

# WRITTEN REPRESENTATION FOR SPR EA1N and EA2 PROJECTS (DEADLINE 1)



## NOISE

**Interested Party:** SASSES    **PINS Refs:** 20024106 & 20024110

**Date:** 1 November 2020

**Issue:** 1

### Summary

The written representation on noise comprises:

1. the expert report by prepared by Rupert Taylor dated 30 October 2020; and
2. the written representation prepared by SASSES dated 3 September 2020 which contains more general observations concerning noise impacts and therefore in relation to technical acoustic issues the expert report is to be preferred.

# WRITTEN REPRESENTATION FOR SPR EA1N and EA2 PROJECTS (DEADLINE 1)



## OPERATIONAL NOISE IMPACT

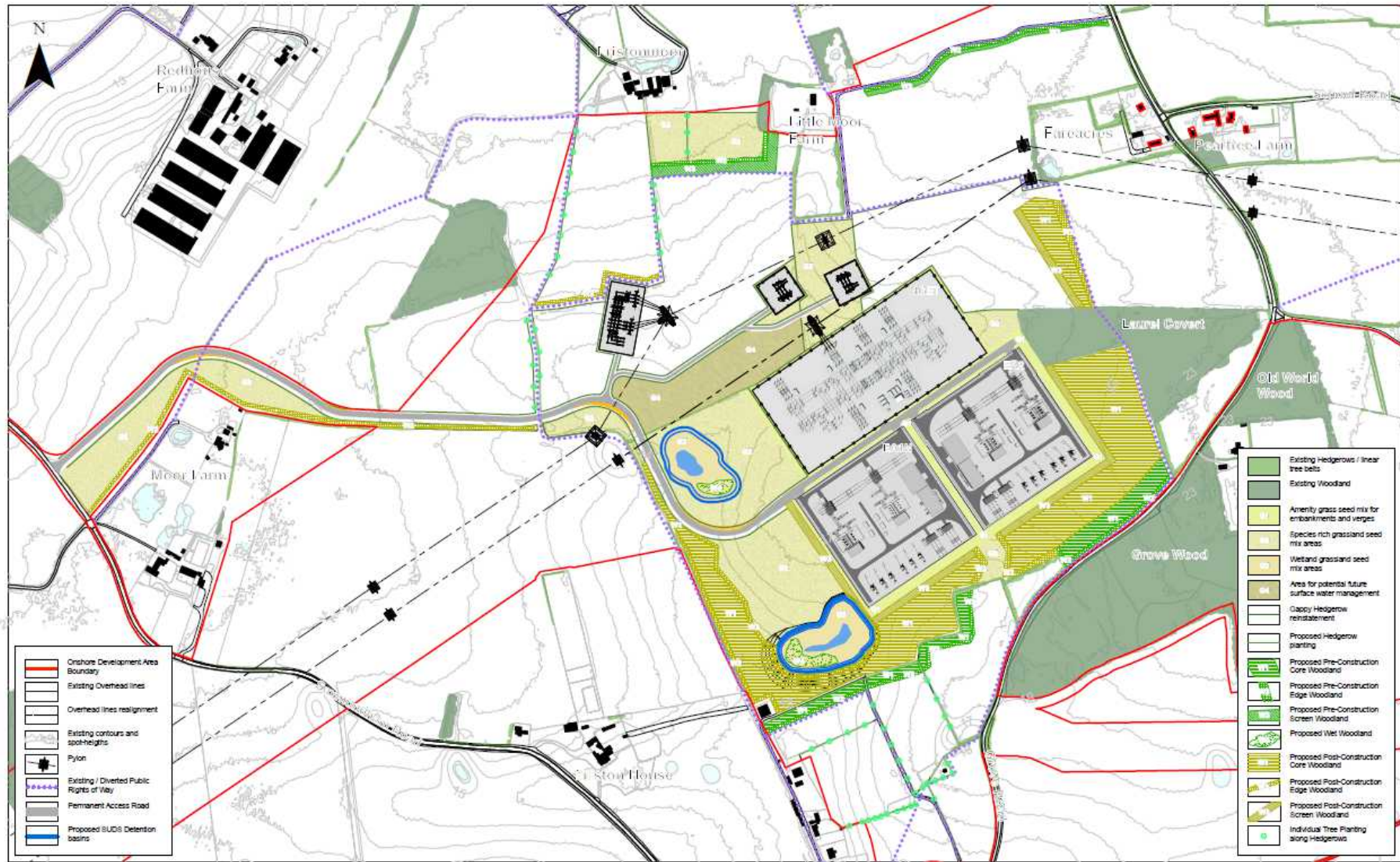
**Interested Party:** SASES    **PINS Refs:** 20024106 & 20024110

