

Report to Inform Appropriate
Assessment Appendix 1: Screening
Matrices





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# **Acronyms & Definitions**

# **Abbreviations / Acronyms**

Abbreviation / Acronym	Description
EMF	Electromagnetic fields
HEA	Habitat Regulations Assessment
INNS	Invasive Non-Native Species
LSE	Likely Significant Effect
RIAA	Report to Inform Appropriate Assessment
SAC	Special Area of Conservation
SPA	Special Protection Area



# **Reference Documentation**

Document Number	Title
N/A	No other documents are referenced within this appendix



# 1 Matrix Key

- 1. Evidence for, or against, adverse effects on designated site qualifying features and Likely Significant Effect is detailed within the footnotes to the integrity matrices.
- √ = Likely Significant Effect cannot be excluded
- X = Likely Significant Effect can be excluded
- C = Construction
- O = Operation and Maintenance
- D = Decommissioning
- Effect not relevant to feature (no potential for pathway)



# 2 Index to Matrices

2. This appendix presents the screening matrices for Outer Dowsing Offshore Wind Farm (ODOW, hereafter 'The Project') promoted by Outer Dowsing Offshore Wind (hereafter 'the Applicant') in accordance with the structure and format specific in PINS Advice Note 10 (August 2022, version 9).

Table 2.1 Details on all matrices included in this appendix

Matrix	Site included in the assessment
Matrix 1	North Norfolk Sandbanks and Saturn Reef SAC
Matrix 2	Inner Dowsing Sandbanks and Saturn Reef SAC
Matrix 3	The Wash and North Norfolk Coast SAC
Matrix 4	Humber Estuary Ramsar
Matrix 5	Humber Estuary SAC
Matrix 6	Gibraltar Point RAMSAR
Matrix 7	The Wash RAMSAR
Matrix 8	Southern North Sea SAC
Matrix 9	Moray Firth SAC
Matrix 10	Humber Estuary SAC
Matrix 11	The Wash and North Norfolk Coast SAC
Matrix 12	Berwickshire and North Northumberland SAC
Matrix 13	Transboundary sites for Harbour porpoise (12 sites)
Matrix 14	Transboundary sites for seals (12 sites)
Matrix 15	Transboundary sites for Harbour seals (12 sites)
Matrix 16	Transboundary sites for Grey seals (12 sites)
Matrix 17	Greater Wash SPA
Matrix 18	Humber Estuary Ramsar
Matrix 19	Humber Estuary SPA
Matrix 20	North Norfolk Coast SPA
Matrix 21	Gibraltar Point Ramsar
Matrix 22	Gibraltar Point SPA
Matrix 23	The Wash Ramsar
Matrix 24	The Wash SPA
Matrix 25	Great Yarmouth North Denes SPA
Matrix 26	Flamborough and Filey Coast SPA
Matrix 27	Outer Thames Estuary SPA
Matrix 28	Alde-Ore Estuary Ramsar
Matrix 29	Alde-Ore Estuary SPA
Matrix 30	Northumbria Coast SPA
Matrix 31	Foulness (Mid-Essex Coast Phase 5) SPA
Matrix 32	Thanet Coast and Sandwich Bay SPA
Matrix 33	Northumberland Marine SPA
Matrix 34	Coquet Island SPA
Matrix 35	Dungeness, Romney Marsh and Rye Bay SPA
Matrix 36	Farne Islands SPA



Matrix 37 Solent and Southampton Water SPA Matrix 38 St Abb's Head to Fast Castle SPA Matrix 39 Firth of Forth SPA Matrix 40 Forth Islands SPA Matrix 42 Poole Harbour SPA Matrix 43 Imperial Dock Lock, Leith SPA Matrix 43 Imperial Dock Lock, Leith SPA Matrix 44 Imperial Dock Lock, Leith SPA Matrix 45 Chesil Beach and The Fleet SPA Matrix 46 Fowlsheugh SPA Matrix 47 Ythan Estuary, Sands of Forvie and Meikle Loch SPA Matrix 47 Matrix 48 Matrix 49 Buchan Ness to Collieston Coast SPA Matrix 50 Matrix 50 Troup, Pennan and Lion's Heads SPA Matrix 51 East Caithness Cliffs SPA Matrix 52 North Caithness Cliffs SPA Matrix 53 Pentland Firth Islands SPA Matrix 54 Copinsay SPA Matrix 55 Hoy SPA Matrix 56 Calf of Eday SPA Matrix 57 Rousay SPA Matrix 58 Matrix 59 Fair Isle SPA Matrix 59 Fair Isle SPA Matrix 60 Mest West Westray SPA Matrix 60 Mest West Westray SPA Matrix 61 Papa Westray (North Hill and Holm) SPA Matrix 63 Noss SPA Matrix 64 Foola SPA Matrix 65 Fetlar SPA Matrix 66 Matrix 67 Transboundary sites for Lesser black-backed gull (3 sites) Matrix 69 Transboundary sites for Northern fulmar (9 sites) Matrix 70 Humber Estuary SPA Matrix 71 Humber Estuary SPA Matrix 72 Humber Estuary SPA Matrix 73 He Wash Ramsar Site Matrix 75 The Wash Ramsar Site Matrix 77 The Wash Ramsar Site		OFFSHORE WIND	
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Matrix 74 Saltfleetby-Theddlethorpe Dunes & Gibraltar Point SAC  Matrix 75 The Wash SPA  Matrix 76 The Wash Ramsar Site  Matrix 77 The Wash & North Norfolk Coast SAC	Matrix 72	Humber Estuary Ramsar Site	
Matrix 75 The Wash SPA  Matrix 76 The Wash Ramsar Site  Matrix 77 The Wash & North Norfolk Coast SAC	Matrix 73	Humber Estuary SAC	
Matrix 76 The Wash Ramsar Site  Matrix 77 The Wash & North Norfolk Coast SAC	Matrix 74	Saltfleetby-Theddlethorpe Dunes & Gibraltar Point SAC	
Matrix 77 The Wash & North Norfolk Coast SAC	Matrix 75	The Wash SPA	
	Matrix 76	The Wash Ramsar Site	
	Matrix 77	The Wash & North Norfolk Coast SAC	
Matrix 78 Greater Wash SPA	Matrix 78	Greater Wash SPA	
Matrix 79 Gibraltar Point SPA	Matrix 79	Gibraltar Point SPA	
Matrix 80 Gibraltar Point Ramsar Site	Matrix 90	Gibraltar Point Ramsar Site	



Matrix	Site included in the assessment		
Matrix 81	North Norfolk SPA		
Matrix 82	North Norfolk RAMSAR		



# 3 Effects Considered

3. Potential effects on designated sites which are considered within the submitted information to support the Report to Inform Appropriate Assessment (RIAA) for the Habitats Regulation Assessment (HRA) of Outer Dowsing Offshore Wind are provided in Table 3.1 below.

Table 3.1: Designated sites and impacts considered for assessment within the RIAA

Designations	Impacts Considered in Matrices
Subtidal and intertidal benthic ecol	
North Norfolk Sandbanks and	Suspended sediment / deposition
Saturn Reef SAC	Indirect pollution
	Accidental pollution
	Invasive Non-Native Species (INNS)
	Changes to physical processes
	Physical habitat loss / disturbance
	Electromagnetic fields (EMF)
	In-combination
Inner Dowsing Sandbanks and	Physical habitat loss / disturbance
Saturn Reef SAC	Suspended sediment / deposition
	Indirect pollution
	Accidental pollution
	Invasive Non-Native Species (INNS)
	Changes to physical processes
	Electromagnetic fields (EMF)
	In-combination
The Wash and North Norfolk Coast	Physical habitat loss / disturbance
SAC	Suspended sediment / deposition
	Indirect pollution
	Accidental pollution
	Invasive Non-Native Species (INNS)
	Changes to physical processes
	Electromagnetic fields (EMF)
	In-combination
Humber Estuary Ramsar	Physical habitat loss / disturbance
	Suspended sediment / deposition
	Indirect pollution
	Accidental pollution
	Invasive Non-Native Species (INNS)
	Changes to physical processes
	Electromagnetic fields (EMF)
	In-combination
Humber Estuary SAC	Physical habitat loss / disturbance
	Suspended sediment / deposition
	Indirect pollution
	Accidental pollution
	Invasive Non-Native Species (INNS)



	OFFSHORE WIND
Designations	Impacts Considered in Matrices
	Changes to physical processes
	Electromagnetic fields (EMF)
	In-combination
Gibraltar Point Ramsar	Physical habitat loss / disturbance
	Suspended sediment / deposition
	Indirect pollution
	Accidental pollution
	Invasive Non-Native Species (INNS)
	Changes to physical processes
	Electromagnetic fields (EMF)
	In-combination
The Wash Ramsar	Physical habitat loss/ disturbance
	Suspended sediment / deposition
	Indirect pollution
	Accidental pollution
	Invasive Non-Native Species (INNS)
	Changes to physical processes
	Electromagnetic fields (EMF)
	In-combination
Marine Mammals	
Southern North Sea SAC	Underwater noise
	Vessel disturbance
	Collision risk
	Indirect pollution
	Accidental pollution
	Changes to prey
	In-combination effects
Humber Estuary SAC and RAMSAR	Underwater noise
Tramber Estadily Site and to the Site	Vessel disturbance
	Collision risk
	Indirect pollution
	Accidental pollution
	Changes to prey
	Habitat loss
	Disturbance at haul out
	In-combination effects
Berwickshire and North	Underwater noise
Northumberland Coast SAC	Vessel disturbance
NOI CHAITIDEITAITA COAST SAC	Collision Risk
	Indirect pollution
	Accidental pollution
	Changes to prey
	Habitat loss
	In-combination effects



Designations	Impacts Considered in Matrices
The Wash and North Norfolk Coast	Underwater noise
SAC	Vessel disturbance
	Collision Risk
	Indirect pollution
	Accidental pollution
	Changes to prey
	Habitat loss
	Disturbance at haul out
	In-combination effects
Transboundary sites for Harbour	Underwater noise
porpoise (12 sites)	Vessel disturbance
po. po.se (11 s.ces)	Collision Risk
	Indirect pollution
	Accidental pollution
	Changes to prey
	In-combination effects
Moray Firth SAC	Underwater noise
Wordy Fire Control	Vessel disturbance
	Collision Risk
	Indirect pollution
	Accidental pollution
	Changes to prey
	Habitat loss
	In-combination effects
Transboundary sites for seals (12	Underwater noise
sites)	Vessel disturbance
	Collision Risk
	Indirect pollution
	Accidental pollution
	Changes to prey
	Habitat loss
	Disturbance at haul out
	In-combination effects
Offshore and intertidal ornithology	
Greater Wash SPA	Direct disturbance and displacement due to work activity and
	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array and ORCP infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Humber Estuary Ramsar	Direct disturbance and displacement due to work activity and
,	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
Humber Estuary Ramsar	Barrier effects for migratory waterbirds Indirect impacts through effects on habitats and prey species Direct disturbance and displacement due to work activity and vessel movements in both the offshore and intertidal zones



Designations	Impacts Considered in Matrices
-	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Humber Estuary SPA	Direct disturbance and displacement due to work activity and
•	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
North Norfolk Coast SPA	Direct disturbance and displacement due to work activity and
North North Coust St 71	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Gibraltar Point Ramsar	Direct disturbance and displacement due to work activity and
dibiaitai Foilit Kallisai	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure Collision risk
	Barrier effects for migratory waterbirds
C'h salta a Datat CDA	Indirect impacts through effects on habitats and prey species
Gibraltar Point SPA	Direct disturbance and displacement due to work activity and
	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
The Wash Ramsar	Direct disturbance and displacement due to work activity and
	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
The Wash SPA	Direct disturbance and displacement due to work activity and
	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species



Designations	Impacts Considered in Matrices
Great Yarmouth North Denes SPA	Direct disturbance and displacement due to work activity and
	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Flamborough and Filey Coast SPA	Direct disturbance and displacement due to work activity and
,	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Outer Thames Estuary SPA	Direct disturbance and displacement due to work activity and
- acc	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Alde-Ore Estuary Ramsar	Direct disturbance and displacement due to work activity and
	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Alde-Ore Estuary SPA	Direct disturbance and displacement due to work activity and
, ,	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Coquet Island SPA	Direct disturbance and displacement due to work activity and
•	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Northumbria Coast SPA	Direct disturbance and displacement due to work activity and
	vessel movements in both the offshore and intertidal zones
	The state of the s



Designations	Impacts Considered in Matrices
2 00.6.10.10.10	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Foulness (Mid-Essex Coast Phase	Direct disturbance and displacement due to work activity and
5) SPA	vessel movements in both the offshore and intertidal zones
3) 31 A	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
Thomat Coast and Conduish Day	Indirect impacts through effects on habitats and prey species
Thanet Coast and Sandwich Bay	Direct disturbance and displacement due to work activity and vessel movements in both the offshore and intertidal zones
SPA	
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Northumberland Marine SPA	Direct disturbance and displacement due to work activity and
	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Dungeness, Romney Marsh and	Direct disturbance and displacement due to work activity and
Rye Bay SPA	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Farne Islands SPA	Direct disturbance and displacement due to work activity and
	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Solent and Southampton Water	Direct disturbance and displacement due to work activity and
SPA	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	COMBIOTITISK



Designations	Impacts Considered in Matrices
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Firth of Forth SPA	Direct disturbance and displacement due to work activity and vessel movements in both the offshore and intertidal zones Direct disturbance and displacement due to the presence of array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
Forth Islands SPA	Indirect impacts through effects on habitats and prey species  Direct disturbance and displacement due to work activity and vessel movements in both the offshore and intertidal zones  Direct disturbance and displacement due to the presence of array infrastructure  Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Poole Harbour Ramsar	Direct disturbance and displacement due to work activity and vessel movements in both the offshore and intertidal zones Direct disturbance and displacement due to the presence of array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Poole Harbour SPA	Direct disturbance and displacement due to work activity and vessel movements in both the offshore and intertidal zones Direct disturbance and displacement due to the presence of array infrastructure Collision risk Barrier effects for migratory waterbirds Indirect impacts through effects on habitats and prey species
Imperial Dock Lock, Leith SPA	Direct disturbance and displacement due to work activity and
	vessel movements in both the offshore and intertidal zones Direct disturbance and displacement due to the presence of array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Firth of Tay and Eden Estuary SPA	Direct disturbance and displacement due to work activity and vessel movements in both the offshore and intertidal zones Direct disturbance and displacement due to the presence of array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species



Designations	Impacts Considered in Matrices
Chesil Beach and The Fleet SPA	Direct disturbance and displacement due to work activity and vessel movements in both the offshore and intertidal zones Direct disturbance and displacement due to the presence of array infrastructure Collision risk Barrier effects for migratory waterbirds Indirect impacts through effects on habitats and prey species
Fowlsheugh SPA	Direct disturbance and displacement due to work activity and vessel movements in both the offshore and intertidal zones Direct disturbance and displacement due to the presence of array infrastructure Collision risk Barrier effects for migratory waterbirds Indirect impacts through effects on habitats and prey species
Ythan Estuary, Sands of Forvie and Meikle Loch SPA	Direct disturbance and displacement due to work activity and vessel movements in both the offshore and intertidal zones Direct disturbance and displacement due to the presence of array infrastructure Collision risk Barrier effects for migratory waterbirds Indirect impacts through effects on habitats and prey species
Ythan Estuary and Meikle Loch Ramsar	Direct disturbance and displacement due to work activity and vessel movements in both the offshore and intertidal zones Direct disturbance and displacement due to the presence of array infrastructure  Collision risk  Barrier effects for migratory waterbirds  Indirect impacts through effects on habitats and prey species
Troup, Pennan and Lion's Heads SPA	Direct disturbance and displacement due to work activity and vessel movements in both the offshore and intertidal zones Direct disturbance and displacement due to the presence of array infrastructure Collision risk Barrier effects for migratory waterbirds Indirect impacts through effects on habitats and prey species
East Caithness Cliffs SPA	Direct disturbance and displacement due to work activity and vessel movements in both the offshore and intertidal zones Direct disturbance and displacement due to the presence of array infrastructure Collision risk Barrier effects for migratory waterbirds Indirect impacts through effects on habitats and prey species
North Caithness Cliffs SPA	Direct disturbance and displacement due to work activity and vessel movements in both the offshore and intertidal zones



Designations	Impacts Considered in Matrices
Designations	
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Pentland Firth Islands SPA	Direct disturbance and displacement due to work activity and
	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Hoy SPA	Direct disturbance and displacement due to work activity and
	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Marwick Head SPA	Direct disturbance and displacement due to work activity and
	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Fair Isle SPA	Direct disturbance and displacement due to work activity and
Tall Isic SI A	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	<b>5</b> ,
Mast Mastron CDA	Indirect impacts through effects on habitats and prey species
West Westray SPA	Direct disturbance and displacement due to work activity and
	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Papa Westray (North Hill and	Direct disturbance and displacement due to work activity and
Holm) SPA	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	array initiastracture



	OFFSHORE WIND
Designations	Impacts Considered in Matrices
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Sumburgh Head SPA	Direct disturbance and displacement due to work activity and vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
N. CDA	Indirect impacts through effects on habitats and prey species
Noss SPA	Direct disturbance and displacement due to work activity and
	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Fetlar SPA	Direct disturbance and displacement due to work activity and
	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Hermaness, Saxa Vord and Valla	Direct disturbance and displacement due to work activity and
Field SPA	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Transboundary sites for Lesser	Direct disturbance and displacement due to work activity and
black-backed gull (3 sites)	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
The sales and the sales are	Indirect impacts through effects on habitats and prey species
Transboundary sites for Northern	Direct disturbance and displacement due to work activity and
fulmar (9 sites)	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species



	OFFSHORE WIND
Designations	Impacts Considered in Matrices
Transboundary sites for Manx	Direct disturbance and displacement due to work activity and
shearwater (4 sites)	vessel movements in both the offshore and intertidal zones
	Direct disturbance and displacement due to the presence of
	array infrastructure
	Collision risk
	Barrier effects for migratory waterbirds
	Indirect impacts through effects on habitats and prey species
Migratory fish	
Humber Estuary SAC	Underwater noise,
	Suspended sediment / deposition,
	Indirect pollution,
	Accidental pollution,
	Electromagnetic field (EMF),
	Invasive Non-Native Species (INNS),
	Physical habitat loss / disturbance,
	Changes to prey
	In-combination effects
River Derwent SAC	Underwater noise,
	Suspended sediment / deposition,
	Indirect pollution,
	Accidental pollution,
	Electromagnetic field (EMF),
	Invasive Non-Native Species (INNS),
	Physical habitat loss / disturbance,
	Changes to prey
	In-combination effects
Onshore ecology	
Humber Estuary SPA	Risk of disturbance/displacement,
	Loss of foraging, roosting and nesting habitat for birds outside
	the SPA,
	Risk of pollution,
Humber Estuary Ramsar Site	Loss of estuary habitats,
	Risk of disturbance/displacement,
	Loss of foraging and roosting habitat for birds outside the
	RAMSAR site,
	Risk of pollution,
Humber Estuary SAC	Risk of loss or damage to estuary habitats
	Risk of pollution
Saltfleetby-Theddlethorpe Dunes	Risk of loss, damage and/or disturbance of habitats
& Gibraltar Point SAC	Disturbance of species
	Risk of pollution
The Wash SPA	Risk of disturbance/displacement,
	Loss of foraging, roosting and nesting habitat,
	Risk of pollution,
The Wash Ramsar Site	Risk of loss or damage to habitats,



