Project:	596.44 kn	n to array a	rea									
Likely Effects of Project												
Effect	Changes in prey availability and behaviour			Direct disturbance and			Barrier effects			Collision risk		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Gannet	Xa Xa Xa			Xa	Xa	Xa		Xa			Xa	

## **Evidence supporting conclusions:**

These SPAs are not within the MMF+1SD of the array areas and offshore ECC for these species. For these SPA sites, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 58: Fowlsheugh SPA

Name of European site:	Fowlsh	Fowlsheugh SPA										
EU Code:	UK9002	271										
Distance to Project:	611.79 k	m to arra	y area									
Likely Effects of Project												
Effect	Changes in prey availability and behaviour			Direct disturbance and	displacement		Barrier effects			Collision risk		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Fulmar	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa	
Razorbill; Herring gull; Kittiwake; and Guillemot	Xb	Xb	Xb	Xb	Xb	Xb		Xb			Xb	

## **Evidence supporting conclusions:**

- For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.
- This SPA is not within the MMF+1SD of the array areas and offshore ECC for these species. For this SPA sites, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 59: Isles of Scilly SPA

Name of European site:	Isles of	Isles of Scilly SPA												
EU Code:	UK90202	288												
Distance to Project:	617.31 k	617.31 km to array area												
Likely Effects of Project														
Effect	Changes in prey availability and behaviour	Changes in prey availability and behaviour					Barrier effects			Collision risk				
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D		
Manx shearwater; and Fulmar	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa			

## **Evidence supporting conclusions:**

For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 60: Ythan Estuary, of Sands of Foryie and Meikle Loch SPA

Name of European site:	Ythan E	Ythan Estuary, of Sands of Foryie and Meikle Loch SPA													
EU Code:	UK90022	221													
Distance to Project:	647.67 k	647.67 km to array area													
Likely Effects of Project				1			1								
Effect	Changes in prey availability and behaviour	Changes in prey availability and behaviour					Barrier effects			Collision risk					
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D			
Common tern; Sandwich tern; Little tern	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa				

## **Evidence supporting conclusions:**

This SPA sites are not within the MMF+1SD of the array areas and offshore ECC for these species. For this SPA sites, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 61: Ythan Estuary, Sands of Foryie and Meikle Loch Ramsar

Name of European site:	Ythan Estuary, of Sands of Foryie and Meikle Loch Ramsar													
EU Code:	UK90022	21												
Distance to Project:	647.67 km	647.67 km to array area												
Likely Effects of Project														
Effect	Changes in prey availability and behaviour	Changes in prey availability and behaviour					Barrier effects			Collision risk				
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D		
Sandwich tern	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa			

## **Evidence supporting conclusions:**

This Ramsar site are not within the MMF+1SD of the array areas and offshore ECC for these species. For thisRamsar sites, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 62: Buchan Ness to Collieston Coast SPA

Name of European site:	Buchan Ness to Collieston Coast SPA													
EU Code:	UK9002	491												
Distance to Project:	647.97 I	647.97 km to array area												
Likely Effects of Project														
Effect	Changes in prey availability and behaviour	Changes in prey availability and behaviour			displacement		Barrier effects							
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D		
Fulmar	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa			
Herring gull; Kittiwake; and Guillemot	Xb	Xb	Xb	Xb	Xb	Xb		Xb			Xb			

## **Evidence supporting conclusions:**

- For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Additionally, the site-specific maximum foraging range from this SPA for Fulmar is 224km (Woodward et al., 2019), therefore the site is unlikely to have connectivity with VE. Therefore, LSE can be discounted in relation to effects alone.
- This SPA is not within the MMF+1SD of the array areas and offshore ECC for these species. For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 63: Rathlin Island SPA

Name of European site:	Rathlin	Rathlin Island SPA												
EU Code:	UK9020	011												
Distance to Project:	656.74 k	656.74 km to array area												
Likely Effects of Project														
Effect	Changes in prey availability and behaviour	Changes in prey availability and behaviour					Barrier effects			Collision risk				
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D		
Fulmar	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa			

## **Evidence supporting conclusions:**

For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 64: Loch of Strathbeg SPA

Name of European site:	Loch o	Loch of Strathbeg SPA													
EU Code:	UK9002	2211													
Distance to Project:	675.36	675.36 km to array area													
Likely Effects of Project															
Effect	Changes in prey availability			Direct disturbance and	displacement		Barrier effects				Collision risk				
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D			
Sandwich tern	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa				

