

Subject: Offshore Wind/Energy Briefing

Report to: EMT 10 November 2016  
Economic Development Committee 21 November 2016

Report by: Peter Wright, Economic Development Officer

## **SUBJECT MATTER/RECOMMENDATIONS**

**This report summarises the opportunities presented by offshore wind developments in the UK, more specifically off the east coast of England and the efforts that are being made to bring this work to Great Yarmouth.**

### **RECOMMENDATION**

**Economic Development Committee are asked to note the contents of this report.**

## **1. INTRODUCTION**

This report outlines the potential of the offshore wind energy sector on the east coast, specifically Great Yarmouth and Lowestoft, building on the 50 years of experience in oil and gas.

## **2. BACKGROUND**

### **Broader Energy Context**

- 2.1 Great Yarmouth is well established as a leading offshore energy port having supported the offshore oil and gas sector in the Southern North Sea for over 50 years. There is a strong local supply chain and skills base including international companies and local businesses operating globally from Great Yarmouth. Great Yarmouth is well placed to develop further in the offshore energy sector, however it faces stiff competition and there is a finite amount of land available at or close to the deep-water outer harbour and river facilities as preferred by businesses in the offshore energy industry.

### **Oil and Gas**

- 2.2 The oil and gas sector is cyclical and over the last couple of years a significant fall in the price of oil has led to a lack of new investment in the sector. Great Yarmouth has suffered less than other areas like Aberdeen as most of the businesses local to Great Yarmouth are engaged in the gas sector where the impact of the downturn has been less dramatic and

companies not reliant on offshore activities alone can draw on opportunities within East Anglia. While most commentators expect an upswing in the medium term, it would be imprudent to predict when and how extensive any return to growth will be.

- 2.3 Nautilus Associates in their report in December 2015 for New Anglia Local Enterprise Partnership on the Energy Sector did identify £18.5 billion of potential capital investment to 2020 in East Anglia, of which £3.3bn was from oil and gas and £3.7bn from decommissioning. There are major gas projects such as Cygnus and Platypus going ahead and operations and maintenance must be maintained.
- 2.4 There are other segments of the wider offshore energy sector where Great Yarmouth is well placed to attract investment.

### **Decommissioning**

- 2.5 There are over 600 production platforms in the North Sea; many are several decades old and past their originally expected lifespan. EU regulations will require many of these facilities to be decommissioned or re-commissioned over the next decade. Great Yarmouth is ideally located, has deep-water facilities, supply chain and fabrication skills to support this industry. Peterson, in a joint venture with environmental solutions provider Veolia has already invested £1m in a purpose-built decommissioning facility in the port area and the Borough Council, with trade association the East of England Energy Group (EEEGR), has developed a decommissioning supply chain capability matrix to demonstrate breadth of skills available locally (See Appendix 1) .

### **Offshore Wind**

- 2.6 The development of the UK offshore wind sector is being undertaken through three phased development rounds co-ordinated by the Crown Estate, the owner of the seabed, to allow for step changes in technology and scale. The Government has initiated a number of subsidy schemes and is currently committed to a Contract for Difference (CfD) programme. (See Appendix 2)
- 2.7 The Round 1 development was launched in 2001. Sites were small (typically 20-40 turbines), close to shore and used onshore turbine technology adapted for a marine environment. The entire capacity of Round 1 is 1.2GW. Scroby Sands, off the Great Yarmouth coastline, was one of the first UK offshore windfarms commissioned comprising 30 x 2MW Vestas turbines.
- 2.8 The productive capacity of a wind farm is measured in megawatts per hour (MW) or gigawatts per hour (GW) where 1 GW = 1000MW.]

