



▶ West Runton Beach

Dudgeon Offshore Wind Farm moving rapidly towards construction

After nearly 21 months of detailed planning and development since the acquisition of the Dudgeon Offshore Wind Farm project in October 2012, the Financial Investment Decision [FID] which will ensure that the construction of the wind farm will proceed was confirmed by the its Owners and their Board Of Directors in July 2014.

Since then , a programme has been activated which is designed to ensure that this 402MW power plant will be able to start delivering electricity to the UK National Grid during the first quarter of 2017, with all 67 wind turbine generators being fully commissioned by the end of that year.

This programme has included undertaking further offshore and onshore survey activities, the commencement of preparatory work at the site of the onshore substation at Necton, Norfolk, the completion of the process of appointing all Tier 1 contractors who will be responsible for building the wind farm and the selection of the site for the O&M base in Great Yarmouth.

Time was also taken during September

2014 to meet and thank the many national, regional and local stakeholders in the UK who have worked with Dudgeon Offshore Wind Limited to help ensure a successful FID. A celebratory reception in central London on 3rd September 2014 was followed the next day by a luncheon in Norwich, where Halfdan Brustad, Chairman of the Dudgeon Board of Directors said:

“Offshore wind is a young rapidly developing global energy industry, and I believe that the work we have undertaken to bring the Dudgeon Offshore Wind Farm to a successful FID will make an important contribution to reducing the cost of electricity produced from renewable energy sources.” ■

DUDGEON Offshore Wind Farm

Operated by Statoil

Autumn 2014



Masdar’s investment is a strong endorsement of the UK as the best place in the world to invest in offshore wind – and it shows the Government’s plan for green growth is working. Since 2010 we have seen, on average, £7 billion a year invested in renewables and we expect to see up to £50 billion more between now and 2020.



UK Energy and Climate Change Secretary of State, Ed Davey (see story page 2).



▶ Halfdan Brustad at the luncheon in Norwich

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Further main contractor appointments

Over the last few months a further five main contractor appointments for the Dudgeon Offshore Wind Farm have been confirmed.

Netherlands based Sif Group B.V will be responsible for the fabrication and assembly of the monopile foundations and the transition pieces. The company has the capability to fabricate monopiles up to 7.8m in diameter, and those being produced for the Dudgeon project will range from 7.0 to 7.4 metres diameter. The first deliveries will be made in January 2016 with installation scheduled to commence between March and May 2016.

The contract with Visser Boskalis Marine Solutions (VBMS) is for the engineering, procurement, construction and installation of the offshore inter array cables as well as the installation of the submarine export cables. VBMS has selected UK based JDR Cables to manufacture the inter array cables, of which there will be over 95km.

Siemens Transmission and Distribution Limited will be responsible for the Electrical System Infrastructure; this will include the engineering, procurement, construction and offshore hook-up of one offshore substation, including its jacket foundation, and the onshore substation at Necton in Norfolk. The company will have the overall responsibility to connect the Dudgeon Offshore Wind Farm onto the 400kV UK National Grid network at Necton. Siemens will run the project from Manchester in the north of England, and the jacket and topside for the offshore substation will be built at the Sembmarine SLP yard in Lowestoft.

The onshore cable contract has been awarded to Carillion Utility Service Limited, the company which successfully installed the onshore cables for the Sheringham Shoal Offshore Wind Farm. The contract includes the engineering, procurement, construction and installation of two 132kV onshore export cable circuits. The onshore cable route consists of a 47km buried cable system running between landfall at Weybourne Hope in North Norfolk to the onshore substation at Necton. Pre-construction work has already commenced, but the main construction and installation activity will take place in 2015 and 2016.

As a result of a contract with A2SEA, the jack-up vessel The Sea Installer will be a regular visitor to the Dudgeon Offshore Wind Farm site during 2017, transporting and installing the 67 Siemens 6MW wind turbine generators.

In January 2017, it will start transporting the components - blades, nacelles and complete



► The vessel The Sea Installer

towers - from Hull on the East Coast of England to site to erect the wind turbine generators at the pre-installed foundations. It will bring four sets of components per trip.

