East Anglia ONE North and East Anglia TWO Offshore Windfarms

Applicants' Comments on SASES' Deadline 9 Submissions

Applicant: East Anglia TWO and East Anglia ONE North Limited
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Author: Royal HaskoningDHV

Applicable to East Anglia ONE North and East Anglia TWO

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Glossary of Acronyms

AIS	Air Insulated Substation
AONB	Area of Outstanding Natural Beauty
APP	Application Document
AS	Additional Submission
BBPP	Breeding Bird protection Plan
BEIS	Department for Business, Energy and Industrial Strategy
CCS	Construction Consolidation Site
CHVP	Cultural Heritage Viewpoint
CION	Connections and Infrastructure Options Note
CoCP	Code of Construction Practice
DCO	Development Consent Order
DCO	Development Consent Order
DML	Deemed Marine Licence
EIA	Environmental Impact Assessment
ES	Environmental Statement
ESC	East Suffolk Council
GDPR	General Data Protection Regulations
GIS	Gas Insulated Substation
HDD	Horizontal Directional Drilling
HF	High Frequency
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
kW	Kilowatt
LCA	Landscape Character Assessment
LCT	Landscape Character Type
LLFA	Lead Local Flood Authority
LMP	Landscape Management Plan
LMP	Landscape Mitigation Plan
LOAEL	Limited Observed Adverse Effect Level
LVIA	Landscape and Visual Impact Assessment
MMO	Marine Management Organisation
MoU	Memorandum of Understanding
MW	Megawatt
NG	National Grid
NGESO	National Grid Electricity System Operator
NGET	National Grid Electricity Transmission
NGV	National Grid Ventures
NOA	Network Options Assessment
NPPF	National Planning Policy Framework
NPS	National Policy Statement
OLEMS	Outline Landscape and Ecological Management Strategy
OLMP	Outline Landscape Mitigation Plan
OTNR	Offshore Transmission Network Review
PD	Procedural Decision
PRoW	Public Right of Way
SASES	Substation Action Save East Suffolk
SCC	Suffolk County Council
SOAEL	Significant Observed Adverse Effect Level

SuDS	Sustainable Drainage System
SWMP	Surface Water Management Plan
SQSS	Security and Quality of Supply Standard
UK	United Kingdom
VP	Viewpoint

Glossary of Terminology

Applicant	East Anglia TWO Limited / East Anglia ONE North Limited
Cable sealing end compound	A compound which allows the safe transition of cables between the overhead lines and underground cables which connect to the National Grid substation.
Construction consolidation sites	Compounds associated with the onshore works which may include elements such as hard standings, lay down and storage areas for construction materials and equipment, areas for vehicular parking, welfare facilities, wheel washing facilities, workshop facilities and temporary fencing or other means of enclosure.
Development area	The area comprising the onshore development area and the offshore development area (described as the 'order limits' within the Development Consent Order).
East Anglia ONE North project	The proposed project consisting of up to 67 wind turbines, up to four offshore electrical platforms, up to one construction, operation and maintenance platform, inter-array cables, platform link cables, up to one operational meteorological mast, up to two offshore export cables, fibre optic cables, landfall infrastructure, onshore cables and ducts, onshore substation, and National Grid infrastructure.
East Anglia ONE North windfarm site	The offshore area within which wind turbines and offshore platforms will be located.
East Anglia TWO project	The proposed project consisting of up to 75 wind turbines, up to four offshore electrical platforms, up to one construction, operation and maintenance platform, inter-array cables, platform link cables, up to one operational meteorological mast, up to two offshore export cables, fibre optic cables, landfall infrastructure, onshore cables and ducts, onshore substation, and National Grid infrastructure.
East Anglia TWO windfarm site	The offshore area within which wind turbines and offshore platforms will be located.
Horizontal directional drilling (HDD)	A method of cable installation where the cable is drilled beneath a feature without the need for trenching.
Jointing bay	Underground structures constructed at intervals along the onshore cable route to join sections of cable and facilitate installation of the cables into the buried ducts.
Landfall	The area (from Mean Low Water Springs) where the offshore export cables would make contact with land, and connect to the onshore cables.
National electricity grid	The high voltage electricity transmission network in England and Wales owned and maintained by National Grid Electricity Transmission.

National Grid infrastructure	A National Grid substation, cable sealing end compounds, cable sealing end (with circuit breaker) compound, underground cabling and National Grid overhead line realignment works to facilitate connection to the national electricity grid, all of which will be consented as part of the proposed East Anglia ONE North / East Anglia TWO project Development Consent Order but will be National Grid owned assets.
National Grid substation	The substation (including all of the electrical equipment within it) necessary to connect the electricity generated by the proposed East Anglia ONE North / East Anglia TWO project to the national electricity grid which will be owned by National Grid but is being consented as part of the proposed East Anglia ONE North / East Anglia TWO project Development Consent Order.
National Grid substation location	The proposed location of the National Grid substation.
Onshore cable corridor	The corridor within which the onshore cable route will be located.
Onshore cable route	This is the construction swathe within the onshore cable corridor which would contain onshore cables as well as temporary ground required for construction which includes cable trenches, haul road and spoil storage areas.
Onshore cables	The cables which would bring electricity from landfall to the onshore substation. The onshore cable is comprised of up to six power cables (which may be laid directly within a trench, or laid in cable ducts or protective covers), up to two fibre optic cables and up to two distributed temperature sensing cables.
Onshore development area	The area in which the landfall, onshore cable corridor, onshore substation, landscaping and ecological mitigation areas, temporary construction facilities (such as access roads and construction consolidation sites), and the National Grid Infrastructure will be located.
Onshore infrastructure	The combined name for all of the onshore infrastructure associated with the proposed East Anglia TWO project from landfall to the connection to the national electricity grid.
Onshore substation	The East Anglia ONE North / East Anglia TWO substation and all of the electrical equipment within the onshore substation and connecting to the National Grid infrastructure.
Onshore substation location	The proposed location of the onshore substation for the proposed East Anglia ONE North / East Anglia TWO project.
Transition bay	Underground structures at the landfall that house the joints between the offshore export cables and the onshore cables.

1 Introduction

1. This document presents the Applicants' comments on Substation Action Save East Suffolk's (SASES) Deadline 9 submissions, including the following:

   - Comments on Deadline 8 Submissions in respect of Noise (REP9-082);
   - Comments on Substation Design Principles Statement (REP9-078);
   - Comments on National Grid Substation Extension Appraisal (REP9-075);
   - Comments on Deadline 8 Flood Risk Submissions (REP9-080);
   - Comments on Draft DCOs Submitted at Deadline 8 (REP9-079);
   - Comments on CAH3 Submissions (REP9-077);
   - Updated Pathfinder Clarification Note (REP9-076);
   - Comments on Other Deadline 8 Submissions (REP9-083); and
   - Comments on the Quality of Stakeholder Engagement (REP9-081).

2. This document is applicable to both the East Anglia TWO and East Anglia ONE North Development Consent Order (DCO) applications, and therefore is endorsed with the yellow and blue icon used to identify materially identical documentation in accordance with the Examining Authority's (ExA) procedural decisions on document management of 23rd December 2019 (PD-004). Whilst this document has been submitted to both Examinations, if it is read for one project submission there is no need to read it for the other project submission.

2 Comments on SASES' Deadline 9 Submissions

2.1 SASES' Comments on the Applicants' Deadline 8 Submissions in Respect of Noise (REP9-082)

ID	SASES' Comment	Applicants' Comments
Introduction		
1	A number of submissions relating to noise were made a Deadline 8 by the Applicants and East Suffolk Council. This submission focuses on operational noise since a compromise has been reached in relation to construction noise.	Noted. The Applicants are pleased to have been able to reach an agreed position regarding construction noise with both SASES and East Suffolk Council (ESC).
2	In respect of operational noise the Applicants have reached an agreement in respect of the operational noise requirement with the Council, no doubt by the Council in the anticipation that the examinations were coming to an end. However that agreement did not involve SASES. It is disappointing that SASES was not contacted in relation to operational noise matters which were discussed by Applicants and the Council alone, contrary to Action Point 10 ISH 15.	The Applicants engaged extensively with ESC regarding operational noise controls between ISH 15 and Deadline 8 to come to agreement on the controls. The Applicants understood the action points requesting consultation with SASES to be in relation to construction phase noise controls, particularly regarding the approach to referencing Lowest Observed Adverse Effect Levels (LOAELs) and Significant Observed Adverse Effect Levels (SOAELs).
3	The Council's response to Action Point 10, Requirements on Noise, is misleading as it fails to mention that SASES was not involved in those discussions despite the Examining Authorities' wishes. There is no excuse for the Applicants and the Council to have excluded SASES and its expert Rupert Thornely-Taylor from those discussions, particularly given the discussions concerning construction noise were productive.	As previously mentioned in response at ID2, the Applicants understood the action point to engage with SASES to be in relation to construction phase noise controls.
4	As a consequence the substantive issues concerning background noise levels, tonality, the ability of the Applicants to mitigate adverse effects and the impulsive noise from the National Grid	The Applicants do not agree that the newly drafted commitments and wording of Requirement 12 of the ***draft DCO*** (document reference 3.1) leave the community of Friston at risk of significant adverse noise effects and refer to the

ID	SASES' Comment	Applicants' Comments
	switchgear have not been resolved. Further it has resulted in a defective draft noise requirement which will continue to put the community of Friston at risk of significant adverse noise effects.	assessment conclusions presented within the ***Noise Modelling Clarification Note*** (REP4-043). The requirement ensures that the operational noise will be an integral part of the design process. ESC will have final approval of the substation design, which will include having regard to the control of operational noise, and can decide not to approve the discharge of Requirement 12 of the final DCO should they consider operational noise to be insufficiently mitigated.
5	SASES relies upon its noise submission at Deadline 8 and makes the following comments on the operational noise related submissions made by the Applicants and East Suffolk Council made at Deadline 8.	Noted. Please see responses at ID6 to ID32.
Background Noise		
6	Issues relating to background noise are unresolved.	Noted. Please see ID7 to ID8 for comments on specific matters raised by SASES in relation to background noise.
7	The Applicants' Position Statement on Noise (REP8-039) contains the statement: "39. *Notwithstanding, if the background sound levels measured at SSR9 were applied at face value it would indicate a potential adverse impact at night but not an indication of a significant adverse impact. But when the absolute level of sound is considered it can be safely concluded that no impacts will occur. As a consequence, SASES representations on the background sound levels do not have any material implications on the outcome of the BS4142:2014 +A1:2019 assessment when the differences between the rating level and background sound level are considered in contex*t." The background LA90 at SSR9 was 18 dBA, so that (applying BS4142) a rating level of 28 dBA LArTr is identified as SOAEL,	The Applicants are unsure of the point that is being made, which appears to be inconsistent with SASES' Deadline 8 submission. BS4142:2014+A1:2019 requires the absolute sound to be considered. At Deadline 8 SASES suggested that an absolute rating level of 30dB is appropriate (please also refer to the Applicants' responses at ID18 and ID19). When the additional distance at SSR9 is considered, their preferred rating level would be achieved (see ***Noise Modelling Clarification Note*** (REP4-043)).

ID	SASES' Comment	Applicants' Comments
	subject to considering context. Detailed consideration of context does not change this, particularly as the Position Statement on Noise states "it is not necessary or reliable to use other methods [than BS 4142] such as that set out in NANR45 [the Defra/Salford report] and certainly not hybrid versions of the method." The DCO as currently drafted will allow 31 dB LArTr which would therefore be well in excess of the threshold of significant observed adverse effect level.	
8	Accordingly, on any reasoned analysis the Applicants' assertion that there would be "no impacts" based on the use of the SSR9 background LA90 figure is demonstrably wrong. There would be significant adverse impacts.	This is not consistent with BS4142:2014+A1:2019, which requires the difference between the rating level and the background sound level to be considered in context.
Tonality and Mitigation		
9	The Applicants in support of their position continue to rely upon the noise report prepared in respect of EA1 which is deeply flawed for the reasons explained in SASES submission at Deadline 6 (REP6-135). The Applicants also seek rely on an anecdotal report from when he walked around the Bramford substation. In short there is no reliable evidence produced by the Applicants that the substations will not be tonal.	The Applicants do not consider the ***East Anglia ONE Onshore Substation Operational Noise Assessment*** (REP5-022) to be flawed and note the disagreement and the continued difference of position with SASES on this matter. Regardless, Requirement 27 of the ***draft DCO*** (document reference 3.1) sets limits according to the rating level which accounts for any tonality. Compliance with the rating levels set out within Requirement 27 of the ***draft DCO*** (document reference 3.1), together with the commitment to undertaken pre-commencement work to discharge Requirement 12, will ensure that there will be no impact. The Applicants fully meet the policy tests set out in 5.11.9 of the Energy NPS EN-1.

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10	The Applicants' argument that modern transformer installations are not tonal is flawed for more than one reason. Firstly, a number of recent environmental statements/noise assessments make the assumption that the noise is tonal. In addition to Triton Knoll there is evidence from Kintore (https://www.ssen-transmission.co.uk/media/4578/appendix-32-noise-impactassessment.pdf). These are modern installations. Secondly, attenuating transformers by enclosure does not change tonality. The enclosures reduce the level in all frequency bands, although not by exactly the same amount, but enclosures certainly do not suppress the prominence of the tone relative to adjacent bands. The only exception to this would be if other completely non-tonal sources on the site provided masking noise, but there is no indication that is the case.	That a number of recent Environmental Statements (ES) / noise assessments assume that the noise is tonal does not provide evidence that the Projects will generate tonal noise at residential receptor locations. The applicants for the schemes referred to would have made these assumptions according to their circumstances and the level of technical work that was available at the time of the impact assessments. The Applicants note that certain parts of these assessments are referred to but not others. For example, the assessment methodology for Triton Knoll suggests that the impact will be low when operational noise levels (including relevant tonal penalties) are below 35 dB LAeq. It is very straightforward to take a point from another ES and use it to fit a particular argument used selectively rather than considering it in context and having regard to the way in which the methodologies have been developed for the circumstances that apply to the application in question (https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN020019/EN020019-000283-6.2.3.11%20Noise%20and%20Vibration.pdf). With respect to the Projects, the Applicants consider that sufficient work has been carried out to justify the assumptions made, and this has been corroborated by Pinnacle Acoustics. It is incorrect to suggest that enclosures do not change the perceptibility of tones from the transformers. It is agreed that enclosures do not suppress the prominence of a tone relative to adjacent bands and that enclosures attenuate sound across a broad frequency range. In this way the overall sound is attenuated relative to other items of equipment located within substations, including mechanical and electrical plant that is used to maintain the transformers and other equipment within the required temperature range. Although enclosures represent an important feature of modern substations, it is important to recognise that they only represent one method of control and that a

ID	SASES' Comment	Applicants' Comments
		range of measures will be used to control noise emanating from the onshore substations, including the selection, design and specification of each individual item of equipment. In this way, enclosures only represent a single part of a toolkit of measures that the Applicants will use to control noise
11	Otherwise, only by reducing the noise level to the point that its perceptibility is reduced does tonality become reduced. There are two ways this can happen (1) by reducing the noise below the background and (2) by reducing the level below the threshold of audibility.	Noted and agreed. It is worth noting that the perceptibility of the sound will depend on the ambient sound as well as the background sound level. This is recognised in Section 11 of BS4142:2014+A1:2019 which states: *"The character and level of the residual sound compared to the character and level of the specific sound. Consider whether it would be beneficial to compare the frequency spectrum and temporal variation of the specific sound with that of the ambient or residual sound to assess the degree to which the specific sound source is likely to be distinguishable and will represent an incongruous sound by comparison to the acoustic environment that would occur in the absence of the specific sound. Any sound parameters, sampling periods and averaging time periods used to undertake character comparisons should reflect the way in which sound of an industrial and/ or commercial nature is likely to be perceived and how people react to it."* It is worth remembering that SASES has focused on the perceptibility of tones at night when people would be indoors. When people are inside bedrooms there will be additional attenuation of sound as it is transmitted from outside to inside, even with windows open. In addition, there will be further masking from internally generated sounds, which will be relevant at such low sound levels. The Applicants have previously referred to the examples in BS4142:2014+A1:2019, which relate to this point.
12	The Applicants have still failed to provide a logical reason for rejecting SSR9. They are proposing 31 dBA at SSR3. This will not be imperceptible, or even of reduced perceptibility in a background	The perceptibility of tones will depend on the prominence of any tone in relation to:

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	of 18 dBA. The ISO 226 threshold of audibility at 100Hz is 26 dB (unweighted, i.e. dBL, equivalent to 7 dBA), so at 31dBA the noise is well above threshold. Accordingly, there is no basis for rejecting a penalty for tonality based on the noise being imperceptible at the receptor.	• The overall level of sound emitted from the onshore substations from all the equipment, including several items of mechanical equipment known to emit broadband sound. Equipment such as the transformers and the shunt reactors, which are capable of emitting tonal sound, only represent a small proportion of the total number of individual items of equipment as demonstrated by ***Table 3*** and ***Table 4*** of the ***Noise Modelling Clarification Note*** (REP4-043); and • The ambient sound level at the receiver location in which the sound will be perceived (mostly inside people's bedrooms in the middle of the night. ***Section 6.3*** of the ***Noise Modelling Clarification Note*** (REP4-043) provides information on the dominant noise sources. It shows that the relative sound contribution from the transformers is low compared to the total predicted noise level. It is worth noting that the Auto Transformer Coolers referred to are not the transformers themselves, but the mechanical cooling equipment associated with the transformers. This is the type of mechanical system that lends itself to conventional means of noise control (e.g. splitter silencers). It is also worth noting that the Harmonic Filters referred to are assumed to be in the open. This equipment can be enclosed if necessary. Because emissions from transformers represent a small contribution to the overall sound it is likely that any tonal components associated with the transformers will be significantly masked by emissions from other equipment. It is too simplistic to suggest that the perceptibility and audibility of the tones will depend on the difference between the rating level and the external background sound level and the threshold of audibility curves. Neither is such an approach consistent with BS4142:2014+A1:2019 which contains detailed procedures in Annexes C and D for the assessment of tonality and the scale of any corrections to be applied.

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13	The Applicants are rejecting BS 4142's statement that: "*The standard is not applicable to the assessment of low frequency noise. NOTE Information on the assessment of low frequency noise is given in NANR45 [1, 2*]" because it also includes examples dealing with noise containing "hum". This is a complete non sequitur, as hums can occur at any frequency. Humans can hum, but not at 100Hz, and many industrial noise sources such as fans and pumps can hum all the way up the spectrum.	The Applicants have explained that BS4142:2014+A1:2019 is applicable and deals with hums perfectly well. Explanations have also been provided as to why the NANR45 method is inapplicable and inappropriate. The NANR45 report states explicitly that it does not apply to planning situations. The reason for this is clear when it is considered properly and in its full context, namely it is a method for investigating complaints about low frequency noise that are not plainly audible and difficult to assess. Neither is it suggested or considered to be a method for assessing sound with tones.
14	In NANR45, referred to in the note immediately following the disapplication for low frequency noise, low frequency noise is defined as noise below 160Hz.	It is correct that NANR45 includes low frequency sound up to 160Hz. Accordingly, it can be seen that there is an overlap in the frequency range covered by BS4142:2014+A1:2019 and NANR45. But it is far too simplistic to suggest that NANR45 should be applied because it covers frequencies up to 160Hz. When the scope and purpose of NANR45 is considered in its full context it is apparent that it does not apply to the Applications. It is illogical to suggest that NANR45 should either supersede or supplement BS4142:2014+A1:2019. There are no areas of grey or ambiguity in relation to this point. BS4142:2014+A1:2019 is the correct standard to be applied to this situation. If the Applicants considered that there was any merit in using NANR45 then it would be considered. The fact is that NANR45 does not provide anything of merit to this particular case.
15	The case that noise from a modern installation will be capable of full mitigation by enclosure is not made. This website https://www.kimptonacoustics.co.uk/project/blackhillock-substation-acoustic-enclosuresfor-siemens/	The case study referred to at the website link does not support SASES assertion that a reduction of 20dB was deemed challenging. The case study certainly refers to challenges on the Blackhillock substation due to the corrosive marine environment, the presence of concrete blast walls affecting access and the restrictions presented by the fact that Blackhillock was an extension to an

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	suggests that a reduction of 20 dB was challenging. The Applicants are already assuming, according to the ES, that a transformer with a sound power level of 101 dB will be reduced by enclosure to a sound pressure level of 58 dBA 1m from the enclosure. Conversion between sound power level and sound pressure level depends on the size of the enclosure, but this suggests that a reduction of well over 20 dB is already assumed, before facing up to lower Requirement 26/27 levels and a 6dB tonal penalty. It is unclear what further reduction can viably be achieved.	existing live substation and SuperGrid Transformers were being installed in highly constrained locations due to existing electrical equipment. No mention is made of any difficulty in the enclosure achieving the required sound insulation performance, indeed it is stated that the required performance was actually exceeded. The referenced case study can, indeed, be considered to support the Applicants' position that appropriate levels of mitigation can be achieved. Requirement 27 of the ***draft DCO*** (document reference 3.1) sets limits according to the rating level which accounts for any tonality penalty.
16	Given the profound consequences of the substations emitting tonal noise which will require a 6dB penalty the Applicants should be required to demonstrate that they can mitigate tonal noise prior to consent. Leaving this matter post consent on the basis of a precommencement condition places the deliverability of the projects at risk. This risk has become all the more acute because the Applicants have admitted (ID LA-08.15 of the SoCG with ESC and SCC, page 115 REP8-114) "*The maximum operational noise rating levels secured through Requirement 27 are the lowest levels that can be agreed based on the Applicants discussions with potential suppliers.*"	The Applicants do not consider that any more technical work can be reasonably undertaken at this stage to demonstrate that the noise can be controlled so as to meet the Requirements of the DCO. Notable technical information has been provided and is sufficient. It would be unreasonable to expect the Applicants to undertake detailed design at this stage and engage and instruct suppliers before the ***draft DCO*** (document reference 3.1) has been approved. A robust design and assurance process will be followed to ensure that the noise limits will be met. This process has been used on other major infrastructure projects and works perfectly well. Such a process is also entirely consistent with section 5.11.9 of the NPS EN-1.
East Suffolk Council's Position		
17	The Council also has unresolved concerns on background noise and refers to these as "professional disagreements" - see the Council's response to action point 10 from ISH 15 (REP8-148). These disagreements are also clearly reflected in the Statement of Common Ground with ESC, table 18 (REP8-114).	Noted. Whilst there remain matters of professional disagreement between the Applicants and ESC regarding the derivation of background noise, it is noted that agreement has been reached regarding the mechanisms for controlling operational noise through updates to the wording of Requirements 12 and 27 of

ID	SASES' Comment	Applicants' Comments
		the ***draft DCO*** (document reference 3.1) and the ***Substations Design Principles Statement*** submitted at Deadline 8 (REP8-082).
18	Yet in its response to Action Point 5 ISH 12 operational noise (REP8-145), the Council provides an example of LOAEL and SOAEL if background was set at 24dB. LOAEL ≥ 24 dB LAr (background level) SOAEL ≥ 34 dB LAr (background level plus 10 dB)	Noted. However, the Applicants confirm that they have routinely contested ESC's analysis of the lowest observed adverse effect level (LOAEL) and significant observed adverse effect level (SOAEL) values because they still continue not to consider the absolute level of sound in accordance with Section 11 of BS4142:2014+A1:2019. SASES on the other hand has given advice on the absolute level of sound. It recommends: *"Since these figures are very low It is right to take account of absolute sound levels. Considering this, and applying appropriate guidance, a noise limit of 30dB at relevant receptors is appropriate to meet the requirements of national policy*". On that basis, SASES does not agree with ESC's position on LOAELs and SOAELs. The Applicants position on the absolute sound level is set out in ***section 2.3*** of the ***Applicants' Comments on SASES' Deadline 8 Submissions*** (REP9-014).
19	However for the reasons stated, 24dB is not the background level. It is only an example of a background level. If background levels are set in accordance with BS4142 taking into account SSR9 then LOAEL is 23dB and SOAEL 28 dB.	SASES appears to be contradicting the submissions made at Deadline 8 in which it claimed that a SOAEL value is 28dB, that being lower than its recommended absolute sound rating level of 30dB.
20	Despite the fact 24 dB is only an example, the Council seems to accept that 24dB is representative of background and has decided to accept the Applicants' draft noise requirement on this basis. This is an irrational decision since it is based upon an example of background which is incorrect in circumstances where the Council	The Applicants have engaged constructively and extensively with ESC and do not believe ESC's decision to be irrational.

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	itself does not agree background noise levels proposed by the Applicants.	
21	Furthermore the Council's decision seems to have been influenced by the Applicants' confirmation that the limits set in the noise requirement are the lowest levels currently achievable (see Statement of Common Ground and the Council's response to Action Point 5 ISH 12 REP8-145). This is an irrelevant consideration when determining what the appropriate noise rating levels should be, and in concluding whether significant adverse effects will remain. What this consideration does do is highlight that the Applicants cannot deliver the mitigation which is necessary to avoid a significant adverse effect.	The Applicants note the commitment within the ***Substations Design Principles Statement*** submitted at Deadline 8 (REP8-052) that *"The Applicants will seek to minimise the operational noise rating level below the limits set out in* ***Requirement 27*** *of the* ***draft DCO*** *(REP7-006)"*. When taking the above commitment together with the knowledge that the specified maximum operational noise rating levels are the lowest levels currently achievable, the Applicants understand that ESC is comfortable that these commitments provide sufficient assurance that effective control of operational noise will be implemented. The Applicants also note the Rochdale envelope approach to assessing potential impacts on Nationally Significant Infrastructure Projects (NSIPs) for the purposes of applying for development consent. As the design of the onshore substations develops further post-consent, where opportunities are identified which will further reduce environmental impacts assessed within ES these will be fully considered and adopted where such decisions do not result in unreasonable costs or delays to the Projects. It is the Applicants' view that the commitments tabled at Deadline 8 provide the appropriate level of control for regulators and flexibility for the Applicants to successfully deliver the Projects in a compliant manner, but also to reduce the operational noise levels further insofar as those measures do not result in unreasonable costs or delays to the Projects or otherwise result in adverse impacts on other aspects of the environment (e.g. landscape and visual impacts).

