

Race Bank Offshore Wind Farm

Environmental Statement Non-Technical Summary

January 2009



centrica
energy

Produced in association with

amec

Race Bank Offshore
Wind Farm

“Against a backdrop of
growing concern about
climate change...”



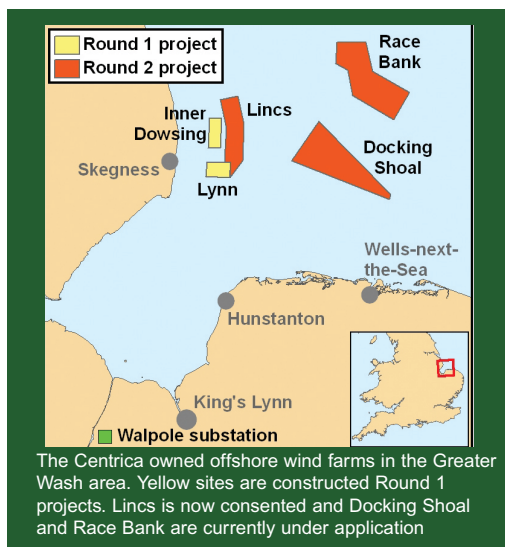
Introduction

This document is a Non-Technical Summary (NTS) of the Environmental Statement (ES) for the proposed Race Bank Offshore Wind Farm.

It provides an overview of the key findings of the Environmental Impact Assessment (EIA) undertaken by Centrica as part of the consent process for the proposed Race Bank Offshore Wind Farm. It is approximately 27 kilometres (16 miles) off Blakeney Point on the north Norfolk coast at its closest point, and 28 kilometres off the Lincolnshire coastline at Chapel St Leonards. This NTS provides the project background, offshore and onshore, including a summary of the scientific studies undertaken and the assessment of the potential environmental effects of the development. For more detailed information you should refer to the main ES (see the back page of this document for further information on how to obtain a copy).

The ES describes in detail the need to generate electricity from renewable sources, the process of site and cable route selection, and the process of design, construction, operation and decommissioning of the wind farm.

In the ES, environmental impacts in relation to the existing biological, physical and human environments are assessed, and appropriate measures for mitigation and monitoring identified.



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“...and the need for security of
energy supplies...”

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The Resolution on site during offshore wind turbine installation at the Lynn Offshore Wind Farm

Centrica

Centrica (RBW) Ltd, which owns the proposed Race Bank Offshore Wind Farm project, is part of Centrica plc, better known to consumers in the UK through its British Gas and Scottish Gas businesses.

The proposed Race Bank site is located within the Greater Wash strategic area, one of three areas designated by the UK Government in 2002 for further development of offshore wind farms. A Strategic Environmental Assessment (SEA) was carried out on this area on behalf of the Government in 2003.

Centrica owns three consented offshore wind farms in the Greater Wash strategic area - Lynn and Inner Dowsing, which are now operational, and the Lincs Offshore Wind Farm, which was granted consent in October 2008. In addition to Race Bank, Centrica also submitted an application to the Government for an offshore wind farm at Docking Shoal in December 2008.

To develop these offshore wind farms, Centrica is combining its own knowledge of the offshore energy industry with that of experienced wind farm developers AMEC and Renewable Energy Systems Ltd (RES).

With a potential installed capacity of up to 620 MW, it is expected that the proposed Race Bank Offshore Wind Farm would meet the domestic requirements of around 420,000 homes annually, and reduce carbon dioxide emissions in a year by approximately 848,000 tonnes. If, following site investigations and identification of further constraints, the number of turbines that could be feasibly constructed was reduced, the associated benefits would fall, in line with the actual installed capacity. Centrica will keep these figures under review and publish updated estimates on its website and in other publications such as project newsletters, as more information is available.

The ES for Race Bank comprises five components: the NTS (this document); Volume 1 - Book 1: Offshore Works Chapters 1-5; Volume 1 - Book 2: Offshore Works Chapters 6-8; Volume 2 (Onshore Works) and associated Technical Appendices. The two books of the Offshore ES cover the proposed Race Bank Offshore Wind Farm site and export cable route to mean high water springs (MHWS) (the high tide mark).

The Onshore ES covers the onshore cable route and substation for the proposed Race Bank, Lincs and Docking Shoal projects. All three projects share the same onshore route and substation. Consent for these elements of the project was granted in May 2007.

