NOISE IMPACT ASSESSMENT

Site:	GB Liming Limited, Evesham
References:	52-233-R1
Date:	30 June 2026
Client:	William Gilder Group Limited

e3p

e3p

Taylor Road | Trafford Park | Urmston | Manchester | M41 7JQ
Registered in England | CRN: 08725262

+ 44 (0) 161 707 9612 | e3p.co.uk

QUALITY ASSURANCE

Report references	52-233-R1

REV REF	DESCRIPTION	DATE
01	First issue	24th June 2026
02	Final	30th June 2026
03		

WRITEN BY	QUALIFICATION	POSITION
Lee Faulkner	BSc (Hons) MIEnvSc CEnv MIOA	Associate Director

REVIEWED BY	QUALIFICATION	POSITION
Melissa Bailey	BEng (Hons) MIOA	Senior Consultant

AUTHORISED BY	QUALIFICATION	POSITION
Lee Faulkner	BSc (Hons) MIEnvSc CEnv MIOA	Associate Director

EXECUTIVE SUMMARY

Site Address	Weston Road, Honeybourne, Evesham WR11 7QF
Grid Reference	SP 11152 42124
Proposed Development	Bespoke Environmental Permit for a sludge liming operation outside of a wastewater treatment facility
Surveys Completed	E3P have conducted a full weekday and weekend background sound survey in a position considered representative of the closest receptors.
Assessments Completed	E3P have used the measured data to predict noise levels at the receptors using the methodology given in ISO:9614:2024 and the worst-case measured values via 3D noise modelling. Commercial noise is assessed in accordance with BS 4142:2014+A1:2019.
Mitigation Recommended	The assessment of the operations found that rating levels will be above background sound levels measured after operations. However, absolute noise levels would fall below the BS 8233 criteria within habitable rooms. As such, a low impact is predicted without the need for mitigation measures.
Conclusions and Discussions	The operation of the site has the potential for low impact at receptors assuming a worst-case assessment. As such, mitigation measures are not required.

CONTENTS

1. INTRODUCTION

1.1. BACKGROUND

E3P was commissioned by William Gilder Group Limited to undertake a Noise Impact Assessment to support a Bespoke Environmental Permit for a sludge liming operation outside of a wastewater treatment facility at GB Liming Limited in Evesham, to be referred to as 'the Site'.

The report has been produced by Lee Faulkner, Associate Director at E3P, and full member of the Institute of Acoustics (MIOA).

1.2. DESCRIPTION OF WORKS AND SOURCES OF NOISE

The site, operated by GB Liming Limited (GBL), is a biosolids liming facility located in a rural area of Cheltenham. GB Liming Ltd currently don't carry out any waste related activities on the site. At the site, the following activities are to take place:

- Delivery of non-compliant biosolids from wastewater treatment works.
- Delivery and secure storage of lime.
- Controlled mixing of biosolids and lime using dedicated plant and equipment.
- Short-term storage of non-compliant biosolids.
- Short-term storage of compliant biosolids.
- Loading and removal of compliant biosolids for application to land under The Sludge.

The site will operate the following equipment;

- 1 x BARFORD BF4048 Tracked Pugmill - BARFORD - Doyle Machinery.
- 2 x loading shovels (one for loading biosolids in and one for moving biosolids to stockpiles and loading biosolids out).
- 1 x 140 kva mobile generator.
- 1 x diesel pressure washer for plant and surface washdown.
- 1 x 70m3 lime silo, step frame mounted for mobility.
- 1 x steel deck type weighbridge.
- 1 x small office container to house weighbridge electronics and DoC/Paperwork log/filing.
- 1 x Storage container (Parts/tools and safety equipment/H&S station).

The site will typically be open during the following hours based on existing operations:

- Monday to Friday - 07:00 – 19:30.
- Saturday - 07:00 – 19:30.
- Sundays, Bank/Public holidays – When required.

1.3. REPORT OBJECTIVES

The objectives of this report are as follows:

- Establish the existing sound levels at the nearest noise sensitive receptors.
- Consider the existing and potential sources of sound and to measure source sound levels of all applicable sources.
- Assess the impact of commercial sound in accordance with BS 4142.
- Provide advice on mitigation measures, where required.

2. ASSESSMENT METHODOLOGY

2.1. ENVIRONMENT AGENECY (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. BRITISH STANDARD 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 rather 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

- +3dB: 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:

- 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.

