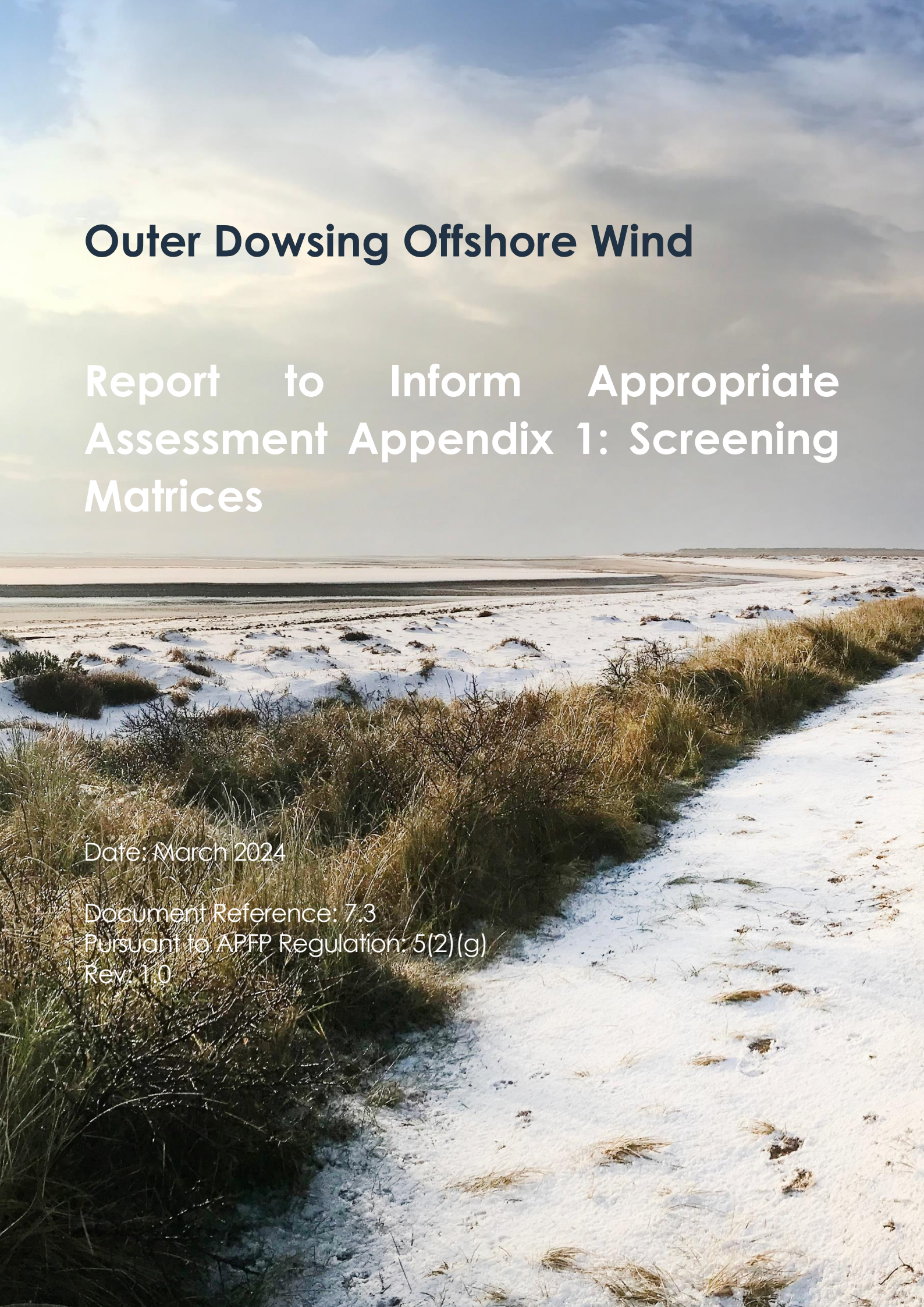
Outer Dowsing Offshore Wind

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

✗ = 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	Berwickshire and North Northumberland SAC
Matrix 9	Moray Firth SAC
Matrix 10	Southern North Sea SAC
Matrix 11	Humber Estuary SAC
Matrix 12	The Wash and North Norfolk Coast SAC
Matrix 13	Transboundary sites for Harbour porpoise (12 sites)
Matrix 14	Transboundary sites for seals (12 sites)
Matrix 15	Greater Wash SPA
Matrix 16	Humber Estuary Ramsar
Matrix 17	Humber Estuary SPA
Matrix 18	North Norfolk Coast SPA
Matrix 19	Gibraltar Point Ramsar
Matrix 20	Gibraltar Point SPA
Matrix 21	The Wash Ramsar
Matrix 22	The Wash SPA
Matrix 23	Great Yarmouth North Denes SPA
Matrix 24	Flamborough and Filey Coast SPA
Matrix 25	Outer Thames Estuary SPA
Matrix 26	Alde-Ore Estuary Ramsar
Matrix 27	Alde-Ore Estuary SPA
Matrix 28	Northumbria Coast SPA
Matrix 29	Foulness (Mid-Essex Coast Phase 5) SPA
Matrix 30	Thanet Coast and Sandwich Bay SPA
Matrix 31	Northumberland Marine SPA
Matrix 32	Coquet Island SPA
Matrix 33	Dungeness, Romney Marsh and Rye Bay SPA
Matrix 34	Farne Islands SPA
Matrix 35	Solent and Southampton Water SPA
Matrix 36	Firth of Forth SPA

Matrix	Site included in the assessment
Matrix 37	Forth Islands SPA
Matrix 38	Poole Harbour Ramsar
Matrix 39	Poole Harbour SPA
Matrix 40	Imperial Dock Lock, Leith SPA
Matrix 41	Firth of Tay and Eden Estuary SPA
Matrix 42	Chesil Beach and The Fleet SPA
Matrix 43	Fowlsheugh SPA
Matrix 44	Ythan Estuary, Sands of Forvie and Meikle Loch SPA
Matrix 45	Ythan Estuary and Meikle Loch Ramsar
Matrix 46	Troup, Pennan and Lion's Heads SPA
Matrix 47	East Caithness Cliffs SPA
Matrix 48	North Caithness Cliffs SPA
Matrix 49	Pentland Firth Islands SPA
Matrix 50	Hoy SPA
Matrix 51	Marwick Head SPA
Matrix 52	Fair Isle SPA
Matrix 53	West Westray SPA
Matrix 54	Papa Westray (North Hill and Holm) SPA
Matrix 55	Sumburgh Head SPA
Matrix 56	Noss SPA
Matrix 57	Fetlar SPA
Matrix 58	Hermaness, Saxa Vord and Valla Field SPA
Matrix 59	Transboundary sites for Lesser black-backed gull (3 sites)
Matrix 60	Transboundary sites for Northern fulmar (9 sites)
Matrix 61	Transboundary sites for Manx shearwater (4 sites)
Matrix 62	Humber Estuary SAC
Matrix 63	River Derwent SAC
Matrix 64	Humber Estuary SPA
Matrix 65	Humber Estuary Ramsar Site
Matrix 66	Humber Estuary SAC
Matrix 67	Saltfleetby-Theddlethorpe Dunes & Gibraltar Point SAC
Matrix 68	The Wash SPA
Matrix 69	The Wash Ramsar Site
Matrix 70	The Wash & North Norfolk Coast SAC
Matrix 71	Greater Wash SPA
Matrix 72	Gibraltar Point SPA
Matrix 73	Gibraltar Point Ramsar Site
Matrix 74	North Norfolk SPA
Matrix 75	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 ecology	
North Norfolk Sandbanks and Saturn Reef SAC	Suspended sediment / deposition 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 Saturn Reef SAC	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 and North Norfolk Coast SAC	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 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)

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 Vessel disturbance Collision risk Indirect pollution Accidental pollution Changes to prey Habitat loss Disturbance at haul out In-combination effects
Berwickshire and North Northumberland Coast SAC	Underwater noise Vessel disturbance 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 SAC	Underwater noise Vessel disturbance Collision Risk Indirect pollution Accidental pollution Changes to prey Habitat loss Disturbance at haul out In-combination effects
Transboundary sites for Harbour porpoise (12 sites)	Underwater noise Vessel disturbance Collision Risk Indirect pollution Accidental pollution Changes to prey In-combination effects
Moray Firth SAC	Underwater noise Vessel disturbance Collision Risk Indirect pollution Accidental pollution Changes to prey Habitat loss In-combination effects
Transboundary sites for seals (12 sites)	Underwater noise 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 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 array infrastructure

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 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 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 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 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

Designations	Impacts Considered in Matrices
	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 5) 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
Thanet Coast and Sandwich Bay 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
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 Rye Bay 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
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 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

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 Indirect impacts through effects on habitats and prey species
Forth 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
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
	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 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
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 Holm) 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

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 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 Field 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
Transboundary sites for Lesser black-backed gull (3 sites)	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
Transboundary sites for Northern fulmar (9 sites)	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
Transboundary sites for Manx shearwater (4 sites)	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
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 & Gibraltar Point SAC	Risk of loss, damage and/or disturbance of habitats 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 SAC	Risk of loss or damage to habitats, 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:	North Norfolk Sandbanks and Saturn Reef SAC																							
Site Code:	UK0030358																							
Closest Distance to Project	5.9 km to array / 17.7 km to ECC / 0.0 km to ANS / 39.5 km to biogenic reef / 69.6km to ORCP																							
Likely Effects of Project																								
Effect	Suspended sediment / deposition			Indirect pollution			Accidental pollution			INNS			Changes to physical processes			Physical habitat loss / disturbance			EMF			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Reefs	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	Xc		Xc		Xc		✓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	Xc		Xc		Xc		✓d	✓d	✓d

Evidence supporting conclusions

✓a 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.

✓b 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.

Xc 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.

End of Matrix 1

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

Name of designated site:	Inner Dowsing, Race Bank, and North Ridge SAC																							
Site Code:	UK0030370																							
Closest Distance to Project	17.8 km to array / 0.0 km to ECC / 30.0 km to ANS / 0.0 km to biogenic reef / 0.0 to ORCP																							
Likely Effects of Project																								
Effect	Physical habitat loss / disturbance			Suspended sediment / deposition			Indirect pollution			Accidental pollution			INNS			Changes to physical processes			EMF			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	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	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		✓a		✓c	✓c	✓c

Evidence supporting conclusions

✓a 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.