Designations	Impacts Considered in Matrices
	Risk of disturbance/displacement,
	Loss of foraging, roosting and nesting habitat,
	Risk of pollution,
The Wash & North Norfolk Coast	Risk of loss or damage to habitats,
SAC	Risk of disturbance,
	Loss of foraging, roosting and nesting habitat,
	Reduction of habitat quality,
	Displacement of otter and reduction of otter habitat
Greater Wash SPA	Risk of loss of or damage to habitats,
	Risk of disturbance/displacement,
	Loss of foraging, roosting and nesting habitat,
	Risk of pollution,
Gibraltar Point SPA	Risk of disturbance/displacement,
	Loss of foraging, roosting and nesting habitat,
	Risk of pollution,
Gibraltar Point Ramsar Site	Risk of loss of or damage to habitats,
	Risk of disturbance,
	Loss of foraging, roosting and nesting habitat,
	Risk of pollution,
	Loss or decline in populations of scarce invertebrates and
	plants,
North Norfolk SPA	Risk of disturbance/displacement,
	Loss of foraging, roosting and nesting habitat,
North Norfolk RAMSAR	Risk of disturbance/displacement,
	Loss of foraging, roosting and nesting habitat,



# 3.1 Sites designated with subtidal and intertidal benthic ecology features

#### Matrix 1: North Norfolk Sandbanks and Saturn Reef SAC

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	North Norfolk Sandbanks and Saturn Reef SAC UK0030358 6.0 km to Array Area / 6.8 km to WTG area / 17.8 km to ECC / 0.0 km to ANS / 44.2 km to biogenic reef / 72.6 km to ORCP																							
Effect	sedin	ended nent / sition		Indirect pollution			Accidental pollution			INNS			Changes to physical processes			Physical habitat loss / disturbance			EMF			In-combination effects		
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
Reefs	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	Хс		Хс		Хс		√d	√d	√d
Sandbanks which are slightly covered by sea water all of the time	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	Хс		Хс		Хс		√d	√d	√d

# **Evidence supporting conclusions**

- Ja Based on proximity to the proposed development, it is considered that potential effects may reach the SAC, within which the features are located. Therefore, a finding of potential LSE is appropriate.
- The HRA Screening Report (Appendix 7.2 of the RIAA) considers that the effects from The Project during decommissioning are similar and potentially less intense than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.
- Due to the distance of the site, physical habitat loss/ disturbance and EMF effects are not anticipated to arise due to the distance from the site. EMF effects only arise from the cables when in operation and therefore there is no pathway for effect for EMF during construction and decommissioning. Therefore, there is no LSE for either of these effects.
- $\sqrt{d}$  It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



# Matrix 2: Inner Dowsing, Race Bank, and North Ridge SAC

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	Inner Dowsing, Race Bank, and North Ridge SAC UK0030370 17.3 km to Array Area / 17.3 km to WTG area / 0.0 km to ECC / 30.0 km to ANS / 0.0 km to biogenic reef / 0.0 km to ORCP																								
Effect	Physical habitat Suspended sediment / deposition						Indire				Accidental pollution			INNS			Changes to physical processes			EMF			In-combination effects		
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	
Reefs	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		√a		√c	√c	√c	
Sandbanks which are slightly covered by sea water all of the time		√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		√a		√c	√c	√c	

# **Evidence supporting conclusions**

- Ja Based on proximity to the proposed development, it is considered that potential effects may reach the SAC, within which the features are located. Therefore, a finding of potential LSE is appropriate.
- The HRA Screening Report (Appendix 7.2 of the RIAA) considers that the effects from The Project during decommissioning are similar and potentially less intense than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.
- $\sqrt{c}$  It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



#### Matrix 3: The Wash and North Norfolk Coast SAC

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK001	.7075	North N				a / 13.4	km to I	ECC / 50	).5 km t	to ANS ,	/ 8.7 km	ı to bioş	genic re	ef / 19.	3 km to	ORCP								
Effect	Physic disturb	al habita	at loss /	Suspended			Indire	Indirect pollution			Accidental pollution		INNS				ges to	coccoc	EMF	EMF			In-combination		
	uistuii	Jance		sediment / deposition						ponu	LIOII					physical processes						effects			
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	
Sandbanks which are slightly covered by sea water all of the time	Хс		Хс	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Хс		√d	√d	√d	
Mudflats and sandflats not covered by seawater at low tide	Хс		Хс	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Хс		√d	√d	√d	
Large shallow inlets and bays	Хс		Хс	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Хс		√d	√d	√d	
Reefs	Хс		Хс	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Хс		√d	√d	√d	
Salicornia and other annuals colonizing mud and sand	Хс		Хс	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Хс		√d	√d	√d	
Atlantic salt meadows (Glauco- Puccinellietalia maritimae)	Хс		Хс	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Хс		√d	√d	√d	

# **Evidence supporting conclusions**

- Ja Based on proximity to the proposed development, it is considered that potential effects may reach the SAC, within which the features are located. Therefore, a finding of potential LSE is appropriate.
- The HRA Screening Report (Appendix 7.2 of the RIAA) considers that the effects from The Project during decommissioning are similar and potentially less intense than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.
- Due to the distance of the site, physical habitat loss/ disturbance and EMF effects are not anticipated to arise due to the distance from the site. EMF effects only arise from the cables when in operation and therefore there is no pathway for effect for EMF during construction and decommissioning. Therefore, there is no LSE for either of these effects.
- $\sqrt{d}$  It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



# Matrix 4: Humber Estuary Ramsar

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK11	031 (66	uary Ran 53) Array Are		0 km to	WTG ar	ea / 12	.5 km t	o ECC /	47.5 km	i to ANS	5 / 20.9	km to b	oiogenic	reef / 1	l8.7 km	to ORC	Р						
Effect		cal hab disturk		Suspe sedin depo			Indire	ect poll	ution	Accid pollu			INNS			Chang		hysical	EMF			In-cor effect	mbinatio s	on
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
Dune systems with humid dune slacks	Хс		Хс	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Хс		√d	√d	√d
Estuarine waters	Хс		Хс	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Хс		√d	√d	√d
Intertidal mud and sand flats	Хс		Хс	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Хс		√d	√d	√d
Saltmarshes	Хс		Хс	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Хс		√d	√d	√d
Coastal brackish/saline lagoons	Хс		Хс	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Хс		√d	√d	√d

# **Evidence supporting conclusions**

- Ja Based on proximity to the proposed development, it is considered that potential effects may reach the SAC, within which the features are located. Therefore, a finding of potential LSE is appropriate.
- The HRA Screening Report (Appendix 7.2 of the RIAA) considers that the effects from The Project during decommissioning are similar and potentially less intense than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.
- Due to the distance of the site, physical habitat loss/ disturbance and EMF effects are not anticipated to arise due to the distance from the site. EMF effects only arise from the cables when in operation and therefore there is no pathway for effect for EMF during construction and decommissioning. Therefore, there is no LSE for either of these effects.
- √d It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



# Matrix 5: Humber Estuary SAC

Name of Humber Estuary SAC

designated site:

Site Code: UK0030170

Closest Distance 54.4 km to Array Area / 54.4 km to WTG area / 18.9 km to ECC / 47.5 km to ANS / 24.3 km to biogenic reef / 23.8 km to ORCP

to Project

Likely Effects of Project

Effect		al habita oance	nt loss /	Susper / depo	nded sed sition	diment	Indired	ct polluti	on	Accidental pollution INNS				Change proces	es to ph ses	ysical	EMF			In-com effects	nbinatior S	1		
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
Estuaries	Хс		Хс	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Хс		√d	√d	√d
Mudflats and sandflats not covered by seawater at low tide	Хс		Хс	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Хс		√d	√d	√d
Sandbanks which are slightly covered by sea water all the time	Хс		Хс	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Хс		√d	√d	√d
Salicornia and other annuals colonizing mud and sand	1		Хс	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Хс		√d	√d	√d
Atlantic salt meadows	Хс		Хс	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Хс		√d	√d	√d

# **Evidence supporting conclusions**

- Ja Based on proximity to the proposed development, it is considered that potential effects may reach the SAC, within which the features are located. Therefore, a finding of potential LSE is appropriate.
- The HRA Screening Report (Appendix 7.2 of the RIAA) considers that the effects from The Project during decommissioning are similar and potentially less intense than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.
- Due to the distance of the site, physical habitat loss/ disturbance and EMF effects are not anticipated to arise due to the distance from the site. EMF effects only arise from the cables when in operation and therefore there is no pathway for effect for EMF during construction and decommissioning. Therefore, there is no LSE for either of these effects.
- √d It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



#### Matrix 6: Gibraltar Point Ramsar

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK11	027 (58	int Rams 39) Irray Are		9 km to	WTG ar	ea / 13	.4 km to	o ECC / `	70.6 km	to ANS	5 / 11.7	km to b	iogenic	reef / 1	.9.3 km	to ORC	Р						
Effect		cal hab disturk		sedin	ended nent / sition		Indire	ect poll	ution	Accid pollut			INNS			Chang proce		hysical	EMF			In-cor effect	mbinatio :s	on
Stage of Development	С	0	D	С	0	D	С	0	D	С	О	D	С	0	D	С	0	D	С	0	D	С	0	D
Estuarine mudflats	Хс		Хс	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Хс		√d	√d	√d
Sandbanks	Хс		Хс	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Хс		√d	√d	√d
Saltmarsh	Хс		Хс	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Хс		√d	√d	√d
Dunes	Хс		Хс	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Хс		√d	√d	√d

# **Evidence supporting conclusions**

- Ja Based on proximity to the proposed development, it is considered that potential effects may reach the site, within which the features are located. Therefore, a finding of potential LSE is appropriate.
- The HRA Screening Report (Appendix 7.2 of the RIAA) considers that the effects from The Project during decommissioning are similar and potentially less intense than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.
- Due to the distance of the site, physical habitat loss/ disturbance and EMF effects are not anticipated to arise due to the distance from the site. EMF effects only arise from the cables when in operation and therefore there is no pathway for effect for EMF during construction and decommissioning. Therefore, there is no LSE for either of these effects.
- √d It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



#### Matrix 7: The Wash Ramsar

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK110	ash Ran 172 (395 m to Arr	)	/ 66.3 k	m to W	TG area ,	/ 16.5 k	m to EC	C / 74.0	km to Al	NS / 13.8	3 km to I	oiogenic	: reef / 2	2.8 km t	o ORCP								
Effect	Physic distur	al habita bance	at loss /		nded se osition	diment	Indire	ect pollu	tion	Accide	ental po	llution	INNS			Chang proce	ges to ph sses	ysical	EMF			In-cor effect	nbinatio s	on
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
Saltmarshes	Хa	Хa	Хa	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Хa		√d	√d	√d
Estuaries	Хa	Хa	Хa	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Хa		√d	√d	√d
Major intertidal banks of sand and mud	Ха	Ха	Ха	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Ха		√d	√d	√d
Shallow water	Хa	Ха	Хa	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Хa		√d	√d	√d
Deep channels	Хa	Хa	Хa	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b		Ха		√d	√d	√d

# Evidence supporting conclusions

- Ja Based on proximity to the proposed development, it is considered that potential effects may reach the site, within which the features are located. Therefore, a finding of potential LSE is appropriate.
- The HRA Screening Report (Appendix 7.2 of the RIAA) considers that the effects from The Project during decommissioning are similar and potentially less intense than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.
- Due to the distance of the site, physical habitat loss/ disturbance and EMF effects are not anticipated to arise due to the distance from the site. EMF effects only arise from the cables when in operation and therefore there is no pathway for effect for EMF during construction and decommissioning. Therefore, there is no LSE for either of these effects.
- √d It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



# 3.2 Sites designated with marine mammal features

#### Matrix 8: Southern North Sea SAC

Name of designated site: Southern North Sea SAC

Site Code: UK0030395

Closest Distance to Project 0.0 km to Array Area / 0.0 km to WTG area / 1.1 km to ECC / 0.0 km to ANS / 36.0 km to biogenic reef / 48.2 km to ORCP

(Offshore)

Likely Effects of Project

Enterly Entertis of Froject																								
Effect	Under	rwater r	noise	Vesse	l disturb	ance	Collisi	on risk		Indire	ct pollut	ion	Accide	ental po	ollution	Habita	at loss		Chang	es to pr	ey	In-con	nbinatio	n
																						effect	S	
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
Harbour porpoise	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√a	√a	√b	√c	√c	√c

# **Evidence supporting conclusions**

- √a Table 5.4 of the HRA Screening Report (Appendix 7.2 of the RIAA) considers that The Project is located within 0 km of the SAC. Therefore, due to proximity to the source there is potential for a likely significant effect (LSE).
- The HRA Screening Report (Appendix 7.2 of the RIAA) considers that the effects from The Project during decommissioning are similar and potentially less intense than those outlined in the construction phase.

  Therefore, a finding of potential LSE is appropriate.
- $\sqrt{c}$  It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



#### Matrix 9: Humber Estuary SAC

Name of designated site:	Hum	ber Est	uary S	AC																							
Site Code:	UKOC	30170																									
Closest Distance to Proje	ct 54.4	km to	Array <i>A</i>	Area / 5	54.4 km	n to WT	「G area	a / 18.9	km to	ECC /	47.5 kr	n to AN	IS / 24.	.3 km t	o bioge	enic ree	ef / 23.	8 km to	ORCP								
(offshore)																											
Likely Effects of Project																											
Effect	Unde	rwate	r	Vess	el		Collis	sion ris	k	Indire	ect pol	lution	Accio	lental		Chan	ges to	prey	Habit	at loss	;	Distu	rbance	at haul	In-co	mbina	tion
	noise			distu	rbance	9							pollu	tion								out			effect	ts	
Stage of Development	С	0	D	С	0	D	С	0	С	С	С	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Grey seal	√a	√a	√b	√c	√c	√b	√d	√d	√b	Хe	Хe	Хe	Хe	Хe	Хe	√g	√g	√g	Хe	Хe	Хe	√c	√c	√b	√f	√f	√f

#### **Evidence supporting conclusions**

- Va Potential for site connectivity is indicated from seal use at sea data (Vincent et al., 2017). Therefore, there is the potential for some level of interaction between grey seal and underwater noise associated with the Project. Potential for LSE concluded.
- The HRA Screening Report (Appendix 7.2 of the RIAA) considers that the effects from The Project during decommissioning are similar and potentially less intense than those outlined in the construction phase.

  Therefore, a finding of potential LSE is appropriate.
- The location of the project relative to the at sea usage area of grey seal together with connectivity to the SAC (Vincent et al., 2017) may result in increased rates of vessel disturbance of grey seal (with vessels associated with activity relating to the Project). Therefore, a finding of potential LSE is appropriate.
- √d The location of the project relative to the at sea usage area of grey seal together with connectivity to the SAC (Vincent et al., 2017) may result in increased collision risk of grey seal (with vessels associated with activity relating to the Project). Therefore, a finding of potential LSE is appropriate.
- These effects have been screened out from assessment as a result of the distance between the Project and the designated site, the scale of the potential change and the scale and extent of alternative habitat.

  Therefore, a finding of no potential LSE is appropriate
- √f It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.
- $\sqrt{q}$  The site is within the maximum range for these effects as informed by modelling and therefore there is a potential for an LSE.



#### Matrix 10: Humber Estuary Ramsar

Name of designated site:	Hum	ber Est	uary R	AMSAR																							
Site Code:	UK11	1031 (6	63)																								
Closest Distance to Project	54.0	km to A	Array A	rea / 5	4.0 km	to WT	G area	/ 12.5	km to	ECC / 4	17.5 km	to AN	S / 20.9	km to	bioge	nic ree	f / 18.7	km to	ORCP								
(offshore)																											
Likely Effects of Project																											
Effect	Unde	erwater	noise	Vesse	el		Collis	ion risk	(	Indire	ect poll	ution	Accid	ental		Chan	ges to	prey	Habit	at loss		Distu	urbance	at	In-co	mbinat	tion
				distu	rbance								pollu	tion								haul	out		effec	ts	
Stage of Development	С	0	D	С	0	D	С	0	С	С	С	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Grey seal	√a	√a	√b	√c	√c	√b	√d	√d	√b	Хe	Хe	Хe	Хe	Хe	Хe	√g	√g	√g	Хe	Хe	Хe	√c	√c	√b	√f	√f	√f

# Evidence supporting conclusions

- √a Potential for site connectivity is indicated from seal use at sea data (Vincent et al., 2017). Therefore, there is the potential for some level of interaction between grey seal and underwater noise associated with the Project. Potential for LSE concluded.
- The HRA Screening Report (Appendix 7.2 of the RIAA) considers that the effects from The Project during decommissioning are similar and potentially less intense than those outlined in the construction phase.

  Therefore, a finding of potential LSE is appropriate.
- The location of the project relative to the at sea usage area of grey seal together with connectivity to the site (Vincent et al., 2017) may result in increased rates of vessel disturbance of grey seal (with vessels associated with activity relating to the Project). Therefore, a finding of potential LSE is appropriate.
- The location of the project relative to the at sea usage area of grey seal together with connectivity to the site (Vincent et al., 2017) may result in increased collision risk of grey seal (with vessels associated with activity relating to the Project). Therefore, a finding of potential LSE is appropriate.
- These effects have been screened out from assessment as a result of the distance between the Project and the designated site, the scale of the potential change and the scale and extent of alternative habitat.

  Therefore, a finding of no potential LSE is appropriate
- √f It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.
- $\sqrt{q}$  The site is within the maximum range for these effects as informed by modelling and therefore there is a potential for an LSE.



#### Matrix 11: The Wash and North Norfolk Coast SAC

Name of designated site: Site Code: Closest Distance to Project (offshore) Likely Effects of Project	UKOC	17075						/ 13.4	l km to	ECC / 5	50.4 km	n to AN	S / 8.7	km to	biogen	ic reef	/ 19.3	km to (	ORCP								
Effect	Unde	rwate	r noise		el Irbance		Collis	sion ris	sk	Indir	ect pol	lution	Accio	lental tion		Chan	ges to	prey	Habit	at loss		Distu haul	rbance out	e at	In-cor effect		ion
Stage of Development	С	0	D	С	0	D	С	0	С	С	С	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Harbour seal	√a	√a	√b	√c	√c	√b	√d	√d	√b	Хe	Хe	Хe	Хe	Хe	Хe	√f	√f	√f	Хe	Хe	Хe	Хe	Хe	Хe	√g	√g	√g

# **Evidence supporting conclusions**

- Va Potential for site connectivity is indicated from seal use at sea data (Vincent et al., 2017). Therefore, there is the potential for some level of interaction between harbour seal and underwater noise associated with the Project. Potential for LSE concluded.
- The HRA Screening Report (Appendix 7.2 of the RIAA) considers that the effects from The Project during decommissioning are similar and potentially less intense than those outlined in the construction phase.

  Therefore, a finding of potential LSE is appropriate.
- The location of the project relative to the at sea usage area of grey seal together with connectivity to the SAC (Vincent et al., 2017) may result in increased rates of vessel disturbance of harbour seal (with vessels associated with activity relating to the Project). Therefore, a finding of potential LSE is appropriate.
- The location of the project relative to the at sea usage area of grey seal together with connectivity to the SAC (Vincent et al., 2017) may result in increased collision risk of harbour seal (with vessels associated with activity relating to the Project). Therefore, a finding of potential LSE is appropriate.
- These effects have been screened out from assessment as a result of the distance between the Project and the designated site, the scale of the potential change and the scale and extent of alternative habitat.

