ID Number: 20026012

The Sizewell C Project, Ref. EN010012

Issue Specific Hearing 11 (14 September 2021) – (ISH11) Flooding, Water and Coastal Processes.

Suffolk County Council Registration ID Number: 20026012

Deadline 8 **24 September 2021**

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Post Hearing Submissions including written summary of Suffolk County Council's Oral Case

Note: These Post Hearing Submissions include a written summary of the Oral Case presented by Suffolk County Council (SCC). They also include SCC's submissions on all relevant Agenda Items, not all of which were rehearsed orally at the ISH due to the need to keep oral presentations succinct. The structure of the Submissions follows the order of the Agenda Items but within each Agenda Item, the Submissions begin by identifying the main points of concern to SCC and then turn to more detailed matters.

Examining Authority's Agenda Item / Question	Suffolk County Council's Response	References
Agenda Item 1 – Welcome, introductions and arrangements for these Issue Specific Hearings		
Agenda Item 2 – Water Supply		
The Water Supply Strategy and the availability of both potable and non-potable water to meet the full demands of the Project with particular regard to the early years of construction.	**2. Water Supply (Transport Impacts)** In Appendix 8.4K: Site Water Supply Strategy [REP7-036] 3.21 the Applicant states that it is awaiting NWL to confirm that water for transport by truck is sourced from Barsham WTW near Beccles. Table 3-1 gives details of the forecast number of water trucks required by the project and table 3-2 compares this against average daily HGV movements and limits. As the LHA SCC draws the inspectors attention to: • The sensitivity of the B1122 in the early years, specifically SZC Co's commitment that the cap in the early years will be a maximum of 600 HDV movements (300 deliveries), inclusive of those servicing the main site, buses to / from the park and rides and to / from the SLR and other associated development sites that may	

	use the B1122. An additional 37 deliveries (74 movements) looks to take the applicant close to these limits and there may be a need to consider whether there should be a limit on what activities can take place prior to the completion of the temporary desalination plant. Further discussions are to take place on the impacts of the desalination plant in advance of ISH15. • The Transport Assessment and Environmental Assessments are based on an assumed split of 85% (510) HGV movements from the south of Yoxford and 15% (90) from the north (Table 7.1 and 7.7 of the Consolidated Transport Assessment: REP4-005). The forecast 74 movements of water tankers to and from the Barsham WTW would be a significant proportion of this and would exceed the predicted number of HGVs assessed on the A145 between the A12 and Beccles. This proportion of 5% (30 movements in early years) on the A145 and 10% on the A12 north of the A145 junction (60 movements in early years) is set out at paragraph 1.54 and 2.24 in Appendix 7B of the consolidated TA (REP4-005). • The Council is concerned that unassessed impacts may occur at the A12/A145 Blythburgh and A145/B1062 Beccles junctions and communities at Brampton and Shadingfield. • The Council considers that to avoid this it is necessary to restrict specific main site construction activities (ie construction of cut off wall 1825m3 per day) until desalination plant is operational.	

	• Presume construction of the transfer main would be under NWL powers as a utility company. Although not likely to be the same scale as the associated development sites this project will generate HGV and other traffic and disruption from traffic management which the authority considers should form part of the cumulative impact of the SZC project. • If the transfer main is constructed all reasonable efforts should be made to include this within and associated works that it is routed through or alongside.	
Agenda Item 3 – Main Development Site Flood Risk Assessment (MDS FRA)		
Outstanding issues with respect to the Applicant's assessment, in particular: **(a) Coastal flood risk; and** **(b) Any other areas of outstanding concern for the MDS FRA.**	(a) **Coastal flood risk; and** No comment (b) **Any other areas of outstanding concern for the MDS FRA** SCC has an outstanding concern in relation to AD6 and the proposed bridleway crossing at Lovers Lane. The proposed level of this crossing is based solely on the modelled level of fluvial flood risk during 1:100+CC. No assessment has been undertaken by the Applicant to determine pluvial flood risk at this location during 1:100+CC. Suffolk County Council commissioned BMT to produce the Leiston Surface Water Management Plan (SWMP) which was published in December 2017. The Leiston SWMP contains some assumptions and could use more refined data, and therefore could be improved, however this is common for catchment wide hydraulic models and provides a more accurate representation than standard national mapping (provided by the Environment Agency) otherwise would.	