## **Evidence supporting conclusions:**

This SPA is not within the MMF+1SD of the array areas and offshore ECC for these species. For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 65: Troup, Pennan and Lion's Heads SPA

Name of European site:	Troup, Pennan and Lion's Heads SPA													
EU Code:	UK9002	471												
Distance to Project:	689.82 I	689.82 km to array area												
Likely Effects of Project														
Effect	Changes in prey availability and behaviour	Changes in prey availability and behaviour			displacement		Barrier effects				COINTE			
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D		
Fulmar	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa			
Kittiwake; Guillemot; Razorbill; Herring gull	Xb	Xb	Xb	Xb	Xb	Xb		Xb			Xb			

## **Evidence supporting conclusions:**

- For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.
- This SPA is not within the MMF+1SD of the array areas and offshore ECC for these species. For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 66: Inner Moray Firth SPA

Name of European site:	Inner Mo	Inner Moray Firth SPA												
EU Code:	UK9020:	313												
Distance to Project:	733.22 k	733.22 km to array area												
Likely Effects of Project														
Effect	Changes in prey availability and behaviour	Changes in prey availability and behaviour					Barrier effects			Collision risk				
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D		
Common tern	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa			

## **Evidence supporting conclusions:**

These SPAs are not within the MMF+1SD of the array areas and offshore ECC for this species. For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 67: Cromarty Firth SPA

Name of European site:	Cromart	Cromarty Firth SPA												
EU Code:	UK90016	623												
Distance to Project:	746.03 k	746.03 km to array area												
Likely Effects of Project							1							
Effect	Changes in prey availability and behaviour	Changes in prey availability and behaviour					Barrier effects			Collision risk				
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D		
Common tern	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa			

## **Evidence supporting conclusions:**

These SPAs are not within the MMF+1SD of the array areas and offshore ECC for this species. For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 68: Rum SPA

Name of European site:	Rum SP	A										
EU Code:	UK90013	341										
Distance to Project:	767.14 k	m to array	area									
Likely Effects of Project												
Effect	Changes in prey availability and behaviour			Direct disturbance and			Barrier effects			Collision risk		
Stage of Development	С	C O D			0	D	С	0	D	С	0	D
Manx shearwater	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa	

## **Evidence supporting conclusions:**

For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



#### HRA Screening Matrix 69: East Caithness Cliffs SPA

Name of European site:	East Cai	thness C	liffs SPA									
EU Code:	UK00301	43										
Distance to Project:	772.54 k	m to array	/ area									
Likely Effects of Project												
Effect	Changes in prey availability and behaviour			Direct disturbance and	displacement		Barrier effects			Collision risk		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Fulmar	Xa Xa Xa			Xa	Xa	Xa		Xa			Xa	
Herring gull; Great black-backed gull; Kittiwake; Guillemot; and Razorbill	Xa Xa Xa Xb Xb			Xb	Xb	Xb		Xb			Xb	

#### **Evidence supporting conclusions:**

- For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Additionally, the site specific maximum foraging range from this SPA for Fulmar is 240km (Woodward et al., 2019), therefore the site is unlikely to have connectivity with VE. Therefore, LSE can be discounted in relation to effects alone.
- This SPA is not within the MMF+1SD of the array areas and offshore ECC for these species. For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



#### HRA Screening Matrix 70: North Caithness Cliffs SPA

Name of European site:	North C	aithness	Cliffs SPA									
EU Code:	UK9001	181										
Distance to Project:	801.84 I	m to arra	y area									
Likely Effects of Project												
Effect	Changes in prey availability and behaviour			Direct disturbance and	displacement		Barrier effects			O Ollision risk		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Fulmar	Xa				Xa	Xa		Xa			Xa	
Kittiwake; Guillemot; and Razorbill	Xb				Xb	Xb		Xb			Xb	

#### **Evidence supporting conclusions:**

- For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.
- This SPA is not within the MMF+1SD of the array areas and offshore ECC for these species. For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



#### HRA Screening Matrix 71: Copinsay SPA

Name of European site:	Copins	ay SPA										
EU Code:	UK9002	151										
Distance to Project:	822.56	km to arra	y area									
Likely Effects of Project												
Effect	Changes in prey availability and behaviour			Direct disturbance and	displacement		Barrier effects				Collision risk	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Fulmar	Xa	Xa Xa Xa			Xa	Xa		Xa			Xa	
Great black-backed gull; Kittiwake; and Guillemot	Xb	Xb	Xb	Xb	Xb	Xb		Xb			Xb	