Project Details

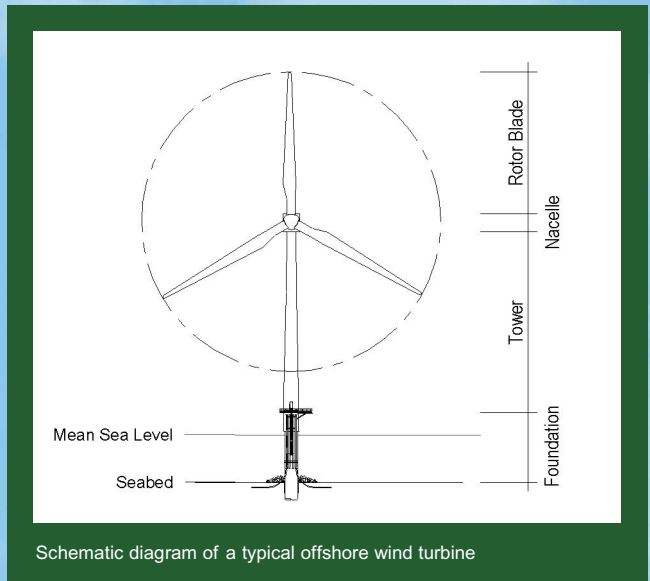
The proposed development is an offshore wind farm with an installed capacity of up to 620 MW, covering a site of 75 square kilometres (29 square miles). It is oriented roughly north-west to south-east and located in water depths of 4 metres (13 feet) to 22 metres (72 feet) Chart Datum (CD), approximately 27 kilometres (16 miles) off Blakeney Point on the north Norfolk coast at its closest point, and 28 km off the Lincolnshire coast at Chapel St Leonards. In addition to wind turbines and foundations, the development would have associated electrical infrastructure comprising subsea cables and up to three offshore substations.

The works on land would include buried cables, and an extension to the existing substation at Walpole forming the connection to the National Grid.

Details of the wind turbine foundation design, wind turbine size, installation methodology, electrical design and cable route would be determined post consent during the detailed design period.

The EIA process has therefore considered a range of design options in order to assess potential impacts.

The layout of the wind turbines would be designed to maximise the energy yield from the site.



Schematic diagram of a typical offshore wind turbine

There would be between 88 and 206 three bladed, horizontal axis wind turbines depending on the size of the wind turbine chosen. The wind turbine, nacelle and hub, complete with three blades, would be mounted on a cylindrical steel tower, which in turn would be supported by a foundation fixed on the seabed.

The maximum height to blade tip would be 180 metres (591 feet), the maximum hub height would be 110 metres (360 feet) with a minimum spacing between wind turbines of 630 metres (2,067 feet).

Electricity would be transmitted by up to four export cables, 61 kilometres (38 miles) long, to a landfall east of the River Nene on the southern shore of the Wash. The depth of cable burial would be dependent on the outcome of a Burial Protection Index (BPI) study. The BPI is an assessment of protection given to a cable as a function of soil type with consideration given to other user activities in the area and their associated risks. Cable burial would be achieved using ploughing (ie cutting a trench to lay the cable in and back-filling it), jetting (ie applying pressure with water jets to sink the cable) or a combination of these methods.

Cables would be buried onshore for 11 kilometres from the landfall point to a new substation extension located directly adjacent to the existing substation at Walpole, Norfolk. Additional works at Walpole, required by National Grid in order to accommodate the connections for Race Bank, Lincs and Docking Shoal Offshore Wind Farms, have been considered in the Onshore ES.

The Crown Estate has awarded an agreement for lease for the Race Bank site for 50 years. Onshore and offshore construction for the proposed development would take place over a period of three to four years. Some preparatory onshore works may take place at the time of the Lincs Offshore Wind Farm construction.



Regular servicing of wind turbines would take place throughout the operational life of the project.

Decommissioning would include the removal of all offshore structures as necessary, to conform with regulations at the time of decommissioning.

UK Energy Policy - The Need for Renewable Energy

Current UK Government energy policy has as its central aim the development of a diverse, sustainable and secure supply of competitively priced energy. The need to reduce carbon dioxide emissions is fundamental to this, with particular focus on developing renewable energy sources.

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At the time of writing, the UK Government has set a domestic target of obtaining 15 per cent of the UK's electricity supply from renewable sources by 2015. Proposals under the Government's Renewable Energy Strategy, released for consultation in June 2008, outline the ambition for the UK to provide 15 per cent of its total energy used (a combination of electricity, heat and transport) from renewable sources by 2020. In order to meet this target, it is estimated that 30 - 35 per cent of electricity would need to be generated from renewable sources. Offshore wind may contribute around 19 per cent of the total renewable electricity target.

An obligation has been placed on all energy suppliers, such as Centrica, to source an increasing share of the power they supply each year to customers from renewable sources.

In June 2008, the Crown Estate launched a Round 3 leasing programme for the delivery of up to 25 GW of new offshore wind farm sites by 2020. This would be in addition to the 8 GW already planned and built, totalling 33 GW. Current Government modelling suggests that 14 GW may be deployed by 2020, with the remaining 19 GW deployed by 2030.

To meet Government targets and to provide security of energy supply, the development of renewable energy is vital.

Consents

The construction and operation of the proposed Race Bank Offshore Wind Farm requires a number of regulatory consents. The Department of Energy and Climate Change (DECC) and the Marine Environment Team of the Marine and Fisheries Agency (MFA) are both responsible for the consents process.

Centrica is applying for the following key consents for the proposed Race Bank Offshore Wind Farm:

- consent under Section 36 of the Electricity Act (1989) to construct and operate the offshore wind farm
- licence under Section 5 of the Food and Environment Protection Act (1985) to deposit materials on the seabed such as the wind turbine foundations and the buried cables
- consent under Section 34 of the Coast Protection Act (1949) in order to make provision for the safety of navigation in relation to the buried cables
- consent under Section 36 (and a Direction by the Secretary of State that deemed planning permission be granted under Section 90 (2) of the Town and Country Planning Act 1990) for the intertidal works between Mean Low Water Springs (MLWS) and Mean High Water Springs (MHWS)

In addition, safety zones may be requested under the Energy Act (2004) to ensure the safety of individuals and vessels during construction and operation.

