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 5 – 3 February 2021

Comments of Suffolk County Council as Lead Local Flood Authority

1. Post hearing submissions including written submissions of oral case (if required) and submissions if there are any outstanding matters requiring to be heard

ISH4: Agenda item 4d. Flood Risk and drainage	
i. Surface water flooding in Friston	Previous surface water flooding in Friston, specifically in October 2019, was caused by multiple surface water flow paths. Detail of the October 2019 surface water flooding in Friston and subsequent work completed by SCC (Section 19 Investigations & Surface Water Management Plan) was submitted at Deadline 1 (Ref 1). The flooding in October 2019 was not directly caused by any flow paths originating from the proposed development site (Ref 11, LA05.06). Existing surface water runoff from the proposed development site runs down the track north of Church Road, before entering the Friston Main River at Church Road. This water remained in channel, before entering the culvert under the B1121. Beyond this, out of bank flooding was experienced on Low Road, however this was the point of convergence for multiple overland flow paths. No internal flooding was experienced as a result of the convergence of these flow paths. The Friston Surface Water Management Plan (Ref 1) should be considered a high confidence data source until such time that a more detailed hydraulic model is developed for the catchment. Some of the flow paths active during October 2019 flooding and identified in the Friston Surface Water Management Plan may interact with the cable corridor and access routes/haul roads, specifically the area north east of Friston village at Grove Road (Ref 2, 11.13). ES (Ref 3, para 64) refers to the entire Friston Watercourse Catchment (6km2) when assessing impacts. This is the Main River downstream and south of Aldeburgh Road (A1094), not the Main River in Friston. The Friston village catchment is much lower (approx. 3km2) and thus the impacts assessed in the ES are diluted through using this methodology (Ref 2, 11.28). For example, 'increased sediment supply' could have a much greater impact on the Human Environment in Friston (which is not assessed as a receptor) when the smaller catchment and the culverted Main River in Friston is considered specifically.

	With respect to the above point on increased sediment supply to the culverted watercourse in Friston. The ES does not include the Human Environment (specifically in Friston) as a receptor (Ref 2, 11.26 & Ref 3, Table 20.12). This is based on SPR committing not to increase surface water flood risk, as per previous Applicant representation (Ref 5, pg 21). However, the D3 & D4 submissions (Ref 12 & 13) both demonstrate an increase in surface water flood risk to Friston during operation (as discussed under (ii) of this response). No information has been provided detailing how surface water will be managed during construction (includes substations, cable corridor & CCS's). Whilst options have been presented by the Applicant in the ES (Ref 14, Section 11), it is unclear whether these options are deliverable within the red line boundary (Ref 2, 11.23). Given the concerns stated above with respect to assessment methodology, specifically increased sediment supply to Friston and the Human Environment of Friston. The omission of this information is of great concern to SCC and differs to the approach taken for operational drainage where information has been supplied (although concerns remain). The consequences of flood risk remain the same during both construction and operation. As such, the same level of information should be provided for both phases to ensure that surface water is adequately managed throughout the projects' construction & operation. The submitted Flood Risk Assessment (FRA (Ref 15)) does not consider any of the above, nor has there been a revision of the FRA to reflect the publication of the Friston Surface Water Management Plan (SWMP). The assessment of the Friston SWMP contained within Outline Operational Drainage Management Plan (Ref 12 &13) is insufficient and is discussed further below (ii).
ii. The Applicant's D3 Outline Operational Drainage Management Plan [REP3-046]	Detailed comments on D3 Outline Operational Drainage Management Plan (Ref 12) are contained in SCC's submission at D4 (Ref 4). The D4 Outline Operational Drainage Management Plan (Ref 13) contains minor changes to reflect the minor reduction in EA1N & EA2 substation plan areas, thus a reduction in impermeable areas. The comments made by SCC at D3 (Ref 4) are still of relevance, in addition to the below points, some of which are repeated due to their importance. **<u>SuDS Infiltration Note (Ref 16)</u>** The SuDS Infiltration Note is submitted as a standalone document. SCC insist that this document is incorporated into the Outline Operational Drainage Management Plan as 'Option 1', as per the surface water disposal hierarchy (discussed further in iv, below). SCC are concerned that Requirement 41 of the DCO only references the Outline Operational Drainage Management Plan.

	Therefore, if the SuDS Infiltration Note is not incorporated, it will not carry weight come discharge of Requirements. SCC would be very concerned if this is an intentional approach by the Applicant. As per SoCG LA 05.05 (Ref 11), SCC acknowledge the Applicant's desire to complete infiltration testing post consent. This is the Applicants choice. SCC are only willing to accept this approach if the Applicant can demonstrate there is sufficient space for infiltration SuDS within the red line boundary. On this basis, the worst acceptable infiltration rate of 10mm/hr must be adopted with an appropriate FoS, as per SoCG LA 05.05 (Ref 11), which is agreed between all parties. Due to the consequences of failure, SCC are of the opinion an FoS of 10 should be used (Ref 7, Table 25.2). To be clear, this approach is solely to determine there is sufficient space within the red line boundary if testing determines that an infiltration only solution is achievable. Other detailed design considerations such as half drain times can be assessed once infiltration testing has been completed. In the meantime, provision for an additional 1:10 storm after 24 hours would be sufficient. Paragraph 4 of the SuDS Infiltration note maintains that a positive discharge to the Main River in Friston will be utilised, regardless of the achievability and viability of infiltration. This is contrary to the surface water disposal hierarchy and national & local policy and is discussed further in section iv, below. It should be noted that an achievable infiltration rate does not mean an infiltration only solution can be pursued. Other considerations such as local geology and the potential for downstream springs to form (in Friston) would also need to be assessed. **<u>D4 Outline Operational Drainage Management Plan (Ref 13)</u>** Friston Surface Water Management Plan (SWMP (Ref 1)) is not used as a Data Source for developing this document. Indeed, the outputs of Friston SWMP are not considered at all with para 65 (Ref 13) stating *"Subsequently BMT developed a 2D model to investigate surface water runoff in the Friston catchment and the flooding to Friston in October 2019. The results of this modelling will be considered to inform the drainage design for the onshore substations and National Grid infrastructure."* i.e. not being considered now. This document (Ref 13) only repeats the contents of Friston SWMP rather than assessing its impact on the proposed Projects. The current proposed access road would remove an existing flood storage basin without any identified options to replace it like for like. This approach is likely to increase surface water flood risk. Whilst the Applicant's verbal commitment at ISH4 to replace this

feature is noted, no details or a written commitment have been provided to date. Similarly, it was noted during ISH4 that ordinary watercourses impacted by the location of the National Grid sub-station will be diverted. No details have been provided to demonstrate this is feasible whilst maintaining compliance with SCC Policy (Ref 17).

No pollution assessment has been undertaken to demonstrate that the proposed SuDS strategy delivers sufficient surface water treatment in accordance with CIRIA SuDS Manual (Ref 7). Failure to do so could result in the potential implementation of proprietary treatment measures (not a SuDS approach).

Appendix 2 of the Outline Operational Drainage Management Plan sets out a summary of key figures. Included is the required surface water storage volumes for the National Grid Substation and the combined EA1N & EA2 substations, as summarised in the below table:

	1:100+20%	1:100+40%
EA1N & EA2	8954.4m^3	11374.1m^3
NG	6445.6m^3	7599.8m^3

On the face of it, sufficient storage is provided for 1:100+20%, however flooded volumes of 2639.55m3 are identified for the 1:100+40% event. For context, an Olympic swimming pool has a volume of 2500m^3 (Ref 18). These flooded volumes are not evaluated and thus our assumption is the proposal is for them not to be contained. Given the natural topography, these flows would be directed towards Friston, resulting in a significant increase in surface water flood risk.

However, the Applicants assessment that there is sufficient storage for 1:100+20% is incorrect. This event only has sufficient storage by utilising storage volumes provided by freeboard and the perimeter access track. This is not acceptable. CIRIA SuDS Manual defines freeboard as "*Distance between the design water level and the top of a structure, provided as a precautionary safety measure against early system failure"* (Ref 7, pg 783). Therefore, freeboard cannot be used for the design storm event and the perimeter access track above the freeboard level certainly cannot be used either. On this basis, using the figures provided in Appendix 2 of the Outline Operational Drainage Management Plan, the design storage volumes provided by the basins are as per the below table:

	Design storage
EA1N & EA2	5928m^3
NG	4070m^3

Comparing the two above tables (duplicated from Appendix 2 of the Outline Operational Drainage Management Plan), it is evident there is a significant shortfall in surface water attenuation volumes provided by the Projects which results in a significant increase in surface water flood risk.