Commenting on the latest contractor appointments, Olav Bernt Haga, Facility Manager of the Dudgeon Offshore Wind Farm, said:

“We have been very pleased with the quality and competitiveness of all the bids we have received, and we now look forward to working with all our main contractors to ensure the wind farm is fully operational by the end of 2017.” ■

Welcome Masdar

In September 2014 it was announced that Masdar had joined Statoil and Statkraft as an investment partner in the Dudgeon Offshore Wind Farm, having purchased a 35% stake from Statoil.

Masdar is wholly owned by the Mubadala Development Company PJSC, the strategic investment company of the Government of Abu Dhabi.

Masdar's stake in Dudgeon is the company's second major investment in the UK offshore



► (From Left to Right) Christian Rynning-Tønnesen, President and CEO of Statkraft; H.E. Dr. Sultan Ahmad Al Jaber, Chairman of Masdar; Ed Davey, Secretary of State for Energy and Climate Change, United Kingdom; Helge Lund, CEO of Statoil

wind energy market; it also owns a 20% stake in the 630 megawatt London Array project, which is the world's largest offshore wind farm.

The investment was announced during the United Nations' Climate Change Summit in New York, and Helge Lund, CEO of Statoil said:

“The Dudgeon project represents an important part of Statoil's renewable

energy strategy, and it will generate value to the owners, the offshore wind industry and the UK community. Statoil brings extensive offshore competence, while Statkraft brings expertise from the power generation industry. Masdar's experience and ambitions within renewable energy will add to the quality in this project.” ■

River harbour quayside base in Great Yarmouth



► Great Yarmouth river harbour quayside

Late last year the Dudgeon Offshore Wind Farm team selected the port town of Great Yarmouth in Norfolk to be the Dudgeon base for the construction phase, and to become the hub for all Operations and Maintenance (O&M) activity for the life of the wind farm.

Following the successful Final Investment Decision for the project in July 2014, it was confirmed that the base will be on a 7 hectare river harbour quayside site which will provide 152 metres of deep water mooring. The site is currently occupied by a large warehouse, but a significant investment in a programme of building and renovation will create a purpose-designed O&M base.

Rune Ronvik, Dudgeon's Operations Manager, provided an update: *“We will be able to take possession of the site on 1st July 2015 by which time we shall have finalised the refurbishment plans and the contractors will be able to make an early start creating our O&M base. As the Dudgeon Offshore Wind Farm will have a life of over 20 years, it is excellent that the site offers the O&M team the flexibility to suit a number of operational models.”* ■

Onshore substation work commences at Necton

Work to build the Dudgeon Offshore Wind Farm started in early July 2014, when enabling works commenced at the site close to the A47 highway at Necton, near Swaffham which will be the location of the onshore substation.

Initially, this involved removing thousands of tonnes of top soil in order to be able to establish a base upon which both National Grid and Dudgeon Offshore Wind will build their substations. The substations are necessary to be able to transmit the electricity produced by the 67 offshore wind turbines into the UK National Grid network.

Once an access road had been built, a steady flow of lorries began to deliver stone to the site for this base, and at one point in excess of 100 lorries per day were making deliveries.



► Site preparation work underway at Necton

Throughout the period of these works, the Dudgeon Stakeholder team has maintained contact with Necton Parish Council, and Carillion, the enabling works contractor, has done its best to minimise the level of disturbance caused to Necton residents through stone deliveries and construction noise and dust.

Once these enabling works are completed, a further meeting will be held so that the residents can be informed about the plans for the next phase of work at the site which is likely to commence during the first quarter of 2015 ■

Archaeological surveys

Archaeological surveys have continued at a number of locations along the cable corridor throughout the summer months.

These have involved digging archaeological trenches and the finds from these trenches have included pottery, metal work and human bone. Once catalogued, the archaeology surveyors send these finds to various external specialists for further identification, description and comment and in the case of metalwork, items are usually sent for specialist stabilisation and conservation.

Although the archaeological work will ultimately be written up and published once the artefacts have been returned to the archaeological surveyors, these artefacts normally remain the property of the landowner.