Centrica placed an application for consent for the proposed Race Bank onshore works under Section 57 of the Town and Country Planning Act (1990). Planning permission was granted for these onshore works in May 2007.

The Environmental Impact Process

The term 'Environmental Impact Assessment' (EIA) describes a process which must be followed for certain types of development to ensure any potential effects on the environment are thoroughly considered. Existing legislation requires that the proposed Race Bank project is subject to a full EIA to support planning and licence applications.

The purpose of the EIA process is to provide adequate environmental information to enable decision-makers to understand the potential environmental effects of the project.

The EIA for the Race Bank Offshore Wind Farm has been undertaken by a number of specialists, including marine biologists, oceanographers, archaeologists, ornithologists and engineers.

The results of the EIA are presented in an Environmental Statement (ES). The ES identifies and assesses potential impacts associated with the construction, operation and decommissioning of the proposed development. For each potential impact, the ES considers the 'worst case' which ensures that the development possibilities (eg foundation type and potential wind turbine locations) and scenarios likely to cause the greatest environmental impact are taken into account for every aspect of the project. This process clearly defines the potential boundaries of the development and describes the maximum possible impact.



A range of surveys were carried out to form the basis of the Environmental Impact Assessment, looking at the physical, biological and human environments

Scoping and Consultation

To assist with the identification of environmental effects on which to focus the EIA and the methods of study used, a formal scoping exercise was undertaken in which Centrica sought views from more than 120 statutory and non-statutory organisations. Consultation continued throughout the EIA process with statutory consultees and key stakeholders. Scoping and consultation have helped shape the proposal submitted. Further consultation with key stakeholders will be carried out by DECC and MFA on the content and findings of the ES.

Public Exhibitions

Details of the early proposals for the development of the Race Bank Offshore Wind Farm were initially publicised through the media, a series of exhibitions and a public consultation exercise.

Public exhibitions have been advertised and held at a range of locations between 2005 and 2008. These include Skegness, King's Lynn, Hunstanton and Sutton Bridge, during Wash Week events in Lincolnshire and north Norfolk and at other events such as the three-day Skeg-X kite surfing championships held in Skegness.

Shortly after the submission of the planning application for Race Bank, further exhibitions will be held to give members of the public and interested organisations an opportunity to ask questions about the project and review the outcome of the various environmental studies.



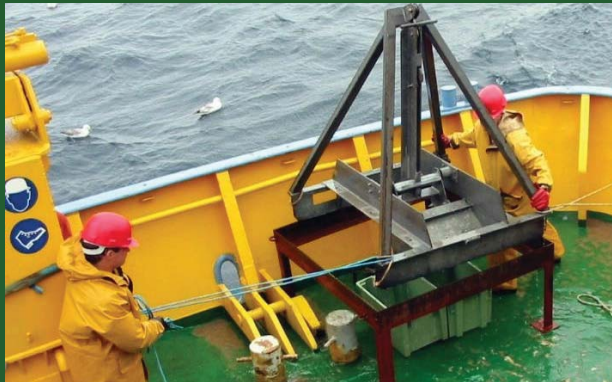
The Gibraltar Point National Nature Reserve visitor centre, near Skegness, where a number of exhibitions have been held

Data Collection and Surveys

As a result of the scoping exercise and consultation process, the following key surveys were undertaken on the proposed site and cable route as part of the offshore EIA process:

- geophysical surveys to understand the characteristics of the seabed
- marine biological surveys
- aerial and boat-based bird and marine mammal surveys
- commercial and natural fish resource surveys
- marine traffic surveys
- intertidal bird and invertebrate surveys
- archaeological surveys of the seabed to the shoreline
- visual assessments of the landscape and seascape

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Grab samples being taken for analysis of the seabed within the proposed Race Bank Offshore Wind Farm site

Site Selection and Consideration of Alternatives

Site Selection

A key part of the overall project to date has been the careful and detailed assessment of all potential locations for the proposed Race Bank Offshore Wind Farm site, the route of the export cables to shore, and the locations of onshore infrastructure. By considering several potential locations within the Greater Wash strategic area it has been possible to eliminate areas where development would be technically difficult, may adversely affect the natural environment, or would impact other economic or social activities. The choice of site was initially based on criteria which included:

- results of surveys from the Greater Wash strategic area
- available wind resource
- geology
- seabed obstructions and munitions
- water depth
- construction limitations
- operation and maintenance requirements
- grid connection
- stakeholder consultations

Grid Connection

Considerations of transmission capacity, connection availability, technical limitations, environmental constraints and potential planning issues led to the selection of the Walpole substation as the proposed point of connection. This substation would provide sufficient connection capacity for Centrica's Lincs, Docking Shoal and Race Bank Offshore Wind Farm projects and would not require the installation of any overhead lines.

