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Proposed New MOT/Testing and Repair Garage, Low Road, Dewsbury Moor, WF13 3PR

Noise Impact Assessment

For:
Hinchcliffe Architecture & Design Ltd

25th April 2024

Ref: NIA-11413-24-11617-v1 MOT Garage, Dewsbury Moor
Issue: First
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1 Introduction

1.1 Overview

Environmental Noise Solutions Ltd (ENS) has been commissioned by Hinchcliffe Architectural & Design Ltd to carry out a noise impact assessment in relation to a proposed new-build MOT/Testing and repair garage at land off Low Road, Dewsbury Moor, WF13 3PR (hereafter referred to as 'the site').

This report has been written to accompany planning application (ref:24/0003) and to address the concerns of the Local Planning Authority, who have made the following comments:

"The proposed development is likely to generate noise which will have the potential to cause a loss of amenity to the occupiers of neighbouring residential noise sensitive premises. Therefore, KC Environmental Health have confirmed that a noise impact assessment will need to be provided with any future application. The assessment should determine the likely noise that will arise from all aspects of the proposed development (including but not limited to noise from activities at the proposed development, vehicle movements, fixed mechanical plant and equipment) and detail the control and mitigation measures that will be necessary to prevent the amenity of nearby receptors being affected by any such noise. All noise assessments should be carried out by a competent person. Developers may wish to contact the Association of Noise Consultants http://www.association-of-noise-consultants.co.uk/ (020 8253 4518) or the Institute of Acoustics http://www.ioa.org.uk (0300 999 9675) for a list of members. Notwithstanding the comments of KC Environmental Health, officers do have concerns regarding the impact of the development on the occupiers of adjacent residential properties and would query the compatibility of such a use in this location. Should a Noise Assessment not be submitted with a future application, this is likely to constitute a reason for refusal."

The objectives of the noise impact assessment are to:

- Assess existing noise levels in the vicinity of the development and nearby noise sensitive receptors.
- Establish the potential noise emissions associated with the proposed development
- Provide specific recommendations, where required, to avoid any potential for loss of amenity due to noise associated with the development

This report details the methodology and results of the assessment and provides recommendations for noise attenuation as appropriate.

The report has been prepared for Hinchcliffe Architectural & Design Ltd for the sole purpose described above and no extended duty of care to any third party is implied or offered. Third parties referring to the report should consult Hinchcliffe Architectural & Design Ltd and ENS as to the extent to which the findings may be appropriate for their use.

A glossary of acoustic terms used in the main body of the text is contained in Appendix 1.

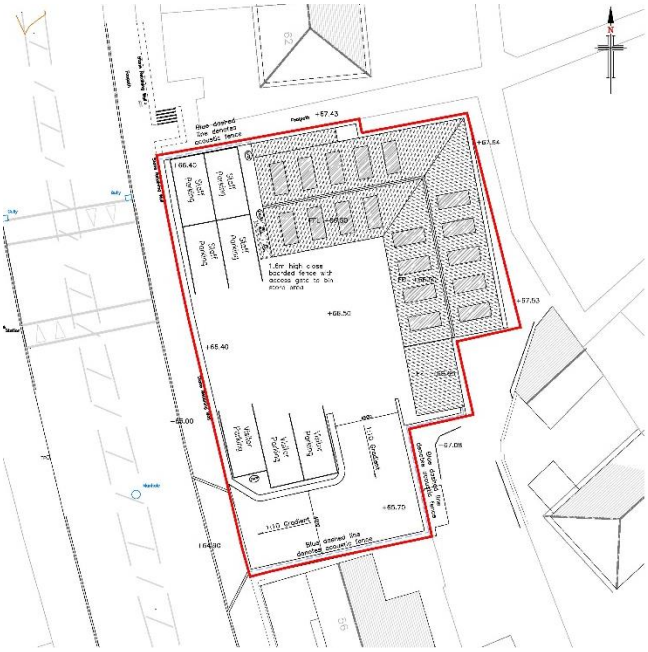
1.2 Site Description and Development Proposals

The site comprises a brownfield site in Dewsbury Moor, to the west of Dewsbury town centre, in a predominantly urban setting. The site boundary is indicated in Figure 1.1 below.