- 2.9 The much larger Round 2 programme was launched in 2003, located further offshore and in deeper waters. Of the 15 sites totalling 7.2GW consented, seven windfarms have been delivered to date with a further four under construction. The remainder will most likely be built at the same time as the Round 3 schemes. Sheringham Shoal, Greater Gabbard and Dudgeon were all Round 2 windfarms in close proximity to Great Yarmouth.(See map below)
- 2.10 The latest phase of the offshore wind programme, Round 3, was announced in 2010. At 25GW, this is the largest offshore windfarm programme in the world, with the largest zones, namely the East Anglia Array, Hornsea and Dogger Bank off the east coast of England. The intention was that its delivery should contribute significantly towards the Government's carbon reduction commitments and stimulate major investment in UK manufacturing in products such as turbines, blades, towers, foundations, sub stations, cables and the supporting supply chain.
- 2.11 The Round 3 programme has been slow to develop for various reasons: changes of Government in 2010, tensions on policy in the previous Coalition Government, uncertainty in the financial markets and a lack of clarity on energy policy from the current Government until late 2015. However the Government announced the first Contract for Difference auction in 2014 and two Round 3 projects were awarded subsidies, the East Anglia One (714MW) off the Norfolk coast and Nearth na Gaoithe (450MW) off the southeast coast of Scotland.

### **3. OFFSHORE WIND**

#### **Progress to date**

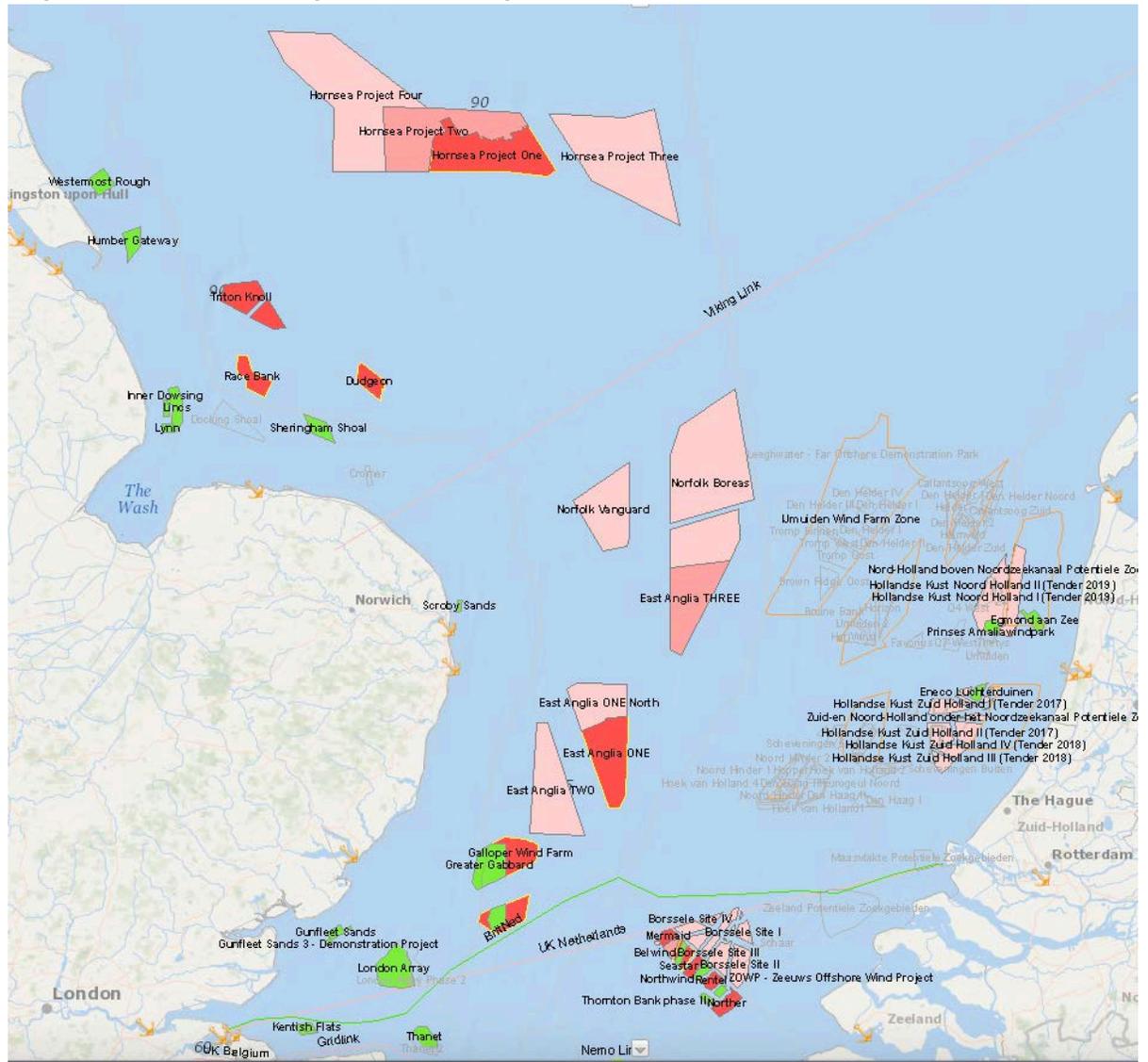
- 3.1 To date, the UK has installed 5GW of offshore wind capacity and there are a further 12 projects with a total capacity of 5.2GW that are either under construction or have passed their final investment decision and will be commissioned by the end of 2020. Assuming the industry maintains its progress in reducing its cost per MW/Hour, industry expects the UK to achieve the Government's ambition of installing another 10GW of capacity in the 2020s to reach a total installed capacity of 20GW by the end of 2030. Based on current leased sites, the large majority of this future capacity is expected to be installed in the North Sea off the UK's east coast.
- 3.2 Of the 17.8GW projects likely to be available for development through to 2030, 62% (11.1GW) is in the Southern North Sea; 36% (6.4GW) is immediately off the coast of Great Yarmouth, while a further 4.7GW (26%) of

