

**FIELDING STREET, MIDDLETON  
APPROVED RESIDENTIAL DEVELOPMENT**

**NOISE IMPACT ASSESSMENT**

**On behalf of:  
HJK Construction**

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## 1.0 INTRODUCTION

- 1.1 Hepworth Acoustics Ltd was commissioned by HJK Construction to carry out a noise impact assessment in connection with an outline approved residential development at land off Fielding Street in Middleton. Condition 2 of the outline approval (21/01628) states:

*'No above ground construction works shall take place until a Noise Impact Assessment is submitted to and approved in writing by the Local Planning Authority which appropriately assesses noise levels within habitable rooms and external amenity areas.'*

*No part of the development shall be occupied until such time as a report providing details of the implemented acoustic mitigation measures, and demonstrating that internal noise levels within habitable rooms meet the levels set out in the approved Noise Impact Assessment, has been submitted to and approved in writing by the Local Planning Authority.*

*The duly installed mitigation measures shall be retained thereafter'*

- 1.2 Therefore, the principle of residential development of the land is firmly established and all that Conditions 2 requires at reserved matters stage is a suitable noise mitigation scheme. The approved residential development will consist of 43 two-storey terraced and semi-detached dwellings. Vehicular access to the development will be via Fielding Street to the east and Radclyffe Street to the west. The site layout is shown in Figure 2.
- 1.3 The site is bounded to the north and east by Fielding Street, which leads to a dead end and thus is very lightly trafficked. To the west is Clough Road, a lightly trafficked road with dwellings to both sides. To the west are a number of light industrial/commercial units including a tyre fitters and MOT centre. All the units face away from the site, thus doors and other openings to the units on the opposite side of the buildings.
- 1.4 The noise assessment has included:
- An inspection of the site and surrounding area;
  - Measurement of noise levels for a period of 24 hours; and
  - Recommendation of appropriate mitigation measures.
- 1.5 The various noise units and indices referred to in this report are described in Appendix I. All noise levels mentioned in the text have been rounded to the nearest decibel, as fractions of decibels are imperceptible.

## 2.0 NOISE SURVEY

- 2.1 Noise measurements were carried out at a location on the site that is representative of the closest dwellings at the western boundary to potential noise sources. The measurement location was 5m from the boundary and is indicated in Figure 1.
- 2.2 Noise measurements were carried out for 24 hours between 09:30 on Tuesday 2<sup>nd</sup> May and 09:30 on Wednesday 3<sup>rd</sup> May 2023. However, ground clearance works are taking place on site until 16:30 each day, which were unable to be halted for the day. Therefore, our assessment of commercial noise was limited to the last hour of trading (16:30 - 17:30) of the nearby commercial units.
- 2.3 The noise measurements were carried out in consecutive 15-minute periods using a NTi Audio XL2 'Type 1' integrating sound level meter (s/n: A2A-20361-E0).
- 2.4 Acoustic calibration checks of the sound level meter was carried out before and after the noise measurements. No significant variation in the calibrated noise level was noted. The noise measurements were taken in 'free-field' conditions and at a microphone height of approximately 1.5m above the ground.
- 2.5 Weather conditions during the survey were mild and dry with 0-20% cloud cover and a light southerly breeze (1-2 m/s). The full results of the noise survey are shown in Appendix II and are summarised in Table 1:

**Table 1: Summary of measured noise levels (dB)**

| Location                      | Daytime L <sub>Aeq</sub> (16:30-17:30) | Night L <sub>Aeq</sub> (23:00-07:00) |
|-------------------------------|----------------------------------------|--------------------------------------|
| 5m from the southern boundary | 46-53                                  | 34-49                                |

- 2.6 The measured noise levels shown in Table 1 are low. The predominant noise in the area during the survey was distant traffic noise. There was some occasional very faint low-level noise from commercial premises, primarily from vehicles departing from the nearby industrial units.

### Noise Assessment

- 2.7 It was proposed to assess any significant commercial/industrial noise sources in accordance with the rating method described in BS 4142:2014 +A1:2019 '*Methods for rating and assessing industrial and commercial sound*'. However, it was found that the development site was not exposed to any significant commercial/industrial noise and any noise from commercial/industrial premises was

clearly below the noise of distant road traffic. Thus, a quantitative noise assessment is not possible. However, when considering the need for any noise mitigation, due consideration must also be given to the future proofing the dwellings from noise from commercial premises.