Figure 1.1: Location of Development

Development proposals are for the erection of a new-build MOT/testing and repair garage on vacant land off Low Road (see Figure 1.2 overleaf).

Figure 1.2: Development Proposals



Development proposals are for erection of a new MOT/testing and repair garage. The proposed garage will feature five vehicle repair bays. Operating hours will be 0800-1800 Monday to Friday, and 0900-1500 on Saturdays, the site will not operate on Sundays. The nearest noise sensitive receptors are residential dwellings on Beckett Crescent to the south-east and Low Road to the north and south. The erection of a fully insulated structure to house the operations have been specifically chosen to mitigate against noise related complaints.

2 Assessment Guidance

2.1 BS 4142 'Methods for Rating and Assessing Industrial and Commercial Sound'

BS 4142:2014+A1-2019 'Methods for Rating and Assessing Industrial and Commercial Sound' (BS 4142)[1] describes methods for determining, at the outside of a building, noise levels from factories or industrial premises and a method for assessing whether the noise is likely to give rise to adverse impacts, and states:

'*The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs. Typically, the greater this difference, the greater the magnitude of the impact. For example:*

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'

The rating level is described as the specific sound level (the equivalent continuous A-weighted sound pressure level at the assessment position (NSR) produced by the specific sound source over the given reference time interval) plus any adjustment for the characteristic features of the sound. The character correction relates to whether and to what degree the specific sound is assessed to have an element of tonality, impulsivity and/or characteristics that are readily distinctive against the residual acoustic environment.

The background noise level is the A–weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90 percent of a given time interval, T, measured using time weighting 'F' and quoted to the nearest whole number of decibels.

The reference time interval of the specific sound is 1 hour during the daytime.

1 British Standard 4142:2014+A1-2019 Methods for rating and assessing industrial and commercial sound, BSI (2014)

3 Noise Survey

3.1 Overview

In order to establish the ambient and background noise levels in the vicinity of the nearest noise sensitive receptors, a baseline noise survey was carried out on Thursday 21st March 2024.

The adopted noise monitoring positions (shown in Appendix 2) were as follows:

- MP1 was located along the eastern boundary of the site at 1.5 metres above ground level (AGL)
- MP2 was located on the pavement, in front on No.12 Low Road at 1.5m (AGL)

The closest noise sensitive receptors to the development have been identified as follows:

- NSR A – No. 56 Low Road to the south
- NSR B – No. 12 Low Road to the west

Noise measurements were undertaken in free field conditions at 1.5 metres above ground level, using a Bruel & Kjaer 2250 and NTI XL3 Type 1 integrating sound level meter. The meters were connected to a windshield covered microphone positioned at the locations detailed above.

The measurement system calibration was verified immediately before and after the survey period using a Bruel & Kjaer Type 4231 calibrator. No drift in calibration levels greater than 0.5 dB was noted. The noted weather conditions during the survey were dry with wind speeds < 5 m/s. Weather conditions were therefore considered appropriate for noise monitoring.

Measurements consisted of A–weighted broadband parameters including L_{Aeq} and L_{A90}, together with linear octave band data.

3.2 Summary

Table 3.1 presents a summary of the noise data for each measurement session, rounded to the nearest decibel.

