

SECTORAL ASSESSMENT OF DEMAND FOR SITES WITH RIVER ACCESS

Although the River Tyne is no longer the centre of economic activity that it was in its heyday, there is still marine and offshore industry on both banks of the river. This is a brief review of those sectors considered to offer the greatest prospects for growth.

Offshore wind generation in particular has strong growth potential, driven by the need to provide cost effective renewable energy to combat climate change. The government's Industrial Strategy 2017 identifies clean growth as one of four areas in which the UK can lead the global technological revolution and integral to this is the UK's world-leading capabilities in offshore wind. The Strategy introduces funding to drive business clusters where there are existing strengths and collaborations, and recognises that North East England has a potential global competitive advantage in offshore renewable energy.

The Offshore Wind Sector Deal announced in March 2019 reinforces the aims of the Industrial Strategy. Over the next decade rapid expansion could see offshore wind's contribution to energy generation increasing from around 7% of British power to more than 30% by 2030, providing 27,000 jobs in the sector. The Deal aims to capitalise on existing regional clusters *"to create more investment and growth in local economies."* The regional cluster in North East England offers proximity to planned wind farms in the relatively shallow waters of the Dogger Bank, which when completed in 2026, will be the world's largest wind farm. The North East also offers established R&D facilities and a manufacturing base with specialist capabilities in offshore working, where businesses are able to diversify into renewables. The government has committed to supporting this private sector expertise. *"To maximise this impact and bolster regional clusters, the sector will coordinate its approach by working with local and regional agencies, devolved administrations and economic development agencies to identify areas of comparative advantage and define the specific infrastructure and investments required to support increased earning power in local communities."* An important component of supporting the growth of the sector will be the provision of suitable land and premises, allowing established businesses to expand and enabling access to new businesses including SMEs.

Research commissioned by the North East Combined Authority has considered the resources required for offshore wind projects. The land and premises requirements of each of four stages - development, equipment manufacture, installation and operation are considered below.

At the **development** stage, designers, consultants and regulators are largely London based, but there is a strong cluster of consultants in the North East. The growth of the sector will benefit such businesses and may lead to increased premises requirements, but such businesses typically do not require riverside locations. The North East is home to a nationally important R&D and testing facility at Blyth, but early aspirations that the Offshore Renewable Energy Catapult (OREC) would act as a catalyst for the formation of a manufacturing cluster have yet to be realised. Marine survey businesses operate from established home ports but an increasing number of visits by survey vessels to North East rivers are anticipated.

The **manufacture** of wind turbine generators is currently dominated by a handful of companies, of which Siemens Gamesa has the largest share of the market. These tier one manufacturing facilities serve national, European and potentially global markets. Siemens has invested heavily at Green Port, Hull where it has a 56ha site. GE Renewable Energy is to open a turbine blade manufacturing plant on the Tees in 2023. Vesta's manufacturing plant on the Isle of Wight is supplying the Seagreen project in the Firth of Forth. Requirements are for large sites with a quay for jack-up vessels to come alongside. NECA research considered that there was a low probability of attracting an OEM to the Tyne, but identifies opportunities for fabrication of components, such as towers,

SECTORAL ASSESSMENT OF DEMAND FOR SITES WITH RIVER ACCESS

foundations (steel jackets, gravity based or monopile) cables and substations. Contracts for foundations have previously been awarded to yards on the Tyne, notably BAM at Neptune Park and Smulders at Hadrian Yard. JDR Cable Systems has subsea cable manufacturing facilities at Hartlepool, and Wallsend and is constructing another at Cambois near Blyth. The growth in offshore wind generation is increasing opportunities for fabrication along Britain's east coast, with larger components requiring river or sea access.

During the **installation** phase, quayside locations are required for assembly as each turbine is partly or completely preassembled before being taken to the project site. Quays require sufficient space and load-bearing capacity for the storage and handling of the turbine components, as well as reasonable proximity to the project site. Examples are Able's facilities at Seaton Port on the Tees and on the Humber. The other major requirement during this phase is for suitable vessels to install the foundations, turbines and offshore cables, and for support vessels (e.g. for offshore accommodation). The assembly port must have the capacity to berth and re-supply the vessel fleet. To support these activities, a skilled offshore workforce will be needed – this may require the presence of suitable training facilities.

