

**REPURPOSE & EXTENSION OF FORMER BANK TO CREATE NEW TRAINING FACILITY
WITH ASSOCIATED EARTHWORKS, LANDSCAPING, BOUNDARY TREATMENT & PARKING**

NOISE IMPACT ASSESSMENT

On behalf of:

Manchester City Football Club Limited

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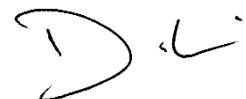
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1.0 INTRODUCTION

- 1.1 Hepworth Acoustics Ltd was commissioned by Manchester City Football Club Limited to carry out a noise impact assessment in connection with new external plant and equipment to be installed as part of proposals for repurpose and extension of a former bank at 550 Ashton New Road, Manchester to create a new training facility with associated earthworks, landscaping, boundary treatment and parking. The noise assessment was requested in connection with a planning application for the development.
- 1.2 The proposed training facility will be located at the site of the former HSBC bank and associated car park at the north-eastern corner of the Etihad Campus, as shown in **Figure 1**. The site is bounded by Ashton New Road to the north, the Ashton Canal to the east, the MCFC North Car Park to the west and existing training pitches to the south. The proposed car parking will essentially be a reallocation of a portion of the existing Etihad Campus car park to the west.
- 1.3 The nearest dwellings are flats above ground floor shops/takeaways to the north-east on Ashton New Road as shown in **Figure 1**.
- 1.4 It is proposed to repurpose and extend the existing former bank building at the site to form a new training facility that will include catering facilities. The precise details of the proposed plant and equipment have yet to be finalised, but we understand that it is likely to include heating/cooling equipment as well as general and kitchen ventilation plant.
- 1.5 This assessment has therefore included the following:
- An inspection of the proposed site and environs;
 - A survey of the prevailing environmental noise levels of the area;
 - Recommending appropriate design noise limits for the new fixed plant/equipment based upon the requirements of BS 4142: 2014+A1:2019 and Manchester City Council's usual noise control criteria; and
 - Providing outline advice on potential noise mitigation measures.

- 1.6 All recommendations in this report are given for acoustics reasons only. Compliance with other requirements (e.g. fire, structural, thermal, etc.) must be checked by others.
- 1.7 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 GUIDANCE

NPPF:2023

- 2.1 Paragraph 185 of the National Planning Policy Framework (NPPF) 2023 states that planning policies and decisions should *“ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development;”*.

NPSE:2010

- 2.2 The Noise Policy Statement for England (NPSE) 2010, which is referred to the in NPPF, includes three aims:
- i. Avoid significant adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.
 - ii. Mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.
 - iii. Where possible, contribute to the improvement of health and quality of life through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.

BS 4142:2014+A1:2019

- 2.3 British Standard 4142:2014+A1:2019, *Methods for rating and assessing industrial and commercial sound* (referred to hereafter as BS 4142), is the appropriate guidance for assessing and controlling the potential noise impact at residential locations from noise sources such as new mechanical services plant installations.

- 2.4 BS 4142 requires a 'rating' level ($L_{Ar,Tr}$) to be calculated from the operation of the noise source and compared with the background sound level ($L_{A90,T}$) which is measured in the absence of the noise source, evaluated over a 1-hour period for daytime operations and a 15-minute period for night-time operations.
- 2.5 In respect of the representative background sound level, BS 4142 states that 'the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods'.
- 2.6 The rating level ($L_{Ar,Tr}$) is based on the 'specific' sound level ($L_s = L_{Aeq,Tr}$) attributed to the operating noise source, with 'character corrections' added for sound sources where 'certain acoustic features can increase the significance of impact' at the residential locations.
- 2.7 The character correction applied to the specific sound level in order to obtain the rating level can take into account tonality, intermittency, impulsivity and characteristics otherwise distinctive against the prevailing noise climate in the area of the residential properties.
- 2.8 An initial estimate of the potential noise impact from the operating noise source is determined by comparing the difference between the background sound level and the rating level.
- 2.9 Regarding the outcome of the initial estimate, BS 4142 states that:
- Typically, the greater this difference, the greater the magnitude of the impact
 - A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context
 - A difference of around +5dB 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 level, the less likely it is that the operation 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.

