East Suffolk galvanised by offshore energy

What does the arrival of significant new energy infrastructure into a rural area mean? Suffolk already has the Sizewell nuclear power site and is now to host cabling for major offshore wind farms being built in the North Sea. *Nick Cottam* knows the area.

By the 2030s East Suffolk could be responsible for up to a quarter of the UK's electricity supply. This was the bullish, post-Brexit prediction made by Suffolk Coastal Conservative MP Therese Coffey in a recent local newspaper article. Coffey bases her assessment on the go ahead for a new Sizewell C nuclear power station – as yet hanging in the air – and the much more tangible, decided delivery of offshore renewable energy, the first cabling for which is currently under construction.

While Sizewell is a lot less likely than any kind of Brexit at the moment, renewable energy is powering ahead on all fronts. 'The first electricity is planned to be generated before the end of 2019,' says Charlie Jordan, the ScottishPower Renewables (SPR) Project Director for the East Anglia ONE project. 'The wind farm will become fully operational in 2020,' he adds: 'generating enough clean energy to power the equivalent of 630,000 homes.'

This is a big deal for a still relatively sparsely populated Area of Outstanding Natural Beauty and this and related SPR projects have not been without controversy as they trundle through the planning process. East Anglia ONE is the first of four SPR renewables projects in the region, with East Anglia TWO currently going through the consultation process and East Anglia THREE granted consent by the Planning Inspectorate in August 2017.

Writing recently about the siting of a renewables substation near the pretty village of Friston after a meeting with Energy Minister Claire Perry, Therese Coffey noted that: 'miles of countryside will needlessly have to be dug up for cables to reach the substation and there may be multiple huge buildings. We spoke about other options that could reduce the impact, including moving the proposed transmitters elsewhere to other energy hubs.'

In this case it seems to be Sizewell to the rescue – not the power station itself but the coastal Sizewell site, which looks like a viable alternative for the 12 ha substation. The station would be visually intrusive, with 21 m tall buildings and transformers handling 2 GW of power to connect with the national grid. SPR estimates that once it is fully up and running, East Anglia TWO could supply up to 740,000 homes.

Exciting energy action?

Good for the UK it seems but should East Suffolk get excited by all this energy action? Is investment in the region helping to offset all those nasty impacts? 'To date we have spent £25mn with suppliers based across the East of England,' says Jordan. 'There is the potential to award additional contracts throughout the remaining stages of construction and into the operational and maintenance phase.' Contracts ranging from labour hire, surveying, crew transfer vessels, equipment hire, fencing, concrete and aggregate, to traffic management and security were all on the cards, he said.

'As well as placing several multi-million pound contracts with suppliers in the region, which in turn have procured a raft of subcontractors from East Anglia, we have also encouraged all our suppliers to place contracts with the local East Anglia supply chain. This demonstrates how offshore wind can deliver added value to the local and regional supply chain,' added Jordan.

Needless to say, visiting contractors have played their part as Glasgow-based SPR claims to have supported the local hotel industry in

East Anglia ONE cable route

The East Anglia ONE cable route runs from Bawdsey to Bramford

Norfolk and Suffolk to the tune of £76,000 over the past two years. To the north of the region the towns of Lowestoft and Great Yarmouth are becoming less seasonal, not only because hotels have more guests throughout the year but also because there are more jobs being created outside the tourist sector.

East Anglia ONE has gained brownie points locally by working with Suffolk County Council to develop a skills strategy to train the workforce and align it to the future of the industry. Enlightened self-interest this may be, but local colleges are not complaining and the East of England Offshore Wind Skills Centre in Great Yarmouth is one tangible outcome of this process.

So too are a series of Science, Technology, Engineering and Maths (STEM) workshops at schools in the region and an East of England International Women in Engineering Day event designed to celebrate the next generation of female engineers. According to Jordan: 'East Anglia is in an enviable position to lead the sector and drive the industry forward for the UK. The offshore wind industry is already delivering measurable benefits to the regional economy and the opportunities are only increasing.'

