

1) Welcome

Welcome to our Phase Four Consultation Public Information Day about our proposed East Anglia TWO and East Anglia ONE North offshore windfarm projects. Members of our project team are on hand today to answer your questions and we welcome any feedback you have.

As part of our pre-application consultation, ScottishPower Renewables (SPR) has published separate Preliminary Environmental Information Reports (PEIRs) for East Anglia TWO and East Anglia ONE North.

Each PEIR provides information on site selection; a detailed project description; preliminary impact assessments; potential cumulative impacts and mitigation measures to reduce or prevent environmental impacts. The content presented today and in each PEIR is shaped by the feedback we received from previous consultation rounds. assessments, prior to submitting separate consent applications towards the end of 2019.

Freepost envelopes are available to return feedback on each project or you can email us at: eastangliaonenorth@scottishpower.com eastangliatwo@scottishpower.com

All material shared today, including each PEIR, is available to download from our website. Each PEIR (excluding appendices) is also available to view in hard copy format at the following locations: Aldeburgh Library; Aldeburgh Town Council; Woodbridge Library; Leiston Town Council; Friston Village Hall; Suffolk County Council and OrbisEnergy Centre (please check our website for times when these documents are available to view).

This is Phase Four of our pre-application consultation and we will use your feedback to help finalise our project proposals and impact

Pre-

Application -Following the initial scoping phase of consultation, the project progressed to the Environmental Impact Assessment **Updates to design -** In response to the feedback we receive during Phase Four Consultation, we will consider further refinements to the design of the project.

Consent Application - Each project submits an application for consent, together with a range of supporting documents including the Environmental Statement to The Planning Inspectorate for examination.

Examination - The Planning Inspectorate will consider the application and will consult with statutory and key stakeholders,

(EIA) stage.

including local authorities. Members of the public will also have the opportunity to make representations during examination.



2) East Anglia TWO and **ONE North Onshore** Development

The offshore export cables will make landfall north of Thorpeness, at a location which has been selected following consultation with statutory stakeholders and technical experts.

Horizontal Directional Drilling (HDD) will be undertaken to facilitate the offshore export cables coming onshore and to avoid interaction with the cliffs, beach and intertidal area.

From landfall, underground cables would be installed to the substations at Grove Wood, a distance of approximately 9km.

The width of the onshore cable route

An onshore substation would be required for each project, both connecting to a single National Grid substation at Grove Wood. All substations will be located adjacent to each other to maximise the use of existing screening and improve the effectiveness of new landscaping, which will reduce the visual impact of the substations.

The existing overhead lines will

would typically be 32m per project during construction, reducing to 16.1m at important hedgerows and the woodland at Aldeburgh Road.

Where trenchless techniques are used (i.e. at the landfall), the width would be wider.

require modification to facilitate the grid connection, which could include up to one additional pylon and require strengthening works to the existing pylons in the immediate area. New cable sealing end compounds will also be required to connect the overhead lines to the National Grid substation.



0.9m 0.9m	0.9m 0.9m
32m	32m

East Anglia TWO and East Anglia ONE North Indicative cable trenching arrangement and working area



3) East Anglia TWO and **ONE North Onshore** Development

How The Projects Relate To Each **Other:** East Anglia TWO and East Anglia ONE North are two separate projects. Two construction scenarios have been assessed: construction of both projects simultaneously and sequentially.

Construction Compounds:

Temporary Construction Consolidation Sites (CCS) would be required along the onshore cable route and at the landfall and substation sites during construction.

Preliminary studies have identified possible CCS locations for the onshore cable route. Each CCS would be reinstated and returned to its previous use following construction.

Operation: All landfall and cable infrastructure will be underground, with the only above-ground elements being the onshore substations and National Grid's infrastructure.

Key Onshore Dimensions: The key dimensions for the onshore infrastructure are presented below.