Table 3.1: Summary of Noise Measurement Data

Position	Date	Time	L_{Aeq} (dB)	L_{A90} (dB)	Comment
MP1	21/03/24	0830-0900	53	44	Road traffic on Low Road dominant
		0900-1000	49	42	
		1000-1100	49	42	
		1100-1200	50	44	
		1200-1300	49	43	
		1300-1400	49	44	
		1400-1500	51	45	
		1500-1600	52	46	
		1600-1700	53	46	

MP2	21/03/24	0900-1000	63	45	
		1000-1100	62	44	
		1100-1200	63	46	
		1400-1500	63	49	
		1500-1600	64	51	
		1600-1700	63	48	

4 Noise Assessment

4.1 Overview

It is understood that the development will include the MOT testing and repair of vehicles internally to the building. As such, noise emission to adjacent areas would be largely controlled by the building fabric, however it is expected that the entry and exit doors to the building would remain open whilst in operation.

On this basis, noise breakout from internal spaces is likely to impact on nearby sensitive receptors. Due to the nature of the proposed site, vehicles movements would be mostly sporadic. It is expected that the garage will service up to 5 vehicles per day.

The following sections of the noise impact assessment discuss the potential noise impacts of the above activities on the amenity of the nearest residential dwellings.

4.2 Propagation

In order to assess the propagation of noise from the site to the nearest receptors, noise level predictions have been performed using iNoise acoustic modelling software. This is a software program specifically developed for the prediction and assessment of environmental noise.

The model calculates noise levels on horizontal and vertical grids with a user defined spacing of receiver points. From these levels, calculated at thousands of points, contour lines of constant noise levels are generated and printed as noise maps. All scaling was based on direct import from Google Earth, with 2nd order reflections considered and absorption coefficients based on the iNoise default for brick-built structures.

The following assumptions were used in the model:

- Meteorological conditions: Temp. 20 °C, Relative Humidity 60%
- Reflections: set to two orders of reflection permitted in the model
- Ground absorption set to G = 0.0 (Hard ground)

In relation to internal operations, the indoor reverberant noise level within the proposed MOT/testing and repair garage has been taken as 69 dB $L_{Aeq,1hr}$ based on historic noise measurements of similar operations undertaken by ENS. Typical noise sources would be attributed use of compressors, wheel guns and the running of vehicle engines within the building when required.

The building envelope comprises coursed brickwork with 4 no. roller shutter access doors facing towards the yard area. Noise emission from internal spaces has been modelled using vertical area sources at the approximate location of the roller shutter doors with reference to drawing (ref: 180-23-PL02).

The noise model results are presented as a noise contour plot in Appendix 3. The predicted cumulative resultant noise level at the nearest noise sensitive receptors are **37 dB $L_{Aeq\ (1\text{-}hour)}$** and **39 dB $L_{Aeq\ (1\text{-}hour)}$** at NSR A and NSR B respectively.

4.3 Impact Assessment

BS 4142 requires that an adjustment can be made for the characteristic features of the sound. Typical noise emitted from the repair of vehicles could contain impulsive characteristics that are perceptible at the nearest noise sensitive receptors, therefore, a **+3 dB penalty** is robustly applied to the assessment in Table 4.1 and 4.2 below.

On the basis of the above, the BS 4142 rating level is set out in Table 4.1 and 4.2 below.

Table 4.1 – BS 4142 Rating Level at the NSR A

Results		Comment
Representative (modal) background sound level	44 dB $L_{Aeq\ (1\text{-}hour)}$	-
Resultant sound level	37 B $L_{Aeq\ (1\text{-}hour)}$	Calculated level at nearest noise sensitive receptor
Specific sound level	37 dB $L_{Aeq\ (1\text{-}hour)}$	-
Acoustic feature correction	+ 3 dB	Just perceptible impulsivity at the receptor
Rating level	40 dB $L_{Ar\ (1\text{-}hour)}$	Rating level at receptor
Excess over background sound level	- 4 dB $_{(1\text{-}hour)}$	-

Table 4.2 – BS 4142 Rating Level at the NSR B

Results		Comment
Representative (modal) background sound level	44 dB $L_{Aeq\ (1\text{-}hour)}$	-
Resultant sound level	39 dB $L_{Aeq\ (1\text{-}hour)}$	Calculated level at nearest noise sensitive receptor
Specific sound level	39 dB $L_{Aeq\ (1\text{-}hour)}$	-
Acoustic feature correction	+ 3 dB	Just perceptible impulsivity at the receptor
Rating level	42 dB $L_{Ar\ (1\text{-}hour)}$	Rating level at receptor
Excess over background sound level	- 1 dB $L_{Ar\ (1\text{-}hour)}$	-

The assessment presented in table 4.1 and 4.2 indicates that the rating noise level from the MOT/testing and repair garage would be – 4 dB and – 1 dB below the representative background noise level at NSR A and NSR B respectively.

