

**SCOTTISHPOWER  
RENEWABLES**

# **East Anglia ONE North and East Anglia TWO Offshore Windfarms**

## **Written Summary of Oral Case ISH16**

### **Issue Specific Hearing 16 on 26<sup>th</sup> May 2021: The Proposed Substations Site**

Applicants: East Anglia TWO Limited and East Anglia ONE North Limited

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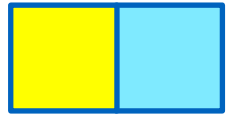
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**Applicable to East Anglia ONE North and East Anglia TWO**



Revision Summary				
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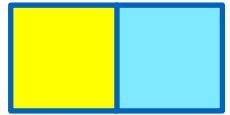
## Glossary of Acronyms

AONB	Area of Outstanding Natural Beauty
DCO	Development Consent Order
ESC	East Suffolk Council
ES	Environmental Statement
ExA	Examining Authority
ISH	Issue Specific Hearing
LVIA	Landscape and Visual Impact Statement
NGET	National Grid Electrical Transmission
NPS	National Policy Statement
PD	Procedural Decision
SASES	Substation Action Save East Suffolk
SCC	Suffolk County Council
SuDS	Sustainable Urban Drainage System



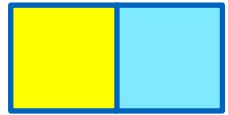
## Glossary of Terminology

Applicants	East Anglia ONE North Limited and East Anglia TWO Limited
The Councils	East Suffolk Council and Suffolk County Council
East Anglia ONE North project	The proposed project consisting of up to 67 wind turbines, up to four offshore electrical platforms, up to one construction, operation and maintenance platform, inter-array cables, platform link cables, up to one operational meteorological mast, up to two offshore export cables, fibre optic cables, landfall infrastructure, onshore cables and ducts, onshore substation, and National Grid infrastructure.
East Anglia TWO project	The proposed project consisting of up to 75 wind turbines, up to four offshore electrical platforms, up to one construction, operation and maintenance platform, inter-array cables, platform link cables, up to one operational meteorological mast, up to two offshore export cables, fibre optic cables, landfall infrastructure, onshore cables and ducts, onshore substation, and National Grid infrastructure.
National Grid infrastructure	A National Grid substation, cable sealing end compounds, cable sealing end (with circuit breaker) compound, underground cabling and National Grid overhead line realignment works to facilitate connection to the national electricity grid, all of which will be consented as part of the proposed East Anglia TWO project Development Consent Order but will be National Grid owned assets.
National Grid substation	The substation (including all of the electrical equipment within it) necessary to connect the electricity generated by the proposed East Anglia TWO / East Anglia ONE North project to the national electricity grid which will be owned by National Grid but is being consented as part of the proposed East Anglia TWO project Development Consent Order.
Projects	The East Anglia ONE North project and the East Anglia TWO project.



# 1 Introduction

1. This document is applicable to both the East Anglia ONE North and East Anglia TWO Development Consent Order (DCO) applications (the Applications), and therefore is endorsed with the yellow and blue icon used to identify materially identical documentation in accordance with the Examining Authority's (ExA) procedural decisions on document management of 23 December 2019. Whilst for completeness of the record this document has been submitted to both Examinations, if it is read for one project submission there is no need to read it again.
2. The Issue Specific Hearing 16 (ISH16) for the Applications were run jointly and took place virtually on 26<sup>th</sup> May 2021 at 10:00am (the Hearings).
3. The Hearings ran through the items listed in the agendas published by the ExA on 12<sup>th</sup> May 2021. The Applicants gave substantive oral submissions at the Hearings and these submissions are set out within this note.
4. Speaking on behalf of the Applicants were:
  - Mr Colin Innes, partner at Shepherd and Wedderburn LLP;
  - Mr Brian McGrellis, onshore consents manager for the Projects;
  - Mr Paul Davies, associate director, chartered engineer and a chartered water and environmental manager at Arup; and
  - Mr Pedro Vicente, associate engineer at Royal HaskoningDHV.