ID	SASES' Comment	Applicants' Comments
22	The Council and the Applicants are also placing reliance upon a revised Requirement 12 in the draft DCO (REP8-004) and an updated Substations Design Principles Statement (REP8-082).	Please see response at ID23.
23	The new Requirement 12(2) states: "*No stage of Work No. 30 may commence until written details of the specification of plant, and any noise mitigation proposed in respect of Work No. 30 together with updated modelling, have been submitted to and approved in writing by the relevant planning authority. Work No. 30 must thereafter be implemented in accordance with the approved details.*" There are a number of problems with this Requirement as follows. a. It defers the deliverability of mitigation to after consent, contrary to law and policy. b. It only applies to the Applicants' substations and not the National Grid infrastructure. c. No independent evidence or opinion has to be produced that the specification and noise mitigation will result in Requirement 27 being met. As has been stated on previous occasions the only parties with access to the necessary electrical engineering expertise are the Applicants. The local planning authority when faced with details of specification of plant and any noise mitigation will have no basis for determining whether they are adequate or not. d. It does not address the situation where the substations are built in accordance with the approved details but in fact the noise requirement is not met. Any approval of these written	a. The Applicants note that the updates to the requirements of the ***draft DCO*** (document reference 3.1) were proposed by ESC within its submissions at Deadline 6 (REP6-081) and during Issue Specific Hearing (ISH) 12. Within their Deadline 6 submission, ESC state that their concerns regarding tonality of operational noise '*could potentially be resolved by redrafting Requirements 26 and 27 to include the types of pre-commencement and post-completion conditions set out in the Development Consent Order (DCO) for East Anglia ONE…*'. From this, it was understood that the introduction of a pre-commencement requirement for approval by the relevant planning authority would provide sufficient assurance to ESC to address their concerns regarding any perceivable tonal characteristics associated with the operation of the onshore substations. This has been confirmed and agreed by ESC (REP8-114). In light of further engagement with ESC prior to Deadline 8, the Applicants and ESC agreed on updating Requirement 12 of the ***draft DCO*** to provide a mechanism for the pre-commencement approval of design details, mitigation and modelling of operational noise, to be presented within an Operational Noise Design Report as referred to within the ***Substations Design Principles Statement*** (REP8-082). The Operational Noise Design Report will set out the particulars of: • Layout of the onshore substations and National Grid substation; • Equipment specifications (with regard to sound power levels); • Details of any physical attenuation measures such as acoustic screens or bunds;

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	details by the relevant planning authority must be without prejudice to the overriding need for the substations to meet the noise requirement.	• Noise prediction methods and the results obtained from the modelling including consideration of uncertainty in the predictions; • Provision of 1/3 octave spectrum information at the noise sensitive locations specified within Requirement 27 of the DCO; and • Where available, provide supplier information / measurement data to inform consideration of the audibility of tones using the reference method set out in Section 9.3.3 and Annex D of BS4142:2014+A1:2019. This approach aligns with that adopted by the consented East Anglia ONE project. b. The Applicants note that the equipment comprising the National Grid substation and associated infrastructure does not materially contribute to the predicted received noise levels at the closest noise sensitive receptors (SSR2, SSR3 and SSR5 NEW), as explained in the ***Noise Modelling Clarification Note*** submitted at Deadline 4 (REP4-043). In line with Requirement 27 of the ***draft DCO*** (document reference 3.1), the cumulative operation of the National Grid substation with the Projects' substations must not exceed the specified maximum operational noise rating levels at the specified monitoring locations. The maximum operational noise rating levels must be complied with (including any tones identified within the operational noise). The Applicants note that Requirement 12(5) of the ***draft DCO*** (document reference 3.1) states that *"Any details provided by the undertaker pursuant to paragraphs (1), (2), (3) and (4) must accord with the substations design principles statement and be within the Order limits"*. The provisions relating to the control of operational noise within the ***Substations Design Principles Statement*** (REP8-082) also apply to the National Grid substation. As such, it is considered that between the ***draft DCO*** (document reference 3.1) and the ***Substations Design Principles Statement*** (REP8-082), the

ID	SASES' Comment	Applicants' Comments
		commitments on operational noise from the National Grid substation are sufficiently secured. c. The Applicants consider this to be irrelevant. The Projects' substations and National Grid substation and associated infrastructure will be designed and built in compliance with the parameters within the DCO and the commitments made within the Applications. The Applicants will work closely with National Grid Electricity Transmission (NGET) to ensure this is the case. Post-consent during the procurement and detailed design stage, the Applicants will receive specifications of substation equipment from suppliers including information on noise emissions. This will enable more precise modelling to be undertaken at that stage, which will feed into the design refinement process. Information pertinent to noise emissions, including model results and mitigation by design measures will be captured within the Operational Noise Design Report to be submitted to and approved by the relevant planning authority prior to the commencement of the Projects' onshore substations, as stipulated by Requirement 12 of the ***draft DCO*** (document reference 3.1). d. Requirement 12 relates to the design of the onshore infrastructure. Compliance with the specified noise limits is secured by Requirement 27.
24	In respect of the amendments to the Substation Design Principles Statement (REP8-082), section 4.7, the majority of this section does not set out design principles and accordingly paragraphs 70, 72, 73, 74 and 75 should be deleted. In respect of the content of paragraph 75 relating to the noise impacts on the public right of way network the assessment referred to should be submitted into the examination. Without wishing to prejudge that assessment the conclusion in relation to noise levels in relation to PRoWs being	***Section 4*** of the ***Substations Design Principles Statement*** (REP8-082) specifically sets out the design evolution of the onshore substations to date. The Applicants thought it would be helpful for the ExA for the information within ***section 4.7*** to be provided within this version of the document (REP8-082) for additional context on the evolution of operational noise commitments since submission of the Applications. The Applicants note that the assessment of potential noise impacts upon the public right of way (PRoW) network has been submitted into the Examinations

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	"negligible" is surprising given the proximity and length of a number of the rights of way surrounding the substations complex.	and direct SASES to ***Section 5*** of the ***Noise Modelling Clarification Note*** (REP4-043).
25	Further there is no design principle which requires the Applicants to design the substations including the National Grid infrastructure so that significant adverse impacts on health and quality of life from noise are avoided.	The Applicants note the commitment within the ***Substations Design Principles Statement*** submitted at Deadline 8 (REP8-052) that *"The Applicants will seek to minimise the operational noise rating level below the limits set out in Requirement 27 of the **draft DCO** (REP7-006)"*. The limits presented in **Requirement 27** of the **draft DCO** (document reference 3.1) are set at a level such that there will be no adverse impacts whatsoever and that noise will be well below a level that might be considered to be significant.
26	In relation to paragraph 71 the design principle should be to mitigate and minimise other adverse impacts consistent with EN-1 section 5.11. This should not be qualified by the words "insofar as these mitigation measures do not add unreasonable costs or delays to the project or otherwise result in adverse impacts on other aspects of the environment", which are inconsistent with policy.	The Applicants note the commitment within the ***Substations Design Principles Statement*** submitted at Deadline 8 (REP8-052) that *"The Applicants will seek to minimise the operational noise rating level below the limits set out in Requirement 27 of the **draft DCO** (REP7-006)"*. The limits presented in **Requirement 27** of the **draft DCO** (document reference 3.1) are set at a level such that there will be no adverse impacts whatsoever and that noise will be below a level where it will be necessary in policy terms to minimise it further. In this way, it can be seen that Requirements 12 and 27 in combination with the substations design principles fully meet the policy tests set out in 5.11.9 of the Energy NPS EN-1.
Noise Requirement		
27	SASES position remains that consent should be refused on the basis set out in its Deadline 8 Submission on Noise (REP8-220).	The Applicants consider that the policy tests relevant to noise have been met and a full and proper assessment of the impacts of noise from the construction and operation of the Projects has not identified significant impacts. As such, the Applicants do not agree with SASES' position.
28	In considering the drafting, the purpose of this requirement should be remembered, namely, to protect the residents of Friston,	The Applicants confirm that they have had regard to the residents of Friston throughout the entire pre and post Application processes, as demonstrated by

ID	SASES' Comment	Applicants' Comments
	neighbouring residential properties and heritage assets from adverse noise effects for so long as the substations are in operation. The purpose of this requirement is not to limit so far as possible the responsibility of the Applicants for adverse noise affects. As noted above SASES and its expert, Rupert Thornely-Taylor were not involved in the drafting of the current noise requirement contrary to the direction of the Examining Authorities.	the engagement of and commitments made by the Applicants to provide further measures to address concerns raised during the Projects' Examinations.
29	However if the projects were to be consented the current requirement in the draft DCOs is defective for the reasons set out below. a. The noise rating levels are too high and should be set at 30 dB. The reasons for this are stated in SASES Deadline 8 Submission on Noise, paragraph 2 (REP8- 220). In addition and following practice in other windfarm projects there should be an additional requirement in respect of 100 Hz third octave band at 32dB LLeq (15 minutes) b. The noise sensitive locations should not be restricted to only three residential receptors. The Applicants are no doubt following the approach they took in EA1 at Bramford, but at Bramford where there were no residential receptors as close as those at Friston let alone a village community. The noise requirement should be applicable to any residential property recognising a detailed plan for monitoring compliance will need to be agreed which will be subject to consultation with Friston Parish Council. In such plan specific locations will be determined. It is not appropriate that locations are prejudged.	The ***draft DCO*** (document reference 3.1) is in no way defective: a) The limits set out in **Requirement 27** of the ***draft DCO*** are set at a level such that there will be no adverse impacts, significant or not significant. SASES' proposed noise rating limit of 30dB is remarkably close to the rating limits of 31dB and 32dB proposed by the Applicants in **Requirement 27** of the ***draft DCO***. A difference of 1dB to 2dB is negligible in the context of adverse effects of noise at night. The Applicants have already fully responded to SASES' suggestion to limit noise in the 100 Hz third octave band at 32dB LLeq (15 minutes) in their comments in ***section 2.3*** of ***Applicants' Comments on Substation Action Save East Suffolk's (SASES) Deadline 8 Submissions*** (REP9-013)**.** Only three other offshore windfarm projects (Dudgeon, Norfolk Vanguard and Norfolk Boreas) have the requirement for a limit at a specific frequency of 32dB LLeq at the 100 Hz third octave band. All three of these projects' substations are sited, or proposed to be sited, at the same location at Necton in Norfolk and Dudgeon, the first of these projects, was consented by the local authority under the Town and Country Planning regime. The condition does not represent standard practice for the consenting of offshore wind farms and the limits in **Requirement 27** of the ***draft DCO*** (document reference 3.1), being rating levels, provide appropriate controls on potential tonality. b) & c) It is very common practice, and not just for offshore wind farms, to set noise limits at a selection of properties rather than all properties in an area.

ID	SASES' Comment	Applicants' Comments
	c. It is self-evident that the most important centre for community life in the village is the Grade II* Saint Mary the Virgin Parish Church which overlooks the substations site. This is a noise sensitive location given its cultural heritage status and its use for private prayer and worship, funerals, weddings and other significant life events. Further the War Memorial is adjacent to the church. d. There is no requirement that assessment should occur when the substations are operating at full rated capacity which is when the substations will be at their noisiest. Generally a worst-case approach should be taken. e. The testing is only proposed to be carried out on two occasions, on initial commencement of operation (without a requirement that commencement means commencement of operation at full capacity) and six months after the substations have been operating at full capacity. There is a real risk that measurements will be taken in atmospheric conditions that result in untypically low levels of noise at the measurement locations, so that apparent compliance with the noise limit requirements may be recorded, with the consequence that on many other days with atmospheric conditions more favourable for noise propagation the requirement limits will be exceeded by a significant margin. It is possible that the substations will become noisier as they age and therefore there should be an ongoing requirement to measure noise on annual basis and if there are reasonable grounds to believe the noise requirement is not being complied with.	These properties are generally chosen as those closest to the proposed development site, in the understanding that limits at these locations will provide adequate protection to properties located further afield. This is a perfectly common and acceptable approach to take. d) The Applicants note that **Requirement 27(2)** of the ***draft DCO*** (document reference 3.1) stipulates that the cumulative operation of the Projects' substations with the National Grid substation must not commence until a scheme for monitoring compliance with the maximum operational noise rating levels specified in **Requirement 27(1)** has been submitted to and approved by the relevant planning authority. The scheme must also specify the other conditions under which the measurements will be taken. This would include substation operation. In accordance with **Requirement 27(3)** of the ***draft DCO***, the above mentioned monitoring scheme must then be implemented as approved. e) **Requirement 27(2)(a)** of the ***draft DCO*** (document reference 3.1) specifies that the monitoring scheme must identify the meteorological conditions under which to carry out the monitoring. This will ensure that appropriate meteorological conditions are chosen to monitor noise to establish a robust reflection of the noise emissions from the Projects' onshore substations and National Grid substation during their operation. f) This has been addressed repeatedly, both within the ***Noise Modelling Clarification Note*** submitted at Deadline 4 (REP4-043) and the ***Applicants' Comments on SASES' Deadline 8 Submissions*** (REP9-014).

ID	SASES' Comment	Applicants' Comments
	f. The impulsive noise from the operation of switchgear in the National Grid substation is still not addressed.	
Conclusion		
30	The position in relation to operational noise remains unsatisfactory.	SASES' position is untenable given that: a) The Applicants have provided compelling evidence that no impacts whatsoever will occur at a rating level below 35dB; and b) SASES has proposed a noise rating limit of 30dB, which is remarkably close to the rating limits of 31dB and 32dB proposed by the Applicants in **Requirement 27** of the ***draft DCO*** (document reference 3.1). A difference of 1dB to 2dB is negligible. The Applicants again point to agreement between themselves and ESC on the control of operational noise, which acted on feedback received during previous written representations (REP6-081) and oral submissions at ISH12.
31	Reliance on a post consent pre-commencement condition to determine whether or not the necessary mitigation can be provided is contrary to law and policy.	The Applicants do not agree with SASES on this matter. The Applicants parent company have extensive experience in procuring and designing electrical infrastructure, which will be drawn on in delivering the Projects. A DCO requirement for pre-commencement approval of details relating to operational noise emissions, with a subsequent post-completion requirement to comply with maximum operational noise rating levels (inclusive of tones) is considered a robust and appropriate mechanism for the control of operational noise. This process will ensure that the substations are designed to avoid audible tones that would incur penalties, or otherwise minimise any that could arise as far as reasonably possible. **Requirement 12** sets out the mechanism for the control of noise through design (pre-commencement), whilst **Requirement 27** sets out the terms of compliance with regard to operational noise as well as the design and implementation of an associated monitoring scheme (post-

ID	SASES' Comment	Applicants' Comments
		completion). This will ensure that the Projects are delivered in compliance with the requirements. Additionally, the Applicants parent company has direct recent experience of designing an HVAC substation and has through the ***East Anglia ONE Onshore Substation Operational Noise Assessment*** (REP5-022) demonstrated that no tonal sound from the East Anglia ONE substation was identifiable at the measurement locations. This is indicative of the design of modern substations. Please also refer to the Applicants' comments at ID23.
32	Whilst the Applicants and the Council may have agreed on a form of requirement this is flawed for the reasons stated above.	The Applicants do not agree with this concluding statement from SASES and consider that the controls imposed through **Requirements 12** and **27** of the ***draft DCO*** (document reference 3.1) together with the commitments of the ***Substations Design Principles Statement*** (REP8-082) are robust, appropriate and proportionate.

2.2 Comments on Substation Design Principles Statement (REP9-078)

ID	SASES' Comment	Applicants' Comments
Introduction		
1	The Applicant's latest version of the Substations Design Principles Statement was submitted at Deadline 8. However much of the additional language is not about good design or design principles but simply a narrative setting out the very limited design evolution which has been achieved with the EA1N and EA2 substations. There has been no design evolution with the National Grid infrastructure other than an unverified proposal to reduce the finished ground level of the NG substation by 70cm.	The Applicants have prepared a robust ***Substations Design Principles Statement*** (REP8-083) which provides a sound framework for progressing the detailed design at the appropriate stage in the project development cycle and provides for public engagement and independent design review through the Design Council (or similar).
2	It is noted that the Examining Authorities have indicated that design will be an area of primary focus during the extended examination period. Accordingly SASES has prepared Sections 1 to 4 of this submission which summarises SASES current position with regard to some of the 'Good Design' issues which have been raised during the Examinations. These opinions are in relation only to onshore works, and more specifically the works at the proposed substation site at Friston.	Noted.
3	EN-1 Section 4.5 is very clear as to the importance of 'Good Design' with regard to new energy infrastructure, but in SASES opinion it is not evident that such 'Good Design' has been achieved in a significant number of important areas, which are described in some detail below.	The Applicants disagree with SASES comment. Good design has been achieved to date, through reductions in building and external equipment height and reductions in operational noise levels and extensive landscape planting and biodiversity enhancement in the area of the substations. The Applicants highlight that Good Design process will continue post consent, through the detailed design process, as defined by the ***Substations Design Principles Statement*** (REP8-083).

ID	SASES' Comment	Applicants' Comments
Design Oversight		
4	The recent National Infrastructure Design Principles document from the National Infrastructure Commission (Ref. 2) is highly relevant and authoritative and the Applicant makes enthusiastic reference to it (Ref.3 page 4). The Principles (page 5) recommend the appointment of a board-level Design Champion to ensure constant emphasis on the need for 'Good Design' and SASES notes the Applicants agreement to appoint a suitable senior member of the Iberdrola management.	No response required.
5	However, SASES maintains that there is also a clear need for independent Power Engineering review of the projects, especially with regard to the design of the substations works. The NIC 'Principles' document supports this by recommending the establishment of a Design Review Panel for all NSIPs, and SASES strongly requests agreement to such an approach, to include independent participants with relevant Power Engineering expertise.	The Applicants have stated on a number of occasions that an independent Power Engineering review is wholly inappropriate. The design principles set out within the ***Substations Design Principles Statement*** (REP8-083) and the parameters set out within the ***draft DCO*** (document reference 3.1) provide sufficient commitments to Good design of a substation associated with an offshore windfarm.
6	It is noted that the Applicants has objected to similar proposals made previously by SASES, and has instead reiterated their intent of allowing only limited aesthetic design review by the Design Council, rather than a Design Review Panel including Engineering expertise capable of addressing all project issues. SASES notes that the Applicants have repeated in a number of documents their intent of reusing the substation design developed for the East Anglia 1 substation at Bramford, rather than investing in an optimal design for the much more sensitive Friston site, which in SASES opinion makes the need for independent oversight to achieve "Good Design" all the more critical. SASES notes that the Rampion substation went through a number of major design iterations before construction and would be	Please see response at ID5. The Applicants must correct the statement by SASES that the Projects will simply reuse the East Anglia ONE substation design. This is not the case. The facts of the matter are that the onshore substation and National Grid substation will be essential national infrastructure assets which must use approved equipment in order to safely and efficiently deliver much needed renewable energy supplies to the national electricity grid. Reference to the East Anglia ONE onshore substation allows for the maximum parameters to be established for the purpose of undertaking the EIA and drafting the draft DCO, and indeed the Applicants have refined the Rochdale

ID	SASES' Comment	Applicants' Comments
	looking to a similarly critical approach to any substations to be built at Friston.	envelope during the Examination to reduce building heights, external equipment heights, and operational noise levels. The Applicants and highlight that the Good Design process will continue post consent, through the detailed design process and will include community consultation, as defined by the ***Substations Design Principles Statement*** (REP8-083).
SPR Substations Rochdale Envelope		
7	<u>Substation Footprint</u> SASES maintains that the current footprint and height of the proposed SPR EA1N and EA2 substations are excessive. With regard to footprint SASES has analysed the substation footprint against rated power for a number of relevant projects and the results are shown in the Table 1 below. Efficient design with regard to substation footprint is indicated by a low 'Spatial Usage' value. **Table 1** **Project** / **System Voltage (kV)** / **Rated Power (MW)** / **Footprint (m^2)** / **Spatial Usage m^2 per MW** EA1 as built / 220 / 714 / 28,500 / **39.91** EA1N as per PEIR and ES / 275 / 800 / 36,100 / **45.12** EA2 as per PEIR and ES / 275 / 900 / 36,100 / **40.11** EA1N after reduction / 275 / 800 / 32,300 / **40.37** EA2 after reduction / 273 / 900 / 32,300 / **35.89** EA1N AFRY recommendation / 275 / 800 / 28,500 / **35.62** EA2 AFRY recommendation / 275 / 900 / 28,500 / **31.67** Hornsea One/NGESO metric / 220 / 1,200 / 32,200 / **26.83** In his statement at ISH2 Session 4 on 2 December 2020 [EV-034o] (at 28min approx.) , speaking on behalf of the Applicant, stated in response to questioning about the use of 275kV as the system voltage	Comparisons between as-built designs (East Anglia ONE) and preliminary designs are misleading. There are likely to be further opportunities to reduce footprint during the detailed design process. In addition, the comment related to the use of 275kV is still very relevant and accurate in the case of East Anglia ONE North and East Anglia TWO, as opting for a transmission capacity voltage of 220kV would lead to each project requiring three circuits for the transfer of power to Friston (instead of two at 275kV), and hence an increased substation footprint of approximately 60% per project.

ID	SASES' Comment	Applicants' Comments
	"it means we can get more power through the cable corridor and have a much reduced footprint per megawatt at the onshore substation" (SASES emphasis). But the Table 1 results indicate otherwise. The originally proposed ES footprints for EA1N and EA2 were both less efficient than EA1 despite the use of 275kV, and even after the recently announced reduction the EA1N footprint is still less efficient than that for EA1. Has SASES misunderstood statement, or has the Applicant failed to implement the footprint reduction referred to? Further, AFRY, in their report for Suffolk County Council, (REP2-037, page 11) stated that "*For planning purposes, the adoption of an identical plot size to EA1 seems reasonable*." (that being 190m x 150m or 28,500 m2). This leads to potential Spatial Usage metrics much improved over those currently proposed, but still substantially worse than Hornsea One as Table 1 above shows.	
8	The Spatial Usage metric currently proposed for EA1N and EA2 is far greater than that achieved by the Hornsea One project, which has been referenced as a benchmark for HVAC substation design by NGESO in their study of Offshore Coordination for the OTNR (Ref. 4, page 38).	Hornsea One is a different HVAC project. It utilises three 220kV export cables. As well as offshore substations the transmission also utilises an offshore reactive compensation station. The figure is also of the finalised substation. It is not in the Applicants' interest to oversize spatial footprints as it increases costs. The current substations have yet to go through the final design phase. There may well be opportunities to further reduce the footprint during that process and indeed a core design principle within the ***Substation Design Principles Statement*** (REP8-082) requires "Where cost effective and efficient to do so, the Applicants will seek to further reduce the visual extent of the onshore substations, National Grid substation and cable sealing end compounds, through appropriate equipment procurement and layout considerations."

ID	SASES' Comment	Applicants' Comments
9	Based on the above SASES believe the current footprints for EA1N and EA2 are excessive and invites the Applicant to propose significant improvements.	The current footprints for East Anglia ONE North and East Anglia TWO are reflective of the current design phase of the projects, as well as of the stage at which the supply chain has been engaged through competitive tenders. The conclusion of these tenders will lead to the commencement of the detailed design phase, which could, as identified above, result in further footprint reductions.
10	Height The height of the capacitor banks associated with the Harmonic Filters remains a cause of considerable concern. Figure 1 below shows an image of what are understood to be representative capacitor banks installed at another substation project, except that rough scaling suggests that the units shown are about 8m high, when 14m high units are proposed for Friston. It is clear from the image, that sited as the Applicant proposes on the south side of the SPR substations, the capacitor banks will be highly visible from Friston village even after many years of screening growth, assuming the optimistic growth are achieved.	Harmonic filters (HF) are subject to Power Quality studies which will be part of the basic design process (currently underway). This would determine the design and nature of the equipment. The assessments to date have been made on a worst case basis. As a general comment, the size/rating of the HF equipment is dependent upon the location in the electrical network (Grid) where the generator connects, as well as the existence of other loads connecting to that same location (background harmonics), and as such comparisons drawn with other wind farm projects can be misleading.

ID	SASES' Comment	Applicants' Comments
	Figure 1  SASES acknowledges that the Applicant has announced some reduction in the height of the proposed capacitor banks, but other projects (e.g. Rampion) have demonstrated their ability to produce substation designs that avoid the need for individual items of electrical infrastructure to be unacceptably prominent and SASES is not convinced that further improvement cannot be achieved. Enquiries are being made of other projects.	
11	<u>Substation Design</u> At ISH 12 ([EV124i] 32.46m) , for the Applicant, explained that in the event that additional noise reduction of the substations was required	As presented in previous submissions (APP-585, REP1-046, REP4-029, REP8-082), the design of the onshore substation must meet the operational noise limits stipulated within the ***draft DCO*** (document reference 3.1) which

ID	SASES' Comment	Applicants' Comments
	to meet the agreed noise rating levels then this would probably be achieved by the provision of additional sound insulation and/or enclosures to the electrical apparatus and that such a provision could apply to the highly visible Harmonic Filters. But the current visualisations appear to make no reference to such additional sound enclosures and do not, therefore, represent the worst case for the visual impact of the substations. The Applicant is requested to clarify their position regarding additional sound insulation where it would affect the visual impact of the substations, and provide such additional visualisations are may be required to illustrate their effect. SASES also refers to its Deadline 9 noise submission which refers to the potential difficulty of implementing effective noise insulation measures.	are agreed with ESC. The design of the onshore substation is therefore considered as an integrated design solution which considers the overall noise levels with the need to comply with the maximum design parameters set out in the ***draft DCO*** (document reference 3.1), the regulatory requirements for an efficient and economical substation design and which meets all applicable safety requirements. It is premature to speculate as to whether the harmonic filters would require further noise attenuation and what this attenuation may be if it is required, however the maximum parameters set out in the draft DCO (document reference 3.1) would continue to apply. This is fully in line with the design flexibility required for offshore wind projects as set out in in EN-1. The Applicants confirm that the photomontages presented (REP8-066 to REP8-068) represent the reasonable worst case which assists in the undertaking of the landscape and visual impact assessment.
National Grid Substation Design Issues		
12	<u>Rochdale Envelope</u> SASES notes that in September 2008 NGET applied for planning approval for a change to GIS switchgear for the substantial expansion of its Bramford substation site (Ref. 5 below), which had previously been approved as a AIS expansion in January 2007 (Ref. 6 below). Apart from SASES concerns that NGET made use of Permitted Rights to avoid the need for a further full planning application, and that it did not relinquish any land that might not now be required as operational land, it is stated in Ref. 5 para 3 that the GIS building would be 12m high and that sealing end gantries 12.5m high. Why, therefore does	The following information has been provided by NGET to inform the Applicants submission: In January 2007, planning permission was sought from Mid Suffolk District Council to extend the 400kV Air-Insulated Switchgear (AIS) substation, An associated application for consent to modify the overhead line connections to the substation was also submitted to the Secretary of State for Trade and Industry under Section 37 of the Electricity Act 1989. Additional land was purchased to accommodate the planned extension and planning permission (0076/07/FUL) was granted in April 2007. Subsequent to that the need to review design options arose. Physically accommodating NGET's requirements at Bramford within the approved AIS layout was not possible and it was considered necessary to design a gas

ID	SASES' Comment	Applicants' Comments
	the latest dDCO for EA1N and EA2, with regard to the GIS NGET option, provide for buildings up to 16m high? SASES also notes from the NGET letter of 24 November 2020 to Save Our Sandlings (Ref. 7) that "the design parameters for the sub-station have been provided to the Promoter by NGET. These are standard size requirements for the sub-station required to connect EA1N and EA2 projects". But based on the Bramford information above extracted from Ref. 5 that would seem to be incorrect. The Applicant is requested to provide a full explanation for the disparity. It should also be recalled that at CAH2 QC on behalf of National Grid stated that the National Grid infrastructure would not be reduced in size if only one of EA1N and EA2 was developed.	insulated switchgear (GIS) alternative. In these circumstances and where the footprint was same as consent in 2007 and was within National Grid's ownership it was notified to the LPA as Permitted Development. National Grid GIS buildings generally have heights ranging from around 13m to in excess of 15m. Older and Traditional GIS buildings tend to be in the range between 14 and 15 m but these all depend on site specific issues which are taken into account in the detailed design. The reference to "standard size requirements" is made in the context of the provision of parameters. National Grid provide parameters within which they can work. The detailed design would then determine the final building height within these parameters. GIS equipment by its nature is smaller in envelope than its AIS equivalent, some of this is due to the insulating gas, but also this is down to the fact that items are stacked on top of each other. As the items are stacked – there needs to be an overhead crane to be able to maintain the equipment – this crane needs to be at a height above the equipment equivalent to the height of the largest piece of GIS that it needs to lift, so that there is space to manoeuvre the equipment around below the roof level. In some cases, this will result in a higher building than others due to final design and equipment selection. Flexibility is required within the parameters to allow for the detailed design process for instance the impact on height/design of using a non SF6 gas or the need to include special/high duty breakers is still unknown and the height of cable terminations and whether they are inside or outside the building which would all be factored in as part of the detailed design process. Some new design/construction approaches including modern compact GIS and modular approaches can reduce the height particularly if gantry cranes can be avoided but this depends on the manufacturers selected, as the Original Equipment Manufacturer will specify the minimum height to crane or

ID	SASES' Comment	Applicants' Comments
		building height where no crane is required. The supplier will always try to minimise building height to reduce cost and help competitiveness through the tender and detailed design process. In summary the parameters provided for the GIS Substation are not the actual parameters of the final detailed design, they are provided as part of the widely accepted Rochdale Envelope approach to EIA assessment, so that the worst case scenario of impact can be assessed and in order to ensure that there is sufficient parameters within the draft DCO to allow a safe and efficient GIS substation to be designed in detail. The height of the building will not change if only one project is connected.
13	<u>Good Design</u> NPS EN-1 is clear as to the Applicant's obligations to achieve 'Good Design' in its application. However the NGET letter (Ref. 7 page 2) explains that the design of NGET substation did not represent the best design that could reasonably be achieved for the Friston site, as the design requirements were for a 'standard size' of substation. Further the Ref. 5 information referred to in section 4.1 above demonstrates that considerable improvement on these 'standard size requirements' was proposed for the far less visually sensitive site at Bramford. This position is clearly unsatisfactory and the Applicants are requested to provide full justification, including scaled engineering diagrams with cross-sections, of the proposed design of Friston NGET GIS substation, including justification for its greater height than that at Bramford. Equivalent information for the AIS version of the NGET substation is also requested, together with drawings showing the impact of expansion of both types of substation, should this be required for the NGV and other projects.	The following information has been provided by NGET to inform the Applicants submission: The approach to the DCO parameters is set out above. As set out in the outline ***Substations Design Principles Statement*** (REP8-082) endeavours will be made in the detailed design process to reduce the height and size of the substation in accordance with the principle of good design at detailed design stage. The parameters are merely maximum parameters to work within and are not necessarily determinative of the final height. At this stage of the design process scaled engineering diagrams and cross section of the proposed design of the GIS substation or AIS substation are not available. Nor is this information available for any potential future expansion of the National Grid substation, which as explained previously would have to be separately consented at the relevant time.

