Hornsea Project Four:

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B2.2: Report to Inform Appropriate Assessment Part 3: Appendix B: HRA Screening Matrices

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Acronyms

Acronym	Definition
AEoI	Adverse Effect on Integrity
APIS	Air Pollution Information System
CPEMMP	Construction Phase Environmental Management and Monitoring Plan
DCO	Development Consent Order
EEC	Export Cable Corridor
EDR	Effective Disturbance Range
EMF	Electromagnetic Fields
ES	Environmental Statement
EU	European Union
FFC SPA	Flamborough and Filey Coast Special Protection Area
HRA	Habitats Regulations Assessment
INNS	Invasive Non-native Species
LSE	Likely Significant Effect
MMMP	Marine Mammal Mitigation Protocol
MPCP	Marine Pollution Contingency Plan
NN	Nutrient Nitrogen
OWF	Offshore wind farm
O&M	Operation and Maintenance (phase of Hornsea Four)
PCH	Potential collision height
pSPA	Proposed Special Protection Area
PTS	Permanent Threshold Shift
PVA	Population Viability Analysis
RIAA	Report to Inform Appropriate Assessment
SAC	Special Area of Conservation
SCI	Site of Community Importance
SCOS	Special Committee on Seals
SIP	Site Integrity Plan
SPA	Special Protection Area
SSC	suspended sediment concentrations
TTS	temporary threshold shifts
UK	United Kingdom
UXO	Unexploded Ordinance
UXO-MMMP	Marine Mammal Mitigation Protocol relating to Unexploded Ordinance
WTGs	Wind turbine generators
WWT	Wildfowl and Wetlands Trust

Units

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

Species Glossary

Birds	
Arctic skua	*Stercorarius parasiticus*
Arctic tern	*Sterna paradisaea*
Puffin	*Fratercula arctica*
Bar-tailed godwit	*Limosa lapponica*
Mute swan	*Cygnus olor*
Black-tailed godwit	*Limosa limosa*
Cormorant	*Phalacrocorax carbo*
Common goldeneye	*Bucephala clangula*
Common greenshank	*Tringa nebularia*
Common pochard	*Aythya ferina*
Common redshank	*Tringa totanus*
Purple sandpiper	*Calidris maritima*
Common scoter	*Melanitta nigra*
Common shelduck	*Tadorna tadorna*
Common tern	*Sterna hirundo*
Dark-bellied brent goose	*Branta bernicla*
Dunlin	*Calidris alpinatea*
Eurasian curlew	*Numenius arquata*
Eurasian marsh harrier	*Circus aeruginosus*
Eurasian oystercatcher	*Haematopus ostralegus*
Eurasian teal	*Anas crecca*
Eurasian whimbrel	*Numenius phaeopus*
Eurasian wigeon	*Anas penelope*
European golden plover	*Pluvialis apricaria*
European shag	*Phalacrocorax aristotelis*
European storm petrel	*Hydrobates pelagicus*
Gadwall	*Anas strepera*
Gannet	*Morus bassanus*
Great bittern	*Botaurus stellaris*
Great skua	*Stercorarius skua*
Greater scaup	*Aythya marila*
Grey plover	*Pluvialis squatarola*
Guillemot	*Gavia immer*
Hen harrier	*Gelochelidon nilotica*
Herring gull	*Circus cyaneus*
Kittiwake	*Charadrius alexandrinus*
Leach's storm petrel	*Rissa tridactyla*
Lesser black-backed gull	*Oceanodroma leucorhoa*
Little gull	*Tachybaptus ruficollis*
Little tern	*Hydrocoloeus mintus*
Mallard	*Sternula albifrons*
Northern lapwing	*Circus pygargus*
Northern pintail	*Vanellus vanellus*
Northern shoveler	*Anas acuta*
Red-throated diver	*Pandion haliaetus*
Red knot	*Falco peregrinus*

Birds	
Ringed plover	*Anser brachyrhynchus*
Roseate tern	*Stercorarius pomarinus*
Ruddy turnstone	*Calidris maritima*
Ruff	*Alca torda*
Sanderling	*Mergus serrator*
Whooper swan	*Xema sabini*
Marine mammals	
Harbour Porpoise	*Podiceps auritus*
Bottlenose dolphin	*Asio flammeus*
Grey seal	*Puffinus griseus*
Harbour seal	*Tringa erythropus*
Fish	
Sea lamprey	*Melanitta fusca*
River lamprey	*Cygnus Cygnus*
Atlantic salmon	*Tringa glareola*
Sea trout	*Halichoerus grypus*
Allis shad	*Phoca vitulina*
Twaite shad	*Petromyzon marinus*
Habitats	
Atlantic salt meadows	*Glauco-Puccinellietalia maritimae*

Matrix Key

✓ = Likely Significant Effect cannot be excluded
X = Likely Significant Effect can be excluded

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

C = construction
O = operation and maintenance
D = decommissioning

Effect not relevant to feature (no pathway)

Index to matrices

This appendix presents the Screening matrices for Hornsea Project Four Offshore Wind Farm (hereafter 'Hornsea Four') promoted by Orsted Hornsea Project Four Limited (hereafter 'the Applicant') in accordance with the structure and format specified in PINS Advice Note 10 (November 2017 (version 8)).

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Matrix	European site included within the assessment
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Effects Considered

Potential effects on European sites which are considered within the submitted Information to Support the Report to Inform Appropriate Assessment for the Habitats Regulation Assessment (HRA) of Hornsea Four are provided in **Table 1 below.**

Table 1: Potential effects on the European site considered in the matrices.

Designations	Impacts Considered In Matrices
Southern North Sea SAC	Increase in underwater noise. Vessel disturbance Vessel collision risk Accidental pollution Changes in prey availability and behaviour Long term physical loss of habitat Temporary increases in suspended sediments In-combination
Flamborough Head (UK) SAC	Temporary habitat loss/ disturbance Temporary increases in suspended sediments / smothering Accidental pollution Invasive Non-Native Species Changes to physical processes Long term physical loss of habitat Electromagnetic fields (EMF) In-combination
Moray Firth	Increase in underwater noise Vessel disturbance Vessel collision risk Changes in prey availability and behaviour Accidental pollution Temporary increases in suspended sediments Long term physical loss of habitat In-combination
The Wash and North Norfolk Coast (UK) SAC	Increase in underwater noise Vessel disturbance Vessel collision risk Changes in prey availability and behaviour Accidental pollution Temporary increases in suspended sediments

Designations	Impacts Considered In Matrices
	Long term physical loss of habitat In-combination
River Derwent (UK) SAC	Release of sediment - suspension/smothering Increase in underwater noise Temporary habitat loss/ disturbance Accidental pollution Long term physical loss of habitat Introduction of hard substrate Changes to physical processes In-combination
Humber Estuary (UK) SAC Grey Seal	Increase in underwater noise Vessel disturbance Vessel collision risk Changes in prey availability and behaviour Accidental pollution Temporary increases in suspended sediments Long term physical loss of habitat Change to physical processes In-combination
Humber Estuary (UK) SAC Migratory fish	Increase in underwater noise Accidental pollution Release of sediment suspension/smothering Long term physical loss of habitat Temporary habitat loss/ disturbance Introduction of hard substrate (INNS) Change to physical processes In-combination
Humber Estuary (UK) SAC Habitats	Accidental pollution Release of sediment suspension/smothering Long term physical loss of habitat Temporary disturbance / damage to habitats Introduction of hard substrate (INNS) Change to physical processes. Increased nitrogen deposition In-combination
Humber Estuary (UK) Ramsar Features under Criteria 3: Grey seal and natterjack toad	Increase in underwater noise Accidental pollution Release of sediment suspension/smothering

Designations	Impacts Considered In Matrices
	Long term physical loss of habitat Temporary habitat loss/ disturbance Introduction of hard substrate (INNS) Change to physical processes In-combination
Humber Estuary (UK) Ramsar Features under Criteria 8 Migratory fish	Increase in underwater noise Accidental pollution Release of sediment suspension/smothering Long term physical loss of habitat Temporary habitat loss/ disturbance Introduction of hard substrate (INNS) Change to physical processes In-combination
Humber Estuary (UK) Ramsar (Cont.) Features under Criteria 1 Habitats	Accidental pollution Release of sediment suspension/smothering Long term physical loss of habitat Temporary disturbance / damage to habitats Introduction of hard substrate (INNS) Change to physical processes. Increased nitrogen deposition In-combination
Humber Estuary (UK) Ramsar (Cont.) Features under Criteria 5 and 6 Birds	Temporary habitat loss (onshore) Temporary disturbance/ damage to habitats (onshore) Habitat fragmentation or severance Disturbance (airborne noise and visual) (onshore) Invasive non-native species (onshore) Accidental release of contaminants (onshore) In-combination
Berwickshire and North Northumberland Coast (UK) SAC	Increase in underwater noise Vessel disturbance Vessel collision risk Changes in prey availability and behaviour Accidental pollution Temporary increases in suspended sediments Long term physical loss of habitat In-combination

Designations	Impacts Considered In Matrices
Transboundary harbour porpoise sites (48 sites)	Increase in underwater noise Accidental pollution Release of sediment suspension/smothering Long term physical loss of habitat Temporary habitat loss/ disturbance Introduction of hard substrate (INNS) Change to physical processes In-combination
Transboundary bottlenose dolphin sites (6 sites)	Increase in underwater noise Vessel disturbance Vessel collision risk Changes in prey availability and behaviour Accidental pollution Temporary increases in suspended sediments Long term physical loss of habitat In-combination
Doggersbank (Dutch) SAC	Increase in underwater noise Vessel disturbance Vessel collision risk Changes in prey availability and behaviour Accidental pollution Temporary increases in suspended sediments Long term physical loss of habitat In-combination
Klaverbank (Dutch) SAC	Increase in underwater noise Vessel disturbance Vessel collision risk Changes in prey availability and behaviour Accidental pollution Temporary increases in suspended sediments Long term physical loss of habitat In-combination
Bancs des Flandres (France) SAC	Increase in underwater noise Vessel disturbance Vessel collision risk Changes in prey availability and behaviour Accidental pollution Temporary increases in suspended sediments

Designations	Impacts Considered In Matrices
	Long term physical loss of habitat In-combination
Vlaamse Banken (Belgium) SAC	Increase in underwater noise Vessel disturbance Vessel collision risk Changes in prey availability and behaviour Accidental pollution Temporary increases in suspended sediments Long term physical loss of habitat In-combination
SBZ 1 (Belgium) SAC	Increase in underwater noise Vessel disturbance Vessel collision risk Changes in prey availability and behaviour Accidental pollution Temporary increases in suspended sediments Long term physical loss of habitat In-combination
SBZ 2 (Belgium) SAC	Increase in underwater noise Vessel disturbance Vessel collision risk Changes in prey availability and behaviour Accidental pollution Temporary increases in suspended sediments Long term physical loss of habitat In-combination
SBZ 3 (Belgium) SAC	Increase in underwater noise Vessel disturbance Vessel collision risk Changes in prey availability and behaviour Accidental pollution Temporary increases in suspended sediments Long term physical loss of habitat In-combination
Vlakte van de Raan (Belguim/Netherlands) SAC	Increase in underwater noise Vessel disturbance Vessel collision risk Changes in prey availability and behaviour

Designations	Impacts Considered In Matrices
	Accidental pollution Temporary increases in suspended sediments Long term physical loss of habitat In-combination
Westerschelde & Saeftinghe (Netherlands) SAC	Increase in underwater noise Vessel disturbance Vessel collision risk Changes in prey availability and behaviour Accidental pollution Temporary increases in suspended sediments Long term physical loss of habitat In-combination
Voordelta (Netherlands) SAC	Increase in underwater noise Vessel disturbance Vessel collision risk Changes in prey availability and behaviour Accidental pollution Temporary increases in suspended sediments Long term physical loss of habitat In-combination
Noordzeekustzone (Netherlands) SAC	Increase in underwater noise Vessel disturbance Vessel collision risk Changes in prey availability and behaviour Accidental pollution Temporary increases in suspended sediments Long term physical loss of habitat In-combination
Waddenzee (Netherlands) SAC	Increase in underwater noise Vessel disturbance Vessel collision risk Changes in prey availability and behaviour Accidental pollution Temporary increases in suspended sediments Long term physical loss of habitat In-combination
Greater Wash SPA	Direct disturbance and displacement Changes in prey availability & behaviour

Designations	Impacts Considered In Matrices
	Indirect impacts through effects on prey species Collision risk Barrier effect In-combination
Flamborough and Filey Coast SPA	Direct disturbance and displacement Changes in prey availability & behaviour Indirect impacts through effects on prey species Collision risk Barrier effect In-combination
Northumbria Coast SPA	Direct disturbance and displacement Changes in prey availability & behaviour Indirect impacts through effects on prey species Collision risk Barrier effect In-combination
Humber Estuary SPA (onshore)	Temporary habitat loss Temporary disturbance / damage to habitats (onshore) Fragmentation or severance of habitats (onshore Disturbance (airborne noise and visual) (onshore) Invasive non-native species (onshore) Accidental release of contaminants (onshore) In-combination Increased nitrogen deposition
Humber Estuary SPA (offshore)	Collision risk In-combination
Humber Estuary Ramsar (offshore)	Collision risk In-combination
Coquet Island SPA	Direct disturbance and displacement Indirect impacts through the effects on prey species Collision risk Barrier effect

Designations	Impacts Considered In Matrices
	In-combination
Farne Islands SPA	Direct disturbance and displacement Indirect impacts through the effects on prey species Collision risk Barrier effect In-combination
Teesmouth and Cleveland Coast SPA	Direct disturbance and displacement Indirect impacts through the effects on prey species Collision risk Barrier effect In-combination
St Abb's Head and Fast Castle	Direct disturbance and displacement Indirect impacts through the effects on prey species Collision risk Barrier effect In-combination
Forth Islands (UK) SPA	Direct disturbance and displacement Indirect impacts through the effects on prey species Collision risk Barrier effect In-combination
Outer Firth of Forth and St Andrew's Complex	Direct disturbance and displacement Indirect impacts through the effects on prey species Collision risk Barrier effect In-combination
Fowlsheugh SPA	Direct disturbance and displacement Indirect impacts through the effects on prey species Collision risk Barrier effect In-combination
Buchan Ness to Collieston Coast SPA	Direct disturbance and displacement

Designations	Impacts Considered In Matrices
	Changes in prey availability & behaviour Indirect impacts through effects on prey species Collision risk Barrier effects In-combination
Troup, Pennan and Lion's Heads SPA	Direct disturbance and displacement Indirect impacts through the effects on prey species Collision risk Barrier effect In-combination
East Caithness Cliffs SPA	Direct disturbance and displacement Indirect impacts through the effects on prey species Collision risk Barrier effect In-combination
North Caithness Cliffs SPA	Direct disturbance and displacement Indirect impacts through the effects on prey species Collision risk Barrier effect In-combination
Copinsay SPA	Direct disturbance and displacement Indirect impacts through the effects on prey species Collision risk Barrier effect In-combination
Hoy SPA	Direct disturbance and displacement Indirect impacts through the effects on prey species Collision risk Barrier effect In-combination
Marwick Head SPA	Direct disturbance and displacement Indirect impacts through the effects on prey species

Designations	Impacts Considered In Matrices
	Collision risk Barrier effect In-combination
Rousay SPA	Direct disturbance and displacement Indirect impacts through effects on prey species Collision risk Barrier effect In-combination
Calf of Eday SPA	Direct disturbance and displacement Indirect impacts through effects on prey species Collision risk Barrier effect In-combination
West Westray SPA	Direct disturbance and displacement Indirect impacts through effects on prey species Collision risk Barrier effect In-combination
Fair Isle SPA	Direct disturbance and displacement Indirect impacts through effects on prey species Collision risk Barrier effect In-combination
Sumburgh Head SPA	Direct disturbance and displacement Indirect impacts through effects on prey species Collision risk Barrier effect In-combination
Noss SPA	Direct disturbance and displacement Indirect impacts through effects on prey species Collision risk Barrier effect In-combination

Designations	Impacts Considered In Matrices
Foula SPA	Direct disturbance and displacement Indirect impacts through effects on prey species Collision risk Barrier effect In-combination
Fetla SPA	Direct disturbance and displacement Indirect impacts through effects on prey species Collision risk Barrier effect In-combination
Hermaness, Saxa Vord and Valla Field SPA	Direct disturbance and displacement Indirect impacts through effects on prey species Collision risk Barrier effect In-combination
Hornsea Mere SPA	Collision risk In-combination
Northumberland Marine SPA	Direct disturbance and displacement Changes in prey availability and behaviour Indirect impacts through effects on prey species Collision risk Barrier effect In-combination

HRA Screening Matrix 1: Southern North Sea (UK) Special Area of Conservation (SAC)

Name of European site:	**Southern North Sea (UK) SAC**																								
EU Code:	**UK0030395**																								
Distance to Project:	**0 km to array**																								
Likely Effects of Project																									
Effect	**Increase in underwater noise**			**Vessel disturbance**			**Vessel collision risk**			**Accidental pollution**			**Changes in prey availability &behaviour**			**Long term physical loss of habitat**			**Temporary increases in suspended sediments**			**In-combination**		
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	✓c	✓d	✓b	✓e	✓e	✓b	✓f	✓f	✓b	✗g	✗g	✗h		✗i		✗j	✗j	✗h	✓k	✓k	✓k

Evidence supporting conclusions.

✓a Hornsea Four is located within 0 km of the SAC. There is potential for a likely significant effect (LSE).

✓b The impacts during decommissioning are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.

✓c The presence of additional vessels within the SAC during construction may result in disturbance of harbour porpoise. Potential LSE is identified.

✓d The presence of additional vessels within the SAC during operation & maintenance may result in disturbance of harbour porpoise. Potential LSE is identified.

✓e **Volume 2, Chapter 4: Marine Mammals (APP-A2.4)** of the **Environmental Statement** (ES) considers marine mammal collision risk, finding that it is not expected that Hornsea Four will increase the risk of mortality in marine mammals from collisions. The recently re-issued 'Advice on Activities' finds that the risk of death or injury collision to be 'not currently considered a significant risk and no additional management is likely to be required'. However, as a precaution (given the significance for an individual if collision occurs), potential LSE has been identified for the project alone.

✓f Following consultation (noted in **Section 8.1** of the **Report to Inform Appropriate Assessment** (RIAA) (**APP-B2.2**) accidental pollution has been identified for potential LSE.

✗g Given the large foraging range of this species and the short-term duration and temporary nature of any impact, and the conclusions of the ES regarding fish and benthic ecology the potential effect is considered to be negligible. Confirmed as not needing further assessment within **Volume 2, Chapter 4: Marine Mammals (APP-A2.4)**. **No LSE** identified.

✗h The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE** is appropriate.

✗i Potential for physical habitat loss for the duration of the project is calculated within the **Screening Report included as Appendix A** (contained within **Table 1)**, being 0.0001% of the volume (water column) and 0.01% of the footprint (seabed), considered to be trivial and non-consequential for both harbour porpoise and harbour porpoise prey. Confirms conclusion of **no LSE** alone.

✗j Harbour porpoise frequently occur in relatively turbid environments and are thus adapted to locating prey in such conditions. The construction, operation & maintenance and decommissioning activities will be localised and intermittent in nature and the extent and duration of any increase in suspended sediment (and subsequent deposition) being negligible, **no LSE** applies.

✓k Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. In addition, although the potential for temporary habitat loss from the project alone has not been identified as potential LSE, habitat loss in-combination during the operation phase has been screened in for potential LSE.

End of Matrix 1

HRA Screening Matrix 2: Flamborough Head (UK) Special Area of Conservation (SAC)

Name of European site: **EU Code:**	**Flamborough Head (UK) SAC** **UK0013036**																							
Distance to Project:	**60.2 km to array**																							
Likely Effects of Project																								
Effect	**Temporary habitat loss/ disturbance**			**Temporary increases in suspended sediments / smothering**			**Accidental pollution**			**Invasive Non Native Species (INNS)**			**Changes to physical processes**			**Long term physical loss of habitat**			**Electromagnetic fields (EMF)**			**In-combination**		
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	✓c	✓d	✓e	✓f	✓f	✓e	✓g	✓h	✓e		✓i			✗j			✗k		✓l	✓l	✓l
Vegetated sea cliffs of the Atlantic & Baltic Coasts																								
Submerged or partially submerged sea caves	✗a	✗a	✗b	✓c	✓d	✓e	✓f	✓f	✓e	✓g	✓h	✓e		✗m			✗j			✗k		✓l	✓l	✓l

Evidence supporting conclusions.

✗a Lack of physical overlap between Hornsea Four and the SAC results in a conclusion of no Likely Significant Effects (LSE) for all features as no works will occur within the SAC boundary and therefore no temporary habitat loss/disturbance would occur.

✗b The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE** is appropriate.

✓c Suspended sediment released during works within the Export Cable Corridor (ECC) may reach the SAC, within which the features are located. Potential for LSE exists.

✓d The potential for sediment release during operation and maintenance is considered less than during construction. Suspended sediment released during works within the ECC may reach the SAC, within which the features are located. Potential for LSE exists.

✓e The impacts during decommissioning are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.

✓f Following consultation (noted in **Section 8.1** of the **Report to Inform Appropriate Assessment** (**APP-B2.2) (RIAA**) accidental pollution has been identified for potential LSE.

✓g A number of measures and best practice approaches will be implemented during the construction phase to reduce the potential for release and spread of non-native, invasive species (INNS) and to provide a process to deal with any should they occur. These will include measures to follow published guidelines and best working practice for the prevention of the release and spread of non-native, invasive species. Such measures are considered an integral part of the project and would be required regardless of HRA matters. It is anticipated that such plans will remove the risk of LSE. In addition, there is little evidence to date from other offshore wind farm development within the North Sea having had any adverse effects on key species and habitats through increasing the spread of marine INNS. However, given that such plans form mitigation, the potential for LSE cannot be ruled out at this stage.

Cont. on next page

HRA Screening Matrix 2: Flamborough Head (UK) SAC (Cont.)

Evidence supporting conclusions (Cont.)

✓h The project could increase the spread of INNS during construction through the movement of vessels in and out of the benthic subtidal study area, should work vessels arrive from outside the UK. Mitigation measures including a Construction Project Environmental Management and Monitoring Plan with a marine biosecurity plan (see **Co111** of **Volume A4, Annex 5.2: Commitment Register**) will ensure the potential introduction and spread of INNS will be minimised. Due to the application of mitigation, a finding of LSE applies.

✓i The only element of the project which is close enough to the SAC to potentially affect coastal processes is installation of the export cable. **Volume 2 Chapter 1** of the **Environmental Statement** (E**S) (Marine Geology, Oceanography and Physical Processes (APP-A2.1))** found any such changes to be localised to the project. However, given the proximity of the cable corridor to the SAC boundary and therefore potentially reef features, although significant effects are unlikely a potential for LSE cannot be ruled out.

✗j There is no longer any overlap of the offshore ECC with the SAC boundary, and therefore no potential for any loss of habitat within the SAC. A finding of **no LSE** applies.

✗k There is no overlap of the offshore ECC with the SAC boundary. Therefore, no potential for electromagnetic fields (EMF) within the SAC boundary. A finding of **no LSE** therefore applies.

✓l Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

✗m There is no potential for overlap between Annex I Habitats and Hornsea Four. Any changes to physical processes will be small scale and localised in nature, insufficient to affect the sea cave feature. A finding of **no LSE** therefore applies.

End of Matrix 2

HRA Screening Matrix 3: Moray Firth (UK) Special Area of Conservation (SAC)

Name of European site:	**Moray Firth (UK) SAC**																								
EU Code:	**UK0019808**																								
Distance to Project:	**522.5 km to array**																								
Likely Effects of Project																									
Effect	**Increase in underwater noise**			**Vessel disturbance**			**Vessel collision risk**			**Changes in prey availability and behaviour**			**Accidental pollution**			**Temporary increases in suspended sediments**			**Long term physical loss of habitat**			**In-combination**		
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 the time																								
Bottlenose dolphin	✓a	✗b	✓c	✓d	✓d	✓c	✓e	✓e	✓c	✗f	✗f	✗g	✗h	✗h	✗g	✗i	✗i	✗g	✗j	✗j	✗g	✓k	✓k	✓k

Evidence supporting conclusions.

- ✓a Following consultation (noted in **Section 8.1** of the **Report to Inform Appropriate Assessment** (RIAA) (**APP-B2.2**) increase in underwater noise during construction has been identified for potential LSE.
- ✗b Designated site and array boundary do not have a physical overlap, therefore there is no pathway for underwater noise during operation on bottlenose dolphin at this site from Hornsea Four.
- ✓c The impacts during decommissioning are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate
- ✓d Following consultation (noted in **Section 8.1** of the **Report to Inform Appropriate Assessment** (RIAA) (**APP-B2.2**) vessel disturbance has been identified for potential LSE.
- ✓e Following consultation (noted in **Section 8.1** of the **Report to Inform Appropriate Assessment** (RIAA) (**APP-B2.2**), vessel collision risk has been identified for potential LSE.
- ✗f Given the large foraging range of this species and the short-term duration and temporary nature of any impact, and the conclusions of the ES regarding fish and benthic ecology the potential effect is considered to be negligible. Confirmed as not needing further assessment within **Volume 2, Chapter 4: Marine Mammals (APP-A2.4)**. **No LSE** identified.
- ✗g The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE** is appropriate.
- ✗h This site is located at a significant distance from the Hornsea Four array (522.5 km) and cable corridor (522.1 km) and therefore there is no pathway for effect on bottlenose dolphin at this site from Hornsea Four.
- ✗i Bottlenose dolphin frequently occur in relatively turbid environments and are thus adapted to locating prey in such conditions. The construction, operation & maintenance and decommissioning activities will be localised and intermittent in nature and the extent and duration of any increase in suspended sediment (and subsequent deposition) being negligible, **no LSE** applies.
- ✗j Potential for physical habitat loss for the duration of the project will not occur inside the SAC boundary, being located at significant distance from the Hornsea Four array (522.5 km) and cable corridor (522.1 km). Confirms conclusion of **no LSE** alone.
- ✓k Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

End of Matrix 3

HRA Screening Matrix 4: The Wash and North Norfolk Coast (UK) SAC

Name of European site:	**The Wash and North Norfolk Coast (UK) SAC**																								
EU Code:	**UK0017075**																								
Distance to Project:	**105.4 km to array**																								
Likely Effects of Project																									
Effect	**Increase in underwater noise**			**Vessel disturbance**			**Vessel collision risk**			**Changes in prey availability & behaviour**			**Accidental pollution**			**Temporary increases in suspended sediments**			**Long term physical loss of habitat**			**In-combination**		
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 seal	✓a	✗b	✓c	✓d	✓d	✓c	✗e	✗e	✗f	✗g	✗g	✗f	✗h	✗h	✗f	✗i	✗i	✗f	✗j	✗j	✗f	✓k	✓k	✓k
Atlantic salt meadows																								
Coastal lagoons																								
Large shallow inlets and bays																								
Mediterranean and thermo-Atlantic halophilous scrubs																								
Mudflats and sandflats not covered by seawater at low tide																								
Reefs																								
Salicornia and other annuals colonising mud and sand																								
Sandbanks which are slightly covered by sea water all the time																								
Otter																								

Cont. on next page

HRA Screening Matrix 4: The Wash and North Norfolk Coast (UK) SAC (Cont.)

Evidence supporting conclusions.

✓a Site within a distance of 120 km from the project. Therefore, there is the potential for some level of interaction between harbour seal and underwater noise associated with Hornsea Four. Potential for Likely Significant Effects (LSE) identified.

✗b The distance between the array boundary and the SAC, low harbour seal numbers within the array boundary and the small scale and localised potential for effect during operation results in a conclusion of **no LSE**.

✓c The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.

✓d The location of Hornsea Four on the fringes of the at sea usage area of harbour seal may result in disturbance of harbour seal. Potential for LSE.

✗e **Volume 2, Chapter 4: Marine Mammals** of the **Environmental Statement** (ES) **(APP-A2.4)** considers marine mammal collision risk, finding that it is not expected that Hornsea Four will increase the risk of mortality in marine mammals from collisions. Low levels of harbour seal are found within the site boundary. Therefore, **no LSE** has been identified for the project alone.

✗f The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. **No LSE** applies.

✗g Given the large foraging range of this species, and the conclusions of the ES regarding fish and benthic ecology, the potential effect is considered to be negligible. Confirmed as not significant within **Volume 2, Chapter 4: Marine Mammals**. **No LSE** identified.

✗h While connectivity between the project and this site is possible, the potential for significant effects to this SAC population is considered to decrease with the severity of effects experienced locally and distance. With reference to the activities proposed, Hornsea Four has very limited potential for the accidental release of significant amounts of vessel fuel or oil. Small scale releases could occur in the unlikely event of non-compliance to legislation, codes of conduct or best practice. Any such events would be small-scale, temporary, and subject to significant dilution and quickly dissipated to non-significant levels in the open coastal environment. **No LSE** is concluded on the basis the project has very low potential for significant releases of contaminants and the low risk of exposure to members of this SAC population.

✗i Harbour seal frequently occur in relatively turbid environments and are thus adapted to locating prey in such conditions. The construction, operation & maintenance and decommissioning activities will be localised and intermittent in nature and the extent and duration of any increase in suspended sediment (and subsequent deposition) being negligible, **no LSE** applies.

✗j No physical habitat loss within the SAC boundary has been identified within the RIAA. **No LSE** applies.

✓k Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

End of Matrix 4

HRA Screening Matrix 5: River Derwent (UK) Special Area of Conservation (SAC)

Name of European site:	**River Derwent (UK) SAC**																								
EU Code:	**UK0030253**																								
Distance to Project:	**47* km to array**																								
Likely Effects of Project																									
Effect	**Release of sediment - suspension/smothering**			**Increase in underwater noise**			**Temporary habitat loss/ disturbance**			**Accidental pollution**			**Long term physical loss of habitat**			**Introduction of hard substrate**			**Changes to physical processes**			**In-combination**		
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**
Sea lamprey	✕a	✕a	✕b	✕c	✕c	✕b	✕d	✕d	✕b	✕e	✕e	✕b	✕f	✕f	✕b	✕g	✕g	✕b	✕h	✕h	✕b	✕i	✕i	✕i
River lamprey	✕a	✕a	✕b	✕c	✕c	✕b	✕d	✕d	✕b	✕e	✕e	✕b	✕f	✕f	✕b	✕g	✕g	✕b	✕h	✕h	✕b	✕i	✕i	✕i
Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation																								
Bullhead																								
Otter																								
*** Being the shortest distance between Hornsea Four and the Humber Estuary (excluding straight lines crossing land)**																									

Cont. on next page

HRA Screening Matrix 5: River Derwent (UK) SAC (Cont.)

Evidence supporting conclusions.

Xa The mouth of the Humber Estuary, which leads to the River Derwent, is located at least 47 km (excluding straight lines crossing land) from the Hornsea Four offshore Export Cable Corridor (ECC). Due to the lower maximum range of effect for this impact, it is considered that there is no potential for a Likely Significant Effect (LSE) to migratory fish moving into or out of the Humber Estuary and therefore migratory fish found within the River Derwent.

Xb The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. **No LSE** applies.

Xc The distance between the mouth of the Humber Estuary, which leads to the River Derwent, and the array area is approximately 74 km, with the cable corridor at least 47 km. It is therefore considered that there will be **no LSE** from underwater noise generated at Hornsea Four on migratory fish entering or leaving the mouth of the Humber Estuary and therefore the migratory fish found within the River Derwent.

Xd The SAC does not physically overlap with Hornsea Four, and therefore is remote from direct temporary habitat loss or disturbance, with **no LSE** identified.

Xe With reference to the activities proposed, Hornsea Four has very limited potential for the accidental release of significant amounts of vessel fuel or oil. Small scale releases could occur in the unlikely event of non-compliance to legislation, codes of conduct or best practice. Any such events would be small-scale, temporary, and subject to significant dilution and quickly dissipated to non-significant levels in the open coastal environment. **No LSE** would therefore arise with respect to accidental pollution.

Xf The SAC does not physically overlap with Hornsea Four, and therefore is remote from long term habitat loss, with **no LSE** identified.

Xg There is already a potential for non-native species to occur due to the presence of other local offshore windfarms (OWF)s and major shipping lanes. No additional risk is posed by Hornsea Four, should a hard substrate be introduced in proximity to the SAC (or in proximity to the mouth of the Humber Estuary) and therefore **no LSE** applies.

Xh The only element of the project which is close enough to the mouth of the Humber Estuary (the route to the SAC) to potentially affect coastal processes is installation of the export cable**. Volume 2 Chapter 1** of the **Environmental Statement** (ES) (**Marine Geology, Oceanography and Physical Processes (APP-A2.1)) (APP-A2.1)** found any such changes to be localised to the project and therefore **no LSE** applies.

Xi Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

End of Matrix 5

HRA Screening Matrix 6a: Grey seal - Humber Estuary (UK) Special Area of Conservation (SAC)

Name of European site:	**Grey seal - Humber Estuary (UK) SAC**																										
EU Code:	**UK0030170**																										
Distance to Project:	**79.7 km to array and 32.2 km to ECC**																										
Likely Effects of Project																											
Effect	**Increase in underwater noise**			**Vessel disturbance**			**Vessel collision risk**			**Changes in prey availability and behaviour**			**Accidental pollution**			**Temporary increases in suspended sediments**			**Long term physical loss of habitat**			**Change to physical processes**			**In-combination**		
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	✗b	✓c	✓d	✓d	✓c	✓e	✓e	✓c	✗f	✗f	✗g	✗h	✗h	✗g	✗i	✗i	✗g		✗j			✗k		✓l	✓l	✓l

Evidence supporting conclusions.

✓a This site is within 145 km of Hornsea Four. As this is places the project within foraging range, there is the potential for some level of interaction between grey seal and underwater noise associated with Hornsea Four. As such, potential LSE cannot be discounted.

✗b The distance between the array boundary and the SAC, together with the small scale and localised potential for effect during operation, results in a conclusion of **no LSE**.

✓c The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, potential LSE is identified.

✓d The location of the project relative to the at sea usage area of grey seal together with connectivity to the SAC may result in disturbance of grey seal. Potential for LSE.

✓e **Volume 2, Chapter 4: Marine Mammals** of the **Environmental Statement** (ES) **(APP-A2.4)** considers marine mammal collision risk, finding that it is not expected that Hornsea Four will increase the risk of mortality in marine mammals from collisions. However, in response to consultation concerns about collision risk potential LSE is identified on a precautionary basis.

✗f Given the large foraging range of this species, and the conclusions of the ES regarding fish and benthic ecology, the potential effect is considered to be negligible. Confirmed as not needing further assessment within **Volume 2, Chapter 4: Marine Mammals**) **(APP-A2.4). No LSE** identified.

✗g The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE** is appropriate.

✗h While connectivity between the project and this site is possible, the potential for significant effects to this SAC population is considered to decrease with the severity of effects experienced locally and distance. With reference to the activities proposed, Hornsea Four has very limited potential for the accidental release of significant amounts of vessel fuel or oil. Small scale releases could occur in the unlikely event of non-compliance to legislation, codes of conduct or best practice. Any such events would be small-scale, temporary and subject to significant dilution and quickly dissipated to non-significant levels in the open coastal environment. **No LSE** is concluded on the basis the project has very low potential for significant releases of contaminants and the low risk of exposure to members of this SAC population.

✗i Grey seal frequently occur in relatively turbid environments and are thus adapted to locating prey in such conditions. The construction, operation & maintenance and decommissioning activities will be localised and intermittent in nature and the extent and duration of any increase in suspended sediment (and subsequent deposition) being negligible, **no LSE** applies.

✗j No physical habitat loss within the SAC boundary has been identified within the ES. **No LSE** applies.

✗k The Humber Estuary SAC at its closest point to Hornsea Four (avoiding straight lines crossing land) is 47km. The **Volume 2 Chapter 1** of the **Environmental Statement** (ES) **(Marine Geology, Oceanography and Physical Processes (APP-A2.1)** found the maximum extent of change in physical processes to be insufficient to reach the Humber. On this basis, it is determined there is no potential for Likely Significant Effects (LSE) from Hornsea Four to the habitats and supporting habitats of the Humber Estuary SAC.

✓l Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

End of Matrix 6a - **Cont. on next page for additional features**

HRA Screening Matrix 6b: Migratory fish - Humber Estuary SAC

Name of European site:	**Migratory fish - Humber Estuary (UK) SAC**																							
EU Code:	**UK0030170**																							
Distance to Project:	**79.7 km to array and 32.2 km to ECC**																							
Likely Effects of Project																								
Effect	**Increase in underwater noise**			**Accidental pollution**			**Release of sediment suspension/smothering**			**Long term physical loss of habitat**			**Temporary habitat loss/ disturbance**			**Introduction of hard substrate (INNS)**			**Change to physical processes**			**In-combination**		
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**
River lamprey *Lampetra fluviatilis*	X a	X a	X b	X c	X c	X b	X d	X d	X b		X e		X e	X e	X b		X f			X g		X h	X h	X h
Sea lamprey *Petromyzon marinus*	X a	X a	X b	X c	X c	X b	X d	X d	X b		X e		X e	X e	X b		X f			X g		X h	X h	X h

Evidence supporting conclusions.

X a The site does not overlap with Hornsea Four and is located at least 47 km from its boundary (excluding straight lines crossing land), with the array even further distance. No potential for LSE with respect to underwater noise and fish accessing the Humber as a migration route, and **no LSE** applies.

X b The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE** is appropriate.

X c While connectivity between the project and this site is possible, the potential for significant effects to this SAC population is considered to decrease with the severity of effects experienced locally and distance. With reference to the activities proposed, Hornsea Four has very limited potential for the accidental release of significant amounts of vessel fuel or oil. Small scale releases could occur in the unlikely event of non-compliance to legislation, codes of conduct or best practice. Any such events would be small-scale, temporary and subject to significant dilution and quickly dissipated to non-significant levels in the open coastal environment. **No LSE** is concluded on the basis the project has very low potential for significant releases of contaminants and the low risk of exposure to members of this SAC population.

X d The site does not overlap with Hornsea Four and is located at least 47 km from its boundary (excluding straight lines crossing land), with the array even further distance, which is outside the potential range of effect for suspended sediment and **no LSE** applies.

X e No physical habitat loss within the SAC boundary has been identified within the ES. **No LSE** applies.

X f There is already a potential for non-native species to occur due to the presence of other local offshore wind farms and major shipping lanes. No additional risk is posed by Hornsea Four, should a hard substrate be introduced in proximity to the SAC **no LSE** applies.

X g The Humber Estuary SAC at its closest point to Hornsea Four (avoiding straight lines crossing land) is 47km. The **Volume 2 Chapter 1** of the **Environmental Statemen**t (ES) **(Marine Geology, Oceanography and Physical Processes (APP-A2.1))**) **(APP-A2.1)** found the maximum extent of change in physical processes to be insufficient to reach the Humber. On this basis, it is determined there is no potential for Likely Significant Effects (LSE) from Hornsea Four to the habitats and supporting habitats of the Humber Estuary SAC.

X h Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

End of Matrix 6b **Cont. on next page for additional features**

HRA Screening Matrix 6c: Habitats - Humber Estuary SAC (UK)

Name of European site:	**Habitats - Humber Estuary (UK) SAC**																								
EU Code:	**UK0030170**																								
Distance to Project:	**79.7 km to array and 32.2 km to ECC**																								
Likely Effects of Project																									
Effect	**Accidental pollution**			**Release of sediment suspension/smothering**			**Long term physical loss of habitat**			**Temporary disturbance / damage to habitats**			**Introduction of hard substrate (INNS)**			**Change to physical processes**			**Increased nitrogen deposition**			**In-combination**		
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**
Atlantic salt meadows *(Glauco-Puccinellietalia maritimae)*																	✕a		✓b		✓b	✓c		✓c
Salicornia and other annuals colonising mud and sand																	✕a		✓b		✓b	✓c		✓c
Mudflats and sandflats not covered by seawater at low tide																								
Sandbanks slightly covered by sea water all the time																								
Fixed dunes with herbaceous vegetation																								
Shifting dunes along the shoreline with *Ammophila arenaria*																								
Estuaries																								
Coastal lagoons * Priority feature																								
Dunes with *Hippophae rhamnoides*																								
Embryonic shifting dunes																								

Cont. on next page

HRA Screening Matrix 6c: Habitats of the Humber Estuary SAC (cont.)

Evidence supporting conclusions (habitats).

✗a The Humber Estuary SAC at its closest point to Hornsea Four (avoiding straight lines crossing land) is 47 km. **Volume 2 Chapter 1** of the **Environmental Statement** (ES) (**Marine Geology, Oceanography and Physical Processes (APP-A2.1)** found the maximum extent of change in physical processes to be insufficient to reach the Humber. On this basis, it is determined there is no potential for Likely Significant Effects (LSE) from Hornsea Four to the habitats and supporting habitats of the Humber Estuary SAC.

✓b The air quality assessment **Volume 3 Chapter 9** of the **ES**) **(APP-A3.9)** has highlighted that there will be a potential, temporary increase in nitrogen deposition on an area of saltmarsh within the Humber SAC associated with construction traffic on the A63. Potential LSE cannot be discounted without further consideration.

✓c Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

Additional note: The habitats of the SAC provide supporting habitat to the designated bird species of the Humber Estuary SPA (see **Screening Matrix 26**) and Humber Estuary Ramsar (see **Screening Matrix 7c).** The potential implications of the project for this supporting habitat (and associated species) have been considered.

End of Matrix 6c

End of Humber Estuary SAC matrices.

HRA Screening Matrix 7a: Grey seal and Natterjack toad - Humber Estuary (UK) Ramsar (Ramsar Criterion 3)

Name of European site:	**Grey seal and Natterjack toad - Humber Ramsar (UK)**																							
EU Code:	**UK11031**																							
Distance to Project:	**77.9km for array to Humber and 32.2km ECC**																							
Likely Effects of Project																								
Effect	**Increase in underwater noise**			**Vessel disturbance**			**Vessel collision risk**			**Changes in prey availability & behaviour**			**Accidental pollution**			**Temporary increases in suspended sediments**			**Long term physical loss of habitat**			**In-combination**		
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**
Grey seal (Ramsar Criterion 3)	√a	✗b	√c	√d	√d	√c	√e	√e	√c	✗f	✗f	✗g	✗h	✗h	✗g	✗i	✗i	✗g				√j	√j	√j
Natterjack toad (Ramsar Criterion 3)																								
***Being the shortest distance between Hornsea Four and the Humber Estuary (excluding straight lines crossing land)**																								

Evidence supporting conclusions.

√a This site is within 145 km of Hornsea Four. As this is places the project within foraging range, there is the potential for some level of interaction between grey seal and underwater noise associated with Hornsea Four. As such, potential LSE cannot be discounted.

✗b The distance between the array boundary and the Ramsar, together with the small scale and localised potential for effect during operation, results in a conclusion of **no LSE**

√c The impacts during decommissioning are considered to be similar and potentially less than those outlined in the construction phase. 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 Ramsar may result in disturbance of grey seal. Potential for LSE.

√e **Volume 2, Chapter 4: Marine Mammals of** the Environmental Statement (ES) **(APP-A2.4)** considers marine mammal collision risk**,** finding that it is not expected that Hornsea Four will increase the risk of mortality in marine mammals from collisions. However, in response to consultation concerns collision risk has been screened in for potential LSE on a precautionary basis

✗f Given the large foraging range of this species, and the conclusions of the ES regarding fish and benthic ecology, the potential effect is considered to be negligible. Confirmed as not needing further assessment within **Volume 2, Chapter 4: Marine Mammals (APP-A2.4)**. **No LSE** identified.

✗g The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE** is appropriate.

✗h While connectivity between the project and this site is possible, the potential for significant effects to this Ramsar population is considered to decrease with the severity of effects experienced locally and distance. With reference to the activities proposed, Hornsea Four has very limited potential for the accidental release of significant amounts of vessel fuel or oil. Small scale releases could occur in the unlikely event of non-compliance to legislation, codes of conduct or best practice. Any such events would be small-scale, temporary and subject to significant dilution and quickly dissipated to non-significant levels in the open coastal environment. **No LSE** is concluded on the basis the project has very low potential for significant releases of contaminants and the low risk of exposure to members of this Ramsar population.

✗i Grey seal frequently occur in relatively turbid environments and are thus adapted to locating prey in such conditions. The construction, operation & maintenance and decommissioning activities will be localised and intermittent in nature and the extent and duration of any increase in suspended sediment (and subsequent deposition) being negligible, **no LSE** applies.

√j Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

End of Matrix 7a **Cont. on next page for additional features**

HRA Screening Matrix 7b: Migratory fish - Humber Estuary (UK) Ramsar – (Ramsar Criterion 8)

Name of European site:	**Migratory fish of the Humber Ramsar (UK)**																							
EU Code:	**UK11031**																							
Distance to Project:	**77.9km for array to Humber and 32.2km ECC**																							
Likely Effects of Project																								
Effect	**Increase in underwater noise**			**Accidental pollution**			**Release of sediment suspension/smothering**			**Long term physical loss of habitat**			**Temporary habitat loss/ disturbance**			**Introduction of hard substrate (INNS)**			**Change to physical processes**			**In-combination**		
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**
River lamprey (Ramsar criterion 8)	Xa	Xa	Xb	Xc	Xc	Xb	Xd	Xd	Xb		Xe		Xe	Xe	Xb	Xf	Xf			Xg		Xh	Xh	Xh
Sea lamprey (Ramsar criterion 8)	Xa	Xa	Xb	Xc	Xc	Xb	Xd	Xd	Xb		Xe		Xe	Xe	Xb	Xf	Xf			Xg		Xh	Xh	Xh

Evidence supporting conclusions.

Xa The site does not overlap with Hornsea Four and is located at least 47 km from its boundary (excluding straight lines crossing land), with the array even further distance. No potential for LSE with respect to underwater noise and fish accessing the Humber as a migration route, and **no LSE** applies.

Xb The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE** is appropriate.

Xc While connectivity between the project and this site is possible, the potential for significant effects to this Ramsar population is considered to decrease with the severity of effects experienced locally and distance. With reference to the activities proposed, Hornsea Four has very limited potential for the accidental release of significant amounts of vessel fuel or oil. Small scale releases could occur in the unlikely event of non-compliance to legislation, codes of conduct or best practice. Any such events would be small-scale, temporary and subject to significant dilution and quickly dissipated to non-significant levels in the open coastal environment. **No LSE** is concluded on the basis the project has very low potential for significant releases of contaminants and the low risk of exposure to members of this Ramsar population.

Xd The site does not overlap with Hornsea Four and is located at least 47 km from its boundary (excluding straight lines crossing land), with the array even further distance, which is outside the potential range of effect for suspended sediment and **no LSE** applies.

Xe No physical habitat loss within the Ramsar boundary has been identified within the ES. **No LSE** applies.

Xf There is already a potential for non-native species to occur due to the presence of other local OWFs and major shipping lanes. No additional risk is posed by Hornsea Four, should a hard substrate be introduced in proximity to the Ramsar **no LSE** applies.

Xg The Humber Estuary Ramsar at its closest point to Hornsea Four (avoiding straight lines crossing land) is 47km. The **Volume 2 Chapter 1** of the **Environmental Statemen**t (ES) **(Marine Geology, Oceanography and Physical Processes (APP-A2.1))** found the maximum extent of change in physical processes to be insufficient to reach the Humber. On this basis, it is determined there is no potential for Likely Significant Effects (LSE) from Hornsea Four to the habitats and supporting habitats of the Humber Estuary Ramsar.

Xh Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

End of Matrix 7b - **Cont. on next page for additional features**

HRA Screening Matrix 7c: Habitats - Humber Estuary (UK) Ramsar (Ramsar Criterion 1)

Name of European site:	**Habitats of the Humber Estuary Ramsar**																									
EU Code:	**UK11031**																									
Distance to Project:	**77.9km for array to Humber and 32.2km ECC**																									
Likely Effects of Project																										
Effect	**Accidental pollution**			**Release of sediment suspension/smothering**			**Long term physical loss of habitat**			**Temporary disturbance / damage to habitats**			**Introduction of hard substrate (INNS)**			**Change to physical processes**			**Increased nitrogen deposition**			**In-combination**		
Stage of Development	**C**	**O**	**D**	**C**	**C**	**O**	**D**	**C**	**O**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Saltmarshes (Ramsar Criterion 1)																	✕a		✓b		✓b	✓c		✓c
Estuarine waters (Ramsar Criterion 1)																								
Intertidal mud and sand flats (Ramsar Criterion 1)																								
Coastal brackish/saline lagoons (Ramsar Criterion 1)																								
Dune systems and humid dune slacks (Ramsar Criterion 1)																								
***Being the shortest distance between Hornsea Four and the Humber Estuary (excluding straight lines crossing land)**																								

Evidence supporting conclusions (habitats).

✕a The Humber Estuary Ramsar at its closest point to Hornsea Four (avoiding straight lines crossing land) is 47 km. **Volume 2 Chapter 1** of the **Environmental Statement** (ES) (**Marine Geology, Oceanography and Physical Processes (APP-A2.1)** found the maximum extent of change in physical processes to be insufficient to reach the Humber. On this basis, it is determined there is no potential for Likely Significant Effects (LSE) from Hornsea Four to the habitats and supporting habitats of the Humber Estuary Ramsar.

✓b The air quality assessment **Volume 3 Chapter 9 (APP-A3.9)** of the **ES** has highlighted that there will be a potential, temporary increase in nitrogen deposition on an area of saltmarsh within the Humber Ramsar associated with construction traffic on the A63. Potential LSE cannot be discounted without further consideration.

✓c Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

End of Matrix 7c **Cont. on next page for additional features**

HRA Screening Matrix 7d: Ornithology - Humber Estuary (UK) Ramsar - (Ramsar Criterion 5 and 6)

Name of European site:	**Ornithology of the Humber Estuary Ramsar**																							
EU Code:	**UK11031**																							
Distance to Project:	**77.9km for array to Humber and 32.2km ECC**																							
Likely Effects of Project																								
Effect	**Temporary habitat loss (onshore)**			**Temporary disturbance/ damage to habitats (onshore)**			**Habitat fragmentation or severance**			**Disturbance (airborne noise and visual) (onshore)**			**Invasive non-native species (onshore)**			**Accidental release of contaminants (onshore)**			**collision risk**			**In-combination**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**O**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Golden plover (Ramsar Criterion 6)	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b		✓c			✓d	
Dunlin (Ramsar Criterion 6)	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b		✓c			✓d	
Black-tailed godwit (Ramsar Criterion 6)	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b		✓c			✓d	
Bar-tailed godwit (Ramsar Criterion 6)	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b		✓c			✓d	
Redshank (Ramsar Criterion 6)	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b		✓c			✓d	
Shelduck (Ramsar Criterion 6)	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b		✓c			✓d	
Knot (Ramsar Criterion 6)	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b		✓c			✓d	
Waterbird assemblage (non-breeding) (Criterion 5)*	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗a	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b	✗b		✓c			✓d	
*Non-breeding bird assemblage (hen harrier, dark-bellied brent goose, teal, wigeon, goldeneye, avocet, oystercatcher, ringed plover, grey plover, lapwing, sanderling, curlew, whimbrel and turnstone.																								

Evidence supporting conclusions.:

✗a The site does not physically overlap with the onshore Hornsea Four boundaries and therefore does not result in loss of habitat, disturbance, damage, or fragmentation. A finding of no likely significant effects (LSE) applies.

✗b Although it is possible that these species may use habitat within the onshore Hornsea Four boundaries, given the expansive landscape of similar habitat in the project surrounds and immediately adjacent to the Ramsar site. It is very unlikely that birds will expend large amounts of valuable energy flying over suitable habitat in order to use areas that may be affected by Hornsea Four that are more than 7 km away. Therefore, it is reasonable to conclude that there are **no LSE**.

✓c It is estimated that only very small potential impacts / effects would occur on all migratory waterbird species and hen harrier from individual developments in the North Sea. However, in order to provide a quantification of any potential impacts and effects potential LSE is identified for these species.

✓d Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

End of Matrix 7 (a-d)

HRA Screening Matrix 8: Berwickshire and North Northumberland Coast (UK) Special Area of Conservation

Name of European site:	**Berwickshire and North Northumberland Coast (UK) SAC**																								
EU Code:	**UK0017072**																								
Distance to Project:	**201.4 km to array**																								
Likely Effects of Project																									
Effect	**Increase in underwater noise**			**Vessel disturbance**			**Vessel collision risk**			**Changes in prey availability and behaviour**			**Accidental pollution**			**Temporary increases in suspended sediments**			**Long term physical loss of habitats**			**In-combination**		
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**
Grey seal	✓a	✗b	✓c	✓d	✓d	✓c	✓e	✓e	✓c	✗f	✗f	✗g	✗h	✗h	✗g	✗i	✗i	✗g		✗j		✓k	✓k	✓k
Large shallow inlets and bays																								
Mudflats and sandflats not covered by seawater at low tide																								
Reefs																								
Submerged and partially submerged sea caves																								

Evidence supporting conclusions.

✓a This site is not within 145 km of Hornsea Four Site, but some site connectivity is indicated from seal use at sea data. Therefore, there is the potential for some level of interaction between grey seal and underwater noise associated with Hornsea Four. The potential for likely significant effects (LSE) is therefore identified.

✗b The distance between the array boundary and the SAC, together with the small scale and localised potential for effect during operation, results in a conclusion of **no LSE**.

✓c The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. A finding of potential LSE is therefore appropriate.

✓d The location of the project relative to the at sea usage area of grey seal together with connectivity to the SAC may result in disturbance of grey seal. Potential for LSE.

✓e **Volume 2, Chapter 4: Marine Mammals (APP-A2.4)** of the **Environmental Statement** (ES) considers marine mammal collision risk, finding that it is not expected that Hornsea Four will increase the risk of mortality in marine mammals from collisions. However, in response to consultation concerns collision risk (particularly in-combination) has been screened in for potential LSE on a precautionary basis.

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HRA Screening Matrix 8: Berwickshire and North Northumberland Coast SAC (cont.)

Evidence supporting conclusions (cont.)

✗f	Given the large foraging range of this species, and the conclusions of the ES regarding fish and benthic ecology, the potential effect is considered to be negligible. Confirmed as not needing further assessment within **Volume 2, Chapter 4: Marine Mammals (APP-A2.4)**. **No LSE** identified.
✗g	The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE** is appropriate.
✗h	While connectivity between the project and this site is possible, the potential for significant effects to this SAC population is considered to decrease with the severity of effects experienced locally and distance. With reference to the activities proposed, Hornsea Four has very limited potential for the accidental release of significant amounts of vessel fuel or oil. Small scale releases could occur in the unlikely event of non-compliance to legislation, codes of conduct or best practice. Any such events would be small-scale, temporary and subject to significant dilution and quickly dissipated to non-significant levels in the open coastal environment. **No LSE** is concluded on the basis the project has very low potential for significant releases of contaminants and the low risk of exposure to members of this SAC population.
✗i	Grey seal frequently occur in relatively turbid environments and are thus adapted to locating prey in such conditions. The construction, operation & maintenance and decommissioning activities will be localised and intermittent in nature and the extent and duration of any increase in suspended sediment (and subsequent deposition) being negligible, **no LSE** applies.
✗i	No physical habitat loss within the SAC boundary has been identified within the ES. **No LSE** applies.
✓k	Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

End of Matrix 8.

HRA Screening Matrix 9a: Transboundary harbour porpoise sites - sites 1 to 10 (of 48)

Name of European site:	Transboundary harbour porpoise sites (48 sites)*																							
EU Code:	Various																							
Distance to Project:	78 to 768 km to array																							
Likely Effects of Project																								
Effect	Increase in underwater noise			Vessel disturbance			Vessel collision risk			Changes in prey availability and behaviour			Accidental pollution			Temporary increases in suspended sediments			Long term physical loss of habitats			In-combination		
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
Agger Tange, Nissum Bredning, Skibsted Fjord og Agerø (Denmark) SAC																								
Anse de Vauville (France) SAC																								
Baie de Canche et couloir des trois estuaires (France) SAC																								
Baie de Seine occidentale (France) SAC																								
Baie de Seine orientale (France) SAC																								
Banc et récifs de Surtainville (France) SAC																								
Bancs des Flandres (France) SAC																								
Borkum-Riffgrund (Germany) SAC																								
Doggerbank (Germany) SAC																								
Doggersbank (Dutch) SAC																								
***Note that some sites may be considered separately for other feature(s), notably seals**																								

All sites screened out based on 26 km effective disturbance range (EDR) (all sites located beyond that range). No Likely Significant Effects (LSE) identified.

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HRA Screening Matrix 9b: Transboundary harbour porpoise sites - sites 11 to 20 (of 48)

Name of European site:	Transboundary harbour porpoise sites (48 sites)*																							
EU Code:	Various																							
Distance to Project:	78 to 768 km to array																							
Likely Effects of Project																								
Effect	Increase in underwater noise			Vessel disturbance			Vessel collision risk			Changes in prey availability and behaviour			Accidental pollution			Temporary increases in suspended sediments			Long term physical loss of habitats			In-combination		
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
Dråby Vig (Denmark) SAC																								
Estuaire de la Seine (France) SAC																								
Estuaires et littoral picards (baies de Somme et d'Authie) (France) SAC																								
Falaises du Cran aux Oeufs et du Cap Gris-Nez, Dunes du Chatelet, Marais de Tardinghen et																								
Gule Rev (Denmark) SAC																								
Hamburgisches Wattenmeer (UK) SAC																								
Helgoland mit Helgoländer Felssockel (Germany) SAC																								
Jyske Rev, Lillefiskerbanke (Denmark) SAC																								
Klaverbank (Netherlands) SAC																								
Kosterfjorden-Väderöfjorden (Sweden) SAC																								
***Note that some sites may be considered separately for other feature(s), notably seals**																								

All sites screened out based on 26 km effective disturbance range (EDR) (all sites located beyond that range). No Likely Significant Effects (LSE) identified.

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HRA Screening Matrix 9c: Transboundary harbour porpoise sites - sites 21 to 31 (of 48)

Name of European site:	Transboundary harbour porpoise sites (48 sites)*																							
EU Code:	Various																							
Distance to Project:	78 to 768 km to array																							
Likely Effects of Project																								
Effect	Increase in underwater noise			Vessel disturbance			Vessel collision risk			Changes in prey availability and behaviour			Accidental pollution			Temporary increases in suspended sediments			Long term physical loss of habitats			In-combination		
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
Løgstør Bredning, Vejlerne og Bulbjerg (Denmark) SAC																								
Lønstrup Rødgrund (Denmark) SAC																								
Nationalpark Niedersächsisches Wattenmeer (Germany) SAC																								
Noordzeekustzone (Netherlands) SAC																								
NTP S-H Wattenmeer und angrenzende Küstengebiete (Germany) SAC																								
Oosterschelde (Netherlands) SAC																								
Récifs et landes de la Hague (France) SAC																								
Récifs et marais arrière-littoraux du Cap Lévi à la Pointe de Saire (France) SAC																								
Récifs Gris-Nez Blanc-Nez (France) SAC																								
Ridens et dunes hydrauliques du détroit du Pas-de-Calais (France) SAC																								
***Note that some sites may be considered separately for other feature(s), notably seals**																								

All sites screened out based on 26 km effective disturbance range (EDR) (all sites located beyond that range). No Likely Significant Effects (LSE) identified.

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HRA Screening Matrix 9d: Transboundary harbour porpoise sites - sites 32 to 40 (of 48)

Name of European site:	Transboundary harbour porpoise sites (48 sites)*																							
EU Code:	Various																							
Distance to Project:	78 to 768 km to array																							
Likely Effects of Project																								
Effect	Increase in underwater noise			Vessel disturbance			Vessel collision risk			Changes in prey availability and behaviour			Accidental pollution			Temporary increases in suspended sediments			Long term physical loss of habitats			In-combination		
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
Sandbanker ud for Thorsminde (Denmark) SAC																								
SBZ 1 / ZPS 1 (Belguim)																								
SBZ 2 / ZPS 2 (Belguim)																								
SBZ 3 / ZPS 3 (Belguim)																								
Skagens Gren og Skagerak (Denmark) SAC																								
SPA Östliche Deutsche Bucht (Germany) SCI																								
Steingrund (Germany) SAC																								
Store Rev (Denmark) SAC																								
Sydlige Nordsø (Denmark) SAC																								
Sylter Aubenriff (Germany) SCI																								
***Note that some sites may be considered separately for other feature(s), notably seals**																								

All sites screened out based on 26 km effective disturbance range (EDR) (all sites located beyond that range). No Likely Significant Effects (LSE) identified.

Cont. on next page

HRA Screening Matrix 9e: Transboundary harbour porpoise sites - sites 40 to 48 (of 48)

Name of European site:	Transboundary harbour porpoise sites (48 sites)*																							
EU Code:	Various																							
Distance to Project:	78 to 768 km to array																							
Likely Effects of Project																								
Effect	Increase in underwater noise			Vessel disturbance			Vessel collision risk			Changes in prey availability and behaviour			Accidental pollution			Temporary increases in suspended sediments			Long term physical loss of habitats			In-combination		
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
Thyborøn Stenvolde (Denmark) SAC																								
Vadehavet med Ribe Å, Tved Å og Varde Å vest for Varde (Denmark) SAC																								
Venø, Venø Sund (Denmark) SAC																								
Vlakte van de Raan (Belguim/Netherlands) SAC																								
Vlaamse Banken (Belguim) SAC																								
Voordelta (Netherlands) SAC																								
Waddenzee (Netherlands) SAC																								
Westerschelde and Saeftunghe (Netherlands) SAC																								
***Note that some sites may be considered separately for other feature(s), notably seals**																								

Evidence supporting conclusions.

All sites screened out based on 26 km effective disturbance range (EDR) (all sites located beyond that range). No Likely Significant Effects (LSE) identified.

End of Matrix 9

HRA Screening Matrix 10: Transboundary bottlenose dolphin sites (6 sites)

Name of European site:	Transboundary bottlenose dolphin sites (6 sites)																							
EU Code:	Various																							
Distance to Project:	78 to 768 km to array																							
Likely Effects of Project																								
Effect	Increase in underwater noise			Vessel disturbance			Vessel collision risk			Changes in prey availability and behaviour			Accidental pollution			Temporary increases in suspended sediments			Long term physical loss of habitats			In-combination		
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
Anse de Vauville (France) Special Area of Conservation (SAC)																								
Banc et récifs de Surtainville (France) SAC																								
Falaises du Cran aux Oeufs et du Cap Gris-Nez, Dunes du Chatelet, Marais de Tardinghen et Dunes de Wissant (France) SAC																								
Baie de Seine orientale (France) SAC																								
Estuaires et littoral picards (baies de Somme et d'Authie) (France) SAC																								
Récifs et marais arrière-littoraux du Cap Lévi à la Pointe de Saire (France) SAC																								

Evidence supporting conclusions.

No Likely Significant Effects (LSE) alone or in-combination based on lack of connectivity to Hornsea Four.

End of Matrix 10

HRA Screening Matrix 11: Doggersbank (Dutch) Special Area of Conservation (SAC)

Name of European site:	**Doggersbank (Dutch) SAC**																								
EU Code:	**NL2008001**																								
Distance to Project:	**84 km to array**																								
Likely Effects of Project																									
Effect	**Increase in underwater noise**			**Vessel disturbance**			**Vessel collision risk**			**Changes in prey availability and behaviour**			**Accidental pollution**			**Temporary increases in suspended sediments**			**Long term physical loss of habitat**			**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**
Grey seal	✓a	✗b	✓c	✓d	✓d	✓c	✗e	✗e	✗f	✗g	✗g	✗f	✗h	✗h	✗f	✗i	✗i	✗f		✗j		✓k	✓k	✓k
Harbour seal	✓a	✗b	✓c	✓d	✓d	✓c	✗e	✗e	✗f	✗g	✗g	✗f	✗h	✗h	✗f	✗i	✗i	✗f		✗j		✓k	✓k	✓k
Harbour porpoise*																								
Sandbanks which are slightly covered by sea water all the time																								
*** Screened out based on 26 km effective disturbance range (EDR) (site located beyond that range)**																								

Evidence supporting conclusions.

✓a Site within screening distance of the project for both harbour and grey seal. Therefore, there is the potential for some level of interaction between harbour seal and grey seal and underwater noise associated with Hornsea Four. The potential for likely significant effects (LSE) is therefore identified.

✗b The distance between the array boundary and the SAC, together with the small scale and localised potential for effect during operation, results in a conclusion of **no LSE** for both species of seal.

✓c The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.

✓d The location of the project relative to the at sea usage area of harbour seal and grey seal may result in disturbance of harbour seal and grey seal. Potential for LSE.

✗e **Volume 2, Chapter 4: Marine Mammals (APP-A2.4)** of the **Environmental Statement** (ES) considers marine mammal collision risk, finding that it is not expected that Hornsea Four will increase the risk of mortality in marine mammals from collisions. Therefore, **no LSE** has been identified for the project alone.

✗f The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE** is appropriate.

✗g Given the large foraging range of both species, and the conclusions of the ES regarding fish and benthic ecology, the potential effect is considered to be negligible. Confirmed as not needing further assessment within **Volume 2, Chapter 4: Marine Mammals (APP-A2.4)**. **No LSE** identified.

✗h While connectivity between the project and this site is possible, the potential for significant effects to this SAC population is considered to decrease with the severity of effects experienced locally and distance. With reference to the activities proposed, Hornsea Four has very limited potential for the accidental release of significant amounts of vessel fuel or oil. Small scale releases could occur in the unlikely event of non-compliance to legislation, codes of conduct or best practice. Any such events would be small-scale, temporary and subject to significant dilution and quickly dissipated to non-significant levels in the open coastal environment. **No LSE** is concluded on the basis the project has very low potential for significant releases of contaminants and the low risk of exposure to members of this SAC population.

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✗i	Harbour seal and grey seal frequently occur in relatively turbid environments and are thus adapted to locating prey in such conditions. The construction, O&M and decommissioning activities will be localised and intermittent in nature and the extent and duration of any increase in suspended sediment (and subsequent deposition) being negligible, **no LSE** applies.
✗j	No physical habitat loss within the SAC boundary has been identified within the ES. **No LSE** applies.
✓k	Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

End of Matrix 11

HRA Screening Matrix 12: Klaverbank (Dutch) Special Area of Conservation (SAC)

Name of European site:	**Klaverbank (Dutch) SAC**																							
EU Code:	**NL2008002**																							
Distance to Project:	**78 km to array**																							
Likely Effects of Project																								
Effect	**Increase in underwater noise**			**Vessel disturbance**			**Vessel collision risk**			**Changes in prey availability and behaviour**			**Accidental pollution**			**Temporary increases in suspended sediments**			**Long term physical loss of habitat**			**In-combination**		
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**
Grey seal	✓a	✗b	✓c	✓d	✓d	✓c	✗e	✗e	✗f	✗g	✗g	✗f	✗h	✗h	✗f	✗i	✗i	✗f		✗j		✓k	✓k	✓k
Harbour seal	✓a	✗b	✓c	✓d	✓d	✓c	✗e	✗e	✗f	✗g	✗g	✗f	✗h	✗h	✗f	✗i	✗i	✗f		✗j		✓k	✓k	✓k
Harbour porpoise*																								
Reef																								

*** Screened out based on 26 km effective disturbance range (EDR) (site located beyond that range)**

Evidence supporting conclusions.

✓a Site within screening distance of the project for both harbour and grey seal. Therefore, there is the potential for some level of interaction between harbour seal and grey seal and underwater noise associated with Hornsea Four. Therefore, the potential for likely significant effects (LSE) is identified.

✗b The distance between the array boundary and the SAC, together with the small scale and localised potential for effect during operation, results in a conclusion of **no LSE** for both species of seal.

✓c The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.

✓d The location of the project relative to the at sea usage area of harbour seal and grey seal may result in disturbance of harbour seal and grey seal. Potential for LSE.

✗e **Volume 2, Chapter 4: Marine Mammals (APP-A2.4)** of the **Environmental Statement** (ES) considers marine mammal collision risk, finding that it is not expected that Hornsea Four will increase the risk of mortality in marine mammals from collisions. Therefore, **no LSE** has been identified for the project alone.

✗f The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE** is appropriate.

✗g Given the large foraging range of both species, and the conclusions of the ES regarding fish and benthic ecology, the potential effect is considered to be negligible. Confirmed as not needing further assessment within **ES Volume 2, Chapter 4: Marine Mammals (APP-A2.4)**. **No LSE** identified.

✗h While connectivity between the project and this site is possible, the potential for significant effects to this SAC population is considered to decrease with the severity of effects experienced locally and distance. With reference to the activities proposed, Hornsea Four has very limited potential for the accidental release of significant amounts of vessel fuel or oil. Small scale releases could occur in the unlikely event of non-compliance to legislation, codes of conduct or best practice. Any such events would be small-scale, temporary, and subject to significant dilution and quickly dissipated to non-significant levels in the open coastal environment. **No LSE** is concluded on the basis the project has very low potential for significant releases of contaminants and the low risk of exposure to members of this SAC population.

✗i Harbour seal and grey seal frequently occur in relatively turbid environments and are thus adapted to locating prey in such conditions. The construction, operation & maintenance and decommissioning activities will be localised and intermittent in nature and the extent and duration of any increase in suspended sediment (and subsequent deposition) being negligible, **no LSE** applies.

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✕j No physical habitat loss within the SAC boundary has been identified within the ES. **No LSE** applies.

✓k Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified

End of Matrix 12

HRA Screening Matrix 13: Bancs des Flandres (France) Special Area of Conservation (SAC)

Name of European site:	**Bancs des Flandres (France) SAC**																							
EU Code:	**FR3102002**																							
Distance to Project:	**296 km to array**																							
Likely Effects of Project																								
Effect	**Increase in underwater noise**			**Vessel disturbance**			**Vessel collision risk**			**Changes in prey availability and behaviour**			**Accidental Pollution**			**Temporary increases in suspended sediments**			**Long term physical loss of habitat**			**In-combination**		
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**
Grey seal	✓a	✕b	✓c	✓d	✓d	✓c	✕e	✕e	✕f	✕g	✕g	✕f	✕h	✕h	✕f	✕i	✕i	✕f		✕j		✓k	✓k	✓k
Harbour seal#																								
Harbour porpoise*																								
Sandbanks which are slightly covered by sea water all the time																								
***Screened out based on 26 km effective disturbance range (EDR) (site located beyond that range)**																								
#Screened out based on 120 km screening range and lack of site connectivity																								

Evidence supporting conclusions.

✓a Site within screening distance of the project for grey seal. Therefore, there is the potential for some level of interaction between grey seal and underwater noise associated with Hornsea Four. Therefore, the potential for likely significant effects (LSE) is identified.

✕b The distance between the array boundary and the SAC, together with the small scale and localised potential for effect during operation, results in a conclusion of **no LSE** for grey seal.

✓c The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.

✓d The location of the project relative to the at sea usage area of grey seal may result in disturbance of grey seal. Potential for LSE.

✕e **Volume 2, Chapter 4: Marine Mammals (APP-A2.4)** of the **Environmental Statement** (ES) considers marine mammal collision risk, finding that it is not expected that Hornsea Four will increase the risk of mortality in marine mammals from collisions. Therefore, **no LSE** has been identified for the project alone.

✕f The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE** is appropriate.

✕g Given the large foraging range of grey seal, and the conclusions of the ES regarding fish and benthic ecology, the potential effect is considered to be negligible. Confirmed as not needing further assessment within **Volume 2, Chapter 4: Marine Mammals (APP-A2.4)**. **No LSE** identified.

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✗h	While connectivity between the project and this site is possible, the potential for significant effects to this SAC population is considered to decrease with the severity of effects experienced locally and distance. With reference to the activities proposed, Hornsea Four has very limited potential for the accidental release of significant amounts of vessel fuel or oil. Small scale releases could occur in the unlikely event of non-compliance to legislation, codes of conduct or best practice. Any such events would be small-scale, temporary, and subject to significant dilution and quickly dissipated to non-significant levels in the open coastal environment. **No LSE** is concluded on the basis the project has very low potential for significant releases of contaminants and the low risk of exposure to members of this SAC population.
✗i	Grey seal frequently occur in relatively turbid environments and are thus adapted to locating prey in such conditions. The construction, operation & maintenance and decommissioning activities will be localised and intermittent in nature and the extent and duration of any increase in suspended sediment (and subsequent deposition) being negligible, **no LSE** applies.
✗j	No physical habitat loss within the SAC boundary has been identified within the ES. **No LSE** applies.
✓k	Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

End of Matrix 13

HRA Screening Matrix 14: Vlaamse Banken (Belgium) Special Area of Conservation (SAC)

Name of European site:	**Vlaamse Banken (Belgium) SAC**																								
EU Code:	**BEMNZ0001**																								
Distance to Project:	**278 km to array**																								
Likely Effects of Project																									
Effect	**Increase in underwater noise**			**Vessel disturbance**			**Vessel collision risk**			**Changes in prey availability and behaviour**			**Accidental Pollution**			**Temporary increases in suspended sediments**			**Long term physical loss of habitat**			**In-combination**		
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**
Grey seal	✓a	✕b	✓c	✓d	✓d	✓c	✕e	✕e	✕f	✕g	✕g	✕f	✕h	✕h	✕f	✕i	✕i	✕f		✕j		✓k	✓k	✓k
Harbour seal#																								
Harbour porpoise*																								
Shad																								
Sea lamprey																								
River lamprey																								
Reef																								
Sandbanks slightly covered by sea water all the time																								
***Screened out based on 26 km effective disturbance range (EDR) (site located beyond that range)**																								
#Screened out based on 120 km screening range and lack of site connectivity																								

Evidence supporting conclusions.

✓a Site within screening distance of the project for grey seal. Therefore, there is the potential for some level of interaction between grey seal and underwater noise associated with Hornsea Four. Therefore, the potential for likely significant effects (LSE) is identified.

✕b The distance between the array boundary and the SAC, together with the small scale and localised potential for effect during operation, results in a conclusion of **no LSE** for grey seal.

✓c The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.

✓d The location of the project relative to the at sea usage area of grey seal may result in disturbance of grey seal. Potential for LSE.

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✗e	**Volume 2, Chapter 4: Marine Mammals (APP-A2.4)** of the **Environmental Statement** (ES) considers marine mammal collision risk, finding that it is not expected that Hornsea Four will increase the risk of mortality in marine mammals from collisions. Therefore, **no LSE** has been identified for the project alone.
✗f	The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE** is appropriate.
✗g	Given the large foraging range of grey seal, and the conclusions of the ES regarding fish and benthic ecology, the potential effect is considered to be negligible. Confirmed as not needing further assessment within **Volume 2, Chapter 4: Marine Mammals (APP-A2.4)**. **No LSE** identified.
✗h	While connectivity between the project and this site is possible, the potential for significant effects to this SAC population is considered to decrease with the severity of effects experienced locally and distance. With reference to the activities proposed, Hornsea Four has very limited potential for the accidental release of significant amounts of vessel fuel or oil. Small scale releases could occur in the unlikely event of non-compliance to legislation, codes of conduct or best practice. Any such events would be small-scale, temporary and subject to significant dilution and quickly dissipated to non-significant levels in the open coastal environment. **No LSE** is concluded on the basis the project has very low potential for significant releases of contaminants and the low risk of exposure to members of this SAC population.
✗i	Grey seal frequently occur in relatively turbid environments and are thus adapted to locating prey in such conditions. The construction, operation & maintenance and decommissioning activities will be localised and intermittent in nature and the extent and duration of any increase in suspended sediment (and subsequent deposition) being negligible, **no LSE** applies.
✗j	No physical habitat loss within the SAC boundary has been identified within the ES. **No LSE** applies.
✓k	Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

End of Matrix 14

HRA Screening Matrix 15: SBZ 1 (Belgium) Special Area Conservation (SAC)

Name of European site:	**SBZ 1 (Belgium) SAC**																								
EU Code:	**BEMNZ0002**																								
Distance to Project:	**313 km to array**																								
Likely Effects of Project																									
Effect	**Increase in underwater noise**			**Vessel disturbance**			**Vessel collision risk**			**Changes in prey availability and behaviour**			**Accidental Pollution**			**Temporary increases in suspended sediments**			**Long term physical loss of habitat**			**In-combination**		
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**
Grey seal	✓a	✕b	✓c	✓d	✓d	✓c	✕e	✕e	✕f	✕g	✕g	✕f	✕h	✕h	✕f	✕i	✕i	✕f		✕j		✓k	✓k	✓k
Harbour seal#																								
Harbour porpoise*																								
Reef																								
Sandbanks which are slightly covered by sea water all the time																								
Shad																								
River lamprey																								
Sea lamprey																								
***Screened out based on 26 km effective disturbance range (EDR) (site located beyond that range)**																								
#Screened out based on 120 km screening range and lack of site connectivity																								

Evidence supporting conclusions.

✓a Site within screening distance of the project for grey seal. Therefore, there is the potential for some level of interaction between grey seal and underwater noise associated with Hornsea Four. Therefore, the potential for likely significant effects (LSE) is identified.

✕b The distance between the array boundary and the SAC, together with the small scale and localised potential for effect during operation, results in a conclusion of **no LSE** for grey seal.

✓c The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.

✓d The location of the project relative to the at sea usage area of grey seal may result in disturbance of grey seal. Potential for LSE.

✗e	**Volume 2, Chapter 4: Marine Mammals (APP-A2.4)** of the **Environmental Statement** (ES) considers marine mammal collision risk, finding that it is not expected that Hornsea Four will increase the risk of mortality in marine mammals from collisions. Therefore, **no LSE** has been identified for the project alone.
✗f	The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE** is appropriate.
✗g	Given the large foraging range of grey seal, and the conclusions of the ES regarding fish and benthic ecology, the potential effect is considered to be negligible. Confirmed as not needing further assessment within **ES Volume 2, Chapter 4: Marine Mammals (APP-A2.4)**. **No LSE** identified.
✗h	While connectivity between the project and this site is possible, the potential for significant effects to this SAC population is considered to decrease with the severity of effects experienced locally and distance. With reference to the activities proposed, Hornsea Four has very limited potential for the accidental release of significant amounts of vessel fuel or oil. Small scale releases could occur in the unlikely event of non-compliance to legislation, codes of conduct or best practice. Any such events would be small-scale, temporary and subject to significant dilution and quickly dissipated to non-significant levels in the open coastal environment. **No LSE** is concluded on the basis the project has very low potential for significant releases of contaminants and the low risk of exposure to members of this SAC population.
✗i	Grey seal frequently occur in relatively turbid environments and are thus adapted to locating prey in such conditions. The construction, operation & maintenance and decommissioning activities will be localised and intermittent in nature and the extent and duration of any increase in suspended sediment (and subsequent deposition) being negligible, **no LSE** applies.
✗j	No physical habitat loss within the SAC boundary has been identified within the ES. **No LSE** applies.
✓k	Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

End of Matrix 15

HRA Screening Matrix 16: SBZ 2 (Belgium) Special Area of Conservation (SAC)

Name of European site:	**SBZ 2 (Belgium) SAC**																								
EU Code:	**BEMNZ0003**																								
Distance to Project:	**303 km to array**																								
Likely Effects of Project																									
Effect	**Increase in underwater noise**			**Vessel disturbance**			**Vessel collision risk**			**Changes in prey availability and behaviour**			**Accidental Pollution**			**Temporary increases in suspended sediments**			**Long term physical loss of habitat**			**In-combination**		
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**
Grey seal	✓a	✗b	✓c	✓d	✓d	✓c	✗e	✗e	✗f	✗g	✗g	✗f	✗h	✗h	✗f	✗i	✗i	✗f		✗j		✓k	✓k	✓k
Harbour seal#																								
Harbour porpoise*																								
Reef																								
Sandbanks which are slightly covered by sea water all the time																								
Shad																								
River lamprey																								
Sea lamprey																								
***Screened out based on 26 km effective disturbance range (EDR) (site located beyond that range)**																								
# Screened out based on 120 km screening range and lack of site connectivity																								

Evidence supporting conclusions.

✓a Site within screening distance of the project for grey seal. Therefore, there is the potential for some level of interaction between grey seal and underwater noise associated with Hornsea Four. Therefore, the potential for likely significant effects (LSE) is identified.

✗b The distance between the array boundary and the SAC, together with the small scale and localised potential for effect during operation, results in a conclusion of **no LSE** for grey seal.

✓c The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.

✓d The location of the project relative to the at sea usage area of grey seal may result in disturbance of grey seal. Potential for LSE.

✗e **Volume 2, Chapter 4: Marine Mammals (APP-A2.4)** of the **Environmental Statement** (ES) considers marine mammal collision risk, finding that it is not expected that Hornsea Four will increase the risk of mortality in marine mammals from collisions. Therefore, **no LSE** has been identified for the project alone.

✗f The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE** is appropriate.

✗g Given the large foraging range of grey seal, and the conclusions of the ES regarding fish and benthic ecology, the potential effect is considered to be negligible. Confirmed as not needing further assessment within **ES Volume 2, Chapter 4: Marine Mammals (APP-A2.4)**. **No LSE** identified.

✗h While connectivity between the project and this site is possible, the potential for significant effects to this SAC population is considered to decrease with the severity of effects experienced locally and distance. With reference to the activities proposed, Hornsea Four has very limited potential for the accidental release of significant amounts of vessel fuel or oil. Small scale releases could occur in the unlikely event of non-compliance to legislation, codes of conduct or best practice. Any such events would be small-scale, temporary, and subject to significant dilution and quickly dissipated to non-significant levels in the open coastal environment. **No LSE** is concluded on the basis the project has very low potential for significant releases of contaminants and the low risk of exposure to members of this SAC population.

✗i Grey seal frequently occur in relatively turbid environments and are thus adapted to locating prey in such conditions. The construction, operation & maintenance and decommissioning activities will be localised and intermittent in nature and the extent and duration of any increase in suspended sediment (and subsequent deposition) being negligible, **no LSE** applies.

✗j No physical habitat loss within the SAC boundary has been identified within the ES. **No LSE** applies.

✓k Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

End of Matrix 16

HRA Screening Matrix 17: SBZ 3 (Belgium) Special Area of Conservation (SAC)

Name of European site:	**SBZ 3 (Belgium) SAC**																								
EU Code:	**BEMNZ0004**																								
Distance to Project:	**307 km to array**																								
Likely Effects of Project																									
Effect	**Increase in underwater noise**			**Vessel disturbance**			**Vessel collision risk**			**Changes in prey availability and behaviour**			**Accidental Pollution**			**Temporary increases in suspended sediments**			**Long term physical loss of habitat**			**In-combination**		
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**
Grey seal	✓a	✗b	✓c	✓d	✓d	✓c	✗e	✗e	✗f	✗g	✗g	✗f	✗h	✗h	✗f	✗i	✗i	✗f		✗j		✓k	✓k	✓k
Harbour seal#																								
Harbour porpoise*																								
Reef																								
Sandbanks which are slightly covered by sea water all the time																								
Shad																								
River lamprey																								
Sea lamprey																								
***Screened out based on 26 km effective disturbance range (EDR) (site located beyond that range)**																								
#Screened out based on 120 km screening range and lack of site connectivity																								

Evidence supporting conclusions.

✓a Site within screening distance of the project for grey seal. Therefore, there is the potential for some level of interaction between grey seal and underwater noise associated with Hornsea Four. Therefore, the potential for likely significant effects (LSE) is identified.

✗b	The distance between the array boundary and the SAC, together with the small scale and localised potential for effect during operation, results in a conclusion of **no LSE** for grey seal.
✓c	The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.
✓d	The location of the project relative to the at sea usage area of grey seal may result in disturbance of grey seal. Potential for LSE.
✗e	**Volume 2, Chapter 4: Marine Mammals (APP-A2.4)** of the **Environmental Statement** (ES) considers marine mammal collision risk, finding that it is not expected that Hornsea Four will increase the risk of mortality in marine mammals from collisions. Therefore, **no LSE** has been identified for the project alone.
✗f	The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE** is appropriate.
✗g	Given the large foraging range of grey seal, and the conclusions of the ES regarding fish and benthic ecology, the potential effect is considered to be negligible. Confirmed as not needing further assessment within **ES Volume 2, Chapter 4: Marine Mammals (APP-A2.4)**. **No LSE** identified.
✗h	While connectivity between the project and this site is possible, the potential for significant effects to this SAC population is considered to decrease with the severity of effects experienced locally and distance. With reference to the activities proposed, Hornsea Four has very limited potential for the accidental release of significant amounts of vessel fuel or oil. Small scale releases could occur in the unlikely event of non-compliance to legislation, codes of conduct or best practice. Any such events would be small-scale, temporary and subject to significant dilution and quickly dissipated to non-significant levels in the open coastal environment. **No LSE** is concluded on the basis the project has very low potential for significant releases of contaminants and the low risk of exposure to members of this SAC population.
✗i	Grey seal frequently occur in relatively turbid environments and are thus adapted to locating prey in such conditions. The construction, operation & maintenance and decommissioning activities will be localised and intermittent in nature and the extent and duration of any increase in suspended sediment (and subsequent deposition) being negligible, **no LSE** applies.
✗j	No physical habitat loss within the SAC boundary has been identified within the ES. **No LSE** applies.
✓k	Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

End of Matrix 17

HRA Screening Matrix 18: Vlakte van de Raan (Belguim/Netherlands) Special Area Conservation (SAC)

Name of European site:	**Vlakte van de Raan (Belgium/Netherlands) SAC**																								
EU Code:	**NL2008003**																								
Distance to Project:	**292 km to array**																								
Likely Effects of Project																									
Effect	**Increase in underwater noise**			**Vessel disturbance**			**Vessel collision risk**			**Changes in prey availability and behaviour**			**Accidental Pollution**			**Temporary increases in suspended sediments**			**Long term physical loss of habitat**			**In-combination**		
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**
Grey seal	✓a	✕b	✓c	✓d	✓d	✓c	✕e	✕e	✕f	✕g	✕g	✕f	✕h	✕h	✕f	✕i	✕i	✕f		✕j		✓k	✓k	✓k
Harbour seal#																								
Harbour porpoise*																								
Sandbanks which are slightly covered by sea water all the time																								
***Screened out based on 26 km effective disturbance range (EDR) (site located beyond that range)**																								
#Screened out based on 120 km screening range and lack of site connectivity																								

Evidence supporting conclusions.

✓a Site within screening distance of the project for grey seal. Therefore, there is the potential for some level of interaction between grey seal and underwater noise associated with Hornsea Four. Therefore, the potential for likely significant effects (LSE) is identified.

✕b The distance between the array boundary and the SAC, together with the small scale and localised potential for effect during operation, results in a conclusion of **no LSE** for grey seal.

✓c The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.

✓d The location of the project relative to the at sea usage area of grey seal may result in disturbance of grey seal. Potential for LSE.

✗e **Volume 2, Chapter 4: Marine Mammals (APP-A2.4)** of the **Environmental Statement** (ES) considers marine mammal collision risk, finding that it is not expected that Hornsea Four will increase the risk of mortality in marine mammals from collisions. Therefore, **no LSE** has been identified for the project alone.

✗f The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE** is appropriate.

✗g Given the large foraging range of grey seal, and the conclusions of the ES regarding fish and benthic ecology, the potential effect is considered to be negligible. Confirmed as not needing further assessment within **ES Volume 2, Chapter 4: Marine Mammals (APP-A2.4)**. **No LSE** identified.

✗h While connectivity between the project and this site is possible, the potential for significant effects to this SAC population is considered to decrease with the severity of effects experienced locally and distance. With reference to the activities proposed, Hornsea Four has very limited potential for the accidental release of significant amounts of vessel fuel or oil. Small scale releases could occur in the unlikely event of non-compliance to legislation, codes of conduct or best practice. Any such events would be small-scale, temporary and subject to significant dilution and quickly dissipated to non-significant levels in the open coastal environment. **No LSE** is concluded on the basis the project has very low potential for significant releases of contaminants and the low risk of exposure to members of this SAC population.

✗i Grey seal frequently occur in relatively turbid environments and are thus adapted to locating prey in such conditions. The construction, operation & maintenance and decommissioning activities will be localised and intermittent in nature and the extent and duration of any increase in suspended sediment (and subsequent deposition) being negligible, **no LSE** applies.

✗j No physical habitat loss within the SAC boundary has been identified within the ES. **No LSE** applies.