	The Leiston SWMP identifies that surface water would flow over Lovers Lane during 1:100+40% and should therefore be considered the worst-case scenario, not the fluvial flood risk that the Applicant has modelled. An absence of detailed assessment should not be seen or used as justification to not design for the worst-case scenario. SCC are willing to provide the Applicant with the model used for the Leiston SWMP. The Applicant could use this model and supplement it with more refined information that they have in relation to the Lovers Lane culvert and the upstream watercourse to improve the reliability of the model. However, in the absence of more detailed modelling, SCC's position is that the bridleway should be at the same level as the existing road (understood to be 3.11m AOD estimated from LIDAR data), to ensure there is no increase of surface water flood risk to the bridleway.	
Agenda Item 4 – Associated Development Site Flood Risk Assessments		
Outstanding issues relating to the following: **(a) Sizewell Link Road FRA; and** **(b) Other Associated Development Sites.**		
Agenda Item 5 – Outline Drainage Strategy [REP2-033]		
Outline Drainage Strategy [REP2-033] **Outstanding issues relating to the Outline Drainage Strategy with particular reference to:**	**<u>Please note:</u> Since ISH11, several meetings between SCC and the Applicant have taken place to aim to now resolve these longstanding matter, which had been raised by SCC throughout the examination. It is hoped that a number of matters can be resolved, but we note that the scale of**	

(a) Main Development Site, including Water Management Zones **(b) Drainage strategies for Associated Development Sites**	**outstanding matters is of such a nature that resolving all issues before the close of the examination will be a challenge. We will update the ExA at D10 in how far the substantive issues could be resolved, and what matters are outstanding.** <u>Environmental Assessment and Primary Mitigation</u> The level of information SCC are seeking from the Applicant at this stage is not detailed information and could not be considered detailed design. Our request is that the Applicant demonstrates their primary mitigation is suitable, sufficient and deliverable within the Order Limits. This should include a demonstration that it can prevent an increase in offsite flood risk, and provide sufficient treatment of pollution, whilst complying with national and local policy, best practice and guidance. This does not extend beyond what SCC LLFA would expect from any Outline residential development coming forward in Suffolk, as shown in Local LLFA guidance, pages 9 & 10. All Environmental Statements are reliant on the provision of SuDS as primary mitigation: • *"Use of SuDS to prevent pollution of controlled waters and to match greenfield run-off rates with an allowance for climate change"* [APP-297, 19.5.5]. • *"The proposed drainage system would incorporate SuDS measures as set out in the Outline Drainage Strategy provided in Volume 2, Appendix 2A of the ES"* or similar wording [APP-376, 12.5.6; APP-407, 12.5.5; APP-441, 12.5.8; APP-476, 12.5.5; APP-507, 12.4.52; APP-536, 12.5.5; APP-570, 12.5.7].	

	The Outline Drainage Strategy [REP2-033] is a high-level document that sets out basic principles that could be followed. It does not go into any level of detail to demonstrate that suitable and sufficient mitigation can be implemented to act as primary mitigation. *Note: SCC have not had time to review the updated Outline Drainage Strategy submitted at Deadline 7, prior to ISH 11.* The Outline Drainage Strategy is explicit in stating its strategic design criteria, *"The surface water drainage network will be designed to retain excess storm water which results from a 1 in 100-year return period rainfall event within the site, for both construction and operation phases"* [Page 2]. The Outline Drainage Strategy goes on to state: *In addition, the approach will seek to satisfy the following criteria as detailed in Construction Industry Research and Information Association (CIRIA) 753, where reasonably practicable:* *• control run-off at or close to where it hits the ground;* *• reduce the rate of run-off leaving any part of the site and discharging to nearby watercourses (ditches, streams, rivers, sea etc.) to greenfield rates;* *• use at, or near-surface drainage features wherever practicable, slowing the rate of run-off entering into below ground drainage attenuation;* *• provide stages of water treatment;* *• select and combine appropriate drainage features or SuDS components to suit site constraints;* *• encourage habitats for wildlife in developed areas and opportunities for biodiversity enhancement; and* *• contribute to the ecology and aesthetic value of developed areas.*	

	[REP2-033, Paragraph 2.2.2] Whilst SCC do not recognise this statement as a direct quote from CIRIA, C753 The SuDS Manual, we generally agree with the principles outlined, except for point 3's specific reference to below ground attenuation. The underlying intention would appear to be compliant with the 'four pillars of SuDS; Water Quantity; Water Quality; Biodiversity; and Amenity [CIRIA, SuDS Manual, pg6]. <u>Integration of Technical Notes into Drainage Strategy and Requirement 5</u> Except for Rail, additional submissions to supplement the basic information provided in the Outline Drainage Strategy have been made for all the proposed development sites. These are as follows: <u>Comments on Submissions from Earlier Deadlines (Deadlines 2-4) Appendices [REP5-120]</u> Appendix B – Ancillary Construction Area Appendix D – Main Development Site Water Management Zones Appendix F – Sizewell Link Road Appendix G – Two Village Bypass Appendix H – Yoxford Roundabout <u>Comments at Deadline 6 on Submission from Earlier Submissions and Subsequent Written Submissions to ISH1-ISH6 – Appendices [REP6-024]</u> Appendix A – Northern Park & Ride <u>Comments at Deadline 7 [REP7-060 & 7-061]</u> Chapter 20: Flood & Water Appendix F – Southern Park & Ride	