ID	SASES' Comment	Applicants' Comments
Landscape Briefing Note 9		
14	Project: 1080 East Anglia One North and East Anglia Two Date: 1 st April 2021 Purpose: Notes responding to SPR's Deadline 8 submission on Substations Design Principles Reference: 1080 BN09 Responses to Deadline 8 submissions.docx Submission Reviewed Substations Design Principles Statement March 2021 ExA.AS-28. D8.V2 (No examination references for D8 documents have been issued yet)	N/A
15	It is noted that the landscape proposals within the OLMP presented in Plate 4.2 of the Substations Design Principles Statement do not show the larger infiltration ponds proposed within Outline Operational Drainage Management Plan - Version 03 24/02/21 REP6-017.	The figures presented within the ***Substations Design Principles Statement*** (REP8-082) are correct. They present an illustration of the SuDS system (based on an attenuation system using conservative design assumptions) and will be refined during the detailed design process, in particular to reflect infiltration as far as practicable.
16	The Substations Design Principles Statement includes for options for the colours which is says will be 'explored with the local community during the post consent engagement strategy, in order to arrive at an acceptable colour solution for the substation buildings.' The choice or colour(s)for the buildings is an element of the detailed design that would benefit from a significant input by the Design Council or other independent review body.	This statement does not preclude Design Council input to the colour of the substation buildings, rather it highlights one of the elements which the local community will be consulted upon. ***Appendix A*** of the ***Substations Design Principles Statement*** (REP8-082) confirms that the draft Landscape Masterplan and Architectural Framework will be submitted for an independent and objective review by a nationally recognised impartial body (such as the Design Council, in consultation with ESC) to inform and guide the final design solutions.
17	The way in which the possible options are currently presented in the Substations Design Principles Statement does not assist in the choice of colours and a much more detailed and comprehensive presentation	The Applicants agree that such information is important to the design iteration process and have anticipated such information being presented to the local

ID	SASES' Comment	Applicants' Comments
	to local community will be required. The best colours will depend in large part on the backdrop against which they will be seen. An understanding of prevailing climatic conditions and the variations in light conditions will be essential as this will often be the sky. A variety of visualisations that show different sky/light conditions will be required. A decision will also need to be taken as to whether all the buildings should be the same colour or whether there should be a mix of colours that reflects their size, orientation etc., as Dame Sylvia Crowe designed at Wylva Nuclear Power Station.	community in line with the ***Substations Design Principles Statement*** (REP8-082).

2.3 SASES' Comments on National Grid Substation Extension Appraisal (REP9-075)

ID	SASES' Comment	Applicants' Comments
Introduction		
1	This document sets out SASES comments on the National Grid Substation Extension Appraisal ("Appraisal') which was prepared by the Applicants following their response to ExQs2 2.0.14 (REP 6–059).	No comment.
2	It is unclear from the introduction to this document whether it is intended to be a cumulative impact assessment at all. The Applicants seem to be suggesting it is not as they assert there is insufficient information available. This is not the case for the reasons set out in SASES written representations on this topic submitted at Deadline 1 (REP1-354) and its post ISH2 submissions (REP3-139 and REP3-140) and as further explained below. Further, it is not explained whether the document is further environmental information for the purposes of regulation 20 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.	The information within the ***Extension of National Grid Substation Appraisal*** (REP8-074) is not intended to comprise a CIA. This is for the reasons stated in ***section 1.1*** of the document, namely that there is still insufficient information on Nautilus and Eurolink to undertake a CIA. The ***Extension of National Grid Substation Appraisal*** (REP8-074) constitutes "environmental information" as defined within the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 but is not "further information".
3	Aside from the section below relating to the Five Estuaries and North Falls projects this submission focuses on the Appraisal and the NGV Interconnector projects Nautilus and Eurolink.	As set out in the introduction to the ***Extension of National Grid Substation Appraisal*** (REP8-074) the report presents an appraisal of the potential additional effects of the potential future expansion of the National Grid substation necessary to accommodate both of the proposed NGV projects. It does not provide an appraisal of the NGV projects' convertor stations or cable routings as this (as well as the final grid connection location) has yet to be established by NGV.
Five Estuaries and North Falls Projects		
4	The Applicants have provided correspondence from the developers in relation to the current status of the connection locations for the Five	No comment.

ID	SASES' Comment	Applicants' Comments
	Estuaries and North Falls windfarm projects. In doing so they confirmed, what had previously been denied, that the connection location for Five Estuaries was to be Friston. However despite the Examining Authorities' Action Point 1 ISH 10 no confirmation of this has been received from National Grid via its NGESO division. Nor has any confirmation from NGESO been provided in relation to the North Falls project.	
5	As is clear from the EA1N and EA2 projects, NGESO changes connection locations for projects. We do not know on what basis National Grid has changed the connection location from Friston for the Five Estuaries and North Falls windfarm projects. It is entirely possible, if not probable, that if the EA1N and EA2 projects are consented together with the National Grid connection hub that the connection location will revert to Friston. In fact it is difficult to see why National Grid's obligations under the Electricity Act would not inevitably determine that Friston is the most coordinated, efficient and economical connection location, if a connection hub is established at Friston through the current DCO applications.	This is speculation and it is not possible, or indeed appropriate, to carry out an assessment on a purely speculative basis. North Falls have stated that they do not have a confirmed onshore grid connection (contrary to the assertion made by SASES) and that that have no plans to progress any work at Friston. Five Estuaries have confirmed that they have accepted a connection offer away from the Leiston area. There is no evidence to support the assertions being made by SASES in this respect.
6	Issues such as this would be much more easily resolvable had the National Grid connection hub been brought forward under a separate DCO application, transparently indicating its potential as the connection location for a series of offshore energy projects. Instead, despite numerous indications to the contrary, the Applicants maintain that the National Grid infrastructure at Friston will only be used for the EA1N and EA2 projects. This approach is not borne out by the evidence.	Paragraph 4.9.2 of NPS EN-1 states that the Government *"envisages that wherever possible, applications for new generating stations and related infrastructure should be contained in a single application…"* and this is what the Applicants have sought to do. The National Grid infrastructure has been fully assessed within the Environmental Statement and including such works within a separate DCO Application would not change the approach taken to the assessment.

ID	SASES' Comment	Applicants' Comments
		The National Grid infrastructure included within the Applications is of a size and scale that is necessary to enable the connection of the East Anglia TWO and East Anglia One North projects only. NGET illustrated that this is an approach which has been adopted in respect of other offshore projects.
7	Further, given the history of other projects being considered for grid connection at Friston, it is clear that the National Grid infrastructure is capable of facilitating further grid connections. The Applicants cannot escape assessing the likely further use of the National Grid NSIP on the basis that they only seek consent for it to meet the needs of their own projects. Put another way, if the National Grid NSIP was promoted as a separate DCO, any environmental assessment would necessarily have had to consider the cumulative effects of the energy projects which would connect to it. The approach to assessment cannot be different simply because the National Grid NSIP is promoted by Applicants for specific generating stations.	See Applicants' response at ID6.
Availability of Information		
8	Advice Note 17 sets the expectation that Applicants will gather information and recognises (paragraph 3.3.2) that relevant data is likely to be available "through direct liaison with…relevant applicants/developers".	The Applicants have liaised with other relevant developers in order to obtain data required for assessment purposes and to the extent that such data has been made available, this has been considered and used in the cumulative assessments. The guidance is clear that the data has to be made available and the Applicants are not obliged to undertake baseline studies for other projects.
9	The Applicants repeatedly stress how little information is available to them. However they have taken a passive approach to this. It has not sought proactively to "gather information" and it does not seem to have engaged in any meaningful exercise with National Grid and its	SASES continue to confuse the National Grid roles. National Grid Electricity System Operator (NGESO) makes public information available on registers. Neither NGESO or NGET are free to disclose confidential information gained through their participation in grid connection agreements. The Applicants fully

ID	SASES' Comment	Applicants' Comments
	divisions in relation to the provision of information. There is no evidence of requests for further information. That is particularly striking because the Applicants are promoting an NSIP on behalf of National Grid, which will facilitate their own projects. No doubt this has involved extensive discussions with National Grid concerning its proposed infrastructure including its construction and operation.	understand the confidential nature of such matters. The implication is that because the Applicants are working with NGET in respect of the Applications they should be provided with or request information that would otherwise be confidential in respect of other projects.
10	As National Grid has stated in a letter dated 24 November 2020 to Save Our Sandlings "the design parameters for the sub-station have been provided to the Promoter by NGET. These are standard size requirements for the sub-station required to connect to EA1N and EA2 projects". Accordingly as the approach is "standard" there must be a substantial body of information relating to construction, design and operational requirements which could be applied to the likely extensions of the National Grid substation.	The Applicants have submitted an appraisal of the potential additional effects of the potential future expansion of the National Grid substation necessary to accommodate both of the proposed NGV projects (see the ***Extension of National Grid Substation Appraisal*** (REP8-074)). It is recognised that this represents only a partial assessment of those projects due to the lack of available information on these projects, but this is all that is possible given the available information.
11	National Grid Ventures has substantial experience of developing interconnector projects. Accordingly there must be a substantial body of information relating to construction, design and operational requirements which could be drawn upon. NGV has drawn upon this in terms of assessing the area and height of the proposed convertor stations – see paragraph 17 below. Further there is publicly available information on the nature of the infrastructure required for other consented or proposed interconnector projects. For example, the AQUIND Interconnector has recently been in examination, and the application includes detail of the proposals for a converter station together with the works required to the existing National Grid substation at Lovedean to accommodate it. National Grid is well aware of the details of these proposals, and they are available on the PINS website1 . Similarly, detailed proposals for the Greenlink Interconnector have been the subject of recent EIA and planning	Please see response at ID17.

ID	SASES' Comment	Applicants' Comments
	consents.2 Both of these schemes will be familiar to the Secretary of State, since he is considering the AQUIND application and recently granted a CPO in respect of the Greenlink proposal.	
12	The obvious conclusion is that the Applicants and National Grid are only too well aware that such a proactive information gathering exercise will reveal that these three NSIPs will have even more serious impacts, demonstrating even further that Friston is an unsuitable site for major energy infrastructure.	Please see response at ID10.
13	In short the Applicants' approach to information gathering is contrary to Advice Note 17 and the underlying legislation.	The Applicants disagree with this statement, which is a fundamental misinterpretation of Advice Note 17. The Applicants have liaised with other relevant developers in order to obtain data required for assessment purposes and to the extent that such data has been made available, this has been considered and used in the cumulative assessments. The guidance is clear that the data has to be made available and the Applicants are not obliged to undertake baseline studies for other projects.
Lack of Cooperation by National Grid		
14	National Grid makes a distinction between its operating divisions NGET, NGESO and NGV (although it is interesting to note that the NGV Nautilus interconnector project appears on the National Grid Group PLC website. https://www.nationalgrid.com/group/about-us/what-we-do/interconnectorsconnecting-cleaner-future/nautilus-interconnector	The distinctions between National Grid divisions form a central part of the GB transmission system. They are established through the legal and regulatory framework established by the Electricity Act 1989. It has been made clear throughout, that National Grid Ventures is part of the National Grid PLC business. However, SASES fail to mention that the National Grid Electricity System Operator, National Grid Electricity Transmission and National Grid Ventures are legally separate companies operating within the National Grid group, and National Grid Electricity System Operator and National Grid Electricity Transmission are regulated businesses – as such,

ID	SASES' Comment	Applicants' Comments
		National Grid Ventures must be treated by National Grid Electricity System Operator and National Grid Electricity Transmission at 'arm's length'.
15	The Examining Authorities quite rightly have sought to include National Grid and these three divisions in the examination process including attendance at hearings which they have refused to attend. The only exception was NGET's attendance at compulsory acquisition hearings. This lack of cooperation with the examination process inevitably leads to conclusion that National Grid does not want to be asked about its decisionmaking, plans and future intentions including in relation to its interconnector projects, the SCD1 and SCD2 interconnector projects and plans to upgrade the Sizewell to Bramford pylon route.	The ***Regulatory Context Note*** (REP2-003) sets out how the different roles and responsibilities that the national grid entities undertake. ***Section 3.2*** of the note explains the requirements for forward planning through the Future Energy Scenarios, The Ten Year Statements and the Network Options Assessment Process. These processes allow comment and scrutiny and also ensure a structured overview by OFGEM. These documents illustrate the significant efforts that go into planning of the development of the transmission system. Key investment decisions are open to scrutiny and debate. This also has to manage the changes in both the demand and supply and this is dynamic.
Permitted Development Rights/Operational Land		
16	SASES refers to its Deadline 8 submissions in relation to operational land (REP7-088). Any extension of the National Grid substation or any further development of the Friston site should not be enabled by permitted development rights. Extensions to or any other National Grid development should be subject to the appropriate planning regime, for example the NSIP process to which Nautilus and Eurolink are subject.	The Applicants have responded to similar points at Deadline 9. The Applicants consider that any such extension would either require planning permission or to be part of the NSIP process. The public information in relation to the specific projects mentioned indicates that both would be EIA development.
Failure to Assess Full Cumulative Effects – Converter Stations		
17	The Applicants provide no information in respect of the likely cumulative effects of the converter stations. They argue that they cannot do so because of the uncertainty as to the precise location of such converter stations. However the Nautilus Interconnector Briefing	The Applicants would point to National Grid Ventures' (NGV) Deadline 9 submission (REP9-062) setting out the current status of the Nautilus and Eurolink projects. This states that the siting and routeing options for the projects will not be presented until later in 2021 and that EIA scoping will not

ID	SASES' Comment	Applicants' Comments
	Pack dated July 2019 and the Nautilus interconnector FAQs dated May 2020, listed as Project documents on on the National Grid Group PLC website https://www.nationalgrid.com/group/about-us/what-we-do/interconnectorsconnecting-cleaner-future/nautilus-interconnector clearly indicate that the location of the converter stations will be in close proximity to the Friston substation site and set out details of the typical size (12 acres) and height (24 metres) of the converter stations.	occur until the first quarter of 2022. Cumulative impact assessment (CIA) requires an understanding of different projects' potential impacts and how their zones of influence may interact; detailed knowledge on location is crucial to this. The Applicants maintain that, in line with Planning Inspectorate's Advice Note 17, these projects are not adequately defined enough to allow for a CIA.
18	Further, other interconnector schemes have emphasised the need for converter stations to be closely located to the grid connection point, to minimise transmission losses. Further the two recent applications noted above (AQUIND and Greenlink) have provided substantial information on the site requirements for converter stations, together with the impacts of their construction. The AQUIND proposal identifies the converter station site requirements as 200m x 200m, and the Greenlink proposal obtained planning permission for a converter station site of 185m x 100m. The proposed capacity of the Nautilus and Eurolink interconnectors each lie between the capacity of AQUIND and Greenlink.	Please see response at ID17. It is the locational information that is also required in order to undertake a CIA. National Grid Ventures has confirmed that it has not yet selected a landfall, cable route, converter station location or grid connection location.
19	Since the impact of works to the National Grid substation to accommodate Nautilus and Eurolink are being assessed, it is unreasonable not also to assess the impact of very large converter station sites associated with those projects which will necessarily be in close proximity to the National Grid substation. This is a straightforward failure of assessment.	Please see response at ID17.

ID	SASES' Comment	Applicants' Comments
Screening		
20	Having limited the scope of the assessment to the expansion of the National Grid substation, the Applicants have carried out a "screening" exercise set out on table 3.1 of the Appraisal. It is split between Cumulative Construction Impacts and Cumulative Operation Impacts.	This is correct.
21	<u>Cumulative Construction Impacts</u> In relation to every topic the following statements are recited: "*The projects are already constructed and operational and therefore do not contribute construction impacts*" "*no detailed information on construction activities or their sequencing is currently available*"	This is incorrect. Each topic is considered individually; different text is included for Ground Conditions and Contamination, and again for Archaeology and Cultural Heritage.
22	However these statements do not bear examination for the following reasons. a. The National Grid Group PLC website which sets out the details of the NGV interconnector projects currently states that the commencement of construction will take place in 2025. https://www.nationalgrid.com/group/aboutus/what-we-do/interconnectors-connecting-cleaner-future/nautilusinterconnector b. Given the timing of the grant of the DCO, the CfD auction process, the construction periods set out in the Project Description (Section 6.9 of Chapter 6 of the Environmental Statement) , supply chain planning and the fact that each DCO has a period of five years and no doubt other factors, it	a. and b. ***Section 3*** of the ***Extension of National Grid Substation Appraisal*** (REP8-074) opens by stating that *"For the purposes of this appraisal, it is assumed that the National Grid substation would need to be present in order for it to be extended for Nautilus; it would not be practical to undertake work on the extensions before or during construction of the Projects. Therefore, the starting assumption of this appraisal is that the Projects are operational"*. Additionally, the Planning Inspectorate webpage states that a DCO application is expected in Q2 2023. The earliest that the project could therefore receive consent, based on examination and determination timescales, is late 2024. With final investment decision and design work taking two years by NGV's own estimation in its Briefing Pack, the earliest construction start date would be 2026.

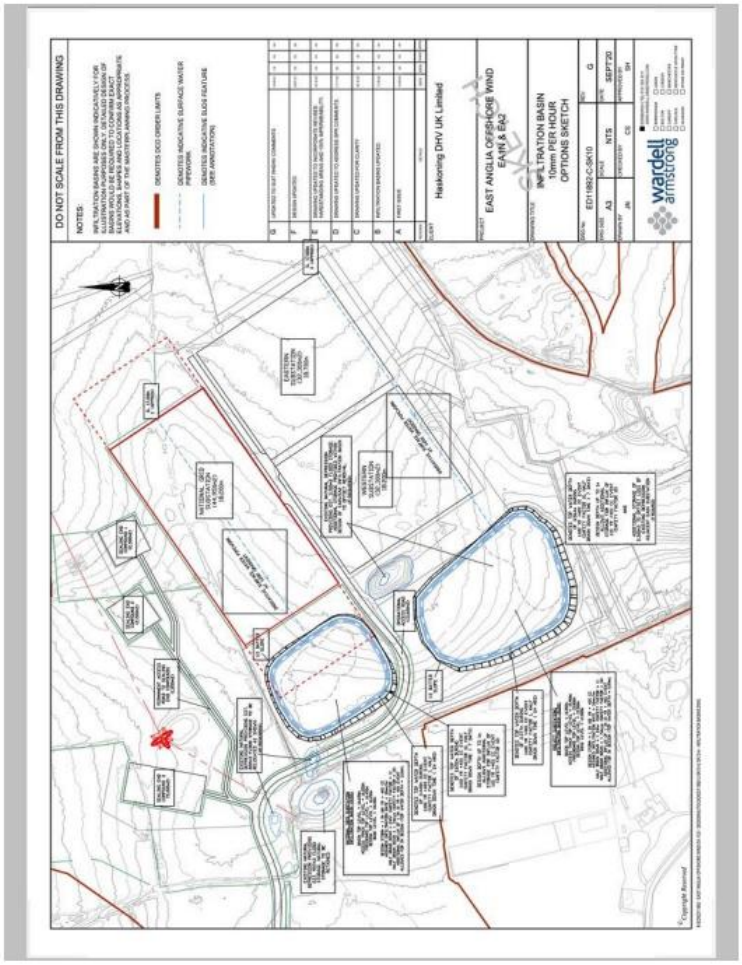
ID	SASES' Comment	Applicants' Comments
	is highly likely, if not inevitable, that either one or both of the projects will not already be constructed and operational. c. National Grid has stated (see paragraph 10 above) that a standard approach is taken to substation infrastructure. No doubt as a result of this construction methods, timings, traffic etc are well understood at least understood sufficiently for cumulative impacts to be assessed. It has clearly been possible to establish the construction impacts of the unextended National Grid substation and cable sealing ends. For the purposes of a reasonable worst case assessment, the information is available from environmental statements from other projects; d. They contradict the rationale for the drafting of requirement 38 which contemplates "grid connection works are being or have been constructed under another development consent order" (which includes a development consent order which is not the DCO for EA1N or EA2). The question has to be asked what prompted this drafting and who might seek consent under another DCO which includes the grid connection works. A reasonable conclusion is that this will be NGV as it will want to be sure that the grid connection works are constructed so that the National Grid substation is available to be extended to connect its Nautilus and Eurolink projects. So clearly enough information is available about construction activities and sequencing to have prompted the drafting of requirement 38.	c. The Applicants would also note that while certain details for Nautilus and Eurolink (e.g. basic construction methods and infrastructure to be installed) are likely to be similar to previously constructed projects and are easily understood, there is no information on either project's potential environmental impacts, which is crucial to CIA. The locational information is also required in order to undertake a CIA. National Grid Ventures has confirmed that it has not yet selected a landfall, cable route, converter station location or grid connection location. d. SASES appear to be speculating as to the rationale for the amendment to Requirement 38 made early in the Examination at Deadline 3. The Applicants have explained the rationale behind the amendment to requirement 38 in hearings and in written submissions and would refer SASES to its previous submissions on this matter.
23	Further there is no attempt to analyse the effect of the Interconnector projects in relation to landfall. Although NGV are looking at four	Please see responses at ID17 and ID22.

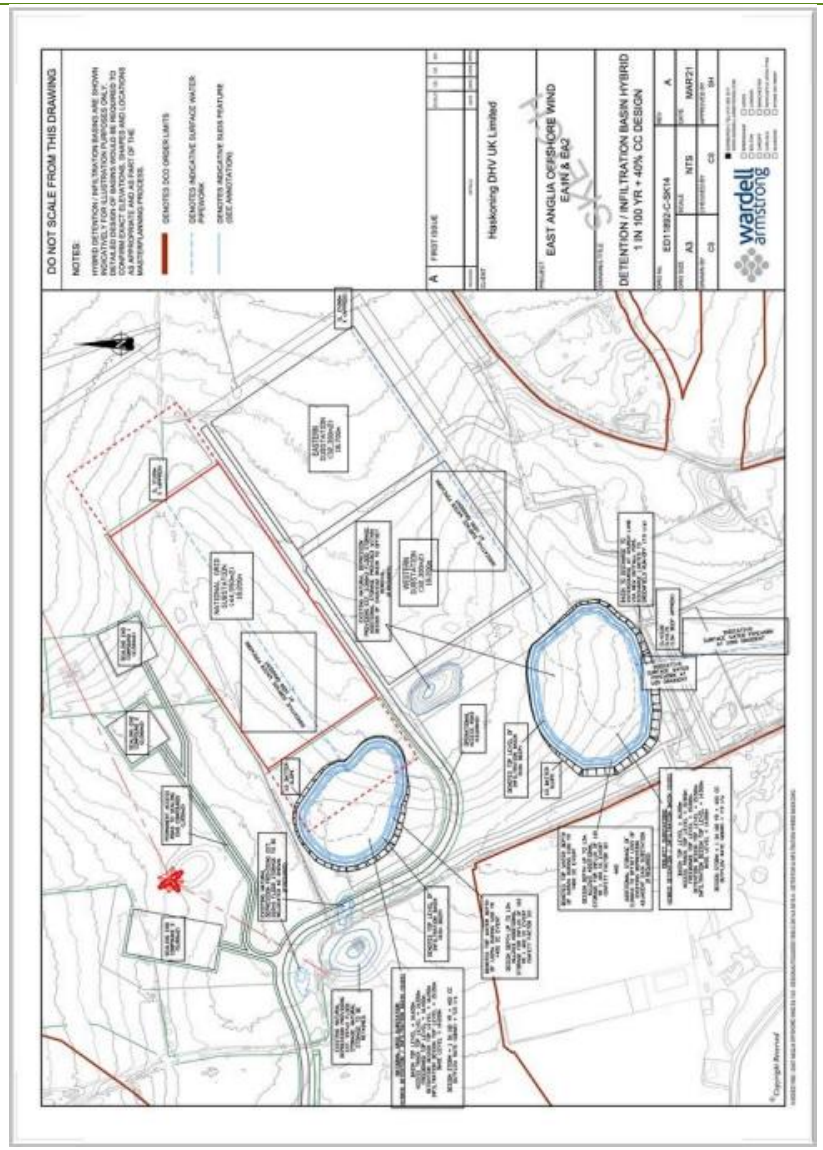
ID	SASES' Comment	Applicants' Comments
	alternative locations they are all between Thorpeness and Sizewell and therefore factors relevant to the EA1N and EA2 landfall must be relevant to these potential landfalls and some degree of cumulative assessment carried out.	
24	In respect of the initial part of the cable route this is the same as for for EA1N and EA2. In respect of the remainder of the cable route there are essentially two different options although one of those options does contemplate the cable route branching off and going immediately to the south of Friston Village rather than direct to the substation site. On the question of the cable route NGV has been concerned to ensure from early in the process that the cable route would not be "sterilised" by the Scottish Power projects. Please see Planning Inspectorate meeting note dated 25 April 2018, page 2. https://infrastructure.planninginspectorate.gov.uk/wpcontent/ipc/uploads/projects/EN010077/EN010077-Advice-00015-1-EAST%20Anglia%20ONE%20North%20Meeting%20Note.pdf	Please see responses at ID17 and ID22.
25	Accordingly the appraisal of cumulative construction impacts is wholly inadequate. This is a particular concern in relation to drainage and flood risk given the inadequacy of the Applicants' current flood risk analysis – see SASES Deadline 8 submission Flood Risk and Drainage (REP8-227) and its Deadline 9 submission.	Please see responses at ID17 and ID22.
26	<u>Cumulative Operation Impacts</u> The Applicants' screening process has eliminated all operational phase cumulative effects with exception of onshore ecology, onshore ornithology, landscape & visual amenity and cultural heritage. In doing so it has ignored cumulative operation impacts in relation to:	***Section 3*** of ***Extension of National Grid Substation Appraisal*** (REP8-074) presents a screening for potential cumulative impacts based upon all currently available information on the NGV projects. Regarding 'water resources and flood risk' and 'noise and vibration', ***Table 3.1*** clearly states that it is not possible to consider potential operation phase cumulative impacts in detail due to a lack of information; the Applicants are not suggesting that cumulative impacts will simply not occur, but that they cannot be assessed at this stage.

