



NORFOLK AND SUFFOLK OFFSHORE WIND CLUSTER

PART OF THE EAST OF ENGLAND'S
ALL ENERGY REGION, HELPING DELIVER
THE INDUSTRIAL STRATEGY



CLUSTER COMPONENTS

EAST OF ENGLAND'S OFFSHORE WIND CLUSTER

The East of England has become the UK's epicentre for energy generation with its unique mix of renewable energy (and in particular offshore wind), gas and nuclear energy production. The flourishing offshore wind cluster in the region is establishing itself as the centre of gravity for the UK's offshore wind market with more installed capacity than any other UK region.

The opportunities presented by the Offshore Wind Sector Deal have galvanised local partnerships to develop a collective vision for the future. Plans will see the formation of an All Energy Industry Council providing the focus and direction needed to capitalise on this game changing opportunity for offshore wind in the East of England.

This paper outlines the vision for the future, how the cluster will be further developed, and its aims and objectives. These plans clearly align with the industrial strategy's five foundations of productivity – place, people, ideas, infrastructure and business environment.

The region has all the component parts of a strong offshore wind cluster and a positive commitment from the sector. Benefiting from an established supply chain and experienced businesses active in all phases of the offshore wind cycle, the region has the necessary infrastructure and opportunities for growth. There are strong and well-established relationships with academia and centres of innovation, such as the University of East Anglia (UEA) and Orbis Energy.

The sector is supported by strong leadership through New Anglia Local Enterprise Partnership (LEP), East of England Energy Group (EEEGR) and business organisations such as the local chambers of commerce. The partnership also includes: Norfolk and Suffolk County Councils, Great Yarmouth Borough Council, Waveney District Council, North Norfolk District Council, MPs and East Coast College.

Partners have joined together to form the East of England Energy Zone (EEEZ), which supports investment and development of the energy sector.

“ Today nearly 4GW of offshore wind power is operational off the region, accounting for 52% of the UK's current 7.5GW installed capacity. ”

A recently published report by 4C Offshore, East of England: Enabling Offshore Wind provides a good audit of the regional capabilities.

ALL ENERGY:

The East of England's offshore wind industry is founded on capabilities developed over more than fifty years of generating energy from the Southern North Sea's oil and gas reserves, nuclear power, and more recently, renewables (offshore wind in particular). Nowhere else in the UK can boast the energy mix and diversity of energy generation in a single region.

SUPPLY CHAIN:

The East of England's energy cluster is home to a vibrant, multi-competent and collaborative supply chain of offshore wind, gas and other energy service providers, ports and fabricators. Together these businesses are able to execute and support significant activities across the offshore wind value chain, from early project development, through engineering, onshore construction, assembly, offshore installation and commissioning to operations and maintenance and decommissioning.

SOUTHERN NORTH SEA:

The Southern North Sea is endowed with a unique combination of physical and locational characteristics that create a favourable environment for offshore wind developments. The predominantly shallow water, average wind speeds in excess of 9m/s and favourable geology are suitable for low-cost foundations. The Southern North Sea is in close proximity to both UK and continental Europe's port facilities and international airports. The concentration of windfarms in the basin allows developers to exploit the benefits of project clustering.