Parameter	Dimension (per Project)	
Typical onshore cable route construction width	32m	
Number of onshore cable trenches	2	
Number of onshore electrical cables	6 (3 per cable trench)	
Onshore cable route: CCS area	160m x 115m (each)	
Onshore substation: Footprint	36,100m ²	
Onshore substation: Maximum building height	15m	
Onshore substation: Maximum height of external electrical equipment	18m	
Onshore substation: CCS area	190m x 90m (in addition to footprint of onshore substations)	
National Grid substation: Footprint	45,500m ² (Air Insulated Substation) Or 16,800m ² (Gas Insulated Substation)	
National Grid substation: Maximum building height	13m (Air Insulated Substation) Or 16m (Gas Insulated Substation)	
National Grid substation: Maximum height of external electrical equipment	16m	
National Grid substation: CCS area	125m x 315m (x 2)	
Lightning protection	Provided using a combination of lightning rods, lightning masts and shield wires	



4) East Anglia TWO and **ONE North Offshore** Development

The East Anglia TWO Offshore Development Area Is Shown Below



The East Anglia ONE North Offshore Development Area Is Shown Below





5) East Anglia TWO and **ONE North Offshore** Development



Key components of the proposed East Anglia TWO and East Anglia ONE North projects

How Does An Offshore Windfarm Work?

- Electricity generated by each turbine is transmitted via inter-array and platform link cables from the turbines to offshore electricity platforms
- From there electricity is
- From the transition bays the underground cables will transport electricity to the onshore substation and onto the National Grid substation and the overhead transmission lines

then transported via buried offshore export cables to the transition bays at landfall

The table below sets out the key components of each project:

Parameter	East Anglia TWO	East Anglia ONE North
Maximum capacity	up to 900MW ¹	up to 800MW ¹
Maximum number of wind turbines	75	67
Windfarm site area	255km ²	208km ²
Distance from windfarm site to shore (closest point of site to Lowestoft)	31km	36km
Offshore cable corridor length/area	80km/180km ²	76km/133km ²
Number of offshore export cables	Two	Two
Maximum wind turbine rotor diameter	250m	250m
Maximum wind turbine hub height	175m	175m
Maximum wind turbine tip height	300m	300m
Minimum separation between wind turbines (for micro-siting) ²	 In-row 800m Inter-row 1200m 	 In-row 800m Inter-row 1200m
Number of wind turbine models to be installed	Up to three	Up to three
Number of met masts	Up to one	Up to one
Number of offshore electrical platforms	Up to four	Up to four
Number of construction, operation and maintenance platforms	Up to one	Up to one

¹ As measured at point of connection of the onshore cables to the onshore substation ² Nominal spacing is likely to exceed this



6 How This Affects You

The following human aspects were considered in our draft impact assessment: air quality; noise and vibration; land use; traffic and transport; human

health; tourism, recreation and socio-economics.

Tourism, Recreation and Socio-economics

The proposed projects are predicted to bring significant socio-economic benefit to the local area and region through the creation of employment opportunities. No significant negative tourism and recreation impacts are predicted.

Noise

Potential noise impacts are identified arising from construction works (and associated construction traffic) in a small number of locations along the indicative onshore development area. These impacts are temporary and will Through the Development Consent Order (DCO) process, noise limits will be tightly controlled and will be agreed with the Local Planning Authority prior to construction.

Traffic

Traffic and transport impacts have been assessed and consider impacts on pedestrians; road safety; and driver delays during construction. With the application of appropriate mitigation measures, such as the implementation of a Construction Traffic Management Plan, the transport impact during construction is assessed to be minor or negligible. Traffic impacts are not predicted to be significant during the operational phase of the projects.

be of short duration.

The only sources of noise with the potential to impact onshore receptors during the operation of the proposed projects would be from the onshore substations.

No significant air quality, land use or human health impacts are identified.



Transformer delivery to the East Anglia ONE offshore windfarm substation (2018)



How This Affects Onshore and Offshore Ecology

The following ecology aspects are considered in our draft impact assessment: marine mammals; onshore and offshore ornithology; fish and seabed communities; habitat mapping; and protected species.

