



East Anglia ONE North and East Anglia TWO Offshore Windfarms

Applicants' Responses to the Secretary of State's Questions of 2nd November 2021 (Item 3)

Applicants: East Anglia ONE North Limited and East Anglia TWO Limited
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Glossary of Acronyms

CoCP	Code of Construction Practice
DCO	Development Consent Order
EIA	Environmental Impact Assessment
ES	Environmental Statement
ESC	East Suffolk Council
LLFA	Lead Local Flood Authority
NPPF	National Planning Policy Framework
NPS EN-1	Overarching National Policy Statement for Energy
OODMP	Outline Operational Drainage Management Plan
SCC	Suffolk County Council
SoS	Secretary of State
SuDS	Sustainable Drainage System

Glossary of Terminology

The Applicants	East Anglia TWO Limited / East Anglia ONE North Limited
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.

1 Introduction

1. This document has been prepared by East Anglia TWO Limited and East Anglia ONE North Limited (the Applicants) in relation to the East Anglia TWO and East Anglia ONE North Development Consent Order (DCO) applications (the Applications). It provides information regarding flood risk in response to Part 3 of both letters published by the Secretary of State for Business, Energy and Industrial Strategy (SoS) on 2nd November 2021 (the SoS letters).
2. Although the SoS letters relate to the East Anglia TWO and East Anglia ONE North Offshore Windfarm projects respectively, the contents of each are identical. This document is therefore applicable to both projects (the Projects).

1.1 Purpose

3. Part 3 of the SoS letters invites comment on the following:
 - *“The Secretary of State notes that in July 2021 the National Planning Policy Framework was updated and in particular at paragraph 159 onwards in relation to flood risk assessment. The Applicant and Interested Parties are invited to provide any comments they may have in light of these changes.*
 - *The Applicant and Interested Parties are invited to comment on the implications of the Environment Agency’s 20 July 2021 update on climate change allowances for Flood Risk Assessment, which updated peak river flow allowances and changed the guidance on how to apply these.*
 - *The Environment Agency is asked to comment on the sufficiency of:*
 - *The existing measures within the construction Surface Water and Drainage Management Plan (located within the updated Outline Code of Construction Plan); and*
 - *The 1 in 15 (for the substation site) and 1 in 10 (for the cable corridor) return periods proposed by the Applicant. Taking into consideration the associated responses from the Applicant, Suffolk County Council and Interested Parties, and the recent flood event in Friston.*
 - *The Applicant is requested to provide details of what it could reasonably achieve to extend its construction surface water drainage scheme so that the return period which it can accommodate is maximised”.*

4. This document provides responses to each of the above points. The structure of the remainder of this document is as follows:
- **Section 2** presents background information on how the Projects considered flood risk and drainage to meet the requirements of all relevant legislation, guidance and planning policy in place at the time of Applications.
 - **Section 3** provides a response to Part 3i of the SoS letters regarding updates to the National Planning Policy Framework (NPPF).
 - **Section 4** provides a response to Part 3ii of the SoS letters regarding updates to the Environment Agency's climate change allowances.
 - **Section 5** provides a response to Part 3iii of the SoS letters regarding updates to the Projects' Code of Construction Practice (CoCP).
 - **Section 6** provides a response to Part 3iv of the SoS letters regarding proposals for surface water management and drainage during construction of the Projects.