ID	SASES' Comment	Applicants' Comments
	a. water resources and flood risk b. land use c. noise and vibration.	Regarding 'land use', ***Table 3.1*** notes that much of the land hypothetically required for the NGV projects will have already experienced a change of use due to the Projects and therefore no cumulative impacts will occur (i.e. the change in existing land uses (e.g. agriculture) that will result from the extensions will not change the significance of the land use impacts assessed for the Projects). The Applicants do not ignore any of these topics.
27	<u>Water resources and flood risk</u> The serious deficiencies in the Applicants' approach to this topic is the subject of a number of SASES representations including most recently its Deadline 9 Comments on Deadline 8 Flood Risk Submissions. Self-evidently the increasing area of the National Grid substation will further worsen an already serious surface water flood risk problem. In screening out this impact the Applicants do admit that to the south-west extension would encroach "possibly into the location of the sustainable drainage system (SUDS) basins proposed as part of the projects". Based on the Applicants' own OODMP the south-west extension will encroach very substantially onto the SuDS basin to the north whether on infiltration basis or on a hybrid basis – see Appendix 1, where figure 1 of the appraisal is overlaid on the plans attached to the latest OODMP. Also the level of encroachment is severe. The Applicants must explain how the further additional flood risk can be mitigated and how the flood risk from the EA1N and EA2 developments will be mitigated given the level of encroachment to the northern SuDS basin. See further the report of GWP consultants attached to SASES' Deadline 9 Submission on Flood Risk referred to above, pages 6 and 7.	The reasons for screening water resources and flood risk out of the appraisal are clearly set out in ***Table 3.1*** of the ***Extension of National Grid Substation Appraisal*** (REP8-074). Other than hypothetical locations for the National Grid substation extensions, there is no information available on how they might affect flood risk and drainage at the site or in the local area, nor on how NGV might mitigate any issues. For example, without knowing the cable routing it is not possible to identify realistic design and mitigation options. This would require NGV to undertake modelling and design work in advance of completing its site selection exercise or undertaking EIA scoping. The Applicants cannot undertake design work on behalf of NGV. Additionally, the Applicants are not proposing to develop the indicative infiltration basins shown on the first figure included within Appendix 1 of SASES' submission. The Applicants intend to develop a sustainable drainage system (SuDS) that utilises the maximum amount of infiltration possible without increasing the indicative attenuation basin footprints shown on the second figure included within Appendix 1 of SASES' submission.

APPENDIX 1

SuDS Basin Overlay Plans




DO NOT SCALE FROM THIS DRAWING
NOTES:
Haskoning DHV UK Limited
EAST ANGLIA OFFSHORE WIND
EA1N & EA2
DETENTION / INFILTRATION BASIN HYBRID
1 IN 100 YR + 40% CC DESIGN
wardell armstrong

ID	SASES' Comment	Applicants' Comments
28	Land Use The issue in relation to land use resulting from the substation extensions is broader than simply the substation site although the reference to the extensions being on land acquired for the project does raise again the question of permitted development rights/operational land – see above. The cumulative impact in relation to land use is substantial as set out in SASES written representation on Land Use (REP1-359). In summary each of the converter stations required for Nautilus and Eurolink have a surface area of 12 acres. This is before the land required for landscape mitigation which will be substantial as it is for the Friston development, a site which was regarded as the preferred site by the Applicants despite the alternatives available between the sea and Friston.	Please see the Applicants' response at ID17 regarding land take for the Nautilus and Eurolink converter station. ID6, ***Table 2.5*** of ***Applicants' Comments on Substation Action Save East Suffolk's (SASES) Deadline 8 Submissions*** (REP9-013) and **ID19**, **ID34-ID38**, **Table 2.5** of ***Applicants' Comments on East Suffolk Council's Deadline 8 Submissions*** (REP9-011).
29	Noise and vibration Given the "standard" approach adopted by National Grid it should be easy to establish that there will be no additional plant and equipment installed either on within the extension or within the existing National Grid substation to serve the Naultius and Eurolink projects which will emit noise. A particular concern is switchgear which makes a loud impulsive sound in operation - see page 9 of SASES Deadline 8 submission on Noise REP8-220.	The National Grid equipment for the extension is assumed to be similar in nature to that proposed for the Projects and assessed within the ***Noise Modelling Clarification Note*** submitted at Deadline 4 (REP4-043) and therefore are not contributing factors to the received noise levels at SSR2, SSR3 and SSR5 NEW.
Landscape and Visual Amenity – Appendix 2 report from Michelle Bolger, Expert Landscape Consultancy		
30	The Extension of National Grid Substation Appraisal acknowledges that the NG substations extensions would result in further landscape and visual harm as a result of 'additional physical effects on landscape features; an intensification of effects on local landscape character and some increase in the lateral spread and influence of	The Applicants note the agreement on the intensification of landscape effects resulting from the extension of the National Grid substation on the landscape character to the north of Friston, which is assessed as being experienced over a localised geographic area.

ID	SASES' Comment	Applicants' Comments
	development.' 3 I agree that there would be an intensification of effects, in particular an intensification of the severance of the landscape to the north of the substations form the village of Friston.	
31	The Extension of National Grid Substation Appraisal acknowledges that 'An increase in the lateral spread and influence of is notable in Viewpoint 2 near Friston, due to the western potential future expansion being visible on the skyline and interrupting the view towards Moor Farm, Fristonmoor.'4 I agree that the lateral spread and influence is notable, The Photomontage from LVIA Vp 2 show that the western NG extension would be visible from this location and would extend the impact of the development across the whole of the open horizon. Even at 15 years mitigation planting will not have fully screened the substation. This is a particularly sensitive location.	The Applicants note this agreement on the effects of the extension of the National Grid substation from Viewpoint 2 near Friston. However, the Applicants highlight that mitigation planting shown at Year 15 in the photomontage will provide substantial screening of the western extension of the National Grid substation, only its upper elements will be visible beyond the intervening vegetation, and would further note that the eastern extension will not be visible in the view.
32	I do not agree with the Extension of National Grid Substation Appraisal that from the north and west the infrastructure would be largely subsumed within the overall massing of the National Grid substation. In the following paragraphs I identify the notable additional adverse effects on the landscape to the north. There would be increased visual harm in particular and an exacerbation of the adverse impacts already identified.	The Applicants note this disagreement and provide responses at ID33 to ID41.
33	I consider that there would be major adverse landscape and visual effects on the landscape to the north of Friston as a result of the SPR substations and the single NG substation, and that the mitigation planting would do little to compensate for the loss of the existing landscape character or the loss of the existing extensive rural views across that landscape. The extensions to the National Grid substation would increases the severity of these major adverse effects.	***Chapter 29 Landscape and Visual Impact Assessment*** (APP-077) and ***Landscape and Visual Impact Assessment Addendum*** (REP4-031) both identify significant landscape and visual effects on the landscape to the north of Friston as a result of the onshore substations and National Grid substation. The intensification of effects resulting from the potential extension of the National Grid substation are acknowledged in the ***Extension of National Grid Substation Appraisal*** (REP8-074). However, it is identified that they would not change the assessments in terms of thresholds of magnitude of change

ID	SASES' Comment	Applicants' Comments
		and the significant landscape and visual effects already assessed for the Projects at the local level.
34	The Photomontage from LVIA Vp 5 shows that the western NG extension would 'fill' the area between the western substation and the sealing end compound, where the additional pylon is located. This would solidify the extent of the industrial landuse across the view. It would sever any possible remaining visual connection with Friston Church and the edge of Friston. Any remaining appreciation of the relationship between the village and the wider landscape would be lost.	The ***Extension of National Grid Substation Appraisal*** (REP8-074) acknowledges that the western potential future extension would be most readily visible extending the influence of development in the view south from Viewpoint 5 towards Friston. Comparison of the original photomontage from ***Landscape and Visual Impact Assessment Addendum - Appendix 5 - Viewpoint 5*** (REP4-036) with the ***Photomontages with Potential National Grid Extensions Bays*** (REP8-071 – REP8-073) shows that the western extension would largely be located in line with and reinforce the massing of elements within the National Grid substation and western onshore substation. Although it also results in some westwards extension of structures towards the overhead pylon, the edges of the village of Friston will be visible beyond and through the intervening but permeable structures such that the church and village remain legible.
35	The location of the western NG extension would overlap with the proposed area for one of the SUDS the drainage basin. This would be true for the drainage basin as currently shown on the OLMP and there would be an even greater overlap if the larger infiltration ponds were implemented. This would raise issues regarding where they could be relocated.	Please see response at ID27.
36	Vp 5 represents the area from which there will be one of the most significant adverse impacts due to: • Proximity to the substations • The extent of development across the landscape visible a single viewpoint; and	The Applicants agree that Viewpoint 5 represents the area from which there will be significant visual effects as a result of the combined effect of the onshore substations, National Grid substation and potential extensions, as assessed in ES ***Chapter 29*** (APP-077) and ***Landscape and Visual Impact Assessment Addendum*** (REP4-031).

ID	SASES' Comment	Applicants' Comments
	• The restrictions on planting under the overhead lines.	
37	The western NG extension would exacerbate all these factors. • It would be closer to Vp 5 than any of the other substations, although not closer than the sealing end compound. • It would be visible in what is currently a 'gap' between the western substation and the sealing end compound. • It would be located immediately beyond a line of mitigation planting that does very little to limit views of the substations.	The Applicants note that the potential western extension would not be closer to Viewpoint 5 than the National Grid substation, it is in fact at equal distance (0.47km) as shown in ***Photomontages with Potential National Grid Extensions Bays*** (REP8-071 – REP8-073). Although it would partially be visible within the current 'gap' between the western substation and pylon, it would largely be located in line with, and reinforce the massing of elements within the National Grid substation. The Applicants would note that line of intervening mitigation planting is designed as part of the Outline Landscape Mitigation Plan (OLMP) proposals to re-create historic tree lined field boundaries, providing layered and partial screening, while allowing views 'through' the landscape to be retained towards Friston.
38	The NG extensions would exacerbate the landscape and visual harm that would results from the development. In particular it would exacerbate the harm experienced in the landscape to the north of the development, from where there is a network of PRoW. This harm would be difficult to mitigate, especially on the western side (Vp 5) from where the mitigation planting will not be able to adequately screen either the development currently proposed or the potential NG extensions.	The Applicants have assessed that the potential extension to the National Grid substation would result in the intensification of landscape and visual effects to the north of Friston, which would include effects on the local PRoW network. The Applicants have proposed a number of measures designed to mitigate effects on the local PRoW network, as detailed in previous submissions, including appropriate PRoW diversions and landscape design / mitigation proposals that will reduce the intensity of effects experienced over-time during the operational life of the Projects. There are some practical limits to the amount of large scale planting that can be proposed within proximity to the overhead line, however the Applicants are proposing further measures such as a higher growing planting mix around the sealing end compound, for example, to provide further screening. The Applicants believe that further screening to reduce effects on views from the north can also be delivered as part of the Landscape Management Plan (LMP), with detailed design consideration of the planting proposals around the infrastructure in proximity to the overhead line.

ID	SASES' Comment	Applicants' Comments
39	Further photomontages have been submitted showing the GIS option for the NG substation, both LVIA and CH viewpoints. CHVP3 and CHVP4 are taken from PRoWs close to the location of LVIA Vp 5. A revised photomontage showing the GIS option LVIA Vp 5 was submitted at Deadline 6 and commented on in MBELC Briefing Note 7.	N/A
40	Taken together, the photomontages from LVIA Vp 5, CHVP3 and CHVP4 show the extent of the harm to the landscape in this area. In particular they show the harm to the visual amenity of the network of footpaths which will be severed visually from the village of Friston; current views of the church tower as seen on the edge of the village will be further obscured.	The Applicants agree that the photomontages showing the National Grid GIS substation provided in the ***Landscape and Visual Impact Assessment Addendum - Appendix 5 - Viewpoint 5*** (REP4-036), ***Photomontages with Potential National Grid Extensions Bays CHVP3 - Appendix 24.7 - Figure 8*** (REP8-069) and ***Photomontages with Potential National Grid Extensions Bays CHVP4 - Appendix 24.7 - Figure 9*** (REP8-070) together illustrate the potential landscape and visual effects arising on the local PRoW network to the north of the Projects.
41	Comparing the photomontages that have been prepared for the GIS versus AIS NG substation it is clear that what may be an advantage from one viewpoint is a disadvantage from another. For example, in MBELC Landscape Briefing Note 8 we noted that for LVIA Vp 5 the landscape and visual effects of the AIS substation were greater that the GIS substation. However, from CHVP 4 the bulk of the buildings within the GIS station are particularly intrusive and difficult to mitigate. Similarly, whilst the western NG extension would be most harmful from LVIA VP 5 it is the eastern NG extension that would exacerbate the visual spread of the development from CHVP 4.	The Applicants agree that for ***Landscape and Visual Impact Assessment Addendum - Appendix 5 - Viewpoint 5*** (REP4-036), the landscape and visual effects of the air-insulated switchgear (AIS) substation are likely to be greater than that for the gas-insulated switchgear (GIS) substation. As described and assessed in the ES ***Chapter 29***, the option of a National Grid substation with GIS electrical infrastructure is deemed not to be the worst-case, due to its reduced footprint, compared to the larger footprint of the AIS electrical infrastructure. The Applicants maintain that on balance, and from the majority of viewpoints and landscape character receptors, a National Grid substation with AIS electrical infrastructure is worst-case in terms of the likely landscape and visual effects. This is evident in the majority of viewpoint photomontages. The Applicants note that in certain viewpoints, the bulk / massing of the taller GIS building may result in it being more visible than the lower level AIS infrastructure, however, as is the case in ***Photomontages***

ID	SASES' Comment	Applicants' Comments
		with Potential National Grid Extensions Bays CHVP3 - Appendix 24.7 - Figure 8 (REP8-069) and ***Photomontages with Potential National Grid Extensions Bays CHVP4 - Appendix 24.7 - Figure 9*** (REP8-070), intervening planting belts do provide considerable screening of the National Grid GIS building and lower level infrastructure. Further design mitigation options are also available for the National Grid GIS, such as through the design of building form, materiality and colour of the GIS building, which would further reduce landscape and visual effects.
Cultural Heritage – Appendix 3 Report from Dr Richard Hoggett		
42	This is a further addendum to the Cultural Heritage Assessment prepared by Richard Hoggett Heritage for SASES, dated October 2020 and submitted at Deadline 1, and the first Cultural Heritage Assessment: Addendum, dated January 2021 and submitted at Deadline 3. This document addresses the likely effects of the extension of the proposed National Grid substation and associated infrastructure intended to be located at Friston.	Noted.
43	Details of these proposed extensions are set out in the Extension of National Grid Substation Appraisal, submitted by the applicant at Deadline 8 (REP-IBR-001029). Produced in response to questions from the Examining Authority, the Appraisal considers the potential effects of extending the National Grid substation to accommodate future projects connecting to the grid in this location, specifically the Nautilus and Eurolink projects	N/A
44	The submitted Appraisal presents a brief and high-level assessment of the likely impacts of the expansion of the National Grid substation, and as such represents something of a cumulative impact assessment. It specifically addresses the impact on Cultural Heritage,	Noted.

ID	SASES' Comment	Applicants' Comments
	together with other impacted areas. The need for such an assessment, and its omission from the submitted DCO application documents, was highlighted in my original Cultural Heritage Assessment, although until now the applicants have stated that such an assessment would not be possible. Clearly this has not proved to be the case, and the acknowledgement of cumulative impact is to be welcomed, although as is discussed further below, with regard to Cultural Heritage, I do not support its conclusions.	
The Proposed Examination		
45	Given the information available to date, the applicants conclude that there is a 'degree of certainty' that the connecting projects will result in the expansion of the proposed National Grid substation. Their submitted Figure 1 indicates that this expansion will result in the enlargement of the National Grid substation to the south-west and the north-east by a distance of some 90m in each direction, representing an approximate 50% increase in the footprint of the proposed National Grid substation.	This statement is taken out of context. There is no certainty that NGV projects will connect at Friston nor is there information from NGV on the locations of other infrastructure required such as the landfall, convertor station or cable routes. Rather the Applicants have stated that in the event that the NGV Projects connect at Grove Road, Friston, a reasonable expectation of the maximum footprint of this is known.
46	These additional areas also have the effect of expanding the footprint of the substation beyond the western and eastern extents of the proposed EA1N and EA2 substations located immediately to the south, making the expanded National Grid substation a larger landscape feature that the other two substations and therefore potentially much more visible from the surrounding area.	Noted.
47	In terms of infrastructure, it is assumed by the applicants that the expanded areas would effectively replicate the infrastructure proposed for the main body of the substation, and this is illustrated in	Noted.

ID	SASES' Comment	Applicants' Comments
	the series of updated photomontages submitted in support of the Appraisal at Deadline 8.	
Cultural Heritage Impact		
48	In screening for potential impacts of the proposed expansion, the applicants identify that Cultural Heritage is a material concern and state that 'The National Grid substation extensions would enlarge the footprint of the National Grid substation, potentially increasing the level of visual change in the setting of adjacent heritage assets. This could result in additional harm to the significance of these assets.	Agreed.
49	In their more detailed assessment of the Cultural Heritage impacts of the expansion of the substation, the applicants identify that 'The simultaneous operation of the National Grid substation and the National Grid substation extensions would create a potential for cumulative impacts on the significance of heritage assets resulting from change in their settings.' In terms of which designated heritage assets might be affected, the applicants acknowledge that 'Cumulative impacts could potentially be experienced by any heritage asset already predicted to be impacted on by the Projects due to change in their settings.' As has been discussed at length in previous documents and during oral submissions, the list of affected heritage assets comprises seven listed buildings which surround the site: • Church of St Mary, Friston (1287864, Grade II*); • Friston War Memorial (1435814, Grade II); • Little Moor Farm (1215743, Grade II); • High House Farm (1216049, Grade II);	Agreed.

ID	SASES' Comment	Applicants' Comments
	• Friston House (1216066, Grade II); • Woodside Farmhouse (1215744, Grade II); and • Friston Post Mill (1215741, Grade II*).	
50	Based on the submitted photomontages, the applicants identify that the extended National Grid substation would be primarily seen from the north and therefore would be most visible in the settings of Little Moor Farm and High House Farm. However, elements would also be visible as far south as the northern edge of Friston Village and therefore appear in the settings of Woodside Farmhouse and the church of St Mary.	Agreed.
51	Regarding the church of St Mary, the applicant concludes that the extended substation would be visible in the setting of the church, but only to a limited extent and only from the northern edge of the churchyard in views looking north. They conclude that this level of change would not result in any cumulative impact on the significance of the church and the predicted impact would remain one of low magnitude. As has been rehearsed at length in written and oral submissions during the course of this hearing, I do not agree with the applicants' identification of a low magnitude impact of the main proposals on the church of St Mary, instead identifying a high magnitude of impact equating to a major significance of effect. In planning terms, this would equate to 'less than substantial harm' at the upper end of the scale, and this is an opinion shared by many of the respondents with heritage expertise in this case. It therefore follows that any assessment of the of the cumulative impact of the expanded National Grid substation must take this level of harm as its starting point and that the additional visual impact of the expanded	The findings of the Applicants and SASES on cumulative impact are essentially the same: the degree of additional visual change would not be enough to materially increase the assessment of impact magnitude, although we recognise there is disagreement on what that magnitude would be. The Applicants agree with SASES that disagreement regarding the Church of St Mary relates to differences in the assessment of the impact magnitude of the Projects. As noted by SASES, this is already well rehearsed in documents submitted to the Examinations and refer to ***Applicants' Comments on SASES' Deadline 1 Submissions*** (REP3-072 (page 69)).

ID	SASES' Comment	Applicants' Comments
	National Grid substation, would increase this harm further, although it would not take the level of harm beyond 'less than substantial', as the physical fabric of the building is not affected.	
52	The applicants do not consider that the enlarged National Grid substation will be visible within the setting of the Friston War Memorial, which they have previously identified as experiencing a negligible magnitude of impact under the proposed scheme. In my own previous assessments, I have disagreed with the applicants' conclusions regarding both the extent of the setting of the memorial and the degree to which that setting contributes towards its significance, identifying instead a medium magnitude of impact resulting in an moderate significance of effect, equating to 'less than substantial harm'. Again, I would argue that this should be the starting point for any cumulative impact assessment, and on the basis of the submitted material would conclude that the additional scale and visibility of the enlarged substation would result in additional harm to this monument, although not so much as to increase the results of my initial assessment.	The Applicants refer to ***Applicants' Comments on SASES' Deadline 1 Submissions*** (REP3-072 (page 75)) for an analysis on the disagreement on the assessment of the War Memorial. The Applicants do not agree with the assertion by SASES that the extension of the National Grid substation would be visible in the setting of the War Memorial but note that the degree of visual change that SASES believes would occur is not sufficient to change the SASES assessment (i.e. there would be no material cumulative impact on the War Memorial).
53	Regarding Little Moor Farm, High House Farm and Woodside Farmhouse, the applicants conclude that the cumulative impact would marginally increase the change in landscape character and impact on the significance of these assets. However, they do not consider this to be sufficient to change the assessment findings which would remain adverse impacts of medium magnitude for Little Moor Farm and low magnitude for High House Farm and Woodside Farmhouse.	Agreed.
54	With regard to Little Moor Farmhouse, as I have stated previously, I agree with the applicants' assessment of the impact which the	The Applicants do not agree with SASES' assessment of cumulative impact on this asset. The footprint of the National Grid substation would be increased in

ID	SASES' Comment	Applicants' Comments
	proposed scheme would have upon this heritage asset. However, I do not agree that the cumulative impact of the expansion of the National Grid substation would not result in the increase of this magnitude. The National Grid substation lies closest to Little Moor Farm and the applicants' 'marginal increase' in change of landscape character equates to a 50% enlargement of the substation and an additional 180m of the northern frontage facing Little Moor Farmhouse, as is captured in the submitted photomontages. I conclude that the expansion of the National Grid substation would result in the elevation of the identified harm from medium to high, resulting in a major significance of effect equating to 'less than substantial harm' towards the upper end of the scale.	size as described by SASES, but this would not affect landscape character in the setting of Little Moor Farm to the same degree. This reflects the fact that the enlarged National Grid substation would always be experienced against a backdrop of the onshore substations when viewed from the north. This is illustrated within ***Photomontages with Potential National Grid Extensions Bays CHVP3 - Appendix 24.7 - Figure 8*** (REP8-069) and ***Photomontages with Potential National Grid Extensions Bays CHVP4 - Appendix 24.7 - Figure 9*** (REP8-070).
55	With regard to High House Farm, the applicant has consistently assessed the impact of the proposed scheme as being of lower impact that on neighbouring Little Moor Farm, despite the similarities of history and setting, and this has been routinely challenged in written and oral submissions made by me and other parties. As with Little Moor Farmhouse, I have identified that the proposed scheme would result in the same medium magnitude of impact resulting in an moderate significance of effect, equating to 'less than substantial harm'. This, then, should be the starting point for any cumulative impact assessment, and again I would conclude that the expansion of the National Grid substation would result in the elevation of the identified harm from medium to high, resulting in a major significance of effect equating to 'less than substantial harm' towards the upper end of the scale.	The Applicants' comments on Little Moor Farm are equally relevant to High House Farm.
56	With regard to Woodside Farmhouse, the applicant has consistently assessed the impact of the EA1N (western) substation as being	The Applicants consider that the marginal change in substation visibility from Woodside Farm does not justify the SASES conclusion that impact would

ID	SASES' Comment	Applicants' Comments
	greater than that of the EA2 (eastern) substation, with mitigation reducing that impact further. As I have argued previously, I do not consider this to be the case, with both configurations of the EA1N and EA2 substations resulting in the same medium magnitude of impact resulting in an moderate significance of effect, equating to 'less than substantial harm'. I do not consider that the proposed mitigation will reduce this impact further. It is encouraging to see the submission at Deadline 8 of an updated photomontage visualisation of the applicants' Cultural Heritage Viewpoint 5, which now shows the full extent of the proposed development of the substations, including an overlaid impression of those elements of the scheme which were screened from view by the selectively chosen viewing location in the initial submissions. This medium impact of moderate significance is therefore the starting point for a cumulative impact assessment, and I would conclude that the expansion of the National Grid substation would result in the elevation of the identified harm from medium to high, resulting in a major significance of effect equating to 'less than substantial harm' towards the upper end of the scale.	increase from medium to high magnitude for this asset. The Applicants consider that the position is fully supported by the visualisations, including the revised presentation of ***Cultural Heritage Viewpoint 5 Additional Visualisations*** (REP8-063). The Applicants note that SASES continues to argue that there would be no difference in impact between western and eastern substations, contrary to the Applicants' position. The Applicants consider that the revised presentation of ***Cultural Heritage Viewpoint 5 Additional Visualisations*** (REP8-063) supports the view that the western substation would be considerably more visible in the setting of Woodside Farm and cause a higher magnitude of impact.
57	With regard to Friston House, the applicants conclude that the western extension would be visible from the outer edge of the woodland that surrounds the house. However, they do not consider that this would materially change the overall appearance of the substations from Friston House, and continue to identify a negligible impact. As has been discussed previously, I disagree strongly with the applicants' identification of the setting of Friston House and their assessment of the contribution which setting makes to the significance of the heritage asset. I have previously identified a low magnitude of impact resulting in an minor significance of effect, equating to 'less than substantial harm'. This should be the starting	The Applicants refer to ***Applicants' Comments on SASES' Deadline 1 Submissions*** (REP3-072 (page 80)) for an analysis of why we disagree with SASES assessment of the Friston House. As is the case with other assets, it is this prior disagreement that lies behind the differences in assessment of cumulative impacts.

