FOREWIND

Forewind
February 2015

Fact
Sheet

Forewind and Dogger Bank

Forewind is a consortium of four leading international energy companies – RWE, SSE, Statkraft and Statoil – committed to securing all the necessary consents required for offshore wind development in the Dogger Bank Zone.

The Dogger Bank Zone is in the North Sea, located between 125 and 290 kilometres (77 to 180 miles) off the east coast of Yorkshire. It is the largest of The Crown Estate's Round 3 zones, extending over approximately 8660 square kilometres (3343 square miles), which is about the same size as North Yorkshire.

As the Dogger Bank Zone is so large, it is being developed in stages and, if fully realised, will be the largest offshore wind development in the world. It would make a huge contribution to the UK's electricity generation capacity, with each of the proposed 1.2 GW projects delivering up to 4 terawatt hours (TWh) of green power per annum, equivalent to the electricity used by almost one million British homes.

Forewind has accumulated a huge amount of data via detailed geophysical (seabed and sub-seabed) surveys; geotechnical testing; meteorological and oceanographic data collection, and wind data collection. More than £60 million has been spent on the surveys with the vast majority of work going to UK-based contractors, and the data has contributed to a wider scientific knowledge of Dogger Bank.

To date Forewind has submitted development consent order applications to the Planning Inspectorate for the first two stages, each comprising two 1.2 gigawatt (GW) wind farm projects. Due to their size, they both fall into the category of nationally significant infrastructure projects.

The application for the first stage – Dogger Bank Creyke Beck – was submitted in August 2013 and a decision is expected by 17 February 2015. The application for the second stage – Dogger Bank Teesside A&B – was submitted in March 2014 and a decision is expected by 5 August 2015.

Economic benefits

With its current industrial base, the UK could provide up to **38 per cent** of the total content of these four Dogger Bank projects, which equates to an investment of close to **£7 billion**. If new relevant manufacturing facilities are established this could rise to **72 per cent of the content**, or an investment of around **£13 billion**.

Delivering these four projects with the existing UK manufacturing base could create more than **4500 new direct and indirect jobs** and generate an additional **£1.6 billion** for the UK economy. With the successful establishment of new relevant manufacturing facilities, this could increase to around **9000 new jobs** giving a **£3.4 billion** boost to the national economy.

Key facts

Size
8660 km² (3343 square miles)
Largest of the Round 3 zones

Distance from UK coast
125 to 290 kilometres
(77 to 180 miles)

Water depth
18 to 63 metres (59 to 206 feet)
One of the shallowest of the Round 3 zones

Estimated capacity
Currently four 1.2 GW wind farm projects in planning

CO_2 reduction
Each 1.2 GW Dogger Bank wind farm would reduce CO_2 emissions by almost two million tonnes per annum, based on the current UK energy mix and an assumed capacity factor of 40%

Dogger Bank
Creyke Beck

Dogger Bank Creyke Beck will have an installed capacity of up to 2.4 GW and will connect into the existing Creyke Beck substation near Cottingham, in the East Riding of Yorkshire. It will comprise two wind farms, **Dogger Bank Creyke Beck A** and **Dogger Bank Creyke Beck B** – both are 131 kilometres from shore at their closest point.

In total it will generate around eight terawatt hours (TWh) of green electricity per annum, which is almost enough to power all the homes in the Yorkshire and Humber region every year. Provided new relevant manufacturing businesses are established in the UK, it could also create up to 4750 new direct and indirect jobs and generate around £1.7 billion for the UK economy.

Offshore

The boundaries for both Dogger Bank Creyke Bank wind farms were identified in 2012, defining the limits of where the offshore wind farm infrastructure will go.