2.10 Where the initial estimate of the impact needs to be modified due to the context, BS 4142: 2014 states that all pertinent factors should be taken into account regarding the context in which the noise occurs, including but not limited to:

- The absolute level of sound.
- The character and level of the residual sound compared to the character of the specific sound; and,
- The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will incorporate design measures that ensure good internal and/or outdoor acoustic conditions such as acoustic screening.

Local Authority Requirements

2.11 Manchester City Council have well-established noise design criteria that are relevant to this development as follows:

‘Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location.’

3.0 BASELINE NOISE SURVEY

- 3.1 A baseline noise survey was carried out over a 24-hour period during the week in order to establish the existing background noise climate of the area.
- 3.2 The noise survey took place between approximately 11:30 on Thursday 28 September 2023 until 12:00 on Friday 29 September 2023 using a NTi Audio XL2 'Class 1' sound level meter (serial no. A2A-20228-E0) with environmental case and microphone environmental windshield. The calibration level of the meter was checked before and after the survey with no calibration deviation observed.
- 3.3 The noise measurements were taken as a series of consecutive 15-minute periods at a location towards the centre of the site so as to be broadly the same distance back from the Ashton New Road (which is the main noise source in the area) as the nearest dwellings. The sound level meter microphone was mounted on a tripod at approximately 1.4m above local ground level. The measurement location is shown in **Figure 1**.
- 3.4 The weather conditions throughout the noise survey were mild (approx. 14°C in the daytime), predominantly dry and with low wind speeds. There were some short periods of light rain in the early evening, however the results of the noise survey indicate that this did not affect the results of the noise survey.
- 3.5 As noted above, the prevailing noise climate at the measurement location was found to be dictated by noise from road traffic on Ashton New Road. Full results of the noise survey are shown in **Appendix II**, with representative sound levels summarised below in **Table 1**.

Table 1: Summary of Noise Levels Measured (dB)

Description	Summary of Measured noise levels			Adopted representative background sound level $L_{A90,15min}$
	Range of $L_{Aeq,T}$	Mean $L_{A90,15min}$	Mode $L_{A90,15min}$	
Daytime period (07:00 – 23:00)	60 - 66	56	56	56
Evening period (19:00 – 23:00)	59 - 61	53	51	51
Night Period (23:00 – 07:00)	52 - 62	46	43	43

4.0 ASSESSMENT & RECOMMENDATIONS

- 4.1 As noted above, there are no confirmed details of the proposed external plant and equipment at this stage. As such, we have derived appropriate noise design limits from the adopted representative background sound levels which will need to be taken into account in the selection, specification and installation of the equipment.
- 4.2 Taking into account the usual Manchester City Council design criteria for new plant/equipment, the appropriate cumulative fixed plant/equipment rating sound level limits (i.e. rated according to BS 4142) are shown in **Table 2** which presents three different noise limits that are applicable depending upon operating times of the various items of equipment.