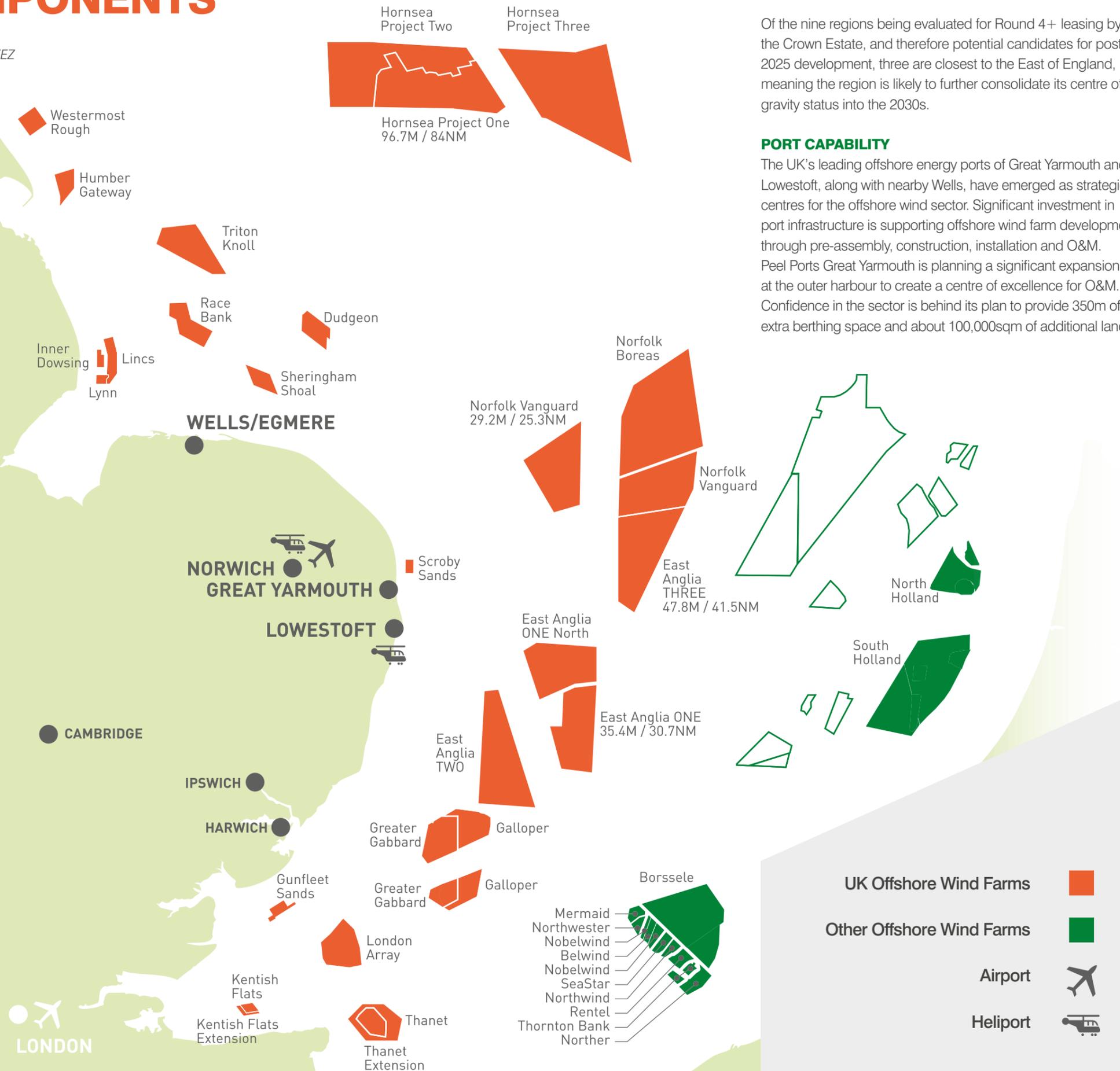
OFFSHORE WIND PROJECTS:

The East has played a leading role in the offshore wind industry since the very beginning when Scroby Sands, the second Round 1 project to be realised, entered offshore construction in 2003. The following 15 years has seen the East of England establish itself as the centre of gravity for the UK's offshore wind market. Today nearly 4GW of offshore wind power is operational off the region, accounting for 52% of the UK's current 7.5GW installed capacity.

The cumulative capacity in operations and development off the East of England is 14.5GW, enough to meet approximately half of the Sector Deal ambition for 2030. To date approximately £11bn of development and capital expenditure has been invested in constructing offshore wind projects in the region, with the 971 operational turbines requiring ongoing annual operational expenditure of around £253m. >

CLUSTER COMPONENTS

With courtesy of EEEZ



> Full build-out of the projects in construction and development will require an additional £22bn in capital expenditure and bring the total annual operational expenditure to £550m.

Of the nine regions being evaluated for Round 4+ leasing by the Crown Estate, and therefore potential candidates for post 2025 development, three are closest to the East of England, meaning the region is likely to further consolidate its centre of gravity status into the 2030s.