- 2.8 In cases such as this, it is appropriate to adopt a pragmatic approach and to implement a noise mitigation scheme that takes into account not only the measured levels of noise, but possible daily variations and changes in the future. This approach is in accordance with the aims of paragraph 187 of the *National Planning Policy Framework* (NPPF) which states:

*“Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or ‘agent of change’) should be required to provide suitable mitigation before the development has been completed.”*

- 2.9 Therefore, noise mitigation measures have been recommended for properties at the western boundary of the site to protect the amenity of the new residents in perpetuity and, in so doing, safeguard the business interests of nearby commercial premises. The recommended noise mitigation measures are described in Section 4.

### 3.0 RECOMMENDED NOISE MITIGATION MEASURES

#### Planning Guidance

- 3.1 The National Planning Policy Framework (NPPF) 2021 provides some general guidance to local authorities on taking noise in to account in planning policies and decisions. This includes guidance that local authorities should *'aim to avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development'* and that *'existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses'*.
- 3.2 No specific guidance is given in the NPPF on acoustic criteria for proposed residential developments, therefore, the guidance discussed below has been used for acoustic design purposes.
- 3.3 Guidance on acceptable noise levels in habitable rooms and private gardens is set out in British Standard 8233: 2014, *'Guidance on sound insulation and noise reduction for buildings'*.
- 3.4 The criteria are summarised in Table 2 below.

**Table 2: BS8233 recommended Acoustic Design Criteria**

| Activity                   | Location         | Daytime (07:00 – 23:00) | Night-time (23:00 – 07:00) |
|----------------------------|------------------|-------------------------|----------------------------|
| Resting                    | Living room      | 35 dB $L_{Aeq,16hr}$    |                            |
| Dining                     | Dining room/area | 40 dB $L_{Aeq,16hr}$    |                            |
| Resting                    | Garden           | 55 dB $L_{Aeq,16hr}$    |                            |
| Sleeping (daytime resting) | Bedroom          | 35 dB $L_{Aeq,16hr}$    | 30 dB $L_{Aeq,8hr}$        |

- 3.5 BS 8233 also recognises that regular individual noise events at night can cause sleep disturbance. Peaks of noise from individual events are usually described in terms of  $L_{Amax}$  values and these can be highly variable and unpredictable such that for design purposes it is usual to take into account the findings of research described in WHO Community Noise Guidelines that states *"for a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45 dB  $L_{Amax}$  more than 10-15 times per night"*.
- 3.6 For this development we therefore recommend the following noise criteria be adopted with windows closed and trickle ventilation provided:

- Daytime noise below 35 dB  $L_{Aeq}$  inside living rooms and bedrooms, below 40 dB  $L_{Aeq}$  in dining rooms and below 55 dB  $L_{Aeq}$  in gardens; and
- Night-time noise levels not exceeding 30 dB  $L_{Aeq}$  and generally not exceeding 45 dB  $L_{Amax}$  in bedrooms.

### Gardens

- 3.7 The housing layout shows that the majority of the gardens of houses on the development site will be well shielded from all noise sources, either by the houses themselves or by existing dwellings. Nevertheless we recommend that acoustic barrier of 1.8m minimum height is installed for the gardens of the seven plots shown in Figure 2.
- 3.8 The acoustic barrier can take the form of a solid brick wall or fencing. However, the acoustic fencing must be at least 20mm thick with no holes or gaps. Suppliers of proprietary acoustic fences include Jacksons Fencing ([jacksons-fencing.co.uk](http://jacksons-fencing.co.uk)), Guardian Fencing ([guardianfencing.com](http://guardianfencing.com)) and Ransfords ([ransfords.co.uk](http://ransfords.co.uk)).

### Sound Insulation of Dwellings

- 3.9 For exposed elevations of dwellings as indicated in blue on Figure 2 we recommend that windows of habitable rooms are fitted with double glazing that has a sound reduction performance of at least 30  $R_w + C_{tr}$ . Typically this would be achieved with double glazing specifications of:
- 6.4mm Solaglas 'Stadip Silence' laminated glass - nominal (8-20mm) cavity - 4mm glass;
- or
- 8mm glass - nominal (8-20mm) cavity - 4mm glass.
- 3.10 Due care and attention must be taken to ensure that all glazing is well-fitted and well-sealed.