#### **Evidence supporting conclusions:**

- For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Additionally, the site specific maximum foraging range from this SPA for Fulmar is 480km (Woodward et al., 2019), therefore the site is unlikely to have connectivity with VE. Therefore, LSE can be discounted in relation to effects alone.
- This SPA is not within the MMF+1SD of the array areas and offshore ECC for these species. For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 72: Mingulay and Berneray SPA

Name of European site:	Mingula	y and Ber	neray SPA										
EU Code:	UK90011	121											
Distance to Project:	823.05 k	m to array	area										
Likely Effects of Project													
Effect	Changes in prey availability and behaviour			Direct disturbance and			Barrier effects			Collision risk			
Stage of Development	С	C O D			0	D	С	0	D	С	0	D	
Fulmar	Xa				Xa	Xa		Xa			Xa		

## **Evidence supporting conclusions:**

For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



#### HRA Screening Matrix 73: Hoy SPA

Name of European site:	Hoy SP	Α										
EU Code:	UK9002	2141										
Distance to Project:	826.27	km to arra	y area									
Likely Effects of Project												
Effect	Changes in prey availability and behaviour			Direct disturbance and	displacement		Barrier effects			Collicion		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Fulmar	Xa Xa Xa			Xa	Xa	Xa		Xa			Xa	
Great skua; Great black-backed gull; Kittiwake; Guillemot; and Puffin				Xb	Xb	Xb		Xb			Xb	

## **Evidence supporting conclusions:**

- For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.
- This SPA is not within the MMF+1SD of the array areas and offshore ECC for these species. For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 74: Auskerry (UK) SPA

Name of European site:	Auskerr	y (UK) SF	PA									
EU Code:	UK9002	381										
Distance to Project:	836.68 t	o array ar	ea									
Likely Effects of Project	I											
Effect	Changes in prey availability and behaviour			Direct disturbance and			Barrier effects			Collision risk		
Stage of Development	С	C O D			0	D	С	0	D	С	0	D
European storm petrel; Arctic tern	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa	

## **Evidence supporting conclusions:**

This SPA is not within the MMF+1SD of the array areas and offshore ECC for these species. For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 75: Handa SPA

Name of European site:	Handa SF	PA										
EU Code:	UK900124	41										
Distance to Project:	845.66 to	array area										
Likely Effects of Project												
Effect	Changes in prey availability and behaviour			Direct disturbance and displacement			Barrier effects			Collision risk		
Stage of Development	C O D			С	0	D	С	0	D	С	0	D
Fulmar	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa	

## **Evidence supporting conclusions:**

For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 76: Shiant Isles SPA

Name of European site:	Shiant Is	les SPA										
EU Code:	UK90010	41										
Distance to Project:	845.66 to	array area										
Likely Effects of Project												
Effect	Changes in prey availability and behaviour			Direct disturbance and			Barrier effects			Collision risk		
Stage of Development	C O D			С	0	D	С	0	D	С	0	D
Fulmar	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa	

## **Evidence supporting conclusions:**

For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 77: Cape Wrath SPA

Name of European site:	Cape Wra	ath SPA										
EU Code:	UK90012	31										
Distance to Project:	854.49 to	array area										
Likely Effects of Project												
Effect	Changes in prey availability and behaviour			Direct disturbance and			Barrier effects			Collision risk		
Stage of Development	C O D			С	0	D	С	0	D	С	0	D
Fulmar	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa	

## **Evidence supporting conclusions:**

For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



#### HRA Screening Matrix 78: Calf of Eday SPA

Name of European site:	Calf of	Eday SPA										
EU Code:	UK9002	431										
Distance to Project:	858.73	m to arra	y area									
Likely Effects of Project												
Effect	Changes in prey availability and behaviour			Direct disturbance and	displacement		Barrier effects			Vair ociaillo		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Fulmar	Xa				Xa	Xa		Xa			Xa	
Great black-backed gull; Kittiwake; and Guillemot	Xb	Xb	Xb	Xb	Xb	Xb		Xb			Xb	

#### **Evidence supporting conclusions:**

- For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.
- This SPA is not within the MMF+1SD of the array areas and offshore ECC for these species. For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