Detailed offshore surveys were carried out in agreement with Natural England, the Marine Management Organisation (MMO) and the Centre for Environment, Fisheries and Aquaculture (Cefas) over the course of 2017/18. This established a baseline against which we have assessed the potential impacts on marine mammals, birds, fish and seabed communities.

Key issues which we considered

Only minor adverse effects are predicted for all species and habitats considered.

Onshore ecology Extensive onshore surveys were carried out, including habitat mapping and protected species surveys on, for example, bats, water voles and great crested newts.

During the impact assessment, special consideration was given

include:

- The potential for underwater noise to be generated by pile driving during foundation construction impacting on marine mammals and fish. As such, underwater noise modelling formed an important part of our assessment
- The risk of birds colliding with, or being disturbed by, our projects
- Habitat loss or degradation to seabed communities

to the impact on the Sandlings Special Protection Area (SPA).

With specific mitigation measures in place the proposed East Anglia TWO and East Anglia ONE North projects are predicted to have no greater than minor impacts on this area.

Only minor effects are predicted for all species and habitats considered.





Turtle dove

Nightjar



B How This Affects Landscape and Visual, Seascape and Heritage

The following aspects were considered in our draft impact assessment: landscape and visual; seascape; and heritage impacts.

Landscape and Visual

As there will be no above-ground infrastructure at the landfall or along the cable route, there will be no significant effects in these areas during the operational phase other than at the cable corridor in the vicinity of Aldeburgh Road due to the partial removal of woodland.

Potentially significant impacts associated with the operation of the onshore substations would be largely contained within the local landscape. Mitigation planting will be designed and introduced with the aim of reducing these impacts. Visibility from the coast of the East Anglia TWO and East Anglia ONE North wind turbines under conditions of excellent visibility is limited to 33% of the time and 26% of the time respectively as a worst case.

Photomontage booklets are available at this event for you to view, as well as a virtual fly-through model which allows you to see what the projects will look like once operational, from any point within the project boundary.

Seascape

Significant construction and operational effects on seascape are not anticipated to be widespread, rather localised and site specific around narrow coastal edges of the Suffolk coast.

Heritage

Direct impacts on designated heritage features have been avoided as part of the site selection process.

Further work will be undertaken prior to submission of the DCO to determine the potential for impact on the setting of designated heritage features.





Archaeological trial trenching will be undertaken

Any archaeological finds will be recorded



How This Affects Marine Users

The following commercial marine aspects were considered in our draft impact assessment: shipping and navigation; fisheries; and recreational users.

The proposed East Anglia TWO and ONE North projects have been assessed for potential shipping and navigation impacts using the Formal Safety Assessment (FSA) process detailed by the International Maritime Organization (IMO, 2002) and as required by the Maritime and Coastguard Agency's (MCA) Methodology for Assessing the Marine Navigational Safety of Offshore Wind Farms (MCA, 2015).

Careful site selection has reduced the overall impact that the proposed projects will have on marine users such as fishermen, ferries and recreational boats. This site selection process involved stakeholder workshops and computer modelling to identify shipping routes and the types of vessels that may be impacted by the projects, allowing interactions to be avoided as far as possible.

In order to ensure and maintain regular communication, a Commercial Fisheries Working Group (CFWG) has been established to ensure effective liaison with commercial fisheries groups affected by our projects. Through the CFWG and other communication channels, appropriate liaison will be undertaken with all relevant fishing and shipping interests to ensure they are fully informed of all construction, maintenance and decommissioning activities.



Offshore electrical platform under construction at East Anglia ONE Offshore Windfarm (with wind turbine foundations visible in the background)

10) Commitment To Onshore Mitigation Along The Cable Route

Proposed Onshore Development Area (PEIR Figure 6.2)

In order to minimise transport impacts associated with the onshore construction and operation of the projects, SPR has adopted a number of mitigation measures, including:

- Construction and use of temporary haul roads to access the landfall, cable corridor and substation areas, thereby reducing Heavy Goods Vehicle (HGV) movements on local roads
- Identification of suitable HGV access routes to avoid key sensitive areas such as Aldeburgh town centre, Thorpeness, Friston, Saxmundham, Benhall Green and Sternfield
- Use of a pilot vehicle system to

For construction works that may affect the Sandlings Special Protection Area (SPA) and Site of Special Scientific Interest (SSSI), specific measures will be implemented to protect breeding birds such as development of a Breeding Bird Protection Plan.