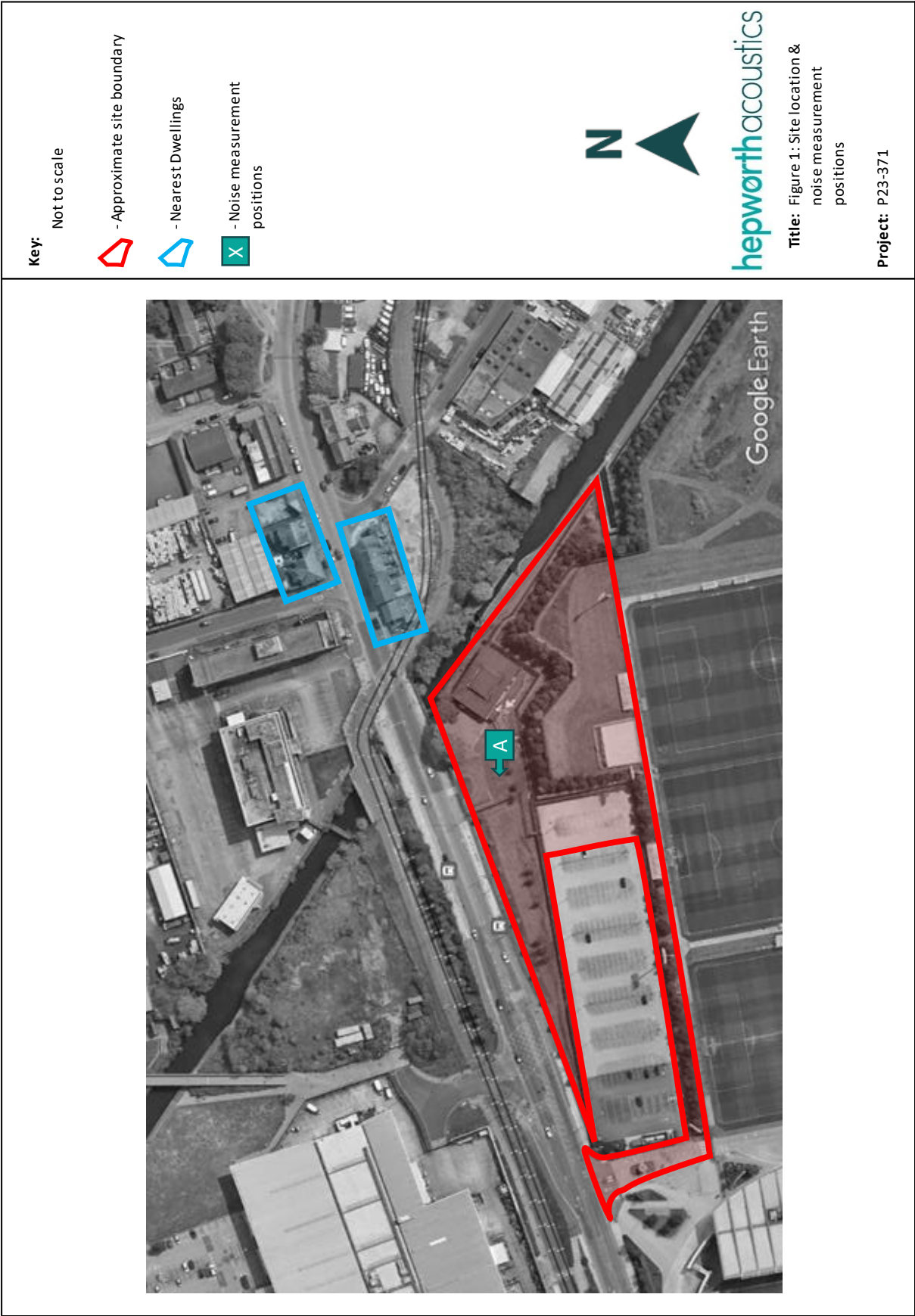
Table 2: Cumulative Buildings Services Plant Rating Level Design Limits (dB $L_{A,T,r}$)