2 Background

2.1 Site Selection

5. Site selection, design and refinement of the Projects (as detailed fully in Environmental Statement (ES) **Chapter 4 Site Selection and Assessment of Alternatives** (APP-052)) has been an iterative process accounting for environmental, physical, technical, commercial and social considerations / opportunities, as well as engineering requirements. The decisions made during site selection were based upon the analysis of data gathered from a range of sources, including primary data obtained during a series of specialist site surveys, and aided by the use of well-established appraisal tools to allow the clear and direct comparison of options (e.g. ES **Appendix 4.2 Red/Amber/Green (RAG) Assessment for Onshore Substations Site Selection in the Sizewell Area** (APP-443)).
6. The site selection process had regard to legislation (e.g. the Electricity Act 1989), policy (e.g. the NPPF, Overarching National Policy Statement for Energy (NPS EN-1), National Policy Statement for Renewable Energy Infrastructure (NPS EN-3), National Policy Statement for Electricity Networks Infrastructure (NPS EN-5)) and established guidance (e.g. National Grid's Horlock and Holford Rules).
7. In accordance with the guidance set out in both the NPS EN-1 and NPPF, the locations identified for the onshore substations and National Grid infrastructure are entirely within Flood Zone 1 and therefore on land that is at the lowest risk of fluvial flooding (defined as land which has a less than 1 in 1,000 annual probability of river flooding (<0.1%)).
8. The onshore substation and National Grid infrastructure locations were also reviewed against the Environment Agency's surface water flood risk mapping and identified as being located in an area predominantly at very low risk of surface water flooding. Furthermore, the National Grid substation location was selected in full cognisance of the presence of a shallow surface water flow route (comprising approximately 4cm of water depth during a 1 in 100 year storm event), noting that such features can be diverted, and their continued conveyance ensured using well established and proven techniques. A commitment to this is made within the **Outline Operational Drainage Management Plan** (OODMP) (REP13-020), along with a commitment to offset any reduction in volume relating to other existing surface water features affected at the substation locations.
9. Suffolk County Council (SCC) (as Lead Local Flood Authority (LLFA)) provided the Applicants with its flood incident records in July 2018. All records were reported as having a low priority and were generally located along the B1121 Saxmundham Road and not in proximity to the onshore substation and National

Grid infrastructure locations. This information was reviewed as part of the evidence base for **Appendix 20.3 Flood Risk Assessment** (APP-496) of the Applications.

10. On 19th November 2019 (following submission of the Applications) SCC reported that a surface water flooding event had occurred within Friston during October 2019. SCC commissioned the Friston Surface Water Study (BMT, 2020) to assess flooding events in Friston. This was effectively undertaken as a Section 19 Investigation, as required by the Flood and Water Management Act 2010 in response to a significant flooding event. The study models surface water flow routes and verifies them using historic information on flooding events within Friston to provide a robust assessment that puts the flood risk in a numerical context without relying on anecdotal evidence.
11. Analysis of the technical data that support the Friston Surface Water Study (see **section 3.6.1** of the **OODMP** (REP13-020)) confirms that there is no flood risk hazard to the onshore substation and National Grid infrastructure locations. Additionally, the study shows that flooding within Friston primarily results from surface water flow from a number of sources unrelated to the onshore substations and National Grid infrastructure locations. This is further acknowledged by SCC and East Suffolk Council (ESC) within the **Statement of Common Ground: East Suffolk Council and Suffolk County Council** (REP12-070), where they agree that *“flood events in the Friston area, resulting from overland flow, that occurred during late 2019 – early 2020 was a result of multiple flow paths and not a direct result of surface water runoff from land associated with the proposed site of the onshore substation or the National Grid infrastructure”*.

2.2 Operation of the Projects

12. Following the gathering and consideration of extensive baseline data to determine current conditions onsite and in the surrounding area, a Sustainable Drainage System (SuDS) has been designed for the Projects, by which surface water originating from the site of the onshore substations and National Grid infrastructure during operation will be managed for the benefit of both the site itself and the downstream environment and receptors. A tiered approach has been taken to selecting the most suitable SuDS. The proposed solution has been informed by site specific infiltration testing. The key parameters of the outline design presented within the **OODMP** (REP13-020) have been agreed with SCC (as the LLFA). Based on this, and again with the agreement of the LLFA, a hybrid infiltration and attenuation design has been selected for the onshore substations and an attenuation only design for the National Grid infrastructure.
13. The proposed SuDS includes an operational surface water discharge provision connecting to the Friston Watercourse (identified as a Main River by the

Environment Agency). The discharge rate will be set at the existing greenfield runoff rate established through the catchment hydraulic model. This will be agreed in consultation with the SCC (as the LLFA) post-consent.