With reference to the BS 4142 guidance set out in Section 2, where the rating noise level from an item or items of plant exceeds the existing background noise level by 5 dB or more, this is an indication that the noise would have an adverse impact at the noise sensitive receptors. As the predicted rating noise level does not exceed the representative background noise level at NSR A or NSR B this is an indication that it would not result in adverse impacts.

5 Summary and Conclusions

A noise survey and assessment has been performed for a proposed new-build MOT/testing and vehicle repair garage at land off Low Road, Dewsbury Moor, WF13 3PR.

Baseline noise monitoring was carried out on Thursday 21st March 2024 to determine prevailing ambient and background noise levels in the vicinity of the nearest noise sensitive receptors.

A scheme of noise mitigation works has been developed to protect nearby residential dwellings.

When assessed in accordance with BS4142 the cumulative noise rating level associated with the operations of the proposed MOT/testing and repair garage are below measured background levels, and therefore represent no adverse impact at the nearest noise sensitive receptors.

Appendix 1 – Abbreviations and Definitions

Sound Pressure Level (L_p)
The basic unit of sound measurement is the sound pressure level. As the pressures to which the human ear responds can range from 20 μPa to 200 Pa, a linear measurement of sound levels would involve many orders of magnitude. Consequently, the pressures are converted to a logarithmic scale and expressed in decibels (dB) as follows:

$L_p = 20 \log_{10}(p/p_o)$

Where L_p = sound pressure level in dB; p = rms sound pressure in Pa; and p_o = reference sound pressure (20 μPa).

A-weighting
A frequency filtering system in a sound level meter, which approximates under defined conditions the frequency response of the human ear. The A-weighted sound pressure level, expressed in dB(A), has been shown to correlate well with subjective response to noise.

Equivalent continuous A-weighted sound pressure level, $L_{Aeq, T}$
The value of the A-weighted sound pressure level in decibels of continuous steady sound that within a specified time interval, T, has the same mean-square sound pressure as a sound that varies with time. $L_{Aeq, 16h}$ (07:00 to 23:00 hours) and $L_{Aeq, 8h}$ (23:00 to 07:00 hours) are used to qualify daytime and night time noise levels.

$L_{A10, T}$
The A-weighted sound pressure level in decibels exceeded for 10% of the measurement period, T. $L_{A10, 18h}$ is the arithmetic mean of the 18 hourly values from 06:00 to 24:00 hours.