## 2 Agenda Item 2: Design Matters

### 2.1 Substation Design Principles Statement

#### 2.1.1 Overview

5. The design principles to be adopted during the detailed design of the onshore substation, National Grid substation and cable sealing end compounds are presented within the **Substation Design Principles Statement** (document reference ExA.AS-6.D11.V3).
6. Throughout the pre-application and Examination stages of the Projects, the Applicants have recognised the localised sensitivities of the substation site, including the potential landscape and visual impacts, potential noise impacts and potential impact on the setting of the Church of St Mary, Friston.
7. Indeed, as part of the site selection process, the Applicants considered potential landscape and visual impacts and mitigation (**Environmental Statement (ES) Appendix 4.5** (APP-446)) of various potential substation sites. From the high-level Landscape and Visual Impact Assessment (LVIA) undertaken at the time, the Friston substation site was concluded to have significant effects on fewer landscape and visual receptors overall when compared to other potential locations, and importantly, it avoided significant effects on the special qualities of the nationally protected Area of Outstanding Natural Beauty (AONB) landscape. **ES Appendix 4.5** also recognised the need to produce a landscape masterplan for the Projects, the importance screening the site with existing blocks of woodland and the minimisation of the height and bulk of structures. This has informed the Order limits, the Applicants approach to land acquisition and the **Outline Landscape and Ecological Management Strategy** (REP10-005).
8. It is for these very reasons that the Applicants have, through early engagement with the supply chain, been able to adopt measures to significantly improve the design of the onshore substations which in turn reduces the impacts of the substations.
9. Such measures include reducing building and external equipment heights; comprehensive landscape screening; enhanced post-planting landscape management; reductions in noise levels; and an enhanced public right of way network.
10. Existing policy set out within the Overarching National Policy Statement for Energy (NPS-EN-1) makes clear the requirements of good design in energy projects, such requirements having been secured under the **Substation Design Principles Statement** (document reference ExA.AS-6.D11.V3).

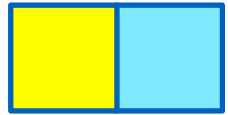


11. The measures set out in the **Substation Design Principles Statement** (document reference ExA.AS-6.D11.V3) will provide the necessary confidence to the ExA and Secretary of State that further design improvements will be implemented during the detailed design of the Projects to further reduce the environmental impact of the Projects, whilst providing the essential design flexibility for these nationally significant infrastructure projects.
12. With regard to the design of individual equipment items, the Applicants must progress an integrated design solution for the substation infrastructure to ensure a safe, efficient and cost-effective design whilst seeking to further reduce the environmental impacts of the substation infrastructure. The final configuration of individual items of equipment (such as harmonic filters) cannot be prejudiced at this early stage of design by further reducing their height. Rather the detailed design of the harmonic filters will be undertaken at the appropriate time and will take into account the available footprint, height constraints, heights of surrounding structures, noise levels, functional requirements and the certification of such equipment for use within the UK's national electricity system.
13. With regard to the number of cable sealing end compounds required to the National Grid substation, three of the four overhead line circuits will connect via a dedicated cable sealing end compound and one will connect directly into the National Grid substation (facilitated by the proximity of the National Grid substation to the pylon. One cable sealing end compound requires a circuit breaker due to the existing network configuration elsewhere on that particular circuit.
14. As one or both Projects must connect into four circuits, the cable sealing end compounds must

### 2.1.2 Design Champion

15. Substation Action Save East Suffolk (SASES) questioned the appointment of the nominated Design Champion for the Projects. The Applicants designate Mr Jonathan Cole, Managing Director, Iberdrola Renewables Offshore Wind Division, as the design champion for the Project in order to maintain the necessary focal point and co-ordination in the progression of good design for the Project's onshore substation the National Grid substation and cable sealing end compounds. Appointment of Mr Cole, reflects the findings of the National Infrastructure Commission's publication 'Design Principles for National Infrastructure' (National Infrastructure Commission, February 2020) which states that *"the Commission identified a need for championing of good design at board level on projects."*





### 2.1.3 Engagement Strategy

16. The **Substation Design Principles Statement** (document reference ExA.AS-6.D11.V3) provides for extensive engagement with local stakeholders. The design of the substations and their environs will be co-ordinated through the development of a Landscape Masterplan and an Architectural Framework document which will consider the various options for the finishes and styles of certain elements of the substation development.
17. Engagement will be undertaken in three stages:
  - **Engagement: Stage 1:** Engagement directly with residents in the immediate vicinity of the onshore substation and National Grid substation in order to discuss their expectations for landscaping in the vicinity of their properties;
  - **Engagement: Stage 2:** The draft Landscape Masterplan and Architectural Framework will be submitted for an independent and objective review by a nationally recognised impartial body (such as the Design Council, in consultation with East Suffolk Council (ESC)) to inform and guide the final design solutions. Parish Council and local resident engagement will also be undertaken during the development of the Landscape Masterplan and the Architectural Framework through a one-day workshop. Following the workshop, there will be a three-week period for attendees to provide further thoughts and feedback to the Applicants.
  - **Engagement: Stage 3:** Feedback from the workshop and the Design Council will be fed into the Landscape Masterplan and Architectural Framework as appropriate. Once a finalised draft is available, the documents will be circulated to the attendees of the workshop and residents in the immediate vicinity of the onshore substation and National Grid substation and a further one day workshop will be arranged to present the detail and explain the rationale behind the final decisions, and provide an opportunity for final comment.