14. Consideration and design of the Projects' SuDS has been undertaken in line with the SuDS drainage hierarchy in Chapter 3 of the CIRIA SuDS Manual (2015), as well as with local policies provided by SCC (as LLFA) in its SuDS drainage guidance. The proposals for the Projects in fact surpass the design standards required as per the CIRIA SuDS Manual (2015). Policy SCLP9.5: Flood Risk and Policy SCLP9.6: Sustainable Drainage Systems of the East Suffolk Council Local Plan have also both been reviewed in the context of the Projects and the Projects are compliant with these.
15. In summary, the flood risk and drainage measures to be implemented by the Projects will ensure there is no risk of surface water flooding to the proposed infrastructure, either from the existing flow route or through the increase in impermeable areas. Furthermore, by maximising the use of infiltration in the detailed operational drainage design, attenuating surface water and ensuring a controlled discharge rate from the site, there is no increased risk of flooding to the surrounding area, and specifically Friston, as a result of the Projects.
16. Indeed, implementing a controlled surface water strategy as part of the Projects, by which surface water is retained in the SuDS basins and allowed to infiltrate or be released to the Friston Watercourse at a controlled greenfield rate, will provide benefits to the downstream catchment of Friston as the flow during extreme events will be markedly reduced when compared to the existing situation.

2.3 Construction of the Projects

17. Surface water and drainage management during construction has also been fully considered in the Projects' design and proposals are outlined in **Section 11** of the **Outline CoCP** (REP13-005) and supplemented by **Section 6** of this document. Preparation of a Surface Water and Drainage Management Plan and Flood Management Plan are secured within the **draft DCO** (REP12-013) and these will be prepared as part of the final CoCP.
18. As stated in **Section 2.1** above, flooding within Friston primarily results from surface water flow from a number of sources unrelated to the onshore substation and National Grid infrastructure locations. Notwithstanding this, the comprehensive construction surface water control measures proposed will reduce uncontrolled flows from the substations site towards Friston.

3 Part 3i: National Planning Policy Framework

19. Part 3i of the SoS letters states *“The Secretary of State notes that in July 2021 the National Planning Policy Framework was updated and in particular at paragraph 159 onwards in relation to flood risk assessment. The Applicant and Interested Parties are invited to provide any comments they may have in light of these changes”*.
20. In July 2021 the NPPF (particularly paragraph 159 onwards) was updated in relation to flood risk assessment. This linked with the Environment Agency concurrently updating its guidance on climate change allowance (addressed in more detail in **Section 4** of this document). Although previously the NPPF and accompanying Planning Practice Guidance stated that all sources of flooding should be considered in relation to proposed developments, the criteria to be applied in assessing whether development is appropriate or not, was focused on fluvial and tidal flooding. For example, it was the fluvial and tidal flood zones which, alongside the vulnerability of a development type, formed the criteria for the basis of an assessment when undertaking the Sequential Test, and when determining whether the Exception Test was required for a proposed development.
21. The updated NPPF is more explicit in the use of the term ‘any source’ of flooding. For example, paragraph 162 of NPPF states *“The aim of the sequential test is to steer new development to areas with the lowest risk of flooding from any source. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding”*. Paragraph 19 of the updated Planning Practice Guidance (August 2021) states that *“Within each flood zone, surface water and other sources of flooding also need to be taken into account in applying the sequential approach to the location of development”*. However, within the updated NPPF, the criteria for the assessment and application of the Sequential Test remains unchanged with a need to undertake a comparison between the vulnerability of a development and the flood zones.
22. The revised focus of the wording in the NPPF and accompanying Planning Practice Guidance acknowledges the need to consider all sources of flooding; however, it does not provide any criteria for their assessment or their suitability in terms of location (similar to that provided for the flood zones and vulnerability of a development) which can be used to determine whether a development is appropriate or not.

