East Anglia ONE North Offshore Windfarm

Appendix 25.3

Operational Noise Modelling Results Report

Preliminary Environmental Information
Volume 3
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Appendix 25.3 is supported by the tables listed below.

Table number	Title
Table A25.1	Receptor Locations – Onshore Substation and National Grid Infrastructure Study Area

Glossary of Acronyms

AAWT	Annual Average Weekday Traffic
ATC	Automatic Traffic Count
BS	British Standard
CoCP	Code of Construction Practice
DfT	Department for Transport
ETG	Expert Topic Group
eVDV	Estimated Vibration Dose Value
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
ISO	International Standards Organisation

Glossary of Terminology

Applicant	East Anglia ONE North Limited.
dB(A)	Decibels measured on a sound level meter incorporating a frequency weighting (A weighting) which differentiates between sounds of different frequency (pitch) in a similar way to the human ear. Measurements in dB(A) broadly agree with people's assessment of loudness. A change of 3 dB(A) is the minimum perceptible under normal conditions, and a change of 10 dB(A) corresponds roughly to halving or doubling the loudness of a sound. The background noise level in a living room may be about 30 dB(A); normal conversation about 60 dB(A) at 1 metre; heavy road traffic about 80 dB(A) at 10 metres; the level near a pneumatic drill about 100 dB(A).
dB(Z) (or previously Lleq)	Decibels measured on a sound level meter incorporating a flat frequency weighting (Z weighting) across the frequency range.
Decibel (dB)	A unit of noise level derived from the logarithm of the ratio between the value of a quantity and a reference value. It is used to describe the level of many different quantities. For sound pressure level the reference quantity is 20 µPa, the threshold of normal hearing is 0dB, and 140dB is the threshold of pain. A change of 1dB is only perceptible under controlled conditions. Under normal conditions a change in noise level of 3dB(A) is the smallest perceptible change.
Development area	The area comprising the Proposed Onshore Development Area and the Offshore Development Area
East Anglia ONE North project	The proposed project consisting of up to 67 wind turbines, up to four offshore electrical platforms, up to one offshore 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.
$L_{A10, T}$	The A weighted noise level exceeded for 10% of the specified measurement period (T). LA10 is the index generally adopted to assess traffic noise.
$L_{A90, T}$	The A weighted noise level exceeded for 90% of the specified measurement period (T). In BS 4142: 2014 it is used to define the 'background' noise level.
$L_{Aeq, T}$	The equivalent continuous sound level – the sound level of a notionally steady sound having the same energy as a fluctuating sound over a specified measurement period (T). $L_{Aeq, T}$ is used to describe many types of noise and can be measured directly with an integrating sound level meter.
L_{Amax}	The maximum A-weighted sound pressure level recorded during a measurement.
National Grid infrastructure	A National Grid substation, connection to the existing electricity pylons and National Grid overhead line realignment works which will be consented as part of the proposed East Anglia ONE North project Development Consent Order but will be National Grid owned assets.

National Grid overhead line realignment works	Works required to upgrade the existing electricity pylons and overhead lines to transport electricity from the National Grid substation to the national electricity grid
National Grid overhead line realignment works area	The proposed area for National Grid overhead line realignment works.
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 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 project Development Consent Order.
National Grid substation location	The proposed location of the National Grid substation.
Proposed onshore development area	The area in which the landfall, onshore cable corridor, onshore substation, 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 ONE North project from landfall to the connection to the national electricity grid.
Onshore substation	The East Anglia ONE North substation and all of the electrical equipment within it.
Onshore substation location	The proposed location of the onshore substation for the proposed East Anglia ONE North project.

25.3 Operational Noise Modelling Results Report

25.1 Introduction

1. This appendix details the results of the proposed East Anglia ONE North project operational noise impact assessment modelling.

2. ***Chapter 25 Noise and Vibration*** details the methodology, assessment criteria and assumptions relevant to the assessment of the operational phase noise impacts.

3. ***Appendix 25.2*** details the differences in construction noise impacts in relation to three construction scenarios. Operational phase impacts however, have been assessed for only two scenarios:

   - Operation of the proposed East Anglia ONE North project (project alone) substation; and
   - Operation of the proposed East Anglia ONE North and East Anglia TWO project proposed project substations.

4. ***Section 25.7*** of ***Chapter 25 Noise and Vibration*** provides more detail concerning the proposed East Anglia ONE North project.

25.2 Operational Phase Noise Modelling Approach

5. The operational phase was modelled using SoundPLAN noise modelling software. This package directly implements the calculation methods outlined in ISO9613-2 (International Organization for Standardization 1996) and other nationally and internationally recognised acoustic standards.

25.3 Operational Phase Receptors

6. A total of 35 sensitive receptor locations were agreed as part of consultation at the Expert Topic Group (ETG) meetings held for the proposed East Anglia ONE North and proposed East Anglia TWO projects. Of the 35 agreed receptors, 12 representative locations were determined (through consultation with the ETG meetings) as relevant within the onshore substation and National Grid infrastructure study area.

7. The 12 receptor locations within the onshore substation and National Grid infrastructure study area are detailed within ***Table A25.1***.

