

Noise Impact Assessment

Unit A Finlan Road, Stakehill
Industrial Estate, Middleton,
M24 2SJ



Presented to: UBS Triton Property Fund

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Report Details

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Quality Assurance

Issue No.	Status	Issue Date	Comments	Author	Technical Review	Authorised
2	Final	5 th July 2025	Updated Planning Policies	Chloe Glenn Graduate Acoustician	Dan Boote Principal Acoustician	Dan Pope Acoustic Team Lead

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As part of Lucion's group of companies, we can support you with a broader range of holistic services. Through our pool of multidisciplinary experts, we help you navigate complex regulatory frameworks, saving you time and money.

Being part of your sustainable supply chain is a key goal for our team. As a member of the UN Global Compact and a commitment to sustainability, we are the partner of choice for businesses looking to make informed decisions and mitigate risks across your portfolio.

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Executive Summary

Site and Report Context	Lucion Delta-Simons Limited ('Lucion Delta-Simons') was instructed by UBS Triton Property Fund (the 'Client') to undertake a Noise Impact Assessment to inform a planning application for a development located at Unit A Finlan Road, Stakehill Industrial Estate, Middleton, M24 2SJ (the 'Site'). The proposed works at the Site comprise the demolition of existing single storey extension and service yard canopy, erection of extension and alterations to existing building, change of use to allow a flexible use within Classes B2, B8 and / or E(g)(iii) and a series of physical works to reconfigure the site including an extension to the service yard, new hard and soft landscaping and associated infrastructure (the 'Proposed Development'). This assessment has been undertaken to identify the key noise sources associated with the proposal and which may have the potential to impact the closest noise sensitive receptors (NSRs). Accordingly, this assessment has been completed with due regard to: • National Planning Policy Framework (NPPF); • Planning Policy Guidance (PPG); • BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'; • BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings'; • Calculation of Road Traffic Noise (CRTN); and • Design Manual for Roads and Bridges (DMRB) LA 111 Noise and Vibration Revision 2.
Summary	This assessment has been informed by a noise survey, completed over a weekday and weekend period, to quantify the existing background noise environment at the sensitive receptors. Noise modelling software CadnaA has been used to create a 3D noise model of the Site to undertake operational noise and maximum noise event calculations to inform the assessment. The operational assessment results have shown that the rated level of noise is below the daytime and night-time background sound levels at the closest NSRs and therefore a negligible impact is predicted. The assessment of night-time L_{AFmax} events (car door slams) has concluded that the internal noise level from such events would not exceed internal noise level criteria at any NSR. Therefore, a negligible impact is predicted. The traffic assessment results have shown that there is up to +0.5 $L_{A10,18hr}$ change in basic noise level on surrounding roads due to traffic associated with the Site, which indicates a negligible impact.
Recommendations	Noise levels from fixed plant should not exceed the levels set out in this report
This is intended as a summary only. Further detail and limitations of the assessment are provided within the main body of the Report.	

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1.0 Introduction

1.1 Appointment

- 1.1.1 Lucion Delta-Simons Limited ('Lucion Delta-Simons') was instructed by UBS Triton Property Fund (the 'Client') to undertake a Noise Impact Assessment to inform a planning application for a development located at Unit A Finlan Road, Stakehill Industrial Estate, Middleton, M24 2SJ (the 'Site'). The proposed works at the Site comprise the demolition of existing single storey extension and service yard canopy, erection of extension and alterations to existing building, change of use to allow a flexible use within Classes B2, B8 and / or E(g)(iii) and a series of physical works to reconfigure the site including an extension to the service yard, new hard and soft landscaping and associated infrastructure (the 'Proposed Development').
- 1.1.2 The Proposed Development has the potential to cause noise impacts at noise sensitive receptors (NSRs) during operation. Therefore, to ensure significant adverse effects are not observed a Noise Impact Assessment is required.

1.2 Site Location and Context

- 1.2.1 The Site currently comprises of a singular 'L' shaped warehouse unit in the south and east, with external parking in the north and northwest and service yards located in the west and northeast. The Site is located in an area mainly influenced by road traffic noise and existing operational and plant noise from the surrounding commercial and industrial units. The Site is located approximately 500m south of Junction 2 of the A627 (M) and 1.8km from Junction 20 of the M62 motorways. Finlan Road borders the western and northern boundaries of the Site and Stakehill Lane borders the full length of the eastern boundary. Caldervale railway line is located 700m west of the Site.
- 1.2.2 The closest noise sensitive receptors (hereafter referred to as NSRs) are located 60m east (R1), 80m south-east (R2) and 45m north-east (R3), along Stakehill Lane.
- 1.2.3 The proposal has the potential to operate during daytime and night-time hours.
- 1.2.4 Reference should be made to **Figure 1** for a map of the Site and surrounding area.
- 1.2.5 The standard limitations associated with this assessment are presented in **Appendix A**.
- 1.2.6 A glossary of terms used in this report is provided in **Appendix B**.

2.0 Legislation and Policy

2.1 Planning Policy

2.1.1 A summary of the national and local planning policy relevant to the Proposed Development is provided below.

National Planning Policy Framework and Planning Practice Guidance

2.1.2 The Government published the revised National Planning Policy Framework (NPPF, December 2024) and the Planning Practice Guidance (PPG) in July 2019¹. Together, the NPPF and PPG set out what the Government expects of local authorities. The overall aim is to ensure the planning system allows land to be used for new homes and jobs, while protecting valuable natural and historic environments.

2.1.3 The PPG adds further context to the NPPF and it is intended that the two documents should be read together.

2.1.4 Noise needs to be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing acoustic environment, including cumulative effects. When preparing local or neighbourhood plans, or taking decisions about new development, there may also be opportunities to consider improvements to the acoustic environment.

2.1.5 Local planning authorities' plan-making and decision making should take account of the acoustic environment and in doing so consider:

- Whether or not a significant adverse effect is occurring or likely to occur;
- Whether or not an adverse effect is occurring or likely to occur; and
- Whether or not a good standard of amenity can be achieved.

2.1.6 In line with the Explanatory Note of the Noise Policy Statement for England, this would include identifