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Annual
Review

June
2013

Innovation in action

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Introduction

Forewind is a consortium comprising four international energy companies – RWE, SSE, Statoil and Statkraft – all leading players in their own right. The consortium is committed to securing all the necessary consents required for the construction and development of the Dogger Bank Zone, potentially the world's largest offshore wind energy project.

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 and extending over approximately 8660 km² (3343 sq miles).

As part of The Crown Estate's third leasing round for UK offshore wind farms (Round 3), its development will help the UK to become more self-sufficient and rely less heavily on overseas sources for its energy while helping meet the government's carbon emissions reduction targets.

The Forewind team is based in Reading and has around 40 full-time employees seconded from the owner companies, as well as a number of consultants and advisors. The team's focus for 2012 has very much been on the first six projects, which together total an installed generation capacity of 7.2 gigawatts (GW).

With its huge size and distance from shore, Dogger Bank represents a completely new era for offshore wind and renewable electricity generation.

Each stage of its progress towards consent and beyond will present technical and logistical challenges. While Forewind has the advantage of being able to draw fully on the experience of each of its owner companies, innovative suppliers and contractors also play an integral role in meeting these challenges.

The activity this year has strongly demonstrated this requirement with innovation being put into action on the site and through survey, modeling and reporting work being done as part of the preparation of the development consent orders.

This is the third Annual Review and covers the progress Forewind has made towards its goals in the period from June 2012 to May 2013.



Chairman's Report

Forewind, with the Dogger Bank project, is at the leading edge of Britain's growing offshore wind industry. The work now underway by this dedicated team represents the most ambitious offshore wind energy generation project in the world and it will help ensure the UK is the undisputed global leader in the technology.



By harnessing the energy in wind to generate electricity, the UK can become less reliant in imports for our energy, which helps to ensure our security of supply and avoid some of the price fluctuations associated with fossil fuels.

The UK has shallow waters and a huge natural wind resource – more than one third of the total European potential and equivalent to three times the UK's annual electricity consumption. So it makes sense to harness it and provide a secure energy supply for the nation. Indeed, the UK cannot meet its combined objectives of secure, low-carbon, affordable electricity without using these resources. Harnessing our immense offshore wind resources will help the UK meet its international commitments as well.

It is a privilege to be involved in such a world-class project, having taken over as Chairman from Lord Deben in February.

I look forward to continuing as part of a team that represents such a high level of innovation, responsible energy production, and potential jobs creation. I am constantly impressed by Forewind's commitment to excellence and to be 'best in class'.

I truly believe that offshore wind will play a significant role in Britain's future energy supply, and the Dogger Bank development is integral to this.

Charles Hendry MP
Chairman

'I am constantly impressed by Forewind's commitment to excellence and to be "best in class".'

General Manager's Report

Partnership is at the heart of Forewind's business. The organisation was conceived as a partnership between four leading energy companies, coming together to secure all necessary planning permissions for wind farm projects on Dogger Bank. Few organisations can match the skills and knowledge that Forewind has been able to draw on. This, together with our expert staff, makes Forewind a world class organisation.



The economic climate remains tough and uncertainty remains about Government energy policy and future support for offshore wind. However, Forewind's shareholders have continued to support Dogger Bank projects and to date have invested more than £75m on the development phase alone. I would like to thank them for their continued support and commitment. In response, Forewind continues to operate cost-effectively, managing the development risk, and seeking innovative ways to deliver more for less.

The Forewind team has earned a reputation with stakeholders for its high quality work – something of which I'm particularly proud. An astonishing quantity of environmental and engineering data has been gathered, analysed and finally synthesised into impressive consent application documents.

Much of our survey work has been carried out in the harsh marine environment found on the North Sea. This spring we installed an offshore meteorological mast, pioneering the use of suction-bucket foundation technology. Working closely with our contractors, this work has been done safely. Forewind is committed to leading health and safety in the offshore wind sector and has been recognised for sharing lessons learned. We believe there is always time to work safely and communicate our experience to the broader industry.

Forewind is now well on the way to applying for up to 4.8 GW of safe, viable offshore wind capacity. Development work is under way on further projects that will bring the total offshore capacity to more than 7 GW.