✓k Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

End of Matrix 18

HRA Screening Matrix 19: Westerschelde & Saeftinghe (Netherlands) Special Area Conservation (SAC)

Name of European site:	**Westerschelde & Saeftinghe (Netherlands) SAC**																							
EU Code:	**NL9803061**																							
Distance to Project:	**301 km to array**																							
Likely Effects of Project																								
Effect	**Increase in underwater noise**			**Vessel disturbance**			**Vessel collision risk**			**Changes in prey availability and behaviour**			**Accidental Pollution**			**Temporary increases in suspended sediments**			**Long term physical loss of habitat**			**In-combination**		
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**
Grey seal	✓a	✗b	✓c	✓d	✓d	✓c	✗e	✗e	✗f	✗g	✗g	✗f	✗h	✗h	✗f	✗i	✗i	✗f		✗j		✓k	✓k	✓k
Harbour seal#																								
Harbour porpoise*																								
***Screened out based on 26 km effective disturbance range (EDR) (site located beyond that range) #Screened out based on 120 km screening range and lack of site connectivity**																								

Evidence supporting conclusions – grey seal.

✓a Site within screening distance of the project for grey seal. Therefore, there is the potential for some level of interaction between grey seal and underwater noise associated with Hornsea Four. Therefore, the potential for likely significant effects (LSE) is identified.

✗b The distance between the array boundary and the SAC, together with the small scale and localised potential for effect during operation, results in a conclusion of **no LSE** for grey seal.

✓c The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, potential LSE is identified.

✓d The location of the project relative to the at sea usage area of grey seal may result in disturbance of grey seal. Potential for LSE.

✗e **Volume 2, Chapter 4: Marine Mammals (APP-A2.4)** of the **Environmental Statement** (ES) considers marine mammal collision risk, finding that it is not expected that Hornsea Four will increase the risk of mortality in marine mammals from collisions. Therefore, **no LSE** has been identified for the project alone.

✗f The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE** is appropriate.

✗g Given the large foraging range of grey seal, and the conclusions of the ES regarding fish and benthic ecology, the potential effect is considered to be negligible. Confirmed as not needing further assessment within **ES Volume 2, Chapter 4: Marine Mammals (APP-A2.4)**. **No LSE** identified.

✗h While connectivity between the project and this site is possible, the potential for significant effects to this SAC population is considered to decrease with the severity of effects experienced locally and distance. With reference to the activities proposed, Hornsea Four has very limited potential for the accidental release of significant amounts of vessel fuel or oil. Small scale releases could occur in the unlikely event of non-compliance to legislation, codes of conduct or best practice. Any such events would be small-scale, temporary and subject to significant dilution and quickly dissipated to non-significant levels in the open coastal environment. **No LSE** is concluded on the basis the project has very low potential for significant releases of contaminants and the low risk of exposure to members of this SAC population.

✗i Grey seal frequently occur in relatively turbid environments and are thus adapted to locating prey in such conditions. The construction, operation & maintenance and decommissioning activities will be localised and intermittent in nature and the extent and duration of any increase in suspended sediment (and subsequent deposition) being negligible, **no LSE** applies.

✗j No physical habitat loss within the SAC boundary has been identified within the ES. **No LSE** applies.

✓k Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

Cont. on next page for additional features

HRA Screening Matrix 19: Westerschelde & Saeftinghe (Netherlands) (Cont.)

Name of European site:	**Westerschelde & Saeftinghe (Netherlands) SAC**																								
EU Code:	**NL9803061**																								
Distance to Project:	**301 km to array**																								
Likely Effects of Project																									
Effect	**Increase in underwater noise**			**Vessel disturbance**			**Vessel collision risk**			**Changes in prey availability and behaviour**			**Accidental Pollution**			**Temporary increases in suspended sediments**			**Long term physical loss of habitat**			**In-combination**		
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**
Salicornia and other annuals colonizing mud and sand																								
Shifting dunes along the shoreline with *Ammophila arenaria*																								
Fixed coastal dunes with herbaceous vegetation																								
Sandbanks which are slightly covered by sea water all the time																								
Mudflats and sandflats not covered by seawater at low tide																								
Estuaries																								
Dunes with *Hippophaë rhamnoides*																								
Embryonic shifting dunes																								
Spartina swards																								
Atlantic salt meadows																								
Humid dune slacks																								

End of Matrix 19

HRA Screening Matrix 20: Voordelta (Netherlands) Special Area of Conservation (SAC)

Name of European site:	Voordelta (Netherlands) SAC																							
EU Code:	NL4000017																							
Distance to Project:	272 km to array																							
Likely Effects of Project																								
Effect	Increase in underwater noise			Vessel disturbance			Vessel collision risk			Changes in prey availability and behaviour			Accidental Pollution			Temporary increases in suspended sediments			Long term physical loss of habitat			In-combination		
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
Grey seal	√a	✗b	√c	√d	√d	√c	✗e	✗e	✗f	✗g	✗g	✗f	✗h	✗h	✗f	✗i	✗i	✗f		✗j		√k	√k	√k
Harbour seal#																								
Harbour porpoise*																								
Allis shad																								
Shad																								
Lampern																								
Great sea lamprey																								
***Screened out based on 26 km effective disturbance range (EDR) (site located beyond that range)**																								
#Screened out based on 120 km screening range and lack of site connectivity																								

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HRA Screening Matrix 20: Voordelta (Netherlands) SAC (Cont.)

Name of European site:	Voordelta (Netherlands) SAC																								
EU Code:	NL4000017																								
Distance to Project:	272 km to array																								
Likely Effects of Project																									
Effect	Increase in underwater noise			Vessel disturbance			Vessel collision risk			Changes in prey availability and behaviour			Accidental Pollution			Temporary increases in suspended sediments			Long term physical loss of habitat			In-combination		
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
Salicornia and other annuals colonizing mud and sand																									
Spartina swards																									
Atlantic salt meadows																									
Embryonic shifting dunes																									
Shifting dunes along the shoreline with Ammophila arenaria																									
Sandbanks which are slightly covered by sea water all the time																									
Mudflats and sandflats not covered by seawater at low tide																									

Cont. on next page

HRA Screening Matrix 20: Voordelta (Netherlands) SAC (Cont.)

Evidence supporting conclusions.

✓a Site within screening distance of the project for grey seal. Therefore, there is the potential for some level of interaction between grey seal and underwater noise associated with Hornsea Four. Therefore, the potential for likely significant effects (LSE) is identified.

✗b The distance between the array boundary and the SAC, together with the small scale and localised potential for effect during operation, results in a conclusion of **no LSE** for grey seal.

✓c The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.

✓d The location of the project relative to the at sea usage area of grey seal may result in disturbance of grey seal. Potential for LSE.

✗e **Volume 2, Chapter 4: Marine Mammals (APP-A2.4)** of the **Environmental Statement** (ES) considers marine mammal collision risk, finding that it is not expected that Hornsea Four will increase the risk of mortality in marine mammals from collisions. Therefore, **no LSE** has been identified for the project alone.

✗f The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE** is appropriate.

✗g Given the large foraging range of grey seal, and the conclusions of the ES regarding fish and benthic ecology, the potential effect is considered to be negligible. Confirmed as not needing further assessment within **ES Volume 2, Chapter 4: Marine Mammals (APP-A2.4)**. **No LSE** identified.

✗h While connectivity between the project and this site is possible, the potential for significant effects to this SAC population is considered to decrease with the severity of effects experienced locally and distance. With reference to the activities proposed, Hornsea Four has very limited potential for the accidental release of significant amounts of vessel fuel or oil. Small scale releases could occur in the unlikely event of non-compliance to legislation, codes of conduct or best practice. Any such events would be small-scale, temporary and subject to significant dilution and quickly dissipated to non-significant levels in the open coastal environment. **No LSE** is concluded on the basis the project has very low potential for significant releases of contaminants and the low risk of exposure to members of this SAC population.

✗i Grey seal frequently occur in relatively turbid environments and are thus adapted to locating prey in such conditions. The construction, operation & maintenance and decommissioning activities will be localised and intermittent in nature and the extent and duration of any increase in suspended sediment (and subsequent deposition) being negligible, **no LSE** applies.

✗j No physical habitat loss within the SAC boundary has been identified within the ES. **No LSE** applies.

✓k Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

End of Matrix 20

HRA Screening Matrix 21: Noordzeekustzone (Netherlands) Special Area of Conservation (SAC)

Name of European site:	**Noordzeekustzone (Netherlands) SAC**																								
EU Code:	**NL9802001**																								
Distance to Project:	**221 km to array**																								
Likely Effects of Project																									
Effect	**Increase in underwater noise**			**Vessel disturbance**			**Vessel collision risk**			**Changes in prey availability and behaviour**			**Accidental Pollution**			**Temporary increases in suspended sediments**			**Long term physical loss of habitat**			**In-combination**		
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**
Grey seal	✓a	✗b	✓c	✓d	✓d	✓c	✗e	✗e	✗f	✗g	✗g	✗f	✗h	✗h	✗f	✗i	✗i	✗f		✗j		✓k	✓k	✓k
Harbour seal#																								
Harbour porpoise*																								
Shad																								
River lamprey																								
Sea lamprey																								
Salicornia and other annuals colonizing mud and sand																								
Atlantic salt meadows																								
Embryonic shifting dunes																								
Shifting dunes along the shoreline																								
Sandbanks slightly covered by sea water all the time																								
Mudflats and sandflats not covered by seawater at low tide																								
***Screened out based on 26 km effective disturbance range (EDR) (site located beyond that range)**																								
#Screened out based on 120 km screening range and lack of site connectivity																								

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HRA Screening Matrix 21: Noordzeekustzone (Netherlands) SAC (Cont.)

Evidence supporting conclusions.

✓a Site within screening distance of the project for grey seal. Therefore, there is the potential for some level of interaction between grey seal and underwater noise associated with Hornsea Four. Therefore, the potential for likely significant effects (LSE) is identified.

✗b The distance between the array boundary and the SAC, together with the small scale and localised potential for effect during operation, results in a conclusion of **no LSE** for grey seal.

✓c The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.

✓d The location of the project relative to the at sea usage area of grey seal may result in disturbance of grey seal. Potential for LSE.

✗e **Volume 2, Chapter 4: Marine Mammals (APP-A2.4)** of the **Environmental Statement** (ES) considers marine mammal collision risk, finding that it is not expected that Hornsea Four will increase the risk of mortality in marine mammals from collisions. Therefore, **no LSE** has been identified for the project alone.

✗f The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE** is appropriate.

✗g Given the large foraging range of grey seal, and the conclusions of the ES regarding fish and benthic ecology, the potential effect is considered to be negligible. Confirmed as not needing further assessment within **ES Volume 2, Chapter 4: Marine Mammals (APP-A2.4)**. **No LSE** identified.

✗h While connectivity between the project and this site is possible, the potential for significant effects to this SAC population is considered to decrease with the severity of effects experienced locally and distance. With reference to the activities proposed, Hornsea Four has very limited potential for the accidental release of significant amounts of vessel fuel or oil. Small scale releases could occur in the unlikely event of non-compliance to legislation, codes of conduct or best practice. Any such events would be small-scale, temporary and subject to significant dilution and quickly dissipated to non-significant levels in the open coastal environment. **No LSE** is concluded on the basis the project has very low potential for significant releases of contaminants and the low risk of exposure to members of this SAC population.

✗i Grey seal frequently occur in relatively turbid environments and are thus adapted to locating prey in such conditions. The construction, operation & maintenance and decommissioning activities will be localised and intermittent in nature and the extent and duration of any increase in suspended sediment (and subsequent deposition) being negligible, **no LSE** applies.

✗j No physical habitat loss within the SAC boundary has been identified within the ES. **No LSE** applies.

✓k Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

End of Matrix 21

HRA Screening Matrix 22: Waddenzee (Netherlands) Special Area of Conservation (SAC)

Name of European site:	Waddenzee (Netherlands) SAC																								
EU Code:	NL1000001																								
Distance to Project:	229 km to array																								
Likely Effects of Project																									
Effect	Increase in underwater noise			Vessel disturbance			Vessel collision risk			Changes in prey availability and behaviour			Accidental Pollution			Temporary increases in suspended sediments			Long term physical loss of habitat			In-combination		
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	✗b	✓c	✓d	✓d	✓c	✗e	✗e	✗f	✗g	✗g	✗f	✗h	✗h	✗f	✗i	✗i	✗f		✗j		✓k	✓k	✓k			
Harbour seal#																											
Harbour porpoise*																											
Shad																											
River lamprey																											
Sea lamprey																											
Narrow-mouthed whorl snail																											
***Screened out based on 26 km effective disturbance range (EDR) (site located beyond that range)**																											
#Screened out based on 120 km screening range and lack of site connectivity																											

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HRA Screening Matrix 22: Waddenzee (Netherlands) (Cont.)

Name of European site:	Waddenzee (Netherlands) SAC																							
EU Code:	NL1000001																							
Distance to Project:	229 km to array																							
Likely Effects of Project																								
Effect	Increase in underwater noise			Vessel disturbance			Vessel collision risk			Changes in prey availability &behaviour			Accidental pollution			Temporary increases in suspended sediments			Long term physical loss of habitat			Long term physical loss of habitat		
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 slightly covered by sea water all the time																								
Estuaries																								
Mudflats & sandflats not covered by seawater at low tide																								
Salicornia and other annuals colonizing mud and sand																								
Spartina swards																								
Atlantic salt meadows																								
Embryonic shifting dunes																								
Shifting dunes along the shoreline with Ammophila arenaria																								
Fixed coastal dunes with herbaceous vegetation																								
Dunes with Hippophaë rhamnoides																								
Dunes with Salix repens ssp argentea																								
Humid dune slacks																								

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HRA Screening Matrix 22: Waddenzee (Netherlands) (Cont.)

Evidence supporting conclusions.

✓a Site within screening distance of the project for grey seal. Therefore, there is the potential for some level of interaction between grey seal and underwater noise associated with Hornsea Four. Therefore, the potential for likely significant effects (LSE) is identified.

✗b The distance between the array boundary and the SAC, together with the small scale and localised potential for effect during operation, results in a conclusion of **no LSE** for grey seal.

✓c The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.

✓d The location of the project relative to the at sea usage area of grey seal may result in disturbance of grey seal. Potential for LSE.

✗e **Volume 2, Chapter 4: Marine Mammals (APP-A2.4)** of the **Environmental Statement** (ES) considers marine mammal collision risk, finding that it is not expected that Hornsea Four will increase the risk of mortality in marine mammals from collisions. Therefore, **no LSE** has been identified for the project alone.

✗f The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE** is appropriate.

✗g Given the large foraging range of grey seal, and the conclusions of the ES regarding fish and benthic ecology, the potential effect is considered to be negligible. Confirmed as not needing further assessment within **ES Volume 2, Chapter 4: Marine Mammals (APP-A2.4)**. **No LSE** identified.

✗h While connectivity between the project and this site is possible, the potential for significant effects to this SAC population is considered to decrease with the severity of effects experienced locally and distance. With reference to the activities proposed, Hornsea Four has very limited potential for the accidental release of significant amounts of vessel fuel or oil. Small scale releases could occur in the unlikely event of non-compliance to legislation, codes of conduct or best practice. Any such events would be small-scale, temporary and subject to significant dilution and quickly dissipated to non-significant levels in the open coastal environment. **No LSE** is concluded on the basis the project has very low potential for significant releases of contaminants and the low risk of exposure to members of this SAC population.

✗i Grey seal frequently occur in relatively turbid environments and are thus adapted to locating prey in such conditions. The construction, operation & maintenance and decommissioning activities will be localised and intermittent in nature and the extent and duration of any increase in suspended sediment (and subsequent deposition) being negligible, **no LSE** applies.

✗j No physical habitat loss within the SAC boundary has been identified within the ES. **No LSE** applies.

✓k Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

End of Matrix 22

HRA Screening Matrix 23: Greater Wash Special Protection Area (SPA)

Name of European site:	**Greater Wash SPA**																		
EU Code:	**UK9020329**																		
Distance to Project:	**63.4 km from array, 0.4 km to ECC**																		
Likely Effects of Project																			
Effect	**Direct disturbance and displacement**			**Changes in prey availability & behaviour**			**Indirect impacts through effects on prey species**			**Collision risk**			**Barrier effect**			**In-combination**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Red-throated diver	✓a	✓b	✓c	✗d		✗e		✗d			✗f			✗g		✓h	✓h	✓h
Common scoter	✓a	✓b	✓c	✗d		✗e		✗d			✗f			✗g		✓h	✓h	✓h
Little gull	✗i	✗i	✗i	✗d		✗e		✗d			✓j			✗g		✗k	✓h	✗k
Sandwich tern																		
Common tern																		
Little tern																		

Evidence supporting conclusions.

- ✓a A sensitive species to cable laying vessels, only during construction in the Export Cable Corridor (ECC), close to the SPA. Therefore, a finding of potential LSE is appropriate.
- ✓b A sensitive species, maintenance vessels may pass close to or through the SPA. Therefore, a finding of potential LSE is appropriate.
- ✓c The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.
- ✗d No changes in prey availability or behaviour predicted directly or indirectly as main construction and O&M activities are in array area and not within SPA, which is 63.4 km away. **No LSE** is identified
- ✗e The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE** is appropriate.
- ✗f Not recorded in array area and a species that flies low to the water so is not at risk from collision. **No LSE** is identified.
- ✗g Species is only present during the non-breeding bio-season and the array area is not a 'barrier' between roosting and feeding areas for this species. The potential for LSE is therefore discounted.
- ✓h Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.
- ✗i Not sensitive to construction or maintenance and operation or decommissioning activities when on migration. **No LSE** is identified.
- ✓j Potentially present in numbers during migration and proportion fly at potential collision height (PCH). Potential for LSE identified.
- ✗k Potential effects were not considered to require further assessment during the construction and decommissioning phase in-combination with other plans or projects. This is due to Hornsea Four having no overlap with relevant phases of other projects that would occur at the same time.

End of Matrix 23

HRA Screening Matrix 24: Flamborough and Filey Coast SPA

Name of European site:	Flamborough and Filey Coast SPA																	
EU Code:	UK9006101																	
Distance to Project:	63 km to array, 2.5 to EEC																	
Likely Effects of Project																		
Effect	Direct disturbance and displacement			Changes in prey availability and behaviour			Indirect impacts through the effects on prey species			Collision risk			Barrier effect			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Fulmar (component of seabird assemblage)	✗a	✗b	✗c	✗d		✗e		✗f			✗g			✗h		✗i	✗j	✗i
Kittiwake	✗a	✗b	✗c	✗d		✗e		✗f			✓k			✗h		✗i	✓l	✗i
Herring gull (component of seabird assemblage)	✗a	✗b	✗c	✗d		✗e		✗f			✓m			✗h		✗i	✓l	✗i
Gannet	✓n	✓o	✓p	✗d		✗e		✗f			✓q			✗h		✓l	✓l	✓l
Guillemot	✓n	✓o	✓p	✗d		✗e		✗f			✗f			✓r		✓l	✓l	✓l
Razorbill	✓n	✓o	✓p	✗d		✗e		✗f			✗f			✓r		✓l	✓l	✓l
Puffin (component of seabird assemblage)	✓n	✓o	✓p	✗d		✗e		✗f			✗f			✓r		✓l	✓l	✓l
Seabird assemblage (excluding named components above)																		

Evidence supporting conclusions

✗a Not sensitive to construction activities within the Hornsea Four array area that would lead to displacement. No potential for LSE identified.

✗b Not sensitive to operation and maintenance activities within the Hornsea Four array area that would lead to displacement or barrier effects. Therefore, **no LSE** is concluded.

✗c The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE** is appropriate.

✗d Not sensitive to insignificant effects on prey species within the Hornsea Four array area (as identified by the findings reported in the project's **Environmental Statement - Volume 2, Chapter 3: Fish and Shellfish (APP-A2.3)** and **Volume 2 Chapter 2, Benthic and Intertidal Ecology (APP-A2.2)** indirectly during the operation and maintenance phase.

✗e The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE** is appropriate.

✗f Not sensitive to insignificant effects on prey species within the Hornsea Four array area (as identified by the findings reported in the project's **Environmental Statement - Volume 2, Chapter 3: Fish and Shellfish (APP-A2.3)** and **Volume 2 Chapter 2, Benthic and Intertidal Ecology (APP-A2.2)** indirectly during the operation and maintenance phase. No potential for LSE.

✗g A species that flies low to the water with very low risk of collision from Hornsea Four. **No LSE** identified.

✗h Species known to have a large foraging range, which would not be susceptible to a barrier effect. **No LSE** is identified.

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HRA Screening Matrix 24: Flamborough and Filey Coast SPA (cont.)

Evidence supporting conclusions (cont.)

✗i	Potential effects were not considered to require further assessment during the construction and decommissioning phase in-combination with other plans or projects. This is due to Hornsea Four having no overlap with relevant phases of other projects that would occur at the same time.
✗j	Based on low species sensitivity to impacts and over these scales, the pathways are considered too weak to contribute to a material degree to an in-combination effects
✓k	Present in moderate densities within the Hornsea Four array area and proportion fly at potential collision height (PCH) during both the breeding and non-breeding bio-seasons. Potential for LSE.
✓l	Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.
✓m	Present in very low densities within the Hornsea Four array area, though a proportion fly at PCH. Collision risk estimated to be extremely low and would likely be trivial or inconsequential but screened in on precautionary basis.
✓n	Moderate sensitivity to sensitivity to construction activities within the Hornsea Four array area, potential LSE identified.
✓o	Moderate sensitivity to operation and maintenance activities within Hornsea Four array area potential LSE identified during both breeding and non-breeding seasons.
✓p	The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.
✓q	Present in moderate densities within the Hornsea Four array area and proportion fly at potential collision height (PCH) during both the breeding and non-breeding bio-seasons. Potential for LSE.
✓r	Auks species may forage beyond array area and may be sensitive to flying through so may be susceptible to barrier effect, potential LSE identified.

End of Matrix 24

HRA Screening Matrix 25: Northumbria Coast SPA

Name of European site:	**Northumbria Coast SPA**																	
EU Code:	**UK9006131**																	
Distance to Project:	**151.7 km to array. 102.6 k to ECC**																	
Likely Effects of Project																		
Effect	**Direct disturbance and displacement**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Collision risk**			**Barrier effect**			**In-combination**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Arctic tern		×a		×b		×c		×d			✓e			×f		×g	✓h	×g
Little tern																		
Turnstone																		
Purple sandpiper																		

Evidence supporting conclusions.