3. SURVEY RESULTS

3.1. BACKGROUND SOUND SURVEY

E3P has undertaken a full weekday and weekend background sound survey in a position considered representative of the closest residential dwellings to the south east. The survey was carried out over the following time periods:

- 2026.

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

- Noise Measurement Position 1 (NMP1): Located to the south east of the development site immediately adjacent to the residential dwelling to the south east. The microphone of the sound level meter was located at a height of 1.5 m above ground level, in free-field conditions. The noise climate at this location consisted predominantly of road traffic along the B4035 and distant commercial noise from the noise.

Figure 1 below shows the NMP location.

Figure 1 Noise Measurement Position

Table 3.1 details the measured ambient and background sound levels. The daytime levels correspond to the $L_{A90,1hr}$ between 07:00 and 19:30.

Table 3.1 Background and Ambient Sound Levels

DATE	TIME PERIOD	RANGE OF MEASURED BACKGROUND SOUND LEVELS, $L_{A90,T}$ (dB)	MEDIAN MEASURED BACKGROUND SOUND LEVEL, $L_{A90,T}$ (dB)
Thursday 25th June	Daytime	37.9-39.9	39
Friday 26th June	Daytime	34.5-44.9	40
Saturday 27th June	Daytime	28.1-36.3	35
Sunday 28th June	Daytime	31.0-42.4	40

From the above, the lowest median value of 35 dB is used to inform the assessment. For receptors further from the road, a 3 dB reduction is applied to inform a worst-case assessment to allow for increased distance from the road.

Weather conditions during the surveys were conducive to the measurement of environmental noise for the duration. The equipment outlined in Table 3.2 was used for the noise survey.

Table 3.2 Noise Measurement Equipment and Calibration Dates

MEASUREMENT POSITION	EQUIPMENT DESCRIPTION	MANUFACTURER AND TYPE NUMBER	SERIAL NUMBER	CALIBRATION DUE DATE
NMP1-NMP3	Sound Level Meter	Fusion	14226	17th December 2027
	Pre-amplifier	Pre22	2135072	
	Microphone	40CD	470570	
	Calibrator	CR 515	99204	13th August 2026

The sound level meter was field calibrated before and after measurements with no significant drift witnessed.

4. BS 4142 NOISE 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 used noise modelling software, CadnaA 2025 MR2, to determine the impact of noise from the sound sources associated with the development.

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 the potential for intermittent delivery and use of equipment, a +3 dB correction is applied for intermittency. Given the distance, it is not considered there would be a tonal element to the equipment nor would there be an impulsivity.

The following inputs have been included in the model:

