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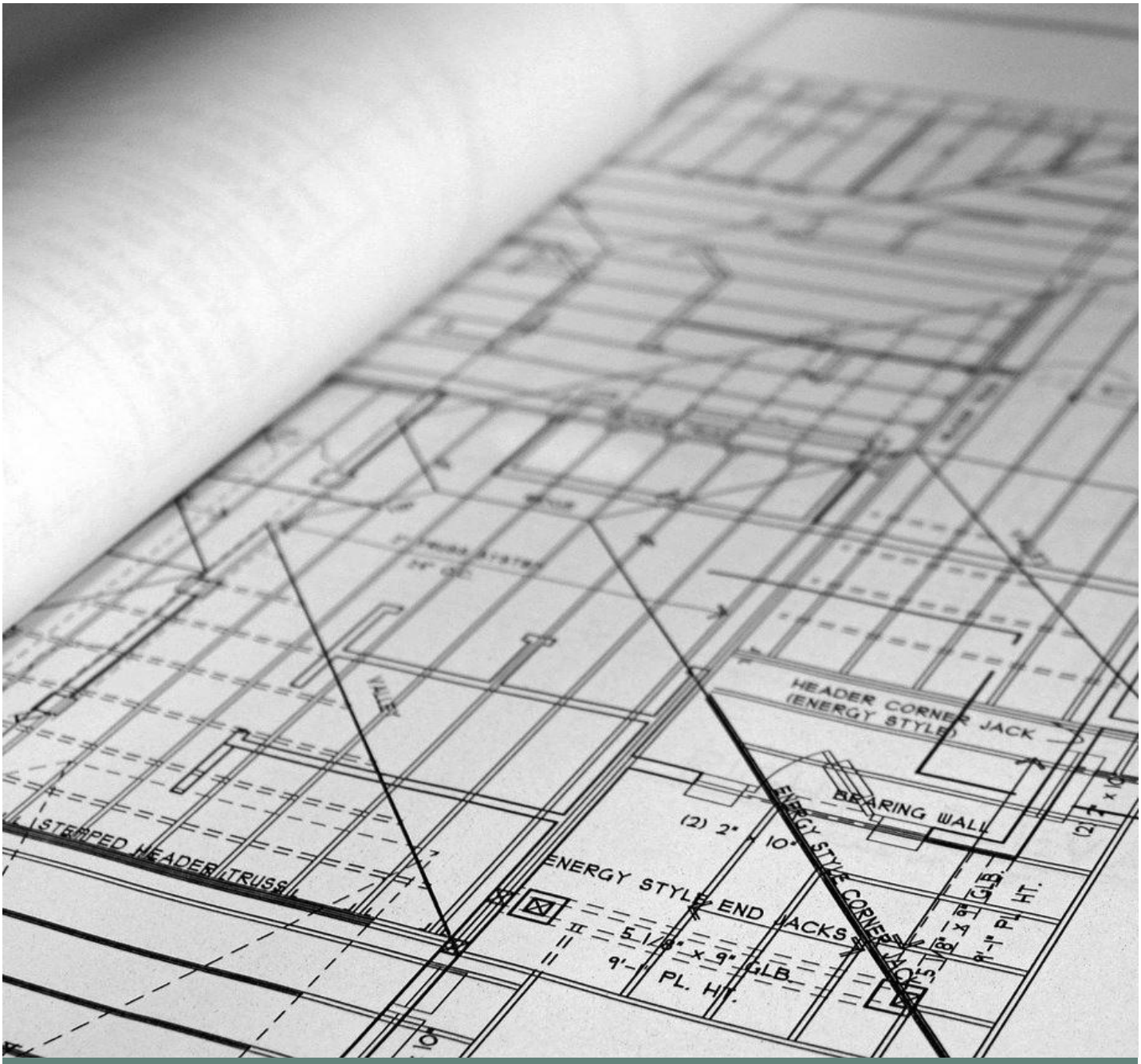

Singleton Birch Hydrogen Production Facility

Noise Impact Assessment Report

Client: Centrica Energy Storage Limited

Project Number: 0962024

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REPORT ISSUE AND STATUS LOG

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1 INTRODUCTION

1.1 OVERVIEW

1.1.1 JPM Acoustics Ltd has been appointed by Centrica Energy Storage Limited to undertake a Noise Impact Assessment for a proposed Hydrogen Production Facility at the Singleton Birch site in Melton Ross. The Noise Impact Assessment is required to support a planning application for the proposed development.