  Therefore, a finding of no potential LSE is appropriate
- The location of the project relative to the at sea usage area of grey seal together with connectivity to the SAC (Vincent et al., 2017) may result changes to prey of harbour seal. Therefore, a finding of potential LSE is appropriate.
- $\sqrt{q}$  It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



#### Matrix 12: Berwickshire and North Northumberland Coast SAC

Name of designated site:	Berwi	ckshire	and No	rth No	rthuml	berland	Coast	SAC																			
Site Code: Closest Distance to Project (Offshore) Likely Effects of Project	UK00: 260.4		Array Aı	rea / 20	60.7 kn	n to WT	G area	/ 264.	5 km to	ECC / 2	235.7 k	m to Al	NS / 262	2.8 km	to biog	genic re	eef / 267	7.2 km	to ORC	P							
Effect	Unde	erwater	noise	Vess	el distu	rbance	Collis	sion ris	k	Indire	ect pol	lution	Accid pollu			Char	nges to p	orey	Habit	at loss		Distu haul	irbance out	at	In-cor		tion
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
Grey Seal	√a	√a	√b	√c	√c	√b	√d	√d	√b	Хe	Хe	Хe	Хe	Хe	Хe	√f	√f	√f	Хe	Хe	Хe	Хe	Хe	Хe	√a	√a	√a

#### **Evidence supporting conclusions**

- Va Potential for site connectivity is indicated from seal use at sea data (Vincent et al., 2017). Therefore, there is the potential for some level of interaction between grey seal and underwater noise associated with the Project. Potential for LSE concluded.
- The HRA Screening Report (Appendix 7.2 of the RIAA) considers that the effects from The Project during decommissioning are similar and potentially less intense than those outlined in the construction phase.

  Therefore, a finding of potential LSE is appropriate.
- The location of the project relative to the at sea usage area of grey seal together with connectivity to the SAC (Vincent et al., 2017) may result in increased rates of vessel disturbance of grey seal (with vessels associated with activity relating to the Project). Therefore, a finding of potential LSE is appropriate.
- The location of the project relative to the at sea usage area of grey seal together with connectivity to the SAC (Vincent et al., 2017) may result in increased collision risk of grey seal (with vessels associated with activity relating to the Project). Therefore, a finding of potential LSE is appropriate.
- No potential for LSE. These effects have been screened out from assessment as a result of the distance between the Project and the designated site, the scale of the potential change and the scale and extent of alternative habitat.
- The location of the project relative to the at sea usage area of grey seal together with connectivity to the SAC (Vincent et al., 2017) may result changes to prey of grey seal. Therefore, a finding of potential LSE is appropriate.
- $\sqrt{q}$  It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



# Matrix 13: Moray Firth SAC

Name of designated site: Site Code: Closest Distance to Project (Offshore) Likely Effects of Project	UK00	y Firth 9 19808 ' km to <i>i</i>		rea / 53	7.3 km	to WTG	area /	546.9	km to E	CC / 51	2.1 km	to ANS	/ 544.1	km to l	oiogenic	reef / !	549.0 kı	n to OF	(CP					
Effect	Unde	rwater	noise	Vesse	l distur	bance	Collis	ion risk		Indire	ect pollu	ution	Accid pollut			Chang	ges to p	rey	Habita	at loss		In-cor	nbinati :s	on
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
Bottlenose dolphin	√a	√a	√b	√a	√a	√b	√a	√a	√b	Хс	Хс	Хс	Хс	Хс	Хс	√a	√a	√b	Хс	Хс	Хс	√a	√a	√a

# **Evidence supporting conclusions**

√a	Potential for site connectivity is indicated from photo-identification data. Therefore, there is the potential for some level of interaction between bottlenose dolphin associated with the Moray Firth
	SAC and these effects from the project. The impacts during decommissioning are considered to be similar and potentially less than those outlined in the construction phase.

The HRA Screening Report (Appendix 7.2 of the RIAA) considers that the effects from The Project during decommissioning are similar and potentially less intense than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.

No potential for LSE. These effects have been screened out from assessment as a result of the distance between the Project and the designated site, the scale of the potential change and the scale and extent of alternative habitat.

# End of Matrix 13

Хc



## Matrix 14: Transboundary sites for Harbour porpoise (12 sites)

Name of designated site: Transboundary sites for Harbour porpoise (12 sites)

Site Code: Various
Closest Distance to Project Various

(Offshore)

Likely Effects of Project

Effect	Unde	rwater r	noise	Vesse	l distur	oance	Collisi	on risk		Indire	ct pollu	tion	Accide	ental po	llution	Habita	at loss		Chan	ges to p	rey	In-co	mbinatio ts	on
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	О	D
Bancs de Flandres SCA	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Ха	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa
Doggersbank (Netherlands) SAC;	Ха	Ха	Ха	Ха	Ха	Ха	Ха	Хa	Хa	Ха	Ха	Хa	Ха	Ха	Ха	Хa	Ха	Ха	Ха	Ха	Ха	Ха	Хa	Ха
Klaverbak SCI;	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa
Noordzeekustone SCI;	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa
SBZ 1 SCI;	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa
SBZ 2 SCI;	Хa	Хa	Хa	Хa	Хa	Хa	Ха	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Ха	Хa
SBZ 3 SCI;	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa
Vlaamse Banked SCI;	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa
Vlakte van de Raan SCI;	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa
Voordelta SCI;	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa
Waddenzee SCI; and	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Ха	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa	Хa
Westerschelde & Saeftinghe SCI.	Ха	Ха	Ха	Ха	Ха	Ха	Ха	Ха	Ха	Ха	Ха	Ха	Ха	Ха	Ха	Ха	Ха	Xa	Ха	Хa	Хa	Ха	Хa	Хa

# Evidence supporting conclusions

Xa All sites have been screened out based on a lack of evidence to suggest connectivity (no site within 26 km effective disturbance range (EDR) of the Project). Therefore, a finding of no LSE is appropriate.



#### Matrix 15: Transboundary sites for Harbour seals (12 sites)

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	Trans Vario Vario		ary site	es for H	Iarbou	r and G	irey sea	als (12 :	sites)																		
Effect	Unde	erwater	noise		el rbance		Collis	ion risk	(	Indire	ect poll	ution	Accid pollu	lental tion		Chan	ges to	prey	Habit	at loss		Distu haul	rbance out	at	In-co effec	mbinat ts	tion
Stage of Development	C	0	D	C	0	D	C	0	D	C	0	D	C	0	D	C	0	D	C	0	D	C	0	D	C	0	D
Doggersbank (Netherlands) SAC;	√a	√a	√b	√c	√c	√b	√d	√d	√b	Хе	Хе	Хe	Хе	Хе	Хе	Хe	Хe	Хе	Хe	Хe	Хe	Хe	Хe	Хe	√f	√f	√f
Klaverbak SCI;	√a	√a	√b	√c	√c	√b	√d	√d	√b	Хе	Хе	Хе	Хе	Хe	Хе	Хе	Хe	Хe	Хе	Хe	Хе	Хе	Хе	Хe	√f	√f	√f

#### Evidence supporting conclusions

- Va Potential for site connectivity is indicated from seal use at sea data (Vincent et al., 2017). Therefore, there is the potential for some level of interaction between seals and underwater noise associated with the Project. Potential for LSE concluded.
- The HRA Screening Report (Appendix 7.2 of the RIAA) considers that the effects from The Project during decommissioning are similar and potentially less intense than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.
- The location of the project relative to the at sea usage area of grey seal together with connectivity to the SAC (Vincent et al., 2017) may result in increased rates of vessel disturbance of seals (with vessels associated with activity relating to the Project). Therefore, a finding of potential LSE is appropriate.
- √d The location of the project relative to the at sea usage area of grey seal together with connectivity to the SAC (Vincent et al., 2017) may result in increased collision risk of seals (with vessels associated with activity relating to the Project). Therefore, a finding of potential LSE is appropriate.
- No potential for LSE. These effects have been screened out from assessment as a result of the distance between the Project and the designated site, the scale of the potential change and the scale and extent of alternative habitat.
- √f It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



#### Matrix 16: Transboundary sites for Grey seals (12 sites)

Name of designated Transboundary sites for Harbour and Grey seals (12 sites)

site:

Site Code: Various Closest Distance to Various

Project

Likely Effects of Project

Effect		erwater	noise _	Vascal	disturba	nco	Collisio	on rick		Indire	ct _		Accie	lental		Change	es to prey		Habi	tat los		Dict	ırbanc	o at	In-		
LITECT	Onu	erwater	TIOISE	VESSEI	uistuiba	ilice	Comsic	JII IISK		pollut			pollu			Change	s to prey		Habi	tatios	5	haul		e at		binat	ion
										poliui	.1011		pont	LIOII								Haui	out				1011
			<u> </u>			T_			1_									1_			1-				effe	_	
Stage of Development	C	0	D	C	0	D	С	0	D	С	0	D	C	0	D	C	0	D	С	0	D	С	0	D	C	0	D
Bancs de Flandres	√a	√a	√b	√c	√c	√b	√d	√d	√b	Хe	Хe	Хe	Хe	Хe	Хe	√a	√a	√b	Хe	Хe	Хe	Хe	Хe	Хe	√f	√f	√f
SCA;																											
Doggersbank	√a	√a	√b	√c	√c	√b	√d	√d	√b	Хe	Хe	Хe	Хe	Хe	Хe	√a	√a	√b	Хe	Хe	Хe	Хe	Хe	Хe	√f	√f	√f
(Netherlands) SAC;										'	'	'	'	'	'				'	'	'	'	'	′ -			
Klaverbak SCI;	√a	√a	√b	√c	√c	√b	√d	√d	√b	Хe	Хe	Хe	Хe	Хe	Хe	√a	√a	√b	Хe	Хe	Хe	Хe	Хe	Хe	√f	√f	√f
Noordzeekustone SCI;	√a	√a	√b	√c	√c	√b	√d	√d	√b	Хе	Хе	Хe	Хe	Хe	Хe	√a	√a	√b	Хe	Хe	Хe	Хe	Хе	Хe	√f	√f	√f
SBZ 1 SCI;	√a	√a	√b	√c	√c	√b	√d	√d	√b	Хe	Хе	Хe	Хе	Хe	Хe	√a	√a	√b	Хe	Хе	Хe	Хе	Хе	Хe	√f	√f	√f
SBZ 2 SCI;	√a	√a	√b	√c	√c	√b	√d	√d	√b	Хe	Хе	Хe	Хе	Хe	Хe	√a	√a	√b	Хe	Хе	Хe	Хе	Хе	Хe	√f	√f	√f
SBZ 3 SCI;	√a	√a	√b	√c	√c	√b	√d	√d	√b	Хe	Хe	Хe	Хe	Хe	Хe	√a	√a	√b	Хe	Хe	Хe	Хe	Хe	Хe	√f	√f	√f
Vlaamse Banked SCI;	√a	√a	√b	√c	√c	√b	√d	√d	√b	Хe	Хe	Хe	Хe	Хe	Хe	√a	√a	√b	Хe	Хe	Хe	Хe	Хe	Хe	√f	√f	√f
Vlakte van de Raan	√a	√a	√b	√c	√c	√b	√d	√d	√b	Хe	Хe	Хe	Хe	Хe	Хe	√a	√a	√b	Хe	Хe	Хe	Хe	Хe	Хe	√f	√f	√f
SCI;																											
Voordelta SCI;	√a	√a	√b	√c	√c	√b	√d	√d	√b	Хe	Хe	Хe	Хe	Хe	Хe	√a	√a	√b	Хe	Хe	Хe	Хe	Хe	Хe	√f	√f	√f
Waddenzee SCI; and	√a	√a	√b	√c	√c	√b	√d	√d	√b	Хe	Хe	Хe	Хe	Хe	Хe	√a	√a	√b	Хe	Хе	Хe	Хе	Хe	Хe	√f	√f	√f
Westerschelde & Saeftinghe SCI.	√a	√a	√b	√c	√c	√b	√d	√d	√b	Хe	Хе	Хе	Хе	Хe	Хe	√a	√a	√b	Хе	Хе	Хе	Хе	Хе	Хе	√f	√f	√f

#### **Evidence supporting conclusions**

- √a Potential for site connectivity is indicated from seal use at sea data (Vincent et al., 2017). Therefore, there is the potential for some level of interaction between grey seal and underwater noise associated with the Project. Potential for LSE concluded.
- The HRA Screening Report (Appendix 7.2 of the RIAA) considers that the effects from The Project during decommissioning are similar and potentially less intense than those outlined in the construction phase.

  Therefore, a finding of potential LSE is appropriate.
- The location of the project relative to the at sea usage area of grey seal together with connectivity to the SAC (Vincent et al., 2017) may result in increased rates of vessel disturbance of grey seal (with vessels associated with activity relating to the Project). Therefore, a finding of potential LSE is appropriate.
- The location of the project relative to the at sea usage area of grey seal together with connectivity to the SAC (Vincent et al., 2017) may result in increased collision risk of grey seal (with vessels associated with activity relating to the Project). Therefore, a finding of potential LSE is appropriate.
- No potential for LSE. These effects have been screened out from assessment as a result of the distance between the Project and the designated site, the scale of the potential change and the scale and extent of alternative habitat.
- √f It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



## 3.3 Sites designated with offshore and intertidal ornithology features

Matrix 17: Greater Wash SPA

Name of designated site: Site Code: Closest Distance to Project								Greater Wa  UK9020329  24.8 km to ORCP	Array Are	ea / 24.8 kn	n to WTG area / 0.0	km to EC	CC / 24.	) km to <i>F</i>	.NS / 0.0	<b>) km</b> †	to biog	genic r	eef / 0.0		
						Likely	Effect	ts of Project													
Effect	activi	icement of ty an ments ir ore and	both the	displa the	cement presend	due to	disp		e to the		isk due to the pres	ence of		r effects presenc		imp thro	acts ough e	effects ts and es		ibination e	effects
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	О	D	С	0	D
Common scoter	√a	√a	√a	√a	√a	√a		√a			√a			√a					√d	√d	√d
Red-throated diver	√a	√a	√a	√a	√a	√a		√a			√a			√a					√d	√d	√d
Little gull	Χf	Χf	Χf	Χf	Χf	Χf		Χf			√a			√a						√d	
Little tern	Хb	Хb	Хb	Хb	Хb	Хb		Хb			Хb			Хb							
Common tern	Хс	Хс	Хс	Хс	Хс	Хс		Хс			√a			√a						√d	
Sandwich tern	, -	Хe	Хе	Хe	Хe	Хe		Хе			Хе			Хе							

**Evidence supporting conclusions** 

- The cable corridor and ORCP directly overlap with this SPA with red-throated diver and common scoter having high or very high vulnerability to disturbance/displacement from vessel disturbance. All other features have low vulnerability to disturbance and displacement (Bradbury et al., 2014; Dierschke et al., 2016; Fliessbach et al., 2019). The pathway to insufficient prey resource is weak for all designated features. 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. There is potential for migratory waterbirds to be impacted by the array through barrier effects and collisions. Disturbance and displacement due to presence of ORCP for red-throated diver and common scoter screened in to the assessment following SNCB consultation.
- The Project array is beyond the mean-maximum +1SD foraging range (Woodward et al., 2019) for little tern and therefore has no breeding season connectivity.
- Xc These species are not vulnerable to this impact, and have therefore been screened out.
- √d It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.
- Xe Sandwich tern has been screened out as although the Greater Wash is designated for breeding Sandwich terns, the breeding colonies are located within and protected by the North Norfolk Coast SPA, which is where impacts on that species are considered. There is therefore no pathway for effect for this site.
- Xf This feature is a non-breeding feature and therefore these impacts have to directly affect the designated site to have an impact on the conservation objectives. Due to this there is no pathway for effect for disturbance and displacement.



## Matrix 18: Humber Estuary Ramsar

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK11031	Stuary Ram (663) o Array Area		to WTG are	a / 12.5 km	to ECC / 47	.5 km to AN	IS / 20.9 km	to biogenic	reef / 18.7	km to ORC	Р						
Effect	activity a	disturband nent due nd vessel n the offs zones	to work novements					risk due of turbines	to the		effects du of turbines	e to the		impacts th habitats an				ation
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
European golden plover	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Red knot	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Dunlin	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Black-tailed godwit	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Common redshank	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Common shelduck	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Bar-tailed godwit	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	

# Evidence supporting conclusions

- There is potential for migratory waterbirds to be impacted by the array through barrier effects and collisions. The pathway to insufficient prey resource is weak for all designated features. 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 cannot be discounted in relation to all effects alone.
- Wintering waterbirds are not prone to displacement impacts due to the distance from the ECC to the site exceeding 2km.
- $\sqrt{c}$  It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



## Matrix 19: Humber Estuary SPA

Name of Humber Estuary SPA

designated site:

Site Code: UK9006111

Closest Distance 54.0 km to Array Area / 54.0 km to WTG area / 12.5 km to ECC / 47.5 km to ANS / 20.9 km to biogenic reef / 18.7 km to ORCP

Likely Effects of Pro																		
Effect			acement due to work	Direct	disturba			n risk due to	the		er effects	due to			through		combin	ation
			ts in both the offshore			the presence	presen	ce of turbines		the	presenc	e of		on habitat	s and prey	effe	cts	
	and intertidal	zones		of turbir	es					turbi	nes		species					
Stage of	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Development																		
Avocet	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Bar-tailed godwit	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Bittern	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Black-tailed	Хb	Хb	Хb	Χb	Хb	Хb		√a			√a						√c	
godwit																		
Dunlin	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Golden plover	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Hen harrier	Хb	Хb	Хb	Χb	Хb	Хb		√a			√a						√c	
Knot	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Little tern	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Marsh harrier	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Redshank	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Ruff	Хb	Хb	Хb	Χb	Χb	Хb		√a			√a						√c	
Shelduck	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Pink-footed goose	Хb	Хb	Хb	Χb	Хb	Хb		√a			√a						√c	
Wigeon	Хb	Хb	Хb	Χb	Хb	Хb		√a			√a						√c	
Ringed plover	Хb	Хb	Хb	Χb	Хb	Хb		√a			√a						√c	
Curlew	Хb	Хb	Хb	Χb	Хb	Хb		√a			√a						√c	
Sanderling	Хb	Хb	Хb	Χb	Хb	Хb		√a			√a						√c	
Oystercatcher	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Dark-bellied brent	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
goose																		
Mallard	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Pochard	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Goldeneye	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Scaup	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	



- There is potential for migratory waterbirds to be impacted by the array through barrier effects and collisions. The pathway to insufficient prey resource is weak for all designated features. 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 cannot be discounted in relation to all effects alone.
- Wintering waterbirds are not prone to displacement impacts due to the distance from the ECC to the SPA exceeding 2km.
- $\sqrt{c}$  It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



#### Matrix 20: North Norfolk Coast SPA

Name of North Norfolk Coast SPA

designated site:

Site Code: UK9009031

Closest Distance 56.4 km to Array Area / 56.4 km to WTG area / 29.9 km to ECC / 59.0 km to ANS / 16.0 km to biogenic reef / 31.4 km to ORCP

o Project

Likely Effects of Project

Effect		d vessel movemen	lacement due to work ts in both the offshore	Direct displace of turbi		ance and the presence		on risk due to		Barri the turbi				ct impacts s on habitat s			combin cts	ation
Stage of	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Development																		
Dark-bellied brent goose	Хb	Хb	Xb	Хb	Хb	Хb		√a			√a						√c	
Eurasian marsh harrier	Хb	Хb	Хb	Хb	Хb	Xb		√a			√a						√c	
Eurasian wigeon	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Great bittern	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Pied avocet	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Pink-footed goose	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Red knot	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Sandwich tern	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Common tern	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Little tern	Хb	Хb	Хb	Хb	Хb	Хb		√a			√a						√c	
Assemblage features	Хb	Хb	Хр	Хb	Хb	Хb		√a			√a						√c	

#### **Evidence supporting conclusions**

The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species and therefore has no breeding season connectivity. There is potential for migratory seabird and waterbirds to be impacted by the array through barrier effects and collisions.

