



Hornsea Project Four: Environmental Statement (ES)

Non-Technical Summary

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Hornsea Four DCO Non-Technical Summary



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Introduction

What Is this Document?

This is the Non-Technical Summary (NTS) of the final Environmental Impact Assessment (EIA) that has been undertaken for the Hornsea Four offshore wind farm (hereafter Hornsea Four). It is provided as a stand-alone document with the full report of the assessment available in the Environmental Statement (ES).

The ES provides the environmental information which has been gathered to carry out an assessment of the likely significant effects upon the receiving environment because of the construction, operation and decommissioning of Hornsea Four. This NTS presents a summary of the main findings of the EIA undertaken for Hornsea Four, in non-technical language, and a submission map of all documents being submitted to support the Development Consent Order (DCO) application submission.

The final ES can be accessed on the Planning Inspectorate website:

[Hornsea Project Four Offshore Wind Farm \(Generating Stations\) | National Infrastructure Planning \(planninginspectorate.gov.uk\)](https://www.planninginspectorate.gov.uk/hornsea-project-four-offshore-wind-farm-generating-stations/)

What is Hornsea Four?

Hornsea Four will be an offshore wind farm, comprising up to 180 wind turbines in an area of seabed 486 km², located approximately 69 km due east of Flamborough Head, Yorkshire. The project includes wind turbines that generate the electricity, offshore substations and electrical export cables which extend from the array area in an east-west orientation, to a landfall near Fraisthorpe, East Riding of Yorkshire. The onshore cable corridor extends from the landfall to connect the generated electricity to the Hornsea Four onshore electrical substation, near Cottingham. A connection from the substation to the National Grid is also included in the proposals.

Hornsea Four is the fourth in a series of windfarms to be built and operated in the Former Hornsea Zone. Currently Hornsea One is operational, Hornsea Two is under construction and Hornsea Three received development consent in December 2020 and is now pre-construction.

Who Wants to Develop Hornsea Four?

Hornsea Four is being developed by Orsted Hornsea Project Four Limited (the Applicant), a wholly owned subsidiary of the Danish renewable energy company Orsted.

Orsted is a renewable energy company with more than 30 years' experience and a strong track record delivering successful projects, having built more offshore wind capacity than any other company worldwide. The company has invested significantly in the UK, where it develops, constructs and operates offshore wind farms and innovative energy-to-waste technology. In the UK, Orsted's windfarms generate enough clean energy to power 4.4 million homes. By 2022, once Hornsea Two is operational this figure will have increased to 5.6 million UK homes.

Our offshore wind farms in the UK

12 operational
1 in construction
1 in development

Why do we need Hornsea Four?

Climate change, more recently referred to as the “climate emergency”, is a global issue resulting from emissions of greenhouse gasses (GHGs) into the atmosphere in part due to human activity. The Climate Change Act 2008 forms the basis of the UK’s approach to tackling and responding to climate change. The Act transposes the 2005 Kyoto Protocol commitments to reduce GHG emissions. This Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change, which commits its parties to reducing GHG emissions by setting internationally binding emission reduction targets, implemented primarily through national measures but also via wider market-based mechanisms.

The Climate Change Act 2008 places a duty on the UK government to ensure their net carbon account and GHG emission is reduced, initially by 80% relative to 1990 levels by 2050, as underpinned by international agreements and commitments. To achieve this target, the UK government committed to implement five-yearly carbon budgets that will run until 2032 to restrict the amount of emissions they legally emit within each five-year period. More recently, the Climate Change Act 2008 (2050 Target Amendment) Order 2019 amended the Climate Change Act 2008, to enshrine in law a more challenging commitment that the net UK carbon account for the year 2050 is at least 100% lower than the 1990 baseline (what is known as ‘net zero’). Net zero is the UK’s main target to help stop global warming.

In November 2020, the Prime Minister published his 10-point plan to ‘create, support and protect hundreds of thousands of green jobs, whilst making strides towards net zero by 2050’. The plan included a target to ‘produce enough offshore wind to power every home in the UK, quadrupling how much it produces to 40 gigawatts by 2030’. The Energy White Paper ‘Powering our Net Zero Future’ published in December 2020, emphasises the Government’s commitment to target 40 GW of offshore wind by 2030. The Paper also recognises the economic benefits of clean electricity and states, “We will use our Offshore Wind Sector Deal with the renewables sector to ensure that domestic deployment creates jobs and raises skills levels across the country, and to support overseas trade and investment opportunities for UK-based companies”.

The North Sea provides one of the best environments for producing energy from offshore wind anywhere in the world. As a low carbon, renewable source of energy, Hornsea Four would make a significant contribution to both the UK and global targets by reducing carbon emissions, as well as providing the energy security and self-reliance the UK increasingly requires whilst boosting domestic employment opportunities. Hornsea Four will be a necessary part of the future generation mix, and as such will make a valuable contribution in the direction of adopted UK Government policy and achievement of decarbonisation commitments.

What permissions are being sought and what legislations apply?

Hornsea Four is large enough to be considered a Nationally Significant Infrastructure Project (NSIP) due to it being an “offshore generating station with a capacity of greater than 100 megawatts (MW)”. Permission to build and operate an NSIP is given in a Development Consent Order (DCO), granted by the Secretary of State for Business, Energy and Industrial Strategy in accordance with the policy framework provided in the National Policy Statements (NPSs).

Under the Planning Act 2008, NPSs provide the primary basis for decisions regarding NSIPs made by the Secretary of State. The UK's commitment to renewable energy has been captured in the publication of the following NPSs which are of direct relevance for the development of Hornsea Four:

- EN-1 Overarching Energy;
- EN-3 Renewable Energy Infrastructure; and
- EN-5 Electricity Networks.

The whole of the onshore project footprint lies within the boundary of East Yorkshire of Riding Council (i.e. the local authority) and relevant local development plans have been identified and consulted on so that policy conflicts can be avoided wherever possible. The Environmental Statement (ES) takes full account of wider planning considerations at the national and regional level both on the land and at sea.

Project Overview

What will be built, where and how?

The location of Hornsea Four is shown on Figure 1 and specifically consists of:

Array area

The area where the offshore wind farm turbines will be located and additional infrastructure including the offshore substations, electrical cables to connect turbines and an offshore accommodation platform.

Offshore export cable corridor

The area where the offshore export cables that bring the power generated by the wind farm ashore will be installed, preferably buried below the seabed.

