



The Planning Act 2008

East Anglia One North (EA1N) and East Anglia Two (EA2) Offshore Wind Farms

Planning Inspectorate Reference: EA1N – EN010077, EA2 – EN010078

Deadline 3 - 15 December 2020

Comments of Suffolk County Council as Lead Local Flood Authority

1. Post hearing submissions including written submissions of oral case (if required).

1.1 See separate submission.

2. Response to ExA's further written Questions (ExQ2) (if required).

2.1 Not applicable.

3. The Applicants revised draft DCO (dDCO).

3.1 Not applicable.

4. Any revised /updated SoCG (if any).

4.1 Not applicable.

5. Comments on any additional information/submissions received by Deadline 2.

Scottish Power Renewables, SuDS Infiltration Note, EA1N EA2-DWF-ENV-REP-IBR-001131, 17/11/2020

Paragraph No	SPR Statement	SCC Comment
2	<p>The Applicants have been asked by SCC to demonstrate that there is sufficient space within the Order limits of the onshore substation location and the National Grid substation location to accommodate infiltration features with a worst case infiltration rate of 10mm/hr and an appropriate factor of safety (LA-005 of the Water Resources and Flood Risk Statement of Common Ground). SCC also requested that the Applicants demonstrate compliance with the SCC guidance for SuDS design (2018).</p>	<p>Key points highlighted for latter reference.</p>
4	<p>It is noted that the basis of the design presented within the Applications is for SuDS attenuation ponds with a discharge connection to the Friston watercourse. This represents a reasonable design for the Projects.</p>	<p>This does not demonstrate compliance with the surface water disposal hierarchy. If infiltration is demonstrated to be achievable ($\geq 10\text{mm/hr}$) and viable (e.g. after further geological assessment RE potential for spring lines in Friston), this option must be pursued and prioritised as per national and local policy & guidance. National Planning Policy Guidance (Paragraph: 080 Reference ID: 7-080-20150323), CIRIA SuDS Manual, Suffolk Flood Risk Management Strategy – Appendix (page 13), Suffolk Coastal Local Plan (Policy SLP9.6)</p>

5	The Outline Code of Construction Practice (APP-578) covers surface water and drainage requirements during construction, including sediment management and pollution prevention.	The Outline Code of Construction Practice identifies principles but does not demonstrate that any of the proposed mitigation is deliverable within the red line boundary.
9.	SCC guidance also states that the aim of a SuDS design <i>“should be to discharge surface water runoff as high up the following hierarchy of drainage options as reasonably practicable: i) into the ground (infiltration); ii) to a surface water body (attenuation); iii) to a surface water sewer, highway drain or another drainage system; or iv) to a combined sewer”</i>	For reference, quotes SCC guidance RE surface water disposal hierarchy, which mirrors NPPG. As per my response to Paragraph 4 of the SuDS Infiltration Note, the proposals do not propose to comply with this hierarchy.
11.	The Construction Industry Research and Information Association (CIRIA) SuDS Manual (2015) states that <i>“Where components are designed to manage the 1:10 year or 1:30 year event, it is usual to specify that half emptying occurs within 24 hours. If components are designed to infiltrate events greater than the 1:30 year event, designing to half empty in 24 hours can result in very large storage requirements and, with agreement from the drainage approving body, it may be appropriate to allow longer half emptying times”</i> .	SCC require a half drain time of 24 hours for 1:100+CC. If this is not achievable then it should be demonstrated that any attenuation structures can accommodate an additional 1:10 storm event after 24 hours.
15	In order to demonstrate that sufficient space is available within the Order limits	It is unclear why only 50% of impermeable surfaces have been accounted for in the calculations. Having visited EA1 substation, it is

