Noise Assessment

Halley Stewart Playing Field

Battery Box Ltd.

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Basis of Report

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Table of Contents

Basis of Report i
1.0 Introduction 1
2.0 Noise Sources 2
3.0 BS4142 Assessment 3
3.1 Noise Model Assumptions 3
3.2 Noise Model Results 4
3.3 Discussion 5
4.0 NANR45 Assessment 7
5.0 Conclusion 9

Tables in Text

Table 4-1: Proposed Reference Curve & Modelled Data 7

Figures in Text

Figure 2-1: Proposed Batteries 2
Figure 3-1: Site and Noise Sensitive Receptor 3
Figure 3-2: Daytime BS4142 Assessment 4
Figure 3-3: Night-Time BS4142 Assessment 5
Figure 4-1: Proposed Reference Curve and Modelled Data 7

1.0 Introduction

An environmental noise assessment is required for a proposed micro energy storage facility at micro energy storage facility at Sir Halley Stewart Playing Field, Spalding, PE11 1DA, in support of the submitted planning application. This report will evaluate the potential noise impact of the facility on the surrounding area.

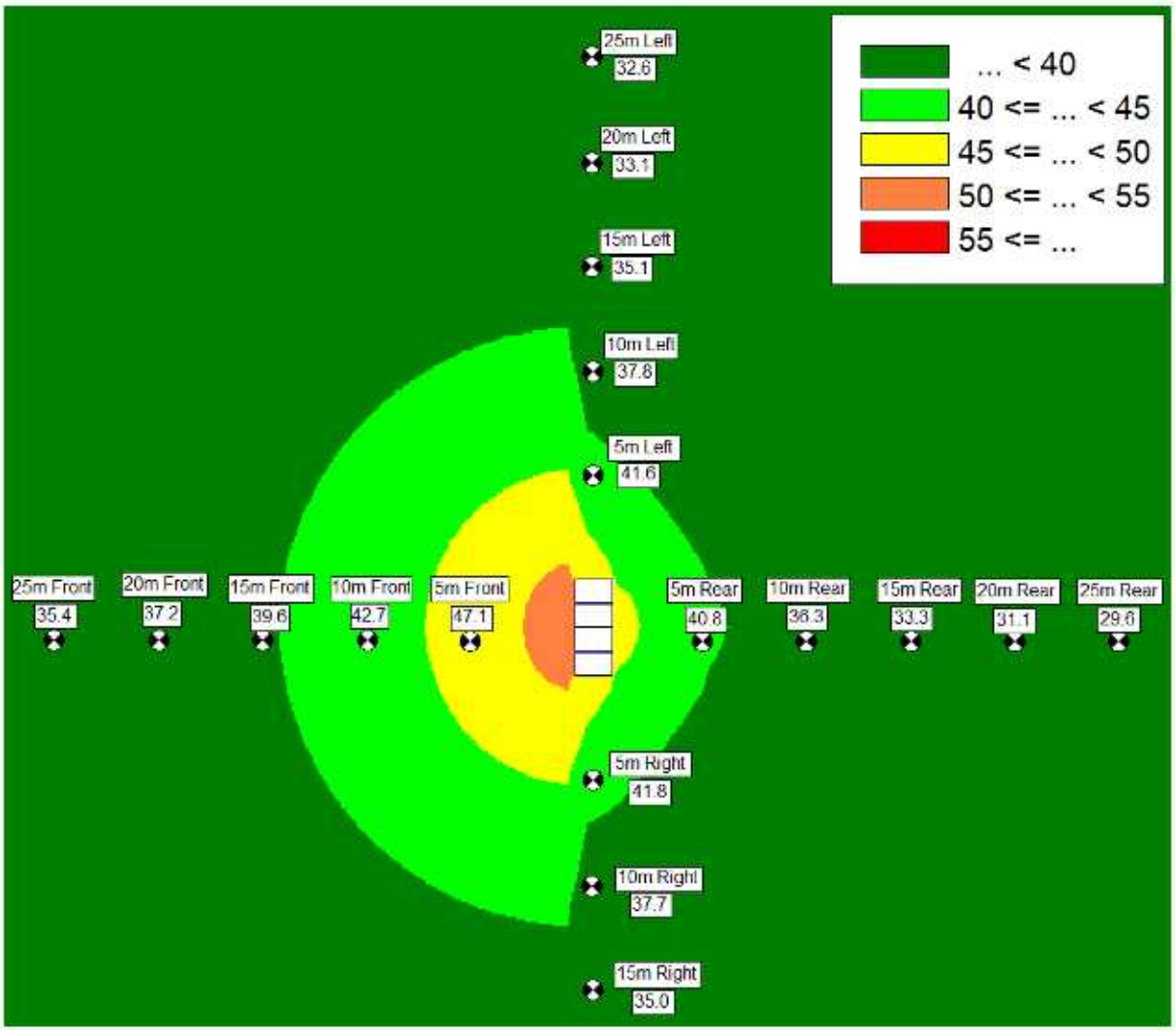
This Report includes:

- The predicted specific noise level at the closest Noise Receptor to the Site.
- Discusses this specific noise level with reference to BS4142:2014+A1:2019.
- Presents an assessment to A NANR45 limits.

2.0 Noise Sources

Figure 2-1 presents the model of the proposed battery with measurement locations in four directions up to 25 metres from the source.

Figure 2-1: Proposed Batteries



3.0 BS4142 Assessment

Figure 3-1 shows the location of the proposed micro energy storage facility with the nearest Noise Sensitive Receptors (NSRs) indicated by yellow pins.

Figure 3-1: Site and Noise Sensitive Receptors

3.1 Noise Model Assumptions

The sound predictions in this assessment have been undertaken using a proprietary software-based noise model, CadnaA, which implements the full range of UK noise-based calculation methods. The calculation algorithms set out in ISO 9613-2:2024 *Acoustics – Attenuation of sound during propagation outdoors – Part 2 Engineering method* for the prediction of sound pressure levels outdoors have been used and the model assumes:

- A ground absorption factor of 0.75.
- Contour Data to include OS terrain data.
- A reflection factor of 3.
- A barrier with dimensions of H: 2.4m, L: 11.4m. This represents the brick wall at the perimeter of the site.

3.2 Noise Model Results

The proposed battery, illustrated in Figure 2-1, was integrated into the in-situ CadnaA noise model. The daytime and night-time CadnaA output images can be seen in Figure 3-2 and Figure 3-3.