	Appendix G – Freight Management Facility It is not clear how the Technical Notes listed above will be integrated into the Outline Drainage Strategy, which is ultimately the control document referenced in Requirement 5. If/when SCC and the Applicant agree common ground on the level of information contained within the respective Technical Notes, the contents of these need to be incorporated into the Outline Drainage Strategy, or somehow linked to Requirement 5 to ensure that the future drainage strategy, come discharge of Requirement 5, is in accordance with the information contained within the Technical Notes. The level of information contained within the Drainage Strategy [REP7-017], which has been upgraded from an Outline Drainage Strategy, is only marginally more detailed. Notwithstanding the concerns that SCC has on each of the Technical Notes, most of the detailed information is contained within said Technical Notes, not REP7-017. As a control document, there is little additional detail added to this document than what was contained in the previous iteration, the Outline Drainage Strategy [REP2-033]. <u>Approach to infiltration testing</u> During ISH11, the Applicant stated that infiltration testing using BRE365 methodology was not possible due to a number of constraints. This is directly contradicted by the fact the Applicant has undertaken testing to BRE365 methodology across MDS & ADS sites during 2021. The Applicant approached SCC LLFA earlier this year to agree an exception for Two Village Bypass to undertake an infiltration test using the falling head test methodology, due to the depth of	

	the test. This was agreed, as an exception. By the very nature of the fact the Applicant approached SCC to agree this methodology and it was agreed in advance, it is clear that the Applicant is aware of SCC's requirements regarding infiltration testing methodology. <u>Comments on test methods.</u> For clarity the authority wishes to comment on comments made by Mr Jones on behalf of the applicant regarding the suitability of BRE365 testing. While it is acknowledged that the test requires some resource, commonly a JCB excavator and water bowser and, while it is time consuming, it provides more realistic test data that for example borehole testing as it mimics the operation of soakaways and drainage pits that commonly drain through their base and sides. The borehole test commonly only tests sideways infiltration and at best a disproportionate basal area. Trench instability can be a problem in granular materials but can be resolved by filling the trench with course granular material and making an appropriate adjustment to calculations. The dimensions of the trench can be measured from the surface so it is not necessary to enter the trench, and is indeed unwise from a safety perspective. The size of the trench necessary for an infiltration test is similar to that commonly used for ground investigations and generally shallower as they only need to go as deep as the proposed soakaway or lagoon. Trenches are usually excavated and backfilled during a day and although there may be an element of settlement it is only the JCB and bowser that need access so disruption is less than drilling a borehole.	

	<u>Land take for above ground SuDS</u> The Applicant also asserted during ISH11 that using further adjacent land for above ground SuDS would be of detriment to the surrounding environment. SCC strongly contest this statement. Well designed SuDS can deliver significant environmental benefits in terms of both biodiversity and amenity, an approach that could complement the delivery of other mitigation for impacts of the proposed development. Of course, SCC would not encourage this approach where the additional land was of environmental significance (i.e SSSI). However, the Applicants sweeping statement with no context or justification is both inaccurate and misleading. <u>Pollution Assessment</u> During ISH11, SCC stated that we would provide further information to the Examining Authority as part of our Deadline 8 submission to explain how pollution should be assessed at a high level, for all schemes other than road schemes. Dependant on land uses, further detailed assessment may be required as part of detailed design. The Applicant proposes to use the CIRIA SuDS Manual Simple Index Approach for this high-level assessment, as per paragraphs 2.5.2 & 2.5.15 of REP7-017. This methodology assigns pollution hazard indices to generic land uses, as per the table below.	

TABLE 26.2 Pollution hazard indices for different land use classifications

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydro-carbons
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/ industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways[1]	Medium	0.7	0.6	0.7
Sites with heavy pollution (eg haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways[1]	High	0.8[2]	0.8[2]	0.9[2]

Once a pollution hazard level has been determined for a proposed site use, or an area of a proposed site, mitigation indices can then be calculated to determine if a sufficient level of pollution treatment is proposed. The indices are calculated using the below formula:

	Where the mitigation index of an individual component is insufficient, two components (or more) in will be required, where: **Total SuDS mitigation index = mitigation index$_1$ + 0.5 (mitigation index$_2$)** Where: mitigation Index$_n$ = mitigation index for component n A factor of 0.5 is used to account for the reduced performance of secondary or tertiary component associated with already reduced inflow concentrations. The mitigation index values are taken from a table, based on the runoff destination, groundwater (through infiltration) or surface waters (via. attenuation). These tables are shown below.	