✓b 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.

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

End of Matrix 2

Matrix 3: The Wash and North Norfolk Coast SAC

Name of designated site:	The Wash and North Norfolk Coast SAC
Site Code:	UK0017075
Closest Distance to Project	48.4 km to array / 13.4 km to ECC / 50.4 km to ANS / 0.0 km to biogenic reef / 19.3km to ORCP
Likely Effects of Project	

Effect	Physical habitat loss / disturbance			Suspended sediment / deposition			Indirect pollution			Accidental pollution			INNS			Changes to physical processes			EMF			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Sandbanks which are slightly covered by sea water all of the time	X c		X c	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		X c		✓d	✓d	✓d
Mudflats and sandflats not covered by seawater at low tide	X c		X c	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		X c		✓d	✓d	✓d
Large shallow inlets and bays	X c		X c	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		X c		✓d	✓d	✓d
Reefs	X c		X c	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		X c		✓d	✓d	✓d
Salicornia and other annuals colonizing mud and sand	X c		X c	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		X c		✓d	✓d	✓d
Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	X c		X c	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		X c		✓d	✓d	✓d

Evidence supporting conclusions

✓a	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.
✓b	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.
X c	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.

End of Matrix 3

Matrix 4: Humber Estuary Ramsar

Name of designated site:	Humber Estuary Ramsar																							
Site Code:	UK11031 (663)																							
Closest Distance to Project	54.0 km to array / 12.1 km to ECC / 47.5 km to ANS / 18.2 km to biogenic reef / 15.3km to ORCP																							
Likely Effects of Project																								
Effect	Physical habitat loss / disturbance			Suspended sediment / deposition			Indirect pollution			Accidental pollution			INNS			Changes to physical processes			EMF			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Dune systems with humid dune slacks	X c		X c	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		X c		✓d	✓d	✓d
Estuarine waters	X c		X c	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		X c		✓d	✓d	✓d
Intertidal mud and sand flats	X c		X c	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		X c		✓d	✓d	✓d
Saltmarshes	X c		X c	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		X c		✓d	✓d	✓d
Coastal brackish/saline lagoons	X c		X c	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		X c		✓d	✓d	✓d

Evidence supporting conclusions

✓a 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.

✓b 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.

X c 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.

End of Matrix 4

Matrix 5: Humber Estuary SAC

Name of designated site:	Humber Estuary SAC																							
Site Code:	UK0030170																							
Closest Distance to Project	54.4 km to array / 18.5 km to ECC / 47.5 km to ANS / 23.8 km to biogenic reef / 19.7km to ORCP																							
Likely Effects of Project																								
Effect	Physical habitat loss / disturbance			Suspended sediment / deposition			Indirect pollution			Accidental pollution			INNS			Changes to physical processes			EMF			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Estuaries	✗c		✗c	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		✗c		✓d	✓d	✓d
Mudflats and sandflats not covered by seawater at low tide	✗c		✗c	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		✗c		✓d	✓d	✓d
Sandbanks which are slightly covered by sea water all the time	✗c		✗c	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		✗c		✓d	✓d	✓d
Salicornia and other annuals colonizing mud and sand	✗c		✗c	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		✗c		✓d	✓d	✓d
Atlantic salt meadows	✗c		✗c	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		✗c		✓d	✓d	✓d

Evidence supporting conclusions

✓a 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.

✓b 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.

✗c 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.

End of Matrix 5

Matrix 6: Gibraltar Point Ramsar

Name of designated site:	Gibraltar Point Ramsar																							
Site Code:	UK11027 (589)																							
Closest Distance to Project	63.1 km to array / 13.3 km to ECC / 70.5 km to ANS / 1.6 km to biogenic reef / 19.3km to ORCP																							
Likely Effects of Project																								
Effect	Physical habitat loss / disturbance			Suspended sediment / deposition			Indirect pollution			Accidental pollution			INNS			Changes to physical processes			EMF			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Estuarine mudflats	X c		X c	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		X c		✓d	✓d	✓d
Sandbanks	X c		X c	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		X c		✓d	✓d	✓d
Saltmarsh	X c		X c	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		X c		✓d	✓d	✓d
Dunes	X c		X c	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		X c		✓d	✓d	✓d

Evidence supporting conclusions

✓a 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.

✓b 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.

X c 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.

End of Matrix 6

Matrix 7: The Wash Ramsar

Name of designated site:	The Wash Ramsar																							
Site Code:	UK11072 (395)																							
Closest Distance to Project	66.5 km to array / 16.4 km to ECC / 74.0 km to ANS / 3.8 km to biogenic reef / 22.7km to ORCP																							
Likely Effects of Project																								
Effect	Physical habitat loss / disturbance			Suspended sediment / deposition			Indirect pollution			Accidental pollution			INNS			Changes to physical processes			EMF			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Saltmarshes	X a	X a	X a	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		X a		✓d	✓d	✓d
Estuaries	X a	X a	X a	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		X a		✓d	✓d	✓d
Major intertidal banks of sand and mud	X a	X a	X a	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		X a		✓d	✓d	✓d
Shallow water	X a	X a	X a	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		X a		✓d	✓d	✓d
Deep channels	X a	X a	X a	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b		X a		✓d	✓d	✓d

Evidence supporting conclusions

✓a 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.

✓b 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.

X c 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.

End of Matrix 7

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 (Offshore)	0.0 km to array / 1.1 km to ECC / 0.0 km to ANS / 34.7 km to biogenic reef / 42.3km to ORCP																						
Likely Effects of Project																							
Effect	Underwater noise			Vessel disturbance			Collision risk			Indirect pollution			Accidental pollution			Habitat loss			Changes to prey			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	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).

✓b 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.

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

End of Matrix 8

Matrix 9: Humber Estuary SAC

Name of designated site:	Humber Estuary SAC																										
Site Code:	UK0030170																										
Closest Distance to Project (offshore)	54.4 km to array / 18.5 km to ECC / 47.5 km to ANS / 23.8 km to biogenic reef / 19.7km to ORCP																										
Likely Effects of Project																											
Effect	Underwater noise			Vessel disturbance			Collision risk			Indirect pollution			Accidental pollution			Changes to prey			Habitat loss			Disturbance at haul out			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	C	C	C	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Grey seal	✓a	✓a	✓b	✓c	✓c	✓b	✓d	✓d	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓g	✓g	✓g	Xe	Xe	Xe	✓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.

✓b 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.

✓c 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.

Xe 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.

✓g The site is within the maximum range for these effects as informed by modelling and therefore there is a potential for an LSE.

End of Matrix 9

Matrix 10: Humber Estuary Ramsar

Name of designated site:	Humber Estuary RAMSAR
Site Code:	UK0030170
Closest Distance to Project (offshore)	54.0 km to array / 12.1 km to ECC / 47.5 km to ANS / 18.2 km to biogenic reef / 15.3km to ORCP
Likely Effects of Project	

Effect	Underwater noise			Vessel disturbance			Collision risk			Indirect pollution			Accidental pollution			Changes to prey			Habitat loss			Disturbance at haul out			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	C	C	C	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Grey seal	✓a	✓a	✓b	✓c	✓c	✓b	✓d	✓d	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓g	✓g	✓g	Xe	Xe	Xe	✓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.

✓b 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.

✓c 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.

✓d 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.

Xe 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.

✓g The site is within the maximum range for these effects as informed by modelling and therefore there is a potential for an LSE.

End of Matrix 10

Matrix 11: The Wash and North Norfolk Coast SAC

Name of designated site:	The Wash and North Norfolk Coast SAC																										
Site Code:	UK0017075																										
Closest Distance to Project (offshore)	48.4 km to array / 13.4 km to ECC / 50.4 km to ANS / 0.0 km to biogenic reef / 19.3km to ORCP																										
Likely Effects of Project																											
Effect	Underwater noise			Vessel disturbance			Collision risk			Indirect pollution			Accidental pollution			Changes to prey			Habitat loss			Disturbance at haul out			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	C	C	C	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Harbour seal	✓a	✓a	✓b	✓c	✓c	✓b	✓d	✓d	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓f	✓f	✓f	Xe	Xe	Xe	Xe	Xe	Xe	✓g	✓g	✓g

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 harbour seal and underwater noise associated with the Project. Potential for LSE concluded.

✓b 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.

✓c 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.

✓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 harbour seal (with vessels associated with activity relating to the Project). Therefore, a finding of potential LSE is appropriate.

Xe 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 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.

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

End of Matrix 11

Matrix 12: Berwickshire and North Northumberland Coast SAC

Name of designated site:	Berwickshire and North Northumberland Coast SAC																										
Site Code:	UK0030395																										
Closest Distance to Project (Offshore)	260.4 km to array / 262.0 km to ECC / 232.6 km to ANS / 259.2 km to biogenic reef / 262.0km to ORCP																										
Likely Effects of Project																											
Effect	Underwater noise			Vessel disturbance			Collision risk			Indirect pollution			Accidental pollution			Changes to prey			Habitat loss			Disturbance at haul out			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Grey Seal	✓a	✓a	✓b	✓c	✓c	✓b	✓d	✓d	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓f	✓f	✓f	Xe	Xe	Xe	Xe	Xe	Xe	✓g	✓g	✓g

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.

✓b 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.

✓c 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.

Xe 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 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.

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

End of Matrix 12

Matrix 13: Moray Firth SAC

Name of designated site:	Moray Firth SAC																						
Site Code:	UK0019808																						
Closest Distance to Project (Offshore)	515.0 km to array / 525.5 km to ECC / 487.0 km to ANS / 521.2 km to biogenic reef / 525.5km to ORCP																						
Likely Effects of Project																							
Effect	Underwater noise			Vessel disturbance			Collision risk			Indirect pollution			Accidental pollution			Changes to prey			Habitat loss			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Bottlenose dolphin	✓a	✓a	✓b	✓a	✓a	✓b	✓a	✓a	✓b	Xc	Xc	Xc	Xc	Xc	Xc	✓a	✓a	✓b	Xc	Xc	Xc	✓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.
✓b	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.
Xc	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

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 (Offshore)	Various
Likely Effects of Project	

Effect	Underwater noise			Vessel disturbance			Collision risk			Indirect pollution			Accidental pollution			Habitat loss			Changes to prey			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Bancs de Flandres SCA	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Doggersbank (Netherlands) SAC;	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Klaverbak SCI;	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Noordzeekustone SCI;	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
SBZ 1 SCI;	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
SBZ 2 SCI;	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
SBZ 3 SCI;	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Vlaamse Banked SCI;	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Vlakte van de Raan SCI;	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Voordelta SCI;	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Waddenzee SCI; and	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Westerschelde & Saeftinghe SCI.	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa

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.