	<p>at the onshore substation location and the National Grid substation location to accommodate infiltration features, the following parameters have been modelled:</p> <ul style="list-style-type: none"> • 50% impermeable surface area for the onshore substations and National Grid infrastructure areas of hardstanding; 	<p>apparent that the entire substation is made of an impermeable construction. If areas of ground have been excluded on the basis that they will be constructed using pervious surfaces (e.g. gravel), these areas must still be included in the calculations on the basis that they will function as part of the engineered drainage system as a pervious surface (CIRIA SuDS Manual pgs 386 – 435). They would cease to generate runoff in a greenfield manner.</p> <p>It is also noted the sealing end compounds are only designed as being 50% impermeable. Again, no justification is provided for this.</p>
Table 3.1		<p>On the basis of my above comments for Paragraph 15, this Table is incorrect.</p> <p>It should also be noted that the areas occupied by the basins should also be included in the impermeable area calculations. Once these areas are holding water, they are unable to function in a greenfield manner and will contribute to the runoff volume requiring storage.</p>
21	<p>It will include a combination of infiltration measures and a connection to the Friston watercourse in the vicinity of Church Road.</p>	<p>This does not demonstrate compliance with the surface water disposal hierarchy. If infiltration is demonstrated to be achievable ($\geq 10\text{mm/hr}$) and viable (e.g. after further geological assessment RE potential for spring lines in Friston), this option must be pursued and prioritised as per national and local policy & guidance.</p> <p>National Planning Policy Guidance (Paragraph: 080 Reference ID: 7-080-20150323), CIRIA SuDS Manual, Suffolk Flood Risk Management Strategy – Appendix (page 13), Suffolk Coastal Local Plan (Policy SLP9.6)</p>
23	<p>It will incorporate infiltration measures, where appropriate, but will retain a discharge connection to the Friston watercourse</p>	<p>This does not demonstrate compliance with the surface water disposal hierarchy. If infiltration is demonstrated to be achievable ($\geq 10\text{mm/hr}$) and viable (e.g. after further geological assessment RE potential for spring lines in Friston), this option must be pursued and prioritised as per national and local policy & guidance.</p> <p>National Planning Policy Guidance (Paragraph: 080 Reference ID: 7-080-20150323), CIRIA SuDS Manual, Suffolk Flood Risk Management</p>

		Strategy – Appendix (page 13), Suffolk Coastal Local Plan (Policy SLP9.6)
23	The Applicants have committed to ensuring that the final design of the SuDS will not increase the rate of discharge to the Friston watercourse over that currently experienced during storm events. The connection to the Friston watercourse remains an integral part of the Projects	<p>SCC awaits details from the Applicant on this matter.</p> <p>The design of the SuDS is not the only issue here. The existing surface water drainage network in this catchment is complicated. The proposals will sever land drains, remove ordinary watercourses & an offline storage structure. There are no proposals to mitigate these impacts to date which could result in an increase in volume of surface water discharging to the Main River in Friston. Not directly from the SuDS, but as a direct consequence of associated works.</p> <p>SCC questions whether the applicant would be willing to commit to baseline and long term monitoring of flows in the Main River through Friston? Potentially supplemented by a rain gauge located nearby. If post-consent & construction flows were found to have increased, would the applicant be willing, in principle, to implement additional mitigation? This would be in addition to assessing and mitigating the identified impacts.</p> <p>As previously stated in this response, a connection to the Friston Main River may not comply with the surface water disposal hierarchy if infiltration is shown to be achievable and viable.</p>
Calculations		<p>In addition to points previously covered, the below should also be noted;</p> <ul style="list-style-type: none"> • A Factor of Safety (FoS) of 1 has been used – as per Paragraph 2 of this submission, SCC have been quite clear that this matter needs to be considered. Given the known downstream flood risk, a FoS of 1 is not suitable. Not in text assessment/justification for the chosen FoS has been provided. Whilst we note the impact this may have on layout/land take, this should not influence the

		<p>chosen parameters and is only required due to the lack of infiltration testing prior to submission.</p> <p>It is worth noting that a FoS of 1 is actually lower than the lowest FoS possible on CIRIA SuDS Manual, CIRIA Report 156 & Suffolk Flood Risk Management Strategy. This leaves SCC querying whether this aspect has been given any consideration whatsoever?</p> <p>The Applicant should justify the Cv values used in the calculations. Only impermeable areas have been used for the calculations.</p>
Design assumptions		<p>No information has been submitted to demonstrate that other design assumptions, such as side slope gradient comply with SCC Guidance, as per Paragraph 2 of this submission.</p> <p>Unclear whether the proposed design can deliver Interception.</p>