ID	SASES' Comment	Applicants' Comments
	point for any cumulative impact assessment, and on the basis of the submitted material would conclude that the additional scale and visibility of the enlarged substation to the north of Friston house would result in additional harm to this heritage asset and elevate the identified magnitude of impact to medium, resulting in a moderate significance of effect. This equates to 'less than substantial harm' towards the middle of the scale.	
58	With regard to Friston Post Mill, I agree with the applicant that the proposed scheme results in a negligible magnitude of impact causing an minor significance of effect, and do not consider that this will be changed by the proposed expansion of the National Grid substation.	Noted.
Conclusion		
59	The applicants' acknowledgement that there are other projects which would potentially want to connect to the National Grid at Friston and that these would result in the enlargement of the National Grid substation is to be welcomed. The need for this to be recognised and properly assessed has been highlighted consistently since the outset of these proceedings. The applicants indicate that such projects would result in the enlargement of the National Grid substation's footprint by some 50%.	Noted.
60	On the basis of the assumptions made, the applicants do not consider that the enlargement of the National Grid substation will have sufficient material impact upon the settings of the identified heritage assets to alter the assessments of heritage impact put forward in their initial submissions for the proposed EA1N, EA2 and National Grid substations. I disagree with these conclusions for two main reasons.	Noted.

ID	SASES' Comment	Applicants' Comments
61	As I have set out at length previously, and have reiterated here, I do not agree with some of the conclusions reached by the applicants in their initial heritage impact assessment, particularly with regard to their assessments of the impact on the church of St Mary and the surrounding farmhouses. Therefore, I do not agree with the baseline heritage impact assessments which have been used to inform the cumulative impact assessment, and would place many of these higher on the scale or harm that does the applicant. My position on these issues are set out alongside those of the applicant in the table below.	Please refer to ***Applicants' Comments on SASES' Deadline 1 Submissions*** (REP3-072) for the Applicants response to the case previously made by SASES.
62	Neither do I support the conclusion that the increased footprint, visual impact and change of landscape character brought about by the proposed expansion of the National Grid substation will result in no change to the initial assessments of heritage impact. As discussed, there will be additional impacts on heritage assets located to the south of the EA1N and EA2 substations, past which elements of the protruding National Grid substation would be visible, but there will be a considerably greater impact upon the settings of Little Moor Farmhouse, High House Farmhouse, Woodside Farmhouse and Friston House, which surround the site to the north and west and which would experience much greater exposure to the new substation elements within their settings. My position on this is also set out in the table below.	The Applicants consider that there is not a simple linear relationship between the change in footprint of the development (as might be appreciated in a plan of the proposals) and the degree of change in landscape character as it is experienced in the setting of adjacent heritage assets. The incremental cumulative impact of the extended National Grid substation on significance of the assets is therefore less than might be initially anticipated from the increase in footprint. This reflects the fact that the extensions to the development footprint would generally be experienced as part of the existing complex of substations, minimising any additional change in landscape character. This is illustrated by ***Photomontages with Potential National Grid Extensions Bays CHVP3 - Appendix 24.7 - Figure 8*** (REP8-069), ***Photomontages with Potential National Grid Extensions Bays CHVP4 - Appendix 24.7 - Figure 9*** (REP8-070), ***Cultural Heritage Viewpoint 5 Additional Visualisations*** (REP8-063), ***Landscape and Visual Impact Assessment Addendum - Appendix 2 - Viewpoint 2*** (REP4-033), ***Landscape and Visual Impact Assessment Addendum - Appendix 5 - Viewpoint 5 (***REP4-036) and ***Landscape and Visual Impact Assessment Addendum - Appendix 7 - Viewpoint 8*** (REP4-038).

ID	SASES' Comment	Applicants' Comments

Heritage Asset	Heritage Importance	Applicant's Assessment		My Assessment		My Cumulative Impact Assessment	
		Magnitude of Impact	Significance of Effect	Magnitude of Impact	Significance of Effect	Magnitude of Impact	Significance of Effect
Church of St Mary	High (II*)	Low	Moderate	High	Major	High	Major
Friston War Memorial	Medium (II)	Negligible	Minor	Medium	Moderate	Medium	Moderate
Little Moor Farm	Medium (II)	Medium	Moderate	Medium	Moderate	High	Major
High House Farm	Medium (II)	Low	Minor	Medium	Moderate	High	Major
Friston House	Medium (II)	Negligible	Minor	Low	Minor	Medium	Moderate
Woodside Farmhouse (EA1N)	Medium (II)	Medium	Moderate	Medium	Moderate	High	Major
Woodside Farmhouse (EA2)	Medium (II)	Low	Minor	Medium	Moderate	High	Major
Friston Post Mill	High (II*)	Negligible	Minor	Negligible	Minor	Negligible	Minor

Onshore Ecology and Ornithology – Appendix 4		
63	SPR Statement As presented in Chapter 22 Onshore Ecology of the ES (APP-070), the only statutory designation within 2km of the onshore substation and National Grid substation locations is the ancient woodland of	As presented in ***Chapter 22 Onshore Ecology*** (APP-070), Grove Wood is primarily afforded protection as an ancient woodland and will be retained and as such there will be no change to its designation.

ID	SASES' Comment	Applicants' Comments
	Grove Wood. This habitat will be unaffected by the Projects and would not be impacted by the National Grid substation extensions. SASES Comment The largest ecological effect on Grove Wood will be to its high bat population. Any increase in size of the development with associated light and noise will be detrimental. In this respect the eastern extension of the NG substation encroaches on Laurel Covert which is also a bat-roosting and foraging site.	The Applicants acknowledge that Grove Wood provides suitable habitat for species such as bats and therefore a suite of monthly activity transect bat surveys were undertaken in 2018. Transect 1 of this survey effort included the onshore substation locations and areas of Grove Wood. No roosting bats were recorded during the 2018 survey effort, however common pipistrelle *Pipistrellus pipistrellus* was the most abundantly observed bat species across the entire five-month survey period for this transect. This species was observed both commuting and feeding along the edges of Grove Wood, along Grove Road and along the hedgerows to the south of Transect 1. ***Chapter 22*** of the ES (APP-070) provides an assessment of the effect of the construction of the Projects on the foraging habitat for bats (paragraph 215-221) as the Applicants acknowledge that some commuting routes will be affected during construction of the onshore substations (paragraph 221). The lighting design for the onshore substations will be in accordance with the Bats and Artificial Lighting in the UK (Bat Conservation Trust (BCT) and Institute of Lighting Engineers 2018). All mitigation measures relating to bats is presented within the ***Outline Landscape and Ecological Management Strategy*** (OLEMS) (document reference 8.7). Following the implementation of these mitigation measures, the impacts upon bats are predicted to be moderate adverse in the short term, and minor adverse in the medium term (APP-070, paragraph 225).
64	SPR Statement The footprints of the National Grid substation extensions will result in the additional loss of agricultural land, which as presented in Chapter 22 (APP-070), is of low ecological value. The cumulative land take for both Projects (both onshore substations and National Grid infrastructure including landscaping) is 37.2ha which is considered	As presented in ***section 22.5.2.1***, ***Chapter 22*** of the ES (APP-070), arable land was the largest habitat by area recorded within the onshore development area. At the time of the survey these ranged from fields that were either in crop (including beetroot, potato and oilseed rape) or had been ploughed. In accordance with the Ecological Impact Assessment (EcIA) criteria set out in ***Table 22.8*** of ***Chapter 22*** (APP-070), the low importance assigned to arable

ID	SASES' Comment	Applicants' Comments
	negligible; the loss of an additional 2.48ha will not materially alter this assessment. SASES Comment Agricultural land is not necessarily of low ecological value. Farmers are encouraged to plant hedges, re-wild field margins and maintain waterbodies. The projects already involve a substantial loss of important hedgerows and the extensions to the NG substation run directly along an existing hedgerow and watercourse. On what basis is the assessment of negligible made? If this relates to the previous comparison with the total amount of agricultural land in Suffolk, then it is unsound.	land is due to arable land being a regular occurring habitat which is not considered to be threatened or rare in the region or Suffolk County.
65	SPR Statement The eastern extension will potentially result in the direct loss of the north-eastern corner of Laurel Covert. This is assuming that no mitigation will be applied, and the extension requires the full footprint shown on Figure 1. SASES Comment See comment on para 28 regarding bats. (ID 1)	Please see response to ID63.
66	SPR Statement The National Grid substation extensions will result in the loss of a length of hedgerow additional to the Projects along the field boundary between the National Grid substation and the corner of Laurel Covert. However, it is considered that potential impacts on ecological receptors such as foraging / commuting bats would not increase to those already assessed for the Projects as similar mitigation as	***Chapter 22*** of the **ES** (APP-070) provides an assessment of the impact of the construction of the Projects on the foraging habitat for bats. The impact on foraging and commuting bats is predicted to occur in the short term. The time lag between removal of the hedgerow and the point at which it provides equivalent habitat value to that removed is noted within the assessment presented in ***Chapter 22*** (APP-070). For this reason, the residual impact following mitigation is concluded to be moderate adverse in the short

ID	SASES' Comment	Applicants' Comments
	presented in Chapter 22 would be required for the National Grid substation extensions. SASES Comment There is also a substantial hedge on the western side of the substation which would be lost. At present this hedge extends to the flood alleviation depression which is surrounded by woody scrub and is home to many creatures, particularly deer, with foraging routes radiating along landscape features.	term, reducing to minor adverse after 3-7 years (i.e. after the hedgerows mature).
67	SPR Statement In terms of disturbance effects from noise or lighting, an Artificial Light Emissions Management Plan will be developed for the final design for the permanent infrastructure, as secured under the requirements of the DCO, which will include measures to minimise light spill following the recommendations regarding birds set out in the Bat Conservation Trust's guidance within Artificial Lighting and Wildlife (2014). Lighting will be required for operation and maintenance activities at the onshore substation and National Grid substations only, and under normal conditions the substation would not be permanently lit. The addition of the National Grid substation extensions would not add any requirement for additional lighting, and therefore the conclusion on cumulative impact would remain as per the ES. SASES Comment Any lighting will have an adverse impact on nocturnal creatures, such as bats and badgers, which are prolific on the site.	The lighting design for the onshore substations will be in accordance with the Bats and Artificial Lighting in the UK (BCT and Institute of Lighting Engineers 2018). In addition, the principles of this guidance will also apply to badgers, i.e. position of artificial lighting to avoid direct lighting on known badger setts. All mitigation measures relating to bats and badgers is presented within the ***OLEMS*** (document reference 8.7).

ID	SASES' Comment	Applicants' Comments
68	SPR Statement The habitats around the onshore substation and National Grid substation locations are of low conservation value for birds, dominated by large arable fields, with small blocks of woodland and hedgerows hosting some common breeding species. With the exception of barn owl, the EIA for the Projects did not record the potential for any of the scoped in Important Ornithological Features (IOFs) in the vicinity of the onshore substations and National Grid substation locations. SASES Comment The substation site has large numbers of Skylarks, which are on the Red-List. Natural England has expressed its concerns that the Applicants have failed to consider farmland bird protection (REP8-162) NE's Update and Comments to Terrestrial Ecology Documents, para 22.	During the onshore substation construction phase all nesting birds will be protected as part of the Breeding Bird Protection Plan (BBPP), through a series of pre-construction nest checks by the Ecological Clerk of Works (ECoW), which would determine whether any restrictions to construction activities are deemed necessary to allow breeding to continue unimpeded. Skylark is Red-listed on the Birds of Conservation Concern (Eaton *et al.* 2015[1]) due to a large long-term decline in national population rather than inherent rareness or vulnerability of particular populations. Although the construction of the onshore substation means that some skylark territories would be lost, these numbers would not reach significance within a regional population context, and it is possible that at least some breeding birds from these territories would relocate in the local area, including in species rich grassland beside the substations created as part of the OLMP (within the ***OLEMS*** (document reference 8.7)) (***Figures 29.11a*** and ***29.11b*** of the ES (APP-401 and APP-402)), rather than be lost to the population. No specific mitigation or habitat management is considered necessary in relation to potential effects on farmland birds, other than the management area for turtle dove (Work No.14) and nightingale (Work No. 12A) committed to by the Applicants, which is also likely to benefit some other farmland species, including skylark.
69	SPR Statement During the 2018 surveys, one occupied barn owl nest box was recorded within the ornithology study area (as a Schedule 1 species3 the location is deemed confidential). The nest box is within a working	The closest breeding barn owl pair is likely to use much of the farmland around the nest site for foraging, potentially including the arable fields where the substations would be, within its territory. According to the Barn Owl Trust[2], arable land is relatively good for barn owl foraging and birds require only 14 to

[1] Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. British Birds 108, 708–746.
[2] https://www.barnowltrust.org.uk/how-to-manage-land-for-barn-owls/barn-owl-habitat-requirements/

ID	SASES' Comment	Applicants' Comments
	farmyard and, based on a recommended protection zone from construction disturbance of up to 175m (Shawyer, 20114), direct cumulative during operation disturbance to nesting birds is considered unlikely. SASES Comment Barn Owls require a huge territory, in winter this is up to 5,000 hectares whereas in summer when there is more food about it can be just 350 hectares (Information from the Barn Owl Trust (www.barnowltrust.org.uk/barn-owl-home-range/). See the following extract as to why the home range is important: "*Staying in one area enables Barn Owls to develop a highly-detailed 'mental map' of their home range. They memorise where the best hunting places are, favoured roost sites, their nest site, and the clear flight paths that connect them all. Indeed, the main way in which nocturnal owls manage to avoid flying into things in the dark is by remembering clear flight paths. This accumulated knowledge can mean the difference between life and death, especially during winter hardship or when they have a brood of young to feed*" and "*Crucially the home range must also contain adequate foraging habitat and no deathtraps, such as major roads*." Electrical equipment is another such hazard. It is clear therefore that any development or extension within the substation site will severely impact on the habitat of Barn Owls, which the Applicants recognise is a Schedule 1 species.	21ha of rough grassland in arable habitats within 2km to meet their foraging requirements, which is only around 1.1 to 1.7% of the total area. This is likely to help explain why the barn owl population in Suffolk is in favourable conservation status and according to the Suffolk Community Barn Owl Project[3], hosts some of the highest densities in Britain. Although a relatively small proportion of a barn owl territory may be subject to the disturbance and habitat loss effects of substation construction and operation, any adverse effects on foraging ability may, at least in part, be offset by the creation of species rich grassland and wetland grassland beside the substations as part of the OLMP (within the ***OLEMS*** (document reference 8.7)) and shown in ***Figure 29.11a*** and ***Figure 29.11b*** of the ES (APP-401 and APP-402). Over the longer-term maturation of planted woodland may also provide nest and roost opportunities for the species, particularly if in proximity to suitable foraging habitat. Local breeding barn owls are therefore likely to continue to utilise suitable foraging habitat throughout the area, and any localised habitat loss is unlikely to substantially impact breeding success or individual survival and affect the favourable population status. Although additional electrical equipment associated with the substation would be required, this is not in the close vicinity of the nest site for newly fledged juveniles to be at increased risk, and with existing electricity towers present resident birds are likely to be used to avoiding such infrastructure. As stated in the ***OLEMS*** (document reference 8.7), any potential losses of territories will aim to be compensated for by the erection of new nest boxes where possible in suitable locations within the local area, in consultation with the Suffolk Community Barn Owl Project. To minimise the risk of the existing territory closest to the substation being affected, at least one nest box will be erected in the local area, but away from

[3] https://www.suffolkbirdgroup.org/scbod-barn-owls

ID	SASES' Comment	Applicants' Comments
		potential effects, prior to the commencement of construction in the onshore substations and National Grid infrastructure areas, to provide an alternative nest or roost site subject to landowner agreement. A commitment to erect nest boxes within suitable locations within the local area for barn owl is captured within ***Section 7.3.4.3*** of the ***OLEMS*** (document refence 8.7), and this will be carried through to the final EMP post-consent.
70	SPR Statement Breeding barn owls are likely to use the local farmland area around the onshore substation and National Grid substation locations for foraging purposes, and so a cumulative direct loss of habitat due to infrastructure could result from the addition of the National Grid substation extensions. However, given the small footprint of the extensions (2.48ha) this would not change the conclusions presented in Chapter 23 Onshore Ornithology (APP-071). SASES Comment See above.	Please see response at ID69. The cumulative effect is considered unlikely to significantly affect the viability of any territories or the favourable status of the population.
71	SPR Statement In terms of disturbance effects from noise or lighting, Chapter 23 (APP-071) notes that barn owl is tolerant of human presence. As noted in section 4.1, an Artificial Light Emissions Management Plan	In general, barn owls appear to be able to hunt successfully with background noise as they are frequently observed foraging along grass verges of busy roads (e.g. Lodé, 2000[4]; Ramsden, 2003[5], Hindmarch et al. 2012[6]; Hindmarch et al., 2017[7]). It is acknowledged that barn owls require sensitivity to higher frequency sounds than general road traffic, which are emitted by small

[4] Lodé, T. (2000). Effect of a motorway on mortality and isolation of wildlife populations. Ambrio, 29, 163–166.
[5] Ramsden, D. J. (1998). Effects of barn conversions on local populations of barn owl (Tyto alba). Bird Study, 45, 68–76.
[6] Hindmarch, S., Krebs, E. A., Elliott, J. E., & Green, D. J. (2012). Do landscape features predict the presence of barn owls in a changing agricultural landscape? Landscape and Urban Planning, 107(3), 255-262.
[7] Hindmarch, S., Elliott, J. E., Mccann, S., & Levesque, P. (2017). Habitat use by barn owls across a rural to urban gradient and an assessment of stressors including, habitat loss, rodenticide exposure and road mortality. Landscape and Urban Planning, 164, 132-143.

ID	SASES' Comment	Applicants' Comments
	will be developed for the final design for the permanent infrastructure, as secured under the requirements of the DCO. Additionally, the National Grid substation extensions would not add any requirement for additional lighting at the National Grid substation. SASES Comment Barn Owls are particularly sensitive to high-frequency sound. The Applicants have been asked to supply data on high frequency sound from the projects which also affects other species, such as bats. The Applicants have avoided supplying such information by saying it is not available. The Applicants should be required to submit such information.	mammal prey species, in order to forage more successfully. Birds typically hunt at low altitude, on average around 3m height, so they can hear prey activity before the higher sound frequencies quickly attenuate. Any high frequency sound associated with a substation is also likely to attenuate relatively shorter distance than lower frequency noise, and this would be aided by the proposed screening as part of the OLMP (within the ***OLEMS*** (document reference 8.7)). Only a very small proportion of a barn owl territory would therefore likely be subject to increased high frequency noise output. It has been shown that barn owls can learn to distinguish between closely similar sound frequencies and between complex noise spectra (Quine & Konishi 1974[8], Konishi & Kenuk 1975[9]) and it is probable that barn owls can distinguish between prey species and other sources of higher-frequency sound, which would allow continuation of hunting around the substations. As it may be the case that within any areas of enhanced noise levels around a substation small mammal species are less likely to detect the presence of a barn owl, the success of foraging may increase.

[8] D.B. Quine & M. Konishi 1974. Absolute frequency discrimination in the bam owl. J. Comp. Physiol. 93: 347–360.
[9] M. Konishi & A.S. Kenuk 1975. Discrimination of noise spectra by memory in the bam owl. J. Comp. Physiol. 97: 55–58.

2.4 SASES' Comments on Applicants' Deadline 8 Flood Risk Submissions (REP9-080)

ID	SASES' Comment	Applicants' Comments
Introduction		
1	Eleven documents of direct relevance to flood-risk arising from these projects were submitted at Deadline 8. These include: i. SPR updated Outline Operational Drainage Management Plan (OODMP) (tracked version) (REP8-065); ii. SPR updated Outline Code of Construction Practice (CoCP) (tracked version) (REP8-018); iii. SPR updated Landscape and Ecological Management Strategy (OLEMS) (REP8- 020); iv. SPR Summary of their Oral Case to ISH11 (REP8-096); v. SPR Flood Risk and Drainage Clarification Note (REP8-038); vi. SPR update on Statement of Common Ground with SCC and ESC (REP8-114); vii. SPR Extension of National Grid Substation Appraisal (REP8-074); viii. SPR comments on Deadline 7 Submissions (REP8-045); ix. SCC submission on Drainage Lessons Learned from EA1 (REP8-173); x. ESC summary of their Oral Case to ISH11 (REP8-152);	Noted.

ID	SASES' Comment	Applicants' Comments
	xi. SCC Deadline 8 Submission- Floods Comments (REP8-176). Attached at Appendix 1 is a report from GWP consultants in respect of these documents.	
Appendix 1 - Flood Risk related responses to Deadline 8 submissions on Scottish Power Renewables proposed EA1N and EA2 onshore works near Friston		
2	This letter constitutes a brief technical critique of the flood risk-related documentation placed on the Planning Inspectorate web-portal in response to the Deadline 8 Submissions following the ISH11 on Flood Risk. These responses to Deadline 8 submissions and the ISH11 have been made by Scottish Power Renewables (SPR) with respect to flood risk near Friston Village, with further comments also provided by Suffolk County Council as the Lead Local Flood Authority, and East Suffolk Council on landscaping matters. This work has been commissioned by Substation Action Save East Suffolk (SASES).	Noted.
3	In providing this written response, the reader is specifically directed to the previous submission by GWP to SASES dated 25th March 2021 and entitled 'Post ISH11 Technical Submission by SASES on Flood Risk Matters in Friston due to the Scottish Power Renewables proposed EA1N and EA2 Works', which was submitted to the Examining Authority by SASES as Appendix 2 of SASES submission entitled 'Deadline 8 – Post Hearing Submissions (ISH11) Flood Risk and Drainage'. That report provides the SASES summary position on increased flood risk to Friston due to the proposed SPR development.	Noted, although the Applicants contest the statement that there will be an increased flood risk to Friston due to the Projects. The Applicants have committed to adopting infiltration as the primary option for drainage from the onshore substations and National Grid infrastructure locations and as such surface water drainage from the Projects would not drain overland towards Friston. Alternatively, the Applicants have committed to maintaining the pre-development Q_{BAR} rate for discharge from the substations should there be a need to adopt the hybrid drainage option, as explained in the ***Outline Operational and Drainage Management Plan*** (OODMP) (REP8-064).

ID	SASES' Comment	Applicants' Comments
4	The critique below intentionally uses the same structure as Appendix 2 referred to above, and considers the extent to which the six technical areas therein have been addressed by these latest responses. For the sake of clarity, these six areas of critical concern are: i. Site Location Selection ii. Flood Risk Methodology iii. Baseline Hydrological Assessment iv. Construction Phase Impacts v. Operation Phase Impact and Mitigation vi. Post-Operation Phase The below assessment does not re-visit and repeat previous GWP analysis nor the stated SASES position, except where to further strengthen the previous position statement by SASES	Noted.
5	Qualifications of Author This letter has been prepared by [REDACTED] has a BSc (Hons) in Geology, an MSc in Hydrogeology and Groundwater Resources, is a Fellow of the Geological Society (FGS), Chartered Geologist (C.Geol), Chartered Member of the Chartered Institute of Water and Environmental Management (C.WEM, CIWEM) and Associate Member of The Academy of Experts (AMAE). [REDACTED] has more than 30 years of post-graduate experience in water resources management, water hazard mapping and risk reduction, flood risk assessment, climate change vulnerability assessment, and disaster risk reduction, both in the United Kingdom and overseas.	N/A.

ID	SASES' Comment	Applicants' Comments
6	Instructions SASES instructed [REDACTED] in June 2019, to provide expert independent advice and review of the SPR environmental statement and related documentation, with respect to the flood risk impact on Friston Village, and to ascertain whether flood risk has been i) assessed in accordance with policy on site location; ii) adequately investigated; and iii) adequately mitigated.	Noted.
7	This assessment focuses on primarily new responses and updates, rather than highlighting existing positions and previous statements. The purpose of the response below is to highlight the extent to which the issues raised in ISH11 and the actions requested of the Applicant by the Examining Authority continue to not adequately address or mitigate the flood risk created by the proposed development to Friston Village.	Noted.
Site Location Selection		
8	The Applicant re-states the FRA follows national policy on flood risk, and states no Sequential Test for site location is required because the site is located in Flood Zone 1. This statement is clearly inconsistent with both EN-1 (5.7.9, 5.7.13, 5.7.14) and NPPF as stated in SASES earlier submissions. To be clear, the NPPF states clearly (Clause 158) that the aim of the Sequential Test is to steer new development to areas with lowest risk of flooding, that development should not be permitted if there are reasonably available sites for the development in areas with lower risk of flooding, and that the sequential approach should be used in areas vulnerable from **any** form of flooding.	The below text is taken directly from the UK Government Guidance titled 'Flood risk assessment: the sequential test for applicants', last updated in 2017. *Developments that need a sequential test* *You need to do a sequential test if both of the following apply:* • *your development is in flood zone 2 or 3 - find out what flood zone you're in* • *a sequential test hasn't already been done for a development of the type you plan to carry out on your proposed site - check with your local planning authority*

ID	SASES' Comment	Applicants' Comments
		From the above it can be concluded that the sequential test for the Projects is **not** required as the onshore substation and National Grid infrastructure locations are not in flood zones 2 or 3. Furthermore, although mapping has identified the presence of an overland surface water flow route through the site, it does not automatically result in flooding to the site. Overland flow occurs on all surfaces where the rainfall intensity is greater than its ability to drain into the ground and is mitigated by the adoption of an appropriate surface water drainage scheme.
9	The Applicant continues to present its argument in terms of fluvial (river) flood risk only, despite knowing full well the site is located within a watershed which not only has high pluvial (run-off) flood risk to Friston village but has a very poorly evaluated groundwater flooding risk. The Examining Authority is directed to also consider HM Governments' recent Flood and Coastal Erosion Risk Management Policy Statement (July 2020), which has 5 policy areas, one of which is better protecting communities including ensuring important infrastructure sites are better prepared to manage flood risk and another enabling more resilient places through catchment-based approaches, including upstream measures to reduce downstream risk.	The Applicants have continually considered both fluvial and pluvial (surface water) flood risk to the, site which is demonstrated within various sections of ***Chapter 20 Water Resources and Flood Risk*** of the ES (APP-068). **Sections 20.5.1** and **20.5.2** of the ES respectively consider the existing surface water and groundwater conditions and **sections 20.6.1.1**, **20.6.1.4** and **20.6.2.1** consider the potential impacts to surface water bodies, surface water run-off and ground water flows. The Applicants have also reviewed the Flood and Coastal Erosion Risk Management Policy Statement (July 2020) and note the reference to policy area iv. 'Better **preparing** communities', and policy area v. 'Enabling more resilient places through a catchment based approach'. Specifically, reference has been made to information contained within policy area iv. Better preparing communities as follows: *"Where areas are at risk of surface water flooding, effective drainage or capture of surface water will help to reduce the impacts of flooding. National and local requirements for sustainable drainage systems already exist, and it is important they are constructed to appropriate design standards suitable for the particular circumstances of the area".*

ID	SASES' Comment	Applicants' Comments
		As noted previously, the Applicants are committed to the incorporation of SuDS within the Projects in accordance with national and local design requirements such that the Projects will not adversely affect surface water flood risk either to the site or downstream to Friston village. As such, the Applicants can confirm that the proposed location, design and mitigation measures for the Projects comply with the policies set out in the Flood and Coastal Erosion Risk Management Policy Statement (July 2020).
Flood Risk Methodology		
10	The Applicant re-iterates previous statements on their approach to the flood risk methodology being consistent with national flood risk policy (see GWP responses in the section above), as well as refers to compliance with East Suffolk Council (ESC) policies on flood risk (SCLP9.5) – as they consider they do not increase flood risk elsewhere - and SUDS (SCLP9.6) – in terms of integration with landscaping issues.	The Applicants can confirm this is correct.
11	As stated previously by SASES, the Applicants' position is NOT compliant with national or local flood risk policies and therefore their flood risk methodology is inadequate. SCLP9.5 clearly states 'developments must not increase flood risk elsewhere' – yet the Applicant has failed to demonstrate adequate flood risk assessment and/or mitigation for all phases of the development for all flood risk types.	The Applicants contests SASES' claim that the surface water and flood risk management strategies proposed are not compliant with national or local flood risk policies and that the flood risk methodology is inaccurate. ***Section 2*** of the ***OODMP*** (REP8-064) presents all of the relevant legislation, policy and guidance that has been applied to the development of the Projects. Within the ***OODMP*** (REP8-064) the Applicants have committed to the adoption of infiltration as the primary option for the Projects, thereby limiting potential surface water runoff from the site. The Applicants have also committed to maintaining the pre-development Q_{BAR} rate, should a hybrid option be required. This is secured through Requirement 41 of the ***draft DCO*** (document reference

ID	SASES' Comment	Applicants' Comments
		3.1). Therefore, the Projects are compliant with SCLP9.5 as there will be no increase in flood risk 'elsewhere'.
12	The Applicant continues to promote the use of QBAR to overcome concerns about not only peak but also TOTAL flows increasing flood risk in Friston. The Applicant has previously used this position to justify not identifying and assessing the vulnerability of flood risk receptors (eg residents, housing, businesses, community infrastructure) in Friston.	As stated in the ***OODMP*** (REP8-064), the Applicants have committed to the adoption of an infiltration scheme as the primary option as well as maintaining the pre-development Q_{BAR} rate, should a hybrid approach be required, this means there will not be an increase in surface water run-off, peak or total flows into Friston.
13	As previously stated by SASES, the watershed has been poorly characterised by the Applicant, residents consider the SCC flood model to underestimate observed flood risk, the Applicant has not proven whether QBAR flow rates will mitigate (or even increase) flood risk in Friston given flooding occurs at least every other year, nor whether flows can be restricted to QBAR for all phases of the development. The Applicant appears to start to recognise the inadequacy of the baseline hydrological assessment – a critical part of the flood risk methodology – which is discussed further below.	The watershed has been appropriately characterised by the Applicants within ***Chapter 20 Water Recourses and Flood Risk*** (APP-068). Furthermore, Suffolk County Council (SCC) has confirmed their requirement for the Applicants to utilise the flood model produced by them to characterise the baseline understanding of flood risk for the Projects which the Applicants can confirm has been used. Industry standard calculations have been used to calculate the indicative Q_{BAR} rate for the site. The Q_{BAR} rate for the site will be reviewed, and updated if necessary, following the completion of ground investigations to be undertaken during detailed design. Nevertheless, the Applicants have committed to maintaining the pre-development Q_{BAR} rate within the ***OODMP*** (REP8-064), which is secured through Requirement 41 of the ***draft DCO*** (document reference 3.1). Therefore, there will be no increased risk of flooding to Friston village.
Baseline Hydrological Assessment		
14	Both SASES and SCC made detailed representations on the on-going inadequacy of the Applicants' baseline hydrological assessment at ISH11.	Noted.