the total is off the Yorkshire coast and serviceable from Great Yarmouth. With further significant developments off the Dutch and Belgian coasts, it is clear that the largest offshore wind market in the world is in the Southern North Sea and deliverable from Great Yarmouth.

### **Market Opportunity**

- 3.3 The UK is the world's leading offshore wind market with the majority of existing and planned development close to the Norfolk and Suffolk coast as the following map shows. The list of projects planned can be seen in Appendix 3 and represents £billions of potential economic activity.
- 3.4 As part of the application process for a Contract For Difference windfarm developers have to create a supply chain plan to show how they are delivering UK content. The Government and license holders share an ambition to achieve or exceed 50% UK content over the lifetime of the project.
- 3.5 A report by BVG Associates for the Government into the capability of East Coast ports for offshore windfarm construction found that Great Yarmouth was suited to windfarm staging and at least one manufacturing activity.
- 3.6 Alongside manufacturing and staging there will be demand for operations and maintenance facilities to service the windfarms in prospect. Great Yarmouth's proximity to a number of windfarms means that further bases are likely to be needed with similar facilities required as the new Statoil base for Dudgeon.

**Map 1 – Concentration of potential development in Southern North Sea**



**Economic Growth Potential**

3.7 Energy sector businesses continue to relocate to, and expand within, the Great Yarmouth area. This indicates a huge confidence in the local economy, the skills of the workforce, the facilities in the port, Enterprise Zone incentives, both at South Denes and Beacon Park, and designation of Great Yarmouth and Lowestoft as a national Centre for Offshore Renewable Engineering (CORE). One of 6 only.

3.8 In the coming years, some of the world's largest wind farms are expected to be

built off the East Anglian coast, including the £2.5 bn East Anglia ONE project, which will create hundreds of jobs in construction and long term operations and maintenance (O&M). ScottishPower Renewables aim to start construction in 2017, with the first of up to 102 offshore wind turbines installed by 2019 and the project fully operational during 2020, creating up to 3,000 jobs. Great Yarmouth will act as the construction base for this windfarm and a new £5m facility is being prepared in the port to receive Siemens turbines.

- 3.9 Great Yarmouth is also playing a similar role as the wind turbine assembly location and installation base for the Galloper windfarm being developed by Innogy (formerly RWE). Turbines are expected in the outer harbour very early in 2017.
- 3.10 Great Yarmouth has already been chosen as the base for operations and maintenance activity for the Dudgeon Offshore windfarm, with activities centred around a new high quality riverside base alongside the Great Yarmouth Energy Park.
- 3.11 The Outer Harbour is being currently used by a jack up working on the Race Bank wind farm.
- 3.12 Other offshore wind projects under planning and or consultation and deliverable from Great Yarmouth include: East Anglia THREE, East Anglia TWO, East Anglia ONE North, Norfolk Boreas and Vanguard and Hornsea 1-3. These plus the Dogger Bank development further offshore will generate a series of construction projects over the next 15 plus years with each project followed by over 20 years of O&M.
- 3.13 There is also a potential market of £30bn in oil and gas decommissioning over the next 30 years.
- 3.14 With over 50 years expertise in oil and gas and skills transferable to the offshore renewables sector, there is a tremendous opportunity in Great Yarmouth, including significant job creation, but there will be fierce competition for investment. Other ports have more land to offer and strong promotional campaigns underway.

## **Council Response**

### **Marketing and Promotion**

- 3.15 Under the East of England Energy Zone banner Great Yarmouth and Waveney with North Norfolk Councils, EEEGR and Norfolk and Suffolk counties have been busily promoting the opportunities in the area for offshore wind. Since 2011 the EEEZ has been promoted at international events up and down the

country and on the continent.

- 3.16 As plans for the UK 3<sup>rd</sup> Round windfarms take shape we can see the fruits of our labours. The involvement of the port in Great Yarmouth has always been a critical element of this work and Peel Ports have already played an important part in drawing developers and their top tier companies to Great Yarmouth.

### **Enquiries**

- 3.17 Enquiries for land and premises continue to be generated through promotional activity, exhibitions and events and press releases. As the UK Round 3 windfarms, such as East Anglia 1, enter into the construction phase, interest in land and premises has increased with a variety of proposals being explored.

### **Land and Premises**

- 3.18 Ever since the Round 3 windfarm leases were awarded in 2010 the Borough Council with Norfolk CC and private landowners have been reviewing the land available for energy, mainly in the South Denes.
- 3.19 The port area of the South Denes has been successfully designated a national Enterprise Zone with rates discounts, relaxed planning controls and superfast broadband. Alongside this area the Borough Council with Norfolk CC have been developing the concept of the Energy Park to make land available close to the port. The Enterprise Zone in the South Denes has recently been extended with the addition of 3 small sites.
- 3.20 The recent BVG report to Government on the capability of East Coast ports in terms of offshore windfarm construction has re-energized the work to maximize the land available for energy in the South Denes.
- 3.21 The second Great Yarmouth Enterprise Zone site at Beacon Park has been very successful at attracting energy companies. Here too the Council, working with New Anglia LEP, have managed to get an extension of the site. The new site will be active from April 2017.

### **Supply Chain**

- 3.22 The Borough Council is very keen to work alongside the major windfarm developers and their Tier 1 and Tier 2 suppliers. The Council hosted a supplier day for the Dudgeon windfarm in the Town Hall in December 2014 and provided local companies with a list of goods and services required by the contractors involved.
- 3.23 The Economic Development Unit has also produced a matrix of the capabilities of local companies to provide to major contractors and windfarm developers. This gives every encouragement to local procurement to achieve UK content.(See Appendix4)

- 3.24 The Council collaborates with the East of England Energy Group in relation to supply chain events organised for developers.

### **Skills**

- 3.25 A number of the major windfarm developers have joined EEEGR and are engaging in their Skills for Energy programmes. The 2 County Councils collaborated with EEEGR on an Enterprise Zone funded skills strategy. The Borough Council supported the Energy Foundation course at Lowestoft College in its early days.

## **4. FINANCIAL IMPLICATIONS**

- 4.1 The marketing and promotion of the opportunities in Great Yarmouth for developers and their supply chain companies must continue.
- 4.2 The Government's support for the offshore wind industry will hopefully stretch out through the 2020's and we need to maintain interest in the EEEZ for that period. A further 2 years funding of EEEZ is planned to come through the Enterprise Zone retained income investment fund known as Pot B.
- 4.3 The recent announcement of the next round of Contracts for Difference in April 2017 provides a welcome encouragement to the industry.

## **5. RISK IMPLICATIONS**

- 5.1 The consistent availability of Government financial support on a cost reducing basis is vital to maintain the industrial scale opportunity offshore wind presents.
- 5.2 The EEEZ has to demonstrate that cost effective solutions can delivered from Great Yarmouth / Lowestoft / North Norfolk. The competition for work will be very strong, and not just from UK ports.

## **6. CONCLUSIONS**

- 6.1 Offshore wind represents a huge opportunity for the local ports and energy industry. Every effort has to be made to ensure that companies can provide a cost effective solution to wind farm development and long term maintenance. All agencies from Local Authorities to Government Departments must collaborate to ensure that UK plc benefits from the industrial scale of work in prospect.

6.2 The Borough Council working with Waveney DC, North Norfolk / Norfolk and Suffolk County Councils and EEEGR has actively promoted the Great Yarmouth and Lowestoft sub regional offer to the industry. The results of this work are beginning to bear fruit.

**7. RECOMMENDATIONS**

The importance of the offshore wind prospects should be noted and the need to maintain our efforts to encourage and accommodate this industry should be recognised.

**8. BACKGROUND PAPERS**

Energy Sector Review, Nautilus Associates Dec 2015  
 East Coast Ports Review, BVG Associates August 2016  
 GYBC Economic Development Strategy 2011 – 2016  
 GYBC Draft Economic Growth Strategy 2016 - 2021

*Areas of consideration: e.g. does this report raise any of the following issues and if so how have these been considered/mitigated against?*

<b>Area for consideration</b>	<b>Comment</b>
Monitoring Officer Consultation:	N/A
Section 151 Officer Consultation:	Yes – at EMT
Existing Council Policies:	Corporate Plan, Economic Strategy and Local Plan.
Financial Implications:	N/A
Legal Implications (including human rights):	N/A
Risk Implications:	N/A
Equality Issues/EQIA assessment:	N/A
Crime & Disorder:	N/A
Every Child Matters:	N/A



## Appendix 2 Offshore Wind/Energy Report Nov.2016

Extract from Vattenfall Submission to Government.

### The UK Energy Act (2013)

52. The Electricity Market Reform policy and Energy Act 2013 introduced Contracts for Difference (CFD) to provide incentives in the form of revenue stabilisation for new low carbon initiatives, replacing the previous Renewable Obligation system. CFD is driven to ensure Levelised Energy Cost (LEC) to the consumer. However, in 2015 the UK Government announced cuts to the CFD subsidies for renewable energy with the focus being to deliver UK energy security through a sustainable electricity market with minimal government intervention, whilst maintaining relatively consistent costs for consumers. If Government conditions on cost reductions are met by developers, budget may be made available for further CFD auctions.

## Operational Windfarms Maintained Locally

## Appendix 3

Windfarm	O & M Base	Operator
Scroby Sands	Great Yarmouth	E.ON
Sherringham Shoal	Wells	Statoil
Greater Gabbard	Lowestoft	Scottish & Southern Energy (SSI)

## Windfarms Under Construction/Planning

Windfarm	Base	Operator/Owner	Timescales	Size	Turbines	Project/Jobs Value
Dudgeon	Great Yarmouth is construction and operation base and will be O&M base	Statoil/Statkraft/Mazdar	O&M base in South Denes completed. Onshore cabling is currently taking place as is installation of monopiles. Turbines will be installed through 2017 with all turbines fully commissioned by end of 2017.	402MW	67 x Siemens 6MW	£1.5bn Undisclosed construction jobs c60 O&M jobs
Galloper	Port of Lowestoft confirmed as "offshore construction coordination base". Great Yarmouth confirmed as "Siemens wind turbine assembly and location base" O&M Harwich	Innogy (formerly RWE)	Work currently taking place in Outer Harbour for handling of turbines early 2017. Commissioned by March 2018.	336MW	56 x Siemens 6MW	£1.56bn 700 construction jobs 90 O&M jobs
Race Bank	Grimsby will be main base, but Great Yarmouth currently being used for jack up installing turbines.	DONG	Offshore construction has commenced; commissioned 2018/9	573MW	91 x Siemens 6MW	£1.7bn Undisclosed construction jobs Undisclosed O&M jobs
East Anglia ONE	Great Yarmouth - Construction Base Lowestoft - O&M	ScottishPower Renewables	Was awarded Contact for Difference February 2015 and Final Investment Decision was made March 2016. Onshore works commence January 2017. Offshore works commence 2018. Fully commissioned 2020.	714MW	102 x Siemens 7MW	£2.5bn Up to 3,000 construction jobs Undisclosed O&M jobs
East Anglia ONE North	TBC	ScottishPower Renewables	Scoping reports early 2017. Construction commences 2026	800MW	TBC	Not disclosed.
East Anglia TWO	TBC	ScottishPower Renewables	Scoping reports early 2017. Construction commences 2025	800MW	TBC	Not disclosed.
East Anglia THREE	TBC	ScottishPower Renewables	Currently being considered by the National Infrastructure team within the Planning Inspectorate. Documents submitted Spring 2016 with start of construction 2020	1200MW	Up to 172 7-12MW turbines (contract not yet awarded)	Not disclosed.
Norfolk Vanguard	TBC	Vattenfall	Scoping Report has been submitted to the Planning Inspectorate. Currently holding Public Information Days.	1.8GW	TBC	Not disclosed.
Norfolk Boreas	TBC	Vattenfall	Concept/early planning stage.	1.8GW	TBC	Not disclosed.
Triton Knoll	TBC	Innogy and Statkraft	Consent authorised.	750-900MW	113-288 8MW	£3bn Jobs not disclosed.
Hornsea Project One	O&M Grimsby. Installation TBC	DONG	Pre-construction	1.218GW	174 x Siemens 7MW	Not disclosed.
Hornsea Project Two	TBC	DONG	Consent authorised.	1.8GW	80-300 6-15MW	£6bn Jobs not disclosed.

Hornsea Project Three	TBC	DONG	Concept/early planning stage.	2.4MW	112	Not disclosed.
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#### Supporting your investment

Business and political leaders in the region are taking a collaborative approach to the development of the energy industry.

A dedicated partnership, between councils and local industry, can facilitate introductions to the companies on this capability matrix as well as other businesses in the East of England Energy Zone in the wider supply chain supporting wind farm development.



## Offshore Wind Supply Chain Capability Matrix

The East of England Energy Zone's supply chain has extensive expertise across the full range of wind farm development from survey to installation and construction to O&M. This expertise is built on over 50 years' experience as England's leading base for offshore energy in the Southern North Sea.

Local companies have played a key role in the delivery of UK Round 1 and 2 windfarms including Scroby Sands, Greater Gabbard, Thanet, Lincs, Dudgeon and Sheringham Shoal with many recognised as leaders in Europe's offshore wind industry.

Great Yarmouth, Lowestoft and Wells in the East of England Energy Zone are at the heart of the offshore wind industry. Companies operating from these towns support the entire spectrum of development, installation and operations & maintenance (O&M).

This new, up-to-date capability matrix accurately maps the breadth of services available in the East of England Energy Zone.



Photo: Mike Page.

For more information on relocation and investment opportunities in the East of England Energy Zone, please contact:  
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3rd Edition



- **The Ideal UK Location**
- UK's largest concentration of energy sector investment
- £18.1 billion energy sector investment committed by 2020
- The ideal location for wind farm development and maintenance in the Southern North Sea
- Significant logistics savings
- Closest ports to around 10GW of completed and planned development
- Easy access to Hornsea and Dogger wind farms in addition to Belgian and Dutch wind farms
- **Experience**
- Great Yarmouth, Lowestoft and Wells; England's leaders in Southern North Sea offshore energy
- 50 years' experience supporting the offshore energy sector
- Highly skilled workforce; large offshore energy supply chain
- Experience in windfarm construction and delivery of Scroby Sands, Sheringham Shoal, Greater Gabbard and Lincs
- Strong maritime industry with vessels for construction, O&M and subsea survey
- **Offshore Wind Ports**
- Great Yarmouth, Lowestoft and Wells all experienced offshore energy sector ports 24/7 working
- Construction for Sheringham Shoal, Greater Gabbard, Scroby Sands and Lincs
- O&M for Sheringham Shoal, Greater Gabbard, Scroby Sands and Dudgeon
- Great Yarmouth chosen for Siemens wind turbine assembly location and installation base for Galloper and construction base for East Anglia ONE
- Lowestoft chosen as Offshore Construction Co-ordination base for Galloper and O&M for East Anglia ONE
- Deepwater and river harbours
- Up to 10.5 metres deep water
- Energy sector dedicated business parks, quayside and other land for development
- UK Government incentives and Enterprise Zones
- **Political and Business Support**
- Designated a Centre for Offshore Renewable Engineering by Government
- Enterprise Zone status over 130 hectares of prime located land
- Assisted Area incentives
- Political and business community commitment
- Unique partnership of local government, Chambers of Commerce and EEEGR
- the region's energy industry association.
- Fast track access to supply chain, skills providers, ports, property data and Government



Photo: Mike Page



## EAST OF ENGLAND GREAT YARMOUTH, LOWESTOFT & WELLS

Centre for Offshore Renewable Engineering