I would like to thank everyone in the Forewind team, including our consultants and contractors, for their passion, commitment, determination, and hard work. This has delivered the enormous progress we have made to date. I'm confident that, working with our partners, we will successfully deliver the next phase; the first step towards sustainable energy projects being built on Dogger Bank.

Lee Clarke
General Manager

'The Forewind team has earned a reputation with stakeholders for its high quality work – something of which I'm particularly proud.'

Mission

- Forewind’s mission is to deliver development consents for safe, viable offshore wind capacity.
- Our priority is to secure the first six projects, each up to 1.2 GW – to build momentum and confidence in Forewind.
- We aim to deliver and maximise value in the Dogger Bank development option on behalf of the parent companies.

Objectives

- Whatever the pressure, there is always time to operate safely – our objective is to be best in class.
- Forewind exists to deliver development consents.
- We always seek to maximise value for our owners.

Vision

We aim to be the most admired offshore wind development team in the world.

- Reputation for quality, expertise and integrity – best in class in our industry.
- Continuously innovating to deliver the programme on time and on budget.
- Proud to be Forewind; recognised as the project colleagues and competitors would like to be part of.
- Our benchmark is offshore wind in general and Round 3 in particular.
- The biggest Round 3 project, capable of generating up to 10% of the UK’s electricity.
- Dogger Bank has a vital part to play in helping combat climate change by reducing carbon emissions.
- Committed to developing Dogger Bank, with the minimum environmental impact.
- Working together to achieve safe, technically and economically viable projects ready for construction.
- Building on the strengths of four of Europe’s biggest energy companies.
- Leadership in the development of renewables in the North Sea.



Progress since June 2012

Forewind finished May 2012 with the first phase of public consultation for the Dogger Bank Teesside projects.



The three consultation events presented proposals and gained feedback on the development, which could potentially generate almost 17 terawatt hours (TWh) of green power every year, equivalent to the electricity used annually by approximately 3.6 million British homes.

In the July, and after two and a half years of ongoing aerial and vessel operations, Forewind concluded the first phase of the most comprehensive offshore bird and marine mammal survey ever undertaken. Carried out by environmental specialists from Gardline Environmental and HiDef Aerial Surveying, the extensive surveys were commissioned to enable Forewind to gather vital information about the range and numbers of bird and marine mammal species, their distributions and seasonal variations across the zone.

While further ornithological and marine mammal surveys will continue as part of Forewind's on-going environmental impact assessment, the information gathered to this milestone has been used to help plan the layout and design of the early projects.

To evenly distribute the demands on both stakeholders and on the supply chain Forewind has developed the zone sequentially in four stages, known as tranches. Tranche A was identified in 2010, Tranche B in 2011 and Tranche C and D will be finalised later in 2013.

During 2012, and with the use of sophisticated modelling techniques Forewind subdivided the first two tranches into four wind farms, which represented a significant step towards finalising the site selection and design of the projects.

Further surveys and modelling continued and boundaries for the additional two offshore wind farm projects with agreed grid connections in Teesside (Teesside C and D) will be finalised by the end of 2013.



'Since June 2012 our internal geographic information systems team has created more than 500 maps to support the development programme. Topics covered have ranged from offshore constraints for the site selection process, and landowner boundaries along our proposed cable routes to plotting the position of the Brave Tern during the installation of the met mast.'

Phil Redstone
Geographical Information Systems Manager

The final consultation for Dogger Bank Creyke Beck began in April 2013. It was the culmination of more than three years of environmental impact assessment work. The responses will be collated and incorporated before the final development consent application is submitted.

Each wind farm will have an operator that will take over from Forewind to build, run and maintain it. The Forewind owners have initiated a project in 2013 that will identify the lead operator for each project, along with common issues.

Zone optimisation

The past 12 months have seen the conclusion of our zone optimisation exercise to assess how best to proceed with the development of the Dogger Bank Zone, taking account of environmental, technical and economic factors. The results have driven the need to change the locations of the various projects within the zone, and their individual capacities. Forewind has worked closely with The Crown Estate to agree this reconfiguration of the zone, which will increase the viability of projects on the Dogger Bank and ensure good use of the seabed.