Applicants' Comments on Local Impact Report

LiR Topic	Applicants' Comments	SCC Response
<p>Paragraphs 11.7 to 11.17 Surface water flooding in Friston</p>	<p>In response to paragraph 11.16 of the LIR, the Applicants have incorporated provision for adequate surface water management within the onshore cable corridor and CCS, details of which will be finalised within the final CoCP.</p> <p>As stated in Table 20.3, Chapter 20 of the ES (APP-068), CCS and temporary works areas within the onshore development area will comprise hardstanding of permeable gravel aggregate underlain by geotextile, or other suitable material to a minimum of 50% of the total area to minimise the area of open ground.</p> <p>Pursuant to Requirement 22 of the draft DCO (APP-023), a construction surface water and drainage management plan will be included within the final CoCP.</p>	<p>The 'provision for adequate surface water management within the onshore cable corridor and CCS' has not been demonstrated as deliverable. No information has been provided to evidence what mitigation measures will be implemented and where to manage surface water during construction. This is reliant on topography, soil conditions (for infiltration) or subsequent access to a watercourse for surface water disposal. This limits the potential areas of use for surface water management and the land take required. None of this has been demonstrated as deliverable within the red line boundary to date.</p> <p>Whist the approach of maximising the use of pervious surfaces is encouraged for the purpose of interception, this is still a form of engineered drainage requiring</p>

		<p>an effective outfall. CIRIA SuDS Manual Figures 20.12, 20.13 & 20.14 detail the three types of pervious paving options, it is evident the proposals will utilise one of these methods. This can act as a method of surface water storage but without an effective outfall, will quickly become redundant. Concerns have also been previously raised RE the suitability of this approach and the use of geotextile given the potential for suspended sediment to be contained within surface water flows and the risk this would pose to the functionality of the geotextile throughout construction. Evidence of the Friston flooding shows just how much sediment needs to be managed.</p>
<p>Paragraphs 11.18 to 11.30 Adequacy of Applications / DCOs</p>	<p>In direct response to paragraph 11.24, the Applicants note that an assessment that takes into account a 40% increase in rainfall intensity due to climate change is not a requirement of the Suffolk Flood Risk Management Strategy and the accompanying Suffolk SuDS Design Principles (in Appendix A of the Suffolk Flood Risk Management Strategy).</p> <p>Given the above, and in response to the matters raised during the SoCG process, the Applicants are preparing a SuDS Infiltration Technical Note to be submitted to the Examinations at Deadline 2</p>	<p>Suffolk Flood Risk Management Strategy, Appendix A states <i>“Design at 20% and then sensitivity check at 40% to see wider flood risk”</i>. This does not support the Applicants statement that this is ‘not a requirement’.</p> <p>Indeed, it is clearly stated that this assessment should be undertaken. The vast majority of major developments in Suffolk take the conservative approach of applying 40% Climate Change allowance to comply with this national and local guidance. We encourage the Applicants to do the same.</p>