TABLE 26.3 Indicative SuDS mitigation indices for discharges to surface waters

	Mitigation indices[1]		
Type of SuDS component	**TSS**	**Metals**	**Hydrocarbon**
Filter strip	0.4	0.4	0.5
Filter drain	0.4[2]	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond[4]	0.7[3]	0.7	0.5
Wetland	0.8[3]	0.8	0.8
Proprietary treatment systems[5,6]	These must demonstrate that they can address each of the contaminant type acceptable levels for frequent events up to approximately the 1 in 1 year retu period event, for inflow concentrations relevant to the contributing drainage a		

TABLE 26.4 Indicative SuDS mitigation indices for discharges to groundwater

Characteristics of the material overlying the proposed infiltration surface, through which the runoff percolates[1]	**TSS**	**Metals**	**Hydrocarbo**
A layer of dense vegetation underlain by a soil with good contaminant attenuation potential[2] of at least 300 mm in depth[3]	0.6[4]	0.5	0.6
A soil with good contaminant attenuation potential[2] of at least 300 mm in depth[3]	0.4[4]	0.3	0.3
Infiltration trench (where a suitable depth of filtration material is included that provides treatment, ie graded gravel with sufficient smaller particles but not single size coarse aggregate such as 20 mm gravel) underlain by a soil with good contaminant attenuation potential[2] of at least 300 mm in depth[3]	0.4[4]	0.4	0.4
Constructed permeable pavement (where a suitable filtration layer is included that provides treatment, and including a geotextile at the base separating the foundation from the subgrade) underlain by a soil with good contaminant attenuation potential[2] of at least 300 mm in depth[3]	0.7	0.6	0.7
Bioretention underlain by a soil with good contaminant attenuation potential[2] of at least 300 mm in depth[3]	0.8[4]	0.8	0.8
Proprietary treatment systems[5, 6]	These must demonstrate that they can addr each of the contaminant types to acceptable levels for inflow concentrations relevant to th contributing drainage area.		

The mitigation values in the above two tables can only be applied if strict design criteria are met. These design criteria only apply to the 1:1+CC rainfall event, as this and lesser rainfall events are the most likely to carry high pollutant loads. An example of this design criteria for an attenuation basin, is included below. If this design criteria is not met, the SuDS feature is not considered to provide pollution mitigation using this methodology.

Good pollutant removal performance is required for all runoff events up to and including event occur, on average, about once a year (termed here the 1:1 year return period event). The dura event should be the relevant critical duration for the detention basin. For this water quality des (for a vegetated basin):

- the depth of flow should be maintained below the height of vegetation (ie usually < 100 m
- the maximum flow velocity in the basin for such an event should be 0.3 m/s to ensure ad runoff filtration
- the time of travel of runoff from inlet to outlet of the basin (residence time = length/velocit at least 9 minutes.

<u>Main Development Site, including Water Management Zones</u>
[REP5-120, Appendix B & D] *(comments below also relate to calculations received informally from SZC for MDS, prior to ISH11).*
At Deadline 7 SZC Co submitted 'Comments at Deadline 7 on Submissions from Earlier Deadlines and Subsequent Written Submissions to ISH1-ISH6' [REP7-061]. 2.19 A (ACA) and C (MDS WMZ) commit to providing SCC with source control calculations prior to ISH 11. At the time of writing SCC have received calculations for MDS WMZs, but not ACA. Multiple technical discrepancies have been identified between the calculations provided and the information submitted at REP5-

	120, Appendix D, some of which are covered at a high level in this response. In addition to this, the Ground Investigations for MDS WMZs sent to SCC cannot be reviewed in detail as no accompanying plan has been provided to show where the most relevant testing (2021 testing) was conducted, and therefore cannot be attributed to any of the calculations. Testing completed prior to 2021 generally cannot be used for design purposes as it does not comply with BRE 365 methodology, for varying reasons, including the use of falling head tests, less than three test runs being completed per pit and the extrapolation of data to obtain results. The Applicant has not indicated exactly which test has been used as a design rate. No pollution assessment has been undertaken for the Main Development Site, except for ACA, where it was shown most areas did not provide sufficient surface water treatment. The Technical Note [REP5-120, Appendix D] contains plan areas at 'bottom of basin area' and 'top of basin area (excluding freeboard)'. All basins should incorporate a minimum freeboard of 300mm, as per national guidance. Therefore, the plan area of the basin shown in the Technical Note, at the top water level, is less than the plan area of the basin required once freeboard is incorporated, this value remains unknown. The plan areas contained in the Technical Note [REP5-120, Appendix D] do not match the plan areas contained in the calculations, without exception. These vary by up to +3,719.9m^2 and -3,307.9m^2. This is a significant variation. The ACA Technical Note [REP5-120, Appendix B] does not contain plan areas for the proposed basins so it was not possible to make a comparison. It is vital that the plan areas of proposed SuDS are clearly stated and supported with an evidence base to ensure	