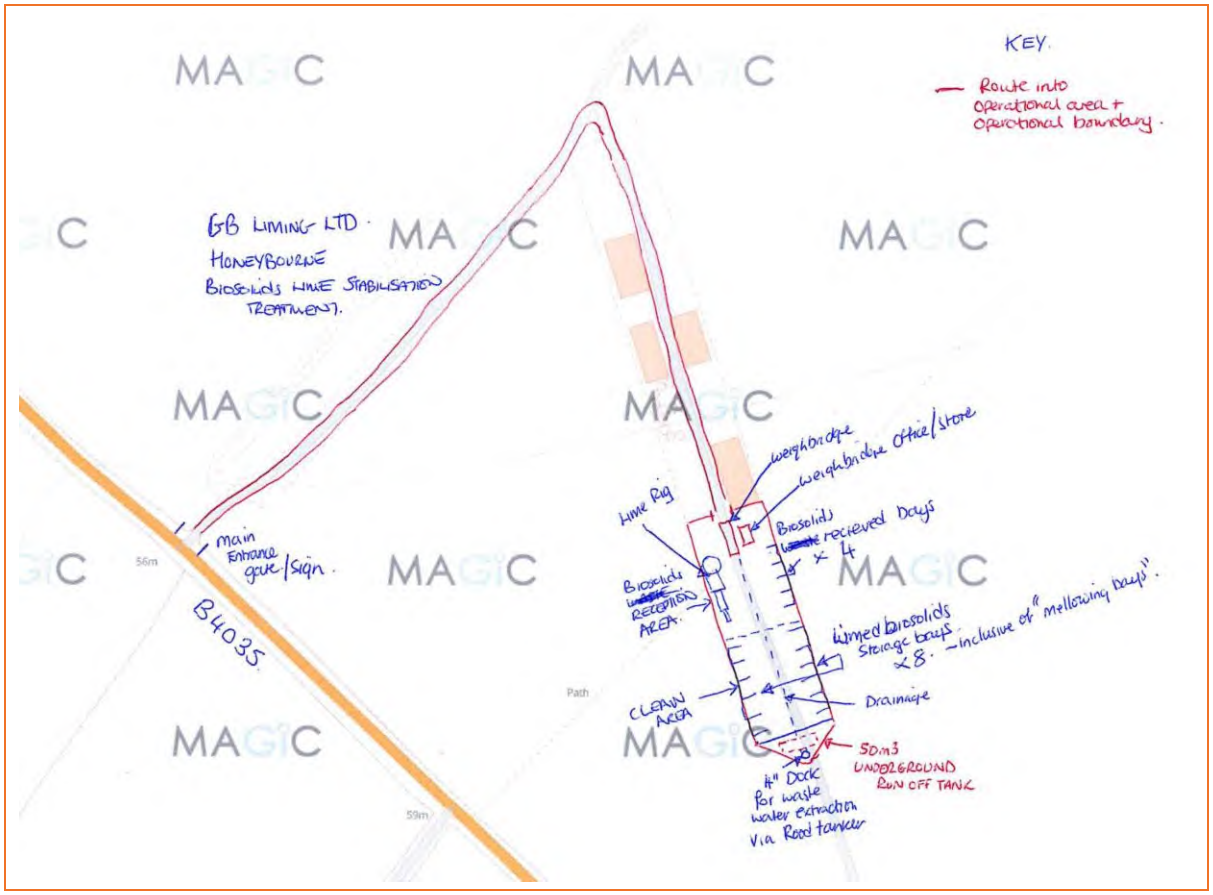
- Ground elevations around the site have been taken as existing by way of a 1 m grid Digital Terrain Model (DTM) which contains public sector information licensed under the Open Government License v3.0.
- Existing buildings have been included in the model and assumed to have a structured façade for dwellings and flat hard walls for other buildings.
- A reflection order of two has been used in all calculations.
- Ground absorption is set at 0.9.
- Noise levels generated using ISO 9613-2:2024 “Acoustics – Attenuation of sound during propagation outdoors” as incorporated into CadnaA software.

As no operational plant was available for measurement at the site, E3P have used library source data for similar sites for each proposed plant item/process which are outlined below:

- BARFORD BF4048 Tracked Pugmill - BARFORD - Doyle Machinery – Specification sheet provided notes a sound power level of 100 dB. For this the main sound energy is assumed to be at the motor/hopper which are at a height of 3.617 m maximum. As such, a source height of 2.5 m is assumed.
- Loading shovel moving material input as moving point source at a height of 2 m with a sound power level of 93.8 dB. A total number of 30 movements in an hour is assumed to inform a worst-case assessment at a speed of 20 km/h.
- 140 kva mobile generator input as a point source with a sound power level of 93 dB at 1.5 m height. This is based on a typical sound pressure level of 65 dB(A) at 10 m as given in BS 5228.
- Diesel pressure washer for plant and surface washdown input as a point source with a sound power level of 93 dB at 1.5 m height. As no data is available for this, a diesel generator source is assumed as above.
- Tipper lorry movement along the access road is input as a moving point source with a sound power level 107 dB with a total of five movements in an hour at a speed of 32 km/h.

Figure 2 below details the site layout produced by the client which provides the locations of the equipment.

Figure 2 Site Layout



4.1. DAYTIME ASSESSMENT

Figure 3 details the resultant Grid Noise Map with levels calculated at 1.5 m height and façade levels showing maximum façade value.

Table 4.1 details the results of the BS 4142 for a selection of receptors and based on worst-case levels per group of receptors. Receptors are shown on Figure 3.

Table 4.1 Daytime BS 4142 Assessment

RECEPTOR	PREDICTED SPECIFIC SOUND LEVEL, $L_{Aeq,1hr}$ (dB)	ACOUSTIC FEATURE CORRECTION (dB)	PREDICTED RATING LEVEL, L_{Ar} (dB)	BACKGROUND SOUND LEVEL, $L_{A90,1hr}$ (dB)	DIFFERENCE, +/- (dB)
Eastern Dwelling	30	3	33	32	**+1**
South East Dwelling	33	3	36	35	**+1**
South West Dwelling	30	3	33	32	**+1**

RECEPTOR	PREDICTED SPECIFIC SOUND LEVEL, $L_{Aeq,1hr}$ (dB)	ACOUSTIC FEATURE CORRECTION (dB)	PREDICTED RATING LEVEL, L_{Ar} (dB)	BACKGROUND SOUND LEVEL, $L_{A90,1hr}$ (dB)	DIFFERENCE, +/- (dB)
Western Dwelling	27	3	30	32	-2

The assessment has determined an exceedance of up to 1 dB exceedance at the closest residential receptors to the south east and south. This is considered a potential adverse impact before consideration of context and uncertainty.