	<p>(document reference ExA.AS9.D2.V1), and an Outline Operational Drainage Management Plan to be submitted to the Examinations at Deadline 3.</p> <p>A sensitivity check has been carried out for a 1 in 100 year storm event with a 40% allowance for climate change to understand the implications for potential flood risk. This will be presented within the Outline Operational Drainage Management Plan to be submitted to the Examinations at Deadline 3.</p>	<p>Comments on the SuDS Infiltration Technical Note are made separately in this response.</p> <p>Any flood risk implications from using 40% climate change allowance must be assessed and managed. We await submission of this information at Deadline 3.</p>
<p>Paragraph 11.31 of the LIR Compliance with Local Policy Based on the information currently available, the schemes are not considered compliant with local policy for the reasons set out above.</p>	<p>The Applicants have engaged with the Councils through the SoCG process (see Table 12 (REP1-072)). This has resulted in a number of requests for clarification which are detailed below</p>	<p>Multiple statements in relation to flood risk remain 'not agreed'.</p>
<p>Unnumbered paragraph following paragraph 11.31 of the LIR Further Work Required</p> <ul style="list-style-type: none"> • Review the baseline environment assessed in the ESs in light of The Friston Surface Water Management Plan published June 2020. • Clarification that all impermeable areas are accounted for in the worst case scenario including the impermeable surface of the basins themselves. • Commitment to assess the impact on human receptors in Friston from the 	<p>The Applicants are preparing a SuDS Infiltration Technical Note to be submitted to the Examinations at Deadline 2 (document reference ExA.AS9.D2.V1).</p> <p>The Applicants are preparing an Outline Operational Drainage Management Plan, which will be submitted to the Examinations at Deadline 3. A review of the Friston Surface Water Management Plan published June 2020 will be included within the Outline Operational Drainage Management Plan.</p>	<p>Comments on the SuDS Infiltration Technical Note are made separately in this response.</p> <p>SCC awaits the Outline Operational Drainage Management Plan which is to be submitted by the Applicant at Deadline 3.</p> <p>The Friston Surface Water Management Plan should not just be 'reviewed'. This information should be used and built upon by the Applicant to explore the</p>

<p>projects specifically looking at the watercourse located in the village and associated catchment.</p> <ul style="list-style-type: none"> • Application of an increase in rainfall intensity due to climate change of 40%. • Commitment to undertake appropriate infiltration testing preconstruction and provide sufficient information prior to consent, to demonstrate that there is sufficient space within the Order Limits to accommodate infiltration features with a worst case infiltration rate. In addition to demonstrating that there is sufficient space within the Order Limits for attenuation features at an agreed discharge rate. • Update the draft DCOs to provide a separate new requirement in relation to operational surface water and foul drainage. • Clarification on the content of the Outline CoCP in relation to matter highlighted in paragraph 11.19 above. • Assign confidence values to the assessments undertaken in Volume 1, Chapter 20, as per EIA Methodology (6.1.5), Paragraph 59. 	<p>With regard to an assessment of impacts upon human receptors, the Operational Drainage Management Plan will secure measures which limit discharges to a controlled rate (equivalent to the greenfield runoff rate) and ensure that any redirected overland flow routes do not cause an increase in offsite flood risk.</p> <p>The Applicants therefore do not consider an assessment necessary. The Applicants will submit an updated draft DCO (APP-023) to the Examinations at Deadline 3.</p> <p>The Applicants will undertake appropriate infiltration testing pre-construction during the detailed design stage of the Projects.</p>	<p>potential impacts of development and the extent of mitigation required. These issues are highlighted in the Draft Statement of Common Ground.</p> <p>As previously stated, SCC do not agree that the assessment of a receptor should be omitted on the basis of certain mitigation being implemented which is yet to be agreed or even discussed in any detail and cannot even be quantified until a detailed assessment of the catchment is undertaken by the Applicant due to the complex nature of the catchments surface water drainage network.</p>
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Applicants' Comments on Responses to ExA WQ1

ExA Question Ref.	Applicants Response	SCC Response
1.7.11	<p>The Applicants have incorporated provision for adequate surface water management within the onshore cable corridor and CCS, details of which will be finalised within the final CoCP.</p>	<p>Whilst mitigation options have been identified, it has not been demonstrated these options can be delivered within the redline boundary. Waiting for the final CoCP could result in insufficient space for optimal mitigation and/or sub-optimal mitigation being utilised due to space constraints.</p> <p>The Applicants are providing details to demonstrate that surface water drainage options for the operational site are deliverable within the red line boundary. Why should the construction phase be approached any differently? The construction phase may present a greater surface water flood risk to Friston due to the larger working areas stripped of topsoil and the potential for sediment supply within flood waters which could have a detrimental impact on the capacity of the Main River in Friston.</p>
1.7.13	<p>The Applicants will adopt and maintain the SuDS basins serving the Projects' onshore substations.</p>	<p>SCC questions if this explicitly includes the SuDS Basin serving the National Grid Substation? Why are National Grid not proposing to maintain this themselves in perpetuity given their infrastructure may be present for longer than SPRs?</p>

6. Notification from any Affected Person of wish to speak at Compulsory Acquisition Hearing 2 (CAH2).

Not applicable.