#### HRA Screening Matrix 79: Rousay SPA

Name of European site:	Rousay	SPA										
EU Code:	UK9002	371										
Distance to Project:	859.68 k	m to arra	y area									
Likely Effects of Project												
Effect	Changes in prey availability and behaviour			Direct disturbance and	displacement		Barrier effects			O Ollision risk		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Fulmar	Xa				Xa	Xa		Xa			Xa	
Guillemot; Arctic tern; and Kittiwake	Xb	Xb	Xb	Xb	Xb	Xb		Xb			Xb	

#### **Evidence supporting conclusions:**

- For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.
- This SPA is not within the MMF+1SD of the array areas and offshore ECC for these species. For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 80: Marwick Head SPA

Name of European site:	Marwick	Head SF	PA											
EU Code:	UK9002	121												
Distance to Project:	861.96 k	m to arra	y area											
Likely Effects of Project														
Effect	Changes in prey availability and behaviour			Direct disturbance and			Barrier effects			Collision risk				
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D		
Kittiwake; and Guillemot	Xa				Xa	Xa		Xa			Xa			

## **Evidence supporting conclusions:**

This SPA is not within the MMF+1SD of the array areas and offshore ECC for these species. For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



#### HRA Screening Matrix 81: Fair Isle SPA

Name of European site:	Fair Isle	SPA										
EU Code:	UK90020	91										
Distance to Project:	865.48 kr	n to array	area									
Likely Effects of Project							1					
Effect	Changes in prey availability and behaviour			Direct disturbance and			Barrier effects			Collision risk		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Fulmar; Great skua	Xa	Xa	Xa	Xa	Xa		Xa			Xa		
Arctic tern; Kittiwake; Gannet; Guillemot; Razorbill; and Puffin	Xb	Xb	Xb	Xb	Xb	Xb		Xb			Xb	

#### **Evidence supporting conclusions:**

- For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Additionally, the site specific maximum foraging range from this SPA for Fulmar is 247km (Woodward et al., 2019), therefore the site is unlikely to have connectivity with VE. Therefore, LSE can be discounted in relation to effects alone.
- This SPA is not within the MMF+1SD of the array areas and offshore ECC for these species. For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



#### **HRA Screening Matrix 82: West Westray SPA**

Name of European site:	West W	estray SF	PA									
EU Code:	UK9002	101										
Distance to Project:	870.21 l	m to arra	y area									
Likely Effects of Project												
Effect	Changes in prey availability and behaviour			Direct disturbance and	displacement		Barrier effects			Valising Price		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Fulmar	Xa				Xa	Xa		Xa			Xa	
Guillemot; Razorbill; and Arctic tern	Xb	Xb	Xb	Xb	Xb	Xb		Xb			Xb	

#### **Evidence supporting conclusions:**

- For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.
- These SPAs are not within the MMF+1SD of the array areas and offshore ECC for these species. For these SPAs, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 83: Papa Westray (North Hill and Holm) SPA

Name of European site:	Papa W	estray (N	orth Hill and	Holm) SPA											
EU Code:	UK9002	111													
Distance to Project:	876.22 k	m to array	/ area												
Likely Effects of Project															
Effect	Changes in prey availability and behaviour			Direct disturbance and			Barrier effects			Collision risk					
Stage of Development	С	C O D			0	D	С	0	D	С	0	D			
Arctic tern	Xa				Xa	Xa		Xa			Xa				

## **Evidence supporting conclusions:**

These SPAs are not within the MMF+1SD of the array areas and offshore ECC for these species. For these SPAs, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 84: Sule Skerry and Sule Stack SPA

Name of European site:	Sule Ske	rry and Su	ule Stack SI	PA										
EU Code:	UK90021	81												
Distance to Project:	884.2 km	to array a	rea											
Likely Effects of Project														
Effect	Changes in prey availability and behaviour disturbance and displacement Collision risk													
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D		
Guillemot; Gannet; European storm petrel; Leach's storm petrel; and Puffin	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa			

#### **Evidence supporting conclusions:**

These SPAs are not within the MMF+1SD of the array areas and offshore ECC for these species. For these SPAs, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