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Indicative cable corridor from Race Bank Offshore Wind Farm site to the onshore substation at Walpole. Up to four cables would be laid in the cable corridor for Race Bank

The Proposed Marine Export Cable Route

Due to the environmental sensitivity of the Wash estuary, the selection of an appropriate route for the marine export cables has been a major part of the overall site selection process.

Initial consultation and detailed technical constraint studies led to the investigation of a cable corridor study area that included a substantial part of the main navigation channel within the Wash estuary. Early feedback from the port authorities indicated a preference for the cable route to be in the deeper region of the Wash where the seabed is more stable. These studies also took into consideration the numerous designations of the estuary, including its status as a Special Area of Conservation (SAC), a Special Protection Area (SPA), a Ramsar Site, a National Nature Reserve (NNR) and a Site of Special Scientific Interest (SSSI).

An offshore cable route running from the north-east to the south-west of the estuary along the navigation channel, with a landfall location to the east of the River Nene, is proposed.

Due to the environmental sensitivity of the saltmarsh habitat in the intertidal area, the export cable would be installed under the saltmarsh using a technique known as horizontal directional drilling. This would avoid potential habitat loss and physical disturbance to the saltmarsh habitat. A cable route within the intertidal area has been selected that reaches the shore at a point where the saltmarsh strip is sufficiently narrow to allow this technique to be used.

The Onshore Cable Route

The consented onshore cable route does not pass through any environmentally designated areas along its approximately 11 kilometre (7 mile) length. The land use along this route is mainly agricultural. Cable installation beneath the A17 would be achieved by horizontal directional drilling beneath the road to avoid major disruption to traffic in the area.

Assessment of Potential Effects

The potential environmental impacts associated with the Race Bank Offshore Wind Farm through each phase, from construction through to operation and decommissioning, are summarised below.

Nature of the Impacts

As part of the EIA process, impact identification and assessment were carried out using standard procedures. For each impact, the magnitude of the effect, based on the area affected, the duration of the effect and the scale of the effect relative to background conditions, has been described along with the sensitivity of the receptor affected based on their importance and recoverability (examples of receptors include birds, marine habitats, humans).

The combination of the magnitude of the effect and the sensitivity of a receptor has then been used to derive the significance of the impact, given as **negligible**, **minor**, **moderate** or **major**.

Where appropriate, mitigation measures have been suggested. The aim of these measures is to reduce any impact that potentially may arise.

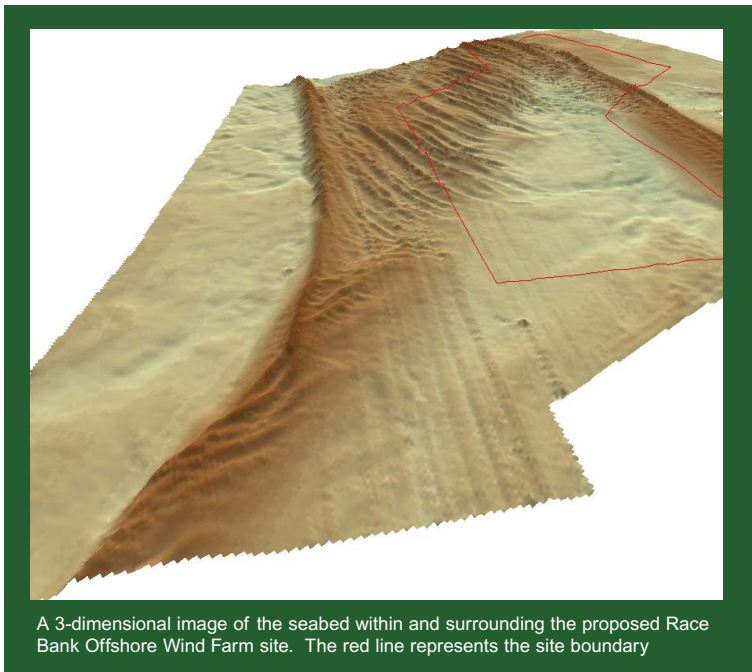
Offshore Wind Farm and Export Cable Route: Potential Physical Effects

Coastal Processes

The coastal processes study included a desk-based review, analysis of site specific data and modelling of the currents, waves and sediment transport. In addition, a study of the form and function of the sandbanks was undertaken which included an analysis of historical charts plus a geological investigation.

The analysis predicted that there would be no change to the coastal processes in Norfolk or Lincolnshire. During construction, installation of the foundations would cause the seabed sediment to be disturbed. However, over most of the site the sediment is sand which would be re-deposited quickly in the local area and therefore not have an effect on the background sediment transport. Gravel is also present on the seabed, but this would not be suspended.

Once constructed, the foundations would have an effect on the speed of the current locally, speeding up the current upstream of the foundation, and slowing it down in its wake.



Across the whole wind farm this would result in a slight decrease in current speeds within the site, and a slight increase in current speeds at the periphery of the site. However, this effect is not considered significant.

Although minor changes are predicted in the wave regime, these are restricted to the wind farm site itself and are not considered significant. Slight changes to sediment transport would also be restricted to the site itself and would not have a significant effect.

The morphological (bedform) study showed that the wind farm was unlikely to have any effect on the morphological behaviour within the site or surrounding sandbanks.