Figure 3-2: Daytime BS4142 Assessment

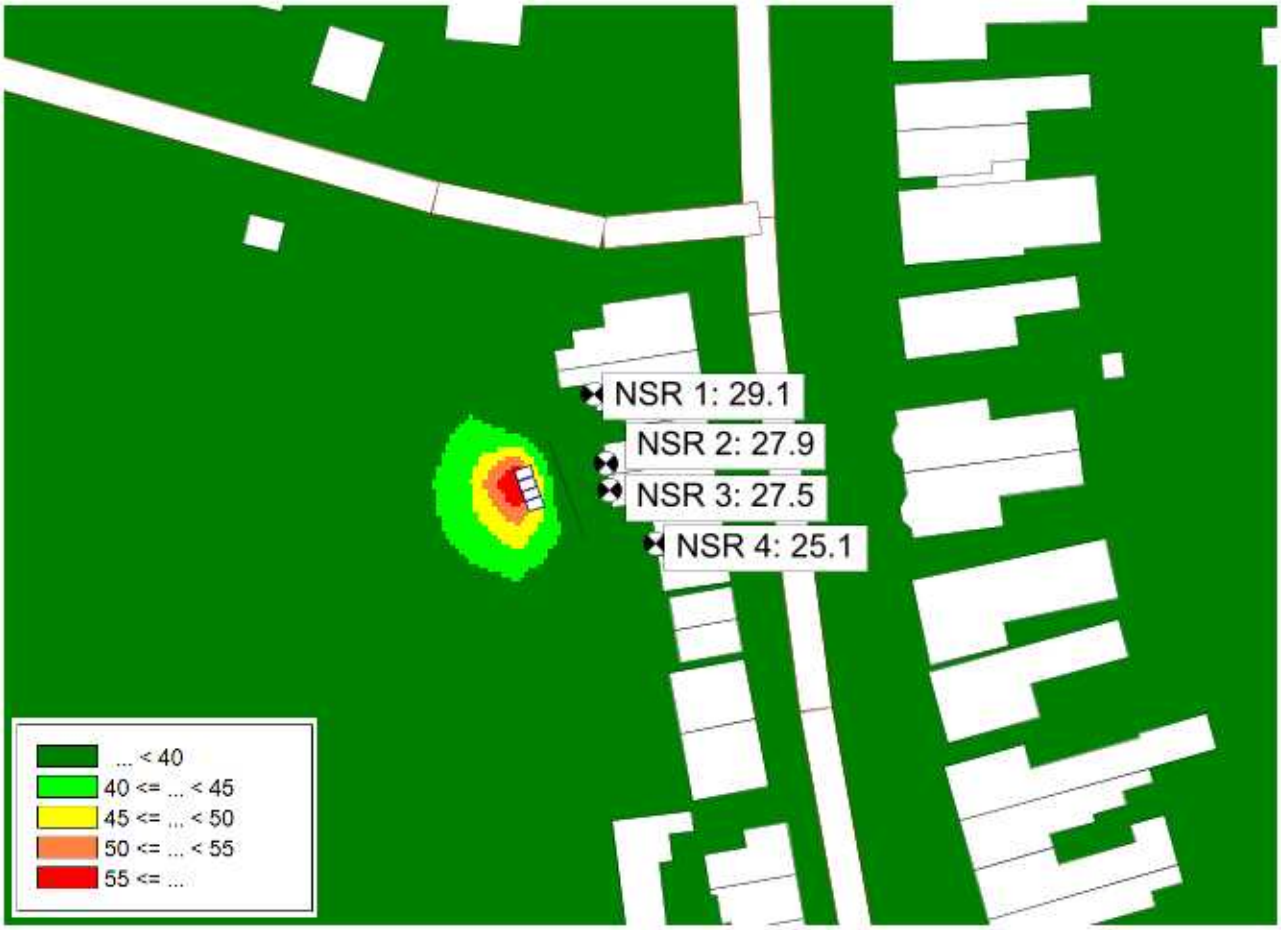
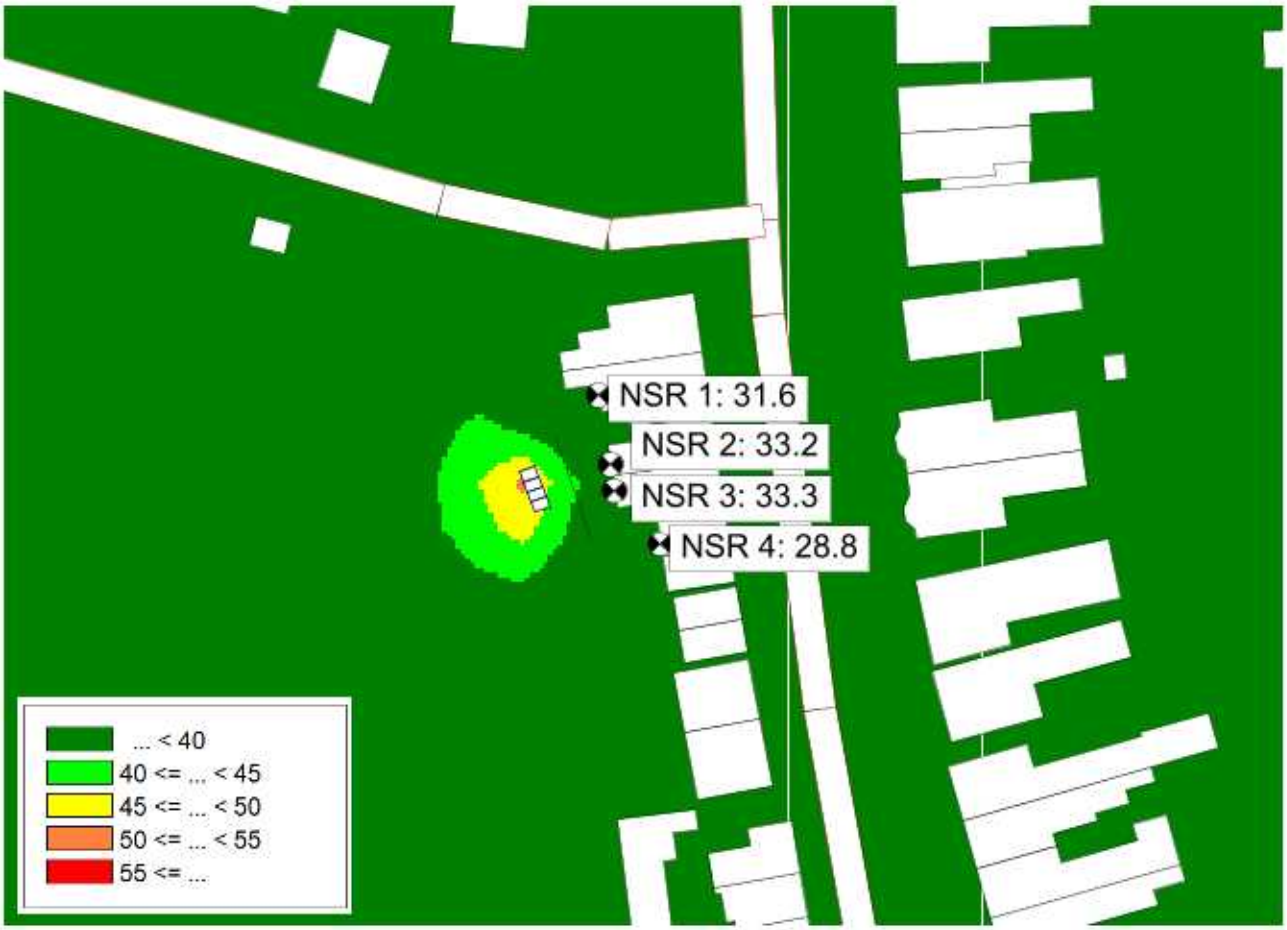