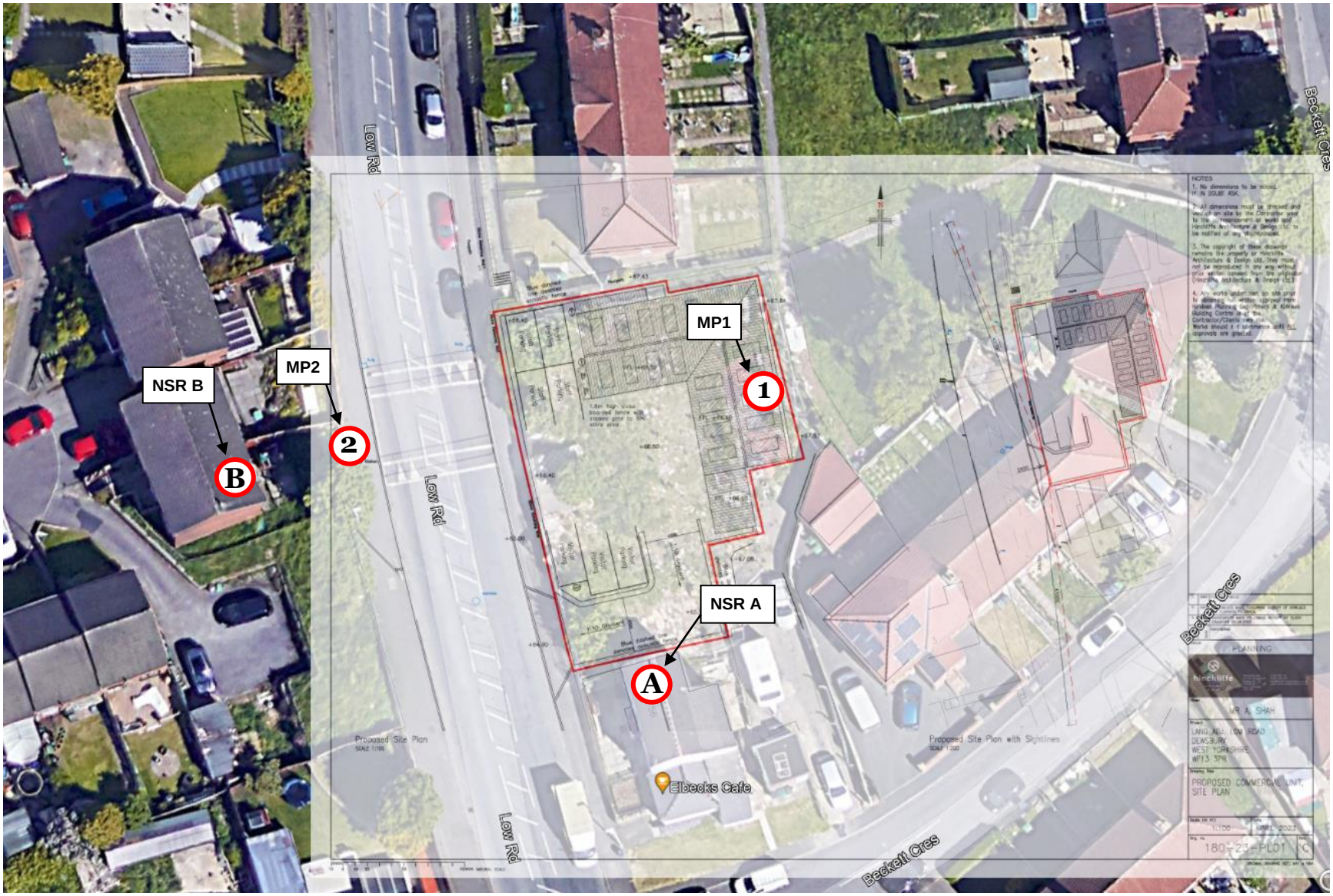
$L_{A90, T}$
The A-weighted sound pressure level of the residual noise in decibels exceeded 90% of a given time interval, T. L_{A90} is typically taken as representative of background noise.

$L_{AF\ max}$
The maximum A-weighted noise level recorded during the measurement period. The subscript 'F' denotes fast time weighting, slow time weighting 'S' is also used.