The increasing size and weight of wind turbines, the siting of wind farms in deeper water and faster installation requirements mean that the size and form of vessels is changing, this in turn results in changing requirements for port infrastructure. Jack-up Wind Turbine Installation Vessels (WTIV) have become the industry standard; these have four or six legs which are positioned on the seabed and then jack the hull out of the water to provide a stable working platform, the legs typically range from 30–110 m in length. As wind farm water depths increase, a greater air draught is required for the vessels to pass beneath bridges, overhead power lines, etc. effectively restricting the range of riverside locations that can accommodate them. On the Tyne, overhead power lines cross the river at Jarrow Slake just to the west of the Tyne Dock Estate this could restrict activities that could take place at Howdon Yard, the former Dow Chemicals site and other sites further upstream

Once in **operation** offshore wind farms need ongoing availability of support vessels able to transport personnel and parts to the wind farm at short notice. Local ports need to be able to service these vessels on a 24/7 basis and provide suitable loading/unloading facilities for replacement parts. The wind farm operator will require a support base at or near the port to incorporate warehousing facilities for routine spare parts and will also require a skilled local workforce to carry out operation and maintenance activities – both engineering and offshore skills are important. Equinor have taken a 35 year lease (with an option to extend for a further 15 years) at Tyne Dock Enterprise Park, where they are constructing an Operation and Maintenance base to serve the Dogger Bank windfarms; this will directly employ 450, and stimulate thousands of further jobs within the supply chain providing consumables (e.g. lubricants, filters, “wear-and-tear” parts etc.) and specialist services (e.g. painting/corrosion protection). The Marine School and Offshore Training Centre at South Shields provides established training facilities.

The growth in the offshore wind sector has stimulated investment in onshore facilities from the Humber to the Blyth. The Head of Estates at Port of Tyne advises that following several years of enquiries businesses are now ready to commit to sites. Securing Equinor's O&M base in 2020 was the Port's first success but the strength of market demand means that the Port is optimistic about securing further investment. The strategy of the Port has changed from expansion of its estate, to investing in those sites with access to deep water quays and which are best placed to compete for businesses serving this rapidly growing sector. The filling of Tyne Dock and the purchase of the McNulty yard have provided the Port with additional riverfront land which it has prepared for

SECTORAL ASSESSMENT OF DEMAND FOR SITES WITH RIVER ACCESS

development. This is now being complimented by investment in the former coal terminal to create the Tyne Renewables Quay some 10 hectares of land with a 170 meter quay, with 13 metre depth.

Decommissioning of oil and gas infrastructure is also recognised as a sector with growth potential. The 1998 OSPAR Convention controls the disposal of offshore installations; it requires all topsides and those substructures weighing less than 10,000 tonnes to be brought to shore for reuse, recycling or disposal. Heavier substructures are to be assessed individually. According to OSPAR, some 1,546 oil and gas related structures have been installed for production in European waters since 1967. The majority of these are in UK (50%) and Norwegian (33%) waters. Whilst 142 structures (9%) had been decommissioned by 2013, the vast majority are still operational.

Various projections of the scale and timing of decommissioning opportunities have been made; early estimates were of a large number of rigs requiring decommissioning within a relatively short period, but subsequent forecasts have shown a progressive postponement of work as operational lives of some infrastructure has been extended. Decommissioning activity is driven by age of structure, government/regulatory requirements and economic climate. There is also evidence that levels of decommissioning decrease in response to rising oil and gas prices. North East decommissioning activity is largely focused on the Tees at Able UK's Seaton Yard, but there has been activity on the Tyne (e.g. Swans) and other facilities on the Tyne are hoping to secure contracts.

Fabrication, modification and maintenance of vessels. NECA's research notes that the growth in offshore wind farms and decommissioning of offshore oil and gas infrastructure will result in increased demand for ship maintenance and repair, providing opportunities for business such as A&P Tyne which has the largest dry dock on the east coast of England. Requirements for quayside steel fabrication services including, for example, modifications of WTIV to extend jack-up legs and conversion of vessels to take larger turbines, provide opportunities for the Tyne to establish itself as a mobilisation centre.

In September 2017 an independent report commissioned by the government to inform the National Shipbuilding Strategy (NSBS) was critical of the naval procurement process and recommended fundamental changes to the way in which the MoD acquires new vessels. To break the current monopoly and to support regional shipyards the report recommended a distributed block building strategy, whereby modular sections and other components would be constructed in shipyards around the UK before being assembled at a single facility. This would improve the pace of build, allow consortia to bid for work and provide steadier workflows and improved efficiencies for smaller shipyards, thus helping to meet the objectives of the government's industrial strategy. Under the NSBS the Royal Navy are to outline their vessel requirements for the next 30 years providing industry with strategic direction, and there is a commitment to build warships in the UK whilst other naval vessels would be subject to open competition but with UK shipyards preferred. The NSBS strategy will provide increased opportunities for fabricators such as A&P Tyne, which has experience of modular construction of naval vessels, including sections of aircraft carriers and nuclear submarines.