“Importantly, all such finds add to the understanding and knowledge of Anglo-Saxon Norfolk.” ■

Tier 2 Supplier Event

On 3rd December 2014 Dudgeon Offshore Wind Limited, in conjunction with GROW: Offshore Wind, is holding a Supplier Event in Great Yarmouth.

UK companies from the Tier 2 offshore wind supply chain will be invited to meet the main contractors responsible for the construction of the Dudgeon Offshore Wind Farm, as well as the Operations and Maintenance team which will run the wind farm. The objective is to encourage these companies to tender for the products and services that will be required in both the construction and O&M phases ■

GROW: OFFSHORE WIND

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manufacturing advisory service

Norfolk onshore cable route – a landowners meeting

The Dudgeon Stakeholder team has continued to maintain close contact with the 44 landowners along the route of the 47km onshore cable corridor from Weybourne Hope to Necton over the last six months, particularly in respect of various survey activities.

The recent appointment of Carillion as the main contractor for the construction and installation of the underground onshore cable circuits will allow a Landowners Meeting to be held during early December 2014, when the contractor will present detailed plans and the timetable for these works ■

The Dudgeon Team:



An interview with Olav Bernt Haga

What is the job of the Facility Manager?

As Facility Manager for the Dudgeon Offshore Wind Farm, Olav Bernt Haga has overall responsibility for the planning and construction phases of the project. He and his 50-strong team will face huge challenges in the successful delivery of the wind farm, one of the main ones being keeping to a tight schedule. A variety of things can affect best laid plans; technological challenges, late design input, the procurement of long lead items, a very long and complex marine programme, and last but not least - the weather.

Olav is however, well qualified to meet these challenges head on. With over 30 years' experience in the sector, his main interest and expertise now lies within the areas of marine operations and subsea technology.

"One of the upsides of the role of the Facility Manager is to lead and facilitate the work of a group of extremely intelligent, hardworking and enthusiastic people towards a challenging goal," Olav enthuses. *"Together with our contractors, we plan, engineer and manage risks and contracts; construction and installation completes the range."*

"On many occasions previously, I have visited and worked in the UK, but have never lived here. From 2016 - the start of offshore construction - I will be here

more often, and I'm looking forward to it."

In his early career, he was involved with projects from the early phases to completion and for the last 15 years he has had project manager assignments for both single projects and project portfolios. These have included extensions to the Tordis and Vigdis oil and gas fields and Vega subsea tie-back projects all of which are located in the Norwegian North Sea. He has also headed up a portfolio of Statoil's oil and gas projects between 2009 and 2011. In his last assignment prior to joining the Dudgeon team, Olav was responsible for all early phase projects in Offshore Greenfield and Wind up to concept selection ■

Dudgeon and the Community



► The Dudgeon stand at Greenbuild

Greenbuild 2014

On 6th and 7th September 2014 the Dudgeon Offshore Wind Farm was one of the exhibitors at Greenbuild 2014, held in Felbrigg Park near Cromer in North Norfolk. The annual event is organised by North Norfolk District Council, and many of the visitors came onto the Dudgeon stand to learn more about this exciting renewable energy project.

Dudgeon Community Support Fund

Discussions related to the terms and conditions by which the Dudgeon Community Fund will make grants available are scheduled to take place over the course of the next few months, with the aim of establishing the fund during the course of 2015. The sum of £100,000 per annum will be paid into the fund for the life of the Dudgeon Offshore Wind Farm ■

About the Owners

The Dudgeon Offshore Wind Farm is owned by two Norwegian companies, Statoil and Statkraft, and Masdar of Abu Dhabi.

Statoil is an international energy company headquartered in Norway, with 21,000 employees and operations in 36 countries. Building on 40 years of experience from oil and gas production, the company is committed to accommodating the world's energy needs responsibly, applying technology and creating innovative business solutions.

Masdar is Abu Dhabi's renewable energy company advancing the development, commercialisation and deployment of clean energy technologies and solutions. The company serves as a link between today's fossil fuel economy and the energy economy of the future.

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 ■

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