Landfall area

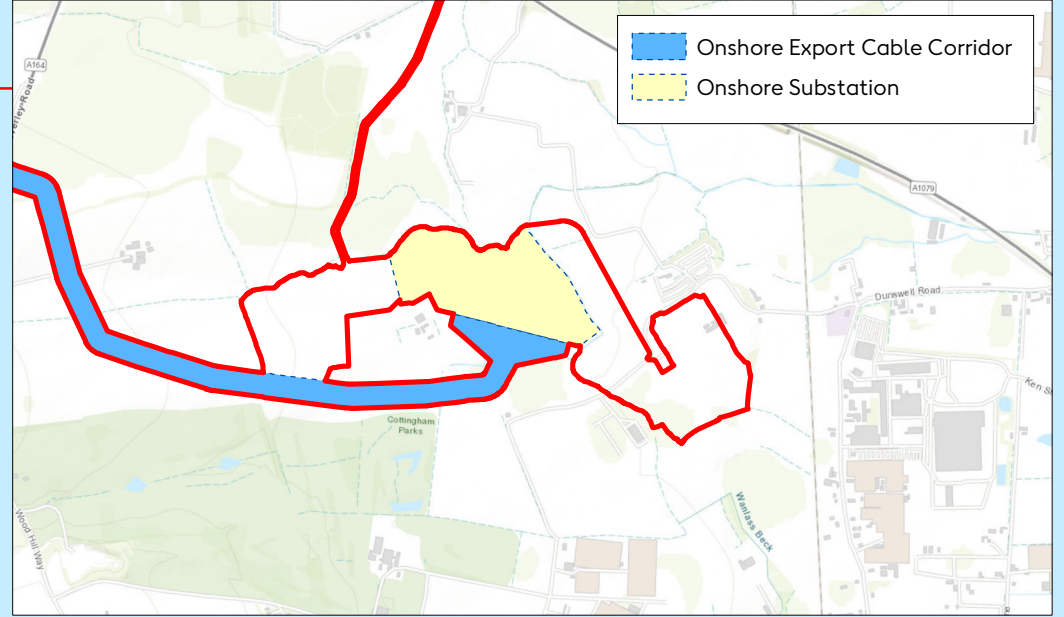
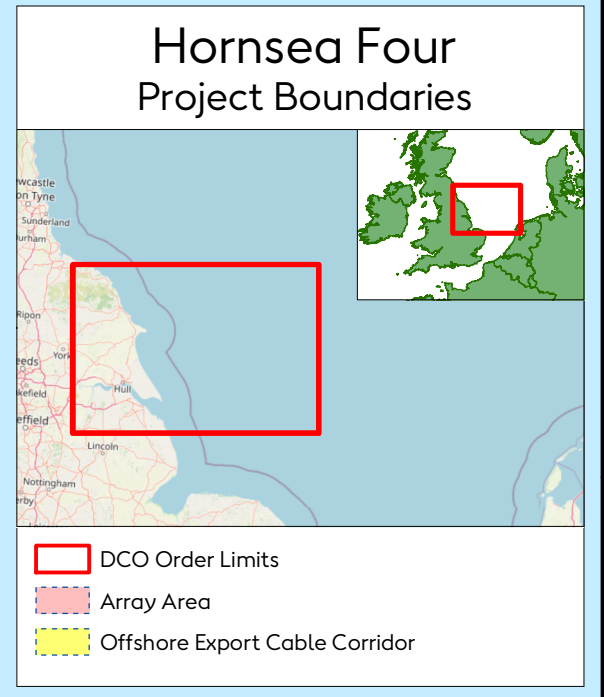
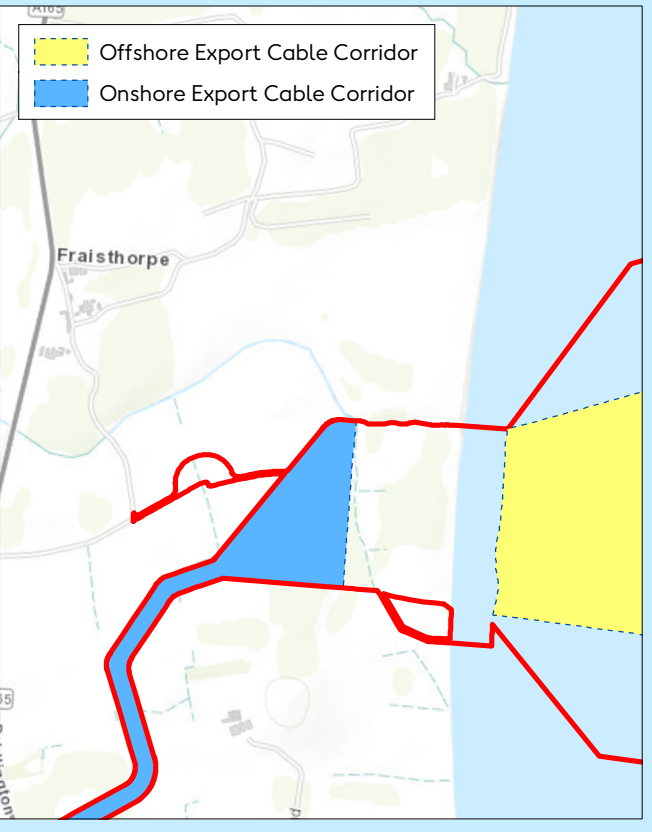
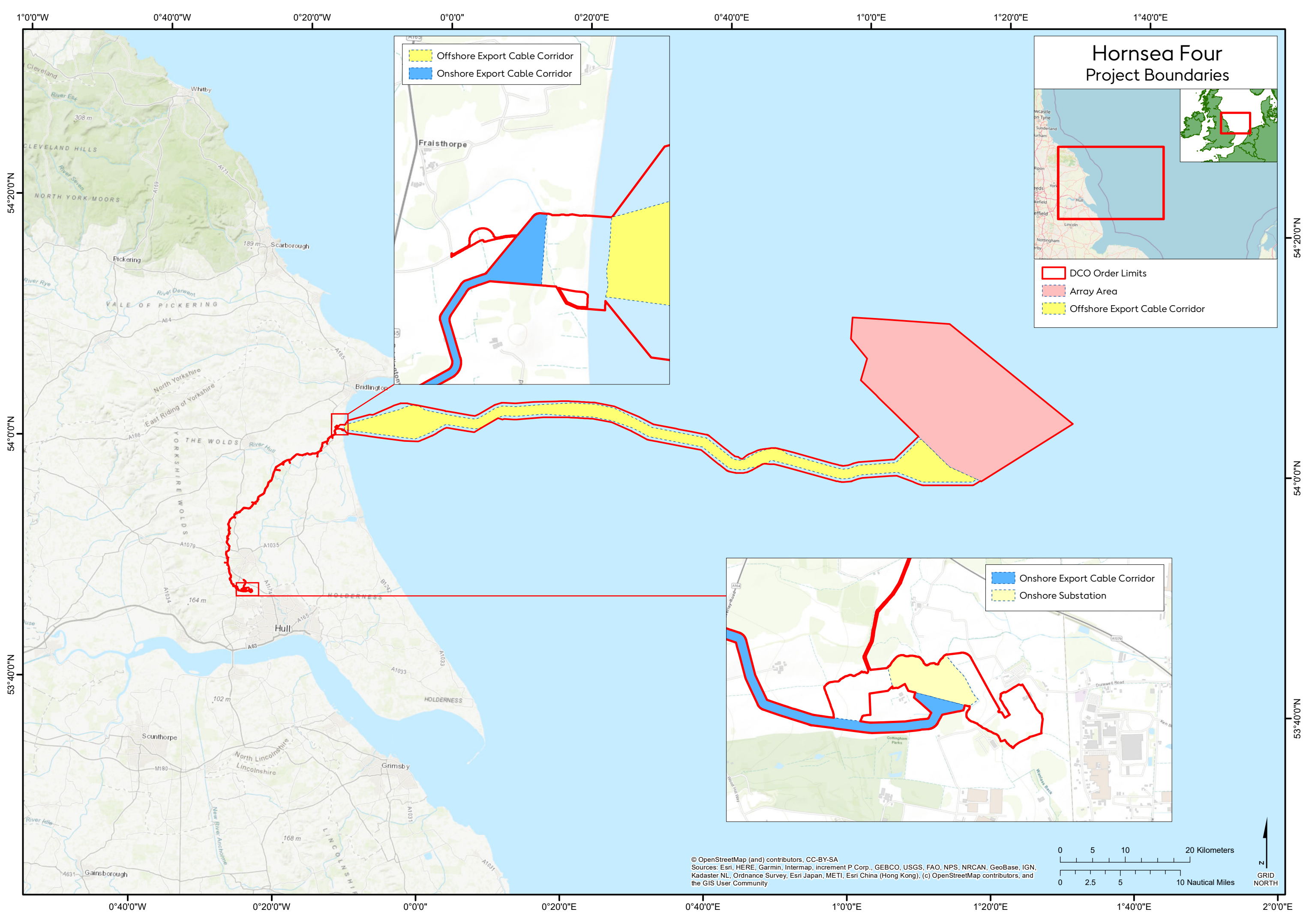
The area where the offshore export cables will be brought ashore and buried beneath Fraisthorpe Beach, to connect to the onshore transmission system for onward transmission to the onshore substation and ultimately to the National Grid.

Onshore export cable corridor

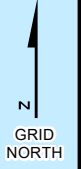
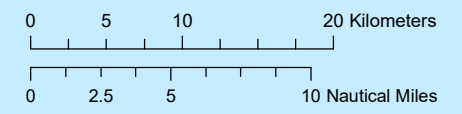
The area where the export cables will be placed in up to six trenches to transfer the power generated across east Yorkshire to the onshore substation. The corridor will also include a haul road, eight temporary logistics compounds, storage areas and temporary access roads.

Onshore substation

The area where the permanent onshore electrical substation infrastructure will be located which includes Energy Balancing Infrastructure (EBI) and a short section of 400kV cables connecting to Creyke Beck National Grid substation.



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Components of Hornsea Four

Hornsea Four will comprise of up to 180 wind turbines and all infrastructure required to transmit the power generated by the turbines to the Creyke Beck National Grid substation, which is located to the north of Cottingham. It will also comprise of both offshore and onshore infrastructure required to operate and maintain the wind farm.

Hornsea Four incorporates EBI which would be located at the new onshore substation. The EBI helps smooth out energy going into the National Grid, storing energy when production is high and releasing it in times of need.

Three differing types of electrical transmission systems are currently under consideration: High Voltage Alternating Current (HVAC); High Voltage Direct Current (HVDC); or a combination of both types in separate electrical systems. **Figure 2** shows the main components of Hornsea Four incorporating HVAC infrastructure requirements.

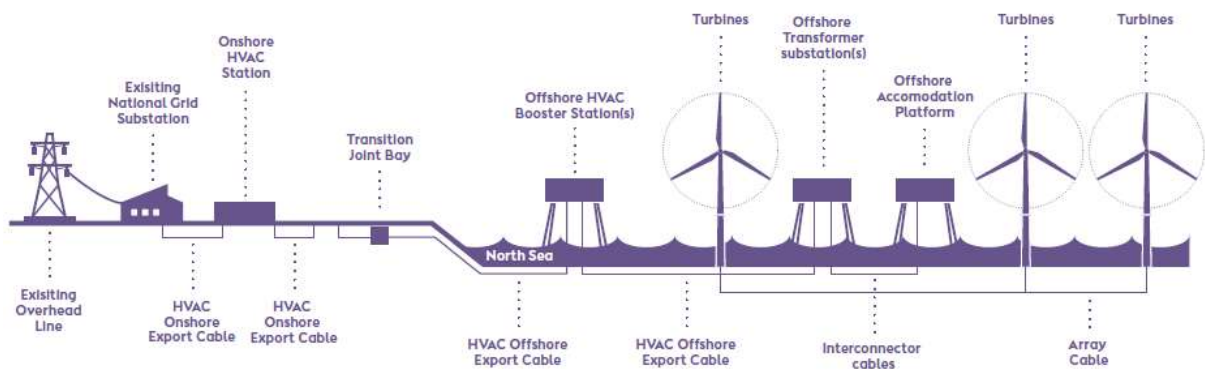


Figure 2: Main Components of Hornsea Four (HVAC Transmission System Only)

Construction Programme

Figure 3 illustrates the likely duration of installing the major project elements of Hornsea Four, and how they may relate to one another. The construction commencement date is dependent on several factors and the earliest possible date that onshore construction could commence is January 2024. The maximum total construction duration (onshore and offshore) is five years and one month (61 months).