PORT CAPABILITY

The UK's leading offshore energy ports of Great Yarmouth and Lowestoft, along with nearby Wells, have emerged as strategic centres for the offshore wind sector. Significant investment in port infrastructure is supporting offshore wind farm development through pre-assembly, construction, installation and O&M. Peel Ports Great Yarmouth is planning a significant expansion at the outer harbour to create a centre of excellence for O&M. Confidence in the sector is behind its plan to provide 350m of extra berthing space and about 100,000sqm of additional land.

Facilities would include extended quayside space with deep water access, a new training centre as well as space to accommodate at least one major manufacturer of wind turbine components. At ABP Lowestoft, the port is investing in the redevelopment of Shell Quay. The new site will afford massive opportunities for O&M and further underpin the region's position as the UK's renewable energy hub. The port has also recently announced a 30-year deal with ScottishPower Renewables to be a construction support and O&M hub for East Anglia ONE.

OPERATIONS AND MAINTENANCE (O&M)

The region leads the nation in operations and maintenance facilities, with four ports acting as O&M bases for operational projects, two further bases in construction and one in planning. Additional O&M bases can be expected when the 10GW+ development pipeline comes online.

Assuming a conservative forecast estimate of £75,000 /MW/ year, the current installed capacity for offshore wind farms off the East of England (not including East Anglia One, currently under construction at the time of writing), could be worth in the region of £309 million per year rising to more than £1.3 billion per year when the current portfolio of consented offshore wind projects is installed and commissioned by 2025-30.

INNOVATION AND KNOWLEDGE TRANSFER

There has been a strong focus on connecting local innovation hubs, research and development organisations and universities, such as Orbis Energy, the Centre for Environment, Fisheries and Aquaculture Science (Cefas) and the University of East Anglia, in a network of centres of innovation excellence to work with companies from early stage R&D to established businesses to provide a focus for innovation support for SMEs, encouraging knowledge transfer, commercialisation and spin outs. The region has also developed close links with key partners such as TWI and the University of Cambridge as part of the wider East of England region.

INTERNATIONAL AND EXPORTS

The East of England is the closest UK region to the four high certainty growing European export markets of the Netherlands, Belgium, Germany and Denmark, where an additional 37GW of offshore wind power will be generating by 2030. For over 15 years, the East of England has collaborated with major offshore wind clusters across Northern Europe to drive innovation. In addition, the region has been building strategic links with key European and global offshore wind markets, with memorandums of understanding and collaborative R&D programmes currently underway with international partners.

THE EAST'S KEY OFFSHORE WIND ASSETS

Norfolk and Suffolk have several key assets which are supporting companies operating, constructing or planning windfarms off the coastline, which include:

BUSINESS ENVIRONMENT

- The Orbis Energy centre of excellence – a specialist innovation and incubation centre focused on renewables.
- The East of England Energy Group (EEEGR), bringing together nearly 300 energy businesses.
- Local partners collaborating to promote the East of England Energy Zone (EEEZ) on a national and international stage to promote export and inward investment activity.
- Business support through the New Anglia Growth Hub, with access to sector specialists, and a number of New Anglia LEP grant programmes.
- Actively engaged business organisations such as the local Chambers of Commerce and others which ensure the wider business community is involved with and aware of the local opportunities.

“ The region has the potential to benefit more than any other region in England from a growth in offshore wind jobs. ”

IDEAS

- More than 15 years of collaboration with major offshore wind clusters across Northern Europe to drive innovation, such as the current four year Interreg project Inn2Power which aims to expand the capacity for innovation and improve SME access to the offshore wind industry which involves the East and South East of England; Flanders, Belgium; the Province of Groningen, the Netherlands; North-West Germany; and Denmark.
- Cefas provides policy and scientific advice regarding offshore renewable energy to governments, the EU and international bodies. It acts as a trusted bridge between governments, academia and industry.
- The region's offshore wind industry holds strong relationships with Innovate UK and not just the ORE catapult, but also other key catapults driving innovation in the sector and across the wider all-energy sector.
- Access to innovation funding through key resources such as New Anglia Capital and the Low Carbon Innovation Fund.