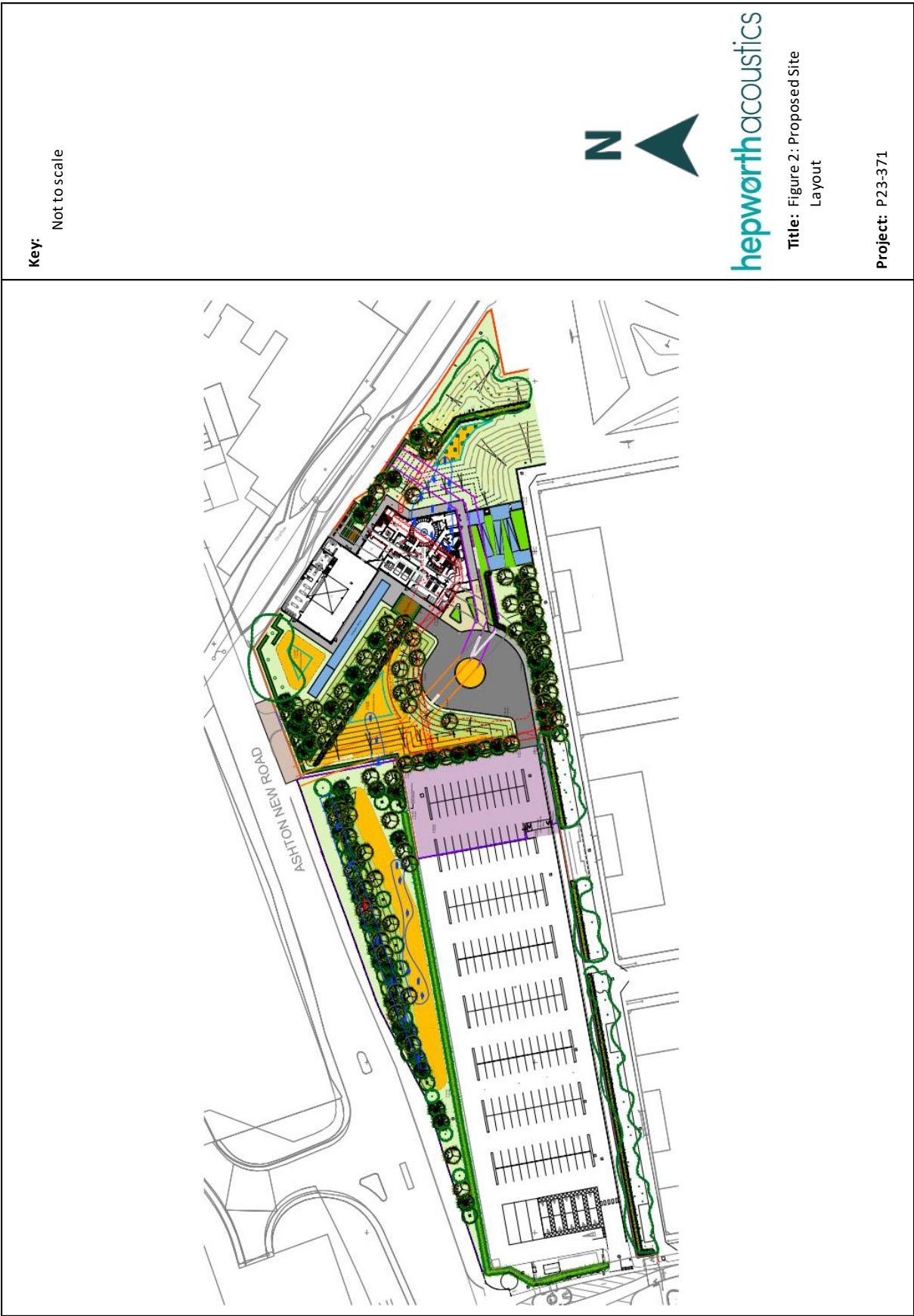
Location	Day (07:00 -19:00)	Evening (19:00 -23:00)	Night (23:00 -07:00)
At nearest dwellings to the north-east	51	46	38

- 4.5 Whilst it should be fairly straight-forward to achieve these limits, depending on the nature and extent of the plant and equipment and the installation location, it may be necessary to specify low noise units and potentially install proprietary acoustic screening and/or enclosures.

5.0 SUMMARY

- 5.1 Hepworth Acoustics Ltd was commissioned by City Football Group to carry out a noise impact assessment in connection with a proposed planning application for the repurpose and extension of a former bank at 550 Ashton New Road, Manchester to create a new training facility with associated earthworks, landscaping, boundary treatment and parking. Specifically, the assessment was requested to consider the potential impact of new external plant and equipment to be installed.
- 5.2 The assessment has included a site visit and inspection of the development land and the surrounding area; and a noise survey over a 24-hour period in order to quantify the representative background noise climate of the area.
- 5.3 The results of the noise survey have been used as a basis for recommending appropriate noise limits for the equipment, the details of which are yet to be finalised.
- 5.4 Whilst the noise limits should be fairly straight-forward to achieve, depending on the extent and precise location of the plant and equipment to be installed, it may be necessary to specify low noise units and potentially install proprietary acoustic screening and/or enclosures.





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.

$L_{Aeq,T}$ 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.

$L_{A90,T}$ 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

Date(s):	Thursday 28 – Friday 29 September 2023
Equipment	NTi XL2 'Class 1' sound level meter (s/n: A2A-20228-E0) with associated calibrator, environmental outdoor monitoring kit and tripod
Weather	Daytime – Dry, ~14°C, overcast skies and calm <3 m/s

Please see chart overleaf.