Figure 3-3: Night-Time BS4142 Assessment



3.3 Discussion

As demonstrated in both Figure 3-2 and Figure 3-3 the worst case predicted specific noise level at the nearest noise sensitive receptor is rounded to 33dBA.

Whilst the latest revision of BS 4142 does not provide definition of low or very low background and rating levels the previous (1997) version considered that rating levels of 35dBA could be considered low.

At this Site it is expected that a BS4142 character correction of 3dB would be appropriate to account for the operation of the Site to be potentially audible above the residual sound levels. Tonal or impulsive noise is not expected.

The rating level would therefore equal 36dBA.

Numerous studies by Moorhouse, Berry, Flindell, etc for the Health Protection Agency and for Defra (referenced within the Further Reading Section of BS 4142) and supported by the recent Association of Noise Consultants Working Group report on BS4142 application, conclude that impacts at rating levels below 35 dB are unlikely. At 36dBA the Site only marginally exceeds this level.

At night, particularly, where potential sleep disturbance is the key issue, an external rating level of 36dBA would result in an internal level below the BS 8233 guideline value of 30dBA owing to the sound reduction of the façade (albeit a level that would also include residual sound).

Overall, on balance, owing to the low rating level, and the likelihood that baselines in the area are higher, SLR consider that there would be a low noise impact in accordance with BS4142.

4.0 NANR45 Assessment

With regard regards to assessing the impact of low frequency noise upon a Noise Sensitive Receptor there is a guidance document titled Procedure for the assessment of low frequency noise complaints (Contract no: NANR45) (dated February 2005). This document contains a reference curve detailing the noise level above which a low frequency noise may be classed as a nuisance.

The procedure is intended to assist in the evaluation of existing problems. It is not intended as a means of predicting when disturbance might occur, for example in a planning situation, and would not be reliable to use as such. However as requested SLR has followed the method and compared the modelled data to the reference curve.

The battery to be installed is Huawei. SLR does not have octave band data for this model of battery. SLR does however have octave band data for the battery technology from a different provider. This data has been used for this assessment. It is considered the sound data would be representative of the Huawei technology.