#### HRA Screening Matrix 85: Sumburgh Head SPA

Name of European site:	Sumbu	gh Head	SPA									
EU Code:	UK9002	511										
Distance to Project:	897.16 I	m to arra	y area									
Likely Effects of Project												
Effect	Changes in prey availability and behaviour			Direct disturbance and	displacement		Barrier effects			Collision risk		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Fulmar	Xa				Xa	Xa		Xa			Xa	
Arctic tern; Kittiwake; Guillemot	Xb	Xb	Xb	Xb	Xb	Xb		Xb			Xb	

#### **Evidence supporting conclusions:**

- For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.
- These SPAs are not within the MMF+1SD of the array areas and offshore ECC for these species. For these SPAs, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 86: Mousa SPA

Name of European site:	Mousa	SPA												
EU Code:	UK9002	361												
Distance to Project:	912.79	m to arra	y area											
Likely Effects of Project														
Effect	Changes in prey availability and behaviour			Direct disturbance and			Barrier effects			Collision risk				
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D		
European storm petrel; and Arctic tern	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa			

## **Evidence supporting conclusions:**

These SPAs are not within the MMF+1SD of the array areas and offshore ECC for these species. For these SPAs, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



#### **HRA Screening Matrix 87: Noss SPA**

Name of European site:	Noss S	PA										
EU Code:	UK9002	081										
Distance to Project:	923.70	m to arra	y area									
Likely Effects of Project												
Effect	Changes in prey availability and behaviour	Changes in prey availability and behaviour					Barrier effects				Collision risk	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Great skua; and Fulmar	Xa	Xa Xa Xa			Xa	Xa		Xa			Xa	
Gannet; Kittiwake; Guillemot; and Puffin	Xb	Xb	Xb	Xb	Xb	Xb		Xb			Xb	

#### **Evidence supporting conclusions:**

- For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.
- This SPA is not within the MMF+1SD of the array areas and offshore ECC for these species. For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 88: Flannan Isles SPA

Name of European site:	Flannan	Isles SPA												
EU Code:	UK90010	21												
Distance to Project:	928.89 kr	n to array	area											
Likely Effects of Project														
Effect	Changes in prey availability and behaviour			Direct disturbance and			Barrier effects			Collision risk				
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D		
Fulmar	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa			

## **Evidence supporting conclusions:**

For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



#### HRA Screening Matrix 89: St Kilda SPA

Name of European site:	St Kilda	SPA										
EU Code:	UK9020	332										
Distance to Project:	932.16 k	m to arra	y area									
Likely Effects of Project												
Effect	Changes in prey availability and behaviour	Changes in prey availability and behaviour					Barrier effects			Collision risk		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Fulmar; and Manx shearwater	Xa	Xa Xa Xa			Xa	Xa		Xa			Xa	
Gannet	Xb	Xb	Xb	Xb	Xb	Xb		Xb			Xb	

#### **Evidence supporting conclusions:**

- For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.
- This SPA is not within the MMF+1SD of the array areas and offshore ECC for these species. For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



#### HRA Screening Matrix 90: North Rona and Sula Sgeir SPA

Name of European site:	North Ro	ona and S	ula Sgeir Sl	PA								
EU Code:	UK90010	11										
Distance to Project:	933.85 km	n to array	area									
Likely Effects of Project							1					
Effect	Changes in prey availability and behaviour			Direct disturbance and			Barrier effects			Collision risk		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Fulmar	Xa Xa Xa			Xa	Xa	Xa		Xa			Xa	
Gannet	Xb	Xb	Xb	Xb	Xb	Xb		Xb			Xb	

#### **Evidence supporting conclusions:**

- For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.
- This SPA is not within the MMF+1SD of the array areas and offshore ECC for these species. For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



#### HRA Screening Matrix 91: Foula SPA

Name of European site:	Foula SP	4										
EU Code:	UK900206	§1										
Distance to Project:	937.01 km	to array a	rea									
Likely Effects of Project												
Effect	Changes in prey availability and behaviour displacement displacement Collision risk											
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Fulmar	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa	
Leach's storm petrel; Razorbill; Kittiwake; Guillemot; Arctic tern; Great skua; and Pufifn	Xb	Xb	Xb	Xb	Xb	Xb		Xb			Xb	

#### **Evidence supporting conclusions:**

- For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Additionally, the site specific maximum foraging range from this SPA for Fulmar is 120km (Woodward et al., 2019), therefore the site is unlikely to have connectivity with VE. Therefore, LSE can be discounted in relation to effects alone.
- This SPA is not within the MMF+1SD of the array areas and offshore ECC for these species. For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 92: Papa Stour SPA