1.1.2 This report includes the results of a baseline noise survey undertaken on the site and includes suitable noise level limits for the proposed development.

1.1.3 This report is necessarily technical in nature. Therefore, to assist the reader, a glossary of acoustic terminology is provided in **Appendix A**.

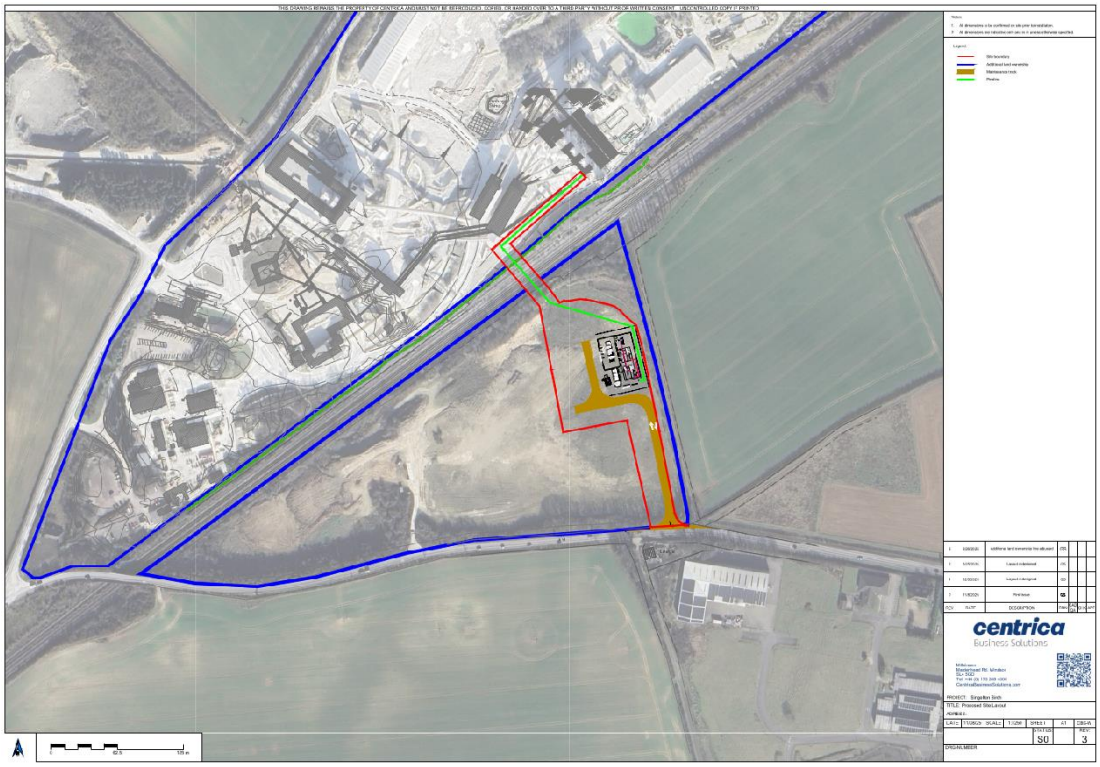
1.2 SITE LOCATION AND PROPOSED DEVELOPMENT

1.2.1 The development site is to the south of the main Singleton Birch site in Melton Ross. The site is bound by a railway line to the north and west, beyond which is the main Singleton Birch site, to the south is the A18 and to the east are open fields.

1.2.2 The proposed development is a hydrogen production facility. Noise emission data for noise sources associated with the development are not available at this stage.

1.2.3 **Figure 1-1** shows the site location and the proposed development layout.

Figure 1-1: Site Location and Proposed Development Layout



2 LEGISLATION AND GUIDANCE

2.1 BS 4142:2014+A1:2019: METHODS FOR RATING AND ASSESSING INDUSTRIAL AND COMMERCIAL SOUND (BS 4142)

2.1.1 This British Standard describes methods for rating and assessing the following:

- Sound from industrial and manufacturing processes;
- Sound from fixed installations which comprise mechanical and electrical plant and equipment;
- Sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train movements on or around an industrial and/or commercial site.

2.1.2 The method uses outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

2.1.3 In accordance with the assessment methodology, the specific sound level ($L_{Aeq,T}$) of the noise source being assessed is corrected by the application of penalties for characteristic features, such as tonal qualities and/or distinct impulses, to give a rating level ($L_{Ar,Tr}$). The British Standard effectively compares the difference between the rating level and the typical background sound level ($L_{A90,T}$) in the absence of the noise source being assessed.