8. Of these 12 receptors, only nine were surveyed due to access constraints.

Table A25.1 Receptor Locations – Onshore Substation and National Grid Infrastructure Study Area

Receptor identifier	Parish/ location	X	Y	Nearest postcode	Measurements Taken
SSR1	Grove Rd, Saxmundham IP17 1TN, UK	641720	261614	IP17 1TN	Yes
SSR2	New Haven, Friston Rd, Saxmundham IP17 1TL, UK	641841	261176	IP17 1TL	Yes
SSR3	Unnamed Road, Saxmundham IP17, UK	641231	261673	IP17 1XA	Yes
SSR4	Saxmundham Rd, Saxmundham IP17 1NJ, UK	640930	260737	IP17 1NJ	No Access
SSR5	Saxmundham Rd, Saxmundham IP17, UK	641157	260802	IP17 1PU	Yes
SSR6	3 Church Rd, Friston, Church Path, Saxmundham IP17 1PX, UK	641413	260559	IP17 1PX	No Access
SSR7	School Rd, Saxmundham IP17 1TN, UK	641808	261655	IP17 1TN	Yes
SSR8	Saxmundham Rd, Saxmundham IP17 1NH, UK	640338	260994	IP17 1NH	No Access
SSR9	Fristonmoor Ln, Saxmundham IP17, UK	640980	261693	IP17 1XD	Yes
SSR10	1 Friston Hall Cottages, Friston, Saxmundham IP17 1NQ, UK	639927	260384	IP17 1NQ	Yes
SSR11	77 Friston Hall Cottages, Friston, Saxmundham IP17 1NL, UK	640518	260309	IP17 1NL	Yes
SSR12	Unnamed Road, Saxmundham IP17 1NF, UK	640377	261580	IP17 1NF	Yes

25.4 Plates

9. ***Plate A25.1***Plate shows the proposed indicative layout of the onshore substation infrastructure for the proposed East Anglia ONE North project and proposed East Anglia TWO project.

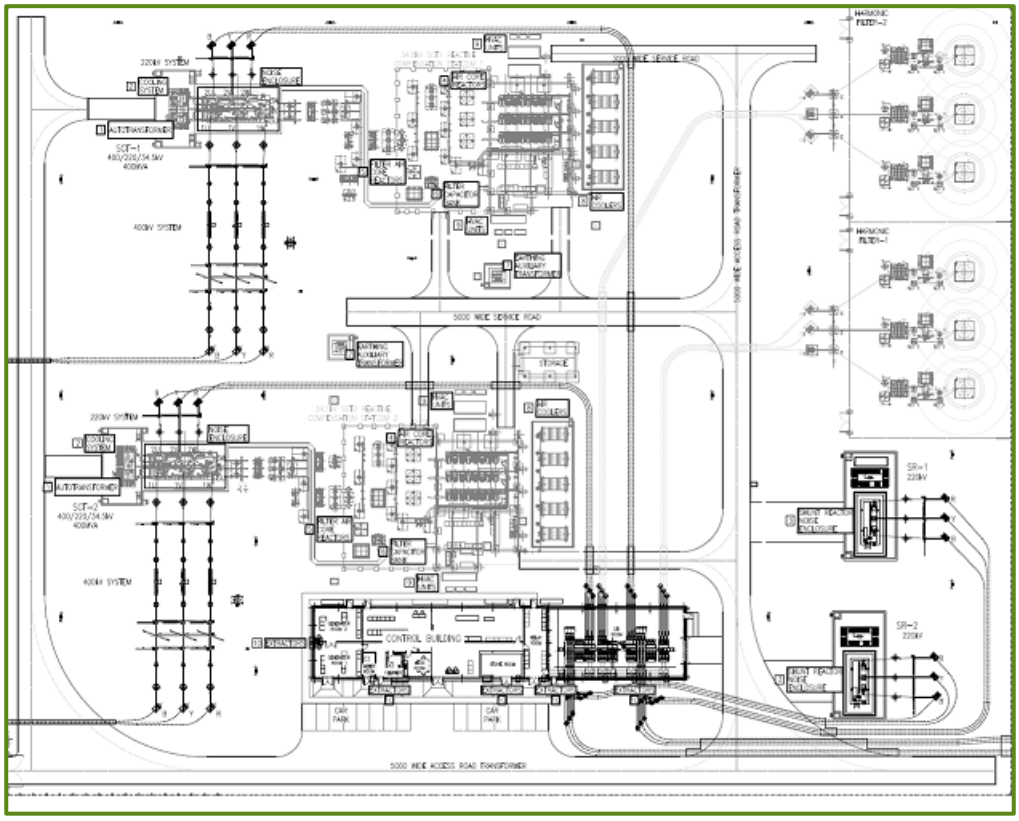


Plate A25.1 Indicative Onshore Substation Layout – HVAC

25.5 Conclusion

10. Operational noise impacts were assessed for the proposed East Anglia ONE North project alone are fully detailed in ***section 25.6*** of ***Chapter 25 Noise and Vibration***.

11. Operational noise impacts were assessed for the proposed East Anglia ONE North project and proposed East Anglia TWO project combined are fully detailed in ***section 25.7*** of ***Chapter 25 Noise and Vibration***.

25.6 References

International Organization for Standardization, (1996) ISO9613-2:1996 Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation. ISO, Switzerland.