×a Not sensitive to construction, operation and maintenance or decommissioning activities associated with potential displacement from Hornsea Four array area and potential connectivity limited to only during migratory bio-seasons whilst on passage.

×b Not sensitive to insignificant changes in prey availability and behaviour across entire array area ((as identified by the findings reported in the project's **Environmental Statement** - **Volume 2, Chapter 3: Fish and Shellfish (APP-A2.3)** and **Volume 2 Chapter 2**, **Benthic and Intertidal Ecology (APP-A2.2)** directly during the construction phase, as potential connectivity limited to only during the migratory bio-seasons whilst on passage.

×c The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE** is appropriate.

×d Not sensitive to insignificant effects on prey species within the array area (as identified by the findings reported in the project's **Environmental Statement** - **Volume 2, Chapter 3: Fish and Shellfish (APP-A2.3)** and **Volume 2 Chapter 2**, **Benthic and Intertidal Ecology (APP-A2.2)** indirectly during the operation and maintenance phase as potential connectivity limited to only during the migratory bio-seasons whilst on passage.

✓e Potential connectivity to array area during migratory bio-seasons, with limited effect as species known to migrate closer to coast and any risk is highly likely to be trivial and inconsequential when considering one off migratory movements through OWFs but screened in on precautionary basis.

×f Not sensitive to barrier effect from Hornsea Four, as no connectivity during more sensitive breeding bio-season and potential connectivity only during migratory bio-seasons whilst on passage when one off movements are not considered to be of any consequence to birds when migrating large distances through the North Sea.

×g Potential effects were not considered to require further assessment during the construction and decommissioning phase in-combination with other plans or projects. This is due to Hornsea Four having no overlap with relevant phases of other projects that would occur at the same time.

✓h Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

End of Matrix 25

HRA Screening Matrix 26: Humber Estuary SPA

Name of European site: Humber Estuary SPA EU Code: UK9006111																								
Distance to Project:	77.9 km to array, 32.2 km to ECC																							
Likely Effects of Project																								
Effect	Temporary habitat loss/ disturbance			Temporary disturbance / damage to habitats (onshore)			Fragmentation or severance of habitats			Disturbance (airborne noise and visual) (onshore)			Invasive non-native species (onshore)			Accidental release of contaminants (onshore)			Collision risk			In-combination		
	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Shelduck (NB)	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕b	✕b	✕b	✕c	✕c	✕c	✕c	✕c	✕c		✓d		✕e	✓f	✕e
Marsh harrier (B)																								
Hen harrier (NB)	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕b	✕b	✕b	✕c	✕c	✕c	✕c	✕c	✕c		✓d		✕e	✓f	✕e
Avocet (B + NB)	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕b	✕b	✕b	✕c	✕c	✕c	✕c	✕c	✕c		✓d		✕e	✓f	✕e
Golden plover (NB)	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕b	✕b	✕b	✕c	✕c	✕c	✕c	✕c	✕c		✓d		✕e	✓f	✕e
Knot (NB)	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕b	✕b	✕b	✕c	✕c	✕c	✕c	✕c	✕c		✓d		✕e	✓f	✕e
Dunlin (NB)	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕b	✕b	✕b	✕c	✕c	✕c	✕c	✕c	✕c		✓d		✕e	✓f	✕e
Ruff (NB)	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕b	✕b	✕b	✕c	✕c	✕c	✕c	✕c	✕c		✓d		✕e	✓f	✕e
Black-tailed godwit (NB)	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕b	✕b	✕b	✕c	✕c	✕c	✕c	✕c	✕c		✓d		✕e	✓f	✕e
Bar-tailed godwit (NB)	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕b	✕b	✕b	✕c	✕c	✕c	✕c	✕c	✕c		✓d		✕e	✓f	✕e
Redshank (NB)	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕b	✕b	✕b	✕c	✕c	✕c	✕c	✕c	✕c		✓d		✕e	✓f	✕e
Little tern (B)																								
Bittern (B + NB)																								
Waterbird assemblage (excluding named components above)	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕a	✕b	✕b	✕b	✕c	✕c	✕c	✕c	✕c	✕c		✓d		✕e	✓f	✕g

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HRA Screening Matrix 26: Humber Estuary SPA (Cont.)

Evidence supporting conclusions.

✗a	The site does not physically overlap with the onshore Hornsea Four boundaries and therefore does not result in loss of habitat, disturbance, damage or fragmentation
✗b	Although it is possible that these species may use habitat within the onshore Hornsea Four boundaries, given the expansive landscape of similar habitat in the project surrounds and immediately adjacent to the SPA. It is very unlikely that birds will expend large amounts of valuable energy flying over suitable habitat in order to use areas that may be affected by Hornsea Four that are more than 7 km away. Therefore, it is reasonable to conclude that there are no likely significant effects.
✗c	The majority of water courses that could be affected by the construction and operation of the onshore elements of Hornsea Four drain to the River Hull and then eventually to the Humber. Construction of the project will involve the storage and handling of small volumes of potentially harmful materials. In the event of accidental pollution of a watercourse, and no mitigating action by Hornsea Four, a small volume of polluting material would need to travel approximately ten to tens of kilometres of watercourse before reaching the Humber SPA. A combination of the small volume of material and natural action over the time it takes to travel to the Humber will result in minimal risk of harm to the site. **No LSE** applies.
✓d	Estimated that very small potential impacts / effects on all migratory waterbird species and hen harrier from individual developments in the North Sea. However, in order to provide a quantification of any potential impacts and effects these species are screened in.
✗e	Potential effects were not considered to require further assessment during the construction and decommissioning phase in-combination with other plans or projects. This is due to Hornsea Four having no overlap with relevant phases of other projects that would occur at the same time
✓f	Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

End of Matrix 26

HRA Screening Matrix 27: Coquet Island SPA

Name of European site:	**Coquet Island SPA**																		
EU Code:	**UK9006031**																		
Distance to Project:	**167 km to array**																		
Likely Effects of Project																			
Effects	**Disturbance displacement**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Collision risk**			**Barrier**			**In-combination**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Kittiwake (un-named component of the seabird assemblage)		✗a		✗b		✗c		✗d			✓e			✗f		✗g	✓h	✗g
Sandwich tern		✗a		✗b		✗c		✗d			✓i			✗f		✗g	✓h	✗g
Common tern		✗a		✗b		✗c		✗d			✓i			✗f		✗g	✓h	✗g
Arctic tern		✗a		✗b		✗c		✗d			✓i			✗f		✗g	✓h	✗g
Roseate tern		✗a		✗b		✗c		✗d			✓e			✗f		✗g	✓h	✗g
Puffin (component of the seabird assemblage)	✓j	✓k	✓l	✗b		✗c		✗d			✗i			✗f		✓h	✓h	✓h
Seabird assemblage (excluding named components above)																		

Evidence supporting conclusions.

✗a Species not known to be sensitive to disturbance and displacement from operation and maintenance activities associated with offshore wind farms. A finding of **no LSE** applies.

✗b Very minor, localised effects are predicted for prey species within (and around) the array area (as identified by the findings reported in the project's **Environmental Statement** - **Volume 2, Chapter 3: Fish and Shellfish (APP-A2.3)** and **Volume 2 Chapter 2**, **Benthic and Intertidal Ecology (APP-A2.2)** during the construction phase. This far-ranging species is unlikely to be sensitive to indirect effects on foraging resource in the context noting the vast resources in the wider habitat available.

✗c The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of **no LSE**

✗d Throughout all project phases, all impacts to Fish and Shellfish (APP-A2.3) receptors were found to have either negligible, minor adverse or minor beneficial effects. Effects on prey species are reported in the project's **Environmental Statement** - **Volume 2, Chapter 3: Fish and Shellfish (APP-A2.3)** and **Volume 2 Chapter 2**, **Benthic and Intertidal Ecology (APP-A2.2)**. Indirect impacts on seabirds are not therefore anticipated. **No LSE**.

✓e Species present in Hornsea Four array area in moderate densities and proportion fly at potential collision height (PCH) during the non-breeding bio-seasons. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✗f Not sensitive to barrier effect from Hornsea Four, as no connectivity during more sensitive breeding bio-season and potential connectivity only during migratory bio-seasons whilst on passage when one off movements are not considered to be of any consequence to birds when migrating large distances through the North Sea.

✗g Potential effects were not considered to require further assessment during the construction and decommissioning phase in-combination with other plans or projects. This is due to Hornsea Four having no overlap with relevant phases of other projects that would occur at the same time.

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HRA Screening Matrix 27: Coquet Island SPA (Cont.)

Evidence supporting conclusions.

✓h Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

✓i Potential connectivity to array area during migratory bio-seasons, with limited effect as species known to migrate closer to coast and any risk is highly likely to be trivial and inconsequential when considering one off migratory movements through OWFs but screened in on precautionary basis.

✓j Moderate sensitivity to sensitivity to construction activities within the Hornsea Four array area, potential LSE identified.

✓k Moderate sensitivity to operation and maintenance activities within Hornsea Four array area potential LSE identified during both breeding and non-breeding seasons.

✓l The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.

End of Matrix 27

HRA Screening Matrix 28: Farne Islands SPA

Name of European site:	**Farne Islands SPA**																		
EU Code:	**UK9006021**																		
Distance to Project:	**198 km to array**																		
Likely Effects of Project																			
Effect	**Disturbance displacement**			**Changes in prey availability and behaviour**			**Indirect impacts through effects on prey species**			**Collision risk**			**Barrier**			**In-combination**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Kittiwake (component of the seabird assemblage)		×a		×b		×c		×d			✓e			×f		×g	✓h	×g
Sandwich tern		×a		×b		×c		×d			✓l			×f		×g	✓h	×g
Common tern		×a		×b		×c		×d			✓l			×f		×g	✓h	×g
Arctic tern		×a		×b		×c		×d			✓l			×f		×g	✓h	×g
Roseate tern																		
Guillemot	✓i	✓j	✓k	×b		×c		×d			×l			×f		✓h	✓h	✓h
Puffin (component of the seabird assemblage)	✓i	✓j	✓k	×b		×c		×d			×l			×f		✓h	✓h	✓h
Seabird assemblage (excluding named components above)																		

Evidence supporting conclusions.

×a Species not known to be sensitive to disturbance and displacement from operation and maintenance activities associated with offshore wind farms. A finding of **no LSE** applies

×b Very minor, localised effects are predicted for prey species within (and around) the array area (as reported in the project's **Environmental Statement** - **Volume 2, Chapter 3: Fish and Shellfish (APP-A2.3)** and **Volume 2 Chapter 2**, **Benthic and Intertidal Ecology (APP-A2.2)** during the construction phase. This far-ranging species is unlikely to be sensitive to indirect effects on foraging resource in the context noting the vast resources in the wider habitat available.

×c The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase.

×d Throughout all project phases, all impacts to Fish and Shellfish (APP-A2.3) receptors were found to have either negligible, minor adverse or minor beneficial effects. Effects on prey species are reported in the project's **Environmental Statement** - **Volume 2, Chapter 3: Fish and Shellfish (APP-A2.3)** and **Volume 2 Chapter 2**, **Benthic and Intertidal Ecology (APP-A2.2)**. Indirect impacts on seabirds are not therefore anticipated. **No LSE**.

✓e Present in Hornsea Four array area in moderate densities and proportion fly at potential collision height (PCH) during the non-breeding bio-seasons. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

×f Not sensitive to barrier effect from Hornsea Four, as no connectivity during more sensitive breeding bio-season and potential connectivity only during migratory bio-seasons whilst on passage when one off movements are not considered to be of any consequence to birds when migrating large distances through the North Sea.

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HRA Screening Matrix 28: Farne Islands SPA (Cont.)

Evidence supporting conclusions

✗g	Potential effects were not considered to require further assessment during the construction and decommissioning phase in-combination with other plans or projects. This is due to Hornsea Four having no overlap with relevant phases of other projects that would occur at the same time.
✓h	Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.
✓i	Moderate sensitivity to sensitivity to construction activities within the Hornsea Four array area, potential LSE identified.
✓j	Moderate sensitivity to operation and maintenance activities within Hornsea Four array area potential LSE identified during both breeding and non-breeding seasons.
✓k	The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.
✗l	A species that flies low to the water with a very low risk of collision.

End of Matrix 28

HRA Screening Matrix 29: Teesmouth and Cleveland Coast SPA

Name of European site:	**Teesmouth and Cleveland Coast SPA (as extended in Jan 2020)**																	
EU Code:	**UK9006061**																	
Distance to Project:	**134 km to array**																	
Likely Effects of Project																		
Effect	**Direct disturbance displacement**			**Changes in prey availability and behaviour**			**Indirect impacts through effects on prey species**			**Collision risk**			**Barrier effects**			**In-combination**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Sandwich tern	✗a	✗a	✗a	✗b		✗c		✗d			✓e			✗f		✗g	✓h	✗g
Common tern	✗a	✗a	✗a	✗b		✗c		✗d			✓e			✗f		✗g	✓h	✗g
Avocet																		
Ruff																		
Knot																		
Redshank																		
Little tern																		
Waterbird assemblage (excluding named components above)																		

Evidence supporting conclusions.

✗a Not sensitive to construction, operation and maintenance or decommissioning activities associated with potential displacement from Hornsea Four array area and potential connectivity limited t only during migratory bio-seasons whilst on passage.

✗b Not sensitive to insignificant changes in prey availability and behaviour across entire array area (as identified in the **Environmental Statement** - **Volume 2, Chapter 3: Fish and Shellfish (APP-A2.3)** and **Volume 2 Chapter 2**, **Benthic and Intertidal Ecology**) directly during the construction phase, as potential connectivity limited to only during the migratory bio-seasons whilst on passage.

✗c The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase.

✗d	Not sensitive to insignificant effects on prey species within the array area indirectly (as identified by the findings reported in the project's **Environmental Statement** - **Volume 2, Chapter 3: Fish and Shellfish (APP-A2.3)** and **Volume 2 Chapter 2**, **Benthic and Intertidal Ecology (APP-A2.2)** during the operation and maintenance phase as potential connectivity limited to only during the migratory bio-seasons whilst on passage.
✓e	Potential connectivity to array area during migratory bio-seasons, with limited effect as species known to migrate closer to coast and any risk is highly likely to be trivial and inconsequential when considering one off migratory movements through OWFs but screened in on precautionary basis.
✗f	Not sensitive to barrier effect from Hornsea Four, as no connectivity during more sensitive breeding bio-season and potential connectivity only during migratory bio-seasons whilst on passage when one off movements are not considered to be of any consequence to birds when migrating large distances through the North Sea.
✗g	Potential effects were not considered to require further assessment during the construction and decommissioning phase in-combination with other plans or projects. This is due to Hornsea Four having no overlap with relevant phases of other projects that would occur at the same time.
✓h	Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.

End of Matrix 29

HRA Screening Matrix 30: St Abb's Head and Fast Castle (UK) SPA

Name of European site:	**St Abb's Head and Fast Castle (UK) SPA**															
EU Code:	**UK9004271**															
Distance to Project:	**269 km to array**															
Likely Effects of Project																
Effect	**Direct disturbance displacement**			**Indirect impacts through effects on prey species**			**Collision risk**			**Barrier effect**			**combination**			
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	
Kittiwake (component of the seabird assemblage)		✕a						✓b						✓c		
Herring gull (component of the seabird assemblage)		✕a						✕d						✕e		
Guillemot (component of the seabird assemblage)		✓f						✕g						✓h		
Razorbill (component of the seabird assemblage)		✓f						✕g						✓h		
Seabird assemblage (excluding named components above)																

Evidence supporting conclusions.

✕a Species not known to be sensitive to disturbance and displacement from operation and maintenance activities associated with offshore wind farms. **No LSE** identified.

✓b Present in the Hornsea Four array area in moderate densities and proportion fly at potential collision height (PCH) during the non-breeding bio-seasons. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✓c Present in moderate densities within Hornsea Four and proportion fly at PCH during the non-breeding bio-seasons so potential for collision risk from Hornsea Four and other offshore wind farms in the UK North Sea, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, kittiwake is screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

✕d Present in very low densities within the Hornsea Four array area, though a proportion fly at PCH. Collision risk assessment estimated extremely low potential mortality rates that would be trivial or inconsequential to any colony, particularly those at such a distance.

✕e Based on low species sensitivity to impacts and over these scales, the pathways are considered too weak to contribute to a material degree to an in-combination effects

✓f Moderate sensitivity to disturbance and displacement from operation and maintenance activities associated with Hornsea Four, though potential for an effect only during non-breeding season. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✕g A species that flies low to the water with very low risk of collision.

✓h Moderate sensitivity to disturbance and displacement from operation and maintenance activities from Hornsea Four and other offshore wind farms within the UK North Sea with potential for an effect during non-breeding season, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, guillemot and razorbill are screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

End of Matrix 30

HRA Screening Matrix 31: Forth Islands (UK) SPA

Name of European site:	**Forth Islands (UK) SPA**
EU Code:	**UK9004171**
Distance to Project:	**272 km to array**
Likely Effects of Project	

Effect	**Direct disturbance and displacement**			**Indirect impacts through the effects on prey species**			**Collision risk**			**Barrier effect**			**In-combination**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Gannet		✗a						✓b						✓c	
Kittiwake (component of the seabird assemblage)		✗a						✓b						✓c	
Lesser black-backed gull		✗a						✗d						✗e	
Herring gull (component of the seabird assemblage)		✗a						✗d						✗e	
Common tern		✗f						✓g						✓h	
Arctic tern		✗f						✓g						✓h	
Roseate tern															
Sandwich tern		✗f						✓g						✓h	
Guillemot (component of the seabird assemblage)		✓i						✗j						✓k	
Razorbill (component of the seabird assemblage)		✓i						✗j						✓k	
Puffin		✓i						✗j						✓k	
Shag															
Seabird assemblage (excluding named components above)															

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HRA Screening Matrix 31: Forth Islands (UK) (Cont.)

Evidence supporting conclusions.

✗a	Not sensitive to operation and maintenance from disturbance and displacement activities during non-breeding season and too distant from array area to be the cause of an effect during the breeding season. Potential for LSE is discounted.
✓b	Present in the Hornsea Four array area in moderate densities and proportion fly at potential collision height (PCH) during the non-breeding bio-seasons. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.
✓c	Present in moderate densities within Hornsea Four and proportion fly at PCH during the non-breeding bio-seasons so potential for collision risk from Hornsea Four and other offshore wind farms in the UK North Sea, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, gannet and kittiwake are screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.
✗d	Present in very low densities within the Hornsea Four array area, though a proportion fly at PCH. Collision risk assessment estimated extremely low potential mortality rates that would be trivial or inconsequential to any colony, particularly those at such a distance.
✗e	Based on low species sensitivity to impacts and over these scales, the pathways are considered too weak to contribute to a material degree to an in-combination effects.
✗f	Not sensitive to operation and maintenance activities associated with potential displacement from the Hornsea Four array area and potential connectivity limited to only during migratory bio-seasons whilst on passage.
✓g	Potential connectivity to the Hornsea Four array area during migratory bio-seasons, with limited effect as species known to migrate closer to coast and any risk is highly likely to be trivial and inconsequential when considering one off migratory movements through OWFs but screened in on precautionary basis.
✓h	Analysis of migratory apportionment assessments provided evidence of very small potential impacts / effects on this migratory seabird species alone from developments in the North Sea and therefore any contribution to an in-combination effect would be trivial and inconsequential. However, common tern, Arctic tern and sandwich tern are screened in on precautionary basis.
✓i	Moderate sensitivity to disturbance and displacement from operation and maintenance activities associated with Hornsea Four, though potential for an effect only during non-breeding season. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.
✗j	A species that flies low to the water with very low risk of collision. **No LSE** is identified.
✓k	Moderate sensitivity to disturbance and displacement from operation and maintenance activities from Hornsea Four and other offshore wind farms within the UK North Sea with potential for an effect during non-breeding season, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, guillemot, razorbill and puffin are screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

End of Matrix 31

HRA Screening Matrix 32: Outer Firth of Forth and St Andrew's Complex proposed Special Protection Area (pSPA)

Name of European site: Outer Firth of Forth and St Andrew's Complex pSPA															
EU Code:	**UK9004411**														
Distance to Project:	**241 km to array**														
Likely Effects of Project															
Effect		**Direct disturbance displacement**			**Indirect impacts through effects on prey species**			**Collision risk**			**Barrier effect**			**In-combination**	
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Eider															
Slavonian grebe															
Gannet		✕a						✓b						✓c	
Kittiwake (component of the seabird assemblage)		✕a						✓b						✓c	
Little gull															
Herring gull (component of the seabird assemblage)		✕a						✕d						✕e	
Common tern*															
Arctic tern*															
Guillemot (component of the seabird assemblage)		✓f						✕g						✓h	
Puffin (component of the seabird assemblage)		✓f						✕g						✓h	
Red-throated diver															
Shag															
Seabird assemblage (excluding named components above)															
Waterbird assemblage															

***Breeding location in adjacent SPAs (in this instance the Forth Islands SPA).**

Cont. on next page

HRA Screening Matrix 32: Outer Firth of Forth and St Andrew's Complex pSPA (cont.)

Evidence supporting conclusions.