The East Anglia ONE project, a 50:50 joint venture between SPR and Vattenfall Wind Power, currently amounts to both offshore and onshore construction work. Offshore, the joint venture is installing 102 wind turbines some 50 km out in the North Sea, while onshore they are building and burying a 37 km cable supply line between Bawdsey at the mouth of the River Deben and Bramford, near Ipswich, where the substation will be located.

Regarding the onshore work: 'All enabling works have been completed, including installation of nine construction consolidation sites,' says Jordan. 'A haul road has been constructed along the length of the cable route to reduce the vehicles on public road.'

Sleepy backwater

This is pioneering stuff for an area which in parts can still be classed as a sleepy backwater. From the burying of cables underneath the river to the discovery of a Neolithic trackway (see inset) the project is making its mark in East Suffolk and in wider East Anglia. In the market town of Woodbridge, about seven miles east of Ipswich, there are cable-laying construction sites either side of the River Deben with teams working long hours to bury the underground cable and where necessary to bring it under road and river.

Where the cabling has to be taken under a road, a river or indeed other obstacles, the contractor has used Horizontal Direct Drilling (HDD), a trenchless method to install the ducts through which the power cables for East Anglia ONE can then be pulled. The drill under the River Deben was completed in the first half of 2018 using a 250-ton rig, one of the largest of its kind in the UK. The rig had to drill down under the river between Falkenham, close to the North Sea mouth, and down-river Ramsholt in order to thread the lubricated ducts through which the cable could be pulled.

Whether they are being driven below the river or installed in open trenches, underground cables are seen as a big plus for a region which thrives on its big skies and stark open landscapes. Once the cables are bedded in the terms of the Development Consent, sites must to be returned to their original state, leaving the fiercest of consultation arguments and protests to the siting of substations.

'To preserve the landscape in the long term we took the decision early in the planning process to bury the cable underground,' said Jordan. 'We also selected the route to avoid areas of important habitat and woodland.'

SPR and its partners point to a legacy of employment and investment long after construction work is finished. This includes an operations and maintenance base of East Anglia ONE, which is currently being constructed at Lowestoft and which will support the wind farm and contribute to the local economy for the next 30 years. When the wind farm is complete there will be around 100 full-time jobs at the base. ●

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Neolithic discovery

In an area where the internationally important Sutton Hoo burial ship was fist unearthed over 70 years ago, archaeologists have made important new discoveries thanks to East Anglia ONE's construction of an onshore cable route.

As part of the underground cabling, SPR commissioned a team of archaeologists from Wardell Armstrong, as required under the Development Consent. The result has been the discovery of a Neolithic trackway dating from 2,300 BC, and the skull of an Auroch, an extinct species of large wild cattle which together suggest the existence of an early settlement close to the River Deben.

Natural water springs still evident in the area have helped to preserve materials such as bone and wood and may well be another reason why Neolithic Man came there in the first place.

According to SPR's Charlie Jordan: 'One of the unanticipated legacies of our wind farm will be a greater understanding of Suffolk's history. In the last two years our project has been responsible for uncovering artefacts from the Bronze Age, Iron Age, Roman and Medieval periods, but it seems that the best has been saved until last.'

The idea that a future proofing power project should be a catalyst for delving into a region's past is indeed exciting in its own right. In the case of nearby Sutton Hoo it took the efforts of a resourceful land-owning widow and a single archaeologist, Basil Brown, to get the ball rolling, while the East Anglia ONE project has drawn on the efforts of up to 400 archaeologists with a peak on-site workforce of around 250 people at any given time.

In overseeing the programme, Wardell Armstrong worked closely with Suffolk County Council and pulled in expertise from across the UK.

'It is exceptionally rare to find preserved organic materials from the Neolithic period and we will learn a great deal from this discovery,' commented Richard Newman, Associate Director at Wardell Armstrong. 'Some of the wood is so well preserved we can clearly see markings made by an apprentice before a more experienced tradesman has taken over to complete the job.'

A preserved wooden stake taken from the 4,000 year old neolithic trackway discovered at the East Anglia ONE cable route archaeology site