Using the calculations from Appendix 2 of the Outline Operational Drainage Management Plan, cumulatively the basins design storage volumes would be exceeded by 5,402m^3 during the 1:100+20% event and 8976.9m^3 during the 1:100+40% event, as set out in the below table, produced by SCC:

	A	B	A - B	C	A - C
	Design storage	1:100+20%		1:100+40%	
EA1N & EA2	5928m^3	8954.4m^3	-3026.4 m^3	11374.1m^3	-5446.1m^3
NG	4070m^3	6445.6m^3	-2375.6 m^3	7599.8m^3	-3529.8m^3
Cumulative shortfall			-5402m^3		-8976.9m^3

Whilst Table 6.2 of the Outline Operational Drainage Management Plan (Ref 13) sensitivity tests a reduced discharge rate, this assessment is flawed based on the above points that the current proposal does not provide sufficient storage volume without increasing surface water flood risk.

No assessment has been undertaken with respect to the feasibility of a culverted connection to the Friston Main River. It is evident that at the junction of Friston Main River and Church Road, the Friston Main River is incredibly shallow. Whilst this is mainly due to siltation caused by overland flow and the shallow gradient of the channel, it is representative of the general condition of the channel, which is maintained by the Environment Agency and is not within the Applicant's control. This could ultimately affect the long-term feasibility of this discharge and is all the more relevant once you consider the invert level of any culvert once it has sufficient cover to pass beneath Church Road.

	No assessment has been undertaken of ability of the proposed basins to deliver Interception (5mm of rainfall across the site (Ref 7, pg 527)). Whilst this would usually be considered a detailed design element, given the existing catchment does not generate runoff to Friston Main River during small rainfall events, the proposed system must mimic this. If current proposals do not deliver Interception, the only way to facilitate this is with an increase in plan area, hence, it must be considered now. No calculations or plans have been provided to support the information contained within Appendix 2. The Applicants statement at ISH4 that these are available is acknowledged and SCC encourage submission of this information, although we query why this has not been previously submitted if readily available.
iii. Existing conditions	To date, no ground investigations (boreholes, infiltration testing or groundwater monitoring) have been undertaken at the location of the proposed substation sites. As such, only high level, publicly available information, such as British Geological Survey mapping, is used to assess existing soil conditions at the locations of the proposed infiltration/attenuation basins. Multiple ordinary watercourses and a flood storage basin (which discharges via. infiltration) serve the existing catchment north of Friston. Surface water is intercepted by these features during minor rainfall events, resulting in minimal, if any, runoff entering the Friston Main River. When the catchment is saturated water flows through the watercourse network, discharging as overland flow along a track that runs north south towards Church Road, Friston, at which point overland flows enter the Friston Main River. Multiple land drains also discharge into a large wooded pit in the centre of the site, again infiltrating water. However, the extent of land served by these land drains is not known.
iv. Sustainable drainage principles	National Planning Policy Guidance (NPPG) clearly sets out the surface water disposal hierarchy, quoted below. This is reiterated in Suffolk Flood Risk Management Strategy Appendix A (Ref 8, pg 13), CIRIA SuDS Manual (Ref 7, pg 41) & supported by Suffolk Coastal Local Plan (Ref 19, para 9.59) *Generally, the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable:* 1. *into the ground (infiltration);*

	2. *to a surface water body;* 3. *to a surface water sewer, highway drain, or another drainage system;* 4. *to a combined sewer* *(NPPG - Ref 6)* CIRIA SuDS Manual (Ref 7, pg 41) states "*As much of the runoff as possible (subject to technical or cost constraints) should be discharged to each destination before a lower priority destination is considered."* It is unclear why the Applicant does not consider infiltration to be a reasonably practicable method of surface water disposal, as per NPPG. Nor have any technical or cost constraints been identified to justify a discharge to Friston Main River, as per CIRIA SuDS Manual. The CIRIA SuDS Manual (Ref 7) identifies four pillars of SuDS (Water Quality, Water Quantity, Biodiversity & Amenity). Integral to the four pillars is 'source control', the principal of managing rainwater close to where it falls and where possible, preventing any discharge from site. Design requirements (side slopes, level bench, max water depths etc.) are based on industry best practice contained within CIRIA SuDS Manual (Ref 7) and SCC Flood Risk Management Strategy Appendix A (Ref 8). SCC expect the Applicant to demonstrate compliance with these design requirements as it ultimately impacts the extent of land take required for the SuDS features. This information should be available as it would have been used to determine the plan area of the proposed basins. SCC maintain their position that a climate change allowance of 40% for increase in peak rainfall intensity (Ref 10) must be used. This is based on no commitment to remove impermeable areas by 2070. This position was clearly stated in the SCC & ESC Joint Local Impact Report (Ref 2, 11.24).
v. Surface water drainage	The current proposed access road would remove an existing flood storage basin without any identified options to replace it like for like. This approach is likely to increase surface water flood risk. Whilst the Applicant's verbal commitment at ISH4 to replace this feature is noted, no details or a written commitment have been provided to date. Similarly, it was noted during ISH4 that ordinary watercourses impacted by the location of the National Grid sub-station will be diverted. No details have been provided to demonstrate this is feasible whilst maintaining compliance with SCC Policy (Ref 17).