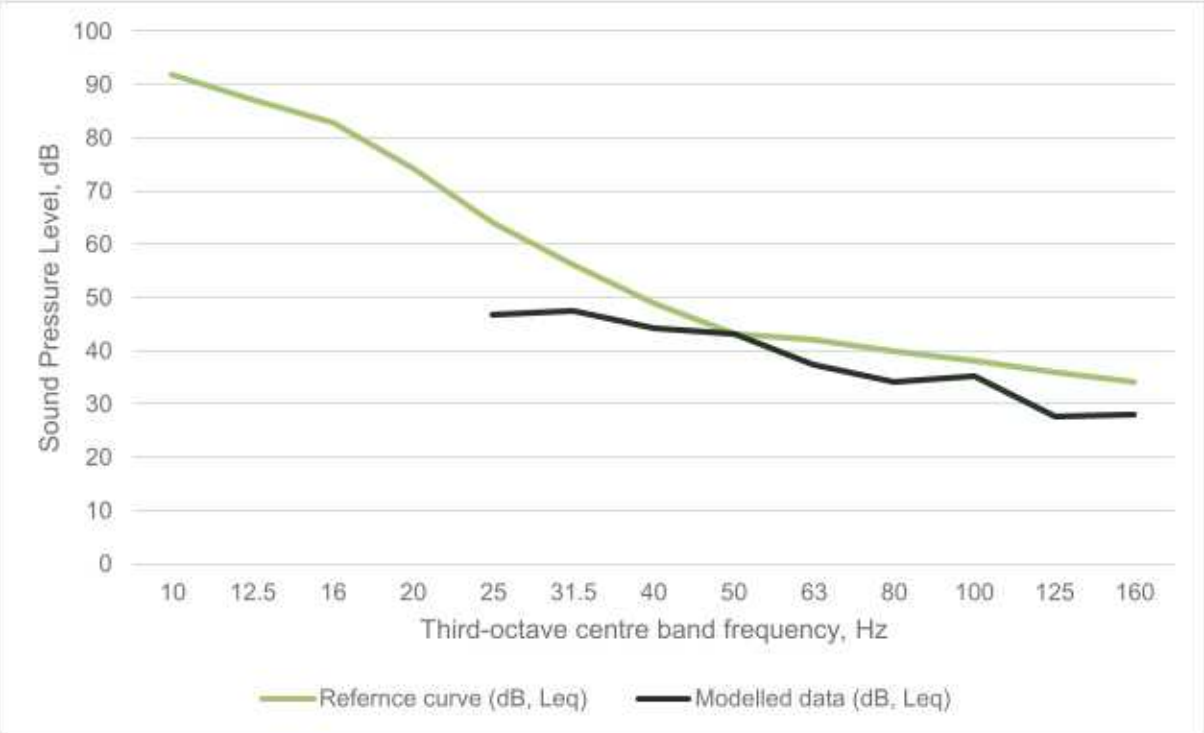
The linear sound levels in each octave band at 66m is shown in Table 4-1. CadnaA will only calculate to 25Hz so 10Hz to 20 Hz is not presented.

Table 4-1: Proposed Reference Curve & Modelled Data

Hz	10	12.5	16	20	25	31.5	40	50	63	80	100	125	160
Ref curve dB, L_{eq}	92	87	83	74	64	56	49	43	42	40	38	36	34
Modelled data dB, L_{eq}	-	-	-	-	47	48	44	43	38	34	35	28	28

Table 4-1 is visualised in Figure 4-1 below.

Figure 4-1: Proposed Reference Curve and Modelled Data



As can be seen from Table 4-1 and Figure 4-1, the limit is met at each frequency assessed. The comfortable meeting of the limit at 25HZ indicates the limit would be met at 10 to 20 Hz.

It is therefore considered that there would be no low frequency noise impact at the Noise Sensitive Receptors.