### 2.1.4 Independent Design Review

18. SASES stated in the Hearings that the design of the substations and related infrastructure should be the subject of independent design review by industry leading independent power engineering consultants.
19. The Applicants consider it to be inappropriate for such a review to be undertaken. The detailed design of the substations will require extensive detailed system studies, power quality studies and procurement and warranty negotiations involving multiple suppliers over a period in excess of 12 months, in order to ensure an efficient, cost effective, safe and equipment compliant substation is delivered. It would not be feasible to carry out a review of the various stages at

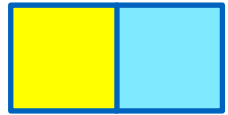


the end of that process. The concept of a “power design review” sounds simple but it fails to have regard to the key design and procurement processes involved. It would require a multiple disciplinary team and would take many months and could frustrate and delay the delivery of the Projects. The Applicants cannot embark on an extensive design and procurement process based on that uncertainty. Furthermore, the **Substation Design Principles Statement** (document reference ExA.AS-6.D11.V3) sets out the principles that the Applicants must adopt which will influence the detailed design process which will seek to make further reductions in substation footprint, height and received noise levels where cost effective, efficient and safe to do so.

20. The Councils have suggested a policy and technology design principle. It is not based on any evidence that there will be any further development in HVAC technology. The design principles most relate to the Applications that have been submitted and assessed through the EIA process and details which come forward for approval within the requirement must be within the ambit of the consent. The design principles are the correct mechanism for delivering further reductions in the environmental impact of the Projects.

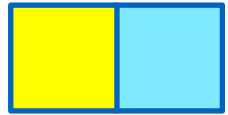
#### 2.1.5 East Anglia ONE Offshore Windfarm Design & Delivery Process

21. ScottishPower Renewables, as the parent company of East Anglia TWO Limited, East Anglia ONE North Limited and East Anglia ONE Limited, has demonstrated how the post consent detailed design process can successfully deliver a refined substation design. The design and delivery process adopted for the East Anglia ONE onshore substation comprised:
- Engagement with local communities and stakeholders pre-application;
  - Submission of an outline design principles statement with the DCO application;
  - Engagement with local communities and stakeholders post consent, as part of the detailed design process; and
  - Commissioning of the Design Council to undertake an independent design review of the onshore substation.
22. Indeed, the Design Council’s response to the EA1 project’s initial design brief submission recognised: *“the project team’s commitment to good design, the extensive research and analysis undertaken of the existing environment and careful consideration given to the site’s natural assets are an excellent starting point for this project”*.
23. The design process adopted resulted in improvements to the onshore substation design, including a reduction of 7m between the permitted maximum building height and the actual building height and a reduction of 1m on the as built external equipment height.



### 2.1.6 National Grid Substation

24. As previously stated by National Grid Electricity Transmission (NGET), detailed design of the National Grid infrastructure has yet to be undertaken and accordingly it has not been possible to reduce the footprint or size of the substation or sealing end compounds at this stage, nor to undertake any micro-siting of these elements of the development within their work areas.
25. The Rochdale envelope of the National Grid infrastructure presents the maximum design parameters, allow the worse-case environmental impacts to be assessed, and ensure that there is sufficient land to ensure that the National Grid infrastructure can be designed appropriately in light of both operational and safety considerations within the parameters.
26. As per the commitments within the **Substation Design Principles Statement** (document reference ExA.AS-6.D11.V3), NGET aim to reduce the footprint and size of their infrastructure to build only what is absolutely necessary for the Projects in the interests of the environment and financial efficiencies.
27. Indeed, NGET's 'lean design' philosophy means that during the selection, optioneering and design for any new National Grid asset, National Grid will look to build only what is required by the customers connection (i.e. the Projects' connection) and will only build with the smallest footprint possible using sustainable materials and building methods where economical to do so.