The government's commitment to increasing the proportion of renewable energy is resulting in strong growth in the offshore wind sector where technological advances have led to the comparative cost of energy generation fall rapidly. Other offshore renewables - wave and tidal are still in their infancy and costs of production are high, but the North East provides an established cluster of manufacturing and offshore industry which can support their development. Decommissioning of offshore infrastructure is also expected to grow though few sites on the Tyne are likely to be suitable. Overall however the emerging opportunities in growth sectors can be expected to outweigh contractions in other sectors leading to an increased demand for sites,

SECTORAL ASSESSMENT OF DEMAND FOR SITES WITH RIVER ACCESS

premises and skills. Whilst not all requirements will be for riverside land, much of the demand, particularly for larger sites, will require access to deep water. Some of this additional demand will be accommodated by more intensive use of land that is currently in operational use, but examples of land being brought forward to meet this growing demand can be found on the Humber, Tees, Tyne and Blyth.

In 2020 the Covid-19 pandemic hit the economy and caused severe disruption to shipping, which had a detrimental impact on the Port's profits and the amount available to invest in site preparation. But trade subsequently recovered, and container traffic through the Port has grown substantially. Despite concerns about Brexit, Nissan recently committed to using the Port to export cars for a further 15 years; this new contract allows for multi-storey parking to be constructed to enable the more efficient use of land within the port estate, freeing up sites for alternative uses.

In response to the opportunities in the offshore energy sector, South Tyneside Council commissioned WSP¹ to assess the opportunities and constraints of four sites on the Tyne: Hawthorn Leslie, Jarrow Green Business Park, the former Dow Chemicals site and Cemex. The scale, infrastructure and marine access of these four sites were assessed against requirements of 11 sub-sectors, taking into account key characteristics (length, beam and draught) of vessels used in the sub-sectors.

The Port of Tyne dredges the river to maintain a depth of 5.2 metres below Chart Datum (CD) from Jarrow Staithes jetty to Newcastle Offshore Technology Park (the stretch of river on which Hawthorn Leslie and Jarrow Green Business Park are situated) and 6.0 metres between Jarrow Slake and Jarrow Staithes (Cemex & Dow Chemicals). All four sites are upstream of Jarrow Slake where overhead electricity cables across the Tyne restrict air draught to 85.7m at Mean High Water Springs (MHWS). This was increased from 64m in 2017.

Given the varied requirements for land and premises for the four stages of development, manufacture, installation and operation, not all riverside sites are suited to all sub-sectors. The WSP study used a traffic light system to grade the sites' suitability for potential opportunities:

- suitable (green),
- constrained / intervention required (amber),
- unsuitable (red).

WSP's analysis is summarised in a table from the Executive Summary of the report which is replicated below. Effectively, none of the sites were suitable at the time for these uses, but with intervention to mitigate constraints some sites could accommodate some of the potential uses.

¹ Riverside Sites Phase 1 Opportunities and Constraints Study, WSP, April 2019

SECTORAL ASSESSMENT OF DEMAND FOR SITES WITH RIVER ACCESS

Offshore Energy Opportunities by Site

Site	General Fabrication	Large Decommissioning	Small Decommissioning	Pipelines, Umbilicals & Cables	Rigid Spoolbase	Cable Store	Offshore Wind Manufacture	Gravity Base Foundation	Assembly Port	O&M (Crew Transfer Vessels)	O&M (Service Operation Vessels)
Former Hawthorn Leslie	Yellow	Red	Yellow	Yellow	Red	Yellow	Red	Red	Red	Red	Yellow
Jarrow Green Business Park	Yellow	Red	Yellow	Yellow	Red	Yellow	Red	Red	Red	Red	Yellow
Former Dow Chemicals	Yellow	Yellow	Yellow	Yellow	Red	Yellow	Yellow	Red	Yellow	Red	Yellow
Cemex	Yellow	Red	Yellow	Yellow	Red	Yellow	Yellow	Red	Yellow	Red	Yellow

Source: WSP

None of the four sites was regarded suitable (green) for any of the offshore energy opportunities. Each would need intervention and investment. With the exception of Cemex the sites either adjoin or are near to residential areas which may constrain working hours, noise and activities undertaken. This may constrain general fabrication and small-scale decommissioning. Uses that would complement existing activity such as on the adjacent A&P Tyne yard, or across the river at the Swans or Neptune yards, would appear preferable. All four sites would require similar interventions such as quay improvements and dredging to support specific uses. WSP estimates that for each of the sites the costs of required interventions range from £5.6 million to £24 million according to the end use.

In summary, although these riverside sites have constraints, which rule out some offshore sector activities, WSP consider that all four sites could, with investment, accommodate a range of other offshore activities and continue to play a role within South Tyneside's portfolio of employment sites. In needing investment in dredging and quay improvements, these sites are no different from other sites on the Tyne, Tees and Blyth, that are being promoted by public and private sector players for development by businesses in the offshore sector.

With intervention the Dow Chemicals and Cemex sites could accommodate a relatively wide range of uses, whereas Hawthorn Leslie and Jarrow Green are unsuitable for some. Since WSP prepared their study part of Jarrow Green has been taken for the Viking Energy Park and with only 1.71ha now available, as a consequence the site is even less able to accommodate offshore energy opportunities.