Name of European site:	Papa Sto	ur SPA										
EU Code:	UK90020	51										
Distance to Project:	956.56 kr	n to array a	irea									
Likely Effects of Project							1			1		
Effect	Changes in prey availability and behaviour			Direct disturbance and			Barrier effects			Collision risk		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Arctic tern	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa	

#### **Evidence supporting conclusions:**

This SPA is not within the MMF+1SD of the array areas and offshore ECC for this species. For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



#### HRA Screening Matrix 93: Fetlar SPA

Name of European site:	Fetlar S	PA										
EU Code:	UK9002	031										
Distance to Project:	967.72 k	m to arra	y area									
Likely Effects of Project												
Effect	Changes in prey availability and behaviour			Direct disturbance and	משטקים ביי		Barrier effects			Collision risk		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Fulmar	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa	
Arctic tern; and Great skua	Xb	Xb	Xb	Xb	Xb	Xb		Xb			Xb	

#### **Evidence supporting conclusions:**

- For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.
- These SPAs are not within the MMF+1SD of the array areas and offshore ECC for these species. For these SPAs, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 94: Ronas Hill-North Roe and Tingon SPA

Name of European site:	Ronas H	ill-North R	oe and Ting	gon SPA								
EU Code:	UK90020	41										
Distance to Project:	972.74 kr	n to array a	area									
Likely Effects of Project												
Effect	Changes in prey availability and behaviour disturbance and disturbance and displacement Collision risk											
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Great skua	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa	

## **Evidence supporting conclusions:**

These SPAs are not within the MMF+1SD of the array areas and offshore ECC for these species. For these SPAs, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



#### HRA Screening Matrix 95: Hermaness, Saxa Vord and Valla Field SPA

Name of European site:	Hermar	ness, Sax	a Vord and V	'alla Field	SPA								
EU Code:	UK9002	2011											
Distance to Project:	989.01	km to arra	y area										
Likely Effects of Project													
Effect	Changes in prey availability and behaviour disturbance and displacement displacement Collision risk												
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	
Fulmar	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa		
Gannet; Kittiwake; Guillemot; Puffin; and Great skua	Xb	Xb	Xb	Xb	Xb	Xb		Xb			Xb		

#### **Evidence supporting conclusions:**

- For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.
- This SPA is not within the MMF+1SD of the array areas and offshore ECC for these species. For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 96: Ramna Stacks and Gruney SPA

Name of European site:	Ramna	Stacks aı	nd Gruney SI	PA								
EU Code:	UK9002	021										
Distance to Project:	986.32 k	m to arra	y area									
Likely Effects of Project												
Effect	Changes in prey availability and behaviour			Direct disturbance and			Barrier effects			Collision risk		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Leach's storm petrel	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa	

## **Evidence supporting conclusions:**

This SPA is not within the MMF+1SD of the array areas and offshore ECC for these species. For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 97: Southern Waters of Gibraltar SPA

Name of European site:	Southern	Waters of	Gibralter S	SPA								
EU Code:	UKGIB000	)2										
Distance to Project:	1835.07 k	m to array a	rea									
Likely Effects of Project							ı					
Effect	Changes in prey availability and behaviour			Direct disturbance and displacement	-		Barrier effects			Collision risk		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Man shearwater	Xa	Xa	Xa	Xa	Xa	Xa		Xa			Xa	

## **Evidence supporting conclusions:**

For this SPA, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context alone. Therefore, LSE can be discounted in relation to effects alone.



## HRA Screening Matrix 98: Vlakte van de Raan

Name of European site:	Vlakt	e van d	de Raan																		
EU Code:	BEMI	NZ0005	and NL	.200800	03																
Distance to Project:	79.28	km to	array ar	ea																	
Likely Effects of Project																					
Effect	Physical habitat loss/	disturbance		Suspended sediment/	deposition		Accidental	pollution		Invasive Non- Native Species	(SNNI)		EMF			Underwater noise			Changes to	prey	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Twaite shad, River shad, and Sea Lamprey	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa	Xa	Xa	Xa	Xa	Xa	Xa

## **Evidence supporting conclusions:**

Xa No potential for LSE. These features have been screened out from assessment as a result of the distance between VE and the designated site.