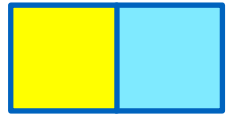


## 3 Agenda Item 3: Flood Risk and Drainage

### 3.1 Flood Risk and Drainage during Construction

#### 3.1.1 Lessons Learnt from East Anglia ONE

28. Suffolk County Council's (SCC's) position is that sub-optimal construction phase surface water drainage infrastructure within the East Anglia ONE offshore windfarm project's onshore cable route, would be repeated on the Projects as the widths of the onshore cable routes are comparable.
29. The Applicants note that as a responsible developer, lessons learnt workshops are held with technical stakeholders as was the case on the East Anglia ONE project. The East Anglia ONE construction team meet with the Councils representatives to undertake a collaborative 'lessons learnt' workshop. This workshop identified areas where both the developer and the Councils can improve or recognise and reinforce good practice from a construction and development control perspective, which would aid future projects.
30. The Applicants discussions with the East Anglia ONE construction team has confirmed that the that sub-optimal construction phase surface water drainage infrastructure was not due to lack of space within the onshore cable route, rather due to the abovementioned timing of the surface water management infrastructure being available.
31. With specific regard to the Projects, the Applicants have ensured that the Order limits are of sufficient width to accommodate a range of surface water and sediment control measures within the onshore development area. As an example, Plate 11.1 of the **Outline Code of Construction Practice** (document reference 8.9) illustrates how the onshore cable can be adopted to provide for settlement or Sustainable Urban Drainage System (SuDS) attenuation ponds where required, by the displacement of spoil stockpiles within the onshore cable route.
32. These settlement/SuDS basin areas can be created as often as required within the onshore development area to reflect the ground conditions and nature of the works being undertaken. Where reduced onshore cable route widths are required at important hedgerows, surface water would be conveyed a few meters away from the important hedgerow to where the onshore cable route expands to 32m in width, where a settlement/SuDS basin can be installed if required. Likewise at the woodland to the east and west of the Aldeburgh Road, surface water would simply be conveyed to the wider onshore cable route on the western bank of the Hundred River or the agricultural land to the south of Fitches Lane where a



settlement/SuDS basin can be installed if required. Soil handling will be managed through the soil management plan approved by the relevant planning authority to ensure protection of the soil structure.

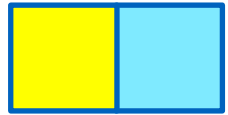
33. At the substation area, the whole of Work No. 33 is available for surface water management during construction, providing ample flexibility to develop an integrated surface water management system which can be expanded as construction works require.
34. The Applicants have also submitted further illustrations at Deadline 11 in response to hearing action point 6 (***Applicants' Response to Hearing Action Points (ISH16 and ISH17)*** (document reference ExA.HA.D11.V1)). The precise detail of any mitigation to be adopted will inevitably be a matter that can only be confirmed as part of the detailed design.

### 3.1.2 General requirements in England

35. There are no mandatory design standards for either flood risk or drainage capacity for temporary works. Although developers are expected by environmental regulation to mitigate against water pollution that may arise from construction processes, there are also no mandatory design standards for pollution protection measures. While there are penalties for causing pollution, there are no design standards or performance thresholds for pollution prevention. Through the ***Outline Code of Construction Practice*** (document reference 8.9), the Applicants have presented a range of measures that can be used to effectively mitigate surface water flows and potential pollution.

### 3.1.3 Site specific requirements

36. The construction works along the full onshore cable corridor have a proposed operational 'life' of two years; therefore, using a 1 in 5-year design event to size drainage conveyance would not be unreasonable.
37. If any part of the Order land was deemed sensitive to flood risk during detailed design, then the design threshold could be increased to provide additional protection to 1 in 10-year as an example.
38. The Applicants will further consider the design event period within the onshore cable route and at the substation area in response to the Hearing Action Point (REF).
39. The Applicants have made submissions on why a 1 in 100-year return period for construction run-off management as proposed by Sizewell C is not appropriate for the Projects in the ***Applicants' Response to Hearing Action Points (ISH16 and ISH17)*** (document reference ExA.HA.D11.V1).



## 3.2 Operational Flood Risk and Drainage

### 3.2.1 Results of Infiltration Testing

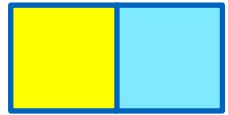
40. To better inform the Applications and demonstrate the potential extent to which infiltration options could be adopted, the Applicants commissioned Structural Soils Limited to carry out infiltration testing to BRE-365<sup>1</sup> at the locations in proximity to the proposed onshore substations and National Grid substation SuDS basins.
41. Initial Tests were carried at seven locations within the footprint of the proposed SuDS basins. Pits TP012a, TP013a and TP014a were located in the footprint of the National Grid Substation SuDS basin and, TP015a, TP016a, TP017a and TP330a were located in the potential footprint of the onshore substations SuDS basin.
42. The Applicants note that BRE-365 recommends three tests to be carried out at each location, which was not achieved during the initial infiltration tests due to time constraints in obtaining information for ISH16. The Applicants are continuing the infiltration testing once their contractor is fully mobilised to the substation site and are undertaking three tests at six locations from 21<sup>st</sup> May 2021. The Applicants will submit the results of these further tests, along with an updated **Outline Operational Drainage Management Plan** as soon as possible after Deadline 11.
43. The Applicants consider that these initial results substantiate that their proposed SuDS drainage basins (hybrid or attenuation only) can be accommodated within the initial layout proposed.
44. It is noted that the extent to which infiltration can be utilised will also depend on the depth of ground water at the SuDS ponds which has yet to be established.