	that sufficient land is clearly allocated for SuDS. Failure to do so could result in SuDS being 'squeezed out' at detailed design, to facilitate other construction uses which will ultimately have a negative impact on surface water storage and treatment. In addition to the plan areas of basins, most WMZ's are described as having perimeter swales. These swales will serve very large catchments and will need to be much larger than the recommended maximums contained in national guidance of 400-600mm deep with a base width of up to 2m (CIRIA, SuDS Manual, 17.2). As such, an indicative dimensioned section should be produced so it is clear how much space should be allocated for such a feature. Again, failure to do so could result in falling back to more traditional highway drainage approaches which will ultimately have a negative impact on surface water storage and treatment. The Technical Note [REP5-120, Appendix D] states that side slopes of the basin will be 1:3. The variation of plan areas in the calculations, as stated above, brings this into doubt. For example, WMZ6 'bottom of basin area' increases by 2,025.3m^2 in the calculations, but the 'top of basin area (excluding freeboard)' only increases by 55.8m^2. SCC assume this would result in a corresponding increase in side slope gradients. The depth of water contained in calculations during 1:100+CC storm event varies between 1.306m (WMZ1) and 2.002m (WMZ3). National guidance recommends maximum water depths of 1m. Whilst it is acknowledged that the basins will not be in publicly accessible areas and therefore, theoretically, greater water depths could be acceptable, this has knock on impacts. To act as a level of treatment for surface water, attenuation basins must be designed to comply with certain	

	criteria. One of said criteria is that water depths do not exceed 100mm during 1:1+CC rainfall event (CIRIA, SuDS Manual, 22.5). If the catchment is so large that water depths exceed 1m during 1:100+CC, it is likely these water depths will also exceed 100mm during 1:1+CC. As such, these basins cannot be considered to deliver a form of treatment. The discharge rate from attenuation basins uses the 1l/s/ha methodology, which SCC support. The discharge rates have been determined using the entire catchment of each WMZ. For example, WMZ6 has a catchment of 47.77ha, and therefore proposes a discharge rate of 47.77l/s. However, the calculations only account for an impermeable area of 27.7ha, which still discharges at 47.77l/s. The consequence of this is that the remaining 20.06ha of the 47.77ha catchment is not represented in the model. Working on the theoretical assumption that this 20.06ha remained greenfield, it would continue discharging at a greenfield runoff rate, in addition to the 47.77l/s which is supposed to represent the entire catchment. These additional flows would either enter and overwhelm the drainage system or would runoff into the surrounding environment, increasing runoff rates beyond the design. Either the greenfield runoff rate should be amended to represent only the impermeable area served, or the entire catchment should be represented in the source control calculations. The PIMP (Percentage Impermeable Area) values and Cv (Volumetric Runoff Coefficient) values used in the calculations are being reviewed but are yet to be agreed. For example, the MDS Technical Note [REP5-120, Appendix D] provides PIMP values for different land uses, however no justification is provided to support the allocation of these values. SCC do not	

	agree, for example, that asphalt roads/pavements can be considered 90% permeable. They are 100% impermeable. These assumptions will have significant knock-on implications to the impermeable areas used in calculations and subsequently the storage volumes required. The ACA Technical Note [REP5-120, Appendix B] utilises a greenfield run-off rate of Qbar. This approach is supported by SCC. However, the methodology used to determine this runoff rate is not agreed by SCC, as stated in SCC's response to REP5-120 [REP6-049, Table 12, Column 1]. Most basins fail to half drain within 24 hours as a function of their increased depth beyond the maximum recommended in national guidance, covered previously in this submission. SCC's preferred approach would be for all basins to be designed properly, in such a manner that half drain times are met, with acknowledgement of the additional land take this would require. SZC Co's proposal is to discharge to the CDO for events greater than 1:100+CC (which SCC support) but also to utilise this approach as a backup for the long half drain times. Leading on from the previous point, WMZ's 4 & 5 cannot connect to the CDO but are proposed to have an additional discharge of 1l/s/ha to help reduce their half drain times. However, the location of this additional discharge has not been stated. WMZ 6 and both ACA basins fail to half drain in 24 hours, cannot discharge to CDO and have no proposed alternative approach, such as accommodating a follow on 1:10 storm after 24 hours. Some of the proposed outfalls are located outside the Order Limits. It is acknowledged that these still fall within the SZC Estate.	