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23. While the Applicants have considered all sources of flooding, in the absence of any criteria as to how this should be implemented, they have sought to address the potential risk from surface water flooding by locating the onshore substations and National Grid infrastructure in an area at low risk of surface water flooding, and by adopting appropriate mitigation measures within the design to address any remaining surface water flood risk concerns.
24. In considering the revised wording it is also noted that SCC (as the LLFA) had already given surface water flooding equal weighting when reviewing the Projects' assessment of flood risk throughout the DCO examinations and prior to the publication of the updated NPPF.
25. All development sites have an element of potential surface water flood risk and any development that changes the surface of a site so that it is more impermeable will need to address this matter through the application of appropriate mitigation measures. There is greater emphasis in the updated NPPF on "*...making as much use as possible of natural flood management techniques as part of an integrated approach to flood risk management...*", which is part of the shift in focus away from hard engineering solutions. However, this is not considered to be a fundamental change that would alter the Projects' Drainage Strategy or the adoption of the proposed SuDS measures. It should also be noted that the extensive landscape planting being proposed as part of the Projects' landscape mitigation strategy would reduce the speed of surface water runoff compared to that currently experienced, as well as soil erosion and silt levels in runoff. On this basis, the landscape mitigation strategy will afford opportunities for further flood mitigation over and above that already included within the concept drainage design.
26. Regarding surface water flooding, the onshore substation and National Grid infrastructure locations were reviewed against the Environment Agency's surface water flood risk mapping and identified as being predominantly located in an area at very low risk of surface water flooding. Furthermore, the National Grid substation location was selected in full cognisance of the presence of a shallow surface water flow route (comprising approximately 4cm of water depth during a 1 in 100 year storm event), noting that such features can be diverted, and their continued conveyance ensured using well established and proven techniques. A commitment to this is made within the **OODMP** (REP13-020), along with a commitment to offset any reduction in volume relating to other existing surface water features in the vicinity of the substation locations.
27. Additionally, a review of the modelling undertaken for the Friston Surface Water Flood Study (BMT, 2020) further confirmed that the surface water conveyance routes onsite do not constitute a significant risk to the onshore substations or National Grid infrastructure, and that the risk falls well below the lowest hazard
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threshold used within the Environment Agency assessment criteria. Most notably, the study confirms that surface water flooding within Friston primarily results from surface water flow from a number of locations unrelated to the onshore substations and National Grid infrastructure locations.

28. The wording of the updated NPPF does not change the understanding of flood risk to or from the Projects, and how the need to manage and mitigate this risk is acknowledged and considered. The onshore substations and National Grid infrastructure will be located on land which is not at risk from fluvial flooding and is predominantly at very low risk of surface water flooding. The Projects have proposed measures within the design to ensure there will be no risk of surface water flooding to the proposed infrastructure, either from the existing conveyance route or through the increase in impermeable area. Furthermore, by attenuating surface water and ensuring a controlled discharge rate from the site there is no increase in flood risk to the surrounding area, specifically Friston. The Projects as proposed are therefore fully aligned with the updated NPPF.
29. In summary, there are no fundamental changes to approach in the updated NPPF. Any changes relate primarily to focus and detail. Many aspects of the NPPF remain the same, including the concepts of not increasing flood risk elsewhere and the need to consider flood risk when locating development, which have already been accommodated within the design of the Projects.