**Date:** 3 September 2020

**Issue:** 7

1. The project comprises 2 x 10 acre SPR substations, equipment up to 18m high + NGET substation (similar size) + multiple sealing end compounds and a new pylon all very close to a long-established village with a Grade 2\* parish church and graveyard, and some residential property within 250m of the substations themselves (Figure 1 below).
2. All these will cause noise pollution in what is otherwise an exceptionally quiet rural location, and has been for hundreds of years, and this is a cause of huge concern to the locality. SASES has an Acoustics expert witness who will be representing us at the relevant ISH. The following comments, therefore, will be of a more general nature.
3. The substation design is understood (Ref. 6) to be a copy of the East Anglia One substation at Bramford (which I hope the Examiners will visit and listen to – it's on SASES requested visit list). But SPR are suggesting that less demanding Impact criteria should apply to the Friston site compared with the Bramford one. Why should Friston residents be treated differently?
4. Substations hum (we know that from day to day experience) – and SPR accepted at EA1 DCO submission that the EA1 substation would hum (Ref 1 page 19 para 40), and it does seem to. This is known as 'Tonality'. And SPR accepted that Residential property should be regarded as Highly Sensitive to noise from the substation (Ref 1 page 32). Quite understandable given the level of irritation and associated health damage that substation noise can cause to humans, and animals.
5. But the DCO documentation for EA1N and EA2 doesn't accept either of these criteria. SPR deny that their Friston substations will be 'Tonal' (Ref 2 paras 110 and 113) despite being an enlarged version of the EA1 Design, and they regard Friston residents as having only Medium Sensitivity (Ref 3) compared with those in the region of Bramford, despite the presence of many elderly residents, a number of whom are housebound.
6. The impact of these criteria downgrades appears to allow SPR to state that there will be Negligible Adverse Impact due to Noise from their EA1N and EA2 substations. But if the EA1 criteria are substituted then using the same approach the Impact level appears to no longer be Negligible in some locations.
7. In addition it is noted that the Night-Time Background Noise levels shown in the DCO documentation (Ref 4) are significantly higher at several locations than those shown and commented on in the PEIR documentation (Ref. 5), with SSR2 being substantially higher. No justification has been found in the DCO documentation for these changes, and had they not been made then additional other locations would be likely to be rated as having Impacts greater than the Negligible Impact that SPR claim.

8. Also it is noted from other DCO applications that the noise levels of equipment may not be worst case, e.g. STATCOMS may only have been assessed at 50% load. It is essential that all equipment noise levels and assessments quoted are complete, worst case and properly authenticated, including the provision of “third octave” data which is understood to be required to reach conclusions about ‘Tonality’. This does not currently seem to be the case and should be grounds for refusing the application as in this case the noise impacts cannot be relied on.
9. Therefore the Examiners are asked to closely scrutinise all the noise claims made by SPR, as it is clear that even modest changes to, or omissions from, criteria can have a disproportionate effect on any Adverse Impact results and therefore site acceptability. And in any case, surely a conservative approach should be adopted, especially to a community which is largely retired with many residents already in less than good health.
10. A further concern is the proposal in the DCO that a 34dBA rating level be used, despite the site being a tranquil location, and that only at two locations (SSR2 and SSR5 NEW), when ALL Friston residential properties should be entitled to the same protection, given that sound levels may be highly localised due to reflections and ground contours. And whatever criteria are chosen they must be fully tested before equipment is allowed to ‘go live’ We are aware of another site (in Scotland) where noise was shown to have a significant impact after commissioning but the transmission operator is understood to have refused to allow the equipment to be powered down for remediation. This would be unacceptable.
11. A final concern is that atmospheric effects, ground-borne noise, and equipment aging are all known to seriously affect perceived noise levels at receptors. These represent yet further concerns that the currently proposed noise emission levels are entirely unacceptable and that the site chosen is unsuitable for the proposed development and that Consent should therefore **be refused**.



8	21/08/2019	mb	Eighth Issue.		
7	13/08/2019	mb	Seventh Issue.	Prepared: mb	
6	24/07/2019	th	Sixth Issue.	Checked: sm	
Rev	Date	By	Comment	Approved: It	

1:2,600 Scale @ A1

0 125 250 m

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**East Anglia ONE North**  
**OLMP General Arrangement**

Drg No	EA1N-OWP-ENV-REP-185-000388
Rev	8
Date	21/08/19
Figure	29.11a
	Coordinate System: BNG Datum: OSG836

Figure 1

## REFERENCES

### Ref 1 Page 19 EA1 Accepted Tonality

- 40 BS 4142 provides a methodology for assessing industrial noise against ambient background noise levels. A ‘rating penalty’ of 5dB is added to the industrial noise if it contains characteristics that are likely to increase the potential for it to cause annoyance. Such characteristics could include impulses (e.g. bangs/crashes) or tonal components (e.g. hums/whistles etc). Noise from electricity infrastructure can contain tonal components (the “mains hum”). As such, a 5dB rating penalty has

been applied to predicted noise levels from the converter station when assessed to BS4142.

