

ScottishPower Renewables

East Anglia TWO and East Anglia ONE North

Substation Factsheet

October 2018

East Anglia TWO and East Anglia ONE North Overview

Further to the ongoing construction of East Anglia ONE and consent for East Anglia THREE ScottishPower Renewables wishes to develop two further offshore windfarms off the coast of Suffolk, the proposed East Anglia ONE North and East Anglia TWO offshore windfarms.

East Anglia TWO is approximately 255km² in area and is expected to consist of up to 75 wind turbines with an overall installed capacity of up to 900MW, with the potential to power around 742,000 homes.

East Anglia ONE North is approximately 208km² in area and is expected to consist of up to 67 wind turbines with an overall installed capacity of up to 800MW, with the potential to power around 660,000 homes.

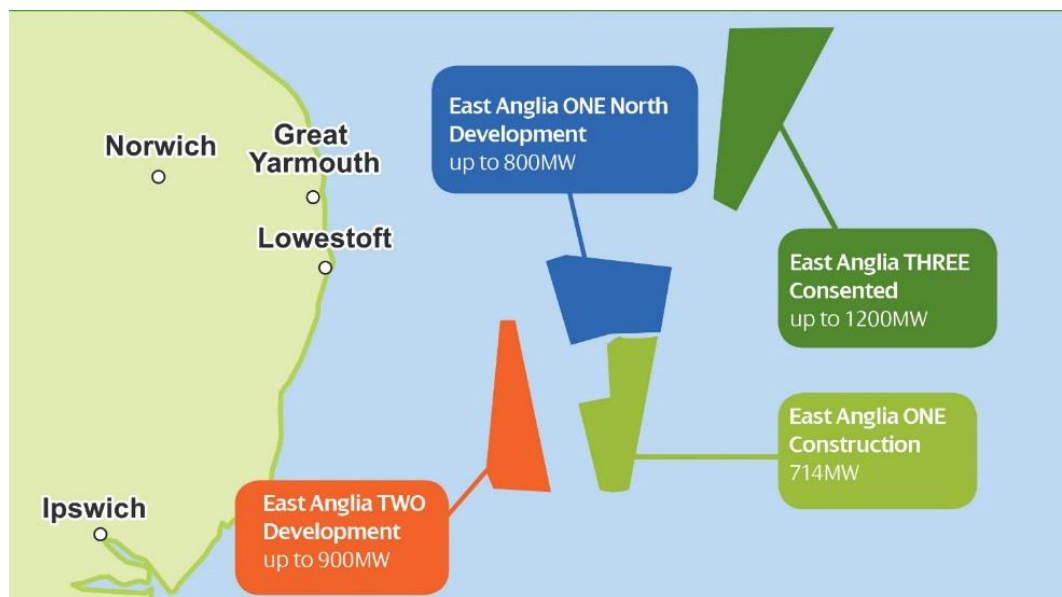


Figure 1: East Anglia Zone Overview

Overview

This factsheet has been produced to provide information on how the design of the proposed East Anglia TWO and East Anglia ONE North substations might evolve during the lifetime of the projects.

ScottishPower Renewables would like assure you that we are at the early stages of the substation design process that will continue with checks during the consent and pre-construction phases of the projects. To do this we have set out the process that we went through for our East Anglia ONE substation which is currently being constructed near Bramford in Suffolk.

Why can the final design not be decided now?

The final design for the proposed East Anglia TWO and East Anglia ONE North substations is dependent on the contractor appointed post consent to undertake the works and the final electrical proposals for the project. As such a realistic 'worst-case' design has been established at this stage based on ScottishPower Renewables' understanding of the substation supply chain, our work on other projects and site specific characteristics of the Broom Covert, Sizewell and Grove Wood, Friston areas.

This approach to outlining a realistic 'worst-case' is called the Rochdale Envelope approach and is commonly used to ensure consent is obtained on a defined envelope but that flexibility to build within that as appropriate is maintained. This flexibility allows for ScottishPower Renewables to procure the most suitable design, from a wider range of suppliers at the time of construction, reducing cost and ensuring that technological advances can be made and accommodated without a new consent being obtained. The Planning Inspectorate (PINs) has published an advice note that discusses how to use this flexible design process (advice note 9: The Rochdale Envelope) which can viewed at:

<https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2013/05/Advice-note-9.-Rochdale-envelope-web.pdf>

We have already refined our Rochdale Envelope for the Grove Wood, Friston site in response to consultation feedback by reducing the maximum building height in the consent from 21m to 15m. In addition we have to ensure a few options as possible are proposed by committing to the use of AC technology and ruling out the use of DC technology which would require a larger building to be built.