'Forewind has taken a very open and positive approach to involving The Crown Estate in its work to tackle the unique challenges of developing offshore wind on the Dogger Bank.'

The optimisation work in 2012 was based on impressive, industry-leading analysis, putting the Dogger Bank Zone on a sound footing for the next phase of development'

Jonny Boston
Commissioners' Representative
The Crown Estate



Health and safety

Health and safety is fundamental to Forewind's activity and is integral to its success. Over the past 12 months, more than 500,000 work-hours have been completed, with no lost time incidents. There has been close cooperation with contractors to construct and install the first offshore metrological mast as well as to gather offshore survey data, which has all been done and delivered with no harm to people or the environment.

Forewind's aim continues to be to improve the health and safety standards in the offshore wind industry, which can only be achieved by working closely together with contractors and service providers.

The organisation has prioritised the development of efficient health and safety management systems, which focus on risk identification and control. It has also focused on transparent reporting and experience swap at an industry level should there be any incidents. Into 2013 and beyond, the importance of behavioural safety and leadership will be emphasised to deliver on the zero harm objectives and mind-set.

'Conducting dry runs in port prior to the start of any offshore survey operations has given Forewind and its suppliers the opportunity to practically assess and review any task-specific hazards before execution on Dogger Bank. This is an excellent example of Forewind working collaboratively with its suppliers to actively embed good HSE practices in its operations.'

Simon Franey
Head of Operations and Safety

Fisheries update

Since its inception, Forewind has adopted the approach that co-existence – operating side by side – is both desirable and achievable for the fishing industry and offshore wind farm development at Dogger Bank. The most sustainable way to achieve this is to avoid where possible, and otherwise reduce, any potential impacts, which is only possible with open and honest engagement.

To facilitate this, a series of consultation meetings were held this year with national fisheries agencies, national fishermen's federations, regional and local organisations and associations and individual fishermen from countries including England, Scotland, The Netherlands, Belgium, Denmark, Sweden, France and Norway. As well Forewind launched a new fisheries-specific publication, Fisheries Update, to keep the industry informed on key issues and relevant news.

'Open and productive meetings with regional and international fishermen and fisheries representatives have been very positive, both in terms of the willingness of fishermen to talk with Forewind and the constructive feedback provided.'

The busy fisheries consultation cycle will continue, ensuring potential concerns are recorded and addressed throughout the development process.'

Martin Goff
Offshore Project Developer

Activities and achievements



Zonal activity

In November 2012, Forewind announced the project boundaries of the first four offshore wind farm projects to be developed in the Round 3 Dogger Bank Zone. Each of the four identified projects has a secured grid connection capacity of 1 GW however to maximise efficiency, Forewind has allowed for the capacity of each project to be up to 1.2 GW. The boundaries are therefore large enough to cater for all the potential infrastructure requirements. The four projects are:

- Dogger Bank Creyke Beck A, with a size of 515 km² (199 sq mi) and 131 kilometres (81 miles) from shore at its closest point;
- Dogger Bank Creyke Beck B, the largest in area with a size of 599 km² (231 sq mi) and also 131 kilometres (81 miles) from shore at its closest point;
- Dogger Bank Teesside A, with a size of 560 km² (216 sq mi) and with closest point from shore at 196 km (122 miles), and
- Dogger Bank Teesside B, with the majority of the project located in Tranche B. It is 593 km² (229 sq mi) and is 165 km (102 miles) from shore at its closest point.

On the site, the installation of the first of two innovative suction-installed foundations in March represented the first sign of construction of the world's largest offshore wind development, as well as a UK industry first. The innovative Bucket Foundation design selected was developed by Danish firm Universal Foundation - a Fred. Olsen-related company - through The Carbon Trust's Offshore Wind Accelerator programme.

The zone has proven already to be a site for innovation as a new and safer installation technique was also used to lift the meteorological mast tower on top of the foundation. By moving the riggers and instead introducing video cameras and guide cones, the risk of an accident caused by a swinging or falling load was eliminated.

'Through careful design, making use of comprehensive survey results and developing a sophisticated optimisation model, we have been able to maximise the projected revenue from Dogger Bank projects whilst minimising construction and operational costs. This, together with continual refinement of designs along with innovation within the supply chain will ensure the cost of energy from Dogger Bank is as low as possible.'