5.0 Conclusion

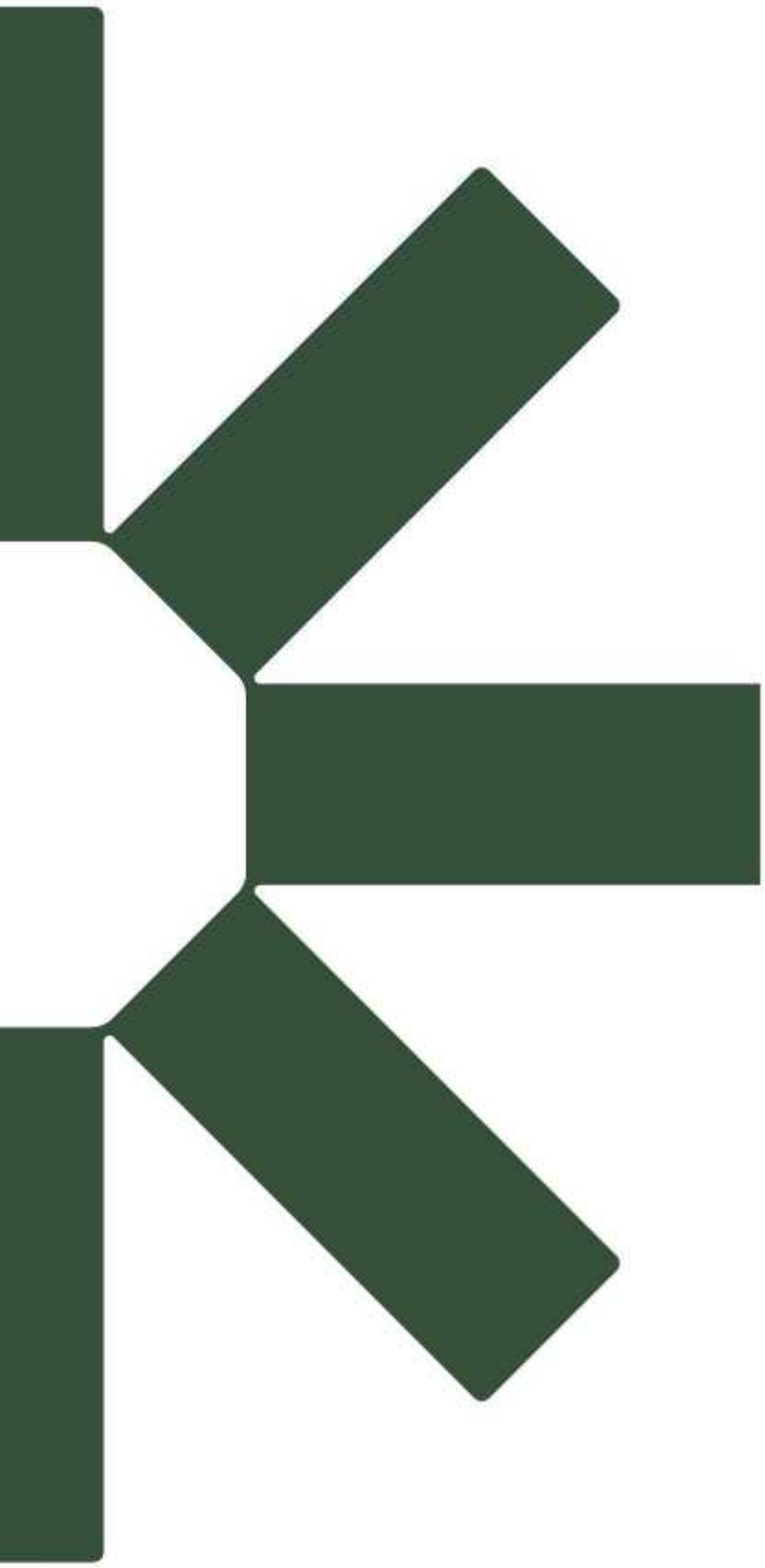
An environmental noise assessment is required for a proposed micro energy storage facility at Sir Halley Stewart Playing Field, Spalding, PE11 1DA, in support of a submitted planning application. This report has evaluated the potential noise impact of the facility on the surrounding area.

This Report includes:

- The predicted specific noise level at the closest Noise Receptor to the Site.
- Discusses this specific noise level with reference to BS4142:2014+A1:2019.
- A NANR45 assessment.

It has been found that:

- The predicted specific noise level at the closest Noise Receptor to the Site is 33dBA.
- The rating level has been determined at 36dBA.
- Overall, on balance, owing to the low rating level, and the likelihood that baselines in the area are higher, SLR consider that there would be no noise impact in accordance with BS4142.
- With regards to low frequency noise, at the frequency bands assessed the Site would be compliant with NANR45 at the Noise Sensitive Receptors.



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