7. Notification of wish to speak at any Issue Specific Hearings w/c 18 and 25 January 2021.

See separate submission.

8. Responses to any further information requested by the ExA for this deadline.

Issue Specific Hearing 2 Action Points

28.	<p>Drainage and flood risk SCC is asked to submit representations in relation to the proposed drainage infiltration basins in terms of capacity and health and safety.</p>	<p>Suffolk County Council (SCC)</p>
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SCC Response

- 8.1 This has largely been covered in Section 5 of this response in response to the SuDS Infiltration Note submitted by the applicant at Deadline 2.
- 8.2 This assessment has been requested by SCC due to Scottish Power Renewables not proposing to undertake infiltration testing until post consent. This assessment is required to ensure that if infiltration is deemed feasible, that there is sufficient land available to accommodate the required SuDS infrastructure.
- 8.3 The applicant was asked to undertake this assessment based on a worst case infiltration rate of 10mm/hr. This is towards the lower end of what SCC LLFA would accept as a feasible rate to utilise infiltration as a method of surface water disposal.
- 8.4 Infiltration systems are required to incorporate a Factor of Safety (FoS) to account for the infiltration surface becoming blinded by silt/debris during operation and thus, functioning less efficiently. This FoS is determined based on the consequences of failure. The below table is an extract from The SuDS Manual (CIRIA, 2015). Given the location of the basins, upstream of Friston village, SCC LLFA think it is reasonable that in the event of system failure, the risk to property would be significant. As such, a FoS of 10 should be used.
- 8.5 The applicants have used an FoS of 1, which you will note is not a value contained within the below table.

TABLE 25.2 Suggested factors of safety, F, for use in hydraulic design of infiltration systems (designed using Bettess (1996). Note: not relevant for BRE method)

Size of area to be drained	Consequences of failure		
	No damage or inconvenience	Minor damage to external areas or inconvenience (eg surface water on car parking)	Damage to buildings or structures, or major inconvenience (eg flooding of roads)
< 100 m ²	1.5	2	10
100–1000 m ²	1.5	3	10
> 1000 m ²	1.5	5	10

- 8.6 The FoS could be reduced through the facilitation of a designed overflow to the Friston Main River. The applicant has been clear that they do not wish to undertake detailed design of surface water drainage at this stage, which this would likely constitute.
- 8.7 It should be noted that even if a feasible infiltration rate is obtained, infiltration may still not be viable and would require further geological assessment to determine the potential risk of springs issuing in Friston as a result of the underlying geology.
- 8.8 To date, information has not been made available to determine if the proposed basins will hold water above ground via. an embankment or below ground. Any embankment would require engineering. Our understanding is that the design volumes of water contained within the basins would not require them to be registered under the Reservoir Act 1975, however, this is an Environment Agency function.
- 8.9 The infiltration basins have been sized based on only 50% of the areas of the National Grid, EA1N & EA2 sub-stations being impermeable. No justification for this has been provided. Having visited Bramford sub-station, it was apparent that there is no permeable surfacing remaining within the sub-station area. I am advised that most sub-stations utilise a gravel material on the ground, regardless of whether they are GIS/AIS. This engineered approach is categorised as an impermeable surface for the purposes of calculating impermeable areas. They could be treated as an engineered, pervious pavement, as per The SuDS Manual, but this would require an effective outfall.
- 8.10 Other design parameters, such as depth of water during the critical storm event are in line with national and local guidance. On this basis, there are unlikely to be any serious health & safety concerns from a recreational perspective, however, we reserve formal comment on this matter as it is an aspect that the applicant will be required to assess as part of their Designer duties under Construction Design Management Regulations 2015 during the design process.
- 8.11 It should be noted that the applicant proposes a connection to the Friston Main River, which will be utilised in regular storm events (i.e not acting as an emergency overflow) regardless of whether infiltration is deemed feasible or not. This does not demonstrate compliance with the surface water disposal hierarchy.