The maximum site-specific foraging range for Sandwich tern from this site is 54 km (Woodward *et al.*, 2019), therefore the Project is beyond the range of this species from this location. Sandwich tern has been screened out for displacement effects and screened in for collision risk.

Therefore, LSE cannot be discounted in relation to all effects alone.

- The Project array is beyond the disturbance impact range for designated species and therefore has no connectivity. Therefore, LSE can be discounted in relation to these effects alone.
- $\sqrt{c}$  It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



#### Matrix 21: Gibraltar Point Ramsar

Name of Gibraltar Point Ramsar

designated site:

Site Code: UK11027 (589)

Closest Distance 62.9 km to Array Area / 62.9 km to WTG area / 13.4 km to ECC / 70.6 km to ANS / 11.7 km to biogenic reef / 19.3 km to ORCP

to Project

Likely Effects of Project

Effect		el movements in l	ent due to work both the offshore					risk due to t e of turbines		Barrie the turbin	presence			impacts n habitats				ation
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	О	В
Grey plover	Ха	Ха	Ха	Ха	Ха	Ха		√b			√b						√c	
Sanderling	Ха	Ха	Ха	Ха	Хa	Хa		√b			√b						√c	
Dark-bellied brent goose	Ха	Xa	Xa	Ха	Ха	Ха		√b			√b						√c	
Bar-tailed godwit	Хa	Хa	Хa	Хa	Хa	Хa		√b			√b						√c	

## **Evidence supporting conclusions**

χ<sub>a</sub> The Project array is beyond the disturbance impact range for designated species and therefore has no connectivity. Therefore, LSE can be discounted in relation to these effects alone.

√b There is potential for migratory waterbirds to be impacted by the array through barrier effects and collisions on migration.

Therefore, LSE cannot be discounted in relation to these effects alone.

 $\sqrt{c}$  It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



#### Matrix 22: Gibraltar Point SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK90080		A Area / 62.9	km to WT0	G area / 13	.4 km to E	CC / 70.6 k	m to ANS	/ 11.7 km	to biogeni	c reef / 19	.3 km to O	RCP					
Effect	activity moveme	cement due to work displacement due to the waterbirds waterbirds effects on habitats and prey															fects	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Grey plover	Хa	Хa	Хa	Хa	Хa	Хa		√b			√b						√c	
Sanderling	Хa	Хa	Хa	Хa	Хa	Хa		√b			√b						√c	
Little Tern	Хa	Хa	Хa	Хa	Хa	Хa		√b			√b						√c	
Bar-tailed godwit	Хa	Хa	Хa	Хa	Хa	Хa		√b			√b						√c	

# Evidence supporting conclusions

- The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated species and therefore has no breeding season connectivity. The Project array is beyond the disturbance impact range for designated waterbird species and therefore has no connectivity. Therefore, LSE can be discounted in relation to these effects alone.
- There is potential for migratory waterbirds to be impacted by the array through barrier effects and collisions. Therefore, LSE cannot be discounted in relation to these effects alone.
- $\sqrt{c}$  It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



#### Matrix 23: The Wash Ramsar

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK11072		rea / 66.3 l	km to WT0	G area / 1	6.5 km to E0	CC / 74.0 I	km to AN	S / 13.8 km t	o bioger	nic reef / 22.	8 km to OR	СР					
Effect	activity moveme	disturbar ment due and ents in l and intert	to work vessel both the	presence	e of	ie to the	Collisior waterbi		migratory	Barrier waterk	effects for pirds	migratory			s through s and prey	In-comb	oination eff	ects
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Eurasian oystercatcher	Хa	Хa	Хa	Хa	Хa	Хa		√b			√b						√c	
Grey plover	Хa	Хa	Хa	Хa	Хa	Хa		√b			√b						√c	
Red knot	Хa	Хa	Хa	Хa	Хa	Хa		√b			√b						√c	
Sanderling	Хa	Хa	Хa	Хa	Хa	Хa		√b			√b						√c	
Eurasian curlew	Хa	Хa	Хa	Хa	Хa	Хa		√b			√b						√c	
Common redshank	Хa	Хa	Хa	Хa	Хa	Хa		√b			√b						√c	
Ruddy turnstone	Хa	Хa	Хa	Хa	Ха	Хa		√b			√b						√c	
Pink-footed goose	Хa	Хa	Хa	Хa	Хa	Хa		√b			√b						√c	
Dark-bellied brent goose	Хa	Хa	Хa	Хa	Ха	Хa		√b			√b						√c	
Common shelduck	Хa	Хa	Хa	Хa	Ха	Хa		√b			√b						√c	
Northern pintail	Хa	Хa	Хa	Хa	Ха	Хa		√b			√b						√c	
Dunlin	Ха	Ха	Ха	Ха	Ха	Ха		√b			√b						√c	
Bar-tailed godwit	Ха	Ха	Хa	Ха	Хa	Хa		√b			√b						√c	

## **Evidence supporting conclusions**

- The Project array is beyond the disturbance impact range for designated species and therefore has no connectivity. Therefore, LSE can be discounted in relation to these effects alone.
- There is potential for migratory waterbirds to be impacted by the array through barrier effects and collisions on migration. Therefore, LSE cannot be discounted in relation to all effects alone.
- $\sqrt{c}$  It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



### Matrix 24: The Wash SPA

Name of designated	The Wa	ish SPA																
site:	LIKOOOG	2021																
Site Code: Closest Distance to	UK9008		rea / 66.3 k	m to WT0	G area / 16	.5 km to FC	C / 74.0 ki	m to ANS	/ 13.8 km to	hiogenic	reef / 22.7	7 km to ORC	P					
Project	00.0				3 a. ca <sub>7</sub> 23	.56 20	o		, 1313 1111 13	210861116		10 0110						
Likely Effects of Project																		
Effect	Direct	disturbar		Direct	disturba		Collision		migratory			migratory	Indirect		through	In-combi	nation eff	ects
	activity		to work vessel	presenc		e to the array	waterbii	ras		waterbi	ras		species	on nabitats	and prey			
			both the			array							Species					
	offshore	e and intert	idal zones															
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Bar-tailed godwit	Хa	Хa	Хa	Хa	Хa	Хa		√b			√b						√c	
Common scoter	Хa	Хa	Хa	Хa	Хa	Хa		√b			√b						√c	
Black-tailed godwit	Хa	Хa	Хa	Хa	Хa	Хa		√b			√b						√c	
Common goldeneye	Хa	Хa	Хa	Хa	Хa	Хa		√b			√b						√c	
Common redshank	Хa	Хa	Хa	Хa	Хa	Хa		√b			√b						√c	
Common shelduck	Хa	Хa	Хa	Хa	Хa	Хa		√b			√b						√c	
	Хa	Хa	Хa	Хa	Хa	Хa		√b			√b						√c	
goose Dunlin	Хa	Хa	Хa	Хa	Хa	Ха		√b			√b						√c	
Eurasian curlew	Xa	Xa	Xa	<del>-</del>	Xa	Xa		√b			√b						√c	
Eurasian oystercatcher	Xa	Xa	Xa	X a X a	Xa	Xa		√b			√b						√c	
Eurasian wigeon	Xa	Xa	Xa	Xa	Xa	Xa		√b			√b						√c	
Gadwall	Xa	Xa	Xa	Хa	Xa	Xa		√b			√b						√c	
Grey plover	Xa	Xa	Xa	Xa	Xa	Xa		√b			√b			+			√c	
Northern pintail	Xa	Xa	Xa	Xa	Xa	Xa		√b			√b						√c	
Pink-footed goose	Xa	Xa	Xa	Xa	Xa	Xa		√b			√b						√c	
Red knot	Xa	Xa	Xa	Ха	Xa	Xa		√b			√b						√c	
Ruddy turnstone	Xa	Xa	Xa	Xa	Xa	Xa		√b			√b						√c	
Sanderling	Ха	Ха	Xa	Xa	Xa	Xa		√b			√b						√c	
Tundra swan	Xa	Xa	Xa	Ха	Ха	Xa		√b			√b						√c	
Common tern	Ха	Xa	Xa	Хa	Ха	Xa		√b			√b						√c	
Little tern	Xa	Ха	Xa	Ха	Ха	Xa		√b			√b						√c	
Assemblage features	Xa	Xa	Xa	Ха	Ха	Xa		√b			√b						√c	
	/\ u	/ u	/\ u	Λu	/\ u	_ /\ u		V D			V D						V C	

# Evidence supporting conclusions

The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated species and therefore has no breeding season connectivity. The Project array is beyond the disturbance impact range for designated waterbird species and therefore has no connectivity. Therefore, LSE can be discounted in relation to these effects alone.



- The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward *et al.,* 2019) for designated seabird species and therefore has no breeding season connectivity. There is potential for migratory waterbirds and seabirds to be impacted by the array through barrier effects and collisions.
  - Therefore, LSE cannot be discounted in relation to these effects alone.
- $\sqrt{c}$  It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



### Matrix 25: Great Yarmouth North Denes SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK9009	271	North Dene Area / 84.5		TG area /	71.4 km to	o ECC / 69.	9 km to <i>i</i>	ANS / 60.0	km to biog	genic reef	/ 93.9 km	to ORCP					
Effect	displace activity movem	ement du and ents in	e to work	displace presence	ement due se of		Collision waterbir		migratory		effect: y waterbi			impacts on habit ecies		In-comb	ination ef	fects
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Little tern	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa

**Evidence supporting conclusions** 

The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward *et al.*, 2019) for designated seabird species and therefore has no breeding season connectivity. The Project concludes negligible potential for impact on migratory birds from this SPA passing through the site based on the distance from the site.

Therefore, LSE can be discounted in relation to all effects alone.



#### Matrix 26: Flamborough and Filey Coast SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK900	6101	nd Filey Coa		/TG area /	95.9 km to	ECC / 70.7	km to ANS	/ 92.7 km	to bioge	nic reef /	97.3 km to	o ORCF	P				
Effect	activity moven	ement do and nents in	ance and ue to work vessel both the intertidal	displace present	disturba ement du e of turbin	e to the		risk due of turbine			effects di ce of turb		throu	ugh Iabita	mpacts effects ts and es	In con	nbination	n effects
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	О	D
Kittiwake	Ха	Хa	Хa	Хa	Хa	Хa		√c		Хa	Хa	Хa					√e	
Herring gull	Хa	Хa	Хa	Хa	Хa	Хa		√c		Хa	Хa	Хa					√e	
Gannet	√b	√b	√b	√b	√b	√b		√c		Хa	Хa	Хa				√e	√e	√e
Guillemot	√b	√b	√b	√b	√b	√b		Хa		Хa	Хa	Хa				√e	√e	√e
Razorbill	√b	√b	√b	√b	√b	√b		Хa		Хa	Хa	Хa				√e	√e	√e
Puffin	√b	√b	√b	√b	√b	√b		Хa		Хa	Хa	Хa				√e	√e	√e
Fulmar	Хd	Xd	Xd	Хd	Χd	Xd		Xd		Χd	Xd	Xd						
European shag	Хa	Хa	Хa	Хa	Хa	Хa		Хa		Хa	Хa	Хa						
Cormorant	Хa	Хa	Хa	Ха	Хa	Хa		Хa		Ха	Хa	Хa						

#### Evidence supporting conclusions

- These designated features are either beyond mean-maximum +1SD foraging range or not deemed sensitive to these offshore wind farm impacts (Bradbury *et al.,* 2014; Dierschke *et al.,* 2016). Therefore there is not potential for LSE.
- The Project array is within the mean-maximum +1SD foraging ranges (Woodward *et al.*, 2019) for designated seabird species and therefore, has breeding season connectivity. Certain designated features have high or very high vulnerability to displacement from offshore windfarms (Bradbury *et al.*, 2014; Dierschke *et al.*, 2016). Therefore, there is a potential for LSE.

  Therefore, guillemot, razorbill, gannet and puffin have potential LSE for disturbance and displacement impacts during all phases.
- The Project array is within the mean-maximum +1SD foraging ranges (Woodward *et al.*, 2019) for designated seabird species and therefore, has breeding season connectivity. Certain designated features have high or very high vulnerability to collision risk with turbines (Bradbury *et al.*, 2014). Therefore, there is a potential for LSE.
- Site has connectivity with breeding fulmar based on mean-maximum +1SD foraging range, however the significance of effects at a population level is considered to decrease exponentially with distance.

  Due to the large foraging range for this species, the likelihood and or severity of the effect experienced locally is considered negligible. In addition, this species has very low vulnerability to displacement and collision (Bradbury *et al.*, 2014).
  - It is therefore determined that significant effects would not manifest on this SPA after the likelihood and severity of effects on the SPA have been apportioned to all SPAs within the foraging range. Therefore, LSE can be discounted in relation to all effects alone.
- $\sqrt{e}$  It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



## Matrix 27: Outer Thames Estuary SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK902	0309	stuary SPA · Area / 97.	8 km to V	VTG area /	84.8 km to	o ECC / 82	.4 km to <i>l</i>	ANS / 71.4	km to bio	genic reef	/ 104.1 kı	n to ORCI	Þ				
Effect	activity moven	ement du	ance and ue to work vessel both the intertidal	displace present infrast	cement du						effect ry waterbi			on habi	through tats and	In-comb	bination e	ffects
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Common tern	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa
Little tern	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Ха					Хa	Хa	Хa
Red-throated diver	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa

## Evidence supporting conclusions

Хa

The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward *et al.*, 2019) for designated seabird species and therefore has no breeding season connectivity. The Project array is beyond the disturbance impact range for designated species and therefore has no connectivity. We conclude negligible potential for impact on migratory birds from this SPA passing through the site based on the distance from the site.

Therefore, LSE can be discounted in relation to all effects alone.



### Matrix 28: Alde-Ore Estuary Ramsar

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK1100	re Estuary )2 (862) m to Arra		7.3 km to	WTG area /	131.4 km t	o ECC / 136	5.2 km to A	NS / 112.6	km to biog	enic reef /	139.2 km to	o ORCP				
Effect	activity	ement du and ents in		displace presenc infrastru					e to the	Barrier e waterbire		migratory	throu	gh effe ats an	impacts ects on d prey	Com	oination ts
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	O D
Lesser black-backed gull	Хb	Хb	Хb	Хb	Хb	Хb		√a		Хb	Хb	Хb				Хb	√c Xb
Pied avocet	Хb	Хb	Хb	Хb	Хb	Хb		Хb		Хb	Хb	Хb				Χb	Xb Xb
Common redshank	Хb	Хb	Хb	Хb	Хb	Хb		Хb		Хb	Хb	Хb				Хb	Xb Xb

# **Evidence supporting conclusions**

- √a On the advice of Natural England, potential for LSE on Lesser black-backed gull due to collisions is screened in for the non-breeding season. Therefore, LSE cannot be discounted in relation to all effects alone.
- The Project is beyond the disturbance impact range for designated waterbird species and therefore has no connectivity. Therefore, LSE can be discounted in relation to these effects alone.
- $\sqrt{c}$  It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



### Matrix 29: Alde-Ore Estuary SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK9009			7.3 km to \	WTG area /	131.4 km t	o ECC / 13	6.2 km to A	NS / 112.6	km to biog	enic reef /	139.2 km to	o ORCP					
Effect	activity	and ents in		displace presence infrastru					e to the	Barrier e waterbir		migratory	Indire throu habita specie	gh effe ats and	impacts ects on d prey	comb		pn
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	О	D	С	0	D
Lesser black-backed gull	Хb	Хb	Хb	Хb	Хb	Хb		√a		Хb	Хb	Хb				Хb	√c	Χb
Pied avocet	Хb	Хb	Хb	Хb	Хb	Хb		Хb		Хb	Хb	Хb				Хb	Хb	Χb
Common redshank	Хb	Хb	Хb	Хb	Хb	Хb		Хb		Хb	Хb	Хb				Хb	Хb	Χb
Ruff	Хb	Хb	Хb	Хb	Хb	Хb		Хb		Хb	Хb	Хb				Хb	Хb	Χb
Little tern	Хb	Хb	Хb	Хb	Хb	Хb		Хb		Хb	Хb	Хb				Хb	Хb	Χb
Sandwich tern	Хb	Хb	Хb	Хb	Хb	Хb		Хb		Хb	Хb	Хb				Хb	Хb	Хb
Marsh harrier	Хb	Хb	Хb	Хb	Хb	Хb		Хb		Хb	Хb	Хb				Хb	Хb	Хb

## Evidence supporting conclusions

- √a On the advice of Natural England, potential for LSE on Lesser black-backed gull due to collisions is screened in for the non-breeding season. Therefore, LSE can not be discounted in relation to all effects alone.
- The Project array is beyond the site-specific mean-maximum +1SD foraging ranges (Woodward *et al.,* 2019) for designated seabird species and therefore has no breeding season connectivity. The maximum site-specific foraging range for lesser black-backed gull from this site is 124km (Woodward *et al.,* 2019), therefore the Project is beyond the range of this species from this location. The
- Project is beyond the disturbance impact range for designated waterbird species and therefore has no connectivity. Therefore, LSE can be discounted in relation to these effects alone It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



### Matrix 30: Northumbria Coast SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK9006			8.6 km to	WTG area /	194.0 km t	o ECC / 17	5.0 km to A	NS / 194.7	km to biog	enic reef /	198.0 km to	o ORCP					
Effect	displac activity movem	displacement due to work activity and vessel movements in both the offshore and intertidal displacement due to the presence of array infrastructure								Barrier e waterbird		migratory	throug	gh effe its an	impacts ects on d prey		binati cts	pn
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Arctic Tern	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa
Little Tern	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa

## **Evidence supporting conclusions**

The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward *et al.,* 2019) for designated seabird species and therefore has no breeding season connectivity. We conclude negligible potential for impact on migratory birds from this SPA passing through the site based on the distance from the site. Therefore, LSE can be discounted in relation to all effects alone.



Matrix 31: Foulness (Mid-Essex Coast Phase 5) Ramsar

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK9009	9246		hase 5) SP		181.1 km t	o ECC / 19	5.3 km to A	NS / 163.6	km to biog	enic reef /	182.4 km t	o ORCP					
Effect	activity	ement due and ents in	nce and e to work vessel both the intertidal	displacer presence infrastru	of	ce and to the array			e to the	Barrier e waterbiro		migratory		gh effe ats an	impacts ects on d prey	com		on
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Bar-tailed godwit	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Ха	Хa	Хa
Dark-bellied brent goose	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa
Grey plover	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Ха	Хa	Хa
Knot	Хb	Хb	Хb	Хb	Хb	Хb		Хb			Хb					Хb	Χb	Χb
Oystercatcher	Хb	Хb	Хb	Хb	Хb	Хb		Хb			Хb					Хb	Χb	Χb
Redshank	Хb	Хb	Хb	Хb	Хb	Хb		Хb			Хb					Хb	Χb	Хb

- The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward *et al.,* 2019) for designated seabird species and therefore has no breeding season connectivity. We conclude negligible potential for impact on migratory birds from this Ramsar passing through the site based on the distance from the site.

  Therefore, LSE can be discounted in relation to all effects alone.
- The Project array is beyond the disturbance impact range for designated species and therefore has no connectivity. We conclude negligible potential for impact on migratory birds from this Ramsar passing through the site based on the distance from the site.