# HRA Screening Matrix 99: Westerschelde & Saeftinghe

Name of European site:	Wes	tersche	lde & S	aefting	he																
EU Code:	NL98	303061																			
Distance to Project:	91.8	km to ar	rray are	а																	
Likely Effects of Project																					
Effect	Physical habitat	disturbance		Suspended sediment/	deposition		Accidental	pollution		Invasive Non- Native Species	(SNNI)		EMF			Underwater noise			Changes to	prey	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Twaite shad; and Sea Lamprey	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa	Xa	Xa	Xa	Xa	Xa	Xa

# **Evidence supporting conclusions:**

Xa No potential for LSE. These features have been screened out from assessment as a result of the distance between VE and the designated site.



## HRA Screening Matrix 100: Voordelta

Name of European site:	Voor	delta																			
EU Code:	NL40	00017																			'
Distance to Project:	78.5 l	km to ar	ray are	а																	
Likely Effects of Project																					
Effect	Physical habitat loss/	disturbance		Suspended sediment/	deposition		Accidental	pollution		Invasive Non- Native Species	(SNNI)		EMF			Underwater noise			Changes to	prey	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Allis shad; Twaite shad; River lamprey and Sea Lamprey	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa	Xa	Xa	Xa	Xa	Xa	Xa

## **Evidence supporting conclusions:**

Xa No potential for LSE. These features have been screened out from assessment as a result of the distance between VE and the designated site.



## HRA Screening Matrix 101: Hamford Water SAC

Name of European site:	Hamford	d Water S	SAC												
EU Code:	UK0030	377													
Distance to Project:	0.71 km	to array a	area												
Likely Effects of Project							1						1		
Effect	Impacts on supporting populations, food	plant and potential habitat outside the SAC		Water quality: pollution from	site run-off affecting habitat quality		Decreases in	water quality			Decrease in air quality			In-combination	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Fisher's estuarine moth	√a		√a	√a		√a	√a		√a	√a		√a	√a		√a

## **Evidence supporting conclusions:**

√a Effects cannot be screened out at this stage, alone or in-combination. Therefore, there is a potential for LSE alone and in-combination.



## HRA Screening Matrix 102: Hamford Water Ramsar

Name of European site:	Hamford Wate	er Ramsar							
EU Code:	UK11028								
Distance to Project:	0.72 km to arra	ay area							
Likely Effects of Project									
Effect	Disturbance of birds outside the Ramsar			Water quality: pollution from	affecting prey		Decreases in water quantity		
Stage of Development	С	0	D	С	0	D	С	0	D
Important wintering populations of: Black- tailed godwit; Dark-bellied brent goose; Redshank; and Ringed plover	√a	√a	√a	√a		√a	√a		

## **Evidence supporting conclusions:**

✓a Effects cannot be screened out at this stage, alone or in-combination. Therefore, there is a potential for LSE alone and in-combination, except for little tern as this species breeds and forages in areas that are distant from the ECC and is addressed separately offshore in HRA Screening Matrix 28.



## HRA Screening Matrix 103: Stour and Orwell Estuaries SPA and RAMSAR

Name of European site:	Stou	r and O	rwell Es	stuaries	SPA an	d RAMS	SAR														
EU Code: Distance to Project:		009121 km to ar	ray area	a																	
Likely Effects of Project																					
Effect	Disturbance of birds outside the	SPA		Water quality:	pollution from site run-off affecting prey	availability	Decreases in	water quantity			Decrease in air quality			Loss of foraging and roosting	nabitat outside the Ramsar	Impacts on	supoprting populations of plants and	invertebrates outside the Ramsar		In-combination	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D				С	0	D
Over winter: Black-tailed godwit; Dark-bellied brent goose; Dunlin; Grey plover Knot; Pintail; Redshank; Waterbird assemblage	√a	√a	√a	√a		√a	√a			√a		√a	√a						√a	√a	√a
On passage: Redshank	√a	√a	√a	√a		√a	√a			√a		√a	√a						√a	√a	√a
During the breeding season: Avocet	√a	√a	√a	√a		√a	√a			√a		√a	√a						√a	√a	√a
Wetland invertebrate assemblage																√a	√a	√a	√a	√a	√a
Wetland plant assemblage																√a	√a	√a	√a	√a	√a

# **Evidence supporting conclusions:**

√a Effects cannot be screened out at this stage, alone or in-combination. Therefore, there is a potential for LSE alone and in-combination.