✗a	Not sensitive to operation and maintenance from disturbance and displacement activities during non-breeding season and too distant from array area to be the cause of an effect during the breeding season. Potential for LSE is discounted.
✓b	Present in the Hornsea Four array area in moderate densities and proportion fly at potential collision height (PCH) during the non-breeding bio-seasons. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.
✓c	Present in moderate densities within Hornsea Four and proportion fly at PCH during the non-breeding bio-seasons so potential for collision risk from Hornsea Four and other offshore wind farms in the UK North Sea, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, gannet and kittiwake are screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.
✗d	Present in very low densities within the array area, though a proportion fly at PCH. Collision risk assessment estimated extremely low potential mortality rates that would be trivial or inconsequential to any colony, particularly those at such a distance.
✗e	Based on low species sensitivity to impacts and over these scales, the pathways are considered too weak to contribute to a material degree to an in-combination effects.
✓f	Moderate sensitivity to disturbance and displacement from operation and maintenance activities associated with Hornsea Four, though potential for an effect only during non-breeding season. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.
✗g	A species that flies low to the water with very low risk of collision. No LSE identified.
✓h	Moderate sensitivity to disturbance and displacement from operation and maintenance activities from Hornsea Four and other offshore wind farms within the UK North Sea with potential for an effect during non-breeding season, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, guillemot and puffin are screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

End of Matrix 32

HRA Screening Matrix 33: Fowlsheugh SPA

Name of European site:	**Fowlsheugh SPA**
EU Code:	**UK9002271**
Distance to Project:	**341 km to array**
Likely Effects of Project	

Effect	**Direct disturbance displacement**			**Indirect impacts through effects on prey species**			**Collision risk**			**Barrier effect**			**In-combination**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar (component of seabird assemblage)		✗a						✗b						✗c	
Kittiwake		✗a						✓d						✓e	
Herring gull (component of seabird assemblage)		✗a						✗f						✗g	
Guillemot		✓h						✗b						✓i	
Razorbill (component of seabird assemblage)		✓h						✗b						✓i	

Evidence supporting conclusions.

✗a Not sensitive to O&M from disturbance and displacement activities during non-breeding season and too distant from array area to be the cause of an effect during the breeding season. LSE is discounted.

✗b A species that flies low to the water with very low risk of collision. **No LSE** identified.

✗c Based on low species sensitivity to impacts and over these scales, the pathways are considered too weak to contribute to a material degree to in-combination effects.

✓d Present in the Hornsea Four array area in moderate densities and proportion fly at potential collision height (PCH) during the non-breeding bio-seasons. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✓e Present in moderate densities within Hornsea Four and proportion fly at PCH during the non-breeding bio-seasons so potential for collision risk from Hornsea Four and other offshore wind farms in the UK North Sea, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, kittiwake is screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

✗f Present in very low densities within the Hornsea Four array area, though a proportion fly at PCH. Preliminary estimations have concluded in this context that there is extremely low potential for mortality rates that would be trivial or inconsequential to any colony, particularly those at such a distance. **No LSE** identified at this stage.

✗g Only very minor, immaterial impacts would occur to this species from the identified pathways. Over these scales, these pathways are considered too weak to contribute to a material degree to in-combination effects.

✓h Moderate sensitivity to disturbance and displacement from operation and maintenance activities associated with Hornsea Four, though potential for an effect only during non-breeding season. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✓i Moderate sensitivity to disturbance and displacement from operation and maintenance activities from Hornsea Four and other offshore wind farms within the UK North Sea with potential for an effect during non-breeding season, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, guillemot and razorbill are screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

End of Matrix 33

HRA Screening Matrix 34: Buchan Ness to Collieston Coast SPA

Name of European site: Buchan Ness to Collieston Coast SPA **EU Code:**	**Buchan Ness to Collieston Coast SPA** **UK9002491**															
Distance to Project:	**381 km to array**															
Likely Effects of Project																
Effect		**Direct disturbance displacement**			**Indirect impacts through effects on prey species**			**Collision risk**			**Barrier effect**				**In-combination**	
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar (component of the seabird assemblage)		×a						×b						×c	
Kittiwake (component of the seabird assemblage)		×a						✓d						✓e	
Herring gull (component of the seabird assemblage)		×a						×f						×g	
Guillemot (component of the seabird assemblage)		✓h						×f						✓i	
Shag (component of the seabird assemblage)															

Evidence supporting conclusions.

×a Not sensitive to operation and maintenance from disturbance and displacement activities during non-breeding season and too distant from array area to be the cause of an effect during the breeding season.

×b A species that flies low to the water with very low risk of collision.

×c Based on low species sensitivity to impacts and over these scales, the pathways are considered too weak to contribute to a material degree to in-combination effects.

✓d Present in the Hornsea Four array area in moderate densities and proportion fly at potential collision height (PCH) during the non-breeding bio-seasons. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✓e Present in moderate densities within Hornsea Four and proportion fly at PCH during the non-breeding bio-seasons so potential for collision risk from Hornsea Four and other offshore wind farms in the UK North Sea, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, kittiwake is screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

×f Present in very low densities within the Hornsea Four array area, though a proportion fly at PCH. Collision risk assessment estimated extremely low potential mortality rates that would be trivial or inconsequential to any colony, particularly those at such a distance.

×g Only very minor and immaterial impacts would occur to this species from the identified pathways. Over these scales, these pathways are too weak to contribute to a material degree to in-combination effects.

✓h Moderate sensitivity to disturbance and displacement from operation and maintenance activities associated with Hornsea Four, though potential for an effect only during non-breeding season. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✓i Moderate sensitivity to disturbance and displacement from operation and maintenance activities from Hornsea Four and other offshore wind farms within the UK North Sea with potential for an effect during non-breeding season, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, guillemot is screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

End of Matrix 34

HRA Screening Matrix 35: Troup, Pennan and Lion's Heads SPA

Name of European site:	**Troup, Pennan and Lion's Heads SPA**														
EU Code:	**UK9002471**														
Distance to Project:	**423 km to array**														
Likely Effects of Project															
Effect	**Direct disturbance and displacement**			**Indirect impacts through the effects on prey species**			**Collision risk**			**Barrier effect**			**In-combination**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar (component of the seabird assemblage)		✕a						✕b						✕c	
Kittiwake		✕a						✓d						✓e	
Herring gull (component of the seabird assemblage)		✕a						✕f						✕g	
Guillemot		✓h						✕b						✓i	
Razorbill (component of the seabird assemblage)		✓h						✕b						✓i	

Evidence Supporting Conclusions.

✕a Not sensitive to O&M from disturbance and displacement activities during non-breeding season and too distant from array area to be the cause of an effect during the breeding season.

✕b A species that flies low to the water with very low risk of collision.

✕c Based on low species sensitivity to impacts and over these scales, the pathways are considered too weak to contribute to a material degree to in-combination effects.

✓d Present in the Hornsea Four array area in moderate densities and proportion fly at potential collision height (PCH) during the non-breeding bio-seasons. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✓e Present in moderate densities within Hornsea Four and proportion fly at PCH during the non-breeding bio-seasons so potential for collision risk from Hornsea Four and other offshore wind farms in the UK North Sea, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, kittiwake is screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

✕f Present in very low densities within the Hornsea Four array area, though a proportion fly at PCH. Collision risk assessment estimated extremely low potential mortality rates that would be trivial or inconsequential to any colony, particularly those at such a distance.

✕g Only very minor and immaterial impacts would occur to this species from the identified pathways. Over these scales, these pathways are too weak to contribute to a material degree to in-combination effects.

✓h Moderate sensitivity to disturbance and displacement from operation and maintenance activities associated with Hornsea Four, though potential for an effect only during non-breeding season. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✓i Moderate sensitivity to disturbance and displacement from operation and maintenance activities from Hornsea Four and other offshore wind farms within the UK North Sea with potential for an effect during non-breeding season, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, guillemot and razorbill are screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

End of Matrix 35

HRA Screening Matrix 36: East Caithness Cliffs SPA

Name of European site: East Caithness Cliffs SPA EU Code: UK9001182															
Distance to Project:	500 km to array														
Likely Effects of Project															
Effect	Direct disturbance displacement			Indirect impacts through effects on prey species			Collision risk			Barrier effect			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Fulmar (component of the seabird assemblage)		✗a						✗b						✗c	
Kittiwake		✗a						✓d						✓e	
Herring gull		✗a						✗f						✗g	
Great black-backed gull (component of the seabird assemblage)		✗a						✗f						✗g	
Guillemot		✓h						✗f						✓i	
Razorbill		✓h						✗f						✓i	
Shag															
Cormorant (component of the seabird assemblage)															
Peregrine															

Evidence Supporting Conclusions.

✗a Not sensitive to O&M from disturbance and displacement activities during non-breeding season and too distant from array area to be the cause of an effect during the breeding season.

✗b A species that flies low to the water with very low risk of collision.

✗c Based on low species sensitivity to impacts and over these scales, the pathways are considered too weak to contribute to a material degree to in-combination effects.

✓d Present in the Hornsea Four array area in moderate densities and proportion fly at potential collision height (PCH) during the non-breeding bio-seasons. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✓e Present in moderate densities within Hornsea Four and proportion fly at PCH during the non-breeding bio-seasons. Potential for collision risk alone and with other OWF in the UK North Sea. Connectivity is limited due to mixing of wider North Sea populations. Therefore, any effect is likely to be trivial & inconsequential. However, LSE is identified on a precautionary basis to assess the likelihood of an AEoI in-combination

✗f Present in very low densities within the Hornsea Four array area, though a proportion fly at PCH. Collision risk assessment estimated extremely low potential mortality rates that would be trivial or inconsequential to any colony, particularly those at such a distance.

Cont. on next page

HRA Screening Matrix 36: East Caithness Cliffs SPA (Cont.)

Evidence supporting conclusions.

✗g	Only very minor, immaterial impacts to this species from the identified pathways. Over these scales, these pathways are too weak to contribute to a material degree to in-combination effects.
✓h	Moderate sensitivity to disturbance and displacement from operation and maintenance activities associated with Hornsea Four, though potential for an effect only during non-breeding season. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.
✓i	Moderate sensitivity to disturbance and displacement from operation and maintenance activities from Hornsea Four and other offshore wind farms within the UK North Sea with potential for an effect during non-breeding season, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, guillemot and razorbill are screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

End of Matrix 36

HRA Screening Matrix 37: North Caithness Cliffs SPA

Name of European site:	**North Caithness Cliffs SPA**															
EU Code:	**UK9001181**															
Distance to Project:	**534 km to array**															
Likely Effects of Project																
Effect	**Direct disturbance displacement**			**Indirect impacts through effects on prey species**			**Collision risk**			**Barrier effect**			**In-combination**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar (component of the seabird assemblage)		✕a						✕b						✕c	
Kittiwake (component of the seabird assemblage)		✕a						✓d						✓e	
Guillemot		✓f						✕b						✓g	
Razorbill (component of the seabird assemblage)		✓f						✕b						✓g	
Puffin (component of the seabird assemblage)		✓f						✕b						✓g	
Peregrine															

Evidence supporting conclusions:

✕a Not sensitive to O&M from disturbance and displacement activities during non-breeding season and too distant from array area to be the cause of an effect during the breeding season.

✕b A species that flies low to the water with very low risk of collision.

✕c Based on low species sensitivity to impacts and over these scales, the pathways are considered too weak to contribute to a material degree to in-combination effects.

✓d Present in the Hornsea Four array area in moderate densities and proportion fly at potential collision height (PCH) during the non-breeding bio-seasons. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✓e Present in moderate densities within Hornsea Four and proportion fly at PCH during the non-breeding bio-seasons so potential for collision risk from Hornsea Four and other offshore wind farms in the UK North Sea, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, kittiwake is screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

✓f Moderate sensitivity to disturbance and displacement from operation and maintenance activities associated with Hornsea Four, though potential for an effect only during non-breeding season. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✓g Moderate sensitivity to disturbance and displacement from operation and maintenance activities from Hornsea Four and other offshore wind farms within the UK North Sea with potential for an effect during non-breeding season, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, guillemot, razorbill and puffin are screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

End of Matrix 37

HRA Screening Matrix 38: Copinsay SPA

Name of European site:	Copinsay SPA														
EU Code:	UK9002151														
Distance to Project:	558 km to array														
Likely Effects of Project															
Effect	Direct disturbance displacement			Indirect impacts through effects on prey species			Collision risk			Barrier effect			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Fulmar (component of the seabird assemblage)		×a						×b						×c	
Kittiwake (component of the seabird assemblage)		×a						✓d						✓e	
Great black-backed gull (component of the seabird assemblage)		×a						×f						×g	
Guillemot (component of the seabird assemblage)		✓h						×b						✓i	

Evidence supporting conclusions:

×a Not sensitive to O&M from disturbance and displacement activities during non-breeding season and too distant from array area to be the cause of an effect during the breeding season.

×b A species that flies low to the water with very low risk of collision.

×c Based on low species sensitivity to impacts and over these scales, the pathways are considered too weak to contribute to a material degree to in-combination effects.

✓d Present in the Hornsea Four array area in moderate densities and proportion fly at potential collision height (PCH) during the non-breeding bio-seasons. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✓e Present in moderate densities within Hornsea Four and proportion fly at PCH during the non-breeding bio-seasons so potential for collision risk from Hornsea Four and other offshore wind farms in the UK North Sea, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, kittiwake is screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

×f Present in very low densities within the Hornsea Four array area, though a proportion fly at PCH. Preliminary estimations in this context predict extremely low potential mortality rates that would be trivial or inconsequential to any colony, particularly those at such a distance. These findings will be confirmed by collision risk modelling.

✓h Moderate sensitivity to disturbance and displacement from operation and maintenance activities associated with Hornsea Four, though potential for an effect only during non-breeding season. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

×g Only very minor, immaterial impacts to this species from the identified pathways. Over these scales, these pathways are too weak to contribute to a material degree to in-combination effects.

✓i Moderate sensitivity to disturbance and displacement from operation and maintenance activities from Hornsea Four and other offshore wind farms within the UK North Sea with potential for an effect during non-breeding season, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, guillemot is screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

End of Matrix 38

HRA Screening Matrix 39: Hoy SPA

Name of European site:	**Hoy SPA**															
EU Code:	**UK9002141**															
Distance to Project:	**558 km to array**															
Likely Effects of Project																
Effect	**Direct disturbance displacement**			**Indirect impacts through effects on prey species**			**Collision risk**			**Barrier effect**			**In-combination**			
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	
Fulmar (component of the seabird assemblage)		✗a						✗b						✗c		
Great skua		✗d						✓e						✓f		
Arctic skua (component of the seabird assemblage)		✗d						✓e						✓f		
Kittiwake (component of the seabird assemblage)		✗a						✓g						✓h		
Great black-backed gull (component of the seabird assemblage)		✗a						✗i						✗j		
Guillemot (component of the seabird assemblage)		✓k						✗b						✓l		
Puffin (component of the seabird assemblage)		✓k						✗b						✓l		
Red throated diver																
Peregrine																

Evidence supporting conclusions:

✗a Not sensitive to O&M from disturbance and displacement activities during non-breeding season and too distant from array area to be the cause of an effect during the breeding season.

✗b A species that flies low to the water with very low risk of collision.

✗c Based on low species sensitivity to impacts and over these scales, the pathways are considered too weak to contribute to a material degree to in-combination effects.

✗d Not sensitive to O&M activities associated with potential displacement from the array area and potential connectivity limited to only during migratory bio-seasons whilst on passage.

✓e Potential connectivity to the Hornsea Four array area during migratory bio-seasons, with limited effect as species known to migrate closer to coast and any risk is highly likely to be trivial and inconsequential when considering one off migratory movements through OWFs but screened in on precautionary basis.

✓f Analysis of migratory apportionment assessments provided evidence of very small potential impacts / effects on this migratory seabird species alone from developments in the North Sea and therefore any contribution to an in-combination effect would be trivial and inconsequential. However, great skua and Arctic skua are screened in on a precautionary basis.

✓g Present in the Hornsea Four array area in moderate densities and proportion fly at potential collision height (PCH) during the non-breeding bio-seasons. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

Cont. on next page

HRA Screening Matrix 39: Hoy SPA (cont.)

Evidence supporting conclusions (Cont.)

✓h Present in moderate densities within Hornsea Four and proportion fly at PCH during the non-breeding bio-seasons so potential for collision risk from Hornsea Four and other offshore wind farms in the UK North Sea, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, kittiwake is screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

✗i Present in low densities and proportion fly at PCH during the non-breeding bio-seasons, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential.

✗j Only very minor, immaterial impacts to this species from the identified pathways. Over these scales, these pathways are too weak to contribute to a material degree to in-combination effects.

✓k Moderate sensitivity to disturbance and displacement from operation and maintenance activities associated with Hornsea Four, though potential for an effect only during non-breeding season. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✓l Moderate sensitivity to disturbance and displacement from operation and maintenance activities from Hornsea Four and other offshore wind farms within the UK North Sea with potential for an effect during non-breeding season, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, guillemot and puffin are screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

End of Matrix 39

HRA Screening Matrix 40: Marwick Head SPA

Name of European site:	**Marwick Head SPA**															
EU Code:	**UK9002121**															
Distance to Project:	**595 km to array**															
Likely Effects of Project																
Effect	**Direct disturbance and displacement**			**Indirect impacts through the effects on prey species**			**Collision risk**			**Barrier effect**			**In-combination**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Kittiwake (component of the seabird assemblage)		✗a						✓b						✓c	
Guillemot		✓d						✗e						✓f	

Evidence supporting conclusions:

✗a Not sensitive to O&M displacement and disturbance activities during non-breeding season and too distant from array area to be the cause of an effect during the breeding season.

✓b Present in the Hornsea Four array area in moderate densities and proportion fly at potential collision height (PCH) during the non-breeding bio-seasons. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✓c Present in moderate densities within Hornsea Four and proportion fly at PCH during the non-breeding bio-seasons so potential for collision risk from Hornsea Four and other offshore wind farms in the UK North Sea, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, kittiwake is screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

✓d Moderate sensitivity to disturbance and displacement from operation and maintenance activities associated with Hornsea Four, though potential for an effect only during non-breeding season. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✗e A species that flies low to the water with very low risk of collision.

✓f Moderate sensitivity to disturbance and displacement from operation and maintenance activities from Hornsea Four and other offshore wind farms within the UK North Sea with potential for an effect during non-breeding season, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, guillemot is screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

End of Matrix 40

HRA Screening Matrix 41: Rousay SPA

Name of European site:	**Rousay SPA**														
EU Code:	**UK9002371**														
Distance to Project:	**595 km to array**														
Likely Effects of Project															
Effect	**Direct disturbance displacement**			**Indirect impacts through effects on prey species**			**Collision risk**			**Barrier effect**			**In-combination**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar (component of the seabird assemblage)		✗a						✗b						✗c	
Arctic skua (component of the seabird assemblage)		✗d						✓e						✓f	
Kittiwake (component of the seabird assemblage)		✗a						✓g						✓h	
Arctic tern		✗c						✓e						✓f	
Guillemot (component of the seabird assemblage)		✓i						✗b						✓j	

Evidence supporting conclusions:

✗a Not sensitive to O&M disturbance and displacement activities during non-breeding season and too distant from array area to be the cause of an effect during the breeding season.

✗b A species that flies low to the water with very low risk of collision.

✗c Based on low species sensitivity to impacts and over these scales, the pathways are considered too weak to contribute to a material degree to in-combination effects.

✗d Not sensitive to O&M activities associated with potential displacement from the Hornsea Four array area. Potential connectivity limited to only during migratory bio-seasons whilst on passage.

✓e Potential connectivity to the Hornsea Four array area during migratory bio-seasons, with limited effect as species known to migrate closer to coast and any risk is highly likely to be trivial and inconsequential when considering one off migratory movements through OWFs but screened in on precautionary basis.

✓f Analysis of migratory apportionment assessments provided evidence of very small potential impacts / effects on this migratory seabird species alone from developments in the North Sea and therefore any contribution to an in-combination effect would be trivial and inconsequential. However, Arctic skua and Arctic tern are screened in on a precautionary basis.

✓g Present in the Hornsea Four array area in moderate densities and proportion fly at potential collision height (PCH) during the non-breeding bio-seasons. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✓h Present in moderate densities within Hornsea Four and proportion fly at PCH during the non-breeding bio-seasons so potential for collision risk from Hornsea Four and other offshore wind farms in the UK North Sea, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, kittiwake is screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

✓i Moderate sensitivity to disturbance and displacement from operation and maintenance activities associated with Hornsea Four, though potential for an effect only during non-breeding season. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✓j Moderate sensitivity to disturbance and displacement from operation and maintenance activities from Hornsea Four and other offshore wind farms within the UK North Sea with potential for an effect during non-breeding season, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, guillemot is screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

End of Matrix 41

HRA Screening Matrix 42: Calf of Eday SPA

Name of European site:	**Calf of Eday SPA**															
EU Code:	**UK9002431**															
Distance to Project:	**595 km to array**															
Likely Effects of Project																
Effect		**Direct disturbance displacement**			**Indirect impacts through effects on prey species**			**Collision risk**			**Barrier effect**				**In-combination**	
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar (component of the seabird assemblage)		×a						×b						×c	
Kittiwake (component of the seabird assemblage)		×a						√d						√e	
Great black-backed gull (component of the seabird assemblage)		×a						√f						√g	
Guillemot (component of the seabird assemblage)		√h						×b						√i	
Cormorant (component of the seabird assemblage)															

Evidence supporting conclusions:

×a Not sensitive to O&M from disturbance and displacement activities during non-breeding season and too distant from array area to be the cause of an effect during the breeding season.

×b A species that flies low to the water with very low risk of collision.

×c Based on low species sensitivity to impacts and over these scales, the pathways are considered too weak to contribute to a material degree to in-combination effects.

√d Present in the Hornsea Four array area in moderate densities and proportion fly at potential collision height (PCH) during the non-breeding bio-seasons. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

√e Present in moderate densities within Hornsea Four and proportion fly at PCH during the non-breeding bio-seasons so potential for collision risk from Hornsea Four and other offshore wind farms in the UK North Sea, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, kittiwake is screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

√f Present in very low densities within the array area, though a proportion fly at PCH. Collision risk assessment estimated extremely low potential mortality rates that would be trivial or inconsequential to any colony, particularly those at such a distance. However, great black-backed gull is screened in on a precautionary basis, due to the Calf of Eday SPA having the largest colony of great black-backed gulls within the Northern boundary of the UK North Sea.

√g Present in very low densities within the array area, though a proportion fly at PCH. Collision risk assessment estimated extremely low potential mortality rates that would be trivial or inconsequential to any colony, particularly those at such a distance. However, great black-backed gull is screened in to assess the likelihood of an AEoI in-combination on a precautionary basis, due to the Calf of Eday SPA having the largest colony of great black-backed gulls within the Northern boundary of the UK North Sea.

√h Moderate sensitivity to disturbance and displacement from operation and maintenance activities associated with Hornsea Four, though potential for an effect only during non-breeding season. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

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HRA Screening Matrix 42: Calf of Eday SPA (cont.)

Evidence supporting conclusions (cont.)