	The Campus area has been excluded from the Technical Note [REP5-120, Appendix D] and no information has been received to demonstrate a suitable, sufficient and deliverable Drainage Strategy within the Order Limits at this location. No information has been provided to detail how the operational infrastructure will manage surface water, either in the Outline Drainage Strategy [REP2-033] or any subsequent Technical Note. To be clear, this only relates to areas that are not subject to the nuclear safety case. <u>Drainage Strategies for Associated Development Sites</u> <u>Road schemes [REP5-120, Appendix F, G & H]</u> The general principles of surface water drainage for the road schemes (Two Village Bypass, Sizewell Link Road and Yoxford Roundabout) and agreed between SZC Co and SCC. However, the details required to confirm that the drainage strategies are deliverable within the Order Limits, whilst complying with national and local policy, best practice and guidance (in order to be eligible for adoption by SCC Highways) have not been provided to SCC. Design assumptions, such as maximum water depths, maximum basin depths, side slope gradients, factors of safety and maintenance requirements has not been provided to SCC to confirm agreement, any forthcoming design which does comply with SCC requirements will not be accepted. We are therefore unable to confirm that the proposed drainage strategies deliver suitable and sufficient mitigation. Final results of infiltration testing, used for design, have not been provided. Results of groundwater monitoring at proposed infiltration basin adjacent River Alde (east) have not been provided. High	

	infiltration rates have led to concerns RE potential continuity with groundwater. Alternative option not proposed if groundwater does present a problem. Results of pollution assessments have not been provided. The location of roadside swales when the road is at grade, in cutting and on embankment is not clear. Indicative sections should be provided for each of the schemes (multiple if necessary) to demonstrate where the swales will be located in each scenario and the size of the proposed swale. Some of the current proposals locate swales at the bottom of embankments, proposing runoff flows down the embankment prior to entering the swale. SCC have been clear that this arrangement will not be acceptable due to the risk of scour this approach could present to the embankment and the swale. It has not been demonstrated that positive outfalls (where required) are located within the Order Limits. It is proposed that SCC adopt 50m either side of the proposed watercourse crossings on Sizewell Link Road. This is not a standard approach and SCC do not intend to adopt watercourses 50m either side of the crossing. <u>Northern Park & Ride [REP6-024, Appendix A]</u> Highway improvements proposed to discharge to ordinary watercourse 150m east of A12, outside Order Limits, presumably on land outside of the Applicants control. This could present problems for SCC Highways to access and maintain any surface water drainage. The scheme proposes to outfall to two ditches. Neither of these ditches have been evidenced or demonstrated to have an effective outfall (particularly any piped crossing beneath the railway line). The level of both outfall ditches are unknown,	

	therefore the maximum depth of any attenuation structure is not known. No ground investigation results provided to confirm that infiltration is not suitable. No assessment of pollution has been undertaken. Calculations have only been provided for the proposed surface water system serving the A12 roundabout. It is unclear why calculations were not provided for the entire site. The calculations that were provided do not accurately model the proposed surface water drainage strategy. Whilst a Qbar discharge rate has been proposed (which SCC support). However, the methodology used to determine this runoff rate is not agreed by SCC, as stated in SCC's response to REP6-024 [7-157 <u>Southern Park & Ride [REP7-059 Appendix F]</u> Results of infiltration testing have been stated in the document but the raw testing results have not been submitted to corroborate this summary. Only four tests undertaken, three in the centre of the site and one to the north. Average infiltration rates, achieved across the three runs (although only two runs are listed in Table1) for each infiltration pit, have been used for design purposes. This does not comply with BRE 365 methodology (paragraph 3.2.3) which states the worst rate achieved across three test runs should be used for design purposes. All subsequent information based off this incorrect infiltration rate is therefore not accepted by SCC. A pumped solution is proposed to take surface water from the southern extent of the site, where no infiltration testing has been undertaken, to the northern extent of the site, where infiltration is proven. The pumping of surface water should be seen as a last	

	resort. The reason pumping has been included in this strategy is because the Applicant has not undertaken infiltration testing in the southern area of the site. This is not sufficient justification to propose a pumped solution and is entirely within the Applicants control. Notwithstanding the above, if infiltration was found in the southern extent of the site, it has not been demonstrated that there is sufficient space available for above ground storage to be accommodated (using an assumed rate of infiltration of 10mm/hr for design purposes until the results of further testing are received). If infiltration was not found in the southern extent of the site, SCC would expect any pumped system to be designed to accommodate a 24 hour pump failure, as per local guidance, the current design does not do this. The proposed drainage strategy is heavily reliant on below ground attenuation to provide sufficient storage of the sites required attenuation volume (73.6%). This is not compliant with Local Plan Policy SCLP9.6, with particular attention drawn to paragraph 5.59 which states *"Presently, there is a tendency for required attenuation volumes to be accommodated below ground. In order to discourage this, preference should be given to the installation of blue-green surface infrastructure, as opposed to hardscape or underground solutions, due to the wider benefits attained through ecosystem services provided by natural capital".* Only FSR rainfall has been applied to calculations. Calculations provided for MDS WMZs show this to be the least conservative methodology which would result in an underestimation of the required attenuation volumes. No climate change allowance has been modelled.	