	Most points covered in this response, were included in Joint ESC & SCC LIR, *Further Work Required* (Ref 2, pg 62), but remain outstanding.

Floods references:

1. REP1-185 - https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010077/EN010077-002848-DL1%20-%20Suffolk%20County%20Council%202020-10-19-History%20of%20Friston%20Flooding.pdf
2. REP1-132 - https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010077/EN010077-002772-DL1%20-%20Suffolk%20County%20Council%20-%20LIR.pdf
3. APP-068 - https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010077/EN010077-001286-6.1.20%20EA1N%20Environmental%20Statement%20Chapter%2020%20Water%20Resources%20and%20Flood%20Risk.pdf
4. REP4-064 - https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010077/EN010077-003510-SCC%20Floods%20Deadline%204.pdf
5. REP2-013 - https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010077/EN010077-002977-ExA.LIR.D2.V1%20EA1N&EA2%20Applicants'%20Comments%20on%20Local%20Impact%20Reports.pdf
6. Paragraph: 080 Reference ID: 7-080-20150323 - https://www.gov.uk/guidance/flood-risk-and-coastal-change
7. CIRIA, The SuDS Manual - SuDS Manual C753 Chapter List (ciria.org)
8. https://www.suffolk.gov.uk/assets/Roads-and-transport/Flooding-and-drainage/Strategy-Apendicies/2018-10-01-SFRMS-SuDS-Guidance-Appendix-A-.pdf
9. Paragraph: 026 Reference ID: 7-026-20140306 - https://www.gov.uk/guidance/flood-risk-and-coastal-change
10. Table 2 - https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances
11. REP1-072 - https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010077/EN010077-002650-ExASoCG2D1V2EA1NEA2DraftStatementofCommonGroundwithEastSuffolkCouncilandSuffolkCou_378414_1.pdf
12. REP3-046 - https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010077/EN010077-003298-ExA.AS-1.D3.V1%20EA1N%20Outline%20Operational%20Drainage%20Management%20Plan.pdf
13. REP4-003 - https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010077/EN010077-003423-ExA.AS-1.D4.V2%20EA1N%20Outline%20Operational%20Drainage%20Management%20Plan.pdf
14. REP3-022 - https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010077/EN010077-003274-8.1%20EA1N%20Outline%20Code%20of%20Construction%20Practice.pdf
15. APP-496 - https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010077/EN010077-001292-6.3.20.3%20EA1N%20ES%20Appendix%2020.3%20Flood%20Risk%20Assessment.pdf

16. REP4-044 - https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010077/EN010077-003431-ExA.AS-9.D4.V2%20EA1N&EA2%20SuDS%20Infiltration%20Note.pdf
17. https://www.suffolk.gov.uk/assets/Roads-and-transport/Flooding-and-drainage/Strategy-Apendicies/2018-10-01-Consenting-Works-Appendix-B-v2-LR.pdf
18. https://www.gov.uk/guidance/reservoirs-owner-and-operator-requirements
19. https://www.eastsuffolk.gov.uk/assets/Planning/Planning-Policy-and-Local-Plans/Suffolk-Coastal-Local-Plan/Adopted-Suffolk-Coastal-Local-Plan/East-Suffolk-Council-Suffolk-Coastal-Local-Plan.pdf

2. Comments of Representations in relation to the additional land sought by the Applicant

2.1 Not applicable.

3. The Applicant's revised draft Development Consent Order

3.1 Requirement 41: Operational drainage management plan

(i) This requires amendment to include a reference to maintenance, as suggested in red;
"Operational drainage management plan 41.—
(1) No part of Work Nos. 30 or 41 may commence until an operational drainage management plan in respect of that part (which accords with the outline operational drainage management plan) has been submitted to and approved by the relevant planning authority, in consultation with Suffolk County Council and the Environment Agency.
(2) The operational drainage management plan must be implemented and maintained as approved."