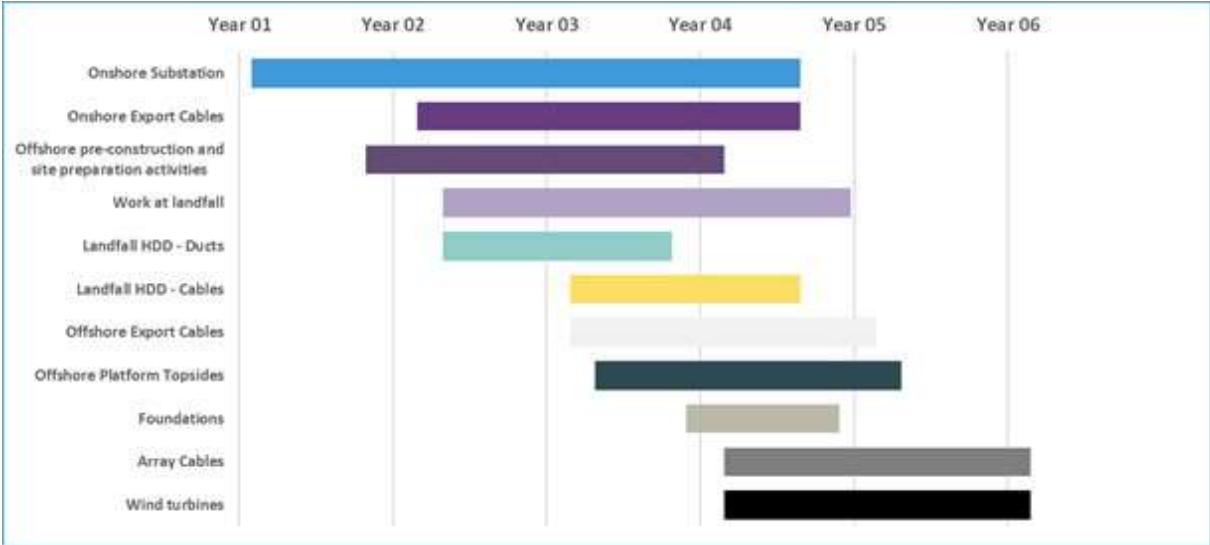


Figure 3: Indicative Construction Programme

Offshore Elements of Hornsea Four

Key Offshore Components of Hornsea Four

- Up to 180 wind turbine generators;
- Up to six offshore transformer substations;
- Up to three offshore converter substations (High Voltage direct Current (HVDC) system only);
- Up to one offshore accommodation platform to house operations and maintenance staff;
- Up to three HVAC booster stations (HVAC system only);
- Subsea inter-array cables linking wind turbines to each other and to offshore substations;
- Subsea interconnector cables linking the offshore substations to one another;
- Subsea export cables to connect the wind farm to landfall; and
- Cable protection.

Wind Turbine Generators

Wind turbine generators comprise of the tower atop a foundation, with a nacelle at its tip housing the electrical equipment, a gearbox and generator. The turbine blades are attached to the front of the nacelle and capture energy from the wind, transforming it via the generator into electricity. At Hornsea Four, the tips of the turbine blades will be no taller than 370 m above mean sea level (MSL), with a clearance between the lowest blade and MSL of no less than 40m. A typical turbine is shown in [Figure 4](#).

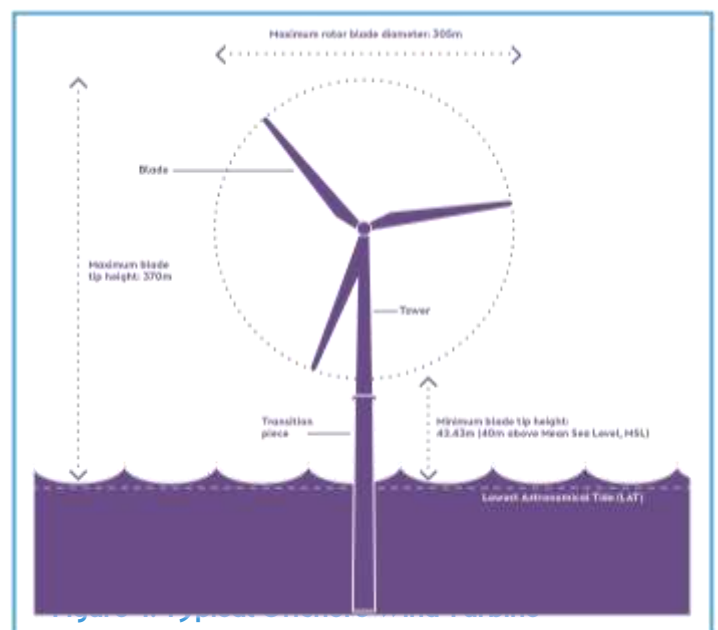


Figure 4: Wind Turbine

Foundation Types

All wind turbines and other offshore structures will be secured to the seabed. The final design of these foundations depends on seabed conditions and the infrastructure being supported.

The foundation types being considered for wind turbines are presented in [Figure 5](#). Each of these either relies on piling the foundation in to the seabed, or the pressure difference generated between the inside of an upturned bucket and the water surrounding it to secure the foundation. Additional foundation types are under consideration for the other offshore structures.



Figure 5: Foundation Options

Offshore Substations

Offshore substations collect the electricity generated by the turbines, via electrical cables, so that it can be transmitted to National Grid. Hornsea Four may require up to nine substations. In the case of a HVDC transmission system being used, up to three substations may also be required to convert the electricity generated from HVAC to HVDC. These would be constructed within the extent of the array area.

Offshore Accommodation Platform

Due to the distance of Hornsea Four from the shore, a single offshore accommodation platform may be constructed within the array area to house operation and maintenance staff. This would reduce the need for crew transfers by boat or helicopter during the operational phase of the project.

HVAC Booster Stations

In the case of an HVAC transmission system, up to three HVAC booster stations may be required to compensate for transmission losses along the long export cable route. These would be located within the central part of the offshore export cable corridor.

Subsea Cables

Subsea cables are required to transmit the electricity generated by the wind turbines to the landfall. Cables will connect the wind turbines to substations (inter-array cables), and from offshore substations to shore (export cable). Additionally, in the case of a HVDC transmission system, interconnector cables will also be required to connect transformer substations to converter substations. Overall, Hornsea Four may require up to 1,344 km of subsea cables.

Cable Protection, Scour Protection and Cable Crossings

The preferred method of protecting the subsea cables will be to bury them within the sea floor. Where burial of cable is not possible cable protection such as rock placement may be required on the seabed. Cable protection will also be used where cables are required to cross existing cables or pipelines on the seabed.

Landfall

Once the offshore export cables reach the coastline, they will make landfall near Fraisthorpe where they will connect with the onshore export cables. The cables will be installed using a drilling technique (such as Horizontal Directional Drilling (HDD)) to create a narrow tunnel under the beach through which the cable is pulled. A logistics compound will be required during construction and this will be located landward of the beach.

Operation and Maintenance

Once construction is complete and the wind farm is fully commissioned Hornsea Four will enter its operation and maintenance phase. Upkeep of the infrastructure at sea may include routine servicing, component replacements, repairs, remedial works, and painting and cleaning.

Decommissioning

At the end of the operational lifetime of Hornsea Four (anticipated to be 35 years), it is expected that any infrastructure above the seabed will need to be completely removed. A decommissioning plan will be developed and agreed prior to decommissioning of the infrastructure, to take account of new techniques and technology.

Onshore Elements of Hornsea Four

Preparatory Works

Prior to the installation of infrastructure, it may be necessary to undertake site preparation works which may include:

- Pre-construction surveys (including ground investigations, soil surveys and archaeological surveys);
- Hedgerow removal and vegetation clearance; and
- Drainage management.

Onshore Export Cables, Corridor and Cable Crossings

The Hornsea Four onshore export cable corridor is approximately 39km in length, from landfall to the onshore substation, and consists of an 80 m wide temporary construction corridor within which a 60 m permanent corridor will be located (possibly larger only where obstacles are encountered, for example, the width has been increased to 120m at the crossing of the National Rail Network at Beswick). Electrical export cables will be installed in separate trenches within the cable corridor. Small fibre optic cables may also be buried alongside the onshore export cables to allow for communication to the wind farm for the various control systems. The indicative cable layout is shown in **Figure 6**.

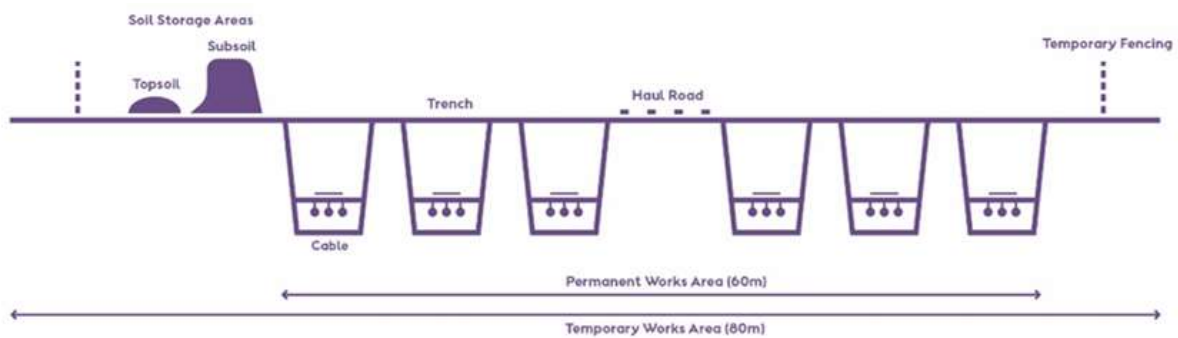


Figure 6: Onshore Export Cable Corridor Indicative Layout

During installation of the onshore cables, the topsoil and subsoil will be stripped and stored on site within the temporary working corridor and stored in separate stockpiles. The trenches will then be excavated using a mechanical excavator, and the export cables will be installed into the open trench. The cables are then buried by backfilling the trench with the excavated material before the land is reinstated to its previous use.

Where the onshore cable crosses main rivers, main roads and railways, HDD or other trenchless technology will be used. A detailed methodology for all crossings will be agreed with the relevant stakeholders such as land owners.

A further section of buried onshore export cable is required to connect the onshore substation with the Creyke Beck National Grid substation. This will be similar in design to the export cabling to the substation but must be high voltage alternating current at 400 kV.

Logistics Compounds

During construction temporary logistics compounds of various sizes will be required along the cable corridor for laydown and storage of materials, plant and staff facilities. Where required they will also be used to house operations such as drilling works. All logistics compounds will be removed, and sites restored to their original condition when construction has been completed.

Access and Haul Roads

Access will be required from the public highway onto various parts of the Hornsea Four onshore site and temporary access points will be installed to facilitate vehicular access from the road during construction.

To limit damage to the surrounding agricultural land, a haul road will be installed at the start of the export cable construction. The haul road, typically 6 m wide (at passing places it will be 7m), will extend the full length of the onshore export cable corridor and will provide vehicular access along the route for the duration of cable construction activities. Bridges will be installed where necessary (e.g. over drainage ditches) and following completion of works the haul road will be removed and the land reinstated.

Access to the onshore substation during construction will also be required and this will be achieved through creation of a temporary access off the northbound carriageway of the A1079 and a two-way access road to and from site. The access road will be retained for operation and maintenance to avoid traffic from the south using Park Lane Road during both construction and operation and maintenance. Accesses relevant to the Onshore Substation are shown in [Figure 7](#).

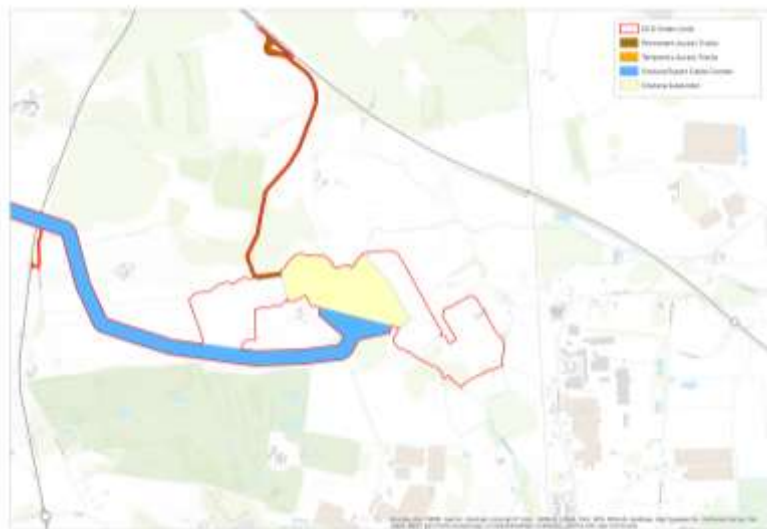


Figure 7: Onshore Substation and Access Roads

Onshore Substation

The onshore substation will be located to the north of Cottingham, approximately 175 m west of the existing Creyke Beck National Grid substation, covering an area of 164,000 m² (15.5 hectares)

inclusive of landscaping areas. A temporary area immediately to the west of the site covering 130,000 m² (13 hectares) will also be required during construction.

The proposed footprint of the site is an irregular shape, following natural field boundaries and the substation will consist of a range of equipment for delivery of the power to the National Grid. The maximum height of any on-site building will be 25 m.

Energy Balancing Infrastructure

The onshore substation will include up to two separate energy balancing infrastructure plants, which will provide valuable services to the electrical grid, such as storing energy to meet periods of peak demand and improving overall reliability.

Reinstatement

Following the completion of the construction works, temporary working areas at the onshore substation, temporary construction access points and the haul road will be reinstated back to its original use.

Once the onshore export cables are installed and the trenches backfilled, the stored topsoil will be replaced and the land reinstated back to its previous use as far as reasonably practical and handed back to the landowner.

Land above transition joint bays will be reinstated but may have manhole covers for access. Land above joint bays and link boxes will also be reinstated, but as with the transition joint bays, they may have manhole covers.

How did the site get selected and what alternatives have been looked at?

An important part of the project development process is the refinement, and subsequent selection of, the final configuration of all project infrastructure. Such decisions must take in to account the existing environment as well as wider engineering considerations. Well informed decisions on the

siting of infrastructure and the underpinning process used to refine and finalise the project design are therefore critical to Hornsea Four.

Consideration has been given to reasonable alternatives at every stage of the process of developing Hornsea Four forming a fundamental driver for every decision within the project, from the technical options within the engineering side to the micro-siting and development of the cable routes.

Several guiding principles have directed site selection along with inputs from consultation, data collection and wider engineering considerations.

Example of the guiding principles for the selection of cable landfall location:

- Select the shortest route possible;
- Avoid key sensitive features where possible and where not, seek to mitigate impacts;
- Minimise disruption to sensitive areas; and
- Find a site large enough to accommodate the connection technology outlined within the design envelope.

Through consideration of the guiding principles, all other reasonable alternatives were considered as part of the selection process and the best identifiable option chosen. In addition, comparative environmental assessment has been undertaken in relation to various parts of Hornsea Four to refine, hone and ultimately select the least environmentally harmful locations and routes for the required infrastructure. Considerable emphasis has therefore been placed on the sustainable routing and location of infrastructure.

The BRAG Comparative Environmental Assessment Technique

Hornsea Four has implemented the BRAG technique where appropriate by using the following categories to identify environmental constraints:

- **Black** - Potential showstopper to development;
- **Red** - High potential to constrain development;
- **Amber** - Intermediate potential to constrain development; and
- **Green** - Low potential to constrain development.

When a specific option is being considered, (e.g. for routing of a cable or the site for the onshore substation) various environmental aspects (e.g. traffic, ecology, water resources) are identified and each component is assigned a BRAG category. A decision on the best option is made using a holistic view of the outcome noting any showstoppers (i.e. black) as well as the number of least impactful scores (i.e. green).

Careful consideration was given to the size and location of the final project taken forward to consent. Hornsea Four adopted three major site reductions from the initial development footprint of 868 km² to the final application footprint of 684 km² due to the findings of the impact assessment, technical considerations and stakeholder feedback.

Environmental Impact Assessment Process

Who has been consulted on the plans?

Hornsea Four has undertaken pre-application consultation with the following consultees:

- Prescribed consultees (all statutory consultees listed by the Planning Inspectorate);
- The Marine Management Association;
- Host and neighbouring local authorities;
- Owners, tenants and occupiers of affected land, community and other organisations in the “vicinity” of Hornsea Four who may be affected both directly and indirectly by the project; and
- Wider communities and organisations.

Approach to Consultation

Consultation and feedback on proposals has been a key part of the Hornsea Four development process. A Statement of Community Consultation (SoCC) was published on 06 September 2018 which set out how Hornsea Four intended to consult with the local community.

Two phases of community consultation were set out in the SoCC to enable the iterative development of Hornsea Four in accordance with feedback received throughout pre-application from the community, landowners, and prescribed consultees. By undertaking iterative consultation, consultees have been able to observe how their feedback has influenced the proposal as the final design has emerged.

In summary, the Applicant undertook the following consultation in accordance with what was committed to in the SoCC:

- Phase one (informal) community consultation was held between 10 October and 21 November 2018 and aligned with publication of the Scoping Report ([Orsted, 2018](#));
- Phase two (formal) consultation was held between 13 August and 23 September 2019 and aligned with publication of the PEIR and PEIR NTS and the parallel consultation with statutory consultees

As part of our community consultation and to better understand the views of the local communities, the project also undertook the following activities:

- Establishing a dedicated Onshore Substation Consultation Group (OSCG);
- Establishing an onshore export cable corridor working group with onshore local interest groups and parish councils;
- Establishing an intertidal working group with offshore local interest groups; and
- Engaging with elected members and parish councils throughout the consultation area through a series of bespoke meetings and presentations.

Hornsea Four has also three additional rounds of ‘targeted’ consultation covering; an alternative onshore export cable route option, a number of minor onshore route amendments and operational access rights, amendments to the onshore substation and energy balancing infrastructure access requirements and a change to an onshore cable corridor access

Consultation Timeline

Consultation and engagement with the public took place as per the consultation timeline set out below see [Figure 8](#).

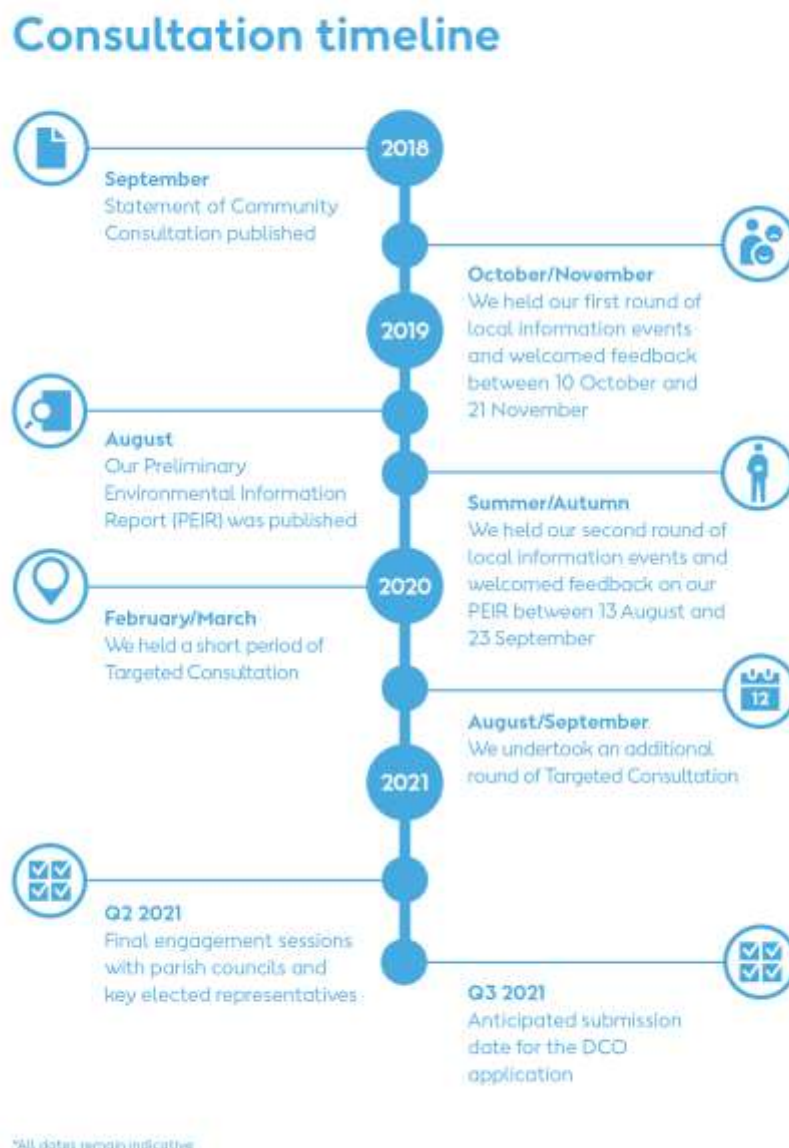


Figure 8: Consultation timeline

What is an Environmental Impact Assessment (EIA)?

The purpose of EIA is to identify the potential environmental impacts from a development and then propose the means to avoid and reduce the significant impact. This information is then presented in an Environmental Statement to assist regulators in the decision-making process.

Assessments are made on the significance of an effect on a wide range of receptors, including physical, biological and human, and mitigation measures are proposed to reduce any significant effects. Effects that remain after mitigation are reported as 'residual effects'.

Assessment parameters and 'Rochdale Envelope' approach

The appointment of contractors for the construction of the development and the detailed project design will be undertaken in the post-consent phase for Hornsea Four. To ensure a robust EIA, a range of potential construction methodologies and infrastructure design options have been considered, and the 'Maximum Design Scenario' has been presented and assessed for each parameter.

Where precise details of the proposals are not known at the time of application submission, the Rochdale Envelope approach should be applied.

How have the environmental impacts been identified and assessed?

Hornsea Four submitted an EIA Scoping Report to the Planning Inspectorate in October 2018. A response to this (the 'Scoping Opinion') was received from the Planning Inspectorate in November 2018 which included comments from a range of stakeholders. The Scoping Opinion has formed the basis of the EIA by identifying and confirming what topics require assessment. Consultation with the public, stakeholders, landowners and statutory bodies has also been undertaken throughout the EIA process to inform the approach to each assessment.

For each topic, a description of the current environmental baseline has been identified through a combination of desk-based study, environmental surveys and consultation. All potential significant impacts of the construction, operation and decommissioning of the project have been identified and are presented within an Impacts Register. An assessment has then been made on the severity of each potential impact and where significant environmental impacts are predicted, mitigation measures are proposed to reduce impacts to acceptable levels where possible. Hornsea Four has taken a proactive approach to avoid or minimise environmental effects and all mitigation measures (i.e. commitments) are presented within a Commitment Register.

Hornsea Four has taken a proportionate approach to Environmental Impact Assessment (EIA). The benefits of delivering proportionate EIA are to:

- Drive collaborative action and understanding;
- Focus assessments so their findings are accessible;
- Reduce uncertainty and risk; and
- Allow more time to be spent exploring the delivery of environmental improvements

A number of tools and approaches have been adopted by Hornsea Four that are aimed at delivering a proportionate EIA:

- The Impacts Register;
- Early adoption of mitigation and the Commitments Register;
- The Application Register:
- Capitalising on the existing evidence base;
- Route planning and site selection;
- A tiered approach to define an appropriate level of assessment; and
- A Consult, Commit, Design ethos

The Preliminary Environment Information Report (PEIR) was submitted in August 2019 and set out the preliminary findings of the EIA to support pre-application consultation activities required under the 2008 Act. In line with the proportionate approach the PEIR concentrated on key issues (i.e. those where there is potential for likely significant effect), with issues of lesser concern scoped out and presented in a summarised format within the Impacts Register. The EIA has been finalised following completion of pre-application consultation and the Final Environmental Statement (ES) will accompany the Development Consent Order (DCO) application to the Planning Inspectorate (PINS). Hornsea Four continued the proportionate approach throughout the ES; a "How to Read this ES" is available which provides further information.

Summary of the Environmental Assessments



Marine Geology, Oceanography and Physical Processes

Water depths across the array area vary between 34 m and 55 m. Around 20 km offshore, lies the Smithic Bank sandbank which will be crossed by the offshore export cable corridor and here the depth reduces to less than 6 m. Tidal currents flow at a peak rate of 0.6 m/s, with wave heights typically less than 1 m, but up to 4.5 m during storm events.

Most of the Hornsea Four array area and offshore sections of the offshore export cable corridor are characterised by a sandy and muddy-sand seabed. Towards the landfall, more coarse sediments dominate. Beneath these surface sediments lies clay till on top of chalk bedrock, which may be exposed in some parts of the array area. Suspended sediment concentrations are naturally low in the array but increase towards shore.

The potential for changes to the tidal, wave and sedimentary regimes resulting from proposed activities of Hornsea Four were assessed for the construction, operation, and decommissioning phases of the project. In order to reduce impacts to physical marine processes, the Applicant has made commitments to develop a scour protection management plan prior to construction, has also committed to burying subsea cables wherever possible, and has committed to limiting the number of the largest turbine foundations. Specific commitments in relation to the Smithic Bank have also been adopted, with a commitment that the crossing of the Dogger Bank A & B cables will be made to the east of Smithic Bank and that cable protection will not be installed within 350 m of the shore. With the incorporation of these commitments the potential impacts on marine geology, oceanography and physical processes are not predicted to be significant.



Benthic and Intertidal Ecology

The Hornsea Four study area is considered to have seabed (benthic) habitats typical of the wider southern North Sea. Analysis of samples collected across the array area has identified eight different animal community types (biotopes). The beach at the landfall is characterised by coarse sands, typical of this part of the coastline.

Hornsea Four does not overlap with any sites designated for nature conservation interest for seabed ecology, although the offshore export cable corridor does pass within approximately 750 m and 4,500 m of the Holderness Offshore and Holderness Inshore Marine Conservation Zones respectively, designated for numerous habitats and species, including the ocean quahog – a type of clam. The assessment concluded that there will be no significant effects on these MCZ sites from the construction, operation and decommissioning of Hornsea Four.

The assessment has considered several possible environmental effects including the impacts of temporary habitat loss and increases in suspended sediment concentrations from construction activities, long term habitat loss/change, colonisation of subsea infrastructure and temporary disturbances from maintenance activities, as well as impacts arising during the decommissioning phase. Several commitments have been made in order to reduce potential impacts to benthic and intertidal ecology, notably the commitment to install cables and foundations avoiding sensitive habitat features. With such commitments in place, the assessment has concluded that there will be no significant effects upon benthic and intertidal ecology.



Fish and Shellfish Ecology

The fish communities in the vicinity of Hornsea Four are considered typical of this part of the southern North Sea, with an abundance of bottom-dwelling species such as whiting and plaice, as well as sprat and mackerel who prefer more open water. Hornsea Four overlaps with areas used as fish spawning and nursery habitats, including those used by herring and sandeel. Commercially important shellfish species are also present including brown crab, European lobster, and whelk. A number of fish species, some of which are of conservation interest, including Atlantic salmon, sea lamprey and river lamprey are known to inhabit the region.

Underwater noise generated during the installation of piled foundations together with those impacts arising from the disturbance of the seabed during construction have been assessed. A number of impacts during operation could also affect fish and shellfish have similarly been assessed, notably: habitat loss and/or change associated with the placement of infrastructure on the seabed; and changes due to a potentially reduced level of commercial fishing in the array area.

The Applicant has made a number of commitments to reduce impacts on fish and shellfish. In order to reduce underwater noise impacts, a commitment has been made that up to two foundations will be installed at any one time and the Applicant will avoid piling the foundations for the offshore substations located along the offshore export cable corridor during the herring spawning season. Other commitments include the burying of cables under the seabed wherever possible to reduce the need for additional cable protection. With the incorporation of these commitments embedded into the project design no significant impacts on fish or shellfish are predicted.



Marine Mammals

The marine mammals most likely to occur in the vicinity of Hornsea Four are harbour porpoise, minke whale, white-beaked dolphin, bottlenose dolphin, harbour seals and grey seals. The Hornsea Four site-specific surveys suggested that the area is important for harbour porpoise. The Hornsea Four array area which overlaps with the Southern North Sea Special Area of Conservation (SAC), which is designated to help protect harbour porpoise.

During construction, the impact assessment considered the impacts of underwater noise arising from the piling of foundations on marine mammals, including the potential for auditory injury, temporary disturbance, and disturbance from the clearance of UXO. The potential for vessel collisions and disruption to prey sources were also assessed. Impacts, including disturbance and reduction in prey availability, have also been considered during the operation and decommissioning phases, with underwater noise from decommissioning activities also considered for the decommissioning phase.

The Applicant has made a number of commitments relevant to marine mammals, notably in relation to the reduction of underwater noise levels. During piling operations, a soft-start procedure will be used where a lower energy is applied to the hammer initially during piling before increasing the hammer energy to its required level. Soft start allows marine mammals to move away from the sound source before it becomes damaging. Other protocols specific to piling and UXO detonation will also be implemented to protect marine mammals. With these commitments in place, no significant impacts on marine mammals for each of the project phases are predicted to arise.



Offshore and Intertidal Ornithology

Digital aerial imagery has been collected monthly for two years in order to determine the type and numbers of birds present in and around Hornsea Four array area. A total of 22 different bird species were identified, with the key species recorded in the greatest numbers being fulmar, gannet, kittiwake, great black-backed gull, guillemot, razorbill, and puffin. On the beaches in the vicinity of the export cable landfall, species likely to be encountered include common scoter, red-throated diver, cormorant, shag, curlew, turnstone, and numerous gull species, although they are found in very low numbers so the beach is not considered a key bird habitat.

A number of Special Protection Areas (SPAs) designated to protect birds have been identified as having potential relevance to Hornsea Four, the closest being the Greater Wash SPA and the Flamborough and Filey Coast SPA. Potential adverse effects on these internationally designated sites are considered through the Habitats Regulations Assessment (HRA) process.

The assessment has considered impacts from disturbance and displacement of birds, and from effects on their prey species during the construction and decommissioning phases of Hornsea Four. The operational effects assessed include collision risk and barrier effects (i.e., blocking of flight paths) from the wind turbines.

The Applicant has made a number of commitments relevant to offshore and intertidal ornithology, notably avoidance of the highest concentrations of birds within the larger developable area, avoiding any overlap with

sites designated for ornithology, increasing the gap between the sea and the lowest blade tip height to 40 m above mean sea level, in order to reduce the risk of bird collisions. With these commitments, no significant impacts to offshore and intertidal ornithology are predicted.



Commercial Fisheries

Hornsea Four lies within a wider region within which a variety of commercial fisheries operate. The value of landings in the wider region is dominated by lobster (UK fleet), herring (predominantly non-UK fleet), brown crab (UK fleet), scallops (UK fleet) and sandeel (predominantly non-UK fleet). Other key species landed within the region include sole, whiting, plaice, mackerel, and whelks.

The impacts assessed primarily relate to the loss of, or exclusion from, established fishing grounds due to construction activities and the presence of the wind farm during operation. Displacement of fishing activity from the operational wind farm to other areas may also lead to increased pressure on neighbouring fishing grounds. Increased vessel traffic associated with Hornsea Four may cause interference with fishing activities.

The main commitments relevant to commercial fisheries are ongoing liaison with the fishing industry through the appointment of a Fisheries Liaison Officer and Fishing Industry Representative, as well as the development of a Fisheries Liaison and Co-Existence Plan, developed through consultation with the National Federation of Fishermen's Organisations. Procedures that align with the guidance produced by the Fishing Liaison with Offshore Wind and Wet Renewables Group will also be implemented to reduce any adverse effects and with these commitments, no significant adverse effects on commercial fisheries are predicted.



Shipping and Navigation

There are no International Maritime Organization Routeing measures in proximity to the Hornsea Four array area and offshore export cable corridor. However, the Inner Approaches Traffic Separation Scheme (TSS) to the Humber, located approximately 36 nautical miles south west of the Hornsea Four site is used by a large number of vessels which transit in proximity to Hornsea Four. A key shipping route is the Newcastle to Amsterdam ferry route, which operates daily, currently passing through the proposed array area. Oil and gas industry vessels also make up a large proportion of vessel traffic in and around the array area. Shipping traffic is at its greatest density in the offshore export cable corridor, with some vessels anchoring in the nearshore section, behind the shelter of Flamborough Head.

The impacts assessed primarily relate to the wind farm structures creating an obstacle to shipping, potentially having knock-on effects including potential increased collision risk outside the array area and a reduction in the search and rescue capabilities of other vessels. The offshore wind farm structures also present a risk for vessels, whilst cable protection may reduce the navigable water depth in some areas. The potential risks associated with the construction and decommissioning of the wind farm were also assessed.

In response to consultation with shipping stakeholders a change to the Hornsea Four Order Limits was proposed to maintain the baseline shipping and navigation characteristics to mitigate the impact of cumulative deviations of vessels due to the presence of Hornsea Four and other nearby developments, such as Hornsea Project Two. In addition to the change in the Hornsea Four Order Limits, the other commitments relevant to shipping and navigation are the marking of all installed infrastructure on charts, marking and

lighting of structures, and the commitment to agreeing wind farm layout principles with the Maritime and Coastguard Agency. With these commitments in place, no significant adverse effects on shipping and navigation are predicted.



Aviation and Radar

Analysis has indicated that the Hornsea Four turbines could be detected by air traffic control radar at Claxby (in North Lincolnshire). Radar detectability of operational wind turbines may affect operations utilising the subject radar system. In addition, the Hornsea Four wind farm area will be transited by helicopters, which could result in the need for them to fly higher when using this route. Military Low-Level Operations take place over the sea in the airspace surrounding the Hornsea Four array area and a network of Helicopter Main routes (HMRs) is established in the vicinity of the Hornsea Four array area to support the transport of personnel and material to offshore oil and gas installations.

The assessment has also considered the potential for the wind farm to create an aviation obstacle to aircraft, including helicopters operating at adjacent oil and gas platforms, and the impact of increased air traffic associated with the construction and operation of Hornsea Four affecting the available airspace for other users.

In order to mitigate effects on the Claxby radar system, an airspace change and radar blanking will be undertaken by the UK regulator (the Civil Aviation Authority). A number of mitigations have also been identified which will improve the access for helicopters associated with oil and gas platforms, to oil and gas installations in poor weather. With measures adopted as part of Hornsea Four in place as part of the project, including (but not limited to) ensuring aviation lighting is fitted to all structures as appropriate, and informing the relevant authorities of the locations, heights and lighting status of the structures to allow inclusion on Aviation Charts, no significant effects on aviation and radar are predicted.



Marine Archaeology

There are a total of 18 known wrecks or obstructions within the Hornsea Four Order Limits, with the majority of these dated to the 20th century, as well as a number of targets identified during seabed surveys which may have further archaeological interest. In addition, there is the potential for the seabed to contain deposits of archaeological interest in the northern part of the array.

The marine archaeology assessment has considered the effects of the operation and decommissioning of Hornsea Four particularly through processes such as compression (crushing) on buried archaeology. Impacts from the construction of Hornsea Four have been scoped out of the assessment due to the adoption of many archaeological commitments to avoid and reduce impacts on archaeological receptors.

The Applicant has made a number of commitments relating to marine archaeology, notably to microsite infrastructure to avoid any wrecks or items of potential archaeological interest, as well as to develop a process to ensure archaeology is adequately considered throughout all activities. With these commitments in place, it is predicted that there will be no significant adverse effects on marine archaeology.



Seascape and Visual Resources

The existing seascape offshore can be described as open sea with occasional offshore structures, such as oil and gas platforms. Other wind farms (including Hornsea Project One Offshore Wind Farm) lie to the east of the Hornsea Four array.

As the offshore array area and nearest offshore substations will be located approximately 69 km and 25km (respectively) from the coast, there will be no significant effects from the coastal receptors and the development will be mostly visible to those present in the offshore environment. Commitments to lighting plans for infrastructure close to shore mitigate effects upon dark skies to sea. It is concluded that the impacts on the seascape and landscape Hornsea Four are similar or less than the impacts of existing offshore developments in the area. The assessment of the seascape, landscape, and visual effects of Hornsea Four concluded that there would be no likely significant effects and was, provided to stakeholders for agreement.

In relation to Hornsea Four offshore substations within the offshore export cable corridor, it has been agreed with relevant stakeholders that, following refinement of the lighting requirements of these structures, there will be no significant effects from the presence of these structures.



Infrastructure and Other Users

Hornsea Four lies in an area which includes current and potential future activity by the oil and gas industry. There are currently four licensed and seven unlicensed oil and gas licence blocks that coincide with the Hornsea Four array area and nine licensed and a further nine unlicensed blocks that coincide with the offshore export cable corridor in addition to a number of wells and surface platforms. There are two active subsea structures associated with the extraction of oil in the Hornsea Four array however there are no active subsea structures within the Hornsea Four ECC. There are 18 existing or planned oil and gas associated pipelines within the Hornsea Four boundary.

There are no oil and gas platforms located within the Hornsea Four array area, with two platforms located approximately 3 km from the western boundary of the array area, with one platform located within the Hornsea Four offshore export cable corridor, and two additional platforms within 1 km of the export cable corridor boundary.

There are two offshore wind farm export cables (Dogger Bank A and B) which overlap with the Hornsea Four offshore export cable corridor and the proposed Endurance saline deposit reservoir, which has been identified as a potential carbon capture and storage reservoir, overlaps in part with the northern part of the Hornsea Four array area. There is also the Viking Link interconnector cable which crosses the gap between Hornsea Four and Hornsea Project Two Offshore Wind Farm array areas.

Potential impacts on other infrastructure activities include the interference with current or future development activity, and the safety and commercial operation of existing assets including helicopter operations to platforms, and risk of collision with platforms were assessed. In order to mitigate effects on nearby oil and gas platforms with Radar Early Warning Systems in place that will be affected by Hornsea Four, operators using

microwave communications and helicopter operators, the Applicant will work closely with the relevant operators to agree technological and communication mitigations to minimise these effects. With mitigation measures combined with measures adopted as part of Hornsea Four in place as part of the project, no significant effects on infrastructure and other users are predicted.

Summary of the Environmental Assessments



Geology and Ground Conditions

The geology underlying Hornsea Four is made up of a range of near surface deposits including sand, gravel and silty clay with a predominantly chalk bedrock. Hornsea Four is not located within a coal mining area, however Hornsea Four intersects a number of Mineral Safeguarding Areas. A number of aquifers underlie Hornsea Four with the chalk aquifers being the most important. Areas of high groundwater vulnerability risk are also present, and these indicate that the soil is easily able to transmit pollution to groundwater. No designated geological sites have been identified within the Hornsea Four Order Limits.

Construction phase effects including the exposure of the workforce to health impacts, encountering contamination during intrusive works, physical intrusion into groundwater, and dewatering of trenches and excavations have all been assessed. Longer term, the operational, effects on the Minerals Safeguarding Areas have been assessed.

Hornsea Four has made several relevant commitments to remove or reduce impacts (where feasible) and best practice guidance have been adopted and embedded as an inherent aspect of the EIA process. These include avoiding a suite of sensitive sites (e.g. those designated for their ecological value), preparation of a pollution prevention plan and also the development of a contaminated land and groundwater scheme to identify any contamination and any remedial measures which may be required. Following the incorporation of such commitments, no significant effects have been identified in relation to geology and ground conditions.



Hydrology and Flood Risk

Hornsea Four onshore infrastructure will be located within two main surface water drainage catchments; the Barmston Sea Drain, and the River Hull. There are also a number of other rivers and Internal Drainage Board (IDB) channels of importance, as well as many unnamed minor watercourses and agricultural drainage channels. Most of the channels have been extensively modified, with straight, uniform channels. However, parts of the River Hull catchment are sensitive chalk rivers and designated as part of the River Hull Headwaters SSSI. In general, the water quality in the area does not meet the required standards under the EU Water Framework Directive due to pressure from sewage and industrial discharges, and diffuse pollution from agriculture.

The flood risk assessment undertaken concludes that landfall is at low risk from flooding by rivers or the sea, as is the majority of the onshore cable corridor. Once operational there will be no flood risk posed to the onshore export cable corridor (ECC) from surface water or groundwater flooding. The onshore substation is at low risk of flooding. Other effects assessed include those relating to possible disturbance to watercourses as a result of construction access requirements, disruption to agricultural land drainage, and effects on water quality.

Hornsea Four has identified a number of measures to reduce any adverse effects including through the crossing of main rivers by drilling underneath them and through the appropriate design of other crossings to specifically limit the flood risk. Post-construction, watercourses will be reinstated to pre-construction conditions wherever

possible to ensure flood risk is not affected. Following the incorporation of such commitments, no significant effects have been identified in relation to hydrology and flood risk.



Ecology and Nature Conservation

The predominant habitats within Hornsea Four include arable land with woodland, scrub, hedgerows, improved grassland, poor semi-improved grassland and freshwaters. Only one statutory site designated to protect nature (the River Hull Site of Special Scientific Interest (SSSI)) overlaps with Hornsea Four. As the most northerly chalk stream in Britain, the River Hull is valued for its clear water and the rich invertebrate, plant and fish life that it supports. Additionally, there are six non-statutory designated sites to protect wildlife proposed to be crossed by Hornsea Four.

Surveys have been undertaken to characterise the ecology of the area (including surveys for habitats, badgers, birds, bats, water voles, otters and Great crested newts) and where recorded, potential impacts on these receptors have been assessed and reported within the Environmental Statement. As they are European Protected Species (EPS), draft licences detailing the proposed mitigation measures in respect to water voles and great crested newts have been produced and agreement from Natural England, via A Letter of No Impediment (LONI) process, has been received for both species.

Hornsea Four has made a number of commitments to reduce impacts on onshore ecological receptors, including to avoid the River Hull SSSI by drilling the cable underneath it, as well as adopting and embedding best practice guidance as an inherent aspect of the EIA process. An outline Ecological Management Plan (oEMP) has been produced which presents the measures and mitigation measures that will be undertaken to manage the potential impacts to onshore ecological receptors. Following the incorporation of the project commitments and the implementation of the measures presented in the oEMP, no significant effects have been identified in relation to onshore ecological receptors.



Landscape and Visual

There are no nationally designated landscapes such as Areas of Outstanding Natural Beauty (ANOB) within the Hornsea Four landscape and visual study area. The south-western extent of the Hornsea Four study area includes a small part of the locally designated Yorkshire Wolds Important Landscape Area (ILA). The majority of the study area lies in the Holderness National Character Area, a rural low-lying plain with open views and sparse woodland.

Assessments on temporary changes to the landscape at the landfall, along the onshore ECC and at the onshore substation have all been undertaken for the construction phase. Assessment of long-term effects on landscape and views associated with the onshore substation have also been undertaken.

No significant effects have been identified as a result of construction of the onshore ECC or at the landfall area, with the exception of localised effects of the landfall works on views experienced by the local community and visitors to the beach. Construction works at the onshore substation are likely to have significant effects on the local landscape within the immediate vicinity of the site. During operation, significant effects of the onshore substation on the landscape will be similarly localised. Beyond this local area there will be no significant effects on landscape character, including that of the Yorkshire Wolds ILA. Significant effects

on views are predicted for a number of locations with clear views of the onshore substation from within 2 km. Beyond this distance, or from locations where intervening vegetation filters views, effects will be not significant.

An outline Landscape Management Plan (oLMP) and an outline Design Plan have been produced to reduce landscape and visual effects and to help absorb the onshore substation into the landscape. These measures are combined together within the Design Vision Statement, which presents the vision of Hornsea Four. As any proposed planting which is implemented matures, the identified effects will be reduced, though some are predicted to remain significant.



Historic Environment

Hornsea Four is located within the East Riding of Yorkshire which has a rich historical and archaeological heritage. Settlement in the area began in the Mesolithic period and evidence from this period right through to the modern day can be found both from finds and from changes within the landscape (field layout/boundaries for example). One designated heritage assets (e.g. scheduled monuments and listed buildings) is located within the footprint of the Hornsea Four boundary (the Beverley Sanctuary Limit Stone, Bishop Burton (HP4-56)), but over 600 have been identified and avoided in the wider study area.

Data has been collected through desk studies, a setting and condition walkover survey and a targeted geophysical survey. The findings of which have been used to inform the assessment presented in the Environmental Statement. Designated and non-designated heritage assets, along with locally designated heritage assets, have been assessed. Direct (physical) impacts could occur to the Beverley Sanctuary Limit Stone Scheduled Monument located within the onshore ECC. With mitigation measures in place, alongside the Commitments set out by Hornsea Four, the residual level of impact would be not significant.

No significant effects have been identified to onshore heritage assets following the application of mitigation and relevant project commitments. Notably, the route planning and site selection work has avoided direct effects on all locally designated heritage assets (other than the Sanctuary Limit Stone) and Hornsea Four has committed to ensure onshore archaeology is adequately considered throughout all construction activities through the implementation of a Written Scheme of Investigation (WSI). The WSI details the requirements for completion of remaining geophysical survey and trial trenching evaluation surveys (where considered necessary) in advance of construction and the setting out of the archaeological mitigation requirements.



Land Use and Agriculture

Hornsea Four is located in an area of fertile soils where agriculture dominates the landscape. Soil types are mixed, and conditions enable the cultivation of cereals, root/fodder crops, potatoes and field vegetables. Some livestock grazing is also present. The onshore substation will be located on farmland but in close proximity to the Creyke Beck National Grid substation, to the north of Cottingham.

Impacts on agriculture are mainly restricted to the construction phase where temporary construction areas

will be required and restrictions on farming activities in place for up to a maximum of 43 months (36 months for the landfall and onshore ECC). Some agricultural land will therefore be taken out of active management for these periods, but permanent loss of agriculture is restricted to the substation site and access track. There are 36 locations where a designated footpath, bridleway or cycle route will be crossed by the onshore ECC or at the onshore substation site, including 23 footpath crossings, eight bridleway crossings, three cycle path crossings, the English Coast Path (which has been designated but is still to be established in the area) and an additional marked way not associated with a designated footpath or bridleway. Other crossings relate to footpaths/bridleways used on a more local level. The onshore substation (and the associated access road) will require one footpath and one bridleway to be permanently diverted – one of which will be stopped up throughout construction.