Overall, the only significant effect was local scour resulting from the foundations, but this can be mitigated by correctly designed scour protection. With this in place, there would be no significant impacts produced by the proposed Race Bank Offshore Wind Farm on coastal processes.

Offshore Wind Farm and Export Cable Route: Potential Biological Effects

Marine Ecology

The animals living on and in the seabed were studied by collecting grab samples and undertaking beam trawls over the proposed Race Bank site.

Most of the site is sand and gravelly sand with animals such as worms and crustaceans. In deeper areas, sediments comprised shell, pebble and cobble over sand and gravel with slightly more diverse animal communities. The most common species were brown and pink shrimps, and small crabs. Fish species included sand goby, dragonet and lesser weaver.

The addition of the foundations would affect some of the animals living in and on the seabed within the footprint of each wind turbine. However the structures are expected to be colonised rapidly by species such as mussels and crabs.

During construction, increases in sediment suspension and deposition are predicted to be small and localised.

Construction noise is likely to cause fish to move away from the foundation locations, however this disturbance would be for a short period only. Mitigation would include the use of 'soft-start' for piling, a slow build up of piling impact noise, which would allow mobile animals to vacate the area. Overall impacts on the benthic ecology were assessed as of **minor** significance.



The reef building Ross worm (*Sabellaria spinulosa*)

Intertidal Ecology

The marine export cables would pass through a small section of the intertidal area of the Wash and there would be impacts upon habitats and species in these areas from the cable installation works. Although effects upon the ecology of the intertidal area would arise, these would be temporary in duration and site-specific in extent, resulting in a **minor** impact.



Part of the intertidal area of the Wash, showing typical habitat

Race Bank Offshore Wind Farm

Marine Mammals

The most common marine mammals in and around the proposed Race Bank site are the common seal, grey seal and harbour porpoise.

During construction, noise from piling activities could affect these animals. Marine mammal observers (MMOs) would survey the area to ensure that no marine mammals are in the vicinity of the site before piling starts. The use of soft-start, a slow build up of piling impact, would allow animals to move away. Surveys of constructed wind farms have shown that mammals generally return to the area within a few hours of piling ceasing. Impacts have been assessed as **minor** overall.



A grey seal pup (*Halichoerus grypus*) at Donna Nook

Birds

A total of 35 species were recorded within the proposed Race Bank Offshore Wind farm site during 25 boat-based surveys and 15 aerial surveys carried out in the study area over two years. From boat-based surveys, little gull and Sandwich tern were estimated to occur in nationally important numbers with fulmar, gannet, lesser black-backed gull, kittiwake, common tern, guillemot and razorbill occurring in regionally important numbers.

Potential impacts on birds including disturbance and displacement effects by the wind farm and associated vessel traffic, and potential collision with wind turbines were assessed. A range of impacts, many of which were **minor** or **negligible** were predicted.

For the Sandwich tern, which has been identified as the most sensitive species, and which breeds in internationally important numbers in the National Nature Reserves at Scolt Head and Blakeney Point, a special research programme has been carried out. This has included tern tracking, prey surveys and observations of food items returned to chicks at the colony. A population modelling exercise is currently being undertaken to assess the potential impacts of the wind farm on the local Sandwich tern populations. The cumulative effects on birds from Race Bank and other proposed wind farms in the Greater Wash are currently being discussed with Natural England (NE) and the Joint Nature Conservation Committee (JNCC).

Disturbance to wintering birds within the Wash SPA is not predicted as installation works are likely to take place during periods when wintering birds are not present. With respect to birds, no impacts arising from the installation of the cables are predicted.

Nature Conservation of the Export Cable Route

The Wash is an internationally important area for nature conservation. An extensive programme of data collection has been undertaken to identify features of specific importance within all areas likely to be affected by the proposed export cable route. The offshore cable route has been designed to avoid those areas of known ecological sensitivity and, through pre-construction surveys and further micro-siting, it is predicted that the potential for impact on such ecologically sensitive features can be eliminated.