(ii) As per ISH4, the Outline Operational Drainage Management Plan only contains the option of a positive discharge to the Friston Main River. The option for infiltration is in a separate document (SuDS Infiltration Clarification Note), which this requirement does not reference. We request that either the SuDS Infiltration Clarification Note in included as part of the Outline Operational Drainage Management Plan or Requirement 41 references the SuDS Infiltration Clarification Note.

(iii) This requirement should also reference Work No 38 (sealing end compounds) and Work No 34 (permanent access road) served by the operational drainage management plan.

(iv) SCC maintain that it should be the discharging authority for Requirement 41. The principal purpose of the proposed SuDS is to prevent an increase in surface water flood risk, for which SCC (as Lead Local Flood Authority) is responsible. Whilst the SuDS do include some landscaping elements, this is not the primary function of this infrastructure and thus the argument put forward by East Suffolk Council (ESC) that they want to retain control of this Requirement for landscaping purposes is acknowledged but not agreed with. The current approach (supported by ESC) could result in an increase in surface water flood risk due to landscaping elements being prioritised. With the ESC approach, unless ESC proposes to act other than in accordance with SCC LLFA's recommendation, ESC would essentially be acting as a facilitator in the discharge of this Requirement. SCC would accept ESC being a consultee to this Requirement with respect to landscaping elements once the function of the SuDS basins has been determined.

(v) The maintenance of SuDS is not solely landscaping based (although there are landscaping elements). Whilst SCC do not object to the integration of landscape maintenance as part of SuDS maintenance, the Council is conscious of the fact that the purpose of the SuDS basins are primarily the storage and treatment of surface water and these vital roles must not be compromised through an inadequate maintenance plan that focuses primarily on landscape elements. In addition to this, the design of the basins (infiltration or attenuation) is yet to be finalised. The incorporation of specific landscape elements, such as wet woodland, would not be suitable in an infiltration basin, for example. On that basis, it is erroneous to assume that maintenance of certain landscaping elements, such as wet woodland, will be required, until detailed design has determined the form of the basins. The SuDS features are required to mitigate any increase in surface water flood risk, landscaping aspects are an additional benefit, not a primary benefit.

(vi) With respect to NPS EN-1 para 5.7.10, specifically the maintenance aspect queried by the ExA during ISH6 – SCC has significant concerns over the Applicant's proposals to maintain both the National Grid (NG) and Scottish Power Renewables (SPR) SuDS. It is entirely feasible that the NG infrastructure, and thus SuDS which serve that area, outlasts the SPR proposed infrastructure. On that basis, following the Applicant's proposals, the Applicant would retain maintenance responsibility for infrastructure on the site when they potentially no longer occupy or have an interest in the site. This could present a long-term surface water flood risk to Friston. SCC would endorse an adoptee being assigned in the DCO, separately for SPR infrastructure (Project SuDS basins) and NG infrastructure (access road, NG SuDS Basin and sealing end compounds) to ensure there is certainty on this critical issue from the outset.

3.2 Work No: 33

SCC questions whether Work No 33 needs to be reworded as this mainly relates to landscaping works, as part of OLEMS, but still references drainage. Indeed, it may be preferable for the surface water drainage infrastructure to be a specific Work No to which Requirement 41 cross-refers.

3.3 Part 4 (Supplemental powers) Article 16 (Discharge of water)

Subsection (7) states '*Nothing in this article overrides the requirement for an environmental permit under regulation 12(1)(b) of the Environmental Permitting (England and Wales) Regulations 2016'.* A similar subsection should be provided for the Land Drainage Act 1991 and specifically the requirement to obtain Land Drainage Consent for any works (temporary or permanent) to an Ordinary Watercourse.

4. Any revised/updated Statements of Common Ground (if any)

4.1 Not applicable.

5. Comments on any additional information/submissions received by Deadline 4

Clarification Note SuDS Infiltration Note (REP4-044)