ID	SASES' Comment	Applicants' Comments
15	The Applicant has previously confirmed the need for additional topographic surveying, ground infiltration testing and hydraulic modelling, but now also appears to recognise the requirement for groundwater monitoring – which could impact the efficacy of infiltration basins as well as groundwater flood risk to Friston – but again refuses to undertake this work at this time, relying instead on such data informing the final design.	All of the ground investigations and monitoring described by SASES within this comment have always been committed to by the Applicants, as detailed in the ***OODMP*** (REP8-068). However, the Applicants have always committed to undertaking these surveys post consent as this is standard practice for NSIP's. At this stage of the examination, the Surface Water Management Plan (SWMP) is yet to be drafted and the ODMP is still an outline plan, meaning that it will be finalised post consent, once all of the ground investigations and monitoring have been undertaken. Therefore, the final plans will be informed by site specific surveys. The final ODMP is subject to final review and sign-off by the Lead Local Flood Authority (LLFA) meaning that the LLFA maintains input and oversight.
16	As previously stated by SASES on multiple occasions including in ISH11, the lack of surface water and groundwater regime characterisation, including a complete lack of monitoring, prevents an accurate baseline hydrological assessment from being undertaken, and therefore prevents reliable flood risk impact assessment and mitigation measure development. The approach to characterising the Friston watershed is inconsistent with DEFRA guidance on small catchments, as previously stated by SASES, and is all the more unacceptable given the known existing flood risk to Friston Village.	Please see responses at ID13 and ID15.
17	The Applicant also questions the reliability of any hydraulic surface water model - given the lack of rainfall and stream flow monitoring to calibrate the model - but now uses the Friston hydraulic model to demonstrate a lack of flood risk to the proposed development site.	It is unclear where the Applicants have questioned the reliability of the existing modelling. SCC has confirmed their requirement for the Applicants to utilise the model produced to characterise the baseline understanding of surface water flood risk. The Applicants can confirm this has been considered, as requested, in the ***OODMP*** (REP8-068).

ID	SASES' Comment	Applicants' Comments
		The model assesses surface water flood risk and utilises rainfall records in the area, combined with the local topographical information to identify overland flow routes etc. The model is 'calibrated' using known historic flooding events and extents. This assessment has been carried out by SCC, and is considered by SCC to be the most appropriate data / information available to characterise flood risk to the Projects. On this basis, the Applicants have also adopted the information from this model within their assessment of flood risk.
18	Notwithstanding the accuracy or otherwise of the Friston hydraulic model, the risk of flooding to the development itself is not of primary interest to SASES, the concern is the risk to Friston itself, which the Applicant chose not to consider further in their further interpretation of the Friston hydraulic model. There is no further assessment of the baseline hydrology by the Applicant. The surface water baseline characterisation remains wholly inadequate, the groundwater baseline has not been evaluated at all. The baseline upon which all flood risk impact assessment and mitigation has to be determined therefore remains not fit-for-purpose and this undermines the actual viability of the Applicants' flood risk management measures.	The Applicants undertook an assessment of the baseline environment within **section 20.5** of ***Chapter 20 Water Resources and Flood Risk*** (APP-068), including surface water and groundwater. The groundwater baseline was evaluated within **section 20.5.2** and is based on information available in key documents published by ESC and SCC (the Councils) and Environment Agency. The Applicants contest that the baseline characterisation is wholly inadequate; the ES was written in line with the requirements of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. As noted in the response at ID15, ground investigations and monitoring have always been committed to by the Applicants, as detailed in the ***OODMP*** (REP8-068). The results of these will enable the refinement and development of the Applicants detailed design.
19	The inadequacy of the baseline in such a vulnerable flood risk watershed and downstream community remains unacceptable.	Please see response at ID18.
Construction Phase Impacts		
20	The Applicant has submitted an updated CoCP. The only substantive update within it states that detailed evaluation of each onshore section will be undertaken prior to construction to inform	The Applicants updated the ***OCoCP*** (document reference 8.1) where appropriate and relevant.

ID	SASES' Comment	Applicants' Comments
	design of the construction phase surface water management scheme.	
21	Whilst the Applicant is now recognising the construction phase does have phase specific flood risk impacts (eg area and turbidity), the above statement does not provide any evidence the construction phase flood risk impacts have been properly assessed (given our on-going concerns about the inadequacy of the baseline flood risk assessment) nor whether adequate mitigation is actually viable. The continuing position of the Applicant is all the more remarkable given the Suffolk County Council (SCC) comments during ISH11 and further evidenced in their Deadline 8 Submission on EA1 Drainage Lessons Learned, which clearly identified construction phase flood risk problems, a failure to understand the complexity of the temporary works drainage, a failure to consider and plan for entire site flood risk mitigation measures early enough, inadequate data (topography and geology) to inform risk and mitigation, inadequate management of land drains, additional treatment requirements eg pH correction, inadequate management along the cable corridors – all in a watershed much less vulnerable to flooding downstream communities.	The Applicants have always recognised that the construction phase has specific flood risk impacts. **Section 11.1** of the ***Outline Code of Construction Practice*** (Outline CoCP) (document reference 8.1) sets out general control measures that the Projects are likely to require. However, as stated in the ***Flood Risk and Drainage Clarification Note*** (REP8-038), the Applicants do not deem it relevant to provide further details on these control measures at this stage as the Projects are yet to undergo detailed design. This is standard practice for NSIPs where the parameters and conclusions reached during detailed design are required to define the exact control measures which are appropriate. The control measures which will be implemented will be refined post consent and will be approved by the LLFA in the final SWMP. The Applicants would like to reiterate that no work on the Projects can begin until the final SWMP has been signed off by the LLFA, meaning they will maintain both the oversight and regulation of the final control measures to be implemented.
22	The Applicant has failed to learn these lessons from EA1 and apply them to the planning stage of EA1N and EA2, all the more remarkable considering their own identification of EA1N and EA2 as a more flood vulnerable watershed given the presence of Friston Village.	As a responsible developer the Applicants (and ScottishPower Renewables (SPR)) undertake regular 'lessons learnt' reviews to improve the design, delivery and operation of its projects. The Projects benefit from this process and in particular the revised approach to construction drainage along the onshore cable route was one of the main 'lessons learnt' from the East Anglia ONE project.

ID	SASES' Comment	Applicants' Comments
23	The management of flood risk within the CoCP is almost entirely absent. This is completely unacceptable.	The Applicants contest this statement as **Section 11** of the ***Outline CoCP*** (document reference 8.1) details the management methods of flood risk during construction. The Applicants are committed to ensuring that best practice in terms of mitigating potential flood risk and limiting run-off during construction is implemented to ensure there is no flood risk impact as a result of the Projects.
Operation Phase Impact and Mitigation		
24	Consistent with previous submissions from the Applicant, they continue to focus on the assessment and mitigation of flood risk during the operational phase and the role and content of the OODMP. The OODMP has been updated slightly since its previous version submitted at Deadline 7. It includes comments on further assessment of flood risk to the development (discussed in the baseline section above regarding interrogation of the Friston flood risk hydraulic model) and the importance of complying with ESC Policy on SCLP9.6 with respect to integration with landscaping and other requirements.	The Applicants have made all updates to the ***Outline CoCP*** (document reference 8.1) and the ***OODMP*** (REP8-064) where necessary.
25	The Applicant continues to caveat the provided surface water management designs being contingent not only on the wider development design and ground investigations, but also 'landscaping requirements' and 'optimum use of land'.	The Applicants would like to clarify that the design of the SuDS and the preferred option to be progressed will prioritise ground conditions, including infiltration testing, and the site specific hydraulic model. However, consideration will also be given to landscaping requirements, use of land, mitigation and ecology. This approach complies with NPS EN-1, para 5.7.9 as it prioritises the implementation of a SuDS.
26	We would direct the Examining Authority to the wording of ESC policy SCLP9.5 which clearly states '… developments **must** not increase flood risk elsewhere', whereas Policy SCLP9.6 states SUDS '**should**' be integrated. The primacy of SCLP 9.5 is self-	As stated at ID13, the Applicants have committed to ensuring there is no increase in flood risk elsewhere by prioritising the use of infiltration as the primary option and by maintaining the pre-development Q_{BAR} rate should a hybrid approach be required, as set out within the ***OODMP*** (REP8-064), which is secured through Requirement 41 of the ***draft DCO*** (document reference 3.1).

ID	SASES' Comment	Applicants' Comments
	evident – it is an absolute requirement, whereas as that of SCLP9.6 is guidance.	Therefore, there is no increased risk of flooding to Friston village. The use of a SuDS will be integrated with all other design elements of the site such as landscaping requirements, use of land, mitigation and ecology.
27	The main update to the OODMP by the Applicant is the addition of a third 'hybrid' drainage option, to the Infiltration Only option and Surface Water Discharge Only option provided before in earlier submissions. The Hybrid option is proposed by the Applicant because the Infiltration Only option cannot be demonstrated by them to be viable, and SCC refuses to accept the Surface Water Discharge Only option. The Hybrid option (there are two hybrid basins proposed) proposes a single basin which allows water to infiltrate the ground through the base of the basin. Once the water depth in the basin reached 0.5m depth then it will start to overflow out of the basin at QBAR. Water levels in the basin will rise up to 1.5m depth. GWP contend that whilst the Hybrid design does allow for infiltration and surface water discharge, the infiltration component is relatively minor, with effectively all water above 0.5m depth actually then flowing out of the basin to the surface water course. This design is NOT optimised to maximise infiltration, it is optimised to ensure it will fit within the site. The Applicant does not provide details of the flow hydrographs or volumes to enable comparison of the % of the flows which infiltrate into the ground compared to those which are discharged to the surface water course. It is therefore not possible to compare whether the TOTAL flow is more or less than the baseline scenario, which is a critical issue given uncertainty over both the QBAR estimate, and whether QBAR causes flooding in Friston. If the Infiltration Basin was to maximise infiltration it would	The Applicants have committed to adopting infiltration as the primary option for surface water drainage from the Projects and will maximise its use, subject to confirmation of infiltration rates etc at the site. To demonstrate that alternative approaches can be accommodated, should infiltration only not be viable, the Applicants have set out two further indicative scheme 'options' within the ***OODMP*** (REP8-068), to demonstrate their commitment to the provision of a SuDS within the Projects thereby ensuring there will be no increase in flood risk as a result. The indicative options have been assessed using conservative values / factors and it is noted that these will be reviewed and refined as part of the detailed design, following site investigations and once the design for the onshore substations and National Grid infrastructure has been finalised. The final design of the drainage scheme will be secured through Requirement 41 of the ***draft DCO*** (document reference 3.1).

ID	SASES' Comment	Applicants' Comments
	be designed to fill completely and then overflow (via a controlled mechanism) to a secondary attenuation pond for discharge to surface water. This current design self-evidently stores a much greater volume of run-off above the surface water discharge outlet pipe than below it. The proposed Hybrid design does not meet the objectives of the stated SCC SUDS hierarchy requirements nor have the design parameters been demonstrated to be accurate. The design itself therefore has not been proven to be viable.	
28	Notwithstanding the points raised above: the proposed storage design will retain 1.5m depth of water - which breaches SCC requirements; its design volume is <2% more than the required volume – which is unacceptably small and does not allow for design parameter inaccuracy or performance inefficiencies eg blockages; and the total storage include freeboard and landscaping is with 10% of the Reservoir Act, despite being immediately above a residential village and the design is without consideration of overflow structures, which is unacceptable.	This is incorrect. The maximum depth of the basins for all options is 1m in line with SCC guidance.
29	The last update to the OODMP is an outline drawing of the outfall pipe from one of the storm water attenuation basins and its discharge into the Friston watercourse. The outlet pipe is proposed to be located along the farm track and discharge into a box culvert under the road before entering the existing ditch system passing through the village.	The Applicants can confirm that a SuDS Outfall Concept figure was appended to the ***OODMP*** (REP8-064) as ***Appendix 2***.
30	No dimensions or design details are provided to enable estimate of cover depth or material strength, nor details of traffic or vehicle loading assessment provided, especially for the pipeline section	***Appendix 2*** of the ***OODMP*** (REP8-064) is provided for indicative purposes only and therefore has no dimensions or design details, hence why it is titled 'SuDS

ID	SASES' Comment	Applicants' Comments
	beneath the farm track. It is not therefore possible to comment on the structural integrity of the proposed design with respect to damage from vehicle loading.	Outfall Concept'. The final outfall method will be confirmed during detailed design once a final SuDS has been developed.
31	The design does however appear to have failed to consider the farm track IS the watercourse north of the road and therefore is subject to storm erosion, sedimentation and flow inundation. The box culvert into which the pipe has an open-ended outlet will therefore during operating conditions be receiving turbid run-off water from the surrounding fields and is highly likely to be both full of water constrained by the current downstream ditch geometry and routinely filled or partially filled with sediment. The outlet pipe located as it is on the floor of the box culvert is highly likely to become blocked with time and its conveyance restricted. This appears to not have been considered. Clearly the consequence of a partially or fully blocked outlet pipe is water backing up in the basins and potentially overtopping the basin bunds. The design appears highly likely to become blocked and is considered unreliable.	The Applicants note SASES' comments and all of the named factors will be considered during detailed design; however, the Applicants would like to reiterate that ***Appendix 2*** of the ***OODMP*** (REP8-064) is provided for indicative purposes only.
32	There are no details provided of the outfall from the second basin.	As stated, all of the figures within the ***OODMP*** (REP9-068) are for indicative purposes only. Exact outfall paths and locations will be confirmed during detailed design once the SuDS has been decided upon.
Post-Operational Phase (and Expansion)		
33	No further evidence has been provided by the Applicant on management of the drainage schemes should the site no longer become operational. There is no provision for decommissioning.	The SASES statement is incorrect. **Requirement 30** of the ***draft DCO*** (document reference 3.1) secures that an onshore decommissioning plan is submitted to and approved by the relevant planning authority in consultation with the relevant highway authority and the relevant statutory nature conservation body. This will include matters pertaining to surface water drainage.

ID	SASES' Comment	Applicants' Comments
34	On the contrary the Applicant has now introduced a further document which allows for the expansion of the current operational area to the west and east of the proposed National Grid sub-station. The Applicant states this will not increase flood risk.	The Applicants have not allowed for the expansion of the current operational area to the west and east of the proposed National Grid sub-station. Any future expansion of the National Grid substation would require consent and any such consent application would have to consider the surface water drainage for that extension. The Applicants cannot incorporate capacity within the Project's surface water system for any unrelated, undefined projects that may or may not connect at Grove Wood, Friston.
35	It is clear from the National Grid sub-station extension documentation provided that this will: i) increase the impermeable footprint of the operational area, increasing flow and volume of run-off; and ii) build over the northern infiltration/attenuation basin areas, reducing the area available for drainage management and flood risk mitigation measures.	See response at ID33 and ID34.
36	Such an extension self-evidently increases flood risk whilst reducing opportunity for flood risk mitigation and therefore significantly, on two counts, reduces the viability of any flood management schemes, not that any viable schemes have been provided at all by the Applicant. This is unacceptable.	See response at ID33 and ID34.

2.5 SASES' Comments on Draft DCOs Submitted at Deadline 8 (REP9-079)

ID	SASES' Comment	Applicants' Comments
Comments on Draft DCOs Submitted at Deadline 8		
1	At Deadline 8 SASES submitted Post Hearing Submissions (ISH15) on the draft DCOs (REP8-228). Whilst some limited improvements have been made to the draft DCOs submitted at Deadline 8, substantive outstanding issues remain. Rather than repeat comments previously made, reference is made to the paragraphs of such submissions.	No comment.
2	SASES comments set out in paragraph 3 in relation to articles 4, 7, 27(11)(a) and Schedule 1, Part 1 (minimum generating capacity) and Part 2 (powers to widen roads) remain unaddressed.	The Applicants provided a response to these points in the ***Applicants' Comments on SASES Deadline 8 Submissions*** (REP9-013).
3	In relation to article 33 (Operational Land) SASES refers to its comments in paragraphs 4, 5 and 6. The issues in relation to article 33 remain outstanding.	See ***Applicants' Comments on SASES Deadline 8 Submissions*** (REP9-013).
4	In respect of Schedule 1 Part 3, Requirements , SASES comments set out in paragraph 3e. remain unaddressed subject to the following comments. a. Whilst the Applicants have clarified in respect of the cable sealing ends that, aside from the gantries, the electrical equipment will not exceed the height of 14.5m, it would be helpful if it could be confirmed that these are the heights used in the photomontages. b. Whilst there has been agreement in relation to reduced construction hours these are not reflected in requirements 23 and 24. In relation to control of noise during the	See ***Applicants' Comments on SASES Deadline 8 Submissions*** (REP9-013). a. The heights used within the photomontages can be found within ***Table 6.1*** of the ***Substations Design Principles Statement*** (REP8-082). Within ***Table 6.1*** it is confirmed that all electrical equipment will not exceed the height of 14m, apart from the lightning protection masts. b. The permitted construction hours (Requirements 23 and 24 of the draft DCO) at the substations remains unchanged. The commitment and detail around the 'shoulder hour' is included within the ***Outline Code of Construction Practice*** (REP8-017).

ID	SASES' Comment	Applicants' Comments
	operational phase (requirement 27) SASES refers to its Deadline 9 submission in respect of Noise. In relation to the new limitation in respect of the National Grid infrastructure to "standard operation" this is an admission that the National Grid switchgear will be extremely loud in operation with the capacity to wake people at night. c. SASES has commented on the new requirement 12(2) in its Deadline 9 submission in respect of Noise.	Regarding operational noise the wording of **Requirement 27** has been agreed with ESC and ensures the correct and clear application of the operational noise limit. Excluding emergency operation and the testing of plant and equipment associated with emergency operation from the control of the noise limits is standard practice when dealing with such equipment. As noted in ***Noise Modelling Clarification Note*** (REP4-043) switchgear equipment is only activated under an emergency or for occasional testing and due to its emergency use and the low occurrence of this item of equipment being operated, this item of National Grid Infrastructure has not been included or assessed further in the updated noise model. c. Please see response at ID23 in Section 2.1.
5	In relation to maintenance (see paragraphs 1- 9 on pages 3, 4 and 5) which is secured across the draft DCO and the OLEMS in respect of landscape maintenance and the OODMP in respect of flood risk and drainage, SASES refers to paragraphs 1-7 in respect of landscape maintenance and in respect of SuDS maintenance to paragraphs 8 and 9, and to its Flood Risk and Drainage submission at Deadline 8 (REP8-226) and its Comments on Deadline 8 Flood Risk Submissions made at Deadline 9.	See ***Applicants' Comments on SASES Deadline 8 Submissions*** (REP9-013).

2.6 SASES' Comments on CAH3 Submissions (REP9-077)

ID	SASES' Comment	Applicants' Comments
Introduction		
1	Following CAH3 the Applicants prepared a submission of oral case and responded to the Action Points issued by the Examining Authorities. SASES comments on that submission and responses as follows.	Noted.
Section 5.1 Reasonable Alternatives to Compulsory Acquisition and Temporary Possession		
2	In Section 5.1 of the Applicants' Written Summary of Oral Case for CAH3, further consideration is given to alternative grid connection locations. SASES is concerned that the explanation appears to differ from that previously offered by the Applicants. It is noted that alternatives remain a principal issue of concern for the Examining Authorities, and SASES will make further submissions as appropriate as this issue is further examined.	The Applicants have presented a thorough consideration of alternatives in ***Chapter 4 Site Selection and Assessment of Alternatives*** of the ES (APP-052).
3	In the interim SASES has submitted at Deadline 9 an Updated Pathfinder Clarification Note part of which relates to the submissions made by the Applicants at paragraphs 67, 68, 69 and 70.	Please see ***Section 2.7*** below which presents the Applicants response to SASES Pathfinder submission.
4	Further in relation to paragraph 69 of the Submission of Oral Case the Applicants state that: "*the combined capacity of the Projects is 1700 MW*" As the Examining Authorities are aware the combined capacity is up to 1700 MW but that the Applicants are only committed to delivering projects with a combined capacity of 200 MW under the DCOs. Even if the statement in paragraph 68 that the maximum	It is the Applicants' intention to build out both projects to their maximum capacity and the Applicants are engaging with the supply chain on this basis. See **ID5.1** of ***Applicants' Responses to ExA's Comments on Draft DCO*** (REP6-067).

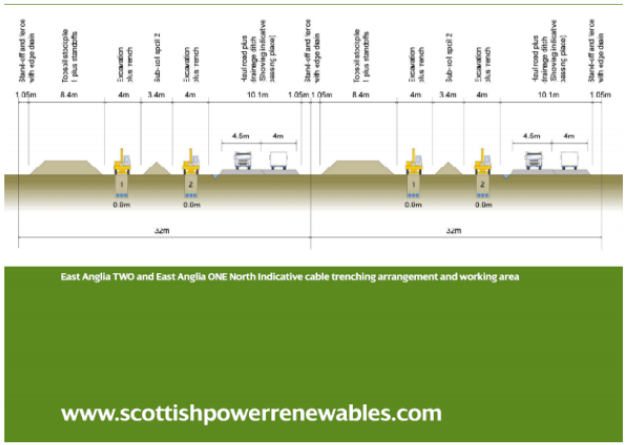
ID	SASES' Comment	Applicants' Comments
	capacity for an HVDC link is 1320 MW (and see SASES' comments in the Updated Pathfinder Clarification Note) is taken at face value that represents only a 20% reduction from the maximum combined capacity of the Projects. In respect of EA1 the capacity of that project was reduced by over 40%.	
5	In addition Scottish Power via the Applicants has brought forward EA1N and EA2 as separate projects of 800MW and 900MW respectively with no commitment to develop both Projects. Seeking to eliminate a proposal made by SASES based on the maximum capacity of the projects is questionable in circumstances where the Applicants will not commit in the DCOs to a capacity approaching the maximum capacity of the Projects when there is a history of "downsizing" the capacity of offshore windfarm projects.	As stated at ID4, it is the intention of the Applicants to build out both projects to their maximum capacity and the Applicants have engaged with the supply chain on this basis (see for example ***Letter from Siemens Gamesa Renewable Energy Limited*** (REP4-030)). With regards to a 'history' of downsizing the capacity of offshore windfarms, it is clearly explained in **ID5.1** of ***Applicants' Responses to ExA's Comments on draft DCO*** (REP6-067) that the reason for the reduction of the capacity for East Anglia ONE was as a result of the restrictions of the Contracts for Difference auction process.
6	In paragraphs 72 – 76 the Applicants seek to dismiss sites at Old Leiston Airfield and at Harrow Lane, Theberton. However there appear to be no adverse comments on the Harrow Lane site which is well enclosed, as distinct to the old airfield site which is open (but distant from properties apart from the Cakes & Ale camping site).	The Applicants would point to their comments at ID5 of ***section 2.2*** of the ***Applicants' Comments on SASES' Deadline 5 Submissions*** (REP7-054). This clearly sets out that the key constraints highlighted for Leiston Airfield site apply to the Harrow Lane site also (as identified in SASES' Deadline 5 submission on the accompanied site inspections (REP5-103)).
7	The reference in paragraph 73 to there being a 'key difference' between the Projects and NGV projects needs further explanation by the Applicants. The NGV projects require just two HVDC cables per project from landfall to the converter station location, and then six 400kV cables from there to the National Grid substation at Friston. The Applicants have six 275kV cables per project to route from landfall to their substations at Friston. Accordingly using HVAC	Please see response at ID10 in Section 2.7.