How will it be insured that the design is within the envelope proposed and assessed?

Both projects would include a requirement in their respective Development Consent Orders (DCOs) where by the final substation design proposals would be agreed in accordance with this requirement with the Local Planning Authority. Development of the final design in accordance with these requirements will provide further opportunities to influence the final substation designs post consent including options for final colour and material choices of buildings, fencing and roads.

In addition, further requirements of the DCOs would include the need to agree landscape mitigation such as earthworks and planting to complement the final substation design.

The proposals for design would accord with design principles set out in the document submitted as part of our application and can be further refined during the examination process. Design principles typically include;

- (1) **Engagement:** with Parish Councils, local residents and relevant authorities
- (2) **Design:** sensitive to place, with visual impacts minimised as far as possible by the use of appropriate design, building materials, shape, layout, coloration and finishes;
- (3) **Height:** substation building and ancillary equipment will be kept to a minimum and the slab level will be set at the lowest practical level;
- (4) **Landscaping:** to minimise the visual intrusion, and respond to local landscape character and biodiversity; considered in the building design and layout of ancillary structures;
- (5) **Embedded ecological mitigation and enhancement:** with particular attention to lighting, large areas of glass and baffling of noise sources;
- (6) **Sustainable Drainage (SuDS) strategy:** to be developed in accordance with DCO Requirements
- (7) **Engagement:** Through development of the final design and landscaping proposals provide opportunity to engage with local communities who will be directly affected by the substation; and
- (8) **Design Review:** The design should be subject to design review, in consultation with the relevant local authorities.

Figure 2 sets out how this process worked for East Anglia ONE. The process of substation design post consent further reduced the substation building height and agreements on building materials and colours were made during an independent design review process.

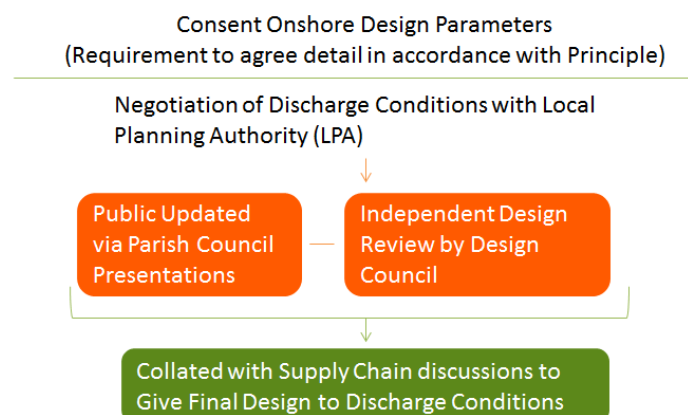


Figure 2: East Anglia ONE post consent design process

Can the substations be buried?

Unfortunately it is not feasible to bury the proposed East Anglia TWO and East Anglia ONE North substations underground given the technical challenges associated with such a proposal. Due to the size, equipment and voltages of the project, burying it would be a significant undertaking without radical changes in technology and design.

Whilst the substations cannot be buried we are looking at existing groundwater information and topography for the sites and will in our final applications confirm what earthworks could be proposed to further reduce the height of the buildings.

What further information will be provided on the proposed substations?

As part of our Phase 4 Consultation in early 2019 we will provide outline master plans for the proposed East Anglia TWO and East Anglia ONE North substations. These will include information on temporary work areas, planting and landscaping and drainage. We will also present detailed impact assessments for the proposed East Anglia TWO and East Anglia ONE North substations. Later in 2019 outline design principles will be developed and submitted with our final consent applications to the Planning Inspectorate. These will then be reviewed and considered during the examination process.

What are the main components of a substation?

Figure 3 provides an overview of the main components that will comprise the proposed East Anglia TWO and East Anglia ONE North substations.