End of Matrix 14

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

Name of designated site:	Transboundary sites for Harbour and Grey seals (12 sites)																										
Site Code:	Various																										
Closest Distance to Project	Various																										
Likely Effects of Project																											
Effect	Underwater noise			Vessel disturbance			Collision risk			Indirect pollution			Accidental pollution			Changes to prey			Habitat loss			Disturbance at haul out			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Doggersbank (Netherlands) SAC;	✓a	✓a	✓b	✓c	✓c	✓b	✓d	✓d	✓b	Xe	Xe	Xe	Xe	Xe	Xe	Xe	Xe	Xe	Xe	Xe	Xe	Xe	Xe	Xe	✓f	✓f	✓f
Klaverbak SCI;	✓a	✓a	✓b	✓c	✓c	✓b	✓d	✓d	✓b	Xe	Xe	Xe	Xe	Xe	Xe	Xe	Xe	Xe	Xe	Xe	Xe	Xe	Xe	Xe	✓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 seals and underwater noise associated with the Project. Potential for LSE concluded.

✓b 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.

✓c 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.

Xe 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.

End of Matrix 15

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

Name of designated site:	Transboundary sites for Harbour and Grey seals (12 sites)																								
Site Code:	Various																								
Closest Distance to Project	Various																								
Likely Effects of Project																									
Effect	Underwater noise			Vessel disturbance			Collision risk			Indirect pollution			Accidental pollution			Changes to prey			Habitat loss			Disturbance at haul out			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Bancs de Flandres SCA;	✓a	✓a	✓b	✓c	✓c	✓b	✓d	✓d	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓a	✓a	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓f	✓f	✓f
Doggersbank (Netherlands) SAC;	✓a	✓a	✓b	✓c	✓c	✓b	✓d	✓d	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓a	✓a	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓f	✓f	✓f
Klaverbak SCI;	✓a	✓a	✓b	✓c	✓c	✓b	✓d	✓d	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓a	✓a	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓f	✓f	✓f
Noordzeekustone SCI;	✓a	✓a	✓b	✓c	✓c	✓b	✓d	✓d	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓a	✓a	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓f	✓f	✓f
SBZ 1 SCI;	✓a	✓a	✓b	✓c	✓c	✓b	✓d	✓d	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓a	✓a	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓f	✓f	✓f
SBZ 2 SCI;	✓a	✓a	✓b	✓c	✓c	✓b	✓d	✓d	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓a	✓a	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓f	✓f	✓f
SBZ 3 SCI;	✓a	✓a	✓b	✓c	✓c	✓b	✓d	✓d	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓a	✓a	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓f	✓f	✓f
Vlaamse Banked SCI;	✓a	✓a	✓b	✓c	✓c	✓b	✓d	✓d	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓a	✓a	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓f	✓f	✓f
Vlakte van de Raan SCI;	✓a	✓a	✓b	✓c	✓c	✓b	✓d	✓d	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓a	✓a	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓f	✓f	✓f
Voordelta SCI;	✓a	✓a	✓b	✓c	✓c	✓b	✓d	✓d	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓a	✓a	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓f	✓f	✓f
Waddenzee SCI; and	✓a	✓a	✓b	✓c	✓c	✓b	✓d	✓d	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓a	✓a	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓f	✓f	✓f
Westerschelde & Saeftinghe SCI.	✓a	✓a	✓b	✓c	✓c	✓b	✓d	✓d	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓a	✓a	✓b	Xe	Xe	Xe	Xe	Xe	Xe	✓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.
- ✓b 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.
- ✓c 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.
- Xe 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.

End of Matrix 16

3.3 Sites designated with offshore and intertidal ornithology features

Matrix 17: Greater Wash SPA

Name of designated site: Greater Wash SPA Site Code: UK9020329 Closest Distance to Project 24.6 km to array, 0.0km to ECC Likely Effects of Project																		
Effect	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 turbines			Collision risk due to the presence of turbines			Barrier effects due to the presence of turbines			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Common scoter	✓a	✓a	✓a	✓a	✓a	✓a		✓a			✓a					✓c	✓c	✓c
Red-throated diver	✓a	✓a	✓a	✓a	✓a	✓a		✓a			✓a					✓c	✓c	✓c
Little gull	Xb	Xb	Xb	Xb	Xb	Xb		✓a			✓a						✓c	
Little tern	Xb	Xb	Xb	Xb	Xb	Xb		✓a			✓a						✓c	
Common tern	Xb	Xb	Xb	Xb	Xb	Xb		✓a			✓a						✓c	
Sandwich tern	Xb	Xb	Xb	Xb	Xb	Xb		✓a			✓a						✓c	

Evidence supporting conclusions

✓a The cable corridor directly overlaps with this SPA with red-throated diver and common scoter having high or very high vulnerability to disturbance/displacement from offshore wind farms and 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.

Xb The Project array is beyond the mean-maximum +1SD foraging range (Woodward *et al.,* 2019) for all designated breeding seabird species and therefore has no breeding season connectivity. All species may be vulnerable to collisions for this site, but have low sensitivity. As agreed with Natural England, Sandwich tern has been screened out for displacement, and little gull and common tern have been assessed for migratory collision risk.

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

End of Matrix 17

Matrix 18: Humber Estuary Ramsar

Name of designated site:	Humber Estuary Ramsar																	
Site Code:	UK11031 (663)																	
Closest Distance to Project	54.0 km to array, 12.1 km to ECC																	
Likely Effects of Project																		
Effect	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 turbines			Collision risk due to the presence of turbines			Barrier effects due to the presence of turbines			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
European golden plover	✗b	✗b	✗b	✗b	✗b	✗b		✓a			✓a						✓a	
Red knot	✗b	✗b	✗b	✗b	✗b	✗b		✓a			✓a						✓a	
Dunlin	✗b	✗b	✗b	✗b	✗b	✗b		✓a			✓a						✓a	
Black-tailed godwit	✗b	✗b	✗b	✗b	✗b	✗b		✓a			✓a						✓a	
Common redshank	✗b	✗b	✗b	✗b	✗b	✗b		✓a			✓a						✓a	
Common shelduck	✗b	✗b	✗b	✗b	✗b	✗b		✓a			✓a						✓a	
Bar-tailed godwit	✗b	✗b	✗b	✗b	✗b	✗b		✓a			✓a						✓a	

Evidence supporting conclusions

✓a	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.
✗b	Wintering waterbirds are not prone to displacement impacts due to the distance from the ECC to the site exceeding 2km.

End of Matrix 18

Matrix 19: Humber Estuary SPA

Name of designated site:	Humber Estuary SPA																	
Site Code:	UK9006111																	
Closest Distance to Project	54.0 km to array, 12.1 km to ECC																	
Likely Effects of Project																		
Effect	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 turbines			Collision risk due to the presence of turbines			Barrier effects due to the presence of turbines			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Avocet	X b	X b	X b	X b	X b	X b		✓a			✓a						✓c	
Bar-tailed godwit	X b	X b	X b	X b	X b	X b		✓a			✓a						✓c	
Bittern	X b	X b	X b	X b	X b	X b		✓a			✓a						✓c	
Black-tailed godwit	X b	X b	X b	X b	X b	X b		✓a			✓a						✓c	
Dunlin	X b	X b	X b	X b	X b	X b		✓a			✓a						✓c	
Golden plover	X b	X b	X b	X b	X b	X b		✓a			✓a						✓c	
Hen harrier	X b	X b	X b	X b	X b	X b		✓a			✓a						✓c	
Knot	X b	X b	X b	X b	X b	X b		✓a			✓a						✓c	
Little tern	X b	X b	X b	X b	X b	X b		✓a			✓a						✓c	
Marsh harrier	X b	X b	X b	X b	X b	X b		✓a			✓a						✓c	
Redshank	X b	X b	X b	X b	X b	X b		✓a			✓a						✓c	
Ruff	X b	X b	X b	X b	X b	X b		✓a			✓a						✓c	
Shelduck	X b	X b	X b	X b	X b	X b		✓a			✓a						✓c	
Pink-footed goose	X b	X b	X b	X b	X b	X b		✓a			✓a						✓c	
Wigeon	X b	X b	X b	X b	X b	X b		✓a			✓a						✓c	
Ringed plover	X b	X b	X b	X b	X b	X b		✓a			✓a						✓c	
Curlew	X b	X b	X b	X b	X b	X b		✓a			✓a						✓c	
Sanderling	X b	X b	X b	X b	X b	X b		✓a			✓a						✓c	
Oystercatcher	X b	X b	X b	X b	X b	X b		✓a			✓a						✓c	
Dark-bellied brent goose	X b	X b	X b	X b	X b	X b		✓a			✓a						✓c	
Mallard	X b	X b	X b	X b	X b	X b		✓a			✓a						✓c	
Pochard	X b	X b	X b	X b	X b	X b		✓a			✓a						✓c	
Goldeneye	X b	X b	X b	X b	X b	X b		✓a			✓a						✓c	
Scaup	X b	X b	X b	X b	X b	X b		✓a			✓a						✓c	

Evidence supporting conclusions

✓a	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.
Xb	Wintering waterbirds are not prone to displacement impacts due to the distance from the ECC to the SPA exceeding 2km.
✓c	It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.