2.1.4 It is advised that the time interval ('T') of the background sound measurement should be sufficient to obtain a representative or typical value of the background sound level at the time(s) when the noise source in question is likely to operate or is proposed to operate in the future.

2.1.5 Comparing the rating level with the background sound level, BS 4142 states:

> "*Typically, the greater this difference, the greater the magnitude of impact.*
>
> *A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.*

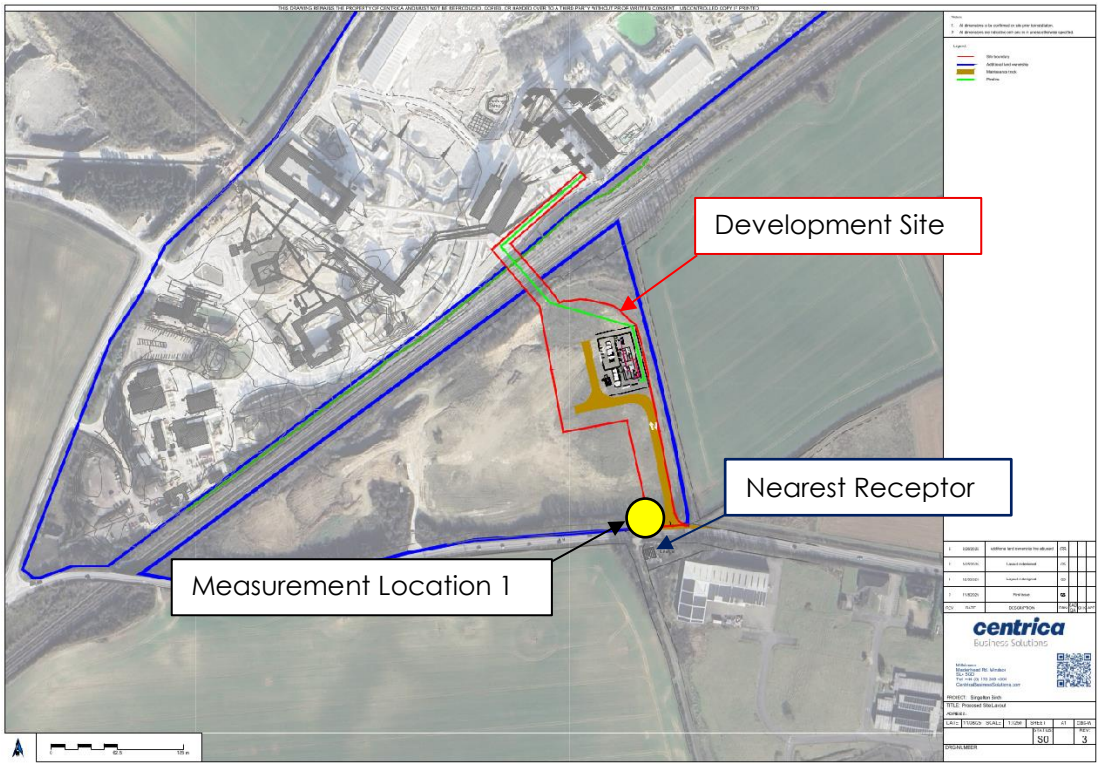
A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."

3 BASELINE NOISE SURVEY

3.1.1 A baseline noise survey has been undertaken to determine the noise environment at a location representative of the nearest noise sensitive receptors to the proposed development. **Figure 3-1** shows the measurement location adopted during the baseline noise survey.

Figure 3-1: Measurement Location



3.1.2 Continuous unattended noise monitoring was undertaken at Measurement Location 1 over a 24-hour period commencing at 13:15 on 14th November 2024. The microphone was mounted in free-field conditions at a height of 1.5 m above local ground level.

3.2 EQUIPMENT

3.2.1 The baseline noise survey was undertaken using the Class 1 specification noise measurement equipment detailed in **Table 3-1**. The measurement equipment was calibrated using a portable calibrator immediately before and after the measurements with no significant drift in calibration observed.

3.2.2 The sound level meter, pre-amplifier and microphone were calibrated to traceable standards within 24 months prior to the measurements. The portable calibrator was calibrated within 12 months prior to the measurements.