	No pollution assessment has been undertaken. Extent of catchment, such as total catchment and impermeable areas has not been clearly identified, either in test or preferably on plan. Design assumptions, such as side slope gradients and justification for factors of safety are not known. Two separate basins are shown to the north of the site, connected by a pipe. This is not what is modelled in the calculations, and it is not known how the plan areas used in the calculations have been determined. <u>Freight Management Facility [REP7-059 Appendix G]</u> Results of infiltration testing have been stated in the document, but the raw testing results have not been submitted to corroborate this summary. Average infiltration rates, achieved across the three runs for each infiltration pit, have been used for design purposes. This does not comply with BRE 365 methodology (paragraph 3.2.3) which states the worst rate achieved across three test runs should be used for design purposes. All subsequent information based off this incorrect infiltration rate is therefore not accepted by SCC. No assessment of soil logs has been undertaken to understand why there is such variability in infiltration rates across the site. The proposed drainage strategy is entirely reliant on below ground attenuation to provide sufficient storage of the sites required attenuation volume. This is not compliant with Local Plan Policy SCLP9.6, with particular attention drawn to paragraph 5.59 which states *"Presently, there is a tendency for required attenuation volumes to be accommodated below ground. In order to discourage this, preference should be given*	

	to the installation of blue-green surface infrastructure, as opposed to hardscape or underground solutions, due to the wider benefits attained through ecosystem services provided by natural capital". Only FSR rainfall has been applied to calculations. Calculations provided for MDS WMZs show this to be the least conservative methodology which would result in an underestimation of the required attenuation volumes. No climate change allowance has been modelled. No pollution assessment has been undertaken and SCC have serious concerns about how this proposed development can deliver sufficient surface water treatment mitigation. The site is considered to have a high pollution hazard level, as per CIRIA SuDS Manual Simple Index Approach, Table 26.2. The proposals consist of traditional drainage directly into below ground crates. Even the use of proprietary treatment is unlikely to be sufficient and certainly cannot be considered a sustainable approach. Extent of catchment, such as total catchment and impermeable areas has not been clearly identified, either in test or preferably on plan. <u>Leiston Sports Facilities</u> No information has been provided to detail how the proposed sports facilities will manage the surface water generated by the proposed development. Leiston has well established problems with surface water flooding, as evidenced in the Leiston Surface Water Management Plan.	
Agenda Item 6 – Water Monitoring and Response Strategy [AS-236]		

Outstanding issues relating to the Water Monitoring and Response Strategy.		
Agenda Item 7 – Water Framework Directive Compliance Assessment		
Outstanding concerns with respect to the Water Framework Directive Compliance Assessment.	We defer to Environment Agency on this matter.	
Agenda Item 8 – Coastal Processes Update		
Coastal processes update to include the following: Modelling for SCDF through decommissioning to 2140; modelling relating to the detailed design of the adapted HCDF; the SCDF design; the provision of additional modelling, plans, sections, and information sought by IPs; the Minsmere Sluice Operation Technical Note; the monitoring, triggers, mitigation, and controls incorporated within the latest revisions of the draft DCO requirements, the DML and the CPMMP.	We defer to Environment Agency and East Suffolk Council on this matter.	
Agenda Item 8 – Any other matters relevant to the agenda		

Schedule

Appendix 1 – proposed amendments to Requirement 5

5. Project wide: Surface and foul water drainage – **option 1**

(1) No part of the authorised development (save for Work No. 1B, 1C, 4A(c), 9(b), 10(b), 11, 12, 13(b), 14, 15, 16 or 17) may be commenced until details of the ~~surface and~~ foul water drainage system for that part (including projected volume and flow rates, management and maintenance arrangements, means of pollution control, sewage treatment works and a programme of construction and implementation) have been submitted to and approved by East Suffolk Council, following consultation with the Environment Agency, the relevant Statutory Nature Conservation Body, the East Suffolk Internal Drainage Board and the sewerage undertaker.~~, the Lead Local Flood Authority and the drainage authority.~~

(2) No part of the authorised development (save for Work No. 1B, 1C, 4A(c), 9(b), 10(b), 11, 12, 13(b), 14, 15, 16 or 17) may be commenced until details of the surface water drainage system for that part (including management and maintenance arrangements, means of pollution control, and a programme of construction and implementation) have been submitted to and approved by Suffolk County Council, following consultation with the Environment Agency, the relevant Statutory Nature Conservation Body, the relevant Internal Drainage Board and the sewerage undertaker.