End of Matrix 19

Matrix 20: North Norfolk Coast SPA

Name of designated site:	North Norfolk Coast SPA																	
Site Code:	UK9009031																	
Closest Distance to Project	57.2 km to array, 29.9 km to ECC																	
Likely Effects of Project																		
Effect	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 turbines			Collision risk due to the presence of turbines			Barrier effects due to the presence of turbines			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Dark-bellied brent goose	✗b	✗b	✗b	✗b	✗b	✗b		✓a			✓a						✓c	
Eurasian marsh harrier	✗b	✗b	✗b	✗b	✗b	✗b		✓a			✓a						✓c	
Eurasian wigeon	✗b	✗b	✗b	✗b	✗b	✗b		✓a			✓a						✓c	
Great bittern	✗b	✗b	✗b	✗b	✗b	✗b		✓a			✓a						✓c	
Pied avocet	✗b	✗b	✗b	✗b	✗b	✗b		✓a			✓a						✓c	
Pink-footed goose	✗b	✗b	✗b	✗b	✗b	✗b		✓a			✓a						✓c	
Red knot	✗b	✗b	✗b	✗b	✗b	✗b		✓a			✓a						✓c	
Sandwich tern	✗b	✗b	✗b	✗b	✗b	✗b		✓a			✓a						✓c	
Common tern	✗b	✗b	✗b	✗b	✗b	✗b		✓a			✓a						✓c	
Little tern	✗b	✗b	✗b	✗b	✗b	✗b		✓a			✓a						✓c	
Assemblage features	✗b	✗b	✗b	✗b	✗b	✗b		✓a			✓a						✓c	

Evidence supporting conclusions

✓a 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.

✗b 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.

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

End of Matrix 20

Matrix 21: Gibraltar Point Ramsar

Name of designated site:	Gibraltar Point Ramsar																	
Site Code:	UK11027 (589)																	
Closest Distance to Project	63.1 km to array, 13.3 km to ECC																	
Likely Effects of Project																		
Effect	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 turbines			Collision risk due to the presence of turbines			Barrier effects due to the presence of turbines			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	B
Grey plover	X a	X a	X a	X a	X a	X a		✓b			✓b						✓c	
Sanderling	X a	X a	X a	X a	X a	X a		✓b			✓b						✓c	
Dark-bellied brent goose	X a	X a	X a	X a	X a	X a		✓b			✓b						✓c	
Bar-tailed godwit	X a	X a	X a	X a	X a	X a		✓b			✓b						✓c	

Evidence supporting conclusions

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

End of Matrix 21

Matrix 22: Gibraltar Point SPA

Name of designated site:	Gibraltar Point SPA																	
Site Code:	UK9008022																	
Closest Distance to Project	63.1 km to array / 13.3 km to ECC / 70.5 km to ANS / 1.6 km to biogenic reef / 19.3 km to ORCP																	
Likely Effects of Project																		
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Grey plover	X a	X a	X a	X a	X a	X a		✓b			✓b						✓c	
Sanderling	X a	X a	X a	X a	X a	X a		✓b			✓b						✓c	
Little Tern	X a	X a	X a	X a	X a	X a		✓b			✓b						✓c	
Bar-tailed godwit	X a	X a	X a	X a	X a	X a		✓b			✓b						✓c	

Evidence supporting conclusions

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

End of Matrix 22

Matrix 23: The Wash Ramsar

Name of designated site:	The Wash Ramsar
Site Code:	UK11072 (395)
Closest Distance to Project	66.5 km to array / 16.4 km to ECC / 74.0 km to ANS / 3.8 km to biogenic reef / 22.7 km to ORCP
Likely Effects of Project	

Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Eurasian oystercatcher	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Grey plover	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Red knot	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Sanderling	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Eurasian curlew	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Common redshank	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Ruddy turnstone	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Pink-footed goose	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Dark-bellied brent goose	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Common shelduck	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Northern pintail	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Dunlin	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Bar-tailed godwit	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	

Evidence supporting conclusions

✗a	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 all effects alone.
✓c	It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.

End of Matrix 23

Matrix 24: The Wash SPA

Name of designated site:	The Wash SPA
Site Code:	UK9008021
Closest Distance to Project	66.5 km to array / 16.4 km to ECC / 74.0 km to ANS / 3.8 km to biogenic reef / 22.7 km to ORCP
Likely Effects of Project	

Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Bar-tailed godwit	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Common scoter	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Black-tailed godwit	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Common goldeneye	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Common redshank	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Common shelduck	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Dark-bellied brent goose	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Dunlin	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Eurasian curlew	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Eurasian oystercatcher	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Eurasian wigeon	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Gadwall	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Grey plover	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Northern pintail	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Pink-footed goose	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Red knot	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Ruddy turnstone	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Sanderling	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Tundra swan	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Common tern	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Little tern	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	
Assemblage features	✗a	✗a	✗a	✗a	✗a	✗a		✓b			✓b						✓c	

Evidence supporting conclusions

✗a 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.

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

End of Matrix 24

Matrix 25: Great Yarmouth North Denes SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	Great Yarmouth North Denes SPA UK9009271 84.5 km to array / 73.1 km to ECC / 69.8 km to ANS / 58.6 km to biogenic reef / 93.8 km to ORCP																	
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Little tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a

Evidence supporting conclusions

X a 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.

End of Matrix 25

Matrix 26: Flamborough and Filey Coast SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	Flamborough and Filey Coast SPA UK9006101 93.5 km to array																		d
Effect	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 turbines			Collision risk due to the presence of turbines			Barrier effects due to the presence of turbines			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	
Kittiwake	✗b	✗b	✗b	✗b	✗b	✗b		✓a		✗b	✗b	✗b					✓d		
Herring gull	✗b	✗b	✗b	✗b	✗b	✗b		✓a		✗b	✗b	✗b					✓d		
Gannet	✓c	✓c	✓c	✓c	✓c	✓c		✓a		✗b	✗b	✗b				✓d	✓d	✓d	
Guillemot	✓c	✓c	✓c	✓c	✓c	✓c	✗b	✗b	✗b	✗b	✗b	✗b				✓d	✓d	✓d	
Razorbill	✓c	✓c	✓c	✓c	✓c	✓c	✗b	✗b	✗b	✗b	✗b	✗b				✓d	✓d	✓d	
Puffin	✓c	✓c	✓c	✓c	✓c	✓c	✗b	✗b	✗b	✗b	✗b	✗b				✓d	✓d	✓d	
Fulmar	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b							
European shag	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b							
Cormorant	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b							

Evidence supporting conclusions

✗a	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.
✓b	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.
✓c	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.
✓d	It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.

End of Matrix 26

Matrix 27: Outer Thames Estuary SPA

Name of designated site:	Outer Thames Estuary SPA
Site Code:	UK9020309
Closest Distance to Project	97.8 km to array / 84.8 km to ECC / 82.4 km to ANS / 69.7 km to biogenic reef / 104.0 km to ORCP
Likely Effects of Project	

Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Common tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Little tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Red-throated diver	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a

Evidence supporting conclusions

X a — 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/ Ramsar passing through the site based on the distance from the site.
Therefore, LSE can be discounted in relation to all effects alone.

End of Matrix 27

Matrix 28: Alde-Ore Estuary Ramsar

Name of designated site:	Alde-Ore Estuary Ramsar
Site Code:	UK11002 (862)
Closest Distance to Project	147.4 km to array / 131.3 km to ECC / 136.2 km to ANS / 110.4 km to biogenic reef / 139.2 km to ORCP
Likely Effects of Project	

Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In Combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Lesser black-backed gull	✗b	✗b	✗b	✗b	✗b	✗b		✓a		✗b	✗b	✗b				✗b	✓c	✗b
Pied avocet	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b				✗b	✗b	✗b
Common redshank	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b				✗b	✗b	✗b

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

End of Matrix 28

Matrix 29: Alde-Ore Estuary SPA

Name of designated site:	Alde-Ore Estuary SPA
Site Code:	UK9009112
Closest Distance to Project	147.2 km to array / 131.3 km to ECC / 136.2 km to ANS / 110.4 km to biogenic reef / 139.2 km to ORCP
Likely Effects of Project	

Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Lesser black-backed gull	✗b	✗b	✗b	✗b	✗b	✗b		✓a		✗b	✗b	✗b				✗b	✓c	✗b
Pied avocet	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b				✗b	✗b	✗b
Common redshank	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b				✗b	✗b	✗b
Ruff	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b				✗b	✗b	✗b
Little tern	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b				✗b	✗b	✗b
Sandwich tern	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b				✗b	✗b	✗b

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

End of Matrix 29

Matrix 30: Northumbria Coast SPA

Name of designated site:	Northumbria Coast SPA																	
Site Code:	UK9006131																	
Closest Distance to Project	198.6 km to array / 193.2 km to ECC / 173.6 km to ANS / 191.9 km to biogenic reef / 193.2 km to ORCP																	
Likely Effects of Project																		
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Arctic Tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Little Tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a

Evidence supporting conclusions

X a 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.

End of Matrix 30

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

Name of designated site:	Foulness (Mid-Essex Coast Phase 5) SPA																	
Site Code:	UK9009246																	
Closest Distance to Project	202.7 km to array / 181.1 km to ECC / 196.3 km to ANS / 161.2 km to biogenic reef / 182.3 km to ORCP																	
Likely Effects of Project																		
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Common tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Little tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Sandwich tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a

Evidence supporting conclusions

X a 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.

End of Matrix 31

Matrix 32: Thanet Coast and Sandwich Bay SPA

Name of designated site:	Thanet Coast and Sandwich Bay SPA																	
Site Code:	UK9012071																	
Closest Distance to Project	231.5 km to array / 213.1 km to ECC / 221.7 km to ANS / 191.7 km to biogenic reef / 214.2 km to ORCP																	
Likely Effects of Project																		
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combinations effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Little tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a

Evidence supporting conclusions

X a 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.

End of Matrix 32

Matrix 33: Northumberland Marine SPA

Name of designated site:	Northumberland Marine SPA																	
Site Code:	UK9020325																	
Closest Distance to Project	237.7 km to array / 235.3 km to ECC / 210.8 km to ANS / 233.3 km to biogenic reef / 235.3 km to ORCP																	
Likely Effects of Project																		
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Arctic tern	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Common tern	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Little tern	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Roseate tern	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Sandwich tern	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Guillemot	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Puffin	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Assemblage features	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa

Evidence supporting conclusions

Xa 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.