### 3.2.2 Outline Operational Drainage Management Plan

45. The proposed drainage system, irrespective of whether an attenuation, hybrid or infiltration solution is adopted, will intercept all storm events up to a 1 in 100-year plus 40% climate change and restrict the outflow from the site, down to Qbar. Therefore, the development of the Projects will significantly reduce the flow from this area, which will have significant benefit in reducing any downstream flooding.
46. The Applicants have applied the drainage hierarchy approach as recommended by the Local Lead Flood Authority in order to maximise the use of infiltration with a proposed solution that will not increase flood risk in Friston.
47. The preliminary results of the initial infiltration testing (**Applicants' Response to R17 Questions of 13 May- Initial Infiltration Testing Preliminary Results** (AS-

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<sup>1</sup> BRE-365 Digest: Soakaway Design (2016)



121)) indicated the potential for infiltration to form a part of the drainage solution, the extent of which will be determined by the more detailed infiltration testing.

48. As mentioned above, the Applicants will submit an updated **Outline Operational Drainage Management Plan** as soon as possible after Deadline 11 following receipt and review of the updated infiltration tests carried out recently.

### 3.2.3 Surface Water Discharge Point Concept Design

49. The Applicants have considered representations raised at previous hearings regarding the culverted solution proposed under Church Road. These include potentially limited space suitable road construction and the general detail around the inlet into the culvert. The Applicants have reviewed the concept design and consider that a buried piped outlet solution for the outfall from the National Grid and onshore substations SuDS basins. This could be accommodated under the existing road allowing approximately 150mm of cover which is permitted under the New Roads and Street Works Regulations subject to the agreement with the local highway authority, would not compromise existing services and would not require expansion joints on the road surface.
50. The Applicants believe that the piped option is a suitable solution for the constraints found at this location.
51. As requested by the ExA, the Applicants have submitted at Deadline 11 an inset plan clearly showing the piped option within the Order limits as requested at action point 11 (**Applicants' Response to Hearing Action Points (ISH16 and ISH17)** (ExA.HA.D11.V1)). This information will be shared with Suffolk County Council also in advance of Deadline 11.

### 3.2.4 Relationship with OLEMS and Nearby Heritage Assets

52. The ExA's Rule 17 Letter dated 13<sup>th</sup> May 2021 requested a number of drawings showing different possible layout scenarios for the onshore substations and National Grid substation proposed for the Projects.
53. The ExA requested that drafts of such drawings should be submitted in advance of the Hearings and the Applicants submitted the draft figures A-F on 21<sup>st</sup> May 2021 of the Appendix contained in the **Applicants' Response to Rule 17 Questions of 13 May – Design and Layout of the Substations'** (AS-122). These included indicative areas of all three operational drainage scheme options (i.e. infiltration only; hybrid; and attenuation only), with a factor of safety of 5, shown as concentric circles and a further version of Drawing E illustrating the indicative areas required to accommodate a factor of safety of 10. The illustration of the latter scenario has been chosen as it represents the worst case scenario that includes onshore substations and National Grid AIS substation along with the three operational drainage options in order to test whether or not the



mitigation planting and the SuDS options could co-exist on the site without reducing the mitigation presented in the **Outline Landscape Mitigation Plan** (REP4-015) and assessed in the LVIA in **ES Chapter 29** (APP-077) and **Landscape and Visual Assessment Addendum** (REP4-031).

54. The indicative areas calculated have been illustrated as concentric circles alongside the SuDS shown on the **Outline Landscape Mitigation Plan** (REP4-015) so that their relative sizes can be understood.
55. Regarding visibility of the SuDS basins from St Marys Church, Friston, given that the SuDS basins are essentially depressions in the ground which are normally dry and grassed, and that the existing hedgerows present between the SuDS basins and the church, and the additional planting proposed, the SuDS basins will not be distinguishable from St Marys Church. The Applicants consider that the surface water drainage can be integrated into the landscape framework whilst also ensuring that the landscaping does not adversely affect the performance of the drainage infrastructure.