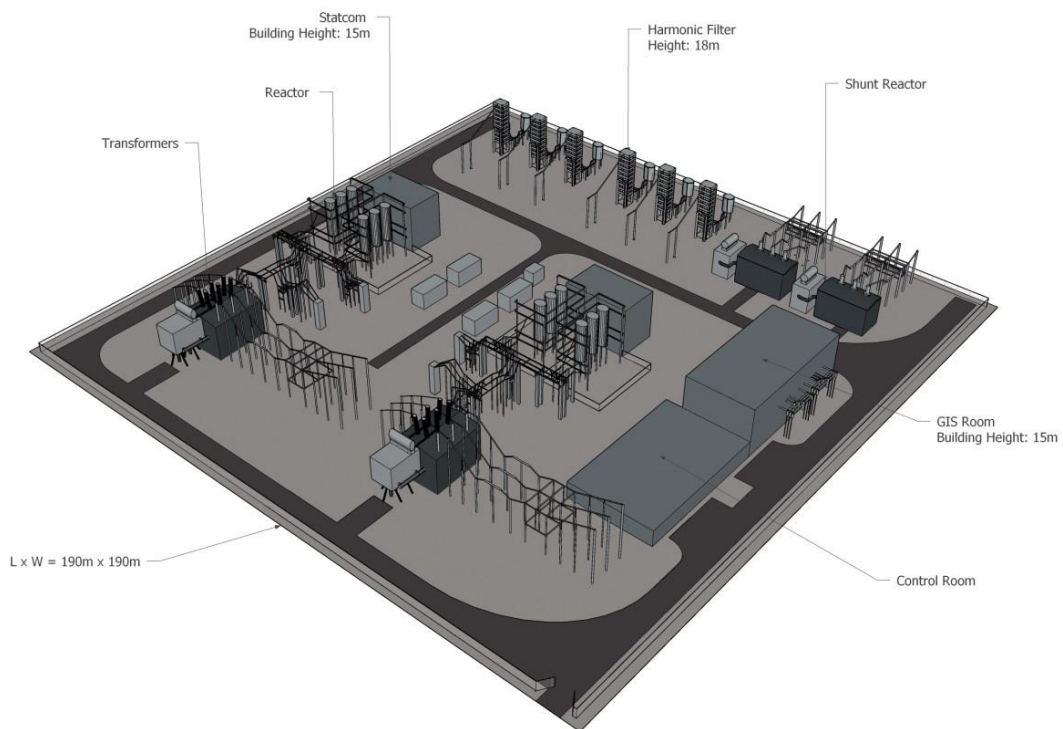


Figure 3: Substation Components

East Anglia ONE Case Study

The Development Consent Order (DCO) for East Anglia One Offshore Windfarm was issued by the Secretary of State in June 2014. Requirement 10 of the DCO issued states the parameters for the detailed design of the onshore substation.

Similar to the East Anglia TWO and East Anglia ONE North projects, initial designs were developed during the pre-consent application stage but these designs were further refined post consent.

The conceptual design of the substation was developed in line with the DCO parameters and in many aspects provided significant improvements including the height of every building within the substation. For example, the height of both the GIS (12m) and STATCOM (8m) buildings are significantly shorter than the parameter granted within the DCO (maximum building height of 19m).



Figure 4: East Anglia ONE Landscaping Cross Section

In addition to the dimensions of the substation, extensive work was undertaken to ensure the visual impact of the buildings on the surrounding environment was minimised.

Following discussions with local councils, it was agreed that a review of the substation design should be carried out by the Design Council, an independent registered charity. Following a comprehensive review and site visit in 2015, the design council provided feedback on the designs presented including the recommendation to produce both a strategic masterplan and architectural report for the proposed design.

This resulted in an 'integrated' approach to the design by using extensive soft landscaping around the substation site to ensure an appropriate level of visual integration into the surrounding landscape. The public were kept informed on design progress through a series of parish council meetings.

All documents were consulted on with Mid Suffolk District Council, Suffolk County Council (where appropriate) and statutory stakeholders before sign-off and can be found on our website at <http://content.yudu.com/web/2it8t/0A4226m/SDDF/html/index.html?page=8>



Figure 5: East Anglia ONE Substation Landscaping Plan

FIND OUT MORE

If you require any further information on the project please contact us via the methods below.

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