Therefore, LSE can be discounted in relation to all effects alone.



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

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK9009	246	ex Coast Pl Area / 202	ŕ		181.1 km t	o ECC / 196	5.3 km to A	NS / 163.6 l	km to biog	enic reef / :	182.4 km to	ORCP					
Effect	displace activity	ement due and ents in	nce and to work vessel both the intertidal	displacen presence	of			risk due of turbines	e to the	Barrier e waterbird		migratory	· ·	gh effe its an	impacts ects on d prey	com		on
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Common tern	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Ха	Хa	Χa
Little tern	Хa	Хa	Хa	Хa	Ха	Хa		Хa			Ха					Хa	Хa	Хa
Sandwich tern	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Ха	Хa	Χa

## **Evidence supporting conclusions**

The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward *et al.,* 2019) for designated seabird species and therefore has no breeding season connectivity. We conclude negligible potential for impact on migratory birds from this SPA passing through the site based on the distance from the site.

Therefore, LSE can be discounted in relation to all effects alone.



## Matrix 33: Thanet Coast and Sandwich Bay SPA

Name of designated site: Site Code: Closest Distance to Project	UK90120	071	Sandwich   Area / 231	·	VTG area /	212.2 km t	o ECC / 222	2.1 km to A	NS / 194.6 I	km to bioge	enic reef / 2	213.6 km to	ORCP					
Likely Effects of Project Effect	displace activity	ment due and ents in b	vessel		of			risk due of turbines	e to the	Barrier e waterbird		migratory		gh effe ts an	impacts ects on d prey	coml		bns
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Little tern	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa

# **Evidence supporting conclusions**

The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward *et al.,* 2019) for designated seabird species and therefore has no breeding season connectivity. We conclude negligible potential for impact on migratory birds from this SPA passing through the site based on the distance from the site.

Therefore, LSE can be discounted in relation to all effects alone.



## Matrix 34: Northumberland Marine SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK9020	325	Marine SPA		/TG area /	236.7 km to	o ECC / 213	.1 km to Al	NS / 236.4 l	km to bioge	enic reef / 2	240.2 km tc	ORCP					
Effect	activity moveme	ment due and ents in l	vessel	Direct displacen presence infrastruc	of		Collision presence			Barrier e presence	effects du of turbine:		`	gh effe ats an	impacts ects on d prey	In com effec		on
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Arctic tern	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa
Common tern	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Χa
Little tern	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa
Roseate tern	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa
Sandwich tern	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa
Guillemot	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa
Puffin	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa
Assemblage features	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa

# Evidence supporting conclusions

χ<sub>a</sub> This is a marine SPA designated for foraging seabirds. Impacts from outside the SPA are considered to have no connectivity to the site. Therefore, LSE can be discounted in relation to all effects alone.



#### Matrix 35: Coquet Island SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK900			3.8 km to V	VTG area / 2	260.9 km to	ECC / 233	9 km to AN	IS / 259.8 kn	n to biogei	nic reef / 2	63.9 km to C	)RCP				
Effect	activity movem	and and in	nce and e to work vessel both the tidal zones	displace presence infrastru	e of	nce and to the array		risk du e of turbine	e to the s	Barrier waterbir		r migratory		igh eff ats ar	impacts fects on nd prey		oination ets
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	O D
Puffin	√a	√a	√a	√a	√a	√a										√e	√e √e
Roseate tern	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb				Хb	Xb Xb
Common tern	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb				Хb	Xb Xb
Sandwich tern	Хb	Хb	Хb	Хb	Хb	Хb	Хb	√c	Хb	Хb	Хb	Хb				Хb	√d Xb
Arctic tern	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb				Хb	Xb Xb
Puffin	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb				Хb	Xb Xb
Black-headed gull	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb				Хb	Xb Xb
Fulmar	Хd	Χd	Χd	Χd	Χd	Χd	Χd	Χd	Χd	Χd	Χd	Χd				Хb	Xb Xb
Herring gull	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb				Хb	Xb Xb
Lesser black-backed gull	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb				Хb	Xb Xb

### **Evidence supporting conclusions**

- The Project array is within the mean-maximum +1SD foraging ranges (Woodward *et al.*, 2019) for designated seabird species and therefore, has breeding season connectivity. Certain designated features have high or very high vulnerability to displacement from offshore windfarms (Bradbury *et al.*, 2014; Dierschke *et al.*, 2016). Therefore, there is a potential for LSE. Therefore, puffin have potential LSE for disturbance and displacement impacts during all phases.
- The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species and therefore has no breeding season connectivity. We conclude negligible potential for impact on migratory birds from this SPA passing through the site based on the distance from the site. Therefore, LSE can be discounted in relation to all effects alone.
- The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species and therefore has no breeding season connectivity. Migrations of sandwich terns in the non-breeding season are likely to result in negligible numbers passing through the site. Sandwich tern have potential LSE in relation due to collision impacts during O&M.
- Site has connectivity with breeding fulmar based on mean-maximum +1SD foraging range, however the significance of effects at a population level is considered to decrease exponentially with distance. Due to the large foraging range for this species, the likelihood and or severity of the effect experienced locally is considered negligible. In addition, this species has very low vulnerability to displacement and collision (Bradbury *et al.*, 2014).
  - It is therefore determined that significant effects would not manifest on this SPA after the likelihood and severity of effects on the SPA have been apportioned to all SPAs within the foraging range. Therefore, LSE can be discounted in relation to all effects alone.
- √e It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



## Matrix 36: Dungeness, Romney Marsh and Rye Bay SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK9012	091	ŕ	and Rye Ba 9.1 km to V	•	246.7 km to	o ECC / 262	.6 km to A	NS / 230.4 k	km to bioge	enic reef / 2	248.3 km to	ORCP					
Effect	displace activity movem	ement due and ents in	vessel	displacer presence infrastruc			Collision presence		e to the	Barrier e waterbiro		migratory		gh effe its and	impacts ects on d prey	com		on
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Common tern	Хa	Хa	Хa	Хa	Ха	Хa		Ха			Ха					Хa	Хa	Хa
Little tern	Хa	Хa	Хa	Хa	Ха	Ха		Ха			Ха					Хa	Хa	Хa
Sandwich tern	Хa	Хa	Хa	Хa	Хa	Хa		Ха			Ха					Хa	Хa	Хa

# **Evidence supporting conclusions**

The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward *et al.,* 2019) for designated seabird species and therefore has no breeding season connectivity. We conclude negligible potential for impact on migratory birds from this SPA passing through the site based on the distance from the site.



#### Matrix 37: Farne Islands SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK9006			6.4 km to	Array / 291	7 km to EC	CC / 261.3 k	m to ANS /	289.7 km t	to biogenio	c reef / 294	.2 km to OF	RCP					
Effect	activity	and ents in	nce and to work vessel both the intertidal	Direct displaced presence infrastru				risk due of turbines			effects du e of turbine	ie to the	throu	gh effe its an	impacts ects on d prey			n
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	C C		D
Kittiwake								√a								Хс v	/d	Хс
Arctic tern	Хс	Хс	Хс	Хс	Хс	Хс		Хс		Хс	Хс	Хс				Xc >	(c	Хс
Common guillemot	√b	√b	√b	√b	√b	√b		Хс		Хс	Хс	Хс				√d v	/d	√d
Puffin	√b	√b	√b	√b	√b	√b		Хс		Хс	Хс	Хс				√d v	/d	√d
Roseate tern	Хс	Хс	Хс	Хс	Хс	Хс		Хс		Хс	Хс	Хс				Xc >	(c	Хс
Sandwich tern	Хс	Хс	Хс	Хс	Хс	Хс		√a		Хс	Хс	Хс				Хс	/d	Хс
European shag	Хс	Хс	Хс	Хс	Хс	Хс		Хс		Хс	Хс	Хс				Xc >	(c	Хc
Great cormorant	Хс	Хс	Хс	Хс	Хс	Хс		Хс		Хс	Хс	Хс				Xc >	(c	Хс
Common tern	Хс	Хс	Хс	Хс	Хс	Хс		Хс		Хс	Хс	Хс				Xc >	(c	Хс

## **Evidence supporting conclusions**

- The Project array is within the mean-maximum +1SD foraging ranges (Woodward *et al.*, 2019) for designated seabird species and therefore, has breeding season connectivity. Designated features have high or very high vulnerability to collision risk with turbines (Bradbury *et al.*, 2014). Therefore, kittiwake and sandwich tern have been screened into the assessment based on potential collision risk impacts. LSE can be discounted in relation to all other species and effects alone.
- √b Natural England have advised to screen in guillemot and puffin for displacement effects.
- The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward *et al.*, 2019) for designated seabird species and therefore has no breeding season connectivity. We conclude negligible potential for impact on migratory birds from this SPA passing through the site based on the distance from the site.

  Therefore, LSE can be discounted in relation to all effects alone.
- $\sqrt{d}$  It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



## Matrix 38: Solent and Southampton Water SPA/Ramsar

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK9011	.061/ UK9	011063	ater SPA/Ra 8.2 km to V		282.2 km t	o ECC / 339	.1 km to Al	NS / 277.4 l	km to biogo	enic reef / 2	288.9 km to	ORCP					
Effect	activity	ement due and ents in	nce and to work vessel both the intertidal	displacen presence	of		Collision presence			Barrier e waterbird		migratory		gh effe ats an	impacts ects on d prey	In comb effec		on
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Common tern	Хa	Хa	Хa	Хa	Хa	Хa		Ха			Ха					Хa	Ха	Хa
Little tern	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Ха					Хa	Хa	Хa
Roseate tern	Хa	Хa	Хa	Хa	Хa	Хa		Ха			Ха					Ха	Ха	Хa
Sandwich tern	Хa	Хa	Хa	Хa	Хa	Хa		Ха			Ха					Хa	Ха	Хa
Mediterranean gull	Хa	Хa	Хa	Хa	Хa	Хa		Ха			Ха					Ха	Ха	Хa
Black-tailed godwit	Хa	Хa	Хa	Хa	Хa	Хa		Ха			Ха					Хa	Ха	Ха
Ringed plover	Хa	Хa	Хa	Хa	Хa	Хa		Ха			Ха					Хa	Ха	Хa
Eurasian teal	Хa	Хa	Хa	Хa	Хa	Хa		Ха			Ха					Хa	Ха	Хa
Dark-bellied brent goose	Хa	Хa	Хa	Хa	Хa	Хa		Ха			Ха					Хa	Ха	Хa

# **Evidence supporting conclusions**

The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward *et al.,* 2019) for designated seabird species and therefore has no breeding season connectivity. We conclude negligible potential for impact on migratory birds from this SPA/ Ramsar passing through the site based on the distance from the site.

Therefore, LSE can be discounted in relation to all effects alone



#### Matrix 39: St Abb's Head to Fast Castle SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK9004	271	Fast Castle / Area / 330		VTG area /	333.6 km t	o ECC / 30!	5.2 km to <i>F</i>	ANS / 332.4 I	km to biog	enic reef /	336.5 km to	o ORCP				
Effect	activity movem	displacement due to work activity and vessel movements in both the offshore and intertidal of the offshore and intertidal displacement due to the presence of turbines through effects of habitats and presence of turbines habitats and presence of turbines presence of turbines presence of turbines habitats and presence of turbines presence of turbines presence of turbines habitats and presence of turbines presence of turbines presence of turbines presence of turbines habitats and presence of turbines presence o															
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	C (	D D
Guillemot	√b	√b	√b	√b	√b	√b		Хa			Хa					√c ·	/c √c
Razorbill	√b	√b	√b	√b	√b	√b		Хa			Хa					√c ·	/c √c
Kittiwake	Ха	Хa	Хa	Хa	Хa	Хa		√b								Ха	/c Xa

# Evidence supporting conclusions

- These designated features are either beyond mean-maximum +1SD foraging range or not deemed sensitive to these offshore wind farm impacts (Bradbury et al., 2014; Dierschke et al., 2016). Therefore there is not potential for LSE.
- The Project array is outside of the mean-maximum +1SD foraging ranges (Woodward *et al.,* 2019) for designated seabird species and therefore, has no breeding season connectivity. However, as the species BDMPS spans the colony and the Project, there is potential for connectivity in the non-breeding season(s).
- $\sqrt{c}$  It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination



## Matrix 40: Firth of Forth SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK90044		Area / 355	.8 km to W	/TG area / 3	356.8 km to	o ECC / 330	).8 km to Al	NS / 356.4 I	km to bioge	nic reef / 3	360.3 km to	ORCP					
Effect	displacer activity	ment due and ents in b	to work vessel	Direct displacem presence infrastruc	nent due of			risk due of turbines		Barrier ef waterbird		migratory	throug	n effec s and	mpacts cts on prey	comb		n
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Sandwich tern	Хa	Ха	Хa	Ха	Ха	Ха		Ха			Хa					Хa	Ха	Хa

# **Evidence supporting conclusions**

The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward *et al.*, 2019) for designated seabird species and therefore has no breeding season connectivity.

Therefore, LSE can be discounted in relation to all effects alone



#### Matrix 41: Forth Islands SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK9004			3.8 km to	WTG area	/ 364.7 km t	:o ECC / 3	38.8 km to	ANS / 364.4	km to b	iogenic reef	/ 368.2 km t	o ORCF	,				
Effect	activity	ement du and ents in	nce and te to work vessel both the intertidal	present	ce of	nce and e to the array			ue to the es		r effects d		throu	gh ef ats a	impacts fects on nd prey	coml		on
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Gannet	√a	√a	√a	√a	√a	√a		√a								√c	√c	√c
Kittiwake	Xd	Χd	Хd	Χd	Χd	Хd		√b								Χd	√c	Χd
Guillemot	√b	√b	√b	√b	√b	√b		Χd								√c	√c	√c
Razorbill	√b	√b	√b	√b	√b	√b		Χd								√c	√c	√c
Puffin	√b	√b	√b	√b	√b	√b		Χd								√c	√c	√c
Lesser black-backed gull	Xd	Χd	Хd	Χd	Χd	Хd		Χd								Χd	Χd	Χd
Herring gull	Xd	Χd	Хd	Χd	Χd	Хd		Χd								Χd	Χd	Χd
European shag	Xd	Χd	Χd	Χd	Хd	Хd		Χd								Хd	Χd	Χd
Sandwich tern	Xd	Χd	Хd	Χd	Χd	Хd		Χd								Χd	Χd	Χd
Roseate tern	Xd	Хd	Хd	Хd	Χd	Χd		Χd								Хd	Χd	Χd
Arctic tern	Xd	Хd	Хd	Хd	Χd	Χd		Xd								Χd	Χd	Χd
Common tern	Xd	Χd	Χd	Χd	Хd	Хd		Χd								Хd	Χd	Χd

### **Evidence supporting conclusions**

- The Project array is within the mean-maximum +1SD foraging ranges (Woodward *et al.*, 2019) for designated seabird species and therefore, has breeding season connectivity. Designated features have high or very high vulnerability to collision risk with turbines and/or displacement effects (Bradbury *et al.*, 2014). Therefore, these species have been screened into the assessment based on potential collision risk and disturbance/displacement impacts.
- These designated features are beyond mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore there is not potential for LSE during the breeding season. However, as the species BDMPS spans the colony and the Project, there is potential for connectivity in the non-breeding season(s).
- $\sqrt{c}$  It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.
- These designated features are either beyond mean-maximum +1SD foraging range or not deemed sensitive to these offshore wind farm impacts (Bradbury *et al.*, 2014; Dierschke *et al.*, 2016). Therefore there is not potential for LSE.



## Matrix 42: Poole Harbour Ramsar

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK11054			l.1 km to W	/TG area / :	322.1 km to	o ECC / 381	0 km to A	NS / 319.1	km to bioge	enic reef / 3	329.8 km to	ORCP					
Effect	displace activity	ment due and ents in l	vessel	Direct displacem presence infrastruc	of					Barrier e waterbird		migratory		gh effe ts an	impacts ects on d prey	com		pn
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Common tern	Ха	Хa	Хa	Хa	Ха	Ха		Хa			Ха					Хa	Хa	Хa

# Evidence supporting conclusions

The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward *et al.*, 2019) for designated seabird species and therefore has no breeding season connectivity.

Therefore, LSE can be discounted in relation to all effects alone



## Matrix 43: Poole Harbour SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK9010			1.1 km to	WTG area /	322.1 km t	o ECC / 381	0 km to A	.NS / 319.1	km to biogo	enic reef /	329.8 km to	ORCP				
Effect	activity	ement due and ents in	turbance and displacement due to the and vessel in both the and intertidal Direct disturbance and displacement due to the and intertidal Direct disturbance and displacement due to the displacement due to the presence of turbines  Collision risk due to the presence of turbines  Parrier effects for migratory waterbirds  Through effects on combinate habitats and prey effects and intertidal infrastructure														
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	O D
Common tern	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Ха					Хa	Xa Xa
Sandwich tern	Хa	Хa	Хa	Хa	Хa	Ха		Хa			Ха					Хa	Xa Xa
Mediterranean gull	Хa	Хa	Ха	Хa	Хa	Ха		Хa			Ха					Хa	Xa Xa

Evidence supporting conclusions.

The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward *et al.*, 2019) for designated seabird species and therefore has no breeding season connectivity.

Therefore, LSE can be discounted in relation to all effects alone



## Matrix 44: Imperial Dock Lock, Leith SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK9004	451	k, Leith SPA		/TG area /	378.3 km to	o ECC / 358	3.1 km to A	NS / 379.8	km to bioge	enic reef / 3	382.9 km to	ORCP					
Effect	displace activity	ement due and ents in	to work vessel	Direct displacem presence infrastruc	nent due of				e to the	Barrier e waterbird		migratory	throu	gh effe ts and	impacts ects on d prey	com		on
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Common tern	Хa	Хa	Хa	Ха	Ха	Хa		Хa			Хa					Хa	Хa	Хa

# Evidence supporting conclusions

The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward *et al.,* 2019) for designated seabird species and therefore has no breeding season connectivity. We conclude negligible potential for impact on migratory birds from this SPA passing through the site based on the distance from the site.

Therefore, LSE can be discounted in relation to all effects alone



## Matrix 45: Firth of Tay and Eden Estuary SPA/ Ramsar

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK9004:	121/ UK90	13018	y SPA/ Ram 5.9 km to W		398.3 km to	o ECC / 370	.8 km to A	NS / 397.5 I	km to bioge	enic reef /	401.6 km to	ORCP					
Effect	displace activity	ment due and ents in	vessel		of	ce and to the array	Collisions waterbird		migratory	Barrier e waterbird		migratory	`	gh effe ts and	impacts ects on d prey	com		on
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Little tern	Хa	Хa	Хa	Ха	Ха	Хa		Ха			Ха					Хa	Хa	Хa

# Evidence supporting conclusions

The Project array is beyond the site-specific mean-maximum +1SD foraging ranges (Woodward *et al.,* 2019) for designated seabird species and therefore has no breeding season connectivity. We conclude negligible potential for impact on migratory birds from this SPA/ Ramsar passing through the site based on the distance from the site. Therefore, LSE can be discounted in relation to all effects alone



## Matrix 46: Chesil Beach and The Fleet SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK90100	091	he Fleet S Area / 402		/TG area /	352.0 km t	o ECC / 411	.0 km to Al	NS / 350.3 l	km to bioge	nic reef / :	360.3 km to	ORCP			
Effect	displace activity moveme	ment due and ents in b	to work vessel	presence infrastruc	nent due of			risk due of turbines	to the	Barrier e		migratory	throug	gh effe ts and	mpacts cts on I prey	combination
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	C O D
Little tern	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Xa Xa Xa

# Evidence supporting conclusions

The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward *et al.*, 2019) for designated seabird species and therefore has no breeding season connectivity.