Table 3-1: Equipment Details

Equipment	Make and Model	Serial Number	Calibration Due Date
Sound Level Meter	SVAN 971	60745	09/06/2025
Microphone	ACO 7052E	66815	
Preamplifier	SV18	64535	
Calibrator	Svantek SV33A	90275	21/02/2025

3.3 WEATHER CONDITIONS

3.3.1 Weather conditions during the survey were conducive to environmental noise monitoring, it being dry with negligible winds.

3.4 RESULTS

3.4.1 A summary of relevant survey results at Measurement Location 1 is presented in **Table 3-2**.

Table 3-2: Summary of Measured Sound Pressure Levels at the Measurement Location

Start Date and Time	Period	Measured Sound Pressure Levels		
		dB $L_{Aeq,T}$	dB $L_{A90,T}$[2]	dB L_{AFmax}[3]
14/11/2024 13:15	Daytime (07:00-23:00)[1]	67	52	-
14/11/2024 23:00	Night-time (23:00-07:00)	61	45	80

[1] Includes periods between 13:15 and 23:00 on 14th November and between 07:00 and 13:15 on 15th November 2024.
[2] mean of measured $L_{A90,15min}$ values during period.
[3] 90th percentile of measured $L_{AFmax,15min}$ values during the night-time.

4 ASSESSMENT

4.1 NOISE LEVEL LIMITS

4.1.1 As noise emission data for the site's proposed equipment are not currently available, consideration has been given to appropriate noise level limits which should be applied to the proposed development.

4.1.2 It can be seen from **Table 3-2** that the measured background noise levels at the nearest noise sensitive location to the site were 52 dB $L_{A90,T}$ during the daytime and 45 dB $L_{A90,T}$ at night.

4.1.3 The above noise levels can be treated as rating level limits for the proposed development, as a rating level equal to background indicates a 'low' impact in accordance with BS 4142.

4.1.4 The above rating level limits should apply at least 3.5 metres from the façade of any residential property i.e. in free-field conditions.

4.1.5 In accordance with BS 4142, any assessment of plant noise emissions should include appropriate rating corrections for tonal, irregular or intermittent plant where applicable, before comparison with the above limits.

4.1.6 It should be noted that the derived rating level limits would be applicable to the total noise from the simultaneous operation of all external plant. As such, noise emissions from individual items of plant will need to be lower than the given limit, although the exact limit for each individual item of plant will be dependent upon its type, noise characteristics, location etc. This issue is best addressed during the detailed design stage when the appropriate level of information is available.

5 CONCLUSION

5.1.1 JPM Acoustics Ltd has been appointed by Centrica Energy Storage Limited to undertake a Noise Impact Assessment for a proposed Hydrogen Production Facility on the Singleton Birch site in Melton Ross. The Noise Impact Assessment is required to support a planning application for the proposed development.

5.1.2 This report includes the results of a baseline noise survey undertaken on the site and establishes suitable noise level limits for the cumulative noise emissions from plant items within the proposed development.

5.1.3 Subject to the proposed limits being met, it is considered that noise need not be a determining factor in granting planning consent for the proposed development.

APPENDIX A: TECHNICAL GLOSSARY

Term	Descriptions
Sound Pressure	Sound, or sound pressure, is a fluctuation in air pressure over the static ambient pressure.
Sound Pressure Level	The sound level is the sound pressure relative to a standard reference pressure of 20 µPa ($20x10^{-6}$ Pascals) on a decibel scale.
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds S1 and S2 is given by 20 $\log_{10}$ (S1/S2). The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20 µPa.
A-weighting, dB(A)	The unit of sound level, weighted according to the increased sensitivity of the human ear at some frequencies.
Noise Level Indices	Noise levels usually fluctuate over time, so it is often necessary to consider an average or statistical noise level. This can be done in several ways, so a number of different noise indices have been defined, according to how the averaging or statistics are carried out.
$L_{eq,T}$	A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
$L_{max,T}$	A noise level index defined as the maximum noise level during the period T. L_{max} is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
$L_{90,T}$	A noise level index. The noise level exceeded for 90% of the time over the period T. L_{90} can be considered to be the "average minimum" noise level and is often used to describe the background noise.
Free-Field	Far from the presence of sound reflecting objects (except the ground), usually taken to mean at least 3.5 m.
Façade	At a distance of 1 m in front of a large sound reflecting object such as a building façade.
Fast/Slow Time Weighting	Averaging times used in sound level metres.
Octave Band	A range of frequencies whose upper limit is twice the frequency of the lower limit.