End of Matrix 33

Matrix 34: Coquet Island SPA

Name of designated site:	Coquet Isand SPA																	
Site Code:	UK9006031																	
Closest Distance to Project	258.6 km to array / 258.8 km to ECC / 231.0 km to ANS / 256.3 km to biogenic reef / 258.8 km to ORCP																	
Likely Effects of Project																		
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Puffin	✓a	✓a	✓a	✓a	✓a	✓a										✓d	✓d	✓d
Roseate tern	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb				Xb	Xb	Xb
Common tern	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb				Xb	Xb	Xb
Sandwich tern	Xb	Xb	Xb	Xb	Xb	Xb	Xb	✓c	Xb	Xb	Xb	Xb				Xb	✓d	Xb
Arctic tern	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb				Xb	Xb	Xb
Puffin	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb				Xb	Xb	Xb
Black-headed gull	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb				Xb	Xb	Xb
Fulmar	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb				Xb	Xb	Xb
Herring gull	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb				Xb	Xb	Xb
Lesser black-backed gull	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb				Xb	Xb	Xb

Evidence supporting conclusions

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

End of Matrix 34

Matrix 35: Dungeness, Romney Marsh and Rye Bay SPA

Name of designated site:	Dungeness, Romney Marsh and Rye Bay SPA																	
Site Code:	UK9012091																	
Closest Distance to Project	269.6 km to array / 246.7 km to ECC / 262.5 km to ANS / 227.2 km to biogenic reef / 248.2 km to ORCP																	
Likely Effects of Project																		
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Common tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Little tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Sandwich tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a

Evidence supporting conclusions

X a 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.

End of Matrix 35

Matrix 36: Farne Islands SPA

Name of designated site:	Farne Islands SPA
Site Code:	UK9006021
Closest Distance to Project	285.8 km to array / 289.1 km to ECC / 257.9 km to ANS / 285.9 km to biogenic reef / 289.1 km to ORCP
Likely Effects of Project	

Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Kittiwake								✓a								✗c	✓d	✗c
Arctic tern	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c				✗c	✗c	✗c
Common guillemot	✓b	✓b	✓b	✓b	✓b	✓b	✗c	✗c	✗c	✗c	✗c	✗c				✓d	✓d	✓d
Puffin	✓b	✓b	✓b	✓b	✓b	✓b	✗c	✗c	✗c	✗c	✗c	✗c				✓d	✓d	✓d
Roseate tern	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c				✗c	✗c	✗c
Sandwich tern	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✓a	✗c	✗c	✗c	✗c				✗c	✓d	✗c
European shag	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c				✗c	✗c	✗c
Great cormorant	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c				✗c	✗c	✗c
Common tern	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c	✗c				✗c	✗c	✗c

Evidence supporting conclusions

✓a	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 has 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.
✗c	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.
✓d	It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.

End of Matrix 36

Matrix 37: Solent and Southampton Water SPA

Name of designated site:	Solent and Southampton Water SPA																	
Site Code:	UK9011061																	
Closest Distance to Project	328.8 km to array / 282.0 km to ECC / 339.1 km to ANS / 267.7 km to biogenic reef / 289.0 km to ORCP																	
Likely Effects of Project																		
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Common tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Little tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Roseate tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Sandwich tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Mediterranean gull	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Black-tailed godwit	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Ringed plover	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Eurasian teal	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Dark-bellied brent goose	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a

Evidence supporting conclusions

X a 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

End of Matrix 37

Matrix 38: St Abb's Head to Fast Castle SPA

Name of designated site:	St Abb's Head to Fast Castle SPA
Site Code:	XXXXXX
Closest Distance to Project	330.0 km to array / 331.4 km to ECC / 305.3 km to ANS / 328.9 km to biogenic reef / 331.5 km to ORCP
Likely Effects of Project	

Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Guillemot	✓b	✓b	✓b	✓b	✓b	✓b		X a			X a					✓c	✓c	✓c
Razorbill	✓b	✓b	✓b	✓b	✓b	✓b		X a			X a					✓c	✓c	✓c
Kittiwake	X a	X a	X a	X a	X a	X a		✓b			✓b						✓c	

Evidence supporting conclusions

X a	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. Outside the breeding season, impacts LSE cannot be discounted in relation to all effects alone.
✓b	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. Designated features have high or very high vulnerability to collision risk with turbines or displacement (Bradbury *et al.,* 2014). Therefore, species have been screened in for non-breeding season impacts.
✓c	It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination

End of Matrix 38

Matrix 39: Firth of Forth SPA

Name of designated site:	Firth of Forth SPA																	
Site Code:	UK9004411																	
Closest Distance to Project	355.6 km to array / 355.4 km to ECC / 327.9 km to ANS / 353.2 km to biogenic reef / 355.4 km to ORCP																	
Likely Effects of Project																		
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Sandwich tern	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa

Evidence supporting conclusions

Xa	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

End of Matrix 39

Matrix 40: Forth Islands SPA

Name of designated site:	Forth Islands SPA
Site Code:	UK9004171
Closest Distance to Project	363.7 km to array / 363.4 km to ECC / 335.9 km to ANS / 361.2 km to biogenic reef / 363.4 km to ORCP
Likely Effects of Project	

Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Gannet	✓a	✓a	✓a	✓a	✓a	✓a		✓a								✓c	✓c	✓c
Kittiwake	Xd	Xd	Xd	Xd	Xd	Xd		✓b								✓c	✓c	✓c
Guillemot	✓b	✓b	✓b	✓b	✓b	✓b		Xd								✓c	✓c	✓c
Razorbill	✓b	✓b	✓b	✓b	✓b	✓b		Xd								✓c	✓c	✓c
Puffin	✓b	✓b	✓b	✓b	✓b	✓b		Xd								✓c	✓c	✓c
Lesser black-backed gull	Xd	Xd	Xd	Xd	Xd	Xd		Xd								Xd	Xd	Xd
Herring gull	Xd	Xd	Xd	Xd	Xd	Xd		Xd								Xd	Xd	Xd
European shag	Xd	Xd	Xd	Xd	Xd	Xd		Xd								Xd	Xd	Xd
Sandwich tern	Xd	Xd	Xd	Xd	Xd	Xd		Xd								Xd	Xd	Xd
Roseate tern	Xd	Xd	Xd	Xd	Xd	Xd		Xd								Xd	Xd	Xd
Arctic tern	Xd	Xd	Xd	Xd	Xd	Xd		Xd								Xd	Xd	Xd
Common tern	Xd	Xd	Xd	Xd	Xd	Xd		Xd								Xd	Xd	Xd

Evidence supporting conclusions

✓a 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.

✓b These designated features are beyond mean-maximum +1SD foraging range (Bradbury et al., 2014; Dierschke et al., 2016). 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.

Xd The Project array is outside the mean-maximum +1SD foraging ranges (Woodward *et al.,* 2019) for designated seabird species and therefore, has breeding season connectivity. Designated seabird species is not vulnerable to the impact and therefore, LSE can be discounted in relation to this effect alone.

End of Matrix 41

Matrix 41: Poole Harbour Ramsar

Name of designated site:	Poole Harbour Ramsar																	
Site Code:	UK11054 (1005)																	
Closest Distance to Project	371.8 km to array / 321.9 km to ECC / 381.1 km to ANS / 309.6 km to biogenic reef / 329.9 km to ORCP																	
Likely Effects of Project																		
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Common tern	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa

Evidence supporting conclusions

Xa	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

End of Matrix 41

Matrix 42: Poole Harbour SPA

Name of designated site:	Poole Harbour Ramsar																	
Site Code:	UK11054 (1005)																	
Closest Distance to Project	371.7 km to array / 321.8 km to ECC / 381.1 km to ANS / 309.6 km to biogenic reef / 329.9 km to ORCP																	
Likely Effects of Project																		
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Common tern	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Sandwich tern	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Mediterranean gull	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa

Evidence supporting conclusions.

Xa 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

End of Matrix 42

Matrix 43: Imperial Dock Lock, Leith SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	Imperial Dock Lock, Leith SPA UK9004451 382.8 km to array / 378.1 km to ECC / 355.8 km to ANS / 377.3 km to biogenic reef / 378.4 km to ORCP																	
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Common tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a

Evidence supporting conclusions

X a 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

End of Matrix 43

Matrix 44: Firth of Tay and Eden Estuary SPA

Name of designated site:	Firth of Tay and Eden Estuary SPA																	
Site Code:	UK9004121																	
Closest Distance to Project	395.5 km to array / 396.7 km to ECC / 367.6 km to ANS / 394.2 km to biogenic reef / 396.7 km to ORCP																	
Likely Effects of Project																		
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Little tern	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa

Evidence supporting conclusions

Xa 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

End of Matrix 44

Matrix 45: Chesil Beach and The Fleet SPA

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	Chesil Beach and The Fleet SPA UK9010091 403.4 km to array / 351.8 km to ECC / 411.2 km to ANS / 341.0 km to biogenic reef / 360.5 km to ORCP																	
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Little tern	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa

Evidence supporting conclusions

Xa	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

End of Matrix 45

Matrix 46: Fowlsheugh SPA

Name of designated site:	Fowlsheugh SPA
Site Code:	UK9002271
Closest Distance to Project	421.5 km to array / 430.9 km to ECC / 393.4 km to ANS / 426.7 km to biogenic reef / 430.9 km to ORCP
Likely Effects of Project	

Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Kittiwake	✓b	✓b	✓b	✓b	✓b	✓b		✓b			✓b					✓d	✓d	✓d
Herring gull	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc				Xc	Xc	Xc
Guillemot	✓b	✓b	✓b	✓b	✓b	✓b	Xa	Xa	Xa	Xa	Xa	Xa				✓d	✓d	✓d
Razorbill	✓b	✓b	✓b	✓b	✓b	✓b	Xa	Xa	Xa	Xa	Xa	Xa				✓d	✓d	✓d
Fulmar	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa

Evidence supporting conclusions

Xa	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/ Ramsar 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.
✓b	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. However, designated features have high or very high vulnerability to collision risk with turbines or displacement effects (Bradbury *et al.,* 2014). Therefore, some vulnerable species have been screened into the assessment for the non-breeding season based on potential collision risk and disturbance/displacement impacts.
Xc	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.
✓d	It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination.

End of Matrix 46

Matrix 47: Ythan Estuary, Sands of Forvie and Meikle Loch SPA

Name of designated site:	Ythan Estuary, Sands of Forvie and Meikle Loch SPA
Site Code:	UK9002221
Closest Distance to Project	443.1 km to array / 454.6 km to ECC / 451.1 km to ANS / 450.0 km to biogenic reef / 454.6 km to ORCP
Likely Effects of Project	

Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Common tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Little tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Sandwich tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a

Evidence supporting conclusions

X a 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

End of Matrix 47

Matrix 48: Ythan Estuary and Meikle Loch Ramsar

Name of designated site:	Ythan Estuary and Meikle Loch Ramsar																	
Site Code:	UK13061 (939)																	
Closest Distance to Project	456.4 km to array / 469.2 km to ECC / 428.5 km to ANS / 464.3 km to biogenic reef / 469.2 km to ORCP																	
Likely Effects of Project																		
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Sandwich tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a

Evidence supporting conclusions

X a	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

End of Matrix 48

Matrix 49: Buchan Ness to Collieston Coast SPA

Name of designated site:	Buchan Ness to Collieston Coast SPA																	
Site Code:	XXXXXX																	
Closest Distance to Project	456.6 km to array / 469.8 km to ECC / 433.8 km to ANS / 464.8 km to biogenic reef / 469.8 km to ORCP																	
Likely Effects of Project																		
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Guillemot	✓b	✓b	✓b	✓b	✓b	✓b		Xa			Xa					✓c	✓c	✓c
Kittiwake	Xa	Xa	Xa	Xa	Xa	Xa		✓b			✓b						✓c	

Evidence supporting conclusions

Xa	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. Designated seabird species is not vulnerable to the impact and therefore, LSE can be discounted in relation to this effect alone.
✓b	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. Designated features have high or very high vulnerability to collision risk with turbines or displacement (Bradbury *et al.,* 2014). Therefore, species have been screened in for non-breeding season impacts.
✓c	It is considered that where there is a potential for LSE alone, there is a potential for LSE in-combination

End of Matrix 49

Matrix 50: Troup, Pennan and Lion's Heads SPA

Name of designated site:	Troup, Pennan and Lion's Heads SPA
Site Code:	UK9002471
Closest Distance to Project	498.4 km to array / 511.7 km to ECC / 470.5 km to ANS / 506.8 km to biogenic reef / 511.7 km to ORCP
Likely Effects of Project	

Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Kittiwake	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✓b	✗a	✗a	✓b	✗a				✗a	✓c	✗a
Herring gull	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a				✗a	✗a	✗a
Fulmar	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a				✗a	✗a	✗a
Guillemot	✓b	✓b	✓b	✓b	✓b	✓b	✗a	✗a	✗a	✗a	✗a	✗a				✓c	✓c	✓c
Razorbill	✓b	✓b	✓b	✓b	✓b	✓b	✗a	✗a	✗a	✗a	✗a	✗a				✓c	✓c	✓c

Evidence supporting conclusions

✗a 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.

✓b These designated features are beyond mean-maximum +1SD foraging range (Bradbury et al., 2014; Dierschke et al., 2016). 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.

End of Matrix 50

Matrix 51: East Caithness Cliffs SPA

Name of designated site:	East Caithness Cliffs SPA
Site Code:	UK9001182
Closest Distance to Project	582.4 km to array / 590.9 km to ECC / 554.4 km to ANS / 587.0 km to biogenic reef / 590.9 km to ORCP
Likely Effects of Project	

Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Kittiwake	Xa	Xa	Xa	Xa	Xa	Xa	Xa	✓b	Xa	Xa	✓b	Xa				Xa	✓c	Xa
Great black-backed gull	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Herring gull	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Fulmar	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Guillemot	✓b	✓b	✓b	✓b	✓b	✓b	Xa	Xa	Xa	Xa	Xa	Xa				✓c	✓c	✓c
Razorbill	✓b	✓b	✓b	✓b	✓b	✓b	Xa	Xa	Xa	Xa	Xa	Xa				✓c	✓c	✓c
European shag	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Great cormorant	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa

Evidence supporting conclusions

Xa	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.
✓b	These designated features are beyond mean-maximum +1SD foraging range (Bradbury et al., 2014; Dierschke et al., 2016). 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.

End of Matrix 51

Matrix 52: North Caithness Cliffs SPA

Name of designated site:	North Caithness Cliffs SPA
Site Code:	UK9001181
Closest Distance to Project	610.4 km to array / 623.4 km to ECC / 582.5 km to ANS / 618.6 km to biogenic reef / 623.4 km to ORCP
Likely Effects of Project	

Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Puffin	✓b	✓b	✓b	✓b	✓b	✓b	Xa	Xa	Xa	Xa	Xa	Xa				✓c	✓c	✓c
Guillemot	✓b	✓b	✓b	✓b	✓b	✓b	Xa	Xa	Xa	Xa	Xa	Xa				✓c	✓c	✓c
Razorbill	✓b	✓b	✓b	✓b	✓b	✓b	Xa	Xa	Xa	Xa	Xa	Xa				✓c	✓c	✓c
Kittiwake	Xa	Xa	Xa	Xa	Xa	Xa	Xa	✓b	Xa	Xa	✓b	Xa				Xa	✓c	Xa
Fulmar	Xd	Xd	Xd	Xd	Xd	Xd	Xd	Xd	Xd	Xd	Xd	Xd				Xd	Xd	Xd

Evidence supporting conclusions

Xa — 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.

✓b — These designated features are beyond mean-maximum +1SD foraging range (Bradbury et al., 2014; Dierschke et al., 2016). 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.

Xd — 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/ Ramsar after the likelihood and severity of effects on the SPA have been apportioned to all SPAs within the foraging range.

End of Matrix 52

Matrix 53: Pentland Firth Islands SPA

Name of designated site:	Pentland Firth Islands SPA																	
Site Code:	UK9001131																	
Closest Distance to Project	618.9 km to array / 632.7 km to ECC / 591.1 km to ANS / 627.7 km to biogenic reef / 632.7 km to ORCP																	
Likely Effects of Project																		
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Arctic tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a

Evidence supporting conclusions

X a	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

End of Matrix 53

Matrix 54: Copinsay SPA

Name of designated site:	Copinsay SPA
Site Code:	XXXXXXX
Closest Distance to Project	630.9 km to array / 646.2 km to ECC / 608.8 km to ANS / 641.2 km to biogenic reef / 646.6 km to ORCP
Likely Effects of Project	

Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Kittiwake	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✓b	✗a	✗a	✓b	✗a				✗a	✓c	✗a
Great black-backed gull	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a				✗a	✗a	✗a
Fulmar	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a				✗a	✗a	✗a
Guillemot	✓b	✓b	✓b	✓b	✓b	✓b	✗a	✗a	✗a	✗a	✗a	✗a				✓c	✓c	✓c

Evidence supporting conclusions

✗a 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.

✓b These designated features are beyond mean-maximum +1SD foraging range (Bradbury et al., 2014; Dierschke et al., 2016). 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.

End of Matrix 54

Matrix 55: Hoy SPA

Name of designated site:	Hoy SPA
Site Code:	UK9002141
Closest Distance to Project	634.8 km to array / 647.5 km to ECC / 607.0 km to ANS / 642.8 km to biogenic reef / 647.5 km to ORCP
Likely Effects of Project	

Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Arctic skua	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Peregrine falcon	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Red-throated diver	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Great skua	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Puffin	✓b	✓b	✓b	✓b	✓b	✓b	X a	X a	X a	X a	X a	X a				✓c	✓c	✓c
Guillemot	✓b	✓b	✓b	✓b	✓b	✓b	X a	X a	X a	X a	X a	X a				✓c	✓c	✓c
Kittiwake	X a	X a	X a	X a	X a	X a	X a	✓b	X a	X a	✓b	X a				X a	✓c	X a
Great black-backed gull	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Fulmar	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a

Evidence supporting conclusions

X a	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/ Ramsar after the likelihood and severity of effects on the SPA have been 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/ Ramsar passing through the site based on the distance from the site.
✓b	These designated features are beyond mean-maximum +1SD foraging range (Bradbury et al., 2014; Dierschke et al., 2016). 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.

End of Matrix 55

Matrix 56: Calf of Eday SPA

Name of designated site:	Calf of Eday SPA																	
Site Code:	XXX																	
Closest Distance to Project	667.1 km to array / 682.4 km to ECC / 645.2 km to ANS / 678.0 km to biogenic reef / 683.5 km to ORCP																	
Likely Effects of Project																		
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Kittiwake	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✓b	✗a	✗a	✓b	✗a				✗a	✓c	✗a
Guillemot	✓b	✓b	✓b	✓b	✓b	✓b	✗a	✗a	✗a	✗a	✗a	✗a				✓c	✓c	✓c

Evidence supporting conclusions

✗a 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.

✓b These designated features are beyond mean-maximum +1SD foraging range (Bradbury et al., 2014; Dierschke et al., 2016). 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.

End of Matrix 57

Matrix 58: Rousay SPA

Name of designated site:	Rousay SPA
Site Code:	8573
Closest Distance to Project	668.0 km to array / 683.2 km to ECC / 645.8 km to ANS / 677.9 km to biogenic reef / 683.2 km to ORCP
Likely Effects of Project	

Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Kittiwake	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✓b	✗a	✗a	✓b	✗a				✗a	✓c	✗a
Guillemot	✓b	✓b	✓b	✓b	✓b	✓b	✗a	✗a	✗a	✗a	✗a	✗a				✓c	✓c	✓c

Evidence supporting conclusions

✗a	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.
✓b	These designated features are beyond mean-maximum +1SD foraging range (Bradbury et al., 2014; Dierschke et al., 2016). 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.

End of Matrix 58

Matrix 59: Marwick Head SPA

Name of designated site:	Marwick Head SPA																	
Site Code:	UK9002121																	
Closest Distance to Project	670.4 km to array / 683.9 km to ECC / 642.6 km to ANS / 679.0 km to biogenic reef / 683.9 km to ORCP																	
Likely Effects of Project																		
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Kittiwake	X a	X a	X a	X a	X a	X a	X a	✓b	X a	X a	✓b	X a				X a	✓c	X a
Guillemot	✓b	✓b	✓b	✓b	✓b	✓b	X a	X a	X a	X a	X a	X a				✓c	✓c	✓c

Evidence supporting conclusions

X a	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.
✓b	These designated features are beyond mean-maximum +1SD foraging range (Bradbury et al., 2014; Dierschke et al., 2016). 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.