~~(2) Following approval pursuant to (1) above, East Suffolk Council shall provide details of the approved surface and foul water drainage system to Suffolk County Council, and no part of the authorised development may be commenced until the details of the approved management and maintenance arrangements and means of pollution control for that part have been endorsed by Suffolk County Council in its capacity as the Lead Local Flood Authority and the drainage authority.~~

(3) The details of the ~~surface and~~ the foul water drainage ~~proposals~~ system and the surface water drainage system must be based on sustainable drainage principles and must be in accordance with the Drainage Strategy.

(4) Any approved ~~surface and~~ foul water drainage system or surface water drainage system must be constructed and maintained in accordance with the approved details.

5. Project wide: Surface and foul water drainage – **option 2**

(1) No part of the authorised development (save for Work No. 1B, 1C, 4A(c), 9(b), 10(b), 11, 12, 13(b), 14, 15, 16 or 17) may be commenced until details of the surface and foul water drainage systems for that part (including projected volume and flow rates, management and maintenance arrangements, means of pollution control, sewage treatment works and a programme of construction and implementation) have been submitted to and approved by East Suffolk Council, following consultation with the Environment Agency, the relevant Statutory Nature Conservation Body, the sewerage undertaker and East Suffolk Internal Drainage Board~~, the Lead Local Flood Authority and the drainage authority~~.

(2) Following approval pursuant to (1) above, ~~East Suffolk Council shall~~ the undertaker must, as soon as possible, provide details of the approved surface ~~and foul~~ water drainage system to Suffolk County Council~~, and no part of the authorised development may be commenced until the details of the approved management and maintenance arrangements and means of pollution control for that part have been endorsed by Suffolk County Council in its capacity as the Lead Local Flood Authority and the drainage authority~~.

(3) The surface and foul water drainage ~~proposals~~ systems must be based on sustainable drainage principles and must be in accordance with the Drainage Strategy.

(4) Any approved surface and foul water drainage system must be constructed and maintained in accordance with the approved details.

(5) Details of the surface and foul water drainage system must not be submitted to East Suffolk Council for approval pursuant to (1) above until Suffolk County Council has approved the additional details in support of the Drainage Strategy.

(6) The additional details referred to in (5) above must include information (consistent with national and local policy and based upon best practice and guidance) in respect of the surface water mitigation to be provided, and its location.

Appendix 2: Examples where County Council is discharging authority for Surface and Foul Water Drainage

Southampton to London Pipeline Development Consent Order 2020

Surface and foul water drainage

9.(1) No stage of the authorised development must commence until, for that stage, a surface and foul water drainage plan for permanent works relevant to that stage, in accordance with the outline SFWDP, has been submitted to and approved by t**he sewerage and/or drainage authority or, where applicable, the Environment Agency and/or the Lead Local Flood Authority**.

(2) The surface water drainage system for each stage must be constructed in accordance with the approved details.

(3) No discharge of water under article 18 (discharge of water) must be made until details of the location and rate of discharge have been submitted to and approved in writing by **the relevant sewerage and/or drainage authority or, where applicable, the Environment Agency and/or the Lead Local Flood Authority**.

Interpretation: “Lead Local Flood Authority” means Hampshire County Council or Surrey County Council, as the case may be

Northampton Gateway Rail Freight Interchange Order 2019

Flood risk and surface water drainage

18.—(1) No component of the authorised development on the main site (excluding archaeological investigation, ecological mitigation works and geotechnical or ground contamination investigation) must commence until a surface water drainage scheme for that component based on sustainable drainage principles has been submitted to and approved in writing by **the lead local flood authority**. The scheme must be in accordance with the sustainable drainage statement and must be informed by additional infiltration testing in accordance with BRE standard 365 “Soakaway design”, the extent of which is to be approved in advance by the lead local flood authority, the aim of which is to identify the maximum extent of reliance upon infiltration in accordance with the drainage hierarchy set out in the sustainable drainage strategy.

(2) The surface water drainage scheme must be implemented in accordance with the details approved by **the lead local flood authority** or in accordance with any variations to those details agreed in writing by **the lead local flood authority**.

Hornsea Three Offshore Wind Farm Order 2020

Surface water

15.—(1) No part of the onshore HVDC/HVAC substation or onshore HVAC booster station shall commence until, in respect of that installation, a detailed surface water scheme has been prepared in consultation with the Environment Agency and Norfolk County Council and submitted to and approved in writing by **Norfolk County Council**.

(2) The detailed surface water schemes must accord with the outline code of construction practice and—

(a) be based on sustainable drainage principles;

(b) an assessment of the hydrological and hydrogeological context of the onshore HVDC/HVAC substation or onshore HVAC booster station, as applicable; and

(c) include detailed designs of a surface water drainage scheme.

(3) Construction of the onshore HVDC/HVAC substation or HVAC booster station as applicable must be carried out in accordance with the approved scheme.