Hornsea Four has made a number of commitments to reduce impacts, the most relevant being to reinstate land back to its former use after construction and ensuring all public rights of way will be stopped up for a limited period at time with the exception of one which will be stopped up for the duration of construction at the onshore substation (or not at all in some circumstances, where feasible) and signposted where necessary (as set out in the Public Rights of Way (ProW) Management Plan). Following the incorporation of such commitments no significant effects have been identified in relation to land use or agriculture.



Traffic and Transport

An assessment of potential impacts associated with an increase in construction traffic has been undertaken in close consultation with East Riding of Yorkshire Council, Highways England and Hull City Council to ensure that all road users are considered. The assessment considers construction impacts only, as once constructed there would be no significant levels of traffic movements.

The assessment work has been informed by site visits, a desk study and collection of existing traffic flow and collision data. The assessment takes into account forecast construction traffic generation (e.g. HGVs and construction personnel) and the proposed access locations required to construct Hornsea Four.

The assessment covers a range of issues including: driver delay; severance; pedestrian amenity; accidents and road safety; and abnormal loads. Ninety Eight separate transport links, including both main A roads and more local routes have been assessed.

A range of mitigation, as presented within the outline Construction Traffic Management Plan (oCTMP), has been committed to by Hornsea Four to manage the impact of construction traffic including committing to core working hours within defined times. The oCTMP defines standards and procedures to manage the numbers and routing of HGVs and employees and identify local road improvements that will be required. Notably, a new access will be provided directly from the A1079 to route construction and operational traffic (associated with the onshore substation and part of the onshore ECC) away from Cottingham and Dunswell. With the implementation of these mitigation measures, no significant effects on traffic and transport are forecast.



Noise and Vibration

The Hornsea Four baseline noise environment and conditions were set using a series of noise surveys undertaken at locations agreed with East Riding of Yorkshire Council at the landfall (three locations), along the onshore ECC (three locations) and near the onshore substation site (six locations). Forecasts of increases to the current background levels of noise have been calculated using a sound model which uses predicted numbers of differing types of construction plant, and operational noise from the different parts of the onshore substation.

Hornsea Four has made several commitments to reduce or eliminate impacts. A key part of the route planning and site selection work ensured that the onshore cable route avoided all noise sensitive properties by at least 50 m, with construction access roads along the cable route taking access from the highway network at least 150 m from such properties where possible.

Other notable mitigation includes setting core construction working hours to minimise disturbance and also restrictions of vehicle movements associated with planned operation of the scheme. Given that during operation the onshore substation will emit noise a commitment has been made by Hornsea Four to limiting such noise to a level no greater than 5 dB above the representative background during daytime and night at the sensitive locations (e.g. residences). Following the incorporation of such commitments no significant effects are predicted in relation to noise and vibration.



Air Quality

The existing baseline for air quality was evaluated using data from publicly available sources. East Riding of Yorkshire Council has not declared any locations where air quality standards are unlikely to be achieved (i.e. Air Quality Management Areas (AQMAs)) but one such area is in place around the A63 trunk road which runs through the centre of Hull. In general background concentrations of pollutants (nitrogen dioxide and particulates) are well below the relevant objectives, with the Hull AQMA experiencing the highest nitrogen dioxide background concentrations, which is to be expected in this more urban area. Elsewhere, air pollution concentrations are lower, which is to be expected in a predominantly rural area away from localised pollution sources such as roads.

The air quality assessment was carried out using dispersion modelling using predicted traffic numbers for the construction of Hornsea Four and the effects of dust from construction activities were assessed. Operational effects of the scheme were not assessed as no likely significant effects are predicted due to the low levels of traffic required and the lack of other emissions to air. The air quality assessment showed that predicted pollutant concentrations were below the respective air quality objectives at all locations during construction. These objectives take into account known health effects and as such, adverse health effects are not anticipated to arise as a result of Hornsea Four with regard to air quality. Consideration of the potential health effects associated with Hornsea Four has been undertaken and the outcome of which is presented within a Health Impact Assessment (HIA).

Hornsea Four has made a number of commitments to reduce impacts on air quality, including adoption of a Construction Code of Practice (CoCP) which include measures to reduce temporary disturbance and incorporation of good practice measures to reduce dust from construction sites. Following the incorporation of such commitments no significant effects have been identified in relation to air quality or health.



Socio-Economics

The closest economic area to Hornsea Four was the Humber Local Enterprise Partnership (LEP) area (referred to as the former Humber LEP for the assessment); however in April 2021 the Humber LEP landscape changed with a newly created Hull and East Riding LEP established. Employment and economic activity are policy priorities within the local area. There are existing strengths in industries related to offshore wind development both in the former Humber LEP area and in the United Kingdom.

Impacts on socio-economics are largely dependent on the location of the port used for construction and operational activities. For the construction and operational phases, the procurement of activities (both on and offshore) will support jobs and economic activity locally but the scale of impacts depends mainly on the location of the port that supports the activities. There is capacity within the former Humber LEP area for local residents to access substantial employment opportunities supported by Hornsea Four.

There are no specific mitigation measures relating to socio-economics beyond the existing commitments. With no significant adverse effects identified, there is the potential for beneficial effects on employment, economic activity and the ability for local residents to access employment opportunities in both the construction and operation and maintenance phase. An Outline Employment and Skills Plan has been prepared and submitted with the DCO application.



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 A5.2.3 Marine Conservation Zone Assessment
 A5.3.1 Fish and Shellfish Ecology Technical Report
 A5.4.1 Marine Mammal Technical Report
 A5.5.1 Offshore & Intertidal Ornithology Baseline Characterisation
 A5.5.2 Offshore Ornithology Displacement Analysis
 A5.5.3 Offshore Ornithology Collision Risk Modelling
 A5.5.4 Offshore Ornithology Population Viability Analysis
 A5.5.5 Offshore Ornithology Migratory Birds Report
 A5.5.6 Offshore Ornithology MRSea Report
 A5.6.1 Commercial Fisheries Technical Report
 A5.7.1 Navigational Risk Assessment
 A5.8.1 Aviation and Radar Technical Report
 A5.9.1 Marine Archaeology Technical Report
 A5.11.1 Offshore Installation Interfaces (Part 1)
 A5.11.1 Offshore Installation Interfaces (Part 2)
 A5.11.1 Offshore Installation Interfaces (Part 3)

Onshore Annexes

A6.1.1 Land Quality Preliminary Risk Assessment
 A6.1.2 Envirocheck Report (Part One)
 A6.1.2 Envirocheck Report (Part Two)
 A6.1.2 Envirocheck Report (Part Three)
 A6.1.2 Envirocheck Report (Part Four)
 A6.1.2 Envirocheck Report (Part Five)
 A6.1.2 Envirocheck Report (Part Six)
 A6.1.2 Envirocheck Report (Part Seven)
 A6.1.2 Envirocheck Report (Part Eight)
 A6.2.1 Geomorphological Baseline Survey Report
 A6.2.2 Onshore Infrastructure Flood Risk Assessment
 A6.2.3 Water Framework Directive Compliance Assessment
 A6.3.1 Extended Phase 1 Habitat Survey Report
 A6.3.2 Extended Phase 1 Target Note Tables
 A6.3.3 Onshore Ornithology - Wintering and Migratory Birds Survey Report
 A6.3.4 Breeding Bird Survey Report
 A6.3.5 Great Crested Newt Environmental DNA (eDNA) Survey Report
 A6.3.6 Water Vole Survey Report
 A6.3.7 Otter Survey Report (confidential)

A6.3.8	Bat Static Detector Survey Report Part A
A6.3.9	Bat Static Detector Survey Report Part B
A6.3.10	Bat Activity Transect Survey Report Part A
A6.3.11	Bat Activity Transect Survey Report Part B
A6.3.12	Bat Emergence and Re-entry Survey Report Part A
A6.3.13	Bat Emergence and Re-entry Survey Report Part B
A6.3.14	Hedgerow and Arboricultural Survey Report
A6.3.15	Badger Survey Report (Confidential)
A6.4.1	Landscape and Visual Resources: Wireframes and Photomontages
A6.5.1	Historic Environment Desk Based Assessment (Part A)
A6.5.1	Historic Environment Desk Based Assessment (Part B)
A6.5.2	Aerial Photographic and Lidar Assessment Report Part A
A6.5.2	Aerial Photographic and Lidar Assessment Report Part C
A6.5.2	Aerial Photographic and Lidar Assessment Report Part C
A6.5.3	Priority Archaeological Geophysical Survey Part A
A6.5.3	Priority Archaeological Geophysical Survey Part B
A6.5.3	Priority Archaeological Geophysical Survey Part C
A6.5.4	Geoarchaeological Desk Based Assessment
A6.7.1	Traffic and Transport Technical Report
A6.7.2	Abnormal Load Report
A6.8.1	Baseline Noise Survey Report
A.6.10.1	Socio-economics Technical Report

Next Steps

All documentation submitted for the DCO application is available to view on the Planning Inspectorate website, link below.

[Hornsea Project Four Offshore Wind Farm \(Generating Stations\) | National Infrastructure Planning \(planninginspectorate.gov.uk\)](https://planninginspectorate.gov.uk/Hornsea-Project-Four-Offshore-Wind-Farm-Generating-Stations)

Contact Us

We want to hear your views on our proposals for Hornsea Four. There are a range of ways you can get in touch:



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