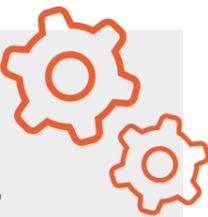
PLACE

- Enterprise Zone status for land to develop manufacturing facilities and house supply chain companies. The Great Yarmouth and Lowestoft Enterprise Zone covers six sites in and around Great Yarmouth and Lowestoft, focusing in growing energy-related businesses. For example, the Beacon Park site is one of the most successful Enterprise Zones in the country, creating a cluster of largely energy related organisations. Additionally, the Egmere Business Zone situated close to the port facilities at Wells-Next-the-Sea has been established to support the investment associated with the growing offshore renewables sector off the North Norfolk Coast.
- Proximity to the market and North Western European offshore wind clusters.



INFRASTRUCTURE

- Deep water port at Great Yarmouth, together with port facilities at Lowestoft, Wells and Harwich.
- Available land for lay down and assembly at or close to quayside.
- Both Great Yarmouth and Lowestoft ports are expanding the land and quayside space available for new state of the art O&M facilities. These facilities provide significant local opportunities for the economy through high-value long-term jobs for local people maintaining the windfarms for 25 years and more.



PEOPLE

- EEEGR's Skills for Energy (SfE) programme has acted as the conduit between industry and skills and education providers in the energy sector since 2005.
- New Anglia LEP sponsored the development of an Energy Sector Skills Plan for Norfolk and Suffolk, which is now being taken forward by key stakeholders from both the private and public sector. The plan prioritises mobilising industry leadership; developing a higher technical engineering offer; building 'intra-industry' and 'inter-sector' workforce transferability; addressing overall 'energy skills fragility'; building inclusive local capacity; and securing the future energy workforce.
- The region has the potential to benefit more than any other region in England from a growth in offshore wind jobs, with an additional direct 6,150 FTEs in well-paid skilled work possible by 2032 (600% growth in current direct employment).
- £10m New Anglia LEP investment (£11.3m total) in a centre for energy skills at East Coast College's Lowestoft campus.
- The employer-led East of England Offshore Wind Skills Centre at East Coast College's Great Yarmouth campus providing a steady pipeline of workers for the region's offshore wind industry.
- Plans are well underway for the Eastern Institute of Technology, a close collaboration of education organisations and employers across the East to ensure businesses have the highly skilled technical workforce of the future.
- Industry-led STEM coordination hub.



Orbis Energy

VISION FOR THE REGION

The Economic Strategy for Norfolk and Suffolk, published in November 2017, clearly sets out the ambition to drive the region's position as a leading centre for the UK's clean energy sector, capitalising on the strength and diversity of the energy sector and its supply chain, strategic location, skills base and connectivity to other regions. The Local Industrial Strategy for Norfolk and Suffolk will place a strong focus on the region's key advantages around clean energy, ICT and agri-food. Therefore, the offshore wind sector has a significant role to play in driving these strategies forward.