4 Part 3ii: Environment Agency Climate Change Allowances

31. Part 3ii of the SoS letters states *“The Applicant and Interested Parties are invited to comment on the implications of the Environment Agency’s 20 July 2021 update on climate change allowances for Flood Risk Assessment, which updated peak river flow allowances and changed the guidance on how to apply these”*.
32. Updates to the Environment Agency climate change allowances (July 2021) were limited to the provision of guidance on the application of peak river flow allowances; there was no change to the guidance on either peak rainfall intensity (used in the assessment of surface water) or sea level rise.
33. As set out in **Section 2** and **Section 3**, there is very limited fluvial flood risk to the onshore substation and National Grid infrastructure locations (notably all are located well within Flood Zone 1 – land identified as having the lowest risk of fluvial flooding). **Appendix 20.3 Flood Risk Assessment** (APP-496) of the Applications considers the peak river flow allowance that would be applicable to these locations.
34. Notwithstanding the above, in relation to the risk from surface water flooding, during consultation following submission of the Applications, SCC (as the LLFA) requested that a 40% uplift for climate change be applied to the Projects’ operational drainage design and this was accordingly adopted within the **OODMP** (REP13-020). Within the updated Environment Agency climate change allowances (July 2021), the 40% uplift to peak rainfall intensity relates to the 2080s epoch and is the most conservative value stipulated.
35. The updated Environment Agency climate change allowances guidance (July 2021) therefore has no implications for the Projects and the allowances already applied within the **OODMP** (REP13-020) are the highest that the Environment Agency has identified in relation to peak rainfall intensity.

5 Part 3iii: Outline Code of Construction Practice

37. Part 3iii of the SoS letters states *“The Environment Agency is asked to comment on the sufficiency of:*
- *the existing measures within the construction Surface Water and Drainage Management Plan (located within the updated Outline Code of Construction Plan);*
 - *the 1 in 15 (for the substation site) and 1 in 10 (for the cable corridor) return periods proposed by the Applicant. Taking into consideration the associated responses from the Applicant, Suffolk County Council and Interested Parties, and the recent flood event in Friston”.*
38. It is noted that this request is directed to the Environment Agency and therefore no comment has been provided in this document.

6 Part 3iv: Surface Water and Drainage Management During Construction

39. Part 3iv of the SoS letters states “*The Applicant is requested to provide details of what it could reasonably achieve to extend its construction surface water drainage scheme so that the return period which it can accommodate is maximised*”.
40. **Section 11** of the **Outline CoCP** (REP13-005) presents construction drainage proposals for the onshore cable route based on the 1 in 10 year storm event return period, and for the onshore substation and National Grid infrastructure locations based on a 1 in 15 year storm event return period. These storm return periods would accommodate over three times the relevant construction durations.

6.1 Onshore Cable Route

41. Construction works associated with the onshore cables will be temporary and transient in their nature. The vast majority of the onshore cable route crosses rural, agricultural land where the impacts associated with flooding are likely to be less than in residential locations and the potential for surface water runoff to dissipate is greater.
42. In determining that the 1 in 10 year return period should be used several scenarios have been modelled and the necessary storage volumes and drainage basin dimensions identified. As noted in **Table 11.2** of the **Outline CoCP** (REP13-005), accommodating the 1 in 10 year return period along a 100m stretch of the onshore cable route would require 49m³ of attenuation, necessitating a drainage basin of 16m in length with a 1m water depth.
43. It is considered unnecessary and inappropriate to undertake additional excavations, additional earth movements and increased land / subsoil disturbance in order to accommodate an increase in return period. Indeed, committing to a 1 in 10 year return period is not only in line with the recommendations of Control of water pollution from linear construction projects (C649) (CIRIA, 2006), but goes beyond comparable linear projects which typically do not set out a minimum return period during the construction phase.
44. Use of the 1 in 10 year storm event return period is therefore considered appropriate for construction of the onshore cable route.