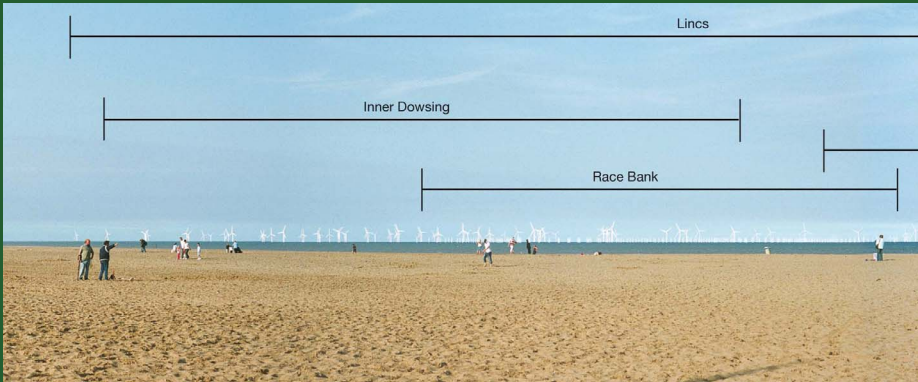


Sandwich tern carrying prey, north Norfolk
© Martin Perrow

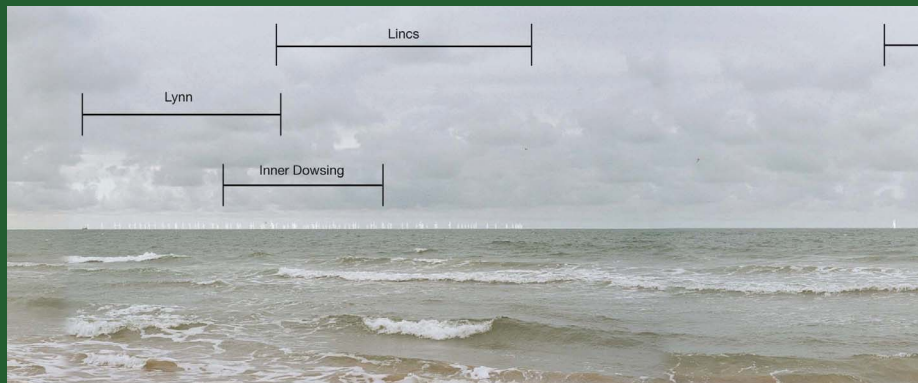
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Offshore Wind Farm and Export Cable Route: Potential Human Effects

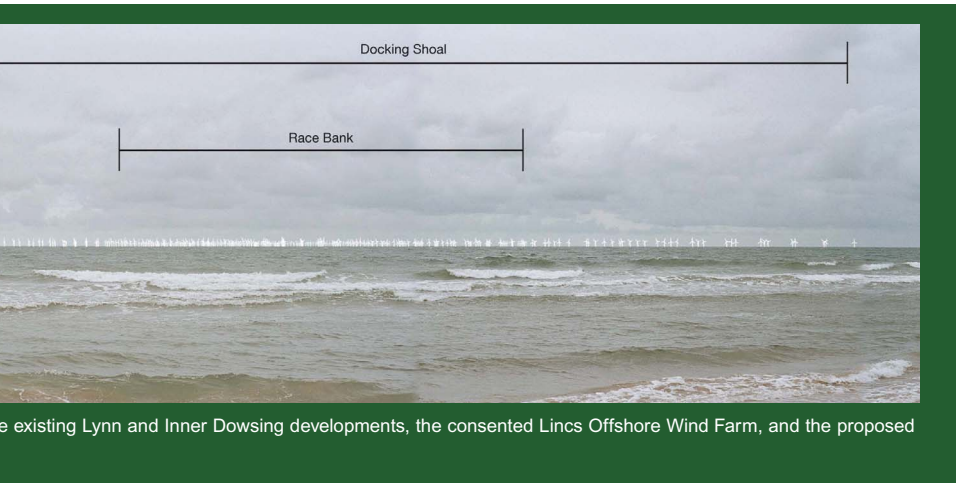
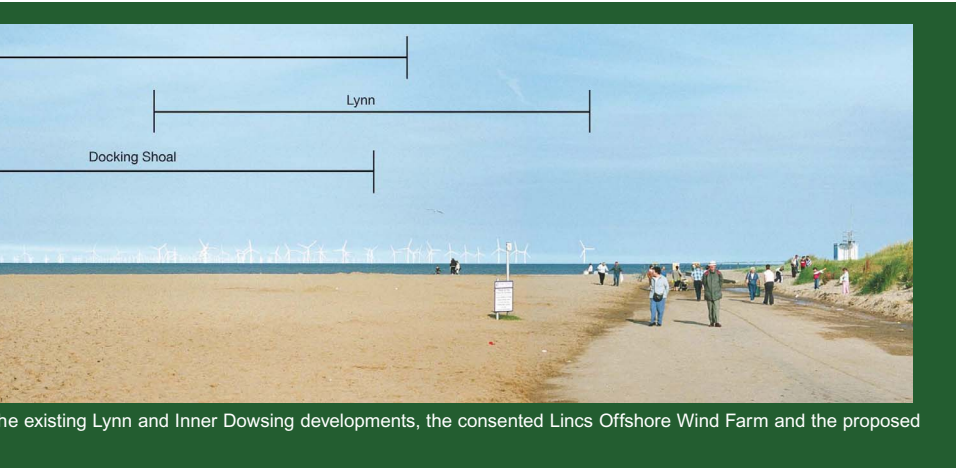
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View of the proposed Race Bank Offshore Wind Farm from Skegness beach. This also shows the extent of the Docking Shoal Offshore Wind Farm



View of the proposed Race Bank Offshore Wind Farm from Brancaster Bay. This also shows the extent of the Docking Shoal Offshore Wind Farm



The potential visual impact of the proposed Race Bank Offshore Wind Farm was assessed from eight representative viewpoints covering Lincolnshire and north Norfolk. Due to the distance offshore (a minimum of approximately 27 kilometres (16 miles)), the proposed development is located beyond the limit of visual significance within the Greater Wash area. In addition, the prevailing weather conditions would significantly affect visibility of the wind turbines beyond 16 kilometres (10 miles).