Summary of key offshore components

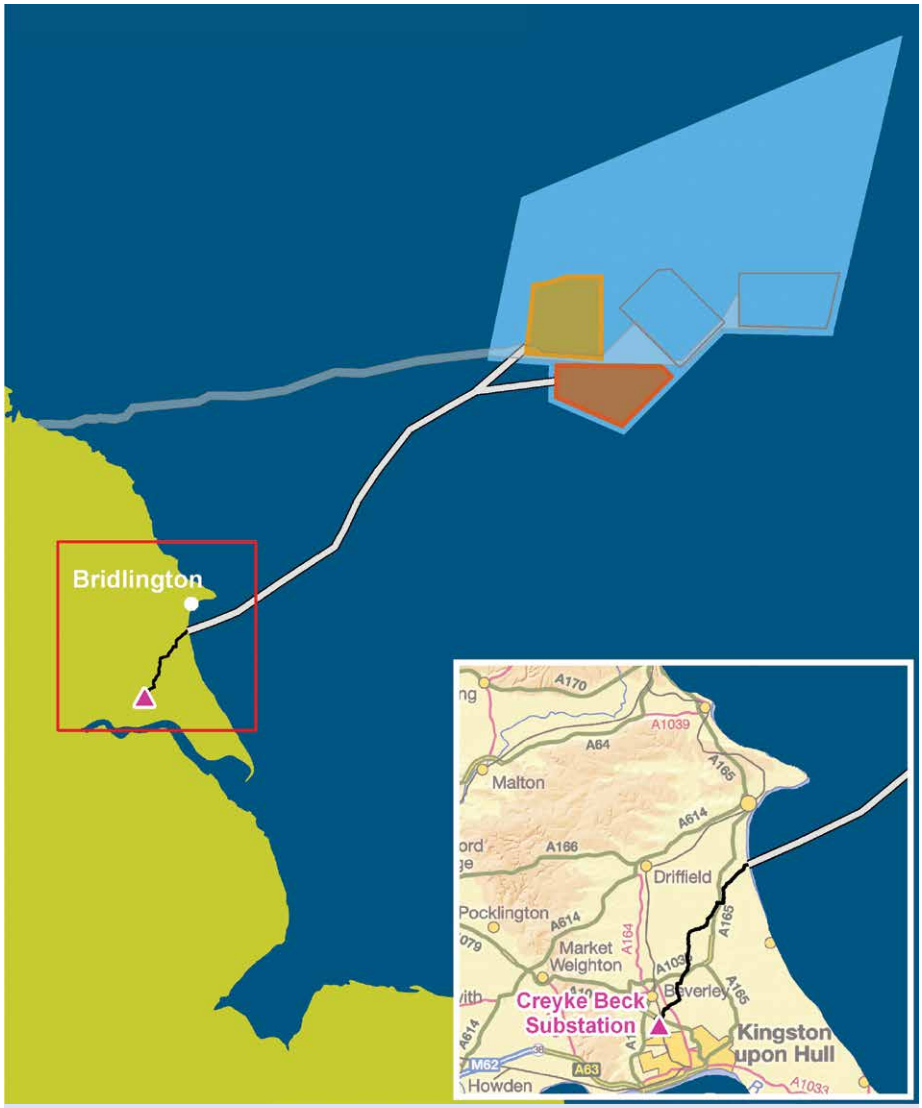
Parameters	Maximum per project	Maximum for Dogger Bank Creyke Beck
Wind turbines	200	400
Offshore collector substation platforms	4	8
Offshore converter substation platforms	1	2
Length of inter-array cabling (km)	950	1900
Length of inter-platform cabling (km)	320	640
Length of inter-project cabling (km)	_	300
Offshore accommodation or helicopter platforms	2	4
Offshore meteorological monitoring stations	5	10

Onshore

The offshore cables will come to shore just north of Ulrome on the Holderness coast. From this landfall, onshore underground cables will carry the power approximately 30 kilometres to the two converter stations located between Beverley and Cottingham adjacent to the A1079. A further two kilometres of export cables will run from the converter stations to the National Grid substation at Creyke Beck.

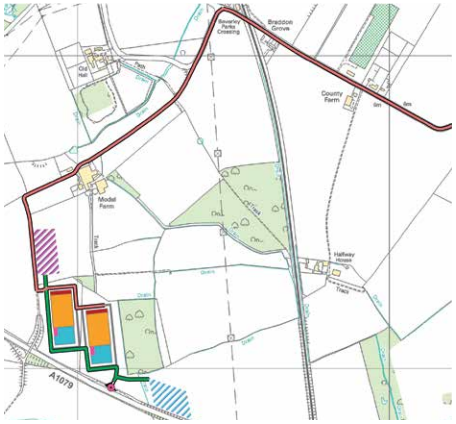
Consent award

After the development consent is awarded, each 1.2 GW wind farm will be transferred to an operating company to progress it to the next stage.