Mark Legerton
Head of Engineering and Supply Chain

Offshore geotechnical and geophysical surveys including shallow gas, benthic, borehole and cone penetration tests continued during the year with EMU-Fugro, Gardline and other contractors. Forewind's aim has been to determine the characteristics of the zone and incorporate the data into its boundary and design planning.

Dogger Bank Creyke Beck

Dogger Bank Creyke Beck is two separate wind farms with a combined installed capacity of up to 2.4 GW. Each wind farm is planned to comprise up to 300 turbines of between 4 MW and 10 MW, around 950 kilometres (590 miles) of inter-array cabling and up to four offshore substations.

Onshore, there will be a 30 kilometre high voltage direct current cable route from landfall to converter stations plus an additional two kilometres of high voltage alternating current cable from the converter stations to the Creyke Beck substation. The onshore cable systems will be buried at least 1.2 metres underground for their entire length.

The location for the proposed onshore converter stations was selected with input from a community working group comprising representatives from parish and local councils, and community groups. This group held its final meeting in April 2013 and it was publicly acknowledged as an excellent example of stakeholder involvement.

The Forewind team spent the past 12 months finalising the Preliminary Environmental Information, including the draft Environmental Statement, draft Non-technical Summary, as well as the draft plans and maps detailing the nature and location of Dogger Bank Creyke Beck.



'The comprehensive and thorough draft Environmental Statement and other draft application documents produced for the final Dogger Bank Creyke Beck consultation were well received by stakeholders as they enabled them to comment in detail on the content of Forewind's proposed submission.'

Melissa Read, Consents Manager
Dogger Bank Creyke Beck

This work culminated in the second and final stage of consultation for the project, which was the last opportunity for stakeholders to comment before the application for a Development Consent Order (DCO) is submitted to the Planning Inspectorate.

More than 250 people attended one or more of the six public consultation events held in May 2013 at locations along the cable route and feedback was overwhelmingly positive. There were some issues raised however relating mostly to the onshore cable route and which will be assessed and incorporated into the final application materials.

Submission is due by the end of summer 2013 and it may take up to 15 months for the application to be determined once it has been accepted by the Planning Inspectorate. Construction would start, at the earliest, in 2016.

Working together with the Humber-side Engineering Training Association (HETA), Forewind's 'Champions for Wind' programme successfully completed its first year in Hull and East Riding of Yorkshire with more than 600 students involved to date.

Dogger Bank Teesside

Dogger Bank Teesside is Forewind's second stage of development of the Dogger Bank Zone.

In June 2012 Forewind held its first consultation phase for the four wind farms comprising Dogger Bank Teesside to explain the site selection work that had been done to date. The three consultation events were attended by around 60 people and feedback incorporated into the draft Preliminary Environmental Information, which will be presented to stakeholders for comment by the end of 2013.

In October 2012, it was decided that Dogger Bank Teesside will be two separate DCO applications, each for two offshore wind projects. The first application will seek consent for Dogger Bank Teesside A and B, connecting

into the existing Lackenby substation near Middlesbrough. The plan is for this application to be lodged with the Planning Inspectorate in spring 2014.

The second DCO application will seek consent for Dogger Bank Teesside C and D, two wind farms of up to 1.2 GW each, whose project boundaries will be finalised in mid-2013 following the completion of additional surveys and assessment. They will also connect to an electricity grid substation in Teesside, most likely the National Grid's existing Tod Point substation.

Throughout the year onshore surveys continued including those to assess any impacts the development may have on bats, breeding birds, local habitats, riparian mammals, newts and reptiles and the landscape. Borehole surveys were also undertaken to assess conditions at the proposed landfall site between Redcar and Marske-by-the-Sea.

At the end of 2012, Forewind's Champions for Wind schools initiative was extended to Teesside with teachers from Hartlepool, Redcar and Middlesbrough accepted for the initiative.

'Through close liaison with stakeholders and careful consultation with a range of interested parties we have been able to identify our onshore cable corridor route, and a suitable site for our converter stations within the Wilton International Site, a globally significant industrial complex. In partnership we are helping the drive towards a transition to more renewable forms of energy in the Tees Valley.'