Paragraph No	SPR comment	SCC Comment
22	The Applicants note SCC's comments at Deadline 3 regarding the need for an infiltration only design to achieve a half drain time of 24 hours under a 1 in 100 year plus 40% for climate change scenario. As shown in Appendix 2: Model Outputs, when applying a FoS of 10 to the parameters detailed in section 3, the half drain time is in exceedance of 7 days and therefore does not meet SCC's specification for an infiltration only design, nor does it meet with the Applicant's basis of design for a combined infiltration/attenuation system which includes a discharge connection point at the Friston Watercourse. The Applicants consider that an infiltration only SuDS design as per the SCC (2018) SuDS hierarchy would not be reasonably practicable to implement. It is therefore the Applicants' view that a SuDS design combining infiltration with a discharge connection point at the Friston Watercourse is appropriate.	As per previous SCC representation, given the design parameters are a worst-case scenario to establish if there is sufficient space within the red line boundary, an additional 1:10 storm can be added to the basin after 24 hours if the 24 hour half drain time cannot be met. Why do the Applicants consider an infiltration only approach, as per national and local guidance, is not reasonably practical? Please justify.
	The Applicants also consider it wholly inappropriate for the proposed national infrastructure projects to be constrained to an infiltration only surface water manage solution, when commitments have been made by the Applicants for a combined infiltration/attenuation system where the discharge to the Friston Watercourse would not exceed the pre-development greenfield run-off rates.	Please justify why the Applicant feels this approach to be inappropriate. The surface water disposal hierarchy is an industry standard as explained in Item 1 of this document in response to ISH4 Agenda item d iv. It is unclear if the Applicant is implying that a different standard should be set for national infrastructure projects (as per highlighted)?
Appendix 1		The annotations on this diagram suggest a freeboard of at most 69mm and at worst 30mm is provided across the different basin design options. This is far less than the 300mm industry standard, as per CIRIA SuDS Manual.

		As per SCC response to ISH4 Agenda Item d iv (contained within this response), the Applicant has not demonstrated that a connection to the Friston Main River is achievable given its shallow nature.

Applicants' Comments on the East Suffolk Council (ESC) and Suffolk County Council (SCC) Deadline 3 Submissions (REP4-025)

Reference	SPR comment	SCC Comment
Section 2.3 ID 1	At this stage the Applicants' commitment to sustainable drainage scheme (SuDS) attenuation ponds with a discharge connection to the Friston watercourse is reasonable since percolation tests are still required at post consent to fully establish the viability of an infiltration scheme. It is inaccurate to suggest the scheme is not compliant with the hierarchy. The Applicants have committed to an attenuation design as a worst case and are considering the incorporation of infiltration as appropriate. Attenuation is secondary in the hierarchy and ultimately the final design must consider wider factors such as health and safety and preventing an increase to the baseline surface water run-off rates. For context, the East Anglia ONE project has successfully adopted an attenuation only system as part of its surface water drainage strategy in order to manage operational flood risk.	SCC agree that the option for a discharge to Friston Main River must be included in the design options at this stage due to the lack of infiltration testing. However, a discharge to Friston Main River should be a secondary option, with infiltration being the primary option. The entire purpose of the SuDS Infiltration Clarification Note methodology is to ensure that if an achievable infiltration rate is determined, there is sufficient space for infiltration only SuDS, if also determined to be viable. The SuDS Infiltration Note (REP2-012) and subsequent SuDS Infiltration Clarification Note (REP4-044) state *"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 at a discharge rate that remains in line with the pre-development greenfield runoff rate. This represents a reasonable design for the Projects and ensures no increase to the existing discharge to the Friston Watercourse".* The SuDS Infiltration Clarification Note also states *"the Applicant's basis of design for a combined infiltration/attenuation system which includes a discharge connection point at the Friston Watercourse".* This approach is not compliant with the surface water disposal hierarchy which is explained further in Item 1 of this document, in response to PINS ISH4 Agenda Item d iv.

		Paragraph 22 & 24 of the SuDS Infiltration Clarification Note (REP4-044) included in this response directly contradicts the Applicants' assertion highlighted yellow. As per SCC representations, the statements outlined and referenced above do not support the Applicants' claim that their approach is compliant with the surface water disposal hierarchy. SCC maintain their position that the proposed surface water drainage strategy is not compliant with the surface water hierarchy.
Section 2.3 ID 2	The intention of this paragraph was to draw a distinction between the construction and operational phase as opposed to signposting infiltration viability within the Outline CoCP (REP3-022). A Construction Method Statement will be developed which will adhere to industry best practice guidance as detailed in the Environment Agency's Pollution Prevention Guidance (PPG) (including PPG01, PPG05, PPG08 and PPG21) and Control of water pollution from construction sites: Guidance for consultants and contractors (C532) – A guide to good practice (CIRIA, 2001). This is secured under Requirement 22(2)(h) of the draft DCO (REP3-011) and must be submitted to the relevant planning authority for approval prior to construction. In addition, a surface water and drainage management plan will also be submitted for approval as part of the final CoCP in accordance with Requirement 22(2)(a). It is the Applicants' view that following the above best practice guidance, surface water management can be delivered within the Order limits.	The intention to adhere to industry best practice is acknowledged and encouraged. However, no information has been provided to demonstrate that any of these mitigation options are deliverable within the Order Limits or indeed are sufficient to provide satisfactory mitigation. The risks associated with surface water flooding are just as relevant during construction as they are during operation. On that basis SCC query why the Applicants do not deem it necessary to demonstrate the deliverability of sufficient surface water drainage mitigation during construction.