6.2 Onshore Substation and National Grid Infrastructure Locations

45. Current construction drainage proposals for the onshore substation and National Grid infrastructure locations include accommodating a 1 in 15 year storm event return period with a temporary drainage basin(s) that has a maximum water depth of 1m (in line with Appendix A – Sustainable Drainage Systems (SuDS) A Local Design Guide (2018) of SCC's Flood Risk Management Strategy).
46. However, the 1m water depth is promoted for reasons of health and safety on sites that are publicly accessible. It is noted that during construction of the onshore substations and National Grid Infrastructure the basin(s) will be temporary and also contained within a secure site that will have a continuous security presence, and to which there will be no public access. Basin(s) with a water depth greater than 1m are therefore considered feasible.
47. Recognising the sensitivity around flood risk within the local communities, the Applicants have investigated options to increase the return period through continued engagement with the Projects' construction management teams.
48. By increasing the depth of the construction drainage basin(s) and reducing the total basin area to allow for additional spoil storage, it will be possible to accommodate an increase from a 1 in 15 year to a 1 in 30 year storm event return period within the construction drainage design for the onshore substations and National Grid infrastructure. In doing so, reduced but nevertheless sufficient flexibility to construct the Projects would be retained whilst further reducing the uncontrolled flows from the substations site towards Friston.
49. Should the SoS consider it necessary for a 1 in 30 year storm event return period to be accommodated within the construction drainage design for the onshore substations and National Grid infrastructure, in order to make the Projects acceptable in planning terms, then the Applicants would suggest that it is secured through an amendment to requirement 22 (CoCP) of the DCO. The Applicants submit that the following amendment (shown in red below) would secure this:

22. Code of construction practice

(1) No stage of the onshore works may commence until for that stage a code of construction practice (which must accord with the outline code of construction practice) has been submitted to and approved by the relevant planning authority.

(2) The code of construction practice must include—

(a) a surface water and drainage management plan;

(b) a flood management plan which includes proposals to accommodate a 1 in 30 year storm event return period within the construction drainage design for Work Nos. 30, 31, 34, 38, 41 and 42;

[...]

7 Summary

50. As noted, this document has been prepared to provide comments on the SoS letters of 2nd November regarding the Projects and flood risk. The document responds to each of the items raised in the SoS letters and presents background information on how the Projects have considered flood risk and drainage to meet the requirements of all relevant legislation, guidance and planning policy. Key points regarding the Projects that can be drawn from the information presented are summarised as follows:

- The onshore substation and National Grid infrastructure locations are within an area that is at the lowest risk of fluvial flooding (entirely within Flood Zone 1 – defined as land which has a less than 1 in 1,000 annual probability of river flooding (<0.1%)) and very low risk of surface water flooding. The continued conveyance of surface water can be ensured through the use of well-established and proven techniques, and a commitment to this is made within the **OODMP** (REP13-020).
- The surface water flow that feeds flooding events within the village of Friston primarily comes from a number of locations unrelated to the onshore substations and National Grid infrastructure locations. This has been confirmed by the Friston Surface Water Study (BMT, 2020) commissioned by SCC (as LLFA), which models surface water flow routes and verifies them using historic information on flooding events within Friston (see detailed analysis presented in **section 3.6.1** of the **OODMP** (REP13-020)). This is further acknowledged by SCC and ESC within the **Statement of Common Ground: East Suffolk Council and Suffolk County Council** (REP12-070).
- The Projects' operational SuDS have been designed to highly conservative standards that in fact surpass the requirements set out in the relevant legislation, policy and guidance, including recent updates made to the NPPF (July 2021) and the Environment Agency climate change allowances (July 2021).
- By implementing the proposed SuDS, not only will there be no increased risk of flooding to the surrounding area as a result of the Projects, but there will be downstream benefits for locations such as Friston as the attenuation and controlled release of surface water from the site during extreme events will ensure that its flow is reduced when compared to the existing situation.
- The 1 in 30 year storm event return period within the construction drainage design for the onshore substations and National Grid infrastructure, as committed to within this document, further reduces the uncontrolled flows from the substations site towards Friston.