Consideration is also being given as to how the cable corridor would cross the SPA at its narrowest point with as little impact as possible, either by open trenching over a condensed period or by Horizontal Directional Drilling over a longer period.

A series of mitigation measures will also be incorporated within a Code of Construction Practice, including specific measures to control dust, noise, lighting and ecological impacts associated with the construction works.

escort HGVs along the B1353 (Thorpeness Road) and avoidance of HGV deliveries along the B1353 during peak morning and evening rush hours

1) Commitment To Mitigation At The Grove Wood Substation Site

Planting around the Grove Wood substation will be designed and introduced with the aim of reducing the visual impact on surrounding properties, and villages such as Friston.

The planting would include areas of faster-growing woodland species to provide the height required as well as the density to ensure effective screening.

An outline Landscape Mitigation Plan is included in each PEIR, and we welcome your views on the outline design to allow the further development of this plan prior to DCO application. In particular, your views on areas for planting and the timing of such planting are encouraged. Following previous consultation feedback which raised flood risk as a key concern, we have introduced a sustainable urban drainage system (SUDS).

The SUDS design ensures surface water run-off from the substations is drained to and held within a SUDS pond (shown on the masterplan drawing).

The SUDS pond then releases the water to the local drainage system at a slow rate, thereby reducing the risk of flooding.

This pond will provide adequate drainage to accommodate the area of impermeable hard standing created by construction of the substations.

12 Commitment ToOffshore Mitigation

This will include:

- Burial of the offshore export cables to minimise the need for surfacelaid cable protection, which could have affected the movement of sediment along the coast line
- Ensuring the route of the offshore cables avoids sensitive habitats and features
- Horizontal Directional Drilling (HDD) at the landfall (to drill under the coastal cliff and beach area) to avoid impact on the Leiston -Aldeburgh Site of Special Scientific Interest (SSSI), the cliffs, the beach and the intertidal area.
- Incorporation of provisions within the DCO will deliver mitigation options such as micro-siting of wind turbines to avoid potentially sensitive marine habitat identified during pre-construction surveys

A number of documents will be drafted and agreed with stakeholders during the development process which will set out mitigation measures to be implemented during the construction phase of the projects. A number of these documents are shown below:

OFFSHORE CONTROL DOCUMENTS

13 Cumulative Impacts

A key consideration in the Environmental Impact Assessment (EIA) is how the construction and operation of the proposed East Anglia TWO and East Anglia ONE North projects interact with other projects in the area. in parallel, SPR has ensured that each project is well described and sufficiently advanced. This allows the impact assessment for each project to fully take into account the cumulative impact of the other. In assessing the simultaneous and sequential construction of both projects, we also ensure that all construction scenarios are fully assessed for each project.

A Cumulative Impact Assessment (CIA) has been undertaken and presented within each PEIR. The methodology adopted in preparing the CIA is presented within Chapter 5 Environmental Impact Assessment Methodology.

Projects which are reasonably well described and sufficiently advanced to provide information on which to base a meaningful and robust assessment have been included in the CIA, following The Planning Inspectorate Advice Note 9 and its complementary guidance in Advice Note 17. SPR is pleased to be a member of the Suffolk County Council chaired 'Energy Projects Working Together Group' expressly set up to examine cumulative impacts with other projects, primarily Sizewell C and National Grid Ventures' Interconnector Projects.

The cumulative impact of other projects will be assessed based on the level of information available and in line with The Planning Inspectorate's Advice Notes. Our final EIA submitted with each DCO application will, for example, consider Sizewell C's current Stage 3 Consultation.

In submitting the consent applications for both East Anglia TWO and East Anglia ONE North projects

Offshore wind turbine under construction