



Transboundary screening undertaken by the Planning Inspectorate (the Inspectorate) on behalf of the Secretary of State (SoS) for the purposes of Regulation 32 of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the 2017 EIA Regulations)	
Project name:	Hornsea Project Four Offshore Wind Farm
Address/Location:	Offshore: Hornsea Project Four Agreement for Lease (AfL) zone, approximately 65km from the East Riding of Yorkshire coast, Southern North Sea Landfall for the connection to onshore is proposed in an area north of Barmston within the East Riding of Yorkshire. An onshore substation for the onshore connection is proposed at Creyke Beck to the south of Beverley, north of Hull.
Planning Inspectorate Ref:	EN010098
Date screening undertaken:	First screening 1 October 2019 following the Applicant's request for a scoping opinion and prior to receipt of an application. Second screening 25 November 2021 following acceptance of an application for a Development Consent Order.
EEA States identified for notification:	First screening: The Netherlands, Germany, Belgium, Denmark, Norway, France, Iceland, Republic of Ireland and Sweden. Second screening: The Netherlands, Germany, Belgium, Denmark, Norway, France, the Republic of Ireland and Sweden.

FIRST TRANSBOUNDARY SCREENING	
Document(s) used for transboundary Screening:	Environmental Impact Assessment: Scoping Report ('the Scoping Report') October 2018 <i>Annex K – Transboundary Impacts Screening</i> Hornsea Project Four: Updated Transboundary Screening September 2019 Hornsea Project Four: Preliminary Environmental Information Report (PEIR) Volume 1: Chapter 4 Project Description (July 2019)

Screening Criteria:	
Characteristics of the Development	<p>Offshore The Proposed Development is for an offshore generating station (wind farm) for up to 180 turbines. The Scoping Report does not detail how much generating capacity the scheme will have, but states that it will be greater than 100 MW. The area of the offshore array is approximately 600 km². Each turbine will have a maximum rotor diameter of 305 m and a maximum blade tip height of 370 m above the Lowest Astronomical Tide (LAT). The transmission system will be either High Voltage Direct Current (HVDC) or High Voltage Alternating Current (HVAC). There will also be an offshore substation, and a cable route from the array area to landfall.</p> <p>The foundation type for the offshore structures has yet to be determined but the options under consideration include monopiles, suction bucket jacket, piled jacket, mono suction buckets, and gravity base structure. All foundation types will require seabed preparation which may include levelling and the removal of surface and sub-surface debris. Scour protection will be required for the foundation structures (93m diameter footprint).</p> <p>Array cables will be used to link the turbines to offshore substations. Up to 6 offshore export cables (within a 1.5km cable corridor) will carry the electricity from the substations to the landfall point.</p> <p>Onshore In addition, the scheme involves onshore cables and a substation at Creyke Beck where there will be a connection to the national grid.</p> <p>The onshore cables will be connected to the offshore cables in transition joint bays, with further joint bays along the route. The cables would connect to a substation with a site area up to 160,000 m², with an additional 100,000 m² temporary area required for construction.</p>
Location of Development (including existing use) and Geographical area	<p>The array area is located in the North Sea, approximately 65km east of the coast of Yorkshire, and approximately 84km from the Dutch EEZ, with the cable route making landfall at the East Riding of Yorkshire. The route for the export cable is located within East Riding of Yorkshire and ends at Creyke Beck. The offshore area supports commercial fisheries and shipping. Land use in the onshore area is largely agricultural.</p> <p>The array area is adjacent to the Hornsea Project One and Hornsea Project Two offshore wind projects. Table 8-3 of the Scoping Report identifies other development to be considered under the cumulative assessment. Dogger Bank Creyke Beck is the only offshore wind development identified, along with two road improvement schemes, an Anaerobic Digestion Plant,</p>