### Ref 1 Page 32 EA1 Receptor Sensitivity



Sensitivity/Importance of Receptor			
Sensitivity of Receptor	Description		
	Construction Noise	Operational Noise	Construction Vibration
High	Education, healthcare facility	Residential area, education, healthcare facility	Listed buildings & non-earthwork Scheduled Ancient Monuments
Medium	Residential area	Area used primarily for leisure activities and not already exposed to significant levels of noise	Unreinforced or light framed structures
Low	Area used primarily for leisure activities	Area used primarily for leisure activities and already exposed to significant levels of noise	Residential or light commercial buildings
Negligible	All other areas such as those used primarily for industrial or agricultural purposes	All other areas such as those used primarily for industrial or agricultural purposes	Reinforced or framed structures Industrial, heavy commercial buildings and earthworks (Scheduled Ancient Monuments)

Table 26-11 Sensitivity/Importance of Receptor

109. When assessing the noise from a source, which is classified as the Rated Noise Level, it is necessary to have regard to the acoustic features that may be present in the noise. Section 9.1 of BS 4142:2014+A1:2019 states:
- *“Certain acoustic features can increase the significance of impact over that expected from a basic comparison between the specific sound level and the background sound level. Where such features are present at the assessment location, add a character correction to the specific sound level to obtain the rating level.”*
110. An operational assessment in accordance with BS 4142:2014+A1:2019 has been undertaken for the onshore substation as it is the only noise source associated with the operational phase. Due to the separation distance, existing ambient soundscape and a detailed screening of the onshore substation plant and equipment, no penalty corrections for intermittency, tonality or impulsivity are required. Further detail is provided in **Appendix 25.5**. These acoustic features are added based on perceptibility at the receptor location.
111. In terms of intermittency, the onshore substation will typically operate for the full 24hrs each day, with no expected stops/starts to the fixed electrical plant. Therefore, no intermittency penalty correction is required. Where there may be air cooling fans that stop/start, this is not considered to be distinctively audible at the receptor, above baseline sound characteristics due to masking effects.
112. In terms of impulsivity, the onshore substation will typically operate for the full 24hrs each day, with no expected stops/starts to the fixed plant. There are no items of fixed electrical plant with impulsive characteristics under typical operating conditions.
113. Tonality screening was in accordance with Annex C of BS4142:2014+A1:2019. All fixed electrical plant items were assessed based on source levels detailed in (**Table 25.31**). Further screening was undertaken of the predicted noise levels at the receptor in accordance with BS4142:2014+A1:2019. No tonality was identified based on the current available information.
114. The determination of the specific sound level free from sounds influencing the ambient sound at the assessment location is obtained by measurement or a combination of measurement and calculation. This is to be measured in terms of the  $L_{Aeq, T}$ , Where 'T' is a reference period of:
- 1 hour during daytime hours (07:00 to 23:00 hours); and
  - 15 minutes during night-time hours (23:00 to 07:00 hours).

**Table 25.21 Definitions of the Different Sensitivity Levels for a Noise Receptor**

Sensitivity	Definition	Examples
High	Receptor has very limited tolerance of effect	<p>Noise Receptors have been categorised as high sensitivity where noise may be detrimental to vulnerable receptors. Such receptors include certain hospital wards (e.g. operating theatres or high dependency units) or care homes at night.</p> <p>Vibration Receptors have been categorised as high sensitivity where the receptors are listed buildings or Scheduled Monuments.</p>
Medium	Receptor has limited tolerance of effect	<p>Noise Receptors have been categorised as medium sensitivity where noise may cause disturbance and a level of protection is required but a level of tolerance is expected.</p> <p>Such subgroups include residential accommodation, private gardens, hospital wards, care homes, schools, universities, research facilities, national parks, (during the day); and temporary holiday accommodation at all times.</p> <p>Vibration Receptors have been categorised as medium sensitivity where the structural integrity of the structure is limited but the receptor is not a listed building or Scheduled Monument.</p>
Low	Receptor has some tolerance of effect	<p>Noise Receptors have been categorised as low sensitivity where noise may cause short duration effects in a recreational setting although particularly high noise levels may cause a moderate effect.</p> <p>Such subgroups include offices, shops, outdoor amenity areas, long distance footpaths, doctor's surgeries, sports facilities and places of worship.</p> <p>Vibration Receptors have been categorised as low sensitivity where the structural integrity of the structure is expected to be high. The level of vibration required to cause damage is very high and such levels are not expected to be reached during the proposed East Anglia ONE North project.</p>
Negligible	Receptor generally tolerant of effect.	<p>Noise Receptors have been categorised as negligible sensitivity where noise is not expected to be detrimental.</p> <p>Such subgroups include warehouses, light industry, car parks, and agricultural land.</p> <p>Vibration Receptors have been categorised as negligible sensitivity where vibration is not expected to be detrimental.</p>