Context is considered below.

4.2. 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:

4.2.1. BASELINE CONDITIONS

E3P have relied upon third party data but it is assumed that the following precautions/procedures were taken:

- Both the sound level meter and calibrator are UKAS calibrated and the meter was field-calibrated both before and after the measurements.
- The measurement locations are considered representative of the existing noise climate outside the nearest residential dwellings to the proposed development.
- Background monitoring was undertaken during favourable weather conditions (e.g. dry and under 5m/s wind speed).

4.2.2. THE ABSOLUTE LEVEL OF THE SOUND

The worst-case absolute noise level at the façade of the most affected receptor is 33 dB $L_{Aeq,1hr}$ in garden areas and 34 dB $L_{Aeq,1hr}$ at facades. Assuming 10 dB for attenuation provided by an open window, this would result in the internal noise level of 24 dB, 11 dB below the internal noise criterion for daytime resting.

As such, this suggests no adverse impact at the receptors in addition to the BS 4142 assessment. Furthermore, external noise levels at the receptors are at least 17 dB below the 50 dB criterion for garden areas. At other receptors, specific noise levels would be considered low.

Indeed, rating levels at most receptors would be considered very low in relation to BS 4142.

4.2.3. THE CHARACTER AND LEVEL OF THE SOUND

The existing sound climate, whilst the site is not operational the existing sound sources are existing commercial sound for eastern receptors), road traffic and birdsong, along with local sources. As such, the operational sound sources would be noticeable over the existing sound climate.

Accordingly, the assessment and AFC applied are considered robust and accurate.

4.2.4. THE SENSITIVITY OF THE RECEPTOR AND EXISTING DESIGN MEASURES

The receptors are residential, permanent and are therefore considered to be highly sensitive. Given that details of the existing receptors are not known, it is assumed that no design measures are incorporated, i.e. open windows relied upon. Based on the absolute noise levels at the façade, the internal noise levels would fall comfortably below the BS 8233:2014 criteria during the day and be considered low impact.

Given the contextual factors discussed above in accordance with BS 4142:2014+A1:2019, it is concluded that the sound sources are of a low impact especially considering the absolute levels of noise and the very low rating levels at most receptors.

As such, no mitigation measures are required.

END OF REPORT

Appendix I: Limitations

GENERAL

1. This report and any associated works (together comprising the "Services") were compiled and carried out by E3P for the client (as present in Section 1) under the E3P “Terms of Business” or with those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.

2. Unless explicitly agreed otherwise, in writing, this report has been prepared under E3P Standard Terms and Business as included within our proposal to the Client.

3. Project-specific appointment documents may be agreed upon at our discretion and a charge may be levied for both the time to review and finalise appointment documents and also for associated changes to the appointment terms. E3P reserves the right to amend the fee should any changes to the appointment terms create an increased risk to E3P.

4. The report needs to be considered in light of the proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

NOISE AND VIBRATION IMPACT ASSESSMENTS

5. 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 in order to inform an accurate assessment.

6. 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.

7. The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walkover inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects responses may not have been received from all parties. E3P cannot be held responsible for any disclosures that are provided post-production of our report and will not automatically update our report.

8. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, E3P reserves the right to review such information and, if warranted, to modify the opinions accordingly.

9. E3P does not warrant work/data undertaken/provided by others.

Appendix II: Glossary

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 LAeq, LA90 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 A Typical Sound Pressure Levels

SOUND PRESSURE LEVEL	LOCATIONS/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