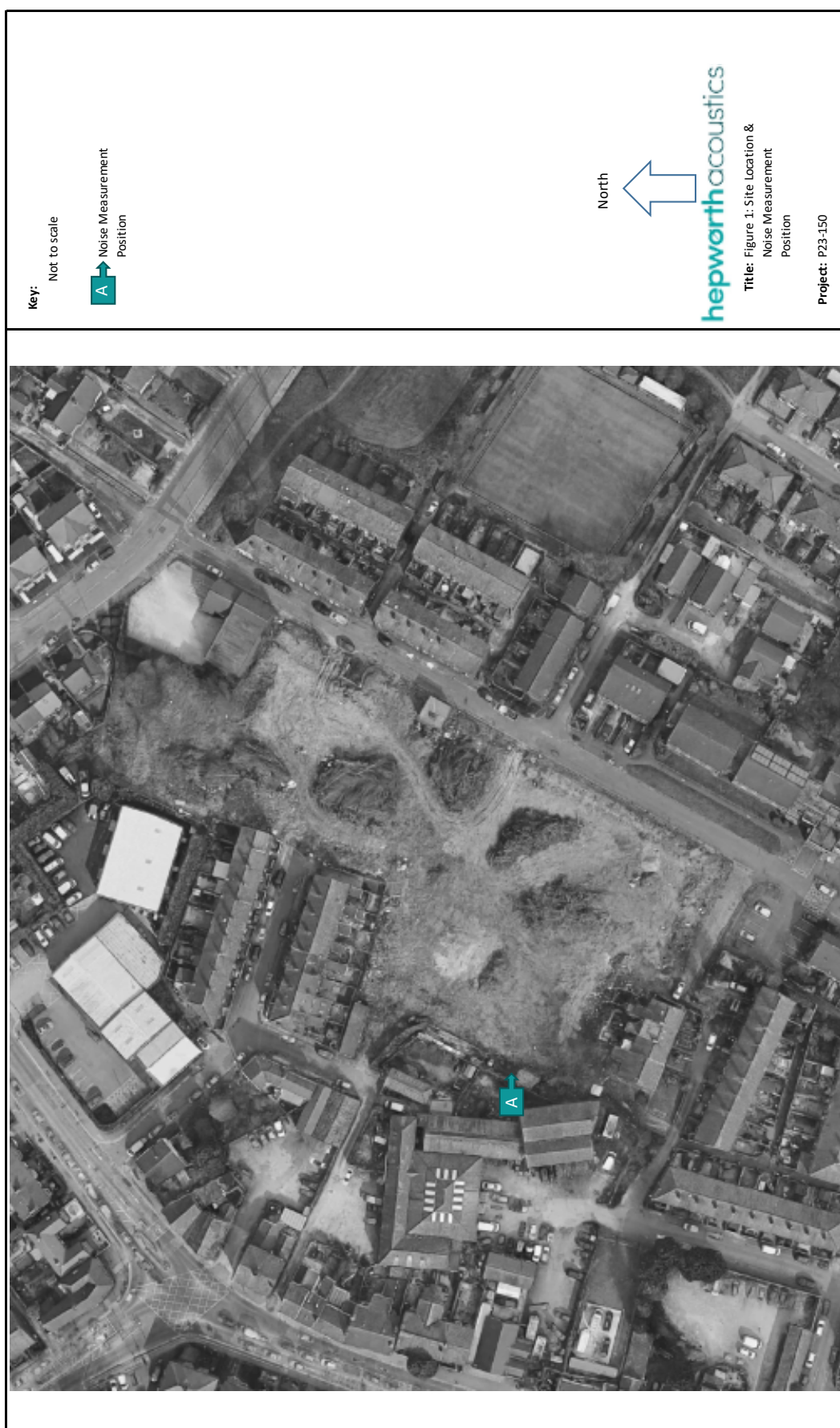
### Ventilation

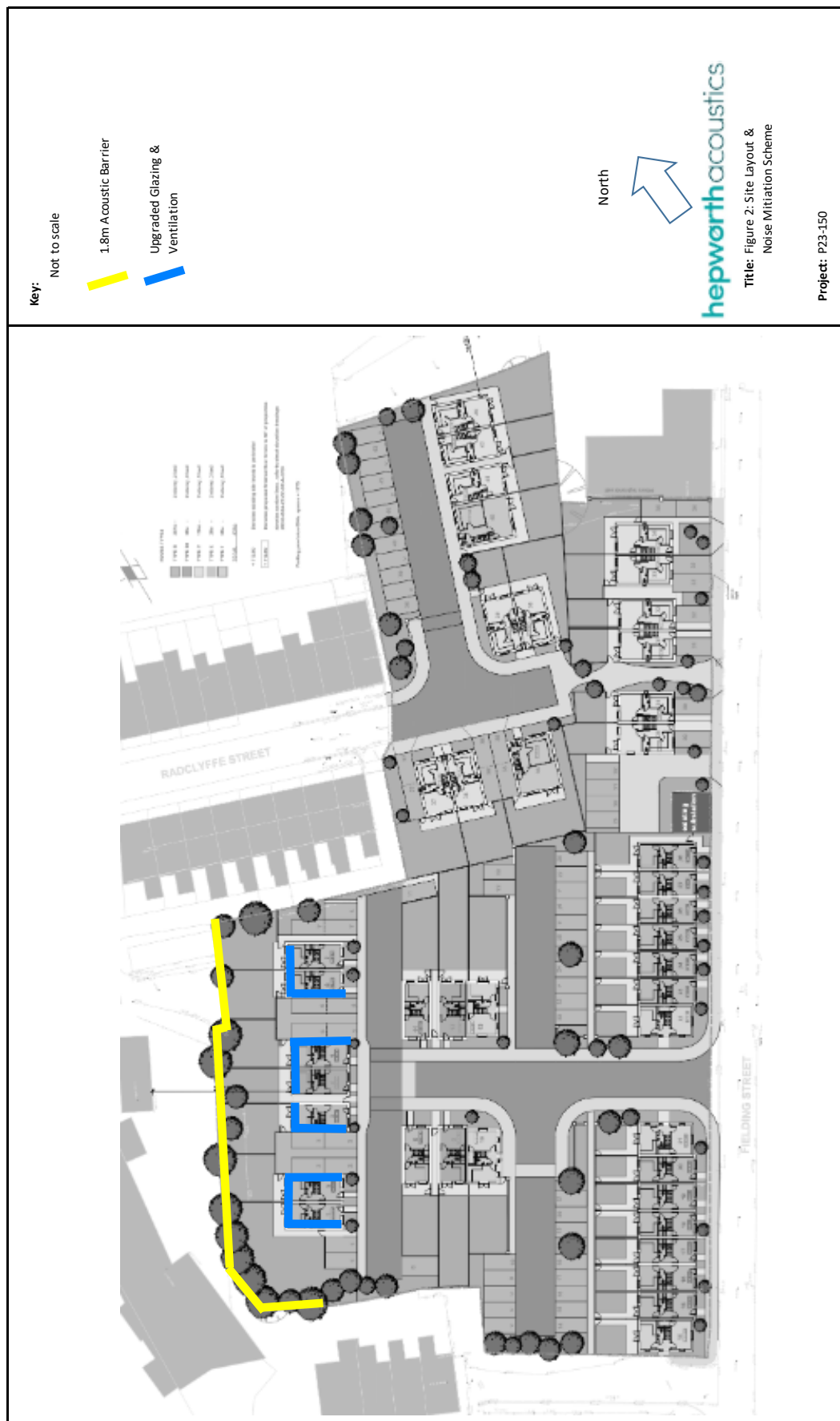
- 3.11 We recommend that standard window frame slot vents are not installed in the habitable rooms that require upgraded glazing as indicated in Figure 2. Instead, we recommend the installation of the following:
- Greenwood EHA574 Airvac Trickle Ventilator (Acoustic Humidity Control); or

- Aereco EHA Acoustic Trickle Ventilator with acoustic canopy and sleeve.
- Or similar with acoustic performance rating of over 42 dB  $D_{n,e,w}$

## **4.0 SUMMARY**

- 4.1 The impact of noise commercial/industrial premises have been assessed for the outline approved residential development at land of Fielding Street in Middleton
- 4.2 The assessment has included the measurement of ambient noise levels for a 24 hour period. There was no significant noise measured from any of the nearby commercial or industrial premises.
- 4.3 However, we have recommended that an appropriate scheme of noise mitigation is implemented for 'future proofing' purposes in order to comply with para.187 of the NPPF.