End of Matrix 59

Matrix 60: Fair Isle SPA

Name of designated site:	Fair Isle SPA
Site Code:	UK9002091
Closest Distance to Project	674.7 km to array / 690.0 km to ECC / 648.7 km to ANS / 690.2 km to biogenic reef / 696.7 km to ORCP
Likely Effects of Project	

Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Great skua	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Fulmar	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Arctic skua	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Arctic tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
European shag	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Fair Isle wren	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Puffin	✓b	✓b	✓b	✓b	✓b	✓b	X a	X a	X a	X a	X a	X a				✓c	✓c	✓c
Guillemot	✓b	✓b	✓b	✓b	✓b	✓b	X a	X a	X a	X a	X a	X a				✓c	✓c	✓c
Razorbill	✓b	✓b	✓b	✓b	✓b	✓b	X a	X a	X a	X a	X a	X a				✓c	✓c	✓c
Kittiwake	X a	X a	X a	X a	X a	X a	X a	✓b	X a	X a	✓b	X a				X a	✓c	X a
Gannet	✓b	✓b	✓b	✓b	✓b	✓b	X a	✓b	X a	X a	✓b	X a				✓c	✓c	✓c

Evidence supporting conclusions

X a — The Project array is beyond the mean-maximum +1SD foraging ranges (and maximum site-specific foraging range for fulmar) (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.

✓b — These designated features are beyond mean-maximum +1SD foraging range (Bradbury et al., 2014; Dierschke et al., 2016). 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).

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

End of Matrix 60

Matrix 61: West Westray SPA

Name of designated site:	West Westray SPA
Site Code:	UK9002101
Closest Distance to Project	678.5 km to array / 693.8 km to ECC / 650.9 km to ANS / 688.6 km to biogenic reef / 693.9 km to ORCP
Likely Effects of Project	

Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Arctic skua	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Arctic tern	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Kittiwake	Xa	Xa	Xa	Xa	Xa	Xa	Xa	✓b	Xa	Xa	✓b	Xa				Xa	✓c	Xa
Guillemot	✓b	✓b	✓b	✓b	✓b	✓b	Xa	Xa	Xa	Xa	Xa	Xa				✓c	✓c	✓c
Razorbill	✓b	✓b	✓b	✓b	✓b	✓b	Xa	Xa	Xa	Xa	Xa	Xa				✓c	✓c	✓c
Fulmar	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa

Evidence supporting conclusions

Xa	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/ Ramsar after the likelihood and severity of effects on the SPA have been 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/ Ramsar 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.
✓b	These designated features are beyond mean-maximum +1SD foraging range (Bradbury et al., 2014; Dierschke et al., 2016). 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.

End of Matrix 61

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

Name of designated site:	Papa Westray (North Hill and Holm) SPA																	
Site Code:	UK9002111																	
Closest Distance to Project	684.6 km to array / 699.9 km to ECC / 657.7 km to ANS / 695.3 km to biogenic reef / 700.7 km to ORCP																	
Likely Effects of Project																		
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Arctic skua	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Arctic tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a

Evidence supporting conclusions

X a — 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.

End of Matrix 62

Matrix 63: Sumburgh Head SPA

Name of designated site:	Sumburgh Head SPA																	
Site Code:	UK9002511																	
Closest Distance to Project	706.5 km to array / 722.0 km to ECC / 681.8 km to ANS / 724.3 km to biogenic reef / 731.1 km to ORCP																	
Likely Effects of Project																		
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Arctic tern	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a
Kittiwake	X a	X a	X a	X a	X a	X a	X a	✓b	X a	X a	✓b	X a				X a	✓c	X a
Guillemot	✓b	✓b	✓b	✓b	✓b	✓b	X a	X a	X a	X a	X a	X a				X a	X a	X a
Fulmar	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				✓c	✓c	✓c

Evidence supporting conclusions

X a — 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/ Ramsar after the likelihood and severity of effects on the SPA have been 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/ Ramsar 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.

✓b — These designated features are beyond mean-maximum +1SD foraging range (Bradbury et al., 2014; Dierschke et al., 2016). 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.

End of Matrix 63

Matrix 64: Noss SPA

Name of designated site:	Noss SPA
Site Code:	UK9002081
Closest Distance to Project	733.3 km to array / 749.0 km to ECC / 709.5 km to ANS / 752.7 km to biogenic reef / 759.8 km to ORCP
Likely Effects of Project	

Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Puffin	✓b	✓b	✓b	✓b	✓b	✓b	Xa	Xa	Xa	Xa	Xa	Xa				✓c	✓c	✓c
Guillemot	✓b	✓b	✓b	✓b	✓b	✓b	Xa	Xa	Xa	Xa	Xa	Xa				✓c	✓c	✓c
Kittiwake	Xa	Xa	Xa	Xa	Xa	Xa	Xa	✓b	Xa	Xa	✓b	Xa				Xa	✓c	Xa
Gannet	✓b	✓b	✓b	✓b	✓b	✓b	Xa	✓b	Xa	Xa	✓b	Xa				✓c	✓c	✓c
Great skua	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Fulmar	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa

Evidence supporting conclusions

Xa	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/ Ramsar after the likelihood and severity of effects on the SPA have been 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/ Ramsar 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.
✓b	These designated features are beyond mean-maximum +1SD foraging range (Bradbury et al., 2014; Dierschke et al., 2016). 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.

End of Matrix 64

Matrix 65: Foula SPA

Name of designated site:	Foula SPA
Site Code:	XXXXXXXX
Closest Distance to Project	746.7 km to array / 761.5 km to ECC / 726.1 km to ANS / 761.2 km to biogenic reef / 767.6 km to ORCP
Likely Effects of Project	

Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Puffin	✓b	✓b	✓b	✓b	✓b	✓b	Xa	Xa	Xa	Xa	Xa	Xa				✓c	✓c	✓c
Guillemot	✓b	✓b	✓b	✓b	✓b	✓b	Xa	Xa	Xa	Xa	Xa	Xa				✓c	✓c	✓c
Kittiwake	Xa	Xa	Xa	Xa	Xa	Xa	Xa	✓b	Xa	Xa	✓b	Xa				Xa	✓c	Xa
Great skua	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Arctic tern	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Shag	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Red-throated diver	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Leach's storm petrel	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Fulmar	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa

Evidence supporting conclusions

Xa	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/ Ramsar after the likelihood and severity of effects on the SPA have been 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/ Ramsar 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.
✓b	These designated features are beyond mean-maximum +1SD foraging range (Bradbury et al., 2014; Dierschke et al., 2016). 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.

End of Matrix 65

Matrix 66: Fetlar SPA

Name of designated site:	Fetlar SPA
Site Code:	UK9002031
Closest Distance to Project	777.5 km to array / 793.4 km to ECC / 754.7 km to ANS / 798.6 km to biogenic reef / 805.8 km to ORCP
Likely Effects of Project	

Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Great skua	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Arctic skua	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Arctic tern	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Fulmar	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Red-necked phalarope	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Dunlin	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa
Whimbrel	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa

Evidence supporting conclusions

Xa	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/ Ramsar after the likelihood and severity of effects on the SPA have been 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/ Ramsar 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.

End of Matrix 66

Matrix 67: Hermaness, Saxa Vord and Valla Field SPA

Name of designated site:	Hermaness, Saxa Vord and Valla Field SPA
Site Code:	UK9002011
Closest Distance to Project	798.8 km to array / 814.6 km to ECC / 775.7 km to ANS / 819.3 km to biogenic reef / 826.5 km to ORCP
Likely Effects of Project	

Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Great skua	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a				✗a	✗a	✗a
European shag	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a				✗a	✗a	✗a
Red-throated diver	✓b	✓b	✓b	✓b	✓b	✓b	✗a	✗a	✗a	✗a	✗a	✗a				✓c	✓c	✓c
Puffin	✓b	✓b	✓b	✓b	✓b	✓b	✗a	✗a	✗a	✗a	✗a	✗a				✓c	✓c	✓c
Guillemot	✓b	✓b	✓b	✓b	✓b	✓b	✗a	✗a	✗a	✗a	✗a	✗a				✓c	✓c	✓c
Kittiwake	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✓b	✗a	✗a	✓b	✗a				✗a	✓c	✗a
Gannet	✓b	✓b	✓b	✓b	✓b	✓b	✗a	✓b	✗a	✗a	✓b	✗a				✓c	✓c	✓c
Fulmar	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a				✗a	✗a	✗a

Evidence supporting conclusions

✗a 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/ Ramsar after the likelihood and severity of effects on the SPA have been 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/ Ramsar 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.

✓b These designated features are beyond mean-maximum +1SD foraging range (Bradbury et al., 2014; Dierschke et al., 2016). 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.

End of Matrix 67

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	Duinen en Lage Land Texel; Waddenzee; and Duinen Vlieland Various Various >219 km to array																	
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Lesser black-backed gull	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a

Evidence supporting conclusions

X a 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.

End of Matrix 68

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

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	Littoral seino-marin; Cap Sizun; Cote de Granit Rose-Sept Iles; Tregor Goëlo; Cap d'Erquy-Cap Fréhel; Camaret; Falaise du Bessin Occidental; Seevogelschutzgebiet Helgoland; and Ouessant-Molène Various Various >373 km to array																	
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Northern fulmar	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a

Evidence supporting conclusions

X a 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.

End of Matrix 69

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

Name of designated site: Site Code: Closest Distance to Project Likely Effects of Project	Cote de Granit Rose-Sept Iles; Iles Houat-Hoedic; Ouessant-Molène; and Baie de Morlaix. Various Various >581 km to array																	
Effect	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			Collisions for migratory waterbirds			Barrier effects for migratory waterbirds			Indirect impacts through effects on habitats and prey species			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Manx shearwater	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a	X a				X a	X a	X a

Evidence supporting conclusions

X a 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.