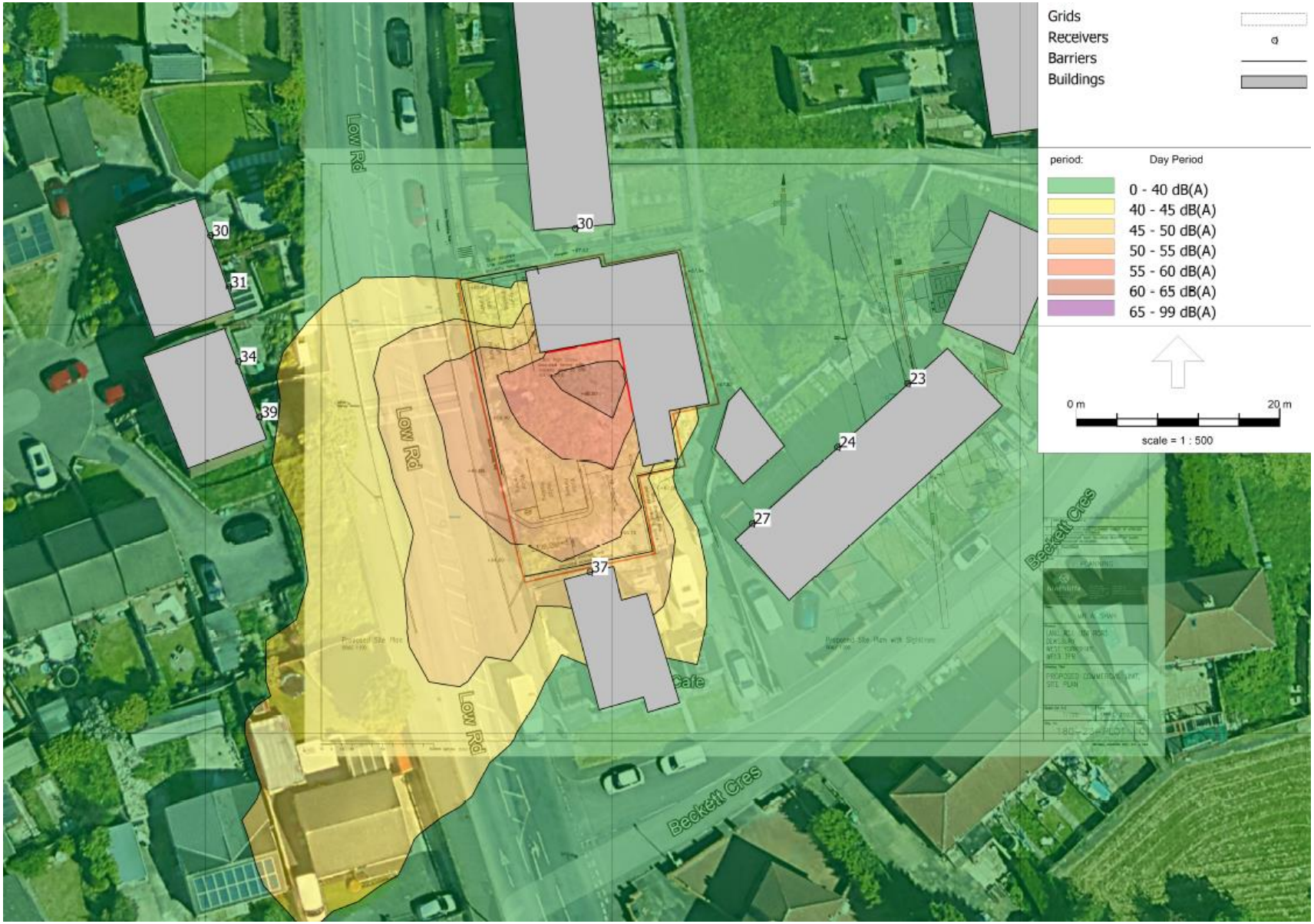
Single Event Level / Sound Exposure Level (SEL or L_{AE})
The energy produced by a discrete noise event averaged over one second, regardless of the event duration. This allows for comparison between different noise events which occur over different lengths of time.

Weighted Sound Reduction Index (R_W)
Single number quantity which characterises the airborne sound insulation properties of a material or building element over a defined range of frequencies (R_W is used to characterise the insulation of a material or product that has been measured in a laboratory).

Appendix 2 – Approximate Noise Measurement Positions and Noise Sensitive Receptors



Appendix 3 – Noise Contour Plot



Appendix 4 – Scheme Of Noise Mitigation

= 2.4 -metre-high close boarded timber fence