A review of the representative viewpoints concluded that visual effects arising from the proposed development would be of no more than **minor** significance. Similarly, impacts on designated sites such as the North Norfolk Area of Outstanding Natural Beauty (AONB) or the historic environment and Conservation Areas of both counties, would be no greater than **minor to negligible**.

The shipping and navigation study was based on a combination of a shipping movement database, site specific radar and Automatic Identification System (AIS), and consultation. Early in the development process, the boundary was adjusted to ensure that the distance between this proposed site and that of the proposed Docking Shoal Offshore Wind Farm complied with the Maritime and Coastguard Agency (MCA) Shipping Template to ensure navigational safety.

There are two main shipping routes near Race Bank which have 19 - 20 vessels each day. One is to the north, leading from the Humber and passing between Triton Knoll and Race Bank, and one is to the south, passing along the Race Bank channel. A few tracks were also observed to the west of Race Bank, but this is not a recognised navigation route. The proposed site is a sufficient distance from each of these to avoid significant effects on ships' radar.

A navigational risk assessment was undertaken, and no risks were found to be unacceptable. A quantitative analysis concluded that in comparison with the background risk of marine accidents in the UK, the additional risk associated with the proposed wind farm is low.

Cultural Heritage and Archaeology

The potential archaeology of the site and cable route includes both wrecks and buried landscapes. Both desk study and analysis of geophysical data have been used to identify potential areas of archaeological importance.

Identification of prehistoric landscapes is difficult in the marine environment, but additional information might be gained from future analysis of boreholes which are required before construction.

Wrecks and debris were identified from national databases, plus fine scale interpretation of geophysical sidescan and bathymetry data. From these, a number of sites within the wind farm and proposed cable route have been recommended for exclusion zones during construction so that vessels and equipment avoid areas of potential archaeological interest, and therefore have no effect.

Consequently, by avoiding sensitive areas, there are no significant effects predicted on archaeology during construction, operation or decommissioning.



An example of a side-scan survey image of an 'anomaly', probably a wreck, measuring 41 x 15 metres, and 2.7 metres high

Race Bank Offshore Wind Farm

Commercial Fisheries

Fishing activity in the proposed Race Bank site consists of a limited number of local potters and minimal levels of long-lining in the general area. For health and safety reasons, temporary safety zones will be put in place during the construction phase. Vessel notification procedures, already established for the Lynn and Inner Dowsing developments, would advise fishermen. Studies from operational wind farms have shown that successful fishing can take place within site boundaries, and recent studies and observations suggest that habitat and food source enhancement may in fact have a beneficial impact on commercial fishing. For vessels passing through the site to access other fishing grounds, any increase in steaming times would be **negligible**.

The route of the export cable has been designed to avoid most of the Wash mussel and cockle beds with **negligible** to **minor** impacts predicted during the cable installation phase.

Other Marine Users

The level of other marine users in the area is low. The other activities that were considered included aggregate dredging, oil and gas drilling, cables and pipelines, sailing, telecommunications, aviation and Ministry of Defence activities. Although the proposed site overlaps with an oil and gas block, there are currently no plans for exploration within the site.

There are no cables or pipelines within the site, and there would be no impact on aggregate dredging. During construction and operation, when there are more vessels using the area, good communication with dredging companies and the local ports would need to be maintained to ensure there are no impacts on other vessel activities. With this in place, the proposed development would have no impacts on other marine users.



A trawler engaged in commercial fishing activities off the east coast of England

Socioeconomics

The proposed Race Bank Offshore Wind Farm has the potential to generate positive economic effects similar to those from the recently constructed Lynn and Inner Dowsing Offshore Wind Farms, off the coast near Skegness.

Through these developments, there have been a number of benefits to the local area, including the use of local vessels for survey work, the hiring of office space for onshore support based at Skegness and Grimsby, and a general increase in local income through a number of contractors and project employees living and working in the area throughout the construction period.

In the longer term, once construction is completed, operations and maintenance staff will be employed.

Offshore wind farm development has the potential to provide new local education opportunities and may also attract additional visitors to the area with both engineering and environmental interests. On a national level, the development and construction of wind farms and wind turbines in the UK could help establish a substantial new UK industry, which could provide long-term jobs to serve both the home and international markets.

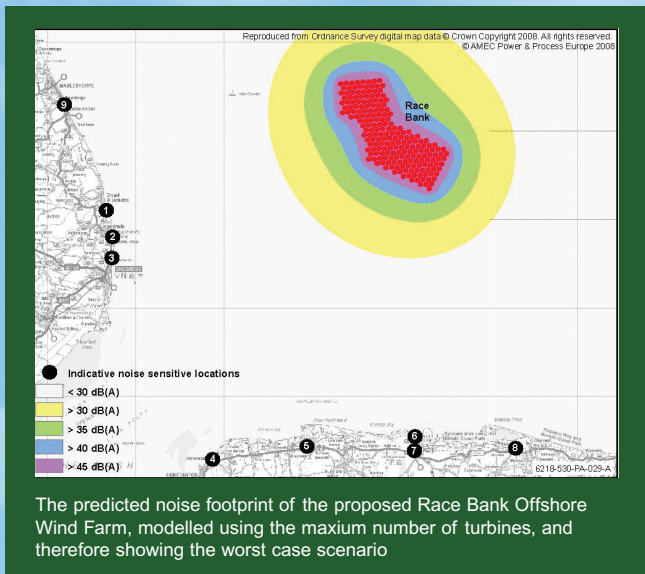
Race Bank Offshore Wind Farm

Electromagnetic Interference and Air Traffic Control

Consultation with the telecommunication and aviation industries has established that the proposed Race Bank development would not be expected to have any adverse impact on communications, microwave links, TV or radio reception or civil aviation. Discussions are ongoing with The Ministry of Defence.