ID	SASES' Comment	Applicants' Comments
	is more expensive because of the need for more cables and trenches	
Section 2.2 Hundred River Crossing		
8	The Applicants state that (as detailed in the Deadline 7 Project Update Note REP7-042) the maximum working width of the onshore cable route at the Hundred River crossing has been reduced to 34m width for a distance of 40m from the banks of the Hundred River. This and the Applicants' oral explanations at CAH3 have been misleading. It has not been made clear that should both projects go ahead the working width would be 2 x 34 = 68m. The Project Update Note and this Summary of Oral Case are confusing in this respect in that they refer to both EA1N and EA2 in their titles. The same comment applies to EA1N & EA2 Project Update Note REP3-052 para 2.2 on page 6.	The Applicants believe they have been clear on the working widths required at the Hundred River crossing. The working width is clearly expressed within Requirement 12 of the ***draft DCO*** (document reference 3.1), as well as within the ***Outline Watercourse Crossing Method Statement*** (REP8-084) which has been prepared for each Project individually and, in line with the ExA's procedural decision (PD-004), is clearly titled with a rider on the front cover and has corresponding colour-coded boxes throughout the document identifying the document with the respective individual project (i.e. either East Anglia TWO or East Anglia ONE North). To confirm, the working width of the onshore cable route at the Hundred River crossing is 34m for **each** Project, which would result in a maximum cumulative working width of 68m at this location should both Projects be consented and then constructed.
9	Draft DCO Requirement 12 and paras 23 and 75 of Statement of Reasons REP7-012 for each project refer to 34 metres width being required per project. Evidence that the actual maximum width would be 68m is confirmed in the Applicants' Outline Watercourse Crossing Method Statement Version 03 REP8-084 Section 4.8 : Onshore Cable Route Width. This document is explicit at para 64: "*Since submission of the Application, the Applicant has reduced the working width of the onshore cable route where the cables cross the Hundred River from 50m to 34m per project. This working width*	This is correct. It has been clear since submission of the Applications that the Applicants require additional working width for the onshore cable routes at the Hundred River crossing to enable safe working practices to be implemented. However, since submission of the Applications the Applicants have been able to reduce the onshore cable route working width of each Project at the Hundred River crossing location following further engagement with engineering teams. Within ***Figure 2*** of ***Outline Watercourse Crossing Method Statement*** (REP8-084) the two buffer areas shown are 40m from each side of the river (i.e. approximately 80m across). The buffer area spans the width of the onshore cable corridor, as it is not currently known precisely where within the onshore cable corridor the onshore cable route will be micro-sited at the point of the

ID	SASES' Comment	Applicants' Comments
	applies for 40m from the Hundred River's western bank and eastern bank (the Hundred River Crossing buffer)". It is stated again at para 65: "T*he width of the onshore cable route within the Hundred River crossing buffer will be up to 34m wide for a single project or 68m where the onshore cables/ducts for East Anglia TWO and East Anglia ONE North are installed in parallel.*" Two 48 x 40m buffer areas, one each side of the river are also illustrated in the Map at Figure 2 of Outline Watercourse Crossing Method Statement V3.	Hundred River crossing. The buffer area shown is therefore illustrative of the distance from the banks of the Hundred River in which works associated with the Hundred River crossing will take place, but not the working width of the onshore cable route at this point. The Applicants reiterate that the working width of the onshore cable route at the Hundred River crossing and within the Hundred River crossing buffer shown on ***Figure 2*** of the ***Outline Watercourse Crossing Method Statement*** (REP8-084) is 34m for each individual Project, and 68m for both Projects cumulatively.
10	The Applicant has variously mentioned the purpose of such a wide separation as being to make sufficient room for construction vehicle turning and to facilitate cooling of cables during the Operation phase. It is not clear why such a large spacing of the cable ducts would be required only at the watercourse. A width of 68m is 250% wider than the maximum width commitment of 27.1m for the cable route at the Aldeburgh Road pinch point, just a few metres away and far exceeds what would be needed for vehicle turning purpose.	As explained within the ***Outline Watercourse Crossing Method Statement*** (REP8-084), the Applicants require increased working width at the Hundred River crossing to allow for safe working areas for each respective Project. The 34m working width per Project includes space for damming of the watercourse within the channel and means of conveying water upstream to the downstream stretch of the channel, in order to create a dry working area.
11	Clearance of such a large area of this, a Natural England designated 'Priority Habitat Protected Habitat Inventory Deciduous Woodland' alongside the River Hundred would be unacceptably damaging to both habitat and landscape.	As set out in ***section 4.9*** of the ***Outline Watercourse Crossing Method Statement*** (REP8-084), within the onshore cable route, trees along the western bank of the Hundred River (stretching 5m inland) will not be removed unless required for safety reasons, thereby minimising the area of disturbance as a result of the Projects. The Applicants note that all working areas will be reinstated on completion of construction works at the Hundred River.

ID	SASES' Comment	Applicants' Comments
Response to ExA Hearing Action Points (CAH3)		
12	In response to Action 3 : The need for 70m Cable Corridor (Section 1.7, page 22 of Applicants' Response to Compulsory Acquisition Hearing 3 REP8-093) the Applicants stated at CAH3 Session 1 (time stamp: 1:28:14 of Video Recording) that "there had not been any objections on the 70m of any substance". We would point out that SASES and other Interested Parties have raised concerns about the matter of the excessive width of land take for construction of the cable corridors and the lack of clarity in the Applicants' submissions on how that land would be allocated should one or both the projects be constructed. Those concerns were raised both in Written Representations and at Open Floor Hearings (Examples: REP1-371 para 4.4 and REP2-161 para 1).	Reference to there not being any objections of substance in respect to the 70m cable corridor relates to responses by parties whose land is affected by the proposed cable corridor. The Applicants have presented a firm justification as to the need for (typically) 70m wide Order Limits within which a (typical) 32m wide onshore cable route will be located within the Statement of Reasons (AS-112) and ***Appendix 3 CAH3 Action 3 – The need for 70m cable corridor*** in ***Applicants' Responses to Hearings Action Points*** (REP8-093).
13	The Applicants' explanations at CAH3 regarding their intention to acquire rights over excessive areas of land along a 70m width of the Cable Corridors were confusing.	Please refer to ***Appendix 3 CAH3 Action 3 – The need for 70m cable corridor*** in ***Applicants' Responses to Hearings Action Points*** (REP8-093).
14	In their response to Action Point 3, the Applicants claim that a single consented 70m wide order limit shared by both projects is justified through a potential benefit to agricultural landowners should only one project be consented. The Applicants argue in section 2.2 that in that scenario there would be flexibility ensuring that the single cable corridor can be constructed adjacent to the field boundary, thereby avoiding the need for a landowner to leave sterile during construction phases a 35 metre wide strip of land between cable corridor and field edge.	N/A.

ID	SASES' Comment	Applicants' Comments
15	However, on examination of EA1N/EA2 Land Plans Rev 04, in conjunction with Suffolk Definitive Maps and Statement of public rights of way and views from Google Earth, only circa 770m of those sections of the 9.2Km cable corridor whose width is less that 75 are adjacent or even close to field boundaries. That immaterial potential saving of short 35m wide strips (at plots 13,15 and 85) cannot justify an excessive land take of 35 metres width over the remainder of the length of the cable corridors. https://www.suffolk.gov.uk/assets/Roads-and-transport/public-rights-of-way/Aldringhamcum-Thorpe.pdf https://www.suffolk.gov.uk/assets/Roads-and-transport/public-rights-of-way/Friston.pdf	The Applicants' submissions within ***Applicants' Responses to Hearings Action Points*** (REP8-093) remain valid. Defining a specific onshore cable corridor for each individual project could result in greater land use impacts. The Applicants' approach is therefore in keeping with Good Design principles of EN-1. No additional land would be taken if only one project were to go ahead, the routing of that one project would be optimised within the 70m order limits. The Applicants do not agree that having this flexibility only delivers immaterial savings. It is the view of the Applicants that defining a specific onshore cable corridor for individual projects could needlessly impact farming operations across the cable route by leaving land parcels that would simply not be practical to farm.
16	The Applicants did not describe or illustrate at CAH3 their Indicative Cable trenching arrangement and working area to include two separate haul roads in the event that 'Scenario 1' prevails i.e. EA1N and EA2 constructed concurrently. This default arrangement was illustrated by SPR on Display Boards at its final and formal Phase 4 / Section 42 public consultation : Slide 2 of Appendix 9.10 of 5.1.9 Phase 4 Public Exhibition Boards [APP-038] as illustrated below and attached.	SASES' statement that the 'default arrangement' was illustrated on Display Boards is misleading. The Display Boards clearly state that the illustration is ''indicative'. The illustration shows the worst case scenario of both projects being constructed to the extent of the maximum parameters, which is wholly appropriate to illustrate. The Applicants have also stated in ***Written Summary of Oral Case Compulsory Acquisition Hearing 3*** (REP8-100) that: *"if the Projects are built concurrently, or sequentially (but with the ducting for the second project installed concurrently as the Applicants have committed to do (Project Update Note (REP2-007))), in order to ensure the Applicants can optimise the onshore cable route for both Projects, common Order limits for the onshore cable corridor have been established. This ensures that during detailed design, consideration can be given to the sharing of temporary works where feasible (such as haul roads, Construction Consolidation Sites (CCS) or drainage infrastructure) whilst retaining the flexibility to microsite each project's*

ID	SASES' Comment	Applicants' Comments
		*infrastructure to reflect ground conditions, ecological or archaeological constraints."*

East Anglia TWO
Offshore Windfarm and
East Anglia ONE North
Offshore Windfarm

SCOTTISHPOWER RENEWABLES

2 East Anglia TWO and ONE North Onshore Development

The offshore export cables will make landfall north of Thorpeness, at a location which has been selected following consultation with statutory stakeholders and technical experts.

Horizontal Directional Drilling (HDD) will be undertaken to facilitate the offshore export cables coming onshore and to avoid interaction with the cliffs, beach and intertidal area.

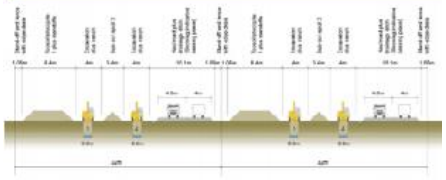
From landfall, underground cables would be installed to the substations at Grove Wood, a distance of approximately 9km.

The width of the onshore cable route would typically be 32m per project during construction, reducing to 16.1m at important hedgerows and the woodland at Aldeburgh Road.

Where trenchless techniques are used i.e. at the landfall, the width would be wider.

An onshore substation would be required for each project, both connecting to a single National Grid substation at Grove Wood. All substations will be located adjacent to each other to maximise the use of existing screening and improve the effectiveness of new landscaping, which will reduce the visual impact of the substations.

The existing overhead lines will require modification to facilitate the grid connection, which could include up to one additional pylon and require strengthening works to the existing pylons in the immediate area. New cable sealing end compounds will also be required to connect the overhead lines to the National Grid substation.



East Anglia TWO and East Anglia ONE North indicative cable trenching arrangement and working area

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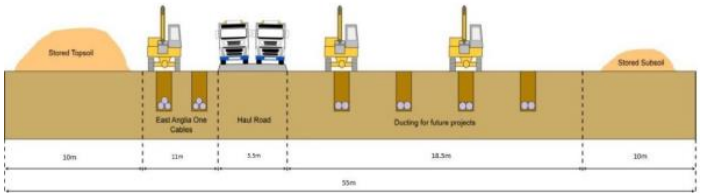
2.7 SASES' Comments on the Updated Pathfinder Clarification Note (REP9-076)

ID	SASES' Comment	Applicants' Comments
Introduction		
1	During 2020 the BEIS Offshore Transmission Network Review undertook detailed evaluation of possible economies and environmental benefits resulting from the offshore coordinated connection of windfarms, rather than continuance of the existing radial approach to connections. This work, which was largely undertaken by National Grid ESO on behalf of BEIS, was presented in a webinar on 17th December 2020.	Noted. The Applicants provided an update at Deadline 9 in their response to the SEAS policy position. The Applicants referenced the fact the most up to date Network Options Assessment (NOA) has considered the potential for High Voltage Direct Current (HVDC) link from the East Anglia area. It was found not to be viable. In addition, the Applicants also provided the latest newsletter for Offshore Transmission Network Review (OTNR).
2	The BEIS Review reported potential capital cost savings in excess of £6bn resulting from coordination of offshore transmission works, provided the earliest possible start was made (around 2025). Stakeholders were requested by BEIS to come forward with proposals for Pathfinder projects capable of early implementation to verify the anticipated benefits.	As indicated in the latest NOA not all HVDC links will be viable. Each potential infrastructure investment will have to be tested.
3	SASES considers that coordination of the SPR EA1N and EA2 projects would make a very suitable candidate for such a Pathfinder by allowing a much reduced number of cables and trenches to an existing National Grid substation site, at which the applicant already owns suitable land, thereby substantially reducing onshore environmental impacts. And this Pathfinder is understood to be compliant with the existing Ofgem regulatory environment.	The Applicants are at the forefront of offshore grid design. SPR have recently tested the HVDC market in relation to technologies for the East Anglia Three project and also in respect of the development of the latest HVAC technology for these projects. The comments made in documents about the pathfinder have focused on projects that are likely to be HVDC in the first place due to distance from land.
Original Proposal		
4	At OFH3 a proposal was made ([REP1-227], p175) for the alternative delivery of the output of the EA1N and EA2 windfarms by a coordinated 1.7GW HVDC Bipole link from an offshore platform to Bramford NGET	See ***Applicants' Comments on SASES' Deadline 5 Submissions*** (REP7-054) and ***Applicants' Comments on SASES' Deadline 8 Submissions*** (REP9-013).

ID	SASES' Comment	Applicants' Comments
	substation, via a single cable trench from Bawdsey landfall to Bramford NGET substation.	
5	This proposal was reiterated by SASES at ISH4 [EV-055] as a possible "Pathfinder" project in support of the BEIS OTNR review, but was only described in outline. Some clarification was provided in [REP5-107] whilst this updated document provides significant additional information and clarification about the proposal.	See ***Applicants' Comments on SASES' Deadline 5 Submissions*** (REP7-054) and ***Applicants' Comments on SASES' Deadline 8 Submissions*** (REP9-013).
Bawdsey to Bramford Cable Route		
6	At the time of approval of the Applicant's East Anglia One (EA1) project it was agreed that a cable route comprising six cable trenches with two ducts/HVDC conductors per trench (12 ducts in total) would be constructed between Bawdsey and Bramford. However, following the CfD auction for EA1 the cable route design was modified to that shown in Figure 1 below to allow the use of HVAC for EA1 using two trenches.  	See ***Applicants' Comments on SASES' Deadline 5 Submissions*** (REP7-054) and ***Applicants' Comments on SASES' Deadline 8 Submissions*** (REP9-013).
7	The remaining four trenches were expected to be used for use by subsequent projects, including EA3, with HVDC Symmetric Monopole at 600MW being the proposed technology. EA3, specified at 1.2GW at that time, was planned to use two of the trenches, with an HVDC converter station at Bramford on an 2.85ha site. This converter site would house two adjacent 600MW converters, the combined output of which would deliver	See ***Applicants' Comments on SASES' Deadline 5 Submissions*** (REP7-054) and ***Applicants' Comments on SASES' Deadline 8 Submissions*** (REP9-013).

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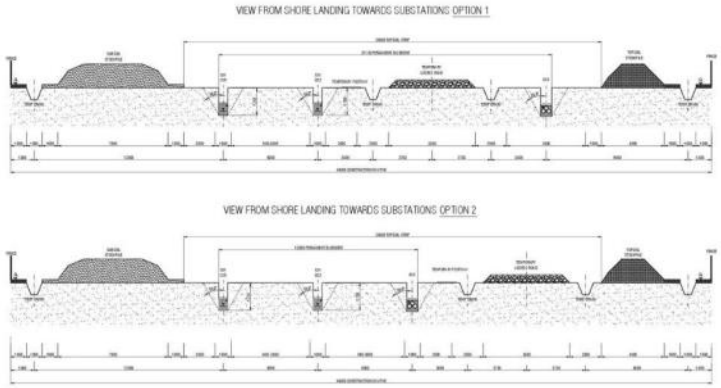
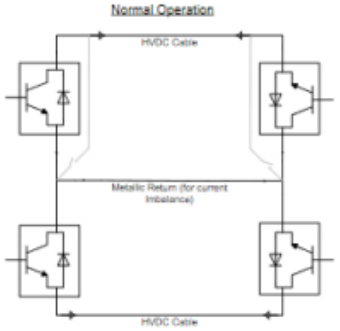
	1.2GW to one or more customer bays at the adjacent NGET substation. This was shown as in Figure 2 below in the EA3 application documents.   Diagram 5.22 Typical Layout of a 1000MW HVDC Converter Station 5.6.13 Onshore Substation (s) construction methods 5.6.13.1 Site Establishment and Laydown Area 463. During construction of the substation(s), site establishment and laydown areas would be required. The following would be required during the construction works: • Temporary construction management offices; • Canteen; Environmental Statement November 2015 East Anglia THREE Offshore Windfarm Chapter 5 Description of the Development Page 123 **Figure 2 Original EA3 Converter Station Design**	
8	However, the Applicant subsequently gained a relaxation of the DCO Regulation 29 order for EA1 to provide that only three cable trenches in total should be built, not the six originally committed to. The Discharge documentation for EA1 shown on page 24 of http://content.yudu.com/web/2it8t/0A4226m/CMS/html/index.html?page=24 illustrates the revised cable configuration for EA1 and EA3 as being that	See ***Applicants' Comments on SASES' Deadline 5 Submissions*** (REP7-054) and ***Applicants' Comments on SASES' Deadline 8 Submissions*** (REP9-013).

ID	SASES' Comment	Applicants' Comments
	shown in Figure 3 below, now with three ducts/cables in just one trench allocated to EA3.  **Figure 3**	
9	SASES initially presumed that the provision of three ducts in one trench was to allow the use of HVDC Bipole to connect the EA3 project to Bramford but recently published information (the Drawing from Ref. 1) records that the Applicant has chosen to use HVDC Symmetric Monopole, which will require only two of the three ducts. For clarification Ref. 1 states on page 4 that "The infrastructure to be installed for EA THREE, therefore, comprises: • The landfall site with one associated transition bay location with two transition bays containing the connection between the offshore and onshore cables; • Two onshore electrical cables (single core);	See ***Applicants' Comments on SASES' Deadline 5 Submissions*** (REP7-054) and ***Applicants' Comments on SASES' Deadline 8 Submissions*** (REP9-013).

ID	SASES' Comment	Applicants' Comments
	• Up to 62 jointing bay locations each with up to two jointing bays; • One onshore converter station, adjacent to the EA ONE Substation; • Three cables to link the converter station to the National Grid Bramford Substation; • Up to two onshore fibre optic cables; and • Landscaping and tree planting around the onshore converter station location."	
Clarification of SASES Pathfinder Proposal		
10	SASES Pathfinder proposal remains as described in para 2 above. The onshore cable route would comprise a single cable trench with three ducts in it similar to that constructed for EA3 but all three ducts would have conductors installed to comprise an HVDC Bipole connection. The HVDC Bipole onshore converter station at Bramford would be similar in principle to that in originally proposed in the EA3 design (see Figure 2 above) but scaled in total power (and footprint if necessary) to 1.7GW, with two adjacent 850MW converters on one site, rather than the two 600MW converters shown in Figure 2. The technology requirements of these two converters should be no greater (and may potentially be less) than currently proposed for EA3, which is apparently now constructing just one much more powerful HVDC converter to handle the whole of the 1.4GW output of the windfarm. Figure 3 below shows a simplified HVDC Bipole arrangement by way of further clarification. The use of a Bipole Metallic Return configuration is proposed, using the third cable duct. The boxes on the left indicate the offshore HVDC equipment, whilst the boxes to the right	As stated on a number of occasions throughout the examination process, the Connections and Infrastructure Options Note (CION) process was undertaken to identify the most economic and efficient connection to the national grid. The result of this was a connection in the Leiston area using HVAC technology. This remains unchanged. Details of the CION process are clearly set out in ***Applicants' Written Summary of Oral Case (ISH2)*** (REP3-085). The solution offered by SASES does not work. A 1700MW single connection is not compliant with the Security and Quality of Supply Standard (SQSS) limit of 1320MW, therefore in order to connect the Projects to the national grid using HVDC technology, two connections would be required (two offshore convertor stations, four HVDC cables and two onshore convertor stations). Again, it is clearly set out in ***Paragraph 60*** of ***Applicants' Written Summary of Oral Case (ISH2)*** (REP3-085), one of the key considerations when considering the use of HVAC or HVDC technology is the distance between the windfarm and the onshore substations, the greater the

ID	SASES' Comment	Applicants' Comments
	show (all much simplified) the onshore HVDC converters, all connected by just three conductors, which would be in one cable trench.	distance the more efficient and economic HVDC becomes. For East Anglia ONE North (69km) and East Anglia TWO (59km), HVAC cables are significantly more efficient for shorter distances. The Applicants refer ***SASES to Applicants' Comments on SASES Deadline 8 Submissions*** (REP9-013). Based on significant engagement with the supply chain, there are no HVDC technologies that will be cost effective for the Projects. Furthermore, the maximum capacity of a project than can bid for Contracts for Difference is 1500MW, so a 1700MW project would not be eligible in full. Two HVAC connected Projects at 900MW and 800MW retain the necessary flexibility in competing in the CFD process.

ID	SASES' Comment	Applicants' Comments



Bipole, metallic return
The bipole arrangement utilises a single return path for two poles. An equal and opposing voltage from each pole means that the return path will carry only minor current due to any imbalance between the two poles. The return path can be provided by either a metallic conductor or sea/earth electrodes if consent can be gained for their use.

- Figure 3 - Bipole Converter Arrangements
- Table 2 Summary of Converter Arrangements

Arrangement	Converter Requirements	Cable Requirements	Availability
Monopole Metallic Return	1 x Rectifier, 1 x Inverter	1 x HVDC 1 x LVDC	Zero output during cable or pole outages. Increased losses.
Symmetric Monopole	2 x Rectifier, 2 x Inverter	2 x HVDC	Zero output during cable or pole outages
Bipole Metallic Return	2 x Rectifier 2 x Inverter	2 x HVDC 1 x LVDC	Half capacity during cable or pole outages.
Bipole without Earth Return	2 x Rectifier 2 x Inverter	2 x HVDC	Half capacity during pole outages. Zero output during cable outages

Table 2 provides a summary of the main converter arrangements and a high level indication of availability during a cable or pole outage.

The options identified in Table 2 could be increased if it is considered that a system reliant on ground return through the earth or sea could be viable on an environmental basis. Whilst such schemes are operating successfully in Scandinavia and New Zealand the assumption made here is not to consider a ground-return system making use of earth or sea return.

Figure 3 HVDC Bipole configuration

ID	SASES' Comment	Applicants' Comments
Loss of Connection Issues		
11	The Applicant has expressed concern that the NGESO SQSS Infeed Loss requirement, applicable to wind farms, would be breached by SASES 1.7GW coordinated proposal. However, National Grid ESO has told SASES that so long as the system design does not have a single point of failure which could lead to an Infeed Loss of greater than 1320MW then use of HVDC Bipole to deliver 1.7GW should be acceptable. The text in Figure 3 above clarifies that Bipole with Metallic Return would lose only half capacity (850MW) during a single pole or cable outage so should be compliant. And in any case the 1320MW SQSS Infeed Loss limit is under review as a result of the BEIS OTNR and may well be increased to around 1800MW.	The SQSS limit (1320MW) is determined by the instantaneous loss of infeed following a failure or unplanned loss of mains or trip. The Bipole system proposed cannot switch from 100% to 50% capacity within the time limits required to maintain system stability. In the event of a trip or fault the whole system would need to come offline, thus breaching the loss of infeed limits. After the full load trip, the system could maybe then be reconfigured and re-energised, this is not compliant with the SQSS.
Ofgem Compliance		
12	During questioning the Ofgem representative advised the Examiners at ISH2 [EV-034u] that the Pathfinder configuration as described could be compliant with the existing Ofgem regulatory regime as both wind farms were in the same ownership.	The Projects are in fact two separate licenced entities. The Applicants have commented on the claimed pathfinder projects above and have nothing further to add.
Environmental Issues		
13	The environmental impacts of the Bawdsey to Bramford cable route were fully considered during the EA1 approval process and no new issues are anticipated from this proposal. The Applicant is understood to have investigated the feasibility of constructing four new cable trenches from Bawdsey to Bramford during early investigation works for a HVAC connection to Bramford for EA1N and EA2 and SASES has found no reports of this not being possible.	This is not accurate. The feasibility of the Bawdsey to Bramford cable route used for East Anglia ONE was investigated for HVAC connections for the Projects but a number of significant constraints were identified, including at HDD locations under major infrastructure such as railways and at river crossings. There were also several pinch points identified along the route that could not accommodate the cable works.

ID	SASES' Comment	Applicants' Comments
CION Compliance		
14	NGESO have previously confirmed acceptance of the power output of both the EA1N and EA2 projects at Bramford (early CION assessments refer) so there should be no NGESO issue with this Pathfinder proposal.	The CION process led by NGESO requires identification of a deliverable grid connection that is economic and efficient. The proposal is not deliverable within the consent timescale and would not be economic and efficient. SASES have not in any way addressed the cost of infrastructure associated with HVDC technology, contrary to the requirement of the Electricity (Competitive Tenders for Offshore Transmission Licences) Regulations 2015. Cables only make up a component part of the transmission works costs and SASES have consistently failed to account for the wider infrastructure costs.
Cable Trench and Cable Reduction		
15	It is important to note that this Pathfinder proposal requires only ONE cable trench containing THREE ducts/conductors, compared with the FOUR cable trenches containing a total of TWELVE conductors, as originally proposed for the EA1N and EA2 connection from Bawdsey to Bramford, and as is currently proposed for the connection of those same wind farms to Friston. This must represent a huge saving in cable and cable trench costs which would not have been taken into account in the original CION assessments, providing further support for the appropriateness of this Pathfinder proposal.	Please see response at ID10 and ID14.

2.8 SASES' Comments on Other Deadline 8 Submissions (REP9-083)

ID	SASES' Comment	Applicants' Comments
Introduction		
1	SASES in addition to its separate submissions on the Applicants' Deadline 8 submissions it makes the following submissions on: a. the draft Memorandum of Understanding and Section 111 Agreement with East Suffolk Council; b. the draft Outline Landscape and Ecological Management Strategy; c. the Statement Of Common Ground with Suffolk County Council in respect of public rights of way.	Noted.
Draft Memorandum of Understanding (REP8-078) and Section 111 Agreement Dated 25th March 2021 (REP8-079)		
2	At Deadline 8 at the Applicants submitted a draft Memorandum of Understanding ("MOU") and a Section 111 Agreement entered into with East Suffolk Council.	Noted.
3	These documents have a number of defects as follows. a. The amounts set out in the S111 agreement and the MOU are presumably meant to reflect the figures set out in the Cabinet papers for the meeting of East Suffolk Council on Tuesday, 5 January 2021. However not all the figures set out on pages 58 and 59 of the papers are reflected in the S111 Agreement and it is impossible to ascertain what is being proposed under the MOU as the figures have been redacted. This is unacceptable as these payments are meant to be considered in some way as offsetting the	a) The Applicants are content that the Agreements do not need to be redacted in that way. b) The sums were negotiated with the Council having regard to the funding of measures. The list of matters in respect of heritage contributions identify a range of opportunities. It is disappointing that SASES do not recognise the positive opportunities that the funds could deliver. c) The Council have control over how sums are spent. The sums are related to specific geographic areas. d) The MOU relates to funding for strategic projects.