Section 2.3 ID 4	The Applicants have given this consideration in the SuDS Infiltration Note (an updated version has been submitted at Deadline 4, document reference ExA.AS-9.D4.V2). A half drain time of 24 hours cannot be achieved while adopting a factor of safety of 10. An infiltration only scheme is therefore unviable for the Applicants; however, preconstruction ground investigation and infiltration testing will determine the extent to which infiltration components can be incorporated into the final SuDS design. Percolation tests will establish the actual infiltration rate. The modelling undertaken for the SuDS Infiltration Note assumed a conservative rate of 10mm/hr.	SCC are surprised by the Applicants' comments that *'an infiltration only scheme is therefore unviable'*. The parameters being used are only for worst case design purposes. Born out of necessity due to the Applicants' lack of infiltration testing. It is entirely unsuitable to rule out an infiltration only approach from a theoretical example but is indicative of the approach being taken by the Applicant in pursuit of a discharge to the Friston Main River, contrary to the surface water disposal hierarchy. As per the agreed item of SCC/SPR SoCG LA 05.05 the worst acceptable infiltration rate of 10mm/hr must be adopted with an appropriate FoS. This is the approach SCC are asking for. Facilitating an additional 1:10 storm to account for half drain time is industry standard.
Section 2.3 ID 9	As outlined in the SuDS Infiltration Note (an updated version has been submitted at Deadline 4, document reference ExA.AS-9.D4.V2) and the Outline Operational Drainage Management Plan (an updated version has been submitted at Deadline 4, document reference ExA.AS-1.D4.V2), the Applicants are committed to maintaining the pre-development greenfield run-off rates at the onshore substations. It is demonstrated in section 6 of the Outline Operational Drainage Management Plan that this can be successfully achieved for an attenuation SuDS design and it is therefore the Applicants view that additional mitigation will not be required.	As per previous SCC comments, this approach again pursues a discharge to the Friston Main River without due consideration being given to infiltration. Even if this option were to be utilised due to infiltration not being achievable or viable, the discharge rates to the Friston Main River are yet to be agreed and would be the subject of a detailed hydraulic model. The Friston catchment does not generate runoff that contributes to the Friston Main River in all rainfall events due to Interception. Without the baseline monitoring suggested, how can the Applicants confidently state that their proposals will not increase surface water runoff rates to Friston, which rarely receives surface water runoff from this area, and anything that is received is delayed by the network of land drains & ordinary watercourses in the catchment?
Section 2.3 ID 10	The Applicants refer to the updated SuDS Infiltration Note (document reference ExA.AS-9.D4.V2) submitted at Deadline 4 where a Factor of Safety (FoS) of 10 is applied to the Infiltration modelling. As presented in ID4 of this table, a half drain time of 24 hours cannot be achieved under this FoS.	As previous, alternative methodologies can be employed where half drain times cannot be met. Susdrain note on 'assessing attenuation storage volumes for SuDS'[1] states;