Chris Nunn
Onshore Environmental Impact Assessment Manager, Dogger Bank Teesside

Engineering and supply chain

Innovative foundation technology

Over the past 12 months, Fred. Olsen related companies, SeaRoc and Harland and Wolff completed the design and construction of the innovative suction-installed bucket foundations and the meteorological mast topsides.

The first foundation, which combines the main features of a monopile with those of a suction bucket, was installed in February using its ingenious installation system. Jets controlled the vertical alignment of the foundation as it embedded itself into the seabed. Fred. Olsen Windcarrier's 132 m jack-up vessel *Brave Tern* installed the foundation on her first job since being completed in 2012.

There was more innovation on the Dogger Bank Zone as a new and safer installation technique was introduced to lift the meteorological mast tower on top of the suction-installed bucket foundation. Developed between Forewind, Fred. Olsen United and its project partners, the technique employed strong plastic guide cones strapped to the tower flanges and video cameras instead of riggers.

Supply chain

Forewind has awarded contracts with a total value of more than £7 million since April 2012, in addition to those previously underway. Following a contract award to Fugro EMU in May 2013, the consortium's spend on geotechnical, geophysical and fish ecology surveys, undertaken as part of the environmental impact assessment work, passed the £45 million mark.

More than 70 different contractors and consultancies have been involved with the development to date, providing services from ornithological and marine mammal surveys to fisheries liaison, legal advice and archaeology. Around 95 per cent of these firms have been UK-based.

Prospective suppliers register their details on the supplier database on Forewind's website, which is now a comprehensive tool for both Forewind and, in future, the wind farm operators.

Grid

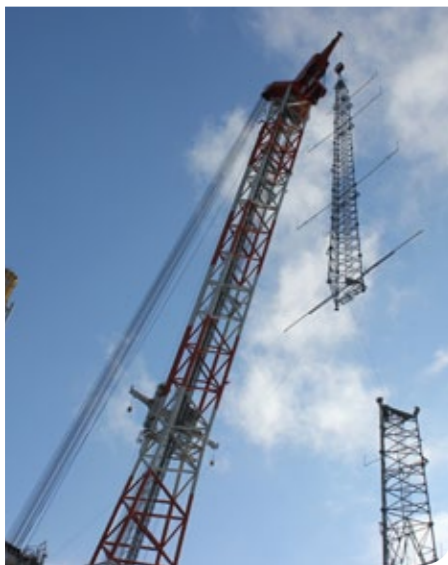
Having secured agreement with National Grid for connections totalling 6 GW of capacity work on the connections themselves continued throughout the period.

Electrical planning work on the two Dogger Bank Creyke Beck connections is well advanced in terms of converter station and onshore cable route selection. Work on Dogger Bank Teesside, comprising two connections at Lackenby and a further two connections close by on the Tees Estuary is also progressing with landfall and preferred onshore converter station sites identified.

Forewind continues to work with National Grid to determine the most economic and efficient connection solutions for further grid connections beyond the first six projects.

'Forewind continues to work with National Grid Electricity Transmission to achieve timely and cost effective grid connection solutions for the projects connecting at Creyke Beck and Lackenby substations. Where possible, novel switchgear solutions are being pursued so connections can be achieved within the footprints of the existing substations to minimise external works.'

John Hughes
Electrical Construction Engineer



Calendar of highlights

June 2012

The first phase of consultation for Dogger Bank Teesside is completed.

July

A successful ecology workshop is held onshore for Dogger Bank Creyke Beck.

Landowner packs are issued to all those likely to be impacted by construction works.

August

Parish council meetings are held throughout East Riding of Yorkshire to update on the development progress.

Preliminary Environmental Information 2 is now underway for Dogger Bank Teesside.

Dogger Bank News, the second issue, is published.

September

The second phase of the Dogger Bank Creyke Beck geophysics surveys kicks off.

Work is underway on the Dogger Bank Teesside onshore environmental impact assessment.

The halfway point is reached for the Dogger Bank Teesside intertidal survey and the nearshore fish surveys begin.