	<p>battery storage adjacent to Creyke Beck substation, and a 100-dwelling development.</p> <p>Annex K of the Scoping Report states that the array area is located beyond 12-nautical miles (NM) from the UK land but is within the UK Exclusive Economic Zone (EEZ) waters. The nearest EEZ of other European States are:</p> <ul style="list-style-type: none"> • The Netherlands 84km • Germany 222km • Belgium 231km • Denmark 235km • Norway 247km • France 271km • Republic of Ireland 333km • Iceland 1,153km <p>No information is provided in the Scoping Report about any areas which could be affected which are under the jurisdiction of another EEA State, but paragraph 1.4.11 of Annex K states that representatives from the Republic of Ireland, Portugal, and Sweden have been consulted. Section 4 of the Applicant’s Updated Transboundary Screening includes details of consultation undertaken with authorities representing The Netherlands, Germany, Belgium, Denmark, Norway, France, Iceland, and the Republic of Ireland (and Sweden in relation to commercial fisheries only).</p>
<p>Environmental Importance</p>	<p>Offshore</p> <p><u>Fish and Shellfish Ecology</u></p> <p>The fish and shellfish species likely to be present in the Hornsea Project Four Scoping Boundary are outlined in full in Table 6-9 of the Hornsea Project Four Scoping Report, with spawning and nursery areas in the vicinity outlined in Table 6-10. A total of 84 fish species were recorded during the otter trawl and epibenthic beam trawl surveys conducted across the former Hornsea Zone between 2010 and 2012.</p> <p><u>Marine Mammals</u></p> <p>The marine mammal species likely to be present in the Hornsea Project Four marine mammal study area (as outlined in Table 6-14 of the Scoping Report) are harbour porpoise <i>Phocoena phocoena</i>, minke whale <i>Balaenoptera acutorostrata</i>, white-beaked dolphin <i>Lagenorhynchus albirostris</i>, grey seal <i>Halichoerus grypus</i> and harbour seal <i>Phoca vitulina</i>.</p> <p><u>Ornithology</u></p> <p>The bird species likely to be present in the Hornsea Project Four array area and offshore Export Cable Corridor (ECC), based on the outputs of the Hornsea Project One, Hornsea Project Two and Hornsea Project Three boat-based surveys, together with the site specific Hornsea Project Four aerial surveys, are</p>

outlined in full in Section 6.6 of the Hornsea Project Four Scoping Report (Offshore and Intertidal Ornithology), and include fulmar, gannet, kittiwake, guillemot, razorbill, puffin and Gulls.

Commercial Fisheries

Commercial fishing operates in the Hornsea Project Four commercial fisheries study area as outlined in Section 6.8 of the Hornsea Project Four Scoping Report. For non-UK vessels, the commercial fisheries study area is dominated by landings of herring *Clupea harengus* by Dutch and German vessels in particular, and of sandeels *Ammodytes marinus*, predominantly by Danish vessels.

Shipping and Navigation

The shipping and navigation baseline for the Hornsea Project Four array area and the offshore ECC are outlined in Section 6.9 of the Hornsea Project Four Scoping Report (Shipping and Navigation).

A number of significant shipping routes pass through the Hornsea Project Four array area. These are principally northeast/southwest orientations of vessels transiting between the Humber Estuary and the entrance to the Baltic Sea. Other routes passing through the site orientate between northeast England and Scottish/European ports in the southern North Sea. Passenger vessel routes are shown in Figure 6-45 of the Scoping Report, including the daily route from Newcastle to Amsterdam (DFDS ferry).

Aviation and Radar

The aviation and radar baseline for the Hornsea Project Four array area and the offshore ECC are outlined in Section 6.10 of the Hornsea Project Four Scoping Report (Aviation and Radar). The airspace above the Hornsea Project Four array area is used by civil and military aircraft, which can be tracked by radar systems operated by civil airports, National Air Traffic Services (NATS) Holdings and the Ministry of Defence (MOD).

The Applicant's Updated Transboundary Screening does not include detailed baseline information, instead making reference to the Applicant's PEIR.

Annex K of the Scoping Report proposes that the transboundary impacts for the following topics are screened out of the EIA process:

- Marine processes
- Benthic and intertidal ecology
- Marine archaeology
- Seascape and visual resources
- Infrastructure (oil and gas operations, and Radar Early Warning Systems)