- Creyke Beck Substation
- Dogger Bank Creyke Beck onshore export cable route
- Dogger Bank Creyke Beck offshore export cable route
- Dogger Bank Creyke Beck A
- Dogger Bank Creyke Beck B
- Dogger Bank Teesside A&B
- Dogger Bank Teesside A&B offshore export cable route
- Dogger Bank Round 3 Zone

Indicative location and layout of converter stations



- Indicative access point for construction traffic from A1079
- Permanent operational access
- Temporary construction access
- Creyke Beck A construction compound
- Creyke Beck B construction compound
- HVDC converter hall
- Office/Control building
- Inner boundary
- Road
- DC yard
- AC yard

Dogger Bank
Teesside A&B

Dogger Bank Teesside A&B is Forewind's second stage of development. It comprises two 1.2 GW wind farms – **Dogger Bank Teesside A**, with its closest point from shore at 196 km, and **Dogger Bank Teesside B**, which is 165 km from shore. It will connect into the national grid at the existing Lackenby substation near Eston, in the Borough of Redcar and Cleveland.

In total it will have an installed generating capacity of up to 2.4 GW and will generate around 8 TWh of green electricity per annum, which is enough to power around 1.8 million British homes. It could also create up to 4750 new direct and indirect jobs and generate more than £1.5 billion for the UK economy.

Offshore

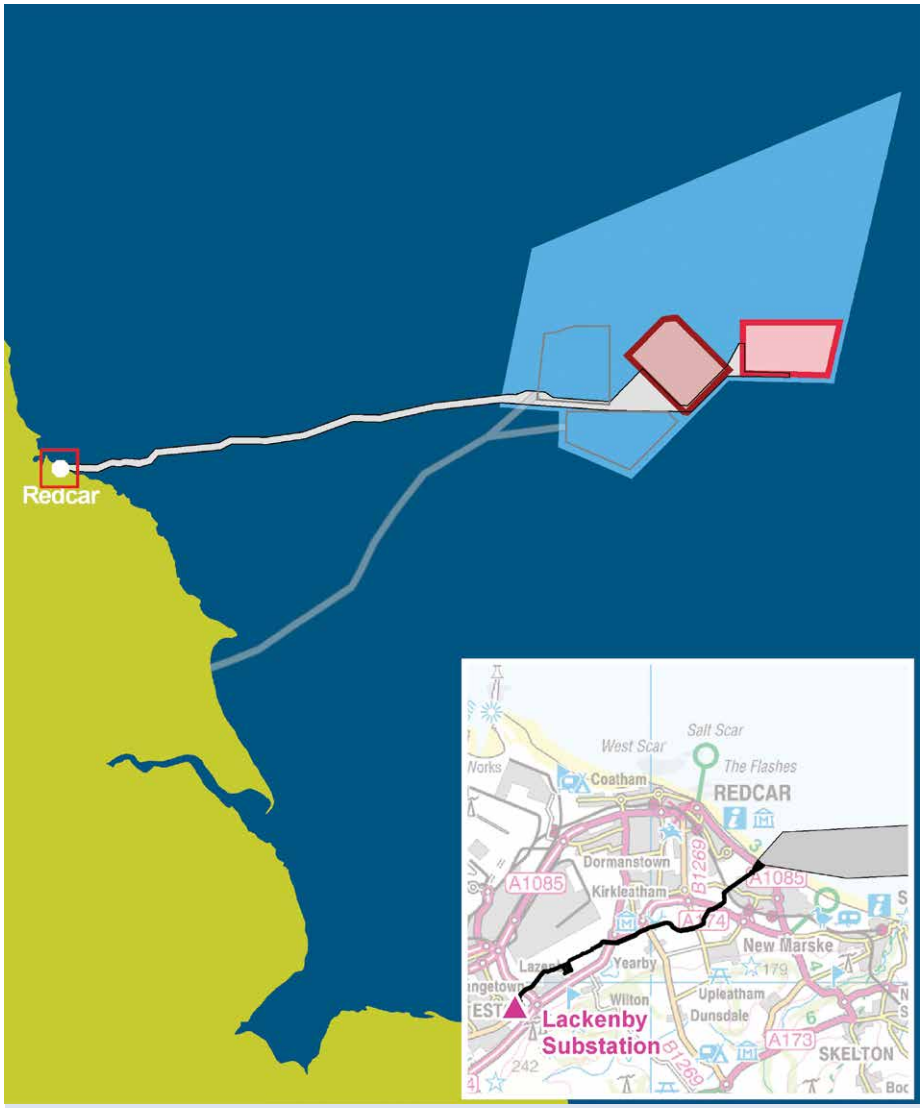
The boundaries for both Dogger Bank Teesside A and Dogger Bank Teesside B were identified in 2012 to define the limits of where the offshore wind farm infrastructure can go.