ID	SASES' Comment	Applicants' Comments
	environmental and economic damage which these projects will cause. b. Assuming the amounts set out in the Cabinet paper are reflected in the S111 Agreement and the MOU, they are insignificant when compared to the damage to the environment, peoples' lives and the potential damage to the tourist economy. They are also paltry when compared to the overall level of investment in these projects which will be around £4 billion. No rationale has been presented as to why the monetary amounts are acceptable. The insignificant nature of the sums is indicated by paragraph 6 of Schedule 2 of the S111 Agreement where the first item mentioned in respect of the preservation and enhancement of heritage assets is "information boards and displays to assist in understanding historic landscape character and features". c. The MOU envisages a Steering Group being set up to manage project selection and reporting of outcomes. However the Steering Group has no obligation to consult the local community nor is there an obligation that it should include members of the local community for example a member of Friston Parish Council. The S111 Agreement does not contemplate any steering group or community involvement at all. d. It is unclear which local communities are to benefit from the sums provided under the MOU. Paragraph 4 refers to "projects… will take place in or will primarily benefit communities in the local authority area of East Suffolk". This is a very large area stretching from Felixstowe to the	e) The S111 agreements all relate to geographic areas. The funds will be controlled by the Council and it is anticipated that there will be opportunities for people and groups to be involved in identifying opportunities for funding.

ID	SASES' Comment	Applicants' Comments
	south to Lowestoft in the north. Many of these communities are not directly affected to any material degree by the onshore aspects of these projects. Furthermore it is very unclear what "primarily benefit" means. What will the non-primary benefits be, what monies will be devoted to them and to whom will they be provided. This lack of clarity is then compounded by paragraph 2 which states that the funds are for "projects within the communities neighbouring the onshore aspects of the Projects". These statements not only lack precision but they also conflict with each other. It does not inspire confidence that any meaningful benefits will truly be delivered to the communities most directly affected by the Projects. e. They do not appear to be any protective provisions under either the S111 agreement or the MOU that sums will not be expended for projects/works which otherwise should be conducted by the Applicants as part of the Projects and their legal obligations in respect of them. Likewise the payments under the S111 Agreement and the MOU should not lead to a reduction in services and or expenditure which the Council would otherwise provide.	
Outline Landscape and Ecological Management Strategy (REP8-019)		
4	SASES position remains that the landscape harm cannot be adequately mitigated by the planting regime.	The Applicants continue to disagree with SASES' position.
5	SASES refers to its Deadline 8 Post Hearing Submissions (ISH 15) (REP8-228) where it commented at paragraphs 1-7 on pages 3 & 4 in relation to the interaction of the maintenance requirements of the	The Applicants note that the final LMP must accord with the ***OLEMS*** (document reference 8.7) and must include details of the ongoing maintenance and management of the landscaping works, as specified within **Requirement 14** of

ID	SASES' Comment	Applicants' Comments
	DCO and the OLEMS and how mitigation and maintenance was inadequately secured by the DCO and the OLEMS. These concerns remain.	the ***draft DCO*** (document reference 3.1). The LMP must be submitted to and approved by the relevant planning authority prior to commencement of the onshore works. Measures, including the planting management and maintenance requirements, set out within the ***OLEMS*** therefore must be carried through into the final LMP. **Requirement 15** of the ***draft DCO*** (document reference 3.1) then expressly stipulates that landscaping works must be carried out and maintained in accordance with the LMP that has been approved by the relevant planning authority. Requirement 15 further secures the replanting period of trees and shrub planted as part of the approved LMP.
6	The Councils share those concerns it being noted that in the Statement of Common Ground at LA – 13.08 that "the Councils' position is that the growth rates proposed by the Applicants are optimistic". It is further noted at LA – 13.11 that the adaptive management scheme only "would reduce the risk of failure of planting" (emphasis added). Given the importance of growth rates "failure of planting" should mean failure to achieve the growth rates upon which the Applicants rely.	The Applicants note they have adopted the approach proposed by the Councils to ensure the best chance of tree / shrub establishment and attaining the growth rates adopted by the Applicants within the assessment of landscape and visual effects. Whilst differences of professional opinion remain regarding the growth rates used in the impact assessments, the implementation of an adaptive management scheme as suitable mitigation has been agreed between the Applicants and the Councils. Anecdotal evidence from other planting schemes within the local area and wider region support the Applicants' position that woodland planting can establish well, as explained within the ***Updated Photomontages Clarification Note*** (REP3-062).
7	The Applicants' position is that the growth rates will be achieved and the level of mitigation illustrated in the photomontages will be delivered. The question is who should bear the risk of planting not achieving the level of mitigation on which the Applicants rely due to less than forecast growth rates being achieved? This question should also be considered in the context that the local authorities and most interested parties consider the Applicants' view of the	The Applicants are required to comply with the requirements of the ***draft DCO*** (document reference 3.1) and the plans and documents approved under the requirements and would therefore carry the risk. Failure to comply with a DCO requirement is a criminal offence.

ID	SASES' Comment	Applicants' Comments
	effectiveness of its mitigation is optimistic. Should it be residents and visitors who will have a view of large-scale industrial infrastructure in a rural landscape that bear the risk, or the Applicants which assert that landscape damage will be mitigated by planting?	
8	Clearly the Applicants should bear that risk and yet the Applicants do not have a direct obligation to ensure that the forecast growth rates are achieved. Accordingly the requirement in relation to tree planting is that the Applicants should do everything possible to ensure that the growth rates predicted by the Applicants and reflected in the photomontages are achieved. Currently the draft DCOs and the OLEMS do not sufficiently secure that the landscape mitigation will be delivered.	The Applicants strongly disagree and refer to their comments at ID7.
9	It also needs to be remembered that nearly all the tree planting will not be implemented until after construction is finished (after a prolonged and uncertain period) and where construction will be further extended for the purposes of extending the National Grid substation for the Nautilus and Eurolink projects and potentially other projects as well.	The Applicants consider it to be sensible to phase the planting, in order to avoid initial planting in an area required for construction (i.e. within the construction footprint). As such, a proportion of the proposed planting scheme will be implemented post-construction when the ground can be suitably prepared to ensure the best chance of establishment. That said, in preparing the final LMP for submission to and approval by the relevant planning authority, and when detailed design information is available, the Applicants will review the planting proposals to identifying areas in which tree/shrub planting could be undertaken pre-construction.
PROWs- Statement of Common Ground – Suffolk County Council (REP8-114)		
10	SASES notes that PRoWs are dealt with under Recreation on page 215 of the SoCG with Table 31 being the relevant document.	N/A

ID	SASES' Comment	Applicants' Comments
11	LA15.03: SASES agrees with the Council that there is insufficient information about the duration and timing of temporary and permanent footpath closures. This is particularly true of the substation site and how the PRoW network will be maintained open for public use during the construction phase. For example, the section of the alternative route along the boundary with Grove Road will be crossed by 70M + of haul road, whilst at the same time the current FP6 will be lost to construction.	***Section 2.3*** of the ***Outline Public Rights of Way Strategy*** (REP3-024) makes clear that the durations of temporary PRoW diversions will be discussed in advance with the relevant highway authority. Typically, PRoW along the onshore cable route will be periodically diverted for a short period of time (a number of weeks depending on the length of PRoW being temporarily closed) to allow for the safe construction of the onshore infrastructure (including haul road construction and removal). The ***draft DCO*** (document reference 3.1) requires an alternative right of way to have been created to the standard defined in the public rights of way strategy prior to the corresponding existing PRoW being extinguished. Similar provisions are in place regarding temporary closure and diversion of PRoW. ***Section 2.2*** of the ***Outline Public Rights of Way Strategy*** (REP3-024) identifies that safety measures will be implemented at any PRoW where haul roads or other construction related activities cross a PRoW and presents a range of measures which could utilised depending on the frequency of use of the PRoW and the nature of construction activities being undertaken.
12	LA15.06: SASES agrees with the Council that there will be significant visual impact for users during construction and operation and this will remain so at 15 years post construction. In addition the Applicants have under assessed the loss of amenity arising from the noise from substations given the proximity of footpaths to the substation complex. This is a major loss of amenity for local residents.	The Applicants have not 'under assessed' the loss of amenity. Attention is drawn to the Applicants' ***Noise Modelling Clarification Note*** (REP4-043) which includes an assessment of non-residential amenity (i.e. PRoW around the onshore substations and National Grid substation) and concludes the predicted impact on non-amenity receptor locations as a result of the implementation of the Projects has been determined as being **negligible** in significance. The Applicants also note the ***Public Rights of Way Clarification Note*** (REP1-049) which helpfully provides an overview of the assessment method and a summary of potential impacts considered for PRoW during construction and operation of the Projects, signposting information from ES Chapters, and drawing on PRoW documents submitted with the Applications.

ID	SASES' Comment	Applicants' Comments
13	LA15.09: SASES shares the Council's concerns that potential new projects, together with the phasing of EA2 and EA1N, are likely to cause delays to the timelines and thus impacts on the PRoW network could be long-lasting.	The Applicants have made their position known on a number of occasions regarding the lack of definition for other potential projects. The Applicants have followed the guidance set out in The Planning Inspectorate Advice Note 17: Cumulative effects assessment relevant to nationally significant infrastructure projects.
14	LA15.11: SASES notes it has been confirmed by the Applicants that the permanent PRoW diversion along Grove Road will not be within the public highway. It will however still be very close to the highway resulting in a loss of amenity to users, including dog-walkers.	The section of the PRoW in question is offset from the road and will be screened from the road by planting. Furthermore, users of existing PRoW E-354/007/0 and existing PRoW E-354/007/A (see ***Temporary Stopping up of Public Right of Way Plan*** (AS-107) must currently walk along Grove Road for a distance of approximately 750m. The Applicants permanent PRoW diversion will take these PRoW users off Grove Road and onto the safe PRoW within the landscaped field, thereby creating a safer PRoW between Friston and Knodishall.

2.9 SASES' Comments on the Quality of Stakeholder Engagement (REP9-081)

ID	SASES' Comment	Applicants' Comments
Introduction		
1	Throughout the Examinations SPR have promoted their view of their excellent communication with the local community, citing EA1 as an example. Last week's experience of the commencement of significant ground investigations shows that SPR's communication with the local community is poor. SPR have also commended their organisational skills. The recent submission of the "Lessons Learned" document from SCC (REP8-173) would suggest otherwise.	With respect to the current site investigation works, information was posted on the SPR website within the East Anglia Latest Updates section on 12th March 2021, over a month before the start of the works, and will be updated throughout the duration of the site investigation works. This was followed by an initial notification informing of the onshore works on the 17th March 2021, three weeks before the first site investigation surveys took place. This was distributed via each project email to over 1,250 recipients (per project), to those who have engaged with the project throughout the pre-application stages and subscribed via our website in line with General Data Protection Regulations (GDPR). This included every parish council across the onshore cable route and on the road network, key interest groups and county and district councils. Prior to the commencement of the more intrusive element of these site investigation works a letter drop in the local area was conducted. This was distributed to Royal Mail subscribed residential and business properties in Sizewell, and the parishes of Aldringham-cum-Thorpe, Knodishall and Friston - the areas directly affected by the investigations. Regular (at minimum every few days) updates have been and will continue to be provided to the development area parish councils, key interest groups and other individuals as requested/relevant to advise of any large traffic movements and other key activities.

ID	SASES' Comment	Applicants' Comments
		Concerns and issues raised about these works are also addressed via our project mailboxes. As the site investigation works progress, weekly lookaheads are provided via emails to subscribers and a dedicated area on the project website is being progressed for weekly lookaheads, which will be supplemented by extra bulletins should the need arise. With regard to the lessons learned document referenced by SASES, the Applicants' note that areas for improvement were focussed on matters relating to drainage and water along the onshore cable corridor. The Applicants have, and continue to, address these matters in a proactive manner as part of the Examinations. The Applicants would also point to the fact that lessons have been learned with regard to construction drainage and matters relating to drainage issues have been included in the proposed land arrangements for the Projects. The lessons learned document does not make any criticism of the communications with the local community.
2	Residents across the area have been deeply concerned about what the future may hold if consent to the Projects was given and feel they have had a taste of what is to come. Multiple complaints have been made to the local authorities and other public bodies. SASES requests that the ExA take this further demonstration of SPR's of poor communication with local communities into account when considering the likely effectiveness of the proposed mitigation.	Please see response at ID1.
3	This is a matter of very great importance if the Projects are consented. The effectiveness of mitigation in many topics is dependent upon effective engagement for example: a. the Outline Landscape And Ecological Management Strategy;	Noted.

ID	SASES' Comment	Applicants' Comments
	b. the Substations Design Principles Statement; and c. the Outline Code of Construction Practice	
4	Given SPR's persistent failure to adequately communicate with local communities and their inability to anticipate issues and areas of sensitivity, they need to refresh their approach to these matters and the team responsible for it. This is an area given the circumstances which requires the ability to listen, to appreciate the other parties' point of view, to anticipate issues of sensitivity and to proactively communicate, recognising that over communication is better than under communication. There is no recognition that SPR have caused and, if the Projects are consented, will continue to cause huge disruption to people's lives for a decade at least. Stakeholder engagement in a situation such as this requires high calibre individuals with excellent people and communication skills. This is lacking as the history of poor engagement demonstrates.	Please see response at ID1.
5	SASES wishes to bring to the attention of the Examining Authority actions taken by SPR very recently within the Onshore Development Area. SASES believes that these demonstrate SPR's continuing disregard for local communities and poor consultation record, which goes back to the Consultation Phase commencing in the Autumn of 2018. The ExA will be aware that Friston Parish Council/SASES commented on this in their Adequacy of the Consultation submission in October 2019.	Noted.
Recent Events		
6	On 17th March 2021 SPR sent emails to those registered as Interested Parties advising that ground investigation works were planned to take place between March and August 2021. A copy of this email is attached at Appendix 1. There is a link in the email to SPR's website for further information:-	Noted.

ID	SASES' Comment	Applicants' Comments
	https://www.scottishpowerrenewables.com/pages/east_anglia_two_and_one_north_onshor e_ground_investigation_works.aspx **APPENDIX 1: Email sent by SPR on 17th March 2021** **East Anglia ONE North Offshore Windfarm** March 2021 Ground investigation works are planned to take place across the East Anglia TWO and ONE North onshore development area between March and August 2021. **These advance surveys are necessary to feed into the cable route and substation design and to gain a better understanding of the environmental mitigations required should the DCO application be successful, as well as to aid with the timely delivery of renewable energy to the area.** This process of early investigations is routine to support the design and suitable mitigation for the development should consent be granted. All works have been carefully planned to work closely with the ecological team and will only take place with their approval. The investigations will take place at various locations along the proposed 9km cable corridor and at the substations site. No investigations will take place within the Leiston-Aldeburgh Site of Special Scientific Interest (SSSI) or Sandlings Special Protection Area (SPA) during the bird nesting season. SPR representatives are currently working across the site to mark out the proposed site boundary for the works to commence. The work will include small teams of people investigating the ground at various locations across the proposed development area using different methods including, soil and groundwater sampling, heritage feature and topographic surveys. This is to assess the baseline condition of the ground to inform future possible design and construction phases. Scottish Power Renewables recognises the critical importance of the local environment. In planning the ground investigation, the locations around the site have been chosen to minimise disturbance to the people, places and landscape within which the investigation will take place. No works are planned on Public Rights of Way and no diversions to them are planned. Please visit the ScottishPower Renewables website for further details on these investigation works.	

ID	SASES' Comment	Applicants' Comments
7	No specific dates for any of these works were given. It should however be noted that the works included borehole drilling to 30M and excavation to 4.5M by 'JCB-type' vehicles. Working hours were proposed from 7am to 7pm on weekdays and 7am to 1pm on Saturdays, said to be in line with the DCO. There has been no recognition of the agreement to reduce construction hours.	The working hours included in the notice are in-line with the ***draft DCO*** (document reference 3.1). Working hours for these works are 7am to 7pm Monday to Friday and 7am to 1pm on Saturday. For any activities with the potential to cause noise, within 100m of a residential property, no works would take place between 7am and 8am and 6pm and 7pm, however, this does not prevent the site team arriving on site at 7am and departing by 7pm.
8	SASES understands that SCC Public Rights of Way Manager was advised by SPR in December 2020 that they would be using public footpaths as accesses for these works and that SCC's consent was not required as SPR had the landowners' consent to use them. This is clearly of concern to those who regularly use the footpaths.	The use of PRoW to access and egress the site area has been kept to a minimum and no ground investigation works are taking place on them. Speed limits are reduced to 5mph for any vehicles using them and notices placed for information.
9	On Thursday 8th April 2021 (less than 2 days after the Examination was due to close) without any notice a vast amount of signage was erected across the Onshore Development Area. No consultation was undertaken with Suffolk County Council as Highway Authority as to the placing of these signs, nor was any notice given to Town and Parish Councils. There were some insignificant A4 printed sheets pinned to stakes at some locations, but these gave no precise information, even if one could stop to read them. Many of the recent road signs were erected on very narrow rural lanes and footpaths, posing a danger to motorists and pedestrians. One sign was hit on the first day. Some signage was placed in people's gardens and private land without any reference to the occupier - see photograph 5	Traffic management signage was designed, planned and placed in agreement with SCC as Highways Authority. Consultation and agreement with SCC included provision for Temporary Traffic Regulation Orders (TTRO) required to ensure the safe access and egress to and from the working areas. With regard to the sign in photograph 5, this sign was removed and subsequently repositioned.

ID	SASES' Comment	Applicants' Comments
	 **Photo 5**	
10	Photographs 1 – 9 attached are examples of the signage erected, There is a further site entrance off the B1121 (Saxmundham Road) near Footpath 16, making a total of 6 site entrances in Friston, with multiple signs in both directions for each access. As can be seen much of this signage is very close, to or encroaching on, the carriageway and SASES believes that a 1m distance from the metalled surface is required, although it is not possible to fully demonstrate the sheer quantity of signs, nor the intimidating effect it had on the community.	Signage is required as traffic calming measures at locations in which speed reduction is necessary. Such signage follows the 'Safety at Street Works and Roadworks Code of Practice' and is in accordance with TTROs for the works. Signage is also required to ensure safety at each site access location. This signage has been approved by SCC and is in accordance with the 'Safety at Street Works and Roadworks Code of Practice'. Following the initial installation of signage, and feedback subsequently received from the local community, the Applicants subsequently removed all signage other than for those

ID	SASES' Comment	Applicants' Comments
	Photo 1 – entrance to Church Road, Friston from B1121 – dangerous position of signage within the carriageway.  *Photo 2 – Entrance to Footpath 17 off Church Road, Friston* 	works which had already commenced in order to reduce the time the signage was present. in the area. The Applicants then reinstalled relevant signage excluding signage relating to a proposed access off Church Road, Friston, which the Applicants consider to be surplus to requirements. Safety is of paramount importance to the Applicants and therefore such signage must remain in place until completion of the associated onshore site investigation works.

Photo 3 – Near St Mary's Church, Friston (note narrow road)

Photo 4 – Entrance to Church Lane from Grove Road

ID	SASES' Comment	Applicants' Comments
	Photo 6 – Site entrance in Grove Road (1 of 4) on Footpath 6  	

ID	SASES' Comment	Applicants' Comments
	Photo 7 – Site entrance from Grove Road (2 of 4) south of Grove Wood 	

ID	SASES' Comment	Applicants' Comments
	Photo 8 – Site entrance from Grove Road (3 of 4) near Fareacre  	

ID	SASES' Comment	Applicants' Comments
	Photo 9 – Site entrance from Grove Road (4 of 4) on track leading to Little Moor Farm  	
11	Subsequent to the erection of these signs a further email was sent by SPR on 9th April advising of nearshore works commencing on 12th April. A copy of that email is attached at Appendix 2. Again, no other notification or consultation has been undertaken and residents are understandably concerned about this very sensitive area.	The Applicants are licenced to carry out these activities and will do so with the utmost regard and sensitivity to any environmental receptors. The Applicants have been granted the necessary marine licence for the works. The process of applying for a marine licence includes due consideration of potential impacts on the receiving environment and consultation via the Regulator (the Marine Management Organisation (MMO)) with relevant technical advisors (including Natural England).

ID	SASES' Comment	Applicants' Comments
	APPENDIX 3: Email from SPR of 9th April 2021 advising of Offshore Works commencing on 12th April **East Anglia TWO Offshore Windfarm** April 2021 Nearshore investigation works are planned to take place in an area off the cost of Thorpeness from 12 April 2021. **These advance surveys are necessary to feed into the design of the cable landfall for the windfarms. By gaining a better understanding of the ground conditions below the area at this early stage, it will be possible to develop environmental mitigations at the landfall which would be required should the DCO application be successful, as well as to aid with the timely delivery of renewable energy to the area.** This process of early investigations is routine to support the design and suitable mitigation for the development should consent for each project be granted. All works have been carefully planned, working closely with the environment team. **Location and Timings** The investigation works will take place just off the coast of Thorpeness in front of the proposed East Anglia TWO and ONE North landfall location. All work is being undertaken with consideration of the relevant offshore stakeholders interests, such as the owners of the Concerto 1S telecommunications cable. A Jack-Up vessel will be towed to the area from Lowestoft on Monday 12 April and installed throughout the day for works to commence. Works are expected to be completed by the end of May. Within that time the Jack-Up will move location of no more than 1-2km to target a maximum of 10 different areas as indicated in the below map, remaining in each location for about 3 days.	
12	Early on Saturday 10th April all signage in the Friston and Aldringham area was removed as mysteriously as it had appeared. Some signage remains in other locations.	See response to ID 10.

ID	SASES' Comment	Applicants' Comments
13	SPR now seems to have rethought its plans and sent an email on 13 April concerning works commencing the following day on 14 April. However SPR do not seem to have considered the footpath and ecological considerations. Please see email exchange with SCC attached at Appendix 2.	This email was one of the first of our regular targeted updates providing more details of activity taking place in a specific area (e.g. details of vehicles movements etc.). This was initially sent directly to parishes and local interest groups and is now also sent to local residents as requested. All work, including access and egress to and from site is undertaken under the full-time supervision of an ECoW. Use of PRoW has been agreed with the landowner and has been subject to consultation with the SCC PRoW Officer. No vegetation will be removed. Access Point 4 accesses the field to the south of Grove Wood and there is no footpath in that location. The Applicants have responded to the SCC PRoW Officer who has thanked the Applicants for their response and raised no further comments.

APPENDIX 2 : Email exchange between SPR, Suffolk County Council, SASES, Friston Parish Council Dated 13/14 April 2021

From:
Date: Wednesday, 14 April 2021 at 12:10
To: [redacted]@scottishpower.com" [redacted]@scottishpower.com>, [redacted] [redacted]@suffolk.gov.uk>, [redacted] [redacted]@suffolk.gov.uk>
Cc: [redacted]@suffolk.gov.uk>, "fristonclerk@gmail.com" <fristonclerk@gmail.com>, [redacted]@foreburyestates.co.uk>
Subject: Re SPR- Onshore Investigation Works Update 13/04/21

Hello [redacted],

Your notification email has been passed to me. Please can you include me in your community emails so that I am kept informed when there are works that might affect public rights of way, rather then receiving updates via others.

A couple of comments:-

Access point 4 appears on or close to a public footpath (E-354/007/0) which is currently a narrow gap in the existing roadside hedge [redacted] If you are proposing to take vehicles in here, then you will need to consider the implications of removing the hedge in the nesting season [redacted].

Access point 2 appears to be using the public footpath (E 354/008/0) although when I was on site yesterday, the TM signs were being placed further south relating to a new access that had been created from Grove Road immediately to the south of the property, Fareacres. This is a bit confusing to locals and other stakeholders alike.

Best Regards,

Area Rights of Way Manager

Rights of Way & Access
Suffolk County Council - Natural Environment Team
Halesworth Service Delivery Centre, Blyth Road, Halesworth, IP19 8EN

---------- Forwarded message ---------
From: [redacted]@scottishpower.com>
Date: Tue, Apr 13, 2021 at 6:27 PM
Subject: Onshore Investigation Works Update 13/04/21
To: Friston Clerk
<fristonclerk@gmail.com>, saveeastsuffolk@outlook.com <saveeastsuffolk@outlook.com>
Cc: [redacted]@scottishpower.com>

Hello

12

[redacted]

We provided a update in March notifying of onshore investigation works taking place at various locations within the proposed cable route (attached).

Activity is now underway and we are providing regular updates to parishes about key activity taking place in your community over the following couple of days, if relevant. This is so you are aware of the works and can pass information on as you see necessary. The investigation programme is constantly evolving due to the nature of the works and therefore we will provide this information as and when confirmed.

Please find below update:

Wednesday 14th April
Site investigation works are due to start on the proposed substation land.
Traffic calming measures will be put in place for all allocated access points for our vehicle movements including site access and traffic speed reductions signage where relevant as indicated on the map below, along with notices on PROW where vehicles will be using these for access, over the next couple of days.
A CPT truck (Cone Penetrometer Test rig based on a truck-chassis) will be collected from a works location in Sizewell at around 0930hrs to be transported and delivered to Friston Access Point 2 as indicated below. To safely deliver this vehicle into the site we are permitted to manually control the traffic for a maximum of 15 minutes.

Thursday 15th April
The CPT will be collected at the end of the shift on Thursday around 1630hrs.

If you have any questions about these works or movements please do not hesitate to get in touch.

ID	SASES' Comment	Applicants' Comments
14	Also SPR does not seem to be exercising proper control over its contractors. One resident on Tuesday, 13 April 2021 found a contractor conducting highway survey works using the resident's driveway access as a parking area and partially obstructing it.	The Applicants' contractors have been briefed on the areas where work is permitted, and they should not be entering onto land without permission.
Aldringham and Sizewell		
15	Signage was also erected in these locations and a large excavator was unloaded at Sizewell Hall Road. This process took approximately 25 minutes and was without notice to residents, causing substantial delays and one person missing a doctor's appointment. This is also the emergency escape road for the nuclear power stations, which is of great concern. The tracks of the excavator also damaged the road surface, photos 10 – 13.	Following this incident, the process for offloading was reviewed including giving notice to local residents when plant is unloaded. The Applicants understand that two vehicles were delayed. The Applicants apologise for any delay caused as a result of the initial offloading process. The site area selected by the contractor for offloading was chosen to avoid damage to overhanging branches further south on Sizewell Hall Road. Subsequently, plant was removed from site using a tractor and trailer to minimise disruption. The damage to the road surface has been investigated and scuff marks remain following the date that the photographs were taken and shown in photographs 10 and 11. Photographs 12 and 13 appear to show signage placed correctly.

ID	SASES' Comment	Applicants' Comments
	Photo 10 - Delivery of excavator at Sizewell Hall Road  ***Photo 11 – Damage to road surface at Sizewell***	

ID	SASES' Comment	Applicants' Comments
		

ID	SASES' Comment	Applicants' Comments
	Photos 12 and 13 – two site accesses off B1122 (Aldeburgh Road) in Aldringham 	

ID	SASES' Comment	Applicants' Comments