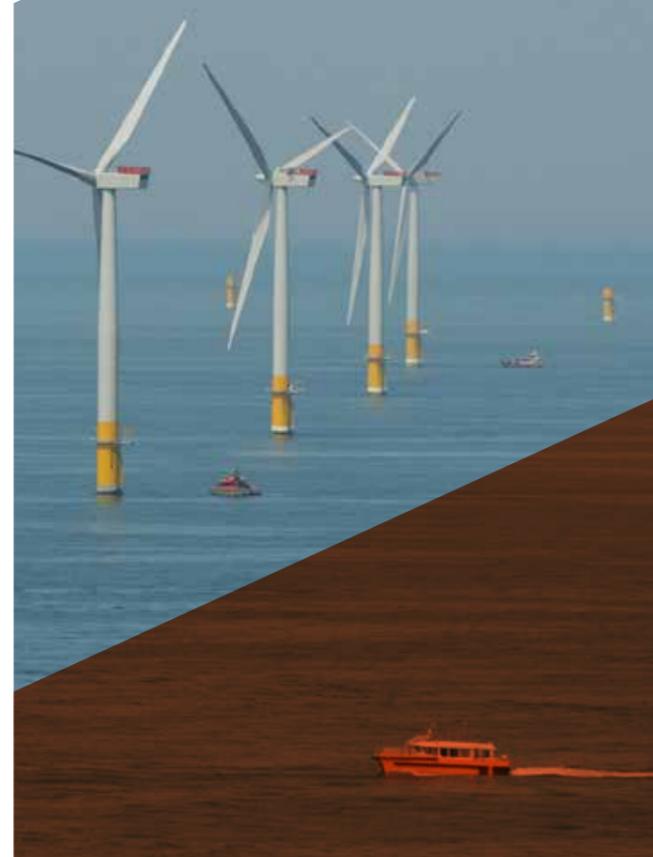
Given the capabilities, assets and investment outlined above, Norfolk and Suffolk can justifiably be recognised as the UK's All Energy Region and centre of excellence and innovation. The region is perfectly placed to tackle the Industrial Strategy's Clean Growth grand challenge and support the UK's efforts on climate change. Through the continued development of offshore renewables, alongside the wider energy mix, and advancing new technologies across the energy sector, we will ensure industry becomes greener and more sustainable. Underpinning this, and as a key component is the development of a strong cluster for offshore wind with a clearly defined vision for the future.

The East of England has the ambition and capabilities to become the natural home for suppliers entering the market, and massive opportunities lie ahead for forward-thinking companies in the energy sector. With space available for business growth at strategic, significantly expandable locations such as the Space to Grow Enterprise Zone comprising of six sites around Lowestoft and Great Yarmouth, businesses can benefit from business rate relief, simplified planning regulations, good transport connections and superfast broadband, including deep-water quayside locations with close proximity to the offshore wind parks and supporting supply chain.

Up to 2020, forecasted investment in offshore wind in the East of England is around £2bn, with the construction of Triton Knoll due to start early in 2019. Before 2030, a further five projects (East Anglia ONE North, TWO, and THREE, Norfolk Vanguard and Norfolk Boreas) are anticipated taking the capital expenditure up to £16bn. Over the same period, the total forecasted spend in the rest of the UK is £28bn and £72.6bn in the rest of North-West Europe. Before 2040, the capital expenditure forecast for this region is £30.26bn, whereas for the rest of the UK in this period the forecast is £43.6bn.

Considering this massive scale of investments off the coast (over £1bn to £2bn per project), the East of England is very under represented when it comes to supply and installation of main components. There are a number of main contractors; Seajacks, Sembmarine SLP, James Fisher Marine Services, 3Sun and Global Marine/CWind. The scale and longevity of the Sector Deal has the potential to trigger investment decisions from at least two additional major component manufacturers into the region - most likely to be turbine components - stimulating inward investment, longer value chains and economic growth into coastal areas with very high unemployment.

Greater Gabbard Wind Farm



Dudgeon Offshore Wind Farm, made in Lowestoft by Sembmarine SLP
Credit - Roberg Gregory Yorke



Given the region's proximity to the largest concentration of windfarms in the UK and coupled with more than 150 gas platforms in the region, the opportunities for operations and maintenance of these facilities is unrivalled. New and innovative models are emerging for shared resources and capabilities from offshore accommodation through to logistical solutions.

Already both oil and gas and offshore wind are learning from one another. Further opportunities exist to pioneer inter-sector training and currency certification. The energy sector in the region is at the cutting edge of innovation and technological advancement. Gas to wire technology and gas platform electrification, powered by offshore wind, are emerging as new advances to provide additional resilience in supply whilst assisting in decarbonising traditional methods of generation. Opportunities for carbon capture and storage in the Southern North Sea and the potential for the production and distribution of Hydrogen are also being examined.

“The East of England has the ambition and capabilities to become the natural home for suppliers entering the market, and massive opportunities lie ahead for forward-thinking companies in the energy sector.”