Summary of key offshore components

Parameters	Maximum per project	Maximum for Dogger Bank Teesside A&B
Wind turbines	200	400
Offshore collector substation platforms	4	8
Offshore converter substation platforms	1	2
Offshore accommodation or helicopter platforms	2	4
Offshore meteorological stations	5	10
Length of inter-array cabling (km)	950	1900
Length of inter-platform cabling (km)	320	640
Number of HVDC export cable pairs	1	2

Onshore

The offshore export cables will come to shore between Redcar and Marske-by-the-Sea in Teesside. A seven-kilometre buried HVDC cable will carry the power to two converter stations located on the Wilton Complex south-east of Middlesborough. A two-kilometre HVAC cable will then run underground to the existing National Grid substation at Lackenby, where the power will enter the national grid.



- Dogger Bank Teesside A&B onshore export cable route
- Dogger Bank Teesside A&B offshore export cable route
- Dogger Bank Teesside A
- Dogger Bank Teesside B
- Dogger Bank Creyke Beck
- Dogger Bank Creyke Beck offshore export cable route
- Dogger Bank Round 3 Zone

Indicative landfall location

- Offshore export cable corridor
- Cable landfall envelope (from mean high water mark)
- Landfall horizontal directional drill compound and joint transition bay

Onshore cable route

- HVDC, open trench

Timetable

The proposal for Dogger Bank Teesside A&B is now with the Planning Inspectorate and its indicative timetable is:

Date	Activity
Q1 2015	Six-month examination phase complete
Q2 2015	Planning Inspectorate recommendation
Q3 2015	Application decision by Secretary of State
2015 onwards	Pre-construction, construction and operations

More information about the examination process can be found on the Planning Inspectorate's website: http://infrastructure.planningportal.gov.uk/projects/yorkshire-and-the-humber/dogger-bank-teesside-ab/

Forewind owners

As a developer, Forewind's aim is to gain consent for the Dogger Bank wind farms but it will not be responsible for their construction and operations. Instead each wind farm will have an operator, nominally one of Forewind's four owner companies. These are:

RWE
RWE Innogy UK is the UK subsidiary of RWE Innogy and one of the UK's leading renewable energy developers and operators. The organisation is committed to developing and operating renewable energy projects to produce sustainable electricity.
www.rwe.com

SSE
SSE is a UK-listed energy company headquartered in Perth and operating across England, Wales, Scotland, Northern Ireland, and the Republic of Ireland. SSE is one the UK's largest generators of electricity with around 11,600 MW of generation capacity in total (UK and Ireland) from the most diverse portfolio of power stations. Through its renewable development division, SSE Renewables, it is involved in the development of new renewable energy projects covering wind, wave, tide, and hydro electricity.
www.sse.com

Statkraft
Statkraft is a leading company in hydropower internationally and Europe's largest generator of renewable energy. The Group produces hydropower, wind power, gas-fired power and district heating and is a global player in energy market operations. Statkraft has 3600 employees in more than 20 countries.
www.statkraft.com

Statoil
Statoil is an international energy company with operations in 36 countries. Building on more than 40 years of experience from oil and gas production on the Norwegian continental shelf, it is committed to accommodating the world's energy needs in a responsible manner, applying technology and creating innovative business solutions. Statoil is headquartered in Stavanger, Norway with approximately 23,000 employees worldwide, and is listed on the New York and Oslo stock exchanges.
www.statoil.com

Contact

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Photo captions

Front page
Computer-generated image of Dogger Bank

This page
Maintenance underway at one of the Dogger Bank meteorological masts