



Noise Impact Assessment for Environmental Permit

Newthorpe Quarry, Newthorpe

Reference: 50-999-R1-1

Date: November 2023



NOISE IMPACT ASSESSMENT FOR ENVIRONMENTAL PERMIT

Newthorpe Quarry
Newthorpe, North Yorkshire

Prepared for:

Newthorpe Aggregates Limited

Report Ref: 50-999-R1-1

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EXECUTIVE SUMMARY

BACKGROUND

Site Address	Newthorpe Quarry, Newthorpe, North Yorkshire LS25 5LE
National Grid Reference	E 445857 N 432188
Proposed Development	Application to Environment Agency for a bespoke Environmental Permit for the use of Waste in a Deposit for Recovery Operation.
Report Objectives	<p>The objectives of this report are to:</p> <ul style="list-style-type: none">Identify, measure, and assess the potential impact of any proposed sound sources associated with the development upon existing receptors in the immediate vicinity of the Site. <p>The report follows current and relevant British Standards to provide a robust assessment.</p>

ASSESSMENT

Surveys Completed	E3P have undertaken a full weekday and weekend background and ambient sound survey in a position considered representative of the closest noise sensitive receptors to the north and north east.
Assessments	<p>Detailed hand calculations have been undertaken for noise from the proposed operations including delivery and movement of material within each phase of restoration. The calculations have been used to predict the Rating Level at the receptors which has been compared with the typical background sound level, accounting for any acoustic characteristics associated with the sound in accordance with BS 4142:2014+A1:2019.</p> <p>The assessment found that the rating level from the proposed operations would achieve or fall below the existing background sound level at all receptors. This is considered a low impact.</p>
Mitigation Requirements	The assessment determined a low impact and, with consideration to context, overall, no adverse impact is predicted at the receptors. As such, no mitigation measures are required.

CONCLUSIONS

This assessment has shown that no adverse impact is predicted at the receptors due to the proposed development.



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1. INTRODUCTION

1.1. BACKGROUND

E3P has been commissioned by Newthorpe Aggregates Limited to provide a Noise Impact Assessment to support the bespoke Environmental Permit Application for the use of Waste in a Deposit for Recovery Operation at Newthorpe Quarry in North Yorkshire.

To achieve the approved contours and facilitate restoration, materials must therefore be imported to The Site. This will involve the delivery of material via Heavy Goods Vehicles (HGVs) and the movement of this material to facilitate the contouring of the site. The depth of waste would vary across the Site in order to assimilate into the existing landform. The total quantity of waste required is understood to be approximately 2 million tonnes and completed over a 9-year period at a rate of approximately 220,000 tonnes per annum. The final topography would assimilate the Site into the surrounding landscape and facilitate restoration.

E3P have been provided with the following drawings which will inform the assessment:

-  Restoration Scheme (10132B/04F).
-  Infill & Recycling Infill Phase 1 (10132D/03/1C Rev C).
-  Infill & Recycling Infill Phase 2 (10132D/03/2B Rev B).
-  Infill & Recycling Infill Phase 3 (10132D/03/3B Rev B).

It is assumed that the proposed operational hours of 07:00-18:00 Monday to Friday and 08:00-13:00 on Saturdays would be followed.

1.2. LIMITATIONS

Where a noise or vibration survey is required to inform an assessment, E3P will endeavour to ensure that all noise and vibration measurements taken are robust, representative, and reliable to inform an accurate assessment at the time.

E3P will endeavour to capture all existing and proposed sources of sound and vibration at the time of the surveys and/or assessments. However, should new sources of sound be introduced, existing sources modified/changed, or characteristics of the sound be altered following completion of such, E3P cannot be held accountable for this.

Where mitigation measures are specified in this report, it should be noted that these measures are relative to a specific sound or vibration source, both in terms of the measured sound pressure and vibration level and the character of the sound source. Where either the sound pressure level or the character of the sound varies following completion of the sound survey, E3P cannot be held responsible for any subsequent variations in the proposed mitigation performance, for either absolute levels or frequency content.



2. GUIDANCE

2.1. ENVIRONMENT AGENCY (2022) NOISE AND VIBRATION MANAGEMENT: ENVIRONMENTAL PERMITS

Environmental permits have conditions that require operators to control pollution – this includes controlling noise and vibration. E3P note that the following are required competencies and standards required in relation to Noise Assessments submitted as part of an Environmental Permit Application:

Noise impact assessments should be carried out to an appropriate standard and by competent personnel, for example, holders of either an Institute of Acoustics:

- *Diploma in Acoustics and Noise Control*
- *Certificate of Competence in Environmental Noise Measurement, with relevant experience*

Monitoring noise in the environment is a specialist field. Monitoring should be carried out by a qualified acoustician who can demonstrate competency in environmental work rather than, for example, occupational health and safety work.

You must use 'BS 4142: Methods for rating and assessing industrial and commercial sound' to quantify the level of environmental noise impact from industrial processes. In rare circumstances, other methods may also be appropriate, for example, NANR45 for assessing existing low frequency sound inside a residential property.

If you want to assess impact using another method, you should discuss and agree this with your regulator before you start the assessment.

Where vibration is an issue, you should contact your regulator for specific advice.

E3P note from the above and the guidance that the EA require a BS 4142 assessment to be conducted.

2.2. BS 4142: 2014+A1:2019 'METHODS FOR RATING AND ASSESSING INDUSTRIAL AND COMMERCIAL SOUND'

This standard describes methods for rating and assessing sound of an industrial or commercial nature which includes:

- 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 processes or premises, such as that from forklift trucks, or that from train or ship movements on or around an industrial or commercial Site.






The procedure detailed in the standard compares the measured or predicted specific noise level from any of the above with the background sound level at a residential dwelling. The measured background sound level at a receptor should be reliable and should not necessarily ascertain a lowest measured background sound level, but to quantify what is typical.




The specific noise level also acknowledges the reference time intervals depending upon whether the noise source operates during daytime (1-hour) or night-time (15-minute) periods.

There are several 'penalties' which can be attributed to the specific sound level depending upon the 'acoustic features' of the sound level under investigation as follows:


Tonality

-  +2 dB: where the tonality is just perceptible.
-  +4 dB: where the tonality is clearly perceptible; and
-  +6 dB: where the tonality is highly perceptible.

Impulsivity

-  +3 dB: where the impulsivity is just perceptible.
-  +6 dB: where the impulsivity is clearly perceptible; and
-  +9 dB: where the impulsivity is highly perceptible.

Intermittency

-  +3 dB: where the intermittency is readily distinctive against the acoustic environment.

In addition to the above, there is a penalty for 'other sound characteristics' of +3 dB where a sound exhibits characteristics that are neither tonal nor impulsive, though are readily distinctive against the acoustic environment. BS 4142 goes on to state that the rating level is equal to the specific sound level if there are no such features present or expected to be present.

Assessment of the rating level relative to the background sound level can yield the following commentary:



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- ✿ Typically, the greater this difference (between the rating level and the background sound level), 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; and
- ✿ 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. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact.

It is common that a Local Planning Authority (LPA) will specify their own criterion and, where this is the case, this criterion will usually take precedence over a simple comparison of the rating level against the background sound level.



3. DESCRIPTION OF WORKS AND SOURCES OF NOISE

It is understood that material would be delivered directly to each restoration phase, tip and the material then placed/compacted by a tracked blade (bulldozer).

E3P have been provided with Infill & Recycling Cross-sections which details Sections of finished heights at restoration. This has been used to inform worst-case assessments assuming plant are at the highest, and closest, point to the receptors during each phase.

The full restoration scheme and quarry operations will run for approximately 9 years from the date planning is granted. This is not expected to be continuous because unfavourable weather (and hence material handling conditions) would necessitate starting and stopping.

There are three main sources of noise associated with the restoration works and the following sound power levels and sound pressure levels are used, as per similar operations and applications:

- 🔊 Bulldozer – 110 L_{WA}.
- 🔊 Excavator – 102 L_{WA}.
- 🔊 Dump Truck – 102 L_{WA}.
- 🔊 Haul Route with above movements – 67.6 dB at 1 m. Calculated using BS 5228 haul route calculation method.



4. NOISE SURVEY RESULTS

Figure 1 details the Noise Measurement Positions with the layout plan overlaid on Google Maps.

4.1. UNATTENDED BACKGROUND AND AMBIENT SOUND SURVEY

E3P has conducted a full weekday and weekend ambient and background Sound Survey in order to quantify the existing levels of background and ambient sound at a position considered representative of the closest residential receptors to the immediate north and north east.

The survey was carried out over the following period:

- 📍 11:00 Friday 24th November to 11:00 Tuesday 28th November 2023.

The following noise measurement position was chosen for the Background Sound Survey:

- 📍 Noise Measurement Position 1 (NMP1): Located to the north of the site on the edge of the wooded area immediately adjacent to the railway line. The microphone was located 2 m above ground level in free-field conditions. This location was approximately 170 m to the south of Brookfield House. Sound sources included rail pass-bys, distant traffic, birdsong and existing on-site activity.

Figure 1 below shows the location of NMP1.



FIGURE 1 NOISE MEASUREMENT POSITION NMP1

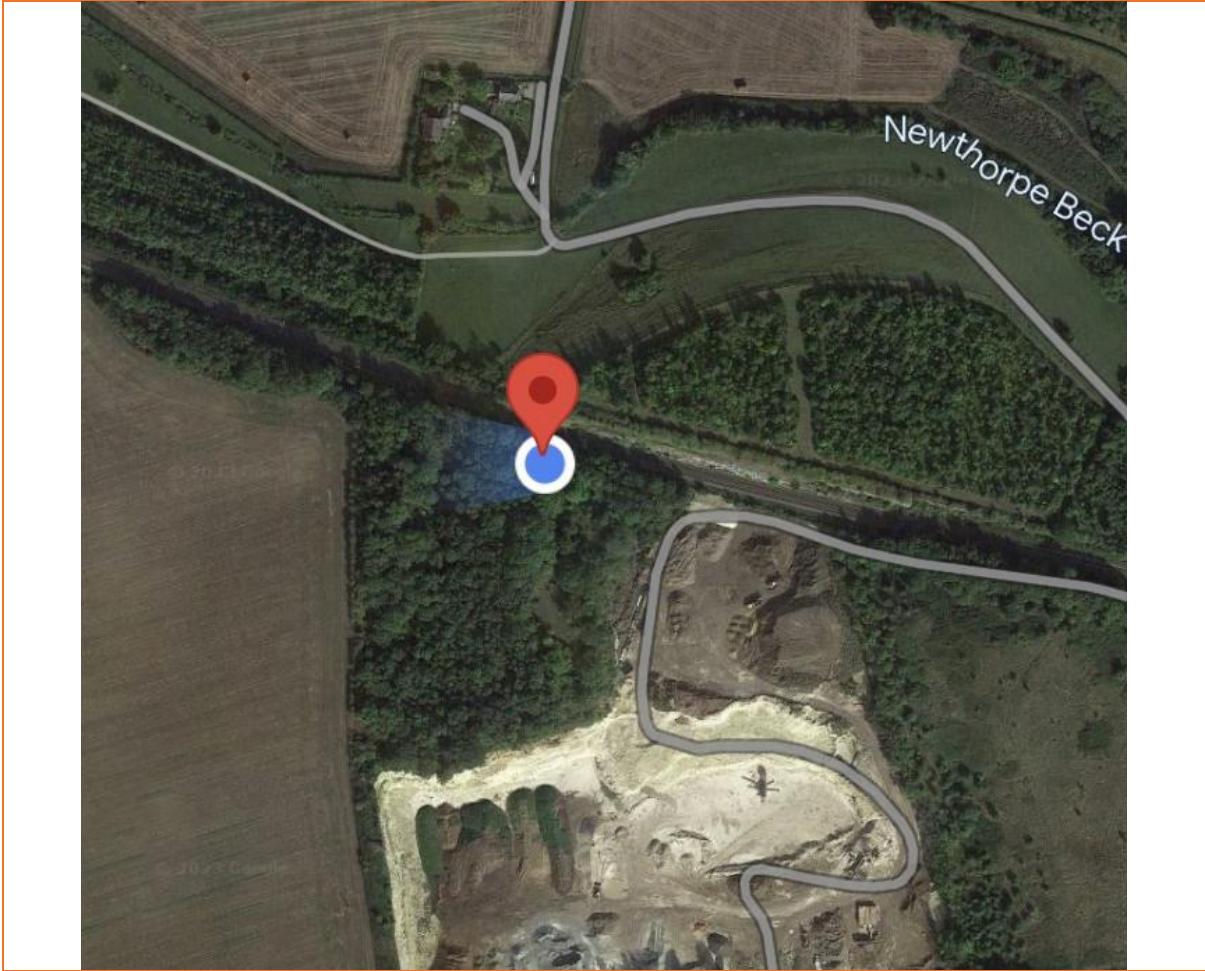


Table 4.1 details the range of measured background and ambient sound levels. The daytime levels correspond to the $L_{A90,1hr}$. The proposed operations will only take place between daytime hours and assumed to be between 07:00 to 18:00 weekdays and 08:00 to 13:00 Saturdays. As such, the median measured background sound levels for the daytime correspond to these periods. Sundays and night-time periods are not included.



TABLE 4.1 RANGE OF MEASURED BACKGROUND AND AMBIENT SOUND PRESSURE LEVELS

DATE	ASSESSMENT PERIOD	RANGE OF MEASURED BACKGROUND SOUND LEVELS, L _{A90,T} (dB)	MEDIAN MEASURED BACKGROUND SOUND LEVEL, L _{A90,T} (dB)
Friday 24th November 2023	Day (11:00 – 18:00)	47.7-51.2	49
Saturday 25th November 2023	Day (07:00 – 13:00)	44.0-47.9	45
Sunday 26th November 2023	-	-	-
Monday 27th November 2023	Day (07:00 – 18:00)	45.7-49.3	48

The full hourly data set can be found in Appendix II of this report.

TABLE 4.2 NOISE MEASUREMENT EQUIPMENT AND CALIBRATION DATES

MEASUREMENT POSITION	EQUIPMENT DESCRIPTION	MANUFACTURER & TYPE NUMBER	SERIAL NUMBER	LAST CALIBRATION DATE
NMP1	Sound Level Meter	01dB Fusion	14226	1st December 2021
	Pre-amplifier	01dB Pre22	2135072	
	Microphone	GRAS 40CD	470570	
	Calibrator	Cirrus CR515	99204	8th August 2023

The sound level meter was field calibrated on site using the above-mentioned calibrator prior to and after noise measurements were taken. No significant drift was witnessed as noted above. Calibration certificates are available upon request.



5. BS 4142 ASSESSMENT

This section considers the likely rating levels from the operations in accordance with BS 4142 and advice given in the Noise and Vibration Management guidance from the EA.

For the purposes of the assessments, E3P has undertaken detailed hand calculations for noise from the restoration operations to determine resultant noise at existing receptors.

The following assumptions have been made:

- ✦ Ground elevations around the site have been taken as existing with the assumption of no ground variation between source and receiver.
- ✦ The operation of the bulldozer is assumed to take place continuously for any given 1 hour period during daytime periods. Other plant items have a lower on-time and, as such, the bulldozer will be assessed singularly.
- ✦ It is assumed that intervening ground is 90% soft ground.
- ✦ The source heights of the equipment are taken from BS 5228-1:2009+A1:2014 and based on them being at the top of the proposed restoration height.

For the BS 4142:2014+A1:2019 assessment, penalties are applied to the specific sound level to provide the rating level. These penalties relate to the acoustic features of the sound source. Given that operations and plant on site are already operational and similar in nature to those proposed, no acoustic penalties are applied.

5.1. BS 4142 DAYTIME NOISE IMPACT ASSESSMENT

Table 5.1 details the BS 4142 assessment for each respective receptors. As receptors are at differing distances and angles from the operations, multiple receptor locations are used to ensure that where any barriers are required are bespoke for that boundary. The following operational times are assumed:

- ✦ Monday to Friday 07:00-18:00.
- ✦ Saturdays 08:00-13:00.
- ✦ No operations on Sunday.

As noted in Table 4.1, the lowest median background sound level between the above periods is noted to be 45 dB, as measured on Saturday 25th November 2023. As such, this is used as a worst-case period.



TABLE 5.1 BS 4142 ASSESSMENT

CALCULATION STEP	BROOKFIELD HOUSE	HALL LANE	SQUIRES CAFÉ BAR
COMBINED PLANT, L_{WA}	110	110	110
DISTANCE TO RECEPTOR (m)	310	560	800
ADJUST FOR DISTANCE (dB)	-57.8	-63.0	-66.1
ADJUST FOR GROUND CORRECTION (CRTN METHOD) (dB)	-7.7	-9.0	-9.8
ADJUST FOR BARRIER ATT (dB)	0	0	0
ESTIMATED $L_{Aeq,T}$ FREE-FIELD (dB)	44.5	38.0	34.1
ACOUSTIC FEATURE CORRECTION (dB)	0	0	0
RATING LEVEL, $L_{A,r}$ (dB)	45	38	34
BACKGROUND SOUND LEVEL, $L_{A90,T}$ (dB)	45	45	45
DIFFERENCE, +/- (dB)	0	-7	-11

It is found that rating levels are expected to meet or fall below the background sound level at all nearby receptors. As such, BS 4142 provides the following advice:

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. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact.

Given the assessment outcome and that quarry operations already exist and are likely audible at the receptors, the impact is considered low and not significant.

5.2. COMMERCIAL SOUND IMPACT CONTEXT AND UNCERTAINTY

In order to determine the final outcome of the assessment, the context must be considered, in accordance with BS 4142:2014+A1:2019, Section 11. The factors to be considered are discussed below:

THE ABSOLUTE LEVEL OF THE SOUND

Since the assessment relates to a future noise source, it is not possible at present to compare the Specific Noise Level with the residual sound, as discussed within the standard. However, the absolute noise level at the façade of the most affected residential receptor is 45 dB $L_{Aeq,1hr}$. Assuming 13 dB for attenuation provided by an open window, this would result in the internal noise level falling below the internal bedroom criterion given in BS 8233:2014 by 3 dB. As such, this would not cause adverse impact.

Furthermore, garden noise levels would fall below the design range of 50-55 dB as outlined in BS 8233 for relaxation purposes.



THE CHARACTER AND LEVEL OF THE RESIDUAL SOUND COMPARED TO THE CHARACTER AND LEVEL OF THE SPECIFIC SOUND

As discussed above, this is not directly possible since the assessment relates to a proposed noise source rather than an existing noise source. However, there is similar plant and operations present on site, as a quarry, and, as such, commercial/industrial sound already forms part of the existing acoustic environment, and this would therefore form part of the Residual Sound. This is significant because the proposed noise source would therefore be contributing to an existing impact, rather than presenting a brand-new impact within the area.

THE SENSITIVITY OF THE RECEPTOR AND WHETHER DWELLINGS OR OTHER PREMISES USED FOR RESIDENTIAL PURPOSES WILL ALREADY INCORPORATE DESIGN MEASURES THAT SECURE GOOD INTERNAL AND/OR OUTDOOR ACOUSTIC CONDITIONS.

The receptors are residential and are therefore considered to be sensitive. Given that details of the existing receptors are not known, it is assumed that no design measures are incorporated, i.e. open windows rather than trickle vents are relied upon for ventilation. Based on the absolute noise levels at the façade, the internal noise levels would be below BS 8233:2014 criteria and would be acceptable when the windows are open or in gardens without barriers/fences.

Given the contextual factors discussed above in accordance with BS 4142:2014+A1:2019, it is concluded that the sound sources proposed are likely to have a low to adverse impact during the daytime periods.

Furthermore, no exceedance of the Background Sound Level is predicted at any receptors and internal noise levels are sufficiently low enough to not warrant mitigation measures due to the external comparison of rating levels and background sound levels.



6. CONCLUSION AND RECOMMENDATIONS

E3P were commissioned to undertake a Noise Impact Assessment for the proposed restoration of Newthorpe Quarry.

E3P have undertaken a full weekday and weekend background and ambient sound survey within the site boundaries considered representative of receptors to the north and north east.

Detailed calculations have informed a BS 4142 assessment for the proposed operations on site. The calculations have been used to predict the rating level at the receptors which has been compared with the typical background sound level, accounting for any acoustic characteristics associated with the sound in accordance with BS 4142:2014+A1:2019.

The BS 4142 assessment determined that the predicted rating levels would achieve or fall below the existing background sound levels during proposed operations. As such, a low impact is considered to be achieved which is not considered significant in context.

Considering this, it is concluded that there should be no adverse impact due to the operations of the proposed operations upon existing receptors.

END OF REPORT



APPENDIX I GLOSSARY OF ACOUSTIC TERMINOLOGY

NOISE

Noise is defined as unwanted sound. Human ears are able to respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble) and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting mechanism is used. This reduces the importance of lower and higher frequencies, in a similar manner to the human ear.

Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character and its variation over a given period of time. In some cases, the time of day and other acoustic features such as tonality or impulsiveness may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source. The most widely used weighting mechanism that best corresponds to the response of the human ear is the "A"-weighting scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or L_{Aeq} , L_{A90} etc., according to the parameter being measured.

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective but, as a general guide, a 10 dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB(A) is generally regarded as the minimum difference needed to perceive a change under normal listening conditions. An indication of the range of sound levels commonly found in the environment is given in the following table.

TABLE A1 TYPICAL SOUND PRESSURE LEVELS

SOUND PRESSURE LEVEL	LOCATION/EXAMPLE
0	Threshold of hearing
20–30	Quiet bedroom at night
30–40	Living room during the day
40–50	Typical office
50–60	Inside a car
60–70	Typical high street
70–90	Inside a factory
100–110	Burglar alarm at 1 m away
110–130	Jet aircraft on take off
140	Threshold of pain



ACOUSTIC TERMINOLOGY

TABLE A2 TERMINOLOGY

DESCRIPTOR	EXPLANATION
dB (decibel)	The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2E-05 Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. "A" weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
L_{Aeq, T}	L _{Aeq} is defined as the notional steady sound level which, over a stated period of time (T), would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period.
L_{Amax}	L _{Amax} is the maximum A-weighted sound pressure level recorded over the period stated. L _{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, 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.
L₁₀ and L₉₀	If a non-steady noise is to be described, it is necessary to know both its level and the degree of fluctuation. The L _n indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L ₁₀ is the level exceeded for 10% of the time and as such can be regarded as the "average maximum level". Similarly, L ₉₀ is the "average minimum level" and is often used to describe the background noise. It is common practice to use the L ₁₀ index to describe traffic noise.
Free-field Level	A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally, as measured outside and away from buildings.
Fast	A time weighting used in the root-mean-square section of a sound level meter with a 125-millisecond time constant.
Slow	A time weighting used in the root-mean-square section of a sound level meter with a 1000-millisecond time constant.



APPENDIX II MEASURED SOUND PRESSURE LEVELS

TABLE A1: HOURLY AMBIENT AND BACKGROUND SOUND LEVEL DATA

PERIOD START	AMBIENT SOUND LEVEL, $L_{Aeq,1hr}$ (dB)	BACKGROUND SOUND LEVEL, $L_{A90,1hr}$ (dB)
24/11/2023 11:00	61.6	51.2
24/11/2023 12:00	60.6	50.3
24/11/2023 13:00	59.5	49.8
24/11/2023 14:00	59.0	48.9
24/11/2023 15:00	59.2	47.7
24/11/2023 16:00	58.1	48.1
24/11/2023 17:00	58.1	48.6
24/11/2023 18:00	56.0	47.0
24/11/2023 19:00	59.3	46.0
24/11/2023 20:00	63.1	45.1
24/11/2023 21:00	62.0	44.1
24/11/2023 22:00	57.6	43.4
24/11/2023 23:00	57.0	42.2
25/11/2023 00:00	44.3	41.4
25/11/2023 01:00	45.4	41.9
25/11/2023 02:00	44.5	41.7
25/11/2023 03:00	44.5	41.0
25/11/2023 04:00	46.0	42.5
25/11/2023 05:00	54.0	43.5
25/11/2023 06:00	58.2	44.1
25/11/2023 07:00	56.4	46.4
25/11/2023 08:00	59.4	46.2
25/11/2023 09:00	57.2	47.2
25/11/2023 10:00	58.3	48.0
25/11/2023 11:00	58.3	44.9
25/11/2023 12:00	56.4	43.8
25/11/2023 13:00	59.2	43.3
25/11/2023 14:00	58.4	43.2
25/11/2023 15:00	56.8	45.5
25/11/2023 16:00	59.1	46.7
25/11/2023 17:00	57.7	47.5



PERIOD START	AMBIENT SOUND LEVEL, $L_{Aeq,1hr}$ (dB)	BACKGROUND SOUND LEVEL, $L_{A90,1hr}$ (dB)
25/11/2023 18:00	58.4	42.5
25/11/2023 19:00	57.1	41.8
25/11/2023 20:00	58.4	38.7
25/11/2023 21:00	55.7	38.5
25/11/2023 22:00	55.6	39.3
25/11/2023 23:00	56.9	39.3
26/11/2023 00:00	41.6	37.1
26/11/2023 01:00	39.1	34.2
26/11/2023 02:00	40.8	35.3
26/11/2023 03:00	42.5	38.3
26/11/2023 04:00	41.2	38.2
26/11/2023 05:00	44.8	41.8
26/11/2023 06:00	45.9	43.0
26/11/2023 07:00	46.2	44.0
26/11/2023 08:00	54.6	44.6
26/11/2023 09:00	57.1	45.0
26/11/2023 10:00	57.3	44.9
26/11/2023 11:00	59.5	46.4
26/11/2023 12:00	58.6	45.5
26/11/2023 13:00	60.6	47.9
26/11/2023 14:00	58.3	47.3
26/11/2023 15:00	58.1	47.0
26/11/2023 16:00	59.2	47.8
26/11/2023 17:00	57.8	46.3
26/11/2023 18:00	59.6	46.3
26/11/2023 19:00	59.1	43.9
26/11/2023 20:00	60.6	41.3
26/11/2023 21:00	58.3	39.7
26/11/2023 22:00	56.3	37.7
26/11/2023 23:00	60.2	38.4
27/11/2023 00:00	38.1	34.4



PERIOD START	AMBIENT SOUND LEVEL, $L_{Aeq,1hr}$ (dB)	BACKGROUND SOUND LEVEL, $L_{A90,1hr}$ (dB)
27/11/2023 01:00	36.1	31.2
27/11/2023 02:00	34.1	29.5
27/11/2023 03:00	35.6	31.9
27/11/2023 04:00	43.1	37.9
27/11/2023 05:00	56.7	44.3
27/11/2023 06:00	59.6	46.4
27/11/2023 07:00	58.5	48.8
27/11/2023 08:00	56.5	49.3
27/11/2023 09:00	58.4	47.8
27/11/2023 10:00	57.8	45.7
27/11/2023 11:00	58.8	46.2
27/11/2023 12:00	57.7	47.3
27/11/2023 13:00	58.3	47.6
27/11/2023 14:00	58.5	48.3
27/11/2023 15:00	58.6	48.7
27/11/2023 16:00	56.8	46.2
27/11/2023 17:00	58.3	46.8
27/11/2023 18:00	56.5	47.2
27/11/2023 19:00	58.1	46.3
27/11/2023 20:00	61.7	44.2
27/11/2023 21:00	54.6	41.6
27/11/2023 22:00	56.3	38.4
27/11/2023 23:00	55.6	37.6
28/11/2023 00:00	51.7	36.8
28/11/2023 01:00	40.7	37.0
28/11/2023 02:00	40.5	37.4
28/11/2023 03:00	41.6	38.5
28/11/2023 04:00	44.0	41.1
28/11/2023 05:00	54.4	45.1
28/11/2023 06:00	59.5	48.5
28/11/2023 07:00	57.9	50.3



PERIOD START	AMBIENT SOUND LEVEL, $L_{Aeq,1hr}$ (dB)	BACKGROUND SOUND LEVEL, $L_{A90,1hr}$ (dB)
28/11/2023 08:00	58.8	50.3
28/11/2023 09:00	58.4	51.1
28/11/2023 10:00	57.8	48.2