Forewind holds a workshop to ensure the learnings from the first phase of development are applied to the second (Dogger Bank Teesside).

Work starts on the array modelling for the latter Dogger Bank projects.

John Gummer resigns as Chairman.

Media and VIPs visit the met mast fabrication in Belfast.

October

Gardline receives a Gannet award from Forewind in recognition of its bird survey work undertaken over the past 2½ years.

The Forewind team attend a number of supply chain and industry events to help promote Forewind and establish contacts with suppliers.

Champions for Wind launches in Teesside with the 10 teacher "champions" attending a conference at the National STEM Centre in York.

Titan Endeavour mobilises in Hartlepool to conduct benthic survey operations on the near-shore end of the Dogger Bank Teesside cable corridor.

November

A new waverider is deployed with the previously lost one recovered safely on-board.

A project boundary workshop is held with key stakeholders.

December

Jacking trials are carried out successfully on Dogger Bank with the *Brave Tern*.

Third edition of *Dogger Bank News* is published and distributed to stakeholders.

January 2013

The innovative suction-installed foundations are on their way to the site.

February

Charles Hendry MP begins as Chairman.

Forewind's practice run-through approach to offshore surveys is named as runner-up in the RenewableUK and The Crown Estate, Renewable Energy Health and Safety Award for 2013.

The western suction-bucket foundation installation is attempted and aborted for technical reasons and the foundation is returned to Belfast for inspection and repair.

The eastern foundation and main platform are successfully installed.

Boreholes are driven near the proposed landfall location for the Dogger Bank Creyke Beck export cables to understand the soil strata and geotechnical information.

March

Near-shore and offshore fish ecology surveys start for Dogger Bank Teesside.

A new and safer installation technique is used to lift the first meteorological mast tower on top of its foundation.

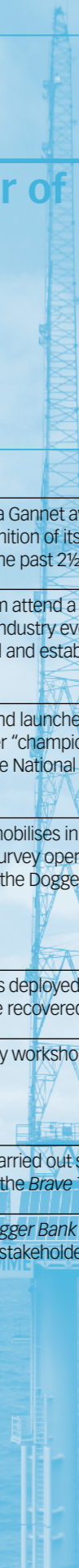
April

Forewind's second and final stage of consultation for Dogger Bank Creyke Beck begins.

Fourth edition of *Dogger Bank News* is published along with the first Fisheries Update newsletter produced especially for the fishing community.

May

More than 250 people attend the six public events held at venues along the cable route as part of the final consultation for Dogger Bank Creyke Beck.



Future

The coming 12 months will be no less busy for Forewind with the Dogger Bank Creyke Beck development consent order application to be submitted to the Planning Inspectorate by the end of summer 2013, the second phase of consultation due for Dogger Bank Teesside's first two projects by the end of the year, and the submission of that development consent order application early in 2014.

All the while the environmental impact assessment and associated work will be underway for the third and fourth Dogger Bank Teesside projects. Key to all this work will be ongoing involvement with stakeholders whose support and cooperation is crucial to the successful applications.

'Forewind has developed excellent working relationships with its stakeholders, and these will become increasingly valuable as we enter the submission and examination stages'

Nikki Young
Stakeholder Manager

Photo captions

Front cover
Brave Tern en route to Dogger Bank

Inside front and inside back cover (double page photo):
Aerial of Sheringham Shoal Offshore Wind Farm.
Photo by CHPV courtesy of Scira Offshore Energy

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Forewind office, Reading

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Whitby Harbour, North Yorkshire

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Top: Birds at Bempton Cliffs, East Riding of Yorkshire. Copyright A. MacKay
Bottom: Dogger Bank Creyke Beck consultation

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Top: Bridlington Harbour
Bottom: Practice run-through safety training in port

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Top: Borehole survey at landfall in East Riding of Yorkshire
Bottom: Champions for Wind in action

Page 09
Top: Four spotted chaser dragonfly. Copyright A. McKay
Bottom: Deploying a camera on Dogger Bank

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Top: Fish ecology survey
Bottom: "Human free" met mast installation

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Dogger Bank Met Mast East in situ

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Wind turbine technician at Sheringham Shoal. Photo by CHPV courtesy of Scira Offshore Energy