The Applicant's Updated Transboundary Screening reaffirms the

	<p>screening conclusions set out above and provides further supporting information.</p> <p>Onshore</p> <p>Annex K of the Applicant’s Scoping Report does not anticipate transboundary impacts associated with the onshore development. Onshore impacts have therefore not been considered further within this screening document. The Applicant’s Updated Transboundary Screening provides a brief discussion of the potential pathways for effects for each environmental aspect considered in the PEIR and identifies potential beneficial socio-economic effects on other EEA States through the sourcing of labour or materials. Adverse environmental effects are not predicted, and the onshore environment is screened out of further assessment.</p>
<p>Potential impacts and Carrier</p>	<p><u>Fish and Shellfish Ecology</u></p> <p>Potential impacts include:</p> <ul style="list-style-type: none"> • direct impacts from underwater noise from piling operations during the installation of subsea infrastructure and electromagnetic fields (EMF) during operation. • indirect impacts on habitats or disturbance to habitat due to increased suspended sediment concentrations and deposition from the placement/removal of foundations and cables in or on the seabed • impacts from loss of, or disturbance to, fish spawning and nursery habitats in the North Sea that are for fish species of commercial importance to other EEA states as well as the behaviour of migratory fish species designated as Annex II species such as lamprey and Atlantic Salmon <p><u>Marine Mammals</u></p> <p>Potential for transboundary impacts due to the mobile nature of marine mammal species, including:</p> <ul style="list-style-type: none"> • direct impacts due to underwater noise generated during construction and decommissioning, particularly piling during the installation of foundations • indirect impacts due to disturbance to prey (fish) species from loss of fish spawning and nursery habitat and suspended sediments and deposition • impacts associated with the operational noise of turbines and EMF during operation <p><u>Ornithology</u></p> <p>There is the potential for transboundary impacts (up to the Mean High Water Springs (MHWS) mark) due to the wide foraging and migratory ranges of typical bird species in the North Sea, including:</p> <ul style="list-style-type: none"> • direct impacts during operation from collisions (with rotating turbine blades which may result in direct mortality of individuals) and barrier (caused by the physical presence of

	<p>structures which may prevent transit of birds between foraging and breeding sites, or on migration)</p> <ul style="list-style-type: none"> • direct impacts from of habitat loss and disturbance. • indirect impacts due to disturbance to prey (fish) species from important bird feeding areas or changes to prey availability due to changes to physical processes and habitat because of the presence of operational infrastructure <p><u>Commercial Fisheries</u></p> <ul style="list-style-type: none"> • Indirect impacts on commercial fishing fleets because of impacts on commercial fish stocks in the waters of other EEA States. • Direct impacts on commercial fishing fleets from all EEA countries because of reduction in access to fishing grounds and potential displacement of fishing effort from Hornsea Project Four to alternative fishing grounds in other EEA States, which will have direct implications to that fishing ground. <p><u>Shipping and Navigation</u></p> <ul style="list-style-type: none"> • Impacts upon shipping routes which transit to/from other EEA countries • Impacts upon international ports, other international shipping routes and/or routes affected by other international offshore renewable energy developments <p><u>Aviation and Radar</u></p> <ul style="list-style-type: none"> • Impacts during operation include potential disturbance to commercial helicopter transiting to oil and gas installations in the Southern North Sea from UK airports. • Impacts from wind turbine presence during the operation and maintenance phase disrupting civil and military radar coverage
Extent	<p><u>Fish and Shellfish Ecology</u></p> <p>Impacts from increased EMF and long-term habitat loss are spatially limited.</p> <p><u>Marine Mammals</u></p> <p>Impacts associated with the operational noise of turbines and EMF are also considered spatially limited.</p> <p><u>Ornithology</u></p> <p>Impacts during the operation and maintenance phases are likely to be of varying spatial extent depending on the species.</p> <p><u>Commercial Fisheries</u></p> <p>Impacts to highly mobile commercial fish species and fishing fleets are anticipated. The Hornsea Project Four development area is known to be of relevance to Belgian, Dutch, Danish, French and German fishing vessels.</p>

	<p><u>Shipping and Navigation</u></p> <p>Potential impacts on shipping routes to/from other EEA countries including The Netherlands, Denmark, Belgium, and Germany are anticipated to occur.</p> <p><u>Aviation and Radar</u></p> <p>Hornsea Project Four development area is entirely within the UK Flight Information Region and impacts to aviation airspace in other EEA states is not anticipated.</p>
Magnitude	<p>The magnitude of potential transboundary impacts has not been specifically identified in the Scoping Report at this stage.</p> <p>The Applicant's Updated Transboundary Screening provides further discussion on the likely magnitude, duration, and likelihood of the potential impacts identified.</p>
Probability	<p><u>Fish and Shellfish Ecology</u></p> <p>During construction the probability of transboundary impacts arising from underwater noise is high; however, modelling of the subsea noise generated by piling is not yet available.</p> <p><u>Marine Mammals</u></p> <p>The probability of transboundary impacts to marine mammals occurring during construction, particularly as a result of underwater noise from piling, is potentially high.</p> <p>Impacts associated with the operational and maintenance phases are considered less likely.</p> <p><u>Ornithology</u></p> <p>The Applicant's Updated Transboundary Screening and Scoping Report do not conclude on the probability of transboundary impacts to ornithology. However, having regard to the distribution of foraging and migratory birds in the Southern North Sea, and the impact pathways, the probability is considered to be high.</p> <p><u>Commercial Fisheries</u></p> <p>The probability of impacts occurring during operation, particularly as a result of the presence of the offshore infrastructure associated with Hornsea Project Four is likely to be high.</p> <p><u>Shipping and Navigation</u></p> <p>The probability of impacts on shipping and navigation occurring during operation, particularly as a result of the presence of the offshore infrastructure associated with Hornsea Project Four is likely to be high.</p> <p><u>Aviation and Radar</u></p> <p>The probability of impacts occurring during the operation and maintenance phase as a result of the presence of the offshore infrastructure associated with Hornsea Project Four is likely to be high.</p>

<p>Duration</p>	<p><u>Fish and Shellfish Ecology</u></p> <p>Potential impacts on fish and shellfish associated with EMF and long-term habitat loss are, by their nature, longer term</p> <p><u>Marine Mammals</u></p> <p>The majority of impacts during construction are considered likely to be short term and temporary.</p> <p>Impacts associated with the operational noise of turbines and EMF are, by nature, longer term which will be reversible depending on the decommissioning strategy.</p> <p><u>Ornithology</u></p> <p>Unlike the majority of impacts during the construction phase, which are considered likely to be short term, potential impacts during the operation and maintenance phase are likely to be long term.</p> <p><u>Commercial Fisheries</u></p> <p>The presence of offshore infrastructure will have the potential to be long term, but it is likely that following completion of construction that some fishing activity may be able to resume.</p> <p><u>Shipping and Navigation</u></p> <p>The presence of offshore infrastructure will have the potential to be long term, but it is likely that following completion of construction that some shipping activity may be able to resume.</p> <p><u>Aviation and Radar</u></p> <p>The presence of offshore infrastructure will have the potential to impact aviation and radar long term and throughout the duration of the operational phase of the Proposed Development.</p>
<p>Frequency</p>	<p>Potential impacts during the operation and maintenance phase are likely to be continuous for the following identified receptors:</p> <ul style="list-style-type: none"> • Fish and Shellfish Ecology • Marine Mammals • Ornithology • Commercial Fisheries • Shipping and Navigation • Aviation and Radar
<p>Reversibility</p>	<p><u>Fish and Shellfish Ecology</u></p> <p>Effects from resulting from impacts that result in long-term habitat loss are will long lasting, but are spatially limited.</p> <p><u>Marine Mammals</u></p> <p>Effects to marine mammals from impacts arising during the operation and maintenance phase are likely to be temporary and reversible following the decommissioning of Hornsea Project</p>

	<p>Four.</p> <p><u>Ornithology</u></p> <p>Effects from impacts to ornithology during the operation and maintenance phase are likely to be reversible following the decommissioning of Hornsea Project Four.</p> <p><u>Commercial Fisheries</u></p> <p>The effects from impacts to commercial fisheries are expected to be reversible following decommissioning, as it is anticipated that all structures above the seabed will be completely removed and fishing activity would be able to resume once decommissioning is completed.</p> <p><u>Shipping and Navigation</u></p> <p>It is likely that effects resulting from impacts to shipping and navigation would be reversible after decommissioning, as it is anticipated that all structures above the seabed will be completely removed.</p> <p><u>Aviation and Radar</u></p> <p>It is likely that effects resulting from impacts to aviation and radar would be reversible after decommissioning, as it is anticipated that all structures above the seabed will be completely removed.</p>
<p>Cumulative impacts</p>	<p>The Applicant's cumulative impact assessment (CIA) has not yet been undertaken and the Applicant has not identified any likely significant cumulative effects at this stage. The Applicant's Updated Transboundary Screening provides further consideration of cumulative effects and acknowledges the potential for collisions and displacement of ornithology extending to non-UK developments. The Updated Transboundary Screening considers the potential for these impacts to be limited as the operational offshore wind farms in Belgium, the Netherlands and Germany are comparatively small.</p>
<p><u>Transboundary screening undertaken by the Inspectorate on behalf of the SoS</u></p> <p>Under Regulation 32 of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the 2017 EIA Regulations) and on the basis of the current information available from the Applicant, the Inspectorate is of the view that the Proposed Development is likely to have a significant effect on the environment in another EEA State.</p> <p>In reaching this view the Inspectorate has applied the precautionary approach (as explained in its Advice Note Twelve: Transboundary Impacts) and taken into account the information currently supplied by the Applicant.</p> <p>Action:</p> <p>Transboundary issues notification under Regulation 32 of the 2017 EIA Regulations is required.</p> <p>States to be notified: The Netherlands (in particular due to potential effects on ornithology, commercial fisheries, and aviation and radar), Germany, Belgium, Denmark, Norway, France (all in particular due to potential effects on ornithology, marine mammals,</p>	

and commercial fisheries), Iceland (ornithology), Republic of Ireland (marine mammals) and Sweden (commercial fishing).

Date: 1 October 2019

Note: The SoS' duty under Regulation 32 of the 2017 EIA Regulations continues throughout the application process.

SECOND TRANSBOUNDARY SCREENING

<p>Document(s) used for transboundary Screening:</p>	<p>B2.2 RP Volume B2 Chapter 2: Report to Inform Appropriate Assessment September 2021.</p> <p>A1.4 Environmental Statement Volume A1 Chapter 4: Project description. September 2021.</p> <p>A2.3 Environmental Statement Volume A2 Chapter 3: Fish and shellfish ecology, September 2021</p> <p>A2.4 Environmental Statement Volume A2 Chapter 4: Marine mammals September 2021</p> <p>A2.5 Environmental Statement Volume A2 Chapter 5: Offshore and intertidal ornithology September 2021</p> <p>A2.6 Environmental Statement Volume A2 Chapter 6: Commercial fisheries September 2021</p> <p>A2.7 Environmental Statement Volume A2 Chapter 7: Shipping and navigation September 2021</p> <p>A2.8 Environmental Statement Volume A2 Chapter 8: Aviation and radar September 2021</p> <p>A2.12 Environmental Statement Volume A2 Chapter 12: Cumulative and Transboundary effects offshore summary September 2021</p> <p>A4.5.7 Environmental Statement Volume A4, Annex 5.7 Transboundary screening report September 2021</p>
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<p>Date screening undertaken:</p>	<p>Re-screened on 25 November 2021 following receipt of application dated 29 September 2021 and acceptance by the Planning Inspectorate on 26 October 2021.</p>
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Transboundary re-screening undertaken by the Inspectorate on behalf of the SoS

Following submission of the DCO application which included the Environmental Statement and the Applicant's HRA report, the Inspectorate has reconsidered the transboundary screening decision made on 1 October 2019.

The Inspectorate has identified the following matters that differ from those considered at the time of the previous transboundary screening decision:

- a change in the description of the Proposed Development; and
- further assessment of potential effects.

Change in the description of the Proposed Development

The Applicant has made changes to the design resulting in a reduction in the offshore array area from 600km² to 468km².

The reduction in the array area has been implemented by the Applicant to:

- increase the gap between Hornsea Project Two and Hornsea Project Four to allow safe passage of shipping vessels; and
- reduce effects on the Flamborough and Filey Coast Special Protection Area (specifically gannet, kittiwake, guillemot and razorbill).

Further assessment of potential effects

The Applicant acknowledges the potential for significant effects on the environment in EEA States within the following ES aspect chapters:

- Fish and Shellfish Ecology;
- Marine Mammals;
- Offshore Ornithology;
- Commercial Fisheries;
- Shipping and Navigation; and
- Aviation and Radar.

The ES has presented assessments of these matters which conclude there would be no significant transboundary effects. However, the Applicant concludes in its cumulative effects assessment that there is potential for significant cumulative effects on marine mammals and on commercial fisheries as a result of the Proposed Development. The contribution from Hornsea Project Four to these significant effects, however, are considered to be minimal.

Conclusion

Under Regulation 32 of the 2017 EIA Regulations and on the basis of the current information available from the Applicant, the Inspectorate remains of the view that the Proposed Development is likely to have a significant effect on the environment in the EEA States as a result of impacts to marine mammals and commercial fisheries.

No new EEA States have been identified as being likely to have significant effects on their environment.

In reaching this view the Inspectorate has applied the precautionary approach (as explained in its Advice Note twelve: Transboundary Impacts); and taken into account the information currently supplied by the Applicant.

Action:

No EEA States replied to the notification undertaken by the SoS after the first transboundary screening.

Transboundary issues notification under Regulation 32 of the 2017 EIA Regulations is required.

States to be notified in relation to marine mammals and commercial fisheries: The Netherlands, Germany, Belgium, Denmark, Norway, France and Republic of Ireland.

States to be notified in relation to commercial fisheries only: Sweden and Republic of Ireland.

Date: 25 November 2021

Note: The SoS' duty under Regulation 32 of the 2017 EIA Regulations continues throughout the application process.

Note:

The Inspectorate's screening of transboundary issues is based on the relevant considerations specified in the Annex to its Advice Note Twelve, available on our website at <http://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/>