Therefore, LSE can be discounted in relation to all effects alone



#### Matrix 47: Fowlsheugh SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK9002			23.1 km 1	to WTG area	a / 434.6 kr	n to ECC/	397.9 km t	o ANS / 43	1.1 km to	biogenic r	eef / 436.2	km to	ORCP				
Effect	displac activity movem	ement du and nents in	ie to work	displac presen				risk due e of turbine			effects duce of turbin		thro	ugh eft tats ar	impacts fects on nd prey	In com	nbination	effects
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D			
Kittiwake	Хd	Χd	Хd	Χd	Χd	Χd		√b								√e	√e	√e
Herring gull	Хс	Хс	Хс	Хс	Хс	Хс		Хс			Хс					Хс	Хс	Хс
Guillemot	√b	√b	√b	√b	√b	√b		Ха			Хa					√e	√e	√e
Razorbill	√b	√b	√b	√b	√b	√b		Ха			Хa					√e	√e	√e
Fulmar	Хd	Χd	Χd	Χd	Χd	Χd		Χd			Χd					Χd	Xd	Xd

### **Evidence supporting conclusions**

- These designated features are either beyond mean-maximum +1SD foraging range or not deemed sensitive to these offshore wind farm impacts (Bradbury et al., 2014; Dierschke et al., 2016). Therefore there is not potential for LSE.
- The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward *et al.*, 2019) for designated seabird species and therefore, has no breeding season connectivity. Therefore there is not potential for LSE during the breeding season. However, as the species BDMPS spans the colony and the Project, there is potential for connectivity in the non-breeding season(s).
- The Project array is beyond the site-specific mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species and therefore has no breeding season connectivity. We conclude negligible potential for impact on migratory birds from this SPA passing through the site based on the distance from the site. Therefore, LSE can be discounted in relation to all effects alone. Site has connectivity with breeding fulmar based on mean-maximum +1SD foraging range, however the significance of effects at a population level is considered to decrease exponentially with distance. Due to the large foraging range for this species, the likelihood and or severity of the effect experienced locally is considered negligible. In addition, this species has very low vulnerability to displacement and collision (Bradbury et al., 2014).
- It is therefore determined that significant effects would not manifest on this SPA after the likelihood and severity of effects on the SPA have been apportioned to all SPAs within the foraging range. Therefore, LSE can be discounted in relation to all effects alone.
  - It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.

√e



## Matrix 48: Ythan Estuary, Sands of Forvie and Meikle Loch SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK90022	221		ie and Mei 3.5 km to W			o ECC / 433	.4 km to A	NS / 469.0 l	km to bioge	enic reef /	474.6 km to	ORCP					
Effect	displace activity moveme	ment due and ents in	vessel		of	ce and to the array			e to the	Barrier e waterbiro		migratory		gh effe ats an	impacts ects on d prey	com		on
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Common tern	Ха	Хa	Хa	Ха	Ха	Ха		Ха			Ха					Хa	Хa	Хa
Little tern	Ха	Ха	Хa	Ха	Ха	Ха		Ха			Ха					Хa	Хa	Хa
Sandwich tern	Ха	Хa	Хa	Ха	Ха	Хa		Ха			Ха					Хa	Хa	Хa

# Evidence supporting conclusions

The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward *et al.*, 2019) for designated seabird species and therefore has no breeding season connectivity.

Therefore, LSE can be discounted in relation to all effects alone



## Matrix 49: Ythan Estuary and Meikle Loch Ramsar

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK1306	1 (939)		ch Ramsar 3.5 km to W		471.6 km to	o ECC / 433	3.4 km to Al	NS / 469.0 l	km to bioge	nic reef / 4	174.6 km to	ORCP					
Effect	displace activity movem	ement due and	to work vessel both the	Direct displacem presence infrastruc	nent due of					Barrier ei waterbird		migratory	throug	ts and	impacts ects on d prey	com		pn
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Sandwich tern	Хa	Хa	Хa	Ха	Ха	Хa		Хa			Хa					Хa	Хa	Хa

# Evidence supporting conclusions

The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward *et al.*, 2019) for designated seabird species and therefore has no breeding season connectivity.

Therefore, LSE can be discounted in relation to all effects alone



#### Matrix 50: Buchan Ness to Collieston Coast SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK90024	491	ollieston Co Area / 458		VTG area /	471.8 km t	o ECC / 433	3.7 km to A	NS / 469.6 l	km to bioge	enic reef / 4	175.2 km tc	ORCP					
Effect	displace activity	ment due and ents in b		displace:					e to the		effects due of turbines		throug	gh effe ts and	impacts ects on d prey		oinati ets	on
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Guillemot	√b	√b	√b	√b	√b	√b		Ха			Ха					√c	√c	√c
Kittiwake	Хa	Хa	Хa	Ха	Хa	Ха		√b									√c	

## Evidence supporting conclusions

- These designated features are either beyond mean-maximum +1SD foraging range or not deemed sensitive to these offshore wind farm impacts (Bradbury et al., 2014; Dierschke et al., 2016). Therefore there is not potential for LSE.
- The Project array is outside of the mean-maximum +1SD foraging ranges (Woodward *et al.,* 2019) for designated seabird species and therefore, has no breeding season connectivity. Therefore there is not potential for LSE during the breeding season. However, as the species BDMPS spans the colony and the Project, there is potential for connectivity in the non-breeding season(s).
- √c It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination



#### Matrix 51: Troup, Pennan and Lion's Heads SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK900	2471	nd Lion's H ay Area / 50			/ 513.5 km	to ECC / 47	75.5 km to	ANS / 511.	5 km to bi	ogenic reef	/ 517.1 km	to ORC	Р				
Effect	activity moven	ement du , and nents in		displac presen infrastr	ement du ce of				ie to the es		effects due of turbing		throu	gh eff ats an	impacts fects on nd prey			ation
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Kittiwake	Ха	Хa	Хa	Хa	Хa	Хa		√b								Хa	√d	Хa
Herring gull	Ха	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa
Fulmar	Хс	Хс	Хс	Хс	Хс	Хс		Хс			Хс					Хс	Хс	Хс
Guillemot	√b	√b	√b	√b	√b	√b		Хa			Хa					√d	√d	√d
Razorbill	√b	√b	√b	√b	√b	√b		Хa			Ха					√d	√d	√d

## Evidence supporting conclusions

- The Project array is beyond the mean-maximum +1SD foraging ranges for all designated seabird species (Woodward *et al.,* 2019) and therefore has no breeding season connectivity.

  This SPA is therefore not considered relevant in the context of the HRA and LSE can be discounted in relation to all effects alone.
- These designated features are beyond mean-maximum +1SD foraging range (Woodward *et al.,* 2019). Therefore there is not potential for LSE during the breeding season. However, as the species BDMPS spans the colony and the Project, there is potential for connectivity in the non-breeding season(s).
- Site has connectivity with breeding fulmar based on mean-maximum +1SD foraging range, however the significance of effects at a population level is considered to decrease exponentially with distance. Due to the large foraging range for this species, the likelihood and or severity of the effect experienced locally is considered negligible. In addition, this species has very low vulnerability to displacement and collision (Bradbury et al., 2014). It is therefore determined that significant effects would not manifest on this SPA after the likelihood and severity of effects on the SPA have been apportioned to all SPAs within the foraging range. Therefore, LSE can be discounted in relation to all effects alone.
- √d It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



#### Matrix 52: East Caithness Cliffs SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK9001			3.8 km to \	WTG area /	<sup>7</sup> 593.9 km	to ECC / 5	58.6 km to	ANS / 591	.0 km to b	iogenic ree	ef / 595.9 k	m to O	)RCP				
Effect	displace activity movem	ement due and ents in	vessel		of	ce and to the array		risk due of turbine			effects du e of turbine		throu	igh effo ats an	impacts ects on d prey		bination	effects
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Kittiwake	Хa	Хa	Хa	Ха	Ха	Ха		√b								Хa	√d	Хa
Great black-backed gull	Хa	Хa	Хa	Ха	Ха	Ха		Хa			Хa					Хa	Хa	Хa
Herring gull	Хa	Хa	Хa	Хa	Хa	Ха		Хa			Хa					Ха	Хa	Ха
Fulmar	Хс	Хс	Хс	Хс	Хс	Хс		Хс			Хс					Хс	Хс	Хс
Guillemot	√b	√b	√b	√b	√b	√b		Хa			Хa					√d	√d	√d
Razorbill	√b	√b	√b	√b	√b	√b		Хa			Хa					√d	√d	√d
European shag	Хa	Ха	Хa	Ха	Ха	Ха		Ха			Ха					Ха	Хa	Хa
Great cormorant	Хa	Хa	Хa	Ха	Ха	Ха		Ха			Хa					Ха	Хa	Хa

## **Evidence supporting conclusions**

- The Project array is beyond the site-specific mean-maximum +1SD foraging ranges (Woodward *et al.,* 2019) for designated seabird species and therefore has no breeding season connectivity. We conclude negligible potential for impact on migratory birds from this SPA passing through the site based on the distance from the site.

  Therefore, LSE can be discounted in relation to all effects alone.
- These designated features are beyond mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore there is not potential for LSE during the breeding season. However, as the species BDMPS spans the colony and the Project, there is potential for connectivity in the non-breeding season(s).
- Site has connectivity with breeding fulmar based on mean-maximum +1SD foraging range, however the significance of effects at a population level is considered to decrease exponentially with distance. Due to the large foraging range for this species, the likelihood and or severity of the effect experienced locally is considered negligible. In addition, this species has very low vulnerability to displacement and collision (Bradbury *et al.*, 2014). It is therefore determined that significant effects would not manifest on this SPA after the likelihood and severity of effects on the SPA have been apportioned to all SPAs within the foraging range. Therefore, LSE can be discounted in relation to all effects alone.
- $\sqrt{d}$  It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



#### Matrix 53: North Caithness Cliffs SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK900			.2.5 km to	o WTG area ,	/ 625.4 km :	to ECC / 5	87.4 km to	ANS / 623.	1 km to b	iogenic ree	f / 628.6 km	n to OR	RCP				
Effect	activity moven	and and in	e to work	displac presen infrasti			1				effects d ce of turbin	ue to the es	thro	ugh eff tats ar	mpacts ects on nd prey	In com	bination	effects
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Puffin	√b	√b	√b	√b	√b	√b		Хa			Хa					√d	√d	√d
Guillemot	√b	√b	√b	√b	√b	√b		Хa			Хa					√d	√d	√d
Razorbill	√b	√b	√b	√b	√b	√b		Хa			Хa					√d	√d	√d
Kittiwake	Хa	Хa	Хa	Хa	Хa	Хa		√b								Хa	√d	Хa
Fulmar	Хс	Хс	Хс	Хс	Хс	Хс		Хс			Хс					Хс	Хс	Хс

### **Evidence supporting conclusions**

- The Project array is beyond the site-specific mean-maximum +1SD foraging ranges (Woodward *et al.,* 2019) for designated seabird species and therefore has no breeding season connectivity. We conclude negligible potential for impact on migratory birds from this SPA passing through the site based on the distance from the site.

  Therefore, LSE can be discounted in relation to all effects alone.
- These designated features are beyond mean-maximum +1SD foraging range (Woodward *et al.*, 2019). Therefore there is not potential for LSE during the breeding season. However, as the species BDMPS spans the colony and the Project, there is potential for connectivity in the non-breeding season(s).
- Site has connectivity with breeding fulmar based on mean-maximum +1SD foraging range, however the significance of effects at a population level is considered to decrease exponentially with distance. Due to the large foraging range for this species, the likelihood and or severity of the effect experienced locally is considered negligible. In addition, this species has very low vulnerability to displacement and collision (Bradbury *et al.*, 2014). It is therefore determined that significant effects would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been apportioned to all SPAs within the foraging range.
  - It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.

End of Matrix 53

√d



## Matrix 54: Pentland Firth Islands SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK90011			1.1 km to A	Array (WTG	) / 634.0 kr	n to ECC / 5	96.1 km to	o ANS / 632.	4 km to bio	ogenic ree	f / 638.0 km	ı to ORC	Р			
Effect	displace activity moveme	ment due and	to work vessel ooth the	displacen presence infrastruc	e of		Collisions waterbird		migratory	Barrier e waterbiro		migratory	throug	h effect ts and		In combina effects	tion
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	СО	D
Arctic tern	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Xa Xa	Ха

# Evidence supporting conclusions

The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward *et al.,* 2019) for designated seabird species and therefore has no breeding season connectivity. We conclude negligible potential for impact on migratory birds from this SPA passing through the site based on the distance from the site.

Therefore, LSE can be discounted in relation to all effects alone



## Matrix 55: Copinsay SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	Copinsa UK9002 630.7 k	2151	y Area / 6	33.4 km to	WTG area	ı / 646.0 kn	1 to ECC / 6	508.6 km t	to ANS / 64	6.1 km to l	oiogenic re	eef / 651.6	km to (	ORCP				
Effect	displace activity movem	and	e to work vessel both the	displace presence infrastru	e of	nce and e to the array			e to the		effects due of turbin	ie to the es	throu	gh effe ats and	impacts ects on d prey			oination
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Kittiwake	Хa	Хa	Хa	Хa	Ха	Хa		√b								Хa	√d	Ха
Great black-backed gull	Хa	Хa	Хa	Хa	Хa	Хa		Ха			Хa					Хa	Хa	Хa
Fulmar	Хa	Хa	Хa	Хa	Хa	Хa		Ха			Хa					Хa	Хa	Ха
Guillemot	√b	√b	√b	√b	√b	√b		Хa			Хa					√d	√d	√d

### **Evidence supporting conclusions**

- The Project array is beyond the mean-maximum +1SD foraging ranges for all designated seabird species (Woodward *et al.,* 2019) and therefore has no breeding season connectivity.

  This SPA is therefore not considered relevant in the context of the HRA and LSE can be discounted in relation to all effects alone.
- These designated features are beyond mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore there is not potential for LSE during the breeding season. However, as the species BDMPS spans the colony and the Project, there is potential for connectivity in the non-breeding season(s).
- Site has connectivity with breeding fulmar based on mean-maximum +1SD foraging range, however the significance of effects at a population level is considered to decrease exponentially with distance.

  Due to the large foraging range for this species, the likelihood and or severity of the effect experienced locally is considered negligible. In addition, this species has very low vulnerability to displacement and collision (Bradbury *et al.*, 2014).
  - It is therefore determined that significant effects would not manifest on this SPA after the likelihood and severity of effects on the SPA have been apportioned to all SPAs within the foraging range. Therefore, LSE can be discounted in relation to all effects alone.
- √d It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



#### Matrix 56: Hoy SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	Hoy SP UK9002 634.6 k	2141	y Area / 63	6.9 km tc	WTG area	/ 649.9 km	to ECC / 6	11.8 km to	ANS / 647	.3 km to b	iogenic ree	f / 652.7 kr	n to OF	RCP				
Effect	activity movem	ement du and ents in	vessel	displace present				risk due			effects du e of turbien		throu	igh eff ats an	mpacts ects on d prey		bination	effects
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Arctic skua	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa
Peregrine falcon	Ха	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa
Red-throated diver	Ха	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa
Great skua	Ха	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa
Puffin	√b	√b	√b	√b	√b	√b		Ха			Хa					√d	√d	√d
Guillemot	√b	√b	√b	√b	√b	√b		Хa			Хa					√d	√d	√d
Kittiwake	Хa	Хa	Хa	Хa	Хa	Ха		√b								Хa	√d	Ха
Great black-backed gull	Ха	Хa	Хa	Хa	Хa	Ха		Ха			Хa					Хa	Хa	Ха
Fulmar	Хс	Хс	Хс	Хс	Хс	Хс		Хс			Хс					Хс	Хс	Хс

### **Evidence supporting conclusions**

- The Project array is beyond the mean-maximum +1SD foraging ranges for all designated seabird species (Woodward *et al.*, 2019) and therefore has no breeding season connectivity.

  This SPA is therefore not considered relevant in the context of the HRA and LSE can be discounted in relation to all effects alone..
- These designated features are beyond mean-maximum +1SD foraging range (Woodward *et al.*, 2019). Therefore there is not potential for LSE during the breeding season. However, as the species BDMPS spans the colony and the Project, there is potential for connectivity in the non-breeding season(s).
- Site has connectivity with breeding fulmar based on mean-maximum +1SD foraging range, however the significance of effects at a population level is considered to decrease exponentially with distance. Due to the large foraging range for this species, the likelihood and or severity of the effect experienced locally is considered negligible. In addition, this species has very low vulnerability to displacement and collision (Bradbury *et al.*, 2014).
  - It is therefore determined that significant effects would not manifest on this SPA after the likelihood and severity of effects on the SPA have been apportioned to all SPAs within the foraging range. Therefore, LSE can be discounted in relation to all effects alone.
- √d It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



## Matrix 57: Calf of Eday SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK9002			9.7 km to	Array (WT0	G) / 682.2 kr	n to ECC	/ 645.0 km t	o ANS / 683	3.0 km to	biogenic ree	f / 688.9 km	ı to ORCP					
Effect	activity movem	ement du and ents in		displac presen infrastr	ement du ce of			on risk du ace of turbine			effects di ce of turbine		through	n effects s and p		combi		pn
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	O D	(	C (	0	D
Kittiwake	Ха	Хa	Хa	Хa	Хa	Хa		√b								Ха	√c	Хa
Guillemot	√b	√b	√b	√b	√b	√b		Хa			Xa				,	√c \	√c	√c

## Evidence supporting conclusions

- The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward *et al.,* 2019) for designated seabird species and therefore has no breeding season connectivity. We conclude negligible potential for impact on migratory birds from this SPA passing through the site based on the distance from the site.

  Therefore, LSE can be discounted in relation to all effects alone.
- These designated features are beyond mean-maximum +1SD foraging range (Woodward *et al.*, 2019). Therefore there is not potential for LSE during the breeding season. However, as the species BDMPS spans the colony and the Project, there is potential for connectivity in the non-breeding season(s).
- $\sqrt{c}$  It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



## Matrix 58: Rousay SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	Rousay UK9002 667.8 k	2371	y Area / 67	0.4 km to	Array (WTG	i) / 683.1 kr	n to ECC /	645.5 km t	o ANS / 682	.7 km to b	iogenic ree	f / 688.4 km	n to ORC	P				
Effect	activity	and ents in		displace presence infrastru					e to the		effects du e of turbine		throug	gh effe ts an	impacts ects on d prey	com		on
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	O	D
Kittiwake	Хa	Хa	Хa	Хa	Хa	Хa		√b								Хa	√c	Хa
Guillemot	√b	√b	√b	√b	√b	√b		Хa			Хa					√c	√c	√c

## **Evidence supporting conclusions**

Хa	The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species and therefore has no breeding season connectivity. We conclude negligible
	potential for impact on migratory birds from this SPA passing through the site based on the distance from the site.
	Therefore, LSE can be discounted in relation to all effects alone.

These designated features are beyond mean-maximum +1SD foraging range (Woodward *et al.*, 2019). Therefore there is not potential for LSE during the breeding season. However, as the species BDMPS spans the colony and the Project, there is potential for connectivity in the non-breeding season(s).

It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.