End of Matrix 70

3.4 Sites designated with Migratory Fish Features

Matrix 71: Humber Estuary SAC

Name of designated site:	Humber Estuary SAC																										
Site Code:	UK0030170																										
Closest Distance to Project	54.4 km to array / 18.5 km to ECC / 47.5 km to ANS / 23.8 km to biogenic reef / 19.7 to ORCP																										
Likely Effects of Project																											
Effect	Underwater noise			Suspended sediment / deposition			Indirect pollution			Accidental pollution			EMF			INNS			Physical habitat loss / disturbance			Changes to prey			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Sea lamprey	✓a	Xb	✓a	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb
River lamprey	✓a	Xb	✓a	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb

Evidence supporting conclusions

✓a	The range between the array areas and designated site mean that there is a potential for LSE for this species at this site.
Xb	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.

End of Matrix 71

3.5 Sites Designated with Onshore Ecology Features

Matrix 72: Humber Estuary SPA

Name of designated site:	Humber Estuary SPA											
Site Code:	UK9006111											
Closest Distance to Project	54.0 km to array / 12.5 km to ECC / 15.3 km to ANS / 47.5 km to biogenic reef / 18.2 km to ORCP											
Likely Effects of Project												
Effect	Risk of loss of or damage to habitats			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			Risk of pollution		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D
Great bittern				✓a	✓a	✓a	✓a	✗b	✗b	✓a	✗b	✓a
Common shelduck				✓a	✓a	✓a	✓a	✗b	✗b	✓a	✗b	✓a
Eurasian marsh harrier				✓a	✓a	✓a	✓a	✗b	✗b	✓a	✗b	✓a
Hen harrier				✓a	✓a	✓a	✓a	✗b	✗b	✓a	✗b	✓a
Pied avocet				✓a	✓a	✓a	✓a	✗b	✗b	✓a	✗b	✓a
European golden plover				✓a	✓a	✓a	✓a	✗b	✗b	✓a	✗b	✓a
Red knot				✓a	✓a	✓a	✓a	✗b	✗b	✓a	✗b	✓a
Dunlin				✓a	✓a	✓a	✓a	✗b	✗b	✓a	✗b	✓a
Ruff				✓a	✓a	✓a	✓a	✗b	✗b	✓a	✗b	✓a
Black-tailed godwit				✓a	✓a	✓a	✓a	✗b	✗b	✓a	✗b	✓a
Bar-tailed godwit				✓a	✓a	✓a	✓a	✗b	✗b	✓a	✗b	✓a
Common redshank				✓a	✓a	✓a	✓a	✗b	✗b	✓a	✗b	✓a
Little tern				✓a	✓a	✓a	✓a	✗b	✗b	✓a	✗b	✓a
Waterbird assemblage				✓a	✓a	✓a	✓a	✗b	✗b	✓a	✗b	✓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.
✗b	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.

End of Matrix 72

Matrix 73: Humber Estuary Ramsar Site

Name of designated site:	Humber Estuary Ramsar Site											
Site Code:	UK11031 (663)											
Closest Distance to Project	54.0 km to array / 12.5 km to ECC / 15.3 km to ANS / 47.5 km to biogenic reef / 18.2 km to ORCP											
Likely Effects of Project												
Effect	Risk of loss of or damage to habitats			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			Risk of pollution		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D
Criterion 1- dune systems and humid dune slacks;	✗b	✗b	✗b				✗b	✗b	✗b	✗b	✗b	✗b
Criterion 5 – assemblages of international importance (waterfowl, non-breeding season);	✓a	✓a	✗b	✓a	✓a	✓a	✓a	✗b	✗b	✓a	✗b	✓a
Criterion 6 – species/populations occurring at levels of international importance	✓a	✓a	✗b	✓a	✓a	✓a	✓a	✗b	✗b	✓a	✗b	✓a
Common shelduck	✓a	✓a	✗b	✓a	✓a	✓a	✓a	✗b	✗b	✓a	✗b	✓a
Eurasian golden plover	✓a	✓a	✗b	✓a	✓a	✓a	✓a	✗b	✗b	✓a	✗b	✓a
Red knot	✓a	✓a	✗b	✓a	✓a	✓a	✓a	✗b	✗b	✓a	✗b	✓a
Dunlin	✓a	✓a	✗b	✓a	✓a	✓a	✓a	✗b	✗b	✓a	✗b	✓a
Black-tailed godwit	✓a	✓a	✗b	✓a	✓a	✓a	✓a	✗b	✗b	✓a	✗b	✓a
Bar-tailed godwit	✓a	✓a	✗b	✓a	✓a	✓a	✓a	✗b	✗b	✓a	✗b	✓a
Common redshank	✓a	✓a	✗b	✓a	✓a	✓a	✓a	✗b	✗b	✓a	✗b	✓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.

✓b	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.

End of Matrix 73

Matrix 74: Humber Estuary SAC

Name of designated site:	Humber Estuary SAC
Site Code:	UK0030170
Closest Distance to Project	54.4 km to array / 18.9 km to ECC / 19.7 km to ANS / 47.5 km to biogenic reef / 23.8 km to ORCP
Likely Effects of Project	

Effect	Risk of loss of or damage to habitats			Risk of disturbance			Loss of foraging, roosting and nesting habitat for birds inside and outside the SPA depending on location of the above ground infrastructure			Risk of pollution		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D
Sandbanks which are slightly covered by sea water all the time; Subtidal sandbanks	X a	X a	X a							X a	X a	X a
Estuaries	X a	X a	X a							X a	X a	X a
Mudflats and sandflats not covered by seawater at low tide; Intertidal mudflats and sandflats	X a	X a	X a							X a	X a	X a
Coastal lagoons	X a	X a	X a							X a	X a	X a
Salicornia and other annuals colonising mud and sand; Glasswort and other annuals colonising mud and sand	X a	X a	X a							X a	X a	X a
Atlantic salt meadows	X a	X a	X a							X a	X a	X a
Embryonic shifting dunes	X a	X a	X a							X a	X a	X a
Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)	X a	X a	X a							X a	X a	X a
Shifting dunes with marram	X a	X a	X a							X a	X a	X a
Fixed dunes with herbaceous vegetation (grey dunes)	X a	X a	X a							X a	X a	X a
Dune grassland	X a	X a	X a							X a	X a	X a
Dunes with *Hippophae rhamnoides*; Dunes with sea-buckthorn	X a	X a	X a							X a	X a	X a

Evidence supporting conclusions

X a 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.

End of Matrix 74

Matrix 75: Saltfleetby-Theddlethorpe Dunes & Gibraltar Point SAC

Name of designated site:	Saltfleetby-Theddlethorpe Dunes & Gibraltar Point SAC											
Site Code:	UK0030270											
Closest Distance to Project	54.4 km to array / 11.9 km to ECC / 15.5 km to ANS / 51.5 km to biogenic reef / 1.6 km to ORCP											
Likely Effects of Project												
Effect	Risk of loss of or damage to habitats			Risk of disturbance			Loss of foraging, roosting and nesting habitat for birds inside and outside the SPA depending on location of the above ground infrastructure			Risk of pollution		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	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

✓a	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.

End of Matrix 75

Matrix 76: The Wash SPA

Name of designated site:	The Wash SPA											
Site Code:	UK9008021											
Closest Distance to Project	66.3 km to array / 16.5 km to ECC / 22.7 km to ANS / 74.0 km to biogenic reef / 3.8 km to ORCP											
Likely Effects of Project												
Effect	Risk of loss of or damage to habitats			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			Risk of pollution		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	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

✓a	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.

End of Matrix 76

Matrix 77: The Wash RAMSAR site

Name of designated site:	The Wash RAMSAR Site											
Site Code:	UK11072 (395)											
Closest Distance to Project	66.2 km to array / 16.5 km to ECC / 22.7 km to ANS / 74.0 km to biogenic reef / 3.8 km to ORCP											
Likely Effects of Project												
Effect	Risk of loss of or damage to habitats			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			Risk of pollution		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D
Criterion 1 – Saltmarshes, major intertidal banks of sand and mud, shallow water, and deep channels	✓a			✓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

Evidence supporting 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. 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:	The Wash & North Norfolk Coast SAC														
Site Code:	UK0017075														
Closest Distance to Project	47.8 km to array / 13.4 km to ECC / 19.3 km to ANS / 50.4 km to biogenic reef / 0.0 km to ORCP														
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			Risk of pollution			Displacement of otter and reduction of otter habitat		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	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

✓a 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.

End of Matrix 78

Matrix 79: Greater Wash SPA

Name of designated site:	Greater Wash SPA											
Site Code:	UK9020329											
Closest Distance to Project	24.6 km to array / 0.0 km to ECC / 0.0 km to ANS / 24.0 km to biogenic reef / 0.0 km to ORCP											
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			Risk of pollution		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	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

✓a	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.

End of Matrix 79

Matrix 80: Gibraltar Point SPA

Name of designated site:	Gibraltar Point SPA											
Site Code:	UK9008022											
Closest Distance to Project	62.9 km to array / 13.4 km to ECC / 19.3 km to ANS / 70.5 km to biogenic reef / 1.6 km to ORCP											
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			Risk of pollution		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	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.

End of Matrix 80

Matrix 81: Gibraltar Point RAMSAR

Name of designated site:	Gibraltar Point Ramsar Site											
Site Code:	UK11027 (589)											
Closest Distance to Project	62.8 km to array / 13.4 km to ECC / 19.3 km to ANS / 70.5 km to biogenic reef / 1.6 km to ORCP											
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, Loss of or decline in populations of scarce invertebrates and plants			Risk of pollution		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	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, bar-tailed godwit, dark-bellied brent goose				✓a	✓a	✓a	✓a			✓a		✓a

Evidence supporting conclusions

✓a 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.

End of Matrix 81

Matrix 82: North Norfolk SPA

Name of designated site:	North Norfolk SPA											
Site Code:	UK9009031											
Closest Distance to Project	56.4 km to array / 29.9km to ECC / 31.4 km to ANS / 59.0 km to biogenic reef / 10.8 km to ORCP											
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.			Risk of pollution		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	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.

End of Matrix 82

Matrix 83: North Norfolk RAMSAR

Name of designated site:	North Norfolk RAMSAR											
Site Code:	76											
Closest Distance to Project	56.4 km to array / 29.9 km to ECC / 31.3 km to ANS / 59.0 km to biogenic reef / 10.8 km to ORCP											
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.			Risk of pollution		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	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.

End of Matrix 83