#### 25.4.3.6 Impact Significance

133. Following the identification of receptor value and sensitivity and magnitude of the effect, it is possible to determine the significance of the impact. A matrix as presented in *Table 25.22* will be used wherever relevant.

Table A25.2.10 Predicted East Anglia ONE North and East Anglia TWO Substations Operational Noise Impact – Night time

Name	Receptor Sensitivity	Measured Baseline Background Noise Level $L_{90}$ (dBA)	Predicted Rating Noise Level Night time (dBA)	Difference in Rating Level and Measured Background $L_{90}$ (dBA)	Impact magnitude (BS4142)	Impact significance (BS4142)	Operational noise limit (dBA)	Difference in Operational noise limit and Background $L_{90}$ (dBA)	Difference in Rating Level and 32dBA Operational Limit (dBA)	Residual Impact magnitude (Compliance with 32dBA Limit)	Residual Impact Significance (Compliance with 32dBA Limit)	PPG/NPSE Category (Compliance with 32dBA Limit)
SSR1	Medium	33	29.8	-3.2	No impact	Negligible	34	+1.0	-4.2	No Impact	Negligible	NOEL
SSR2	Medium	31.5	33.4	+1.9	Negligible	Minor	34	+2.5	-0.6	No Impact	Negligible	NOEL
SSR3	Medium	30	28.8	-1.2	No impact	Negligible	34	+4.0	-5.2	No Impact	Negligible	NOEL
SSR4*	Medium	29	28.4	-0.6	No impact	Negligible	34	+5.0	-5.6	No Impact	Negligible	NOEL
SSR5 NEW	Medium	29	30.1	+1.1	Negligible	Minor	34	+5.0	-3.9	No Impact	Negligible	NOEL
SSR6*	Medium	29	26.9	-2.1	No impact	Negligible	34	+5.0	-7.1	No Impact	Negligible	NOEL
SSR7	Medium	35	28.3	-6.7	No impact	Negligible	34	-1.0	-5.7	No Impact	Negligible	NOEL
SSR8*	Medium	29	22.0	-7.0	No impact	Negligible	34	+5.0	-12.0	No Impact	Negligible	NOEL
SSR9**	Medium	29	26.5	-2.5	No impact	Negligible	34	+5.0	-7.5	No Impact	Negligible	NOEL
SSR10	Medium	31	16.8	-14.2	No impact	Negligible	34	+3.0	-17.2	No Impact	Negligible	NOEL



**Ref 5 PEIR Background Noise Levels – Night time**

**Table A25.13 Predicted East Anglia TWO and East Anglia ONE North Substations Operational Noise Impact – Night time**

Name	Receptor Sensitivity	Measured Background Noise Level (dBA)	Predicted Rating Noise Level Night time	Difference (dBA)	BS4142 Impact magnitude	Impact Significance Without Additional Mitigation	35db criteria impact magnitude	35db criteria Impact Significance
SSR1	Medium	33	31.1	-1.9	No Impact	Negligible	No Impact	Negligible
SSR2	Medium	27	33.6	6.6	Moderate	Moderate	No Impact	Negligible
SSR3	Medium	30	29.9	-0.1	No Impact	Negligible	No Impact	Negligible
SSR4*	Medium	27	30.5	3.5	Minor	Minor	No Impact	Negligible
SSR5	Medium	27	35.4	8.4	Moderate	Moderate	Negligible	Minor
SSR6*	Medium	27	28.4	1.4	Negligible	Minor	No Impact	Negligible
SSR7	Medium	35	29.2	-5.8	No Impact	Negligible	No Impact	Negligible
SSR8*	Medium	27	23.7	-3.3	No Impact	Negligible	No Impact	Negligible
SSR9	Medium	27	27.6	0.6	Negligible	Minor	No Impact	Negligible
SSR10	Medium	31	19.8	-11.2	No Impact	Negligible	No Impact	Negligible
SSR11	Medium	30	22.7	-7.3	No Impact	Negligible	No Impact	Negligible

**Ref. 6** Statement made by Ian McKay of SPR at public meeting held at Thorpeness Country Club on 15<sup>th</sup> October 2018 at about 19:30.