End of Matrix 58

√c



#### Matrix 59: Marwick Head SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK9002			2.5 km to A	nrray (WTG	/ 685.4 kr	n to ECC / 6	647.5 km to	ANS / 683.	.5 km to bio	ogenic reef	/ 689.1 km	ı to ORC	Р				
Effect	displace activity	ement due and ents in		displacer presence					to the		effects due of turbines		throug	ts and	impacts ects on d prey	com		on
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Kittiwake	Хa	Хa	Хa	Xa	Хa	Ха		√b								Хa	√c	Χa
Guillemot	√b	√b	√b	√b	√b	√b		Хa			Хa					√c	√c	√c

## **Evidence supporting conclusions**

- The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward *et al.,* 2019) for designated seabird species and therefore has no breeding season connectivity. We conclude negligible potential for impact on migratory birds from this SPA passing through the site based on the distance from the site.

  Therefore, LSE can be discounted in relation to all effects alone.
- These designated features are beyond mean-maximum +1SD foraging range (Woodward *et al.*, 2019). Therefore there is not potential for LSE during the breeding season. However, as the species BDMPS spans the colony and the Project, there is potential for connectivity in the non-breeding season(s).
- $\sqrt{c}$  It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



#### Matrix 60: Fair Isle SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	Fair Islo UK900 675.3 l	2091	ay Area / 67	'8.0 km to	o Array (W1	G) / 690.0 l	km to ECC	/ 654.7 kr	m to ANS / 6	95.1 km t	o biogenic	reef / 702.3	km to	ORCP				
Effect	activity moven	ement du and nents in	ance and ue to work vessel both the intertidal	displace present	ce of	nce and e to the array	1	n risk du e of turbir	ue to the les		effects d	ue to the les	throu	igh ef ats ar	impacts fects on nd prey	In com	bination	effects
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Great skua	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Ха	Хa	Хa
Fulmar	Хс	Хс	Хс	Хс	Хс	Хс		Хс			Хс					Хс	Хс	Хс
Arctic skua	Ха	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa
Arctic tern	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Ха	Хa	Хa
European shag	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa
Fair Isle wren	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Ха	Хa	Хa
Puffin	√b	√b	√b	√b	√b	√b		Хa			Хa					√d	√d	√d
Guillemot	√b	√b	√b	√b	√b	√b		Хa			Хa					√d	√d	√d
Razorbill	√b	√b	√b	√b	√b	√b		Хa			Хa					√d	√d	√d
Kittiwake	Ха	Хa	Хa	Хa	Хa	Ха		√b								Ха	√d	Хa
Gannet	√b	√b	√b	√b	√b	√b		√b			√b					√d	√d	√d

## **Evidence supporting conclusions**

- The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward *et al.,* 2019) for designated seabird species and therefore has no breeding season connectivity. We conclude negligible potential for impact on migratory birds from this SPA passing through the site based on the distance from the site.

  Therefore, LSE can be discounted in relation to all effects alone.
- These designated features are beyond mean-maximum +1SD foraging range (Woodward *et al.*, 2019). Therefore there is no potential for LSE during the breeding season. However, as the species BDMPS spans the colony and the Project, there is potential for connectivity in the non-breeding season(s).
- Site has connectivity with breeding fulmar based on mean-maximum +1SD foraging range, however the significance of effects at a population level is considered to decrease exponentially with distance. Due to the large foraging range for this species, the likelihood and or severity of the effect experienced locally is considered negligible. In addition, this species has very low vulnerability to displacement and collision (Bradbury *et al.*, 2014).
  - It is therefore determined that significant effects would not manifest on this SPA after the likelihood and severity of effects on the SPA have been apportioned to all SPAs within the foraging range. Therefore, LSE can be discounted in relation to all effects alone.
- It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



## Matrix 61: West Westray SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK900			31.0 km to	Array (WT	G) / 693.6 ki	m to ECC ,	/ 656.1 km <sup>-</sup>	to ANS / 693	3.4 km to	biogenic re	ef / 699.2 k	m to Ol	RCP				
Effect	activity	ement do and nents in	vesse both the	displace presence infrastru	e of	e to the	presenc		e to the		effects d ce of turbind		throu	ugh eff ats an	impacts fects on ad prey	In co effect		tion
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	О	D
Arctic skua	Ха	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa
Arctic tern	Ха	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa
Kittiwake	Ха	Хa	Хa	Хa	Хa	Хa		√b								Хa	√d	Xa
Guillemot	√b	√b	√b	√b	√b	√b		Хa			Хa					√d	√d	√d
Razorbill	√b	√b	√b	√b	√b	√b		Хa			Хa					√dc	√d	√d
Fulmar	Хс	Хс	Хс	Хс	Хс	Хс		Хс			Хс					Хс	Хс	Хс

## Evidence supporting conclusions

- The Project array is beyond the mean-maximum +1SD foraging ranges for all other designated seabird species (Woodward *et al.*, 2019) and therefore has no breeding season connectivity. We conclude negligible potential for impact on migratory birds from this SPA passing through the site based on the distance from the site.
  - This SPA is therefore not considered relevant in the context of the HRA and LSE can be discounted in relation to all effects alone.
- These designated features are beyond mean-maximum +1SD foraging range (Woodward *et al.*, 2019). Therefore there is not potential for LSE during the breeding season. However, as the species BDMPS spans the colony and the Project, there is potential for connectivity in the non-breeding season(s).
- Site has connectivity with breeding fulmar based on mean-maximum +1SD foraging range, however the significance of effects at a population level is considered to decrease exponentially with distance. Due to the large foraging range for this species, the likelihood and or severity of the effect experienced locally is considered negligible. In addition, this species has very low vulnerability to displacement and collision (Bradbury et al., 2014).
  - It is therefore determined that significant effects would not manifest on this SPA after the likelihood and severity of effects on the SPA have been apportioned to all SPAs within the foraging range. Therefore, LSE can be discounted in relation to all effects alone.



## Matrix 62: Papa Westray (North Hill and Holm) SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK9002	111		d Holm) SPA		699.7 km t	o ECC / 662	2.4 km to A	NS / 700.2	km to bioge	enic reef /	706.1 km to	o ORCP					
Effect	displace activity moveme	ment due and ents in l	to work vessel	Direct disturbance and displacement due to the presence of turbines presence of turbines of the infrastructure of turbines o														on
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Arctic skua	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Ха					Хa	Хa	Хa
Arctic tern	Хa	Ха	Хa	Хa	Хa	Хa		Ха			Хa					Хa	Хa	Хa

# Evidence supporting conclusions

The Project array is beyond the mean-maximum +1SD foraging ranges (Woodward *et al.,* 2019) for designated seabird species and therefore has no breeding season connectivity. We conclude negligible potential for impact on migratory birds from this SPA passing through the site based on the distance from the site.

Therefore, LSE can be discounted in relation to all effects alone.



#### Matrix 63: Sumburgh Head SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK9002			9.8 km to	WTG area /	722.1 km t	o ECC / 687	7.9 km to Al	NS / 729.0	km to biog	enic reef /	736.8 km to	o ORCP					
Effect	displace activity	ement due and ents in		displace presence							effects du of turbines	e to the	throug	gh effe ts and		comb		on
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Arctic tern	Хa	Хa	Хa	Ха	Хa	Хa		Хa			Ха					Хa	Хa	Хa
Kittiwake	Хa	Хa	Хa	Ха	Хa	Ха		√b								Хa	√d	Хa
Guillemot	√b	√b	√b	√b	√b	√b		Ха			Ха					Хa	Ха	Хa
Fulmar	Хс	Хс	Хс	Хс	Хс	Хс		Хс			Хс					√d	√d	√d

### **Evidence supporting conclusions**

- The Project array is beyond the mean-maximum +1SD foraging ranges for all other designated seabird species (Woodward *et al.,* 2019) and therefore has no breeding season connectivity. We conclude negligible potential for impact on migratory birds from this SPA passing through the site based on the distance from the site.
- This SPA is therefore not considered relevant in the context of the HRA and LSE can be discounted in relation to all effects alone.
  - These designated features are beyond mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore there is not potential for LSE during the breeding season. However, as the species BDMPS spans the colony and the Project, there is potential for connectivity in the non-breeding season(s).
- Site has connectivity with breeding fulmar based on mean-maximum +1SD foraging range, however the significance of effects at a population level is considered to decrease exponentially with distance.

  Due to the large foraging range for this species, the likelihood and or severity of the effect experienced locally is considered negligible. In addition, this species has very low vulnerability to displacement and collision (Bradbury *et al.*, 2014).
  - It is therefore determined that significant effects would not manifest on this SPA after the likelihood and severity of effects on the SPA have been apportioned to all SPAs within the foraging range. Therefore, LSE can be discounted in relation to all effects alone.
- √d It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



#### Matrix 64: Noss SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	Noss SF UK9002 734.5 k	2081	y Area / 73	36.6 km to	WTG area	/ 749.0 km	to ECC / 7	15.6 km to	ANS / 757	.3 km to b	iogenic ree	f / 765.6 kr	m to Of	RCP				
Effect	activity movem	ement du and nents in		displace presenc infrastru	e of	nce and e to the array			e to the		effects due of turbine	ie to the	throu	igh eff ats an	mpacts ects on d prey	In com	bination	effects
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Puffin	√b	√b	√b	√b	√b	√b		Хa			Хa					√d	√d	√d
Guillemot	√b	√b	√b	√b	√b	√b		Хa			Хa					√d	√d	√d
Kittiwake	Ха	Хa	Хa	Хa	Хa	Хa		√b								Хa	√d	Ха
Gannet	√b	√b	√b	√b	√b	√b		√b			√b					√d	√d	√d
Great skua	Ха	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Ха
Fulmar	Хс	Хс	Хс	Хс	Хс	Хс		Хс			Хс					Хс	Хс	Хс

## Evidence supporting conclusions

- The Project array is beyond the mean-maximum +1SD foraging ranges for all other designated seabird species (Woodward *et al.,* 2019) and therefore has no breeding season connectivity. We conclude negligible potential for impact on migratory birds from this SPA passing through the site based on the distance from the site.
  - This SPA is therefore not considered relevant in the context of the HRA and LSE can be discounted in relation to all effects alone.
- These designated features are beyond mean-maximum +1SD foraging range (Woodward *et al.*, 2019). Therefore there is not potential for LSE during the breeding season. However, as the species BDMPS spans the colony and the Project, there is potential for connectivity in the non-breeding season(s).
- Site has connectivity with breeding fulmar based on mean-maximum +1SD foraging range, however the significance of effects at a population level is considered to decrease exponentially with distance. Due to the large foraging range for this species, the likelihood and or severity of the effect experienced locally is considered negligible. In addition, this species has very low vulnerability to displacement and collision (Bradbury *et al.*, 2014).
- It is therefore determined that significant effects would not manifest on this SPA after the likelihood and severity of effects on the SPA have been apportioned to all SPAs within the foraging range.

  Therefore, LSE can be discounted in relation to all effects alone.
  - It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



## Matrix 65: Foula SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	Foula S UK9002 746.6 k	2061	y Area / 74	19.5 km to	WTG area	/ 761.5 km	to ECC / 7	'26.0 km to	o ANS / 766	.1 km to b	iogenic ree	ef / 773.2 kr	n to Of	RCP				
Effect	activity movem	ement du and ents in	nce and e to work vessel both the intertidal	displace presence infrastru	e of	nce and e to the array			e to the		effects due of turbing	ue to the	throu	igh eff ats ar	impacts fects on nd prey		ıbination	effects
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Puffin	√b	√b	√b	√b	√b	√b		Хa			Хa					√d	√d	√d
Guillemot	√b	√b	√b	√b	√b	√b		Хa			Хa					√d	√d	√d
Kittiwake	Хa	Хa	Хa	Хa	Хa	Хa		√b								Хa	√d	Ха
Great skua	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Ха
Arctic tern	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Ха
Shag	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Ха
Red-throated diver	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Ха
Leach's storm petrel	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Ха
Fulmar	Хс	Хс	Хс	Хс	Хс	Хс		Хс			Хс					Хс	Хс	Хс

#### **Evidence supporting conclusions**

- The Project array is beyond the mean-maximum +1SD foraging ranges for all other designated seabird species (Woodward *et al.,* 2019) and therefore has no breeding season connectivity. We conclude negligible potential for impact on migratory birds from this SPA passing through the site based on the distance from the site.
  - This SPA is therefore not considered relevant in the context of the HRA and LSE can be discounted in relation to all effects alone.
- These designated features are beyond mean-maximum +1SD foraging range (Woodward *et al.*, 2019). Therefore there is not potential for LSE during the breeding season. However, as the species BDMPS spans the colony and the Project, there is potential for connectivity in the non-breeding season(s).
- Site has connectivity with breeding fulmar based on mean-maximum +1SD foraging range, however the significance of effects at a population level is considered to decrease exponentially with distance.

  Due to the large foraging range for this species, the likelihood and or severity of the effect experienced locally is considered negligible. In addition, this species has very low vulnerability to displacement and collision (Bradbury *et al.*, 2014).
  - It is therefore determined that significant effects would not manifest on this SPA after the likelihood and severity of effects on the SPA have been apportioned to all SPAs within the foraging range. Therefore, LSE can be discounted in relation to all effects alone.
- It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.



### Matrix 66: Fetlar SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	Fetlar S UK9002 778.8 k	2031	y Area / 78	0.9 km to	WTG area	/ 793.4 km	to ECC / 7	60.8 km to	o ANS / 803.	.1 km to bi	ogenic ree	ef / 811.7 kn	n to OF	RCP				
Effect	activity	ement du and nents in		displace presence	e of	nce and e to the array					effects due of turbing	ue to the es	throu	igh eff ats an	mpacts ects on od prey	In com	bination 6	effects
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Great skua	Хb	Хb	Хb	Хb	Хb	Хb		Хb			Хb					Χb	Хb	Хb
Arctic skua	Хb	Хb	Χb	Хb	Хb	Χb		Хb			Хb					Χb	Хb	Хb
Arctic tern	Хb	Хb	Хb	Хb	Хb	Хb		Хb			Хb					Хb	Хb	Хb
Fulmar	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa
Red-necked phalarope	Хb	Хb	Хb	Хb	Хb	Хb		Хb			Хb					Хb	Хb	Хb
Dunlin	Хb	Хb	Хb	Хb	Хb	Хb		Хb			Хb					Хb	Хb	Хb
Whimbrel	Хb	Хb	Хb	Хb	Хb	Хb		Хb			Хb					Χb	Хb	Хb

## **Evidence supporting conclusions**

Хa	Site has connectivity with breeding fulmar based on mean-maximum +1SD foraging range, however the significance of effects at a population level is considered to decrease exponentially with distance.
	Due to the large foraging range for this species, the likelihood and or severity of the effect experienced locally is considered negligible. In addition, this species has very low vulnerability to displacement
	and collision (Bradbury et al., 2014). It is therefore determined that significant effects would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been
Хb	apportioned to all SPAs within the foraging range.

The Project array is beyond the mean-maximum +1SD foraging ranges for all other designated seabird species (Woodward *et al.,* 2019) and therefore has no breeding season connectivity. We conclude negligible potential for impact on migratory birds from this SPA passing through the site based on the distance from the site.

This SPA is therefore not considered relevant in the context of the HRA and LSE can be discounted in relation to all effects alone.



#### Matrix 67: Hermaness, Saxa Vord and Valla Field SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK9002	2011	Vord and \			/ 814.7 km	to ECC / 7	81.8 km to	) ANS / 823	.8 km to b	iogenic red	ef / 832.3 kr	n to Ol	RCP				
Effect	displace activity movem	ement du and ents in		displace present	ement due ce of						effects d	ue to the es	throu	ugh eff tats ar	impacts ects on id prey	In com	nbination	effects
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Great skua	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa
European shag	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa
Red-throated diver	√b	√b	√b	√b	√b	√b		Хa			Хa					√d	√d	√d
Puffin	√b	√b	√b	√b	√b	√b		Хa			Хa					√d	√d	√d
Guillemot	√b	√b	√b	√b	√b	√b		Хa			Хa					√d	√d	√d
Kittiwake	Ха	Хa	Хa	Хa	Ха	Хa		√b								Хa	√d	Хa
Gannet	√b	√b	√b	√b	√b	√b		√b			√b					√d	√d	√d
Fulmar	Хс	Хс	Хс	Хс	Хс	Хс		Хс			Хс					Хс	Хс	Хс

### **Evidence supporting conclusions**

- The Project array is beyond the mean-maximum +1SD foraging ranges for all other designated seabird species (Woodward *et al.,* 2019) and therefore has no breeding season connectivity. We conclude negligible potential for impact on migratory birds from this SPA passing through the site based on the distance from the site.
  - This SPA is therefore not considered relevant in the context of the HRA and LSE can be discounted in relation to all effects alone.
- These designated features are beyond mean-maximum +1SD foraging range (Woodward *et al.*, 2019). Therefore there is no potential for LSE during the breeding season. However, as the species BDMPS spans the colony and the Project, there is potential for connectivity in the non-breeding season(s).
- Site has connectivity with breeding fulmar based on mean-maximum +1SD foraging range, however the significance of effects at a population level is considered to decrease exponentially with distance.

  Due to the large foraging range for this species, the likelihood and or severity of the effect experienced locally is considered negligible. In addition, this species has very low vulnerability to displacement and collision (Bradbury *et al.*, 2014).
  - It is therefore determined that significant effects would not manifest on this SPA after the likelihood and severity of effects on the SPA have been apportioned to all SPAs within the foraging range. Therefore, LSE can be discounted in relation to all effects alone.
  - It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.

√d



### Matrix 68: Transboundary sites for Lesser black-backed gull (3 sites)

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	Various	J	nd Texel; \ o WTG are	Waddenzee ea	e; and Duin	en Vlieland	I											
Effect	displace activity	ment due and ents in	vessel	Direct displacem presence infrastruc	of				to the	Barrier e presence			_	h effec s and	mpacts cts on prey	coml		on
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Lesser black-backed gull	Хa	Хa	Хa	Ха	Ха	Ха		Хa			Ха					Хa	Хa	Хa

## **Evidence supporting conclusions**

Sites have connectivity with breeding lesser black-backed gull based on mean-maximum +1SD foraging range, however the distance is at the extent of the foraging range and the significance of effects at a population level is considered to decrease exponentially with distance. Due to the large foraging range for this species, the likelihood and or severity of the effect experienced locally is considered negligible. In addition, this species has very low vulnerability to displacement (Bradbury *et al.*, 2014).

It is therefore determined that significant effects would not manifest on these distant SPAs/ Ramsars after the likelihood and severity of effects on the SPAs have been apportioned to all SPAs within the foraging range.

These SPAs are therefore not considered relevant in the context of the HRA and LSE can be discounted in relation to all effects alone.



## Matrix 69: Transboundary sites for Northern fulmar (9 sites)

Name of designated site:  Site Code: Closest Distance to Project Likely Effects of Project	Camaret Various	; Falaise d		occidental; S			s; Tregor Go t Helgoland											
Effect	displace activity	ment due and ents in l	vessel		of		Collision presence			Barrier e presence				n effe s and	impacts ects on d prey	com		on
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Northern fulmar	Хa	Хa	Хa	Хa	Хa	Хa		Хa			Хa					Хa	Хa	Хa

## **Evidence supporting conclusions**

Xa Sites hav

Sites have connectivity with breeding fulmar based on mean-maximum +1SD foraging range, however the significance of effects at a population level is considered to decrease exponentially with distance. Due to the large foraging range for this species, the likelihood and or severity of the effect experienced locally is considered negligible. In addition, this species has very low vulnerability to displacement and collision (Bradbury *et al.*, 2014).