## HRA Screening Matrix 104: Abberton Reservoir SPA

Name of European site:	Abber	Abberton Reservoir SPA														
EU Code:	UK900	UK9009141														
Distance to Project:	11.4 k	11.4 km to array area														
Likely Effects of Project																
Effect	Disturbance of birds outside the	Disturbance of birds outside the SPA			Water quality: pollution from site run-off affecting habitat quality			Decrease in air quality			Loss of foraging and roosting habitat outside the Ramsar			In-combination		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	
Breeding: Cormorant	√a	√a	√a	√a		√a	√a		√a	√a			√a	√a	√a	
Goldeneye; Pochard; and Tufted duck																

## **Evidence supporting conclusions:**

√a Effects cannot be screened out at this stage, alone or in-combination. Therefore, there is a potential for LSE alone and in-combination.



## HRA Screening Matrix 105: Abberton Reservoir Ramsar

Name of European site:	Abberton Reservoir Ramsar															
EU Code:	UK900	UK9009141														
Distance to Project:	11.4 kr	11.4 km to array area														
Likely Effects of Project																
Effect	Disturbance of birds outside the	Disturbance of birds outside the Ramsar			Water quality: pollution from site run-off affecting prey availability			Decrease in air quality			Loss of foraging and roosting habitat outside the Ramsar			In-combination		
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	
Wintering: Gadwall; Shoveler; Wigeon; and Waterbird assemblage	√a	√a	√a	√a		√a	√a		√a	√a			√a	√a	√a	

# **Evidence supporting conclusions:**

√a Effects cannot be screened out at this stage, alone or in-combination. Therefore, there is a potential for LSE alone and in-combination.



#### 4 REFERENCES

- Bradbury, G., Trinder, M., Furness, B., Banks, A.N., Caldow, R.W. and Hume, D., 2014. Mapping seabird sensitivity to offshore wind farms. PloS one, 9(9).
- Cleasby, I.R., Owen, E., Wilson, L., Wakefield, E.D., O'Connell, P. and Bolton, M., 2020. Identifying important at-sea areas for seabirds using species distribution models and hotspot mapping. Biological Conservation, 241, p.108375.
- Dierschke, V., Furness, R.W. and Garthe, S., 2016. Seabirds and offshore wind farms in European waters: Avoidance and attraction. Biological Conservation, 202, pp.59-68.
- Ellis, J.R., Milligan, S.P. Readdy, L. Taylor, N. and Brown, M.J. (2012), 'Spawning and nursery grounds of selected fish species in UK waters'. Cefas Scientific Series Technical Report 147.
- Fliessbach, K.L., Borkenhagen, K., Guse, N., Markones, N., Schwemmer, P. and Garthe, S., 2019. A ship traffic disturbance vulnerability index for Northwest European seabirds as a tool for marine spatial planning. Frontiers in Marine Science.
- Masden. E.A., Haydon, D.T., Fox A.D., Furmess, R.W. 2010. Barriers to movement: Modelling energetic costs of avoiding marine wind farms amongst breeding seabirds. Marine Pollution Bulletin, 60(7) pp.1085-1091.
- Wildfowl and Wetland Trust (WWT). 2009. Distributions of Cetaceans, Seals, Turtles, Sharks and Ocean Sunfish recorded from Aerial Surveys 2001-2008. WWT Consulting. Report to Department of Energy and Climate Change
- Wright, L. J., Ross-Smith, V. H., Austin, G. E., Massimino, D., Dadam, D., Cook, A. S. C. P., Calbrade, N. A. and Burton, N. H. K. (2012), 'Assessing the risk of offshore wind farm development to migratory birds designated as features of UK Special Protection Areas (and other Annex 1 species)', Strategic Ornithological Support Services, Project SOSS-05, BTO Research Report No. 592.
- Woodward, I., Thaxter, C. B., Owen, E., Cook, A. S. C. P. 2019. Desk-based revision of seabird foraging ranges used for HRA screening. BTO Research Report No. 724. ISBN 978-1-912642-12-0Zeale, M., 2009. Barbastelles in the landscape: ecological research and conservation in Dartmoor National Park. SITA Trust.



PHONE EMAIL WEBSITE ADDRESS

COMPANY NO

0333 880 5306 fiveestuaries@rwe.com www.fiveestuaries.co.uk

Five Estuaries Offshore Wind Farm Ltd Windmill Hill Business Park Whitehill Way, Swindon, SN5 6PB Registered in England and Wales company number 12292474