## Appendix I: Noise Units & Indices

### Sound and the decibel

A sound wave is a small fluctuation of atmospheric pressure. The human ear responds to these variations in pressure, producing the sensation of hearing. The ear can detect a very wide range of pressure variations. In order to cope with this wide range of pressure variations, a logarithmic scale is used to convert the values into manageable numbers. Although it might seem unusual to use a logarithmic scale to measure a physical phenomenon, it has been found that human hearing also responds to sound in an approximately logarithmic fashion. The dB (decibel) is the logarithmic unit used to describe sound (or noise) levels. The usual range of sound pressure levels is from 0 dB (threshold of hearing) to 120dB (threshold of pain).

Due to the logarithmic nature of decibels, when two noises of the same level are combined together, the total noise level is (under normal circumstances) 3 dB(A) higher than each of the individual noise levels e.g. 60 dB(A) plus 60 dB(A) = 63 dB(A). In terms of perceived 'loudness', a 3 dB(A) variation in noise level is a relatively small (but nevertheless just noticeable) change. An increase in noise level of 10 dB(A) generally corresponds to a doubling of perceived loudness. Likewise, a reduction in noise level of 10 dB(A) generally corresponds to a halving of perceived loudness.

The ear is not equally sensitive to sound at all frequencies. It is less sensitive to sound at low and very high frequencies, compared with the frequencies in between. Therefore, when measuring a sound made up of different frequencies, it is often useful to 'weight' each frequency appropriately, so that the measurement correlates better with what a person would actually hear. This is usually achieved by using an electronic filter called the 'A' weighting, which is built into sound level meters. Noise levels measured using the 'A' weighting are denoted dB(A) or dBA.

### Frequency and Hertz (Hz)

As well as the loudness of a sound, the frequency content of a sound is also very important. Frequency is a measure of the rate of fluctuation of a sound wave. The unit used is cycles per second, or hertz (Hz). Sometimes large frequency values are written as kiloHertz (kHz), where 1 kHz = 1000 Hz.

Young people with normal hearing can hear frequencies in the range 20 Hz to 20 kHz. However, the upper frequency limit gradually reduces as a person gets older.

## Glossary of Terms

When a noise level is constant and does not fluctuate, it can be described adequately by measuring the dB(A) level. However, when the noise level varies with time, the measured dB(A) level will vary as well. In this case it is therefore not possible to represent the noise climate with a simple dB(A) value. In order to describe noise where the level is continuously varying, a number of other indices can be used. The indices used in this report are described below.

- $C_{tr}$  This is an A-weighted urban traffic noise spectrum, which can be added to  $D_{nT,w}$  or  $R_w$  in some standards to take into account different source spectra such as low frequency sound.
- $R_w$  This is the 'Weighted Sound Reduction Index', and is a single figure quantity of  $R$ , the laboratory measured Sound Reduction Index.
- $L_{Aeq,T}$  This is the A-weighted 'equivalent continuous noise level' which is an average of the total sound energy measured over a specified time period. In other words,  $L_{Aeq,T}$  is the level of a continuous noise which has the same total (A-weighted) energy as the real fluctuating noise, measured over the same time period. It is increasingly being used as the preferred parameter for all forms of environmental noise.
- $L_{AFmax}$  This is the maximum A-weighted noise level that was recorded during the measurement period in terms of 'Fast' time weighting.
- $L_{A90,T}$  This is the A-weighted noise level exceeded for 90% of the time period.  $L_{A90,T}$  is used as a measure of background noise.

**Appendix II: Noise Survey Results**

|                  |                                                                                                                              |
|------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>Date(s):</b>  | Tuesday 2 <sup>nd</sup> May - Wednesday 3 <sup>rd</sup> May 2023                                                             |
| <b>Equipment</b> | NTi XL2 'Class 1' sound level meters (s/n: A2A-20361-E0) with associated calibrator and environmental outdoor monitoring kit |
| <b>Weather</b>   | Daytime – Dry, mild (12-15°C), generally clear skies, light southerly breeze (1-2m/s)                                        |

All levels in dB(A)

**Location 1:**