It is therefore determined that significant effects would not manifest on these distant SPAs/ Ramsars after the likelihood and severity of effects on the SPAs have been apportioned to all SPAs within the foraging range.

These SPAs are therefore not considered relevant in the context of the HRA and LSE can be discounted in relation to all effects alone.



## Matrix 70: Transboundary sites for Manx shearwater (4 sites)

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	Various		se-Sept Ile: o Array (W		it-Hoedic; (	Ouessant-N	/lolène; and	d Baie de M	Iorlaix.									
Effect	displace activity	ment due and ents in l	vessel		of			risk due of turbines	e to the		effects du of turbines			h effec s and	mpacts cts on prey	coml		pn
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Manx shearwater	Ха	Хa	Хa	Ха	Ха	Хa		Хa			Хa					Хa	Хa	Хa

## **Evidence supporting conclusions**

Χa

Sites have connectivity with breeding Manx shearwater based on mean-maximum +1SD foraging range, however the significance of effects at a population level is considered to decrease exponentially with distance. Due to the large foraging range for this species, the likelihood and or severity of the effect experienced locally is considered negligible. In addition, this species has very low vulnerability to displacement and collision (Bradbury *et al.*, 2014).

It is therefore determined that significant effects would not manifest on these distant SPAs/ Ramsars after the likelihood and severity of effects on the SPAs have been apportioned to all SPAs within the foraging range.

These SPAs are therefore not considered relevant in the context of the HRA and LSE can be discounted in relation to all effects alone.



# 3.4 Sites designated with Migratory Fish Features

## Matrix 71: Humber Estuary SAC

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UKOC	30170			64.4 km	to WT	G area	/ 18.9	km to	ECC / 4	17.5 kn	n to AN	IS / 24	.3 km t	o bioge	enic ree	ef / 23.	8 to O	RCP								
Effect	Unde noise	erwate e	r	sedi	ended ment / osition		Indire	ect pol	lution	Accid pollu			EMF			INNS			loss /	ical hal ' rbance		Chan	ges to	prey	In-co effec	ombinat cts	ion
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
Sea lamprey	√a	Хb	√a	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb
River lamprey	√a	Хb	√a	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb	Хb

# **Evidence supporting conclusions**

 $\sqrt{a}$  The range between the array areas and designated site mean that there is a potential for LSE for this species at this site.

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



# 3.5 Sites Designated with Onshore Ecology Features

Matrix 72: Humber Estuary SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK900			.0 km to V	VTG area / 12	.5 km to onsho	re ECC / 47	'.5 km to ANS	/ 20.9 km to biog	genic reef	7 / 18.7 km to	ORCP
Effect	Risk of to hab		or damage	Risk of c	listurbance/ (	lisplacement	habitat the SPA	for birds insi	ting and nesting de and outside n location of the ructure	Risk of p	oollution	
Stage of Development	C	0	D	С	0	D	С	0	D	С	0	D
Great bittern				√a	√a	√a	√a	Хb	Хb	√a	Хb	√a
Common shelduck				√a	√a	√a	√a	Хb	Хb	√a	Хb	√a
Eurasian marsh harrier				√a	√a	√a	√a	Хb	Хb	√a	Хb	√a
Hen harrier				√a	√a	√a	√a	Хb	Хb	√a	Хb	√a
Pied avocet				√a	√a	√a	√a	Хb	Хb	√a	Хb	√a
European golden plover				√a	√a	√a	√a	Хb	Хb	√a	Хb	√a
Red knot				√a	√a	√a	√a	Хb	Хb	√a	Хb	√a
Dunlin				√a	√a	√a	√a	Хb	Хb	√a	Хb	√a
Ruff				√a	√a	√a	√a	Хb	Хb	√a	Хb	√a
Black-tailed godwit				√a	√a	√a	√a	Хb	Хb	√a	Хb	√a
Bar-tailed godwit				√a	√a	√a	√a	Хb	Хb	√a	Хb	√a
Common redshank				√a	√a	√a	√a	Хb	Хb	√a	Хb	√a
Little tern				√a	√a	√a	√a	Хb	Хb	√a	Хb	√a
Waterbird assemblage				√a	√a	√a	√a	Хb	Хb	√a	Хb	√a

Evidence supporting conclusions

√a Risk of disturbance, and of loss of foraging, roosting and nesting habitat for birds outside the SPA only based on ranges of the ornithological features.

No potential for LSE. These features have been screened out from assessment as a result of the distance between the Project and the designated site and the nature of the works and activities in these different phases.



## Matrix 73: Humber Estuary Ramsar Site

Project	Humber Estua UK11031 (663	)	n to WTG area ,	/ 12.5 km to on	shore ECC / 47.5	km to ANS / 20	).9 km to biogen	ic reef / 18.7 km	n to ORCP			
Likely Effects of Project Effect	Risk of loss of	or damage to ha	abitats	Risk of disturk	oance/ displacen	nent	for birds ins	g, roosting and i side and outs location of the	ide the SPA	Risk of pollutio	on	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Criterion 1- dune systems and humid dune slacks;	Хb	Хb	Хb				Хb	Хb	Хb	Хb	Хb	Хb
Criterion 5 – assemblages of international importance (waterfowl, non-breeding season);	√a	√a	Хь	√a	√a	√a	√a	Хь	Хb	√a	Хb	√a
Criterion 6 – species/populations occurring at levels of international importance	√a	√a	Хb	√a	√a	√a	√a	Хb	Хb	√a	Хb	√a
Common shelduck	√a	√a	Хb	√a	√a	√a	√a	Хb	Хb	√a	Хb	√a
Eurasian golden plover	√a	√a	Хb	√a	√a	√a	√a	Хb	Хb	√a	Хb	√a
Red knot	√a	√a	Хb	√a	√a	√a	√a	Хb	Хb	√a	Хb	√a
Dunlin	√a	√a	Хb	√a	√a	√a	√a	Хb	Хb	√a	Хb	√a
Black-tailed godwit	√a	√a	Хb	√a	√a	√a	√a	Хb	Хb	√a	Хb	√a
Bar-tailed godwit	√a	√a	Хb	√a	√a	√a	√a	Хb	Хb	√a	Хb	√a
Common redshank	√a	√a	Хb	√a	√a	√a	√a	Хb	Хb	√a	Хb	√a

Evidence supporting conclusions

- ✓a Potential for LSE due to disturbance, and loss of foraging and roosting habitat. This is limited to birds and habitats outside of the RAMSAR.
   Due to the mobile nature of the birds, the ornithological features are considered to have potential for LSE.
- No potential for LSE. These features have been screened out from assessment as a result of the distance between the Project and the designated site and the nature of the works and activities in these different phases.



Matrix 74: Humber Estuary SAC

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project Effect	UK0030 54.4 kn ORCP	n to Array			ΓG area / 18 disturbanc				o ANS / 24.3 kn roosting and		enic reef / 2 pollution	.3.8 km to
	habitat	S					and o	utside the S	or birds inside PA depending above ground			
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Sandbanks which are slightly covered by sea water all the time; Subtidal sandbanks	Хa	Хa	Хa							Хa	Хa	Хa
Estuaries	Хa	Хa	Хa							Хa	Хa	Хa
Mudflats and sandflats not covered by seawater at low tide; Intertidal mudflats and sandflats	Ха	Ха	Хa							Хa	Ха	Ха
Coastal lagoons	Хa	Хa	Хa							Хa	Хa	Хa
Salicornia and other annuals colonising mud and sand; Glasswort and other annuals colonising mud and sand	Ха	Ха	Ха							Ха	Ха	Ха
Atlantic salt meadows	Хa	Хa	Хa							Хa	Хa	Хa
Embryonic shifting dunes	Хa	Хa	Хa							Хa	Хa	Хa
Shifting dunes along the shoreline with Ammophila arenaria (white dunes)	Хa	Хa	Хa							Хa	Хa	Хa
Shifting dunes with marram	Хa	Хa	Хa							Хa	Хa	Хa
Fixed dunes with herbaceous vegetation (grey dunes)	Ха	Ха	Ха							Ха	Ха	Ха
Dune grassland	Хa	Хa	Хa							Хa	Хa	Хa
Dunes with <i>Hippophae rhamnoides</i> ; Dunes with sea-buckthorn	Ха	Ха	Хa							Ха	Ха	Ха

Evidence supporting conclusions

Xa Due to the distance between the Order Limits and the SAC, and the nature of the habitats, there is no risk of undermining the conservation objectives for this SAC.



## Matrix 75: Saltfleetby-Theddlethorpe Dunes & Gibraltar Point SAC

Name of designated site: Site Code:	UK0030	270	lethorpe Du				loo ta an	h FCC /	54 5 lun to ANG		to bio	:f /
Closest Distance to Project		to Array <i>i</i>	Area / 54.5 K	m Distan	ces to wil	3 area/ 4.15	km to ons	snore ECC /	51.5 km to ANS	) / 11.4 K	m to bioger	iic reet /
Likely Effects of Project												
Effect	Risk of I habitats		damage to	Risk of o	disturbanc	е	nestin and or on loc	g habitat foutside the S	roosting and or birds inside PA depending above ground	Risk of	pollution	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Embryonic shifting dunes	√a	√a	√a	√a		√a				√a	√a	√a
Shifting dunes along the shoreline with Ammophila arenaria (""white dunes"")	√a	√a	√a	√a		√a				√a	√a	√a
Fixed coastal dunes with herbaceous vegetation (""grey dunes"")	√a	√a	√a	√a		√a				√a	√a	√a
Dunes with Hippophae rhamnoides	√a	√a	√a	√a		√a				√a	√a	√a
Humid dune slacks	√a	√a	√a	√a		√a				√a	√a	√a

Evidence supporting conclusions

Risk of loss of or damage to Annex I habitats depending on location of the above ground infrastructure. Potential for LSE on all qualifying features. This is a precautionary conclusion based on project design uncertainties.



## Matrix 76: The Wash SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project		3021 n to Array A							n to biogenic reef ,			
Effect	Risk o		or damage to	Risk of c	listurbance/ d	isplacement	habitat the SPA	for birds ins	sting and nesting side and outside n location of the ructure	Risk of p	oollution	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Bewick's swan				√a	√a	√a	√a			√a		√a
Pink-footed goose				√a	√a	√a	√a			√a		√a
Dark-bellied brent goose				√a	√a	√a	√a			√a		√a
Common shelduck				√a	√a	√a	√a			√a		√a
Eurasian wigeon				√a	√a	√a	√a			√a		√a
Gadwall				√a	√a	√a	√a			√a		√a
Northern pintail				√a	√a	√a	√a			√a		√a
Black (common) scoter				√a	√a	√a	√a			√a		√a
Common goldeneye				√a	√a	√a	√a			√a		√a
Eurasian oystercatcher				√a	√a	√a	√a			√a		√a
Grey plover				√a	√a	√a	√a			√a		√a
Red knot				√a	√a	√a	√a			√a		√a
Sanderling				√a	√a	√a	√a			√a		√a
Dunlin				√a	√a	√a	√a			√a		√a
Black-tailed godwit				√a	√a	√a	√a			√a		√a
Bar-tailed godwit				√a	√a	√a	√a			√a		√a
Eurasian curlew				√a	√a	√a	√a			√a		√a
Common redshank				√a	√a	√a	√a			√a		√a
Ruddy turnstone				√a	√a	√a	√a			√a		√a
Common tern				√a	√a	√a	√a			√a		√a
Little tern				√a	√a	√a	√a			√a		√a
Waterbird assemblage				√a	√a	√a	√a			√a		√a



# Evidence supporting conclusions

Risk of disturbance and loss of foraging, roosting and nesting habitat for birds inside and outside the SPA depending on location of the above ground infrastructure and Risk of pollution. Potential for LSE on all qualifying features.



## Matrix 77: The Wash RAMSAR site

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project Effect	UK1107 66.3 km ORCP	to Array A		m to WT Risk displac	of	18 km to onsho	Loss of nesting and ou	f foraging, habitat fo tside the SI tion of the	o ANS / 13.8 km roosting and r birds inside PA depending above ground			22.8 km to
Stage of Development	С	0	D	С	О	D	С	0	D	С	О	D
Criterion 1 – Saltmarshes, major intertidal banks of sand and mud, shallow water, and deep channels				√a	√a	√a	√a			√a		√a
Criterion 3 – Inter-relationship between saltmarshes, intertidal sand, mudflats, and estuarine waters	√a			√a	√a	√a	√a			√a		√a
Criterion 5 – Bird assemblages of international importance				√a	√a	√a	√a			√a		√a
Criterion 6 – Bird species/ populations occurring at levels of international importance				√a	√a	√a	√a			√a		√a
Common redshank				√a	√a	√a	√a			√a		√a
Eurasian curlew				√a	√a	√a	√a			√a		√a
Eurasian oystercatcher				√a	√a	√a	√a			√a		√a
Grey plover				√a	√a	√a	√a			√a		√a
Red knot				√a	√a	√a	√a			√a		√a
Sanderling				√a	√a	√a	√a			√a		√a
Black-headed gull				√a	√a	√a	√a			√a		√a
Common eider				√a	√a	√a	√a			√a		√a
Bar-tailed godwit				√a	√a	√a	√a			√a		√a
Common shelduck				√a	√a	√a	√a			√a		√a
Dark-bellied brent goose				√a	√a	√a	√a			√a		√a
Dunlin				√a	√a	√a	√a			√a		√a
Pink-footed goose				√a	√a	√a	√a			√a		√a

conclusions

√a

Risk of loss of or damage to estuary habitats. Risk of disturbance and loss of foraging and roosting habitat inside and outside the Ramsar site, depending on location of the above ground infrastructure.

supporting

Evidence

Risk of pollution. Potential for LSE on all qualifying features. End of Matrix 77



## Matrix 78: The Wash & North Norfolk Coast SAC

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK00170	75	Norfolk Co		area / 0.18	3 km to onsho	ore ECC / 5	0.5 km to A	NS / 8.7 km	to biogenio	reef / 19.3	km to O	RCP		
Effect			damage to of habitat			listurbance/	nesting h	oraging, ro labitat for b de the SPA on of the abo cture	oirds inside depending		llution			cement c duction o	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D	С	0	D
Atlantic salt meadows	√a	√a	√a	√a		√a									
Mediterranean and thermo-Atlantic halophilous scrubs	√a	√a	√a	√a		√a									
Coastal lagoons	√a	√a	√a	√a		√a									
Otter				√a	√a	√a							√a		√a

# Evidence supporting conclusions

Risk of loss of or damage to Annex I habitats depending on location of the above ground infrastructure. Displacement of otter and reduction of otter habitat. Potential for LSE on all qualifying features. This is a precautionary conclusion based on project design uncertainties.



## Matrix 79: Greater Wash SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK9020			m to WT0	G area / 0.0	km to onsh	ore ECC /	' 24.0 km to	ANS / 0.0 km t	o biogen	ic reef / 0.0	km to
Effect		s, reductio	damage to n of habitat		ince/displa		nestin and o on loc	g habitat four side the S	roosting and or birds inside PA depending above ground	Risk of	pollution	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Sandwich tern	√a			√a	√a	√a	√a			√a		√a
Common tern	√a			√a	√a	√a	√a			√a		√a
Little tern	√a			√a	√a	√a	√a			√a		√a

## Evidence supporting conclusions

Risk of disturbance of nesting birds inside the SPA and loss of foraging habitat outside the SPA, depending on location of the above ground infrastructure; and Risk of pollution. Potential for LSE on all qualifying features.



## Matrix 80: Gibraltar Point SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	UK9008			rm to WTG	area / 4	.15 km to onsh	ore ECC / 7	0.6 km to	ANS / 11.7 kn	n to bioger	nic reef / 19	9.3 km to
Effect		, reductio	damage to n of habitat	Risk displacer	of nent	disturbance/	nesting h and outsi	abitat for de the SP on of the a	oosting and birds inside A depending bove ground		ollution	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Grey plover				√a	√a	√a	√a			√a		√a
Sanderling				√a	√a	√a	√a			√a		√a
Bar-tailed godwit				√a	√a	√a	√a			√a		√a
Little tern				√a	√a	√a	√a			√a		√a

Evidence

supporting

## conclusions

√a

Risk of disturbance, and of loss of foraging, roosting and nesting habitat outside the SPA depending on location of the above ground infrastructure. Risk of pollution. Potential for LSE on all qualifying features.



### Matrix 81: Gibraltar Point RAMSAR

Name of designated site:	Cibralta	r Doint D	amsar Site									
Name of designated site:			amsar site									
Site Code:		27 (589)										
Closest Distance to Project	62.9 km ORCP	to Array	Area / 62.9 k	m to WT	「G area / 4	1.15 km to onsh	ore ECC	/ 70.6 km t	o ANS / 11.7 kn	n to biog	enic reef /	19.3 km to
Likely Effects of Project												
Effect		s, reductio	r damage to on of habitat		of ement	disturbance/	nesting and ou on loca infrast decline	g habitat foutside the Sation of the ructure,	roosting and or birds inside PA depending above ground Loss of ortions of scarce plants	Risk of	pollution	
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Ramsar Criterion 1: Coastal habitats – estuarine mudflats, sandbanks, and saltmarsh	√a		√a	√a	√a	√a				√a		√a
Ramsar Criterion 2: Red Data book invertebrates				√a	√a	√a	√a			√a		√a
Notable plant species				√a	√a	√a	√a			√a		√a
Ramsar Criterion 5: Waterfowl				√a	√a	√a	√a			√a		√a
Ramsar Criterion 6: Grey plover, sanderling, bartailed godwit, dark-bellied brent goose				√a	√a	√a	√a			√a		√a

Evidence supporting conclusions

Risk of pollution, affecting aquatic invertebrates, plants and birds. Risk of disturbance and loss of foraging and roosting habitat outside the Ramsar site for dark-bellied brent goose. Potential for LSE on some coastal habitats, waterfowl, invertebrates and plants.



## Matrix 82: North Norfolk SPA

Name of designated site: Site Code: Closest Distance to Project	North Norfolk SPA UK9009031 56.4 km to Array Area / 56.4 km to WTG area / 24 km to onshore ECC / 59.0 km to ANS / 16.0 km to biogenic reef / 31.4 km to ORCP											
Likely Effects of Project												
Effect	Risk of loss of or damage to habitats, reduction of habitat quality.					Loss of foraging, roosting and nesting habitat for birds inside and outside the SPA depending on location of the above ground infrastructure.						
Stage of Development	С	0	D	С	0	D	С	0	D	С	0	D
Pink-footed goose				√a	√a	√a	√a					

Evidence supporting conclusions

√a Risk of disturbance and loss of foraging and roosting habitat outside the SPA. Potential for LSE on pink-footed goose.



## Matrix 83: North Norfolk RAMSAR

	f North Norfolk RAMSAR												
designated site:													
Site Code:	76												
Closest Distance	Closest Distance 56.4 km to Array Area / 56.4 km to WTG area / 24 km to onshore ECC / 59.0 km to ANS / 16.0 km to biogenic reef / 31.4 km to ORCP												
to Project													
Likely Effects of Project													
Effect	Risk of loss of or damage to habitats, reduction of habitat quality.			Risk of disturbance/ displacement			Loss of foraging, roosting and nesting habitat for birds inside and outside the SPA depending on location of the above ground infrastructure.						
Stage of	С	0	D	С	0	D	С	0	D	С	0	D	
Development													
Pink-footed				√a	√a	√a	√a						
goose													

# Evidence supporting conclusions

√a Risk of disturbance and loss of foraging and roosting habitat outside the SPA. Potential for LSE on pink-footed goose.