	The Cv values are volumetric coefficients as defined in the HR Wallingford Procedure (2018). These are used to reduce the volume of run-off from impermeable areas to match observations. When selecting a suitable Cv value the Wallingford Procedure Volume 4 states: *"An extensive study of the runoff data from sewered urban catchments showed that the volume of runoff was related to the impervious area, the soil type and the catchment wetness. An approximate result may be obtained by assuming that the runoff derives from a proportion of the impervious area (paved and roof), the proportion varying according to soil type. On this basis the overall average value of Cv is about 0.75, ranging from 0.6 on catchments with rapidly-draining soils to about 0.9 on catchments with heavy soils.* *These values reflect the loss of some rainfall from impervious areas through cracks and into depressions and by drainage onto pervious (unpaved) areas. Similarly, any runoff from the pervious areas onto the impervious areas is also incorporated".* *The above values of Cv should therefore be used in conjunction with the total impervious area (paved and roof) intended to drain to the storm system."*	*The specification of a runoff coefficient attempts to represent the volume of flow from a particular surface. For example, in most circumstances you would anticipate less runoff from a grassed surface when compared to an impermeable road or roof surface. This is represented through the definition of Cv, with values ranging from 0% (no runoff from rainfall) up to 100% (all of the rainfall that occurs on a surface occurs as runoff).* *The 'standard defaults' for the Coefficient of Volumetric Runoff (suggested by Modified Rational Method) consider that a proportion of sub-catchment contributing runoff to the drainage system is permeable. The Modified Rational Method guidance coefficients are 0.75 for summer and 0.84 for winter scenarios. This assumes that permeable parts of the sub-catchment will be wetter in winter and therefore produce more runoff.* *However, the majority of attenuation volume calculations consider impermeable areas only as contributing to the drainage system. Therefore, careful consideration needs to be given to the specification of Cv, as the default values used in software packages may not be appropriate.* *Sewers for Adoption (7th Edition) recommends that a Cv of 1.0 should be used whenever calculating runoff from impermeable surfaces (roofs and paved areas should have an impermeability of 100%). When making an application the designer should demonstrate to the SAB that Cv has been suitably determined.* There are no permeable areas associated with the proposed development. Only impermeable areas are considered in the calculations, with all areas being considered as 100% Impermeable; on this basis, a Cv of 1 should be used.

Section 2.3 ID 11	Detailed information such as side slope gradients will be provided in the detailed design within the final Operational Drainage Management Plan required under Requirement 41 of the draft DCO (REP3-011).	This information should be available now as it contributes to the plan area of the basins and is therefore something that should have already been considered in determining the basin size. It is unclear why design assumptions are being withheld.
Section 2.4 ID 1	Sediment management measures for works within the onshore cable corridor and at the Construction Consolidation Sites are set out in section 11.1.1 of the Outline CoCP (REP3-022). The Councils' concerns are noted by the Applicants. A Construction Method Statement will be developed which will adhere to industry best practice guidance as detailed in the Environment Agency's PPG (including PPG01, PPG05, PPG08 and PPG21) and Control of water pollution from construction sites: Guidance for consultants and contractors (C532) – A guide to good practice (CIRIA, 2001). This is secured under Requirement 22(2)(h) of the draft DCO (REP3-011) and must be submitted to the relevant planning authority for approval prior to construction. The Projects will incorporate SuDS measures within the onshore cable route at appropriate locations through displacement of spoil stockpiles. This is a lesson learned by the Applicants from East Anglia ONE. In addition, a surface water and drainage management plan will also be submitted for approval as part of the final CoCP in accordance with Requirement 22(2)(a).	SCC are encouraged that this is a lesson learned from East Anglia ONE. However, it was a lesson learned because of the problems encountered along the cable corridor. Is there additional space along the cable corridor for these Projects compared to East Anglia ONE? SCC do not have confidence that a SuDS solution can be implemented during construction within the Order Limits and maintain the position that the Applicant should demonstrate the deliverability of this, as is the case for the operational stage.

	It is the Applicants' view that following the above best practice guidance, surface water management can be delivered within the Order limits.	
Section 2.4 ID 4	The Applicants are unclear on the specifics of what SCC is referring to regarding the omission of a receptor. However, for clarity, the Friston Watercourse is identified as a receptor in section 20.5.4 of the ES (APPAPP-068) and in Appendix 20.3 Flood Risk Assessment (APP-496). The assessment has followed the assessment approach set out in Chapter 5 EIA Methodology (APP-053) and the impacts have been robustly assessed in accordance with national and local policy (section 20.4 of Chapter 20 Water Resources and Flood Risk).	Response to this point is set out above under Item 1, in response to PINS ISH4 Agenda Item d i. This issue was included in the Joint Councils LIR (REP1-132) paragraphs 11.27 – 11.30.
References: 1 - https://www.susdrain.org/files/resources/fact_sheets/03_14_fact_sheet_attenuation.pdf		

Outline Operational Drainage Management Plan (REP4-003)

SCC continue to have significant concerns with respect to the Outline Operational Drainage Management Plan. These concerns are comprehensively outlined in this response under Item 1, ISH4 Agenda Item d ii and are therefore not repeated here.

6. Responses to any further information requested by the Examining Authority for this deadline

6.1 Not applicable.