In Air Noise

The potential acoustic impact of the proposed Race Bank Offshore Wind Farm was assessed using best practice guidelines set out by the Department of Trade and Industry (now DECC). During construction of the wind farm, the impact from piling activities was predicted to be **minor** due to the distance of the development from the shore. No other significant impacts are predicted onshore during the construction and operation of the proposed wind farm.



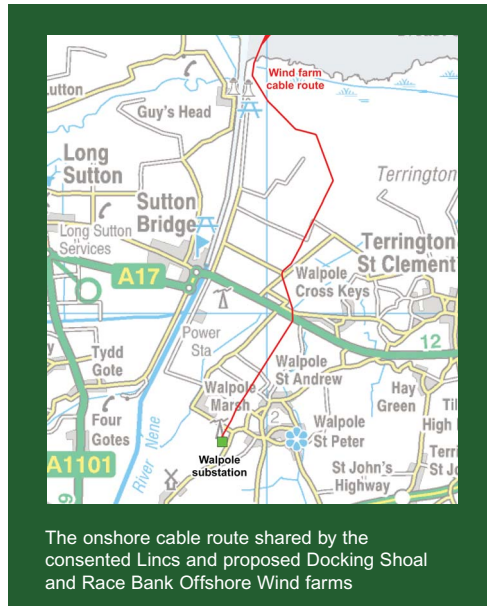
Onshore Works: Potential Effects

The proposed Race Bank Offshore Wind Farm would require electrical cables to conduct the electricity to a substation onshore where it is fed into the National Grid. The proposed 11 kilometre (7 mile) onshore cable route and extension of the existing substation at Walpole were assessed for their potential impact on the surrounding environment in Volume 2 of the ES (Onshore). This Volume, which addressed all three Centrica projects – Lincs, Docking Shoal and Race Bank – was submitted in January 2007 with the Lincs ES.

Topics covered in the onshore ES included:

- hydrology, hydrogeology, geology and soils
- ecology and nature conservation
- landscape and visual character
- cultural heritage and archaeology
- socioeconomics and tourism
- transport and traffic
- in-air noise
- flood risk and coastal defences

Planning consent has been received for the onshore works associated with Race Bank under a separate application.



The onshore cable route shared by the consented Lincs and proposed Docking Shoal and Race Bank Offshore Wind farms

The proposed Race Bank Offshore Wind Farm would play an important role in reducing carbon emissions, add to the diverse energy mix required to meet present and future energy demands in a sustainable manner, and increase the security of energy supply to UK homes.

The EIA, for both the offshore and onshore elements of the proposed development, has been completed in accordance with EU and UK regulations. Throughout the development process, Centrica has carried out detailed and extensive consultations with statutory and non-statutory bodies, interested parties and the public. Exact project phasing, foundation types and the size of wind turbines to be used would be determined post consent, therefore the ES defines the potential boundaries for the development, and the EIA assessments address the scenario that would have the greatest potential effect on the environment.

Throughout pre-construction, construction, operation and decommissioning, all relevant consents would be obtained. Potential impacts would be avoided through the adoption of appropriate and adequate mitigation measures.



A cable installation barge at sunset during the construction of the Lynn Offshore Wind Farm

“...Centrica has made a significant commitment to develop renewable energy as part of its energy portfolio. ”



Race Bank Offshore Wind Farm

Further Information

The Environmental Statement can be viewed during the statutory consultation period at the following locations:

Skegness Library, 23 Roman Bank, Skegness, Lincs PE25 2SA
King's Lynn Library, London Road, King's Lynn, Norfolk PE30 5EZ
Wells-next-the-Sea Library and Learning Centre, Station Road, Wells-next-the-Sea, Norfolk, NR23 1EA
King's Lynn and West Norfolk Borough Council, King's Court, Chapel Street, King's Lynn, Norfolk, PE30 1EX
South Holland District Council, Council Offices, Priory Road, Spalding, Lincolnshire, PE11 2XE
Boston Borough Council, Municipal Buildings, West Street, Boston, Lincs, PE21 8QR
Lincolnshire County Council, County Offices, Newland, Lincoln, LN1 1YL
Norfolk County Council, County Hall, Martineau Lane, Norwich, Norfolk, NR1 2DH

Requests for copies of the Environmental Statement (priced at £5 on CD and £250 for a hard copy, with cheques made payable to Centrica Renewable Energy Ltd), or additional copies of this Non-Technical Summary (free), should be made in writing to:

Centrica (RBW) Ltd
Centrica Energy
Millstream East
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SL4 5GD

A version of the Non-Technical Summary is also available to download from the Race Bank project pages of the Centrica Energy website:
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