√i	Moderate sensitivity to disturbance and displacement from operation and maintenance activities from Hornsea Four and other offshore wind farms within the UK North Sea with potential for an effect during non-breeding season, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, guillemot is screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

End of Matrix 42

HRA Screening Matrix 43: West Westray SPA

Name of European site:	**West Westray SPA**															
EU Code:	**UK9002101**															
Distance to Project:	**605 km to array**															
Likely Effects of Project																
Effect		**Direct disturbance and displacement**			**Indirect impacts through the effects on prey species**			**Collision risk**			**Barrier effect**				**In-combination**	
Stage of Development	**C**	**O**	**1**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar (component of the seabird assemblage)		✕a						✕b						✕c	
Arctic skua (component of the seabird assemblage)		✕d						✓e						✓f	
Kittiwake (component of the seabird assemblage)		✕a						✓g						✓h	
Arctic tern		✕d						✓e						✓f	
Guillemot		✓i						✕b						✓j	
Razorbill (component of the seabird assemblage)		✓i						✕b						✓j	

Evidence supporting conclusions:

✕a Not sensitive to O&M from disturbance and displacement activities during non-breeding season and too distant from array area to be the cause of an effect during the breeding season.

✕b A species that flies low to the water with very low risk of collision.

✕c Based on low species sensitivity to impacts and over these scales, the pathways are considered too weak to contribute to a material degree to in-combination effects.

✕d Not sensitive to O&M activities associated with potential displacement from the Hornsea Four array area. Potential connectivity limited to only during migratory bio-seasons whilst on passage.

✓e Potential connectivity to the Hornsea Four array area during migratory bio-seasons, with limited effect as species known to migrate closer to coast and any risk is highly likely to be trivial and inconsequential when considering one off migratory movements through OWFs but screened in on precautionary basis.

✓f Analysis of migratory apportionment assessments provided evidence of very small potential impacts / effects on this migratory seabird species alone from developments in the North Sea and therefore any contribution to an in-combination effect would be trivial and inconsequential. However, Arctic skua and Arctic tern are screened in on a precautionary basis.

✓g Present in the Hornsea Four array area in moderate densities and proportion fly at potential collision height (PCH) during the non-breeding bio-seasons. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

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HRA Screening Matrix 43: West Westray SPA (cont.)

Evidence supporting conclusions (cont.):

✓h Present in moderate densities within Hornsea Four and proportion fly at PCH during the non-breeding bio-seasons so potential for collision risk from Hornsea Four and other offshore wind farms in the UK North Sea, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, kittiwake is screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

✓i Moderate sensitivity to disturbance and displacement from operation and maintenance activities associated with Hornsea Four, though potential for an effect only during non-breeding season. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✓i Moderate sensitivity to disturbance and displacement from operation and maintenance activities from Hornsea Four and other offshore wind farms within the UK North Sea with potential for an effect during non-breeding season, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, guillemot and razorbill are screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

End of Matrix 43

HRA Screening Matrix 44: Fair Isle SPA

Name of European site:	**Fair Isle SPA**															
EU Code:	**UK9002091**															
Distance to Project:	**607 km to array**															
Likely Effects of Project																
Effect	**Direct disturbance displacement**			**Indirect impacts through effects on prey species**			**Collision risk**			**Barrier effect**			**In-combination**			
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	
Fulmar (component of the seabird assemblage)		✗a						✗b						✗c		
Gannet (component of the seabird assemblage)		✗a						✓d						✓e		
Great skua (component of the seabird assemblage)		✗f						✓g						✓h		
Arctic skua (component of the seabird assemblage)		✗f						✓g						✓h		
Kittiwake (component of the seabird assemblage)		✗a						✓d						✓e		
Arctic tern (component of the seabird assemblage)		✗f						✓g						✓h		
Guillemot		✓i						✗b						✓j		
Razorbill (component of the seabird assemblage)		✓i						✗b						✓j		
Puffin (component of the seabird assemblage)		✓i						✗b						✓i		
Shag (component of the seabird assemblage)																
Fair Isle wren																

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HRA Screening Matrix 44: Fair Isle SPA (Cont.)

Evidence supporting conclusions:

✗a	Not sensitive to operation and maintenance from disturbance and displacement activities during non-breeding season and too distant from array area to be the cause of an effect during the breeding season.
✗b	A species that flies low to the water with very low risk of collision.
✗c	Based on low species sensitivity to impacts and over these scales, the pathways are considered too weak to contribute to a material degree to in-combination effects.
✓d	Present in the Hornsea Four array area in moderate densities and proportion fly at potential collision height (PCH) during the non-breeding bio-seasons. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.
✓e	Present in moderate densities within Hornsea Four and proportion fly at PCH during the non-breeding bio-seasons so potential for collision risk from Hornsea Four and other offshore wind farms in the UK North Sea, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, gannet and kittiwake are screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.
✗f	Not sensitive to operation and maintenance from disturbance and displacement activities during non-breeding season and too distant from array area to be the cause of an effect during the breeding season.
✓g	Potential connectivity to the Hornsea Four array area during migratory bio-seasons, with limited effect as species known to migrate closer to coast and any risk is highly likely to be trivial and inconsequential when considering one off migratory movements through OWFs, but screened in on precautionary basis.
✓h	Analysis of migratory apportionment assessments provided evidence of very small potential impacts / effects on this migratory seabird species alone from developments in the North Sea and therefore any contribution to an in-combination effect would be trivial and inconsequential. However, great skua, Arctic skua and Arctic tern are screened in on a precautionary basis.
✓i	Moderate sensitivity to disturbance and displacement from operation and maintenance activities associated with Hornsea Four, though potential for an effect only during non-breeding season. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.
✓j	Moderate sensitivity to disturbance and displacement from operation and maintenance activities from Hornsea Four and other offshore wind farms within the UK North Sea with potential for an effect during non-breeding season, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, guillemot, razorbill and puffin are screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

End of Matrix 44

HRA Screening Matrix 45: Sumburgh Head SPA

Name of European site:	**Sumburgh Head SPA**															
EU Code:	**UK9002511**															
Distance to Project:	**639 km to array**															
Likely Effects of Project																
Effect	**Direct disturbance displacement**			**Indirect impacts through effects on prey species**			**Collision risk**			**Barrier effect**			**In-combination**			
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	
Fulmar (component of the seabird assemblage)		✗a						✗b						✗c		
Kittiwake (component of the seabird assemblage)		✗a						✓d						✓e		
Arctic tern		✗f						✓g						✓h		
Guillemot (component of the seabird assemblage)		✓i						✗b						✓j		

Evidence supporting conclusions:

✗a Not sensitive to O&M from disturbance and displacement activities during non-breeding season and too distant from array area to be the cause of an effect during the breeding season.

✗b A species that flies low to the water with very low risk of collision.

✗c Based on low species sensitivity to impacts and over these scales, the pathways are considered too weak to contribute to a material degree to in-combination effects.

✓d Present in the Hornsea Four array area in moderate densities and proportion fly at potential collision height (PCH) during the non-breeding bio-seasons. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✓e Present in moderate densities within Hornsea Four and proportion fly at PCH during the non-breeding bio-seasons so potential for collision risk from Hornsea Four and other offshore wind farms in the UK North Sea, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, kittiwake is screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

✗f Not sensitive to O&M activities associated with potential displacement from the Hornsea Four array area. Potential connectivity limited to only during migratory bio-seasons whilst on passage.

✓g Potential connectivity to the Hornsea Four array area during migratory bio-seasons, with limited effect as species known to migrate closer to coast and any risk is highly likely to be trivial and inconsequential when considering one off migratory movements through OWFs but screened in on precautionary basis.

✓h Analysis of migratory apportionment assessments provided evidence of very small potential impacts / effects on this migratory seabird species alone from developments in the North Sea and therefore any contribution to an in-combination effect would be trivial and inconsequential. However, Arctic tern is screened in on a precautionary basis.

✓i Moderate sensitivity to disturbance and displacement from operation and maintenance activities associated with Hornsea Four, though potential for an effect only during non-breeding season. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✓j Moderate sensitivity to disturbance and displacement from operation and maintenance activities from Hornsea Four and other offshore wind farms within the UK North Sea with potential for an effect during non-breeding season, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, guillemot is screened in to assess the likelihood of an AEoI in-combination on a precautionary basis

End of Matrix 45

HRA Screening Matrix 46: Noss SPA

Name of European site:	Noss SPA															
EU Code:	UK9002081															
Distance to Project:	667 km to array															
Likely Effects of Project																
Effect	Direct disturbance and displacement			Indirect impacts through the effects on prey species			Collision risk			Barrier effect			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Fulmar (component of the seabird assemblage)		×a						×b						×c	
Gannet		×a						✓d						✓e	
Great skua		×f						✓g						✓h	
Kittiwake (component of the seabird assemblage)		×a						✓d						✓e	
Guillemot		✓i						×b						✓j	
Puffin (component of the seabird assemblage)		✓i						×b						✓j	

Evidence supporting conclusions:

×a Not sensitive to O&M from disturbance and displacement activities during non-breeding season and too distant from array area to be the cause of an effect during the breeding season.

×b A species that flies low to the water with very low risk of collision.

×c Based on low species sensitivity to impacts and over these scales, the pathways are considered too weak to contribute to a material degree to in-combination effects.

✓d Present in the Hornsea Four array area in moderate densities and proportion fly at potential collision height (PCH) during the non-breeding bio-seasons. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✓e Present in moderate densities within Hornsea Four and proportion fly at PCH during the non-breeding bio-seasons so potential for collision risk from Hornsea Four and other offshore wind farms in the UK North Sea, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, gannet and kittiwake are screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

×f Not sensitive to O&M activities associated with potential displacement from the Hornsea Four array area. Potential connectivity limited to only during migratory bio-seasons whilst on passage.

✓g Potential connectivity to the Hornsea Four array area during migratory bio-seasons, with limited effect as species known to migrate closer to coast and any risk is highly likely to be trivial and inconsequential when considering one off migratory movements through OWFs but screened in on precautionary basis.

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HRA Screening Matrix 46: Noss (Cont.)

Evidence supporting conclusions (Cont.)

✓h Analysis of migratory apportionment assessments provided evidence of very small potential impacts / effects on this migratory seabird species alone from developments in the North Sea and therefore any contribution to an in-combination effect would be trivial and inconsequential. However, great skua is screened in on a precautionary basis.

✓i Moderate sensitivity to disturbance and displacement from operation and maintenance activities associated with Hornsea Four, though potential for an effect only during non-breeding season. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✓j Moderate sensitivity to disturbance and displacement from operation and maintenance activities from Hornsea Four and other offshore wind farms within the UK North Sea with potential for an effect during non-breeding season, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, guillemot and puffin are screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

End of Matrix 46

HRA Screening Matrix 47: Foula SPA

Name of European site:	**Foula SPA**															
EU Code:	**UK9002061**															
Distance to Project:	**678 km to array**															
Likely Effects of Project																
Effect	**Direct disturbance displacement**			**Indirect impacts through effects on prey species**			**Collision risk**			**Barrier effect**			**In-combination**			
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	
Fulmar (component of the seabird assemblage)		✗a						✗b						✗c		
Great skua		✗d						✓e						✓f		
Arctic skua (component of the seabird assemblage)		✗d						✓e						✓f		
Kittiwake (component of the seabird assemblage)		✗a						✓g						✓h		
Arctic tern		✗d						✓e						✓f		
Guillemot		✓i						✗b						✓j		
Razorbill (component of the seabird assemblage)		✓i						✗b						✓j		
Puffin		✓i						✗b						✓j		
Leach's storm petrel																
Red throated diver																
Shag																

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HRA Screening Matrix 47: Foula

Evidence supporting conclusions.

✗a	Not sensitive to operation and maintenance from disturbance and displacement activities during non-breeding season and too distant from array area to be the cause of an effect during the breeding season.
✗b	A species that flies low to the water with very low risk of collision.
✗c	Based on low species sensitivity to impacts and over these scales, the pathways are considered too weak to contribute to a material degree to in-combination effects.
✗d	Not sensitive to operation and maintenance from disturbance and displacement activities during non-breeding season and too distant from array area to be the cause of an effect during the breeding season.
✓e	Potential connectivity to the Hornsea Four array area during migratory bio-seasons, with limited effect as species known to migrate closer to coast and any risk is highly likely to be trivial and inconsequential when considering one off migratory movements through OWFs but screened in on precautionary basis.
✓f	Analysis of migratory apportionment assessments provided evidence of very small potential impacts / effects on this migratory seabird species alone from developments in the North Sea and therefore any contribution to an in-combination effect would be trivial and inconsequential. However, great skua, Arctic skua and Arctic tern are screened in on a precautionary basis.
✓g	Present in the Hornsea Four array area in moderate densities and proportion fly at potential collision height (PCH) during the non-breeding bio-seasons. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.
✓h	Present in moderate densities within Hornsea Four and proportion fly at PCH during the non-breeding bio-seasons so potential for collision risk from Hornsea Four and other offshore wind farms in the UK North Sea, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, kittiwake is screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.
✓i	Moderate sensitivity to disturbance and displacement from operation and maintenance activities associated with Hornsea Four, though potential for an effect only during non-breeding season. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.
✓j	Moderate sensitivity to disturbance and displacement from operation and maintenance activities from Hornsea Four and other offshore wind farms within the UK North Sea with potential for an effect during non-breeding season, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, guillemot, razorbill and puffin are screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

End of Matrix 47

HRA Screening Matrix 48: Fetlar SPA

Name of European site:	**Fetlar SPA**															
EU Code:	**UK9002031**															
Distance to Project:	**712 km to array**															
Likely Effects of Project																
Effect	**Direct disturbance displacement**			**Indirect impacts through effects on prey species**			**Collision risk**			**Barrier effect**			**In-combination**			
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	
Fulmar (component of the seabird assemblage)		✗a						✗b						✗c		
Great skua		✗d						✓e						✓f		
Arctic skua (component of the seabird assemblage)		✗d						✓e						✓f		
Arctic tern		✗d						✓e						✓f		
Red-necked Phalarope																
Dunlin																
Whimbrel																

Evidence supporting conclusions.

✗a Not sensitive to O&M from disturbance and displacement activities during non-breeding season and too distant from array area to be the cause of an effect during the breeding season.

✗b A species that flies low to the water with very low risk of collision.

✗c Based on low species sensitivity to impacts and over these scales, the pathways are considered too weak to contribute to a material degree to in-combination effects.

✗d Not sensitive to O&M from disturbance and displacement activities during non-breeding season and too distant from array area to be the cause of an effect during the breeding season.

✓e Potential connectivity to the Hornsea Four array area during migratory bio-seasons, with limited effect as species known to migrate closer to coast and any risk is highly likely to be trivial and inconsequential when considering one off migratory movements through OWFs but screened in on precautionary basis.

✓f Analysis of migratory apportionment assessments provided evidence of very small potential impacts / effects on this migratory seabird species alone from developments in the North Sea and therefore any contribution to an in-combination effect would be trivial and inconsequential. However, great skua, Arctic skua and Arctic tern are screened in on a precautionary basis

End of Matrix 48

HRA Screening Matrix 49: Hermaness, Saxa Vord and Valla Field SPA

Name of European site:	**Hermaness, Saxa Vord and Valla Field SPA**															
EU Code:	**UK9002011**															
Distance to Project:	**733 km to array**															
Likely Effects of Project																
Effect	**Direct disturbance displacement**			**Indirect impacts through effects on prey species**			**Collision risk**			**Barrier effect**			**In-combination**			
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	
Fulmar (component of the seabird assemblage)		✗a						✗b						✗c		
Gannet		✗a						✓d						✓e		
Great skua		✗f						✓g						✓h		
Kittiwake (component of the seabird assemblage)		✗a						✓d						✓e		
Guillemot (component of the seabird assemblage)		✓i						✗b						✓j		
Puffin		✓i						✗b						✓j		
Red throated diver																
Shag (component of the seabird assemblage)																

Evidence supporting conclusions.

✗a Not sensitive to O&M from disturbance and displacement activities during non-breeding season and too distant from array area to be the cause of an effect during the breeding season.

✗b A species that flies low to the water with very low risk of collision.

✗c Based on low species sensitivity to impacts and over these scales, the pathways are considered too weak to contribute to a material degree to in-combination effects.

✓d Present in the Hornsea Four array area in moderate densities and proportion fly at potential collision height (PCH) during the non-breeding bio-seasons. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✓e Present in moderate densities within Hornsea Four and proportion fly at PCH during the non-breeding bio-seasons so potential for collision risk from Hornsea Four and other offshore wind farms in the UK North Sea, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, gannet and kittiwake are screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

✗f Not sensitive to O&M activities associated with potential displacement from the Hornsea Four array area. Potential connectivity limited to only during migratory bio-seasons whilst on passage.

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HRA Screening Matrix 49: Hermaness, Saxa Vord and Valla Field SPA (Cont.)

Evidence supporting conclusions.

✓g Potential connectivity to the Hornsea Four array area during migratory bio-seasons, with limited effect as species known to migrate closer to coast and any risk is highly likely to be trivial and inconsequential when considering one off migratory movements through OWFs but screened in on precautionary basis.

✓h Analysis of migratory apportionment assessments provided evidence of very small potential impacts / effects on this migratory seabird species alone from developments in the North Sea and therefore any contribution to an in-combination effect would be trivial and inconsequential. However, great skua is screened in on a precautionary basis.

✓i Moderate sensitivity to disturbance and displacement from operation and maintenance activities associated with Hornsea Four, though potential for an effect only during non-breeding season. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.

✓j Moderate sensitivity to disturbance and displacement from operation and maintenance activities from Hornsea Four and other offshore wind farms within the UK North Sea with potential for an effect during non-breeding season, though connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential. However, guillemot and puffin are screened in to assess the likelihood of an AEoI in-combination on a precautionary basis.

End of Matrix 49

HRA Screening Matrix 50: Hornsea Mere SPA

Name of European site:	Hornsea Mere SPA														
EU Code:	UK9006171														
Distance to Project:	12.9 km to offshore EEC														
Likely Effects of the Project															
Effect	Direct disturbance and displacement			Indirect impacts through the effects on prey species			Collision Risk			Barrier effect			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Gadwall								✓a						✓b	
Mute swan															

Evidence supporting conclusions (Cont.)

✓a Estimated that very small potential impacts / effects on migratory gadwall from individual developments in the North Sea. However, in order to provide a quantification of any potential impacts and effects these species are screened in.

✓b Estimated that very small potential impacts / effects on all migratory gadwall in-combination from developments in the North Sea. However, in order to provide a quantification of any potential impacts and effects these species are screened in.

End of Matrix 50

HRA Screening Matrix 51: Northumberland Marine SPA

Name of European site:	**Northumberland Marine SPA**																		
EU Code:	**UK9020325**																		
Distance to Project:	**187 km from array, 144 km to ECC**																		
Likely Effects of Project																			
Effect	**Direct disturbance and displacement**			**Changes in prey availability & behaviour**			**Indirect impacts through effects on prey species**			**Collision risk**			**Barrier effect**			**In-combination**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Kittiwake (component of the seabird assemblage)		✗a		✗b		✗c		✗d			✓e			✗f		✗g	✓h	✗g
Common tern		✗a		✗b		✗c		✗d			✓i			✗f		✗g	✓h	✗g
Arctic tern		✗a		✗b		✗c		✗d			✓i			✗f		✗g	✓h	✗g
Roseate tern		✗a		✗b		✗c		✗d			✓i			✗f		✗g	✓h	✗g
Sandwich tern		✗a		✗b		✗c		✗d			✓i			✗f		✗g	✓h	✗g
Little tern																		
Guillemot	✓j	✓j	✓k	✗b		✗c		✗d			✗l			✗f		✓h	✓h	✓h
Puffin	✓j	✓j	✓k	✗b		✗c		✗d			✗l			✗f		✓h	✓h	✓h
Seabird assemblage (excluding named components above)																		

Evidence supporting conclusions.

✗a Species not known to be sensitive to disturbance and displacement from operation and maintenance activities associated with offshore wind farms. A finding of **no LSE** applies.

✗b Very minor, localised effects are predicted for prey species within (and around) the array area (as reported in the project's **Environmental Statement - Volume 2, Chapter 3: Fish and Shellfish (APP-A2.3)** and **Volume 2 Chapter 2, Benthic and Intertidal Ecology (APP-A2.2)** during the construction phase. This far-ranging species is unlikely to be sensitive to indirect effects on foraging resource in the context noting the vast resources in the wider habitat available.

✗c The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase.

✗d Throughout all project phases, all impacts to Fish and Shellfish **(APP-A2.3)** receptors were found to have either negligible, minor adverse or minor beneficial effects. Effects on prey species are reported in the project's **Environmental Statement - Volume 2, Chapter 3: Fish and Shellfish (APP-A2.3)** and **Volume 2 Chapter 2, Benthic and Intertidal Ecology (APP-A2.2)**. Indirect impacts on seabirds are not therefore anticipated. **No LSE**.

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HRA Screening Matrix 51: Northumberland Marine SPA (Cont.)

Evidence supporting conclusions.

✓e	Present in Hornsea Four array area in moderate densities and proportion fly at potential collision height (PCH) during the non-breeding bio-seasons. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.
✗f	Not sensitive to barrier effect from Hornsea Four, as no connectivity during more sensitive breeding bio-season and potential connectivity only during migratory bio-seasons whilst on passage when one off movements are not considered to be of any consequence to birds when migrating large distances through the North Sea.
✗g	Potential effects were not considered to require further assessment during the construction and decommissioning phase in-combination with other plans or projects. This is due to Hornsea Four having no overlap with relevant phases of other projects that would occur at the same time.
✓h	Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. No additional in-combination issues are identified.
✓i	Potential connectivity to array area during migratory bio-seasons, with limited effect as species known to migrate closer to coast and any risk is highly likely to be trivial and inconsequential when considering one off migratory movements through OWFs, but screened in on precautionary basis.
✓j	Moderate sensitivity to disturbance and displacement from construction and operation and maintenance activities associated with Hornsea Four, though potential for an effect only during non-breeding season. However, connectivity limited due to mixing of wider North Sea populations and therefore any effect likely to be trivial and inconsequential, though screened in on a precautionary basis.
✓k	The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase.
✗l	A species that flies low to the water with a very low risk of collision.

END OF SCREENING MATRICES