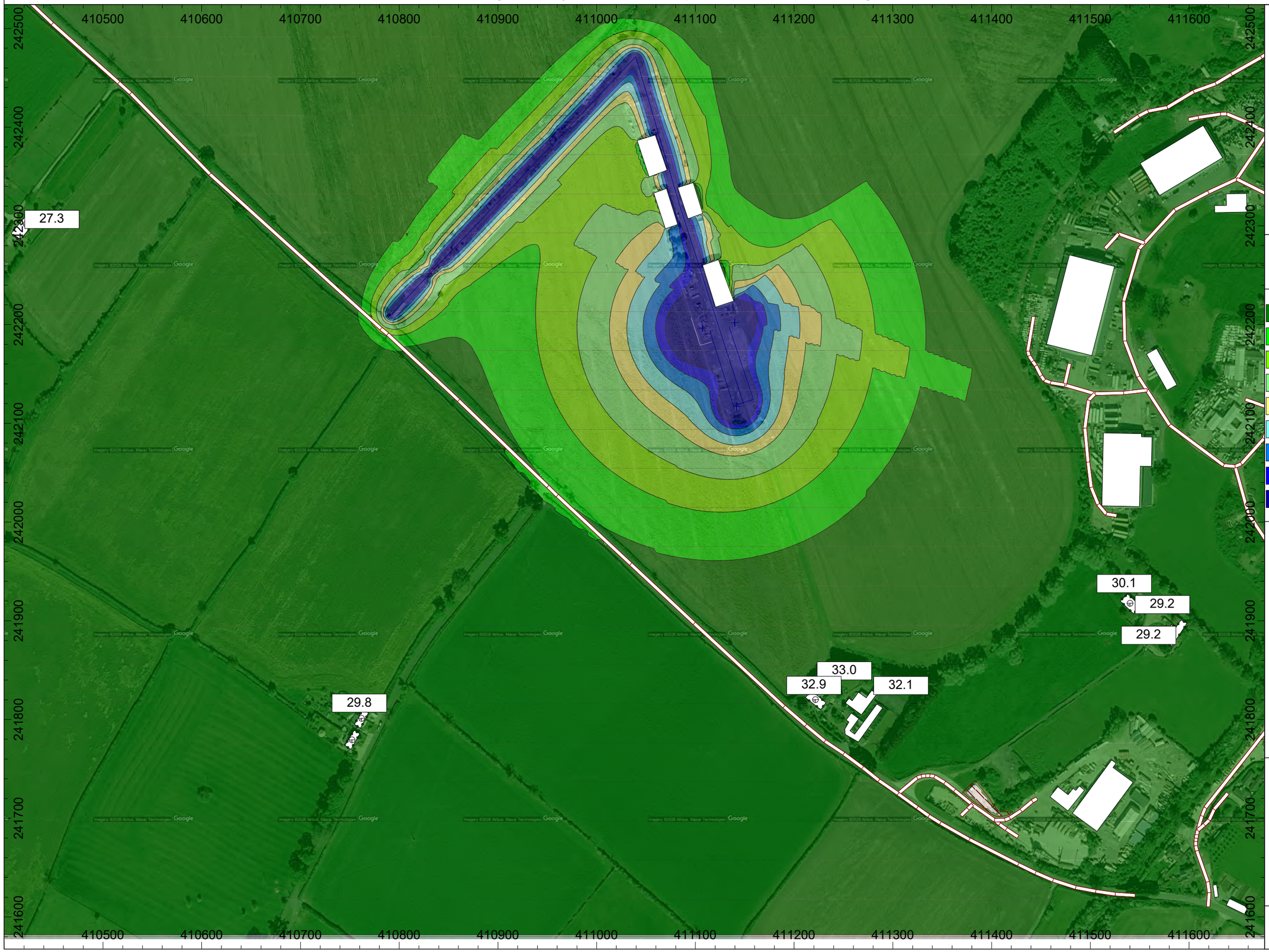
ACOUSTIC TERMINOLOGY

Table B 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.
LAeq, T	LAeq 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.
LAmax	LAmax is the maximum A-weighted sound pressure level recorded over the period stated. LAmax is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall Leq 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 Ln indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L10 is the level exceeded for 10% of the time and as such can be regarded as the “average maximum level”. Similarly, L90 is the “average minimum level” and is often used to describe the background noise. It is common practice to use the L10 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.
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.

Appendix III: Figures

Figure 3 - Daytime Grid Noise Map - Calculation at 1.5m above ground level



Project:
GB Liming Ltd

Project-No:
52-233

Client:
William Gilder Group

Predicted Noise Level, LAeq,T (dB)

- ... <= 38
- 38 < ... <= 40
- 40 < ... <= 42
- 42 < ... <= 45
- 45 < ... <= 48
- 48 < ... <= 50
- 50 < ... <= 52
- 52 < ... <= 55
- 55 < ...

Noise Map Objects

- Point Source
- Line Source
- Road
- Parking Lot
- Building
- Barrier
- Building Evaluation
- Calculation Area

e3p

Project Engineer: L Faulkner
Date: 24/06/2026