ALL ENERGY INDUSTRY COUNCIL

To realise this vision, the cluster needs strong and clear leadership, and a spirit of collaboration which brings together partners strengthening the strategic relationships between industry, government and academia. Following a meeting of stakeholders in December 2018, it was agreed that a new **All Energy Industry Council** will be developed to establish the East of England as the UK's All Energy Region to boost trade, investment and growth within the industry and deliver the National Industrial Strategy and Sector Deals.

Stakeholders such as EEEGR, that has represented the energy sector and its supply chain in the region for more than 17 years, chambers of commerce and Orbis Energy are vital to ensuring the approach remains industry-led.

Although offshore wind will be a key priority, the council will represent the wider energy sector, taking advantage of the East of England's unique status as the UK's only All Energy region, incorporating oil and gas, nuclear, wind, solar and wave energy. Delivery groups, led by different partners and aligned with specific objectives, will drive forward activity and report into the council. The council will be strongly connected to key LEP groups/strategies such as the Innovation Board; Skills Board; Integrated Transport Strategy; and the Economic Strategy for Norfolk and Suffolk and local groups such as the Suffolk Energy Coast Delivery Board. In addition, the council gives us the vehicle to drive collaboration with other key clusters.

A draft delivery plan is in place with the following objectives:

I. PROFILE AND PROMOTION

- a. Branding and marketing the area and cluster to national and global audiences.
- b. Proactively promoting the offer to attract global investment and boost exports across the energy sector.

II. LOBBYING AND REGULATION

Strengthening links with Government and Offshore Wind Industry Council and other bodies to attract support and investment and improve regulations.

III. SUPPLY CHAIN DEVELOPMENT

Strengthening the cluster, helping a broad spectrum of businesses to work with each other, including tier one corporates, and maximising export and investment opportunities.

IV. INNOVATION SUPPORT

Helping businesses improve their performance and enabling them to enter new markets, develop new products, enhance processes and improve productivity.

V. SKILLS DEVELOPMENT

Co-ordinating the skills sector plan, connecting employers with providers and responding to industry demands in developing the skilled workforce of tomorrow working in association with EEEGR's Skills for Energy programme.

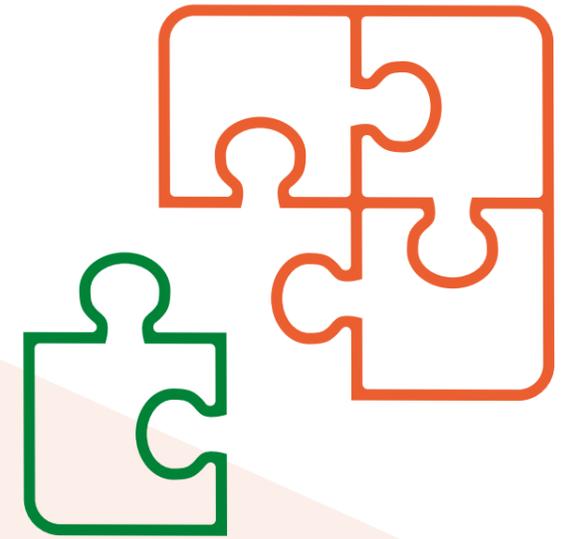
VI. INFRASTRUCTURE

Attracting investment to enhance and build the infrastructure required to support the growth of the industry and improve connectivity and business productivity.

LOCAL DELIVERY OF INDUSTRIAL STRATEGY

A priority focus of the new council will be to develop the offshore wind cluster alongside, and in parallel with, planned investment and development across the energy industry. The Industry Council will have a key strategic role in supporting and delivering the Industrial Strategy at a national and local level. New Anglia LEP will be co-developing a local industrial strategy with government, which will have a strong focus on the region's all energy expertise and setting out how the region can continue to assist with tackling the Clean Growth grand challenge.

It will collaborate with OWIC to ensure that the cluster is delivered in alignment with the Offshore Wind Sector Deal.



Dudgeon Offshore Wind Farm
Credit - Jan Arne Wold

THE > EAST



Great Yarmouth Energy Capital
Credit - Mike Page

NEWANGLIA

Local Enterprise Partnership
for Norfolk and Suffolk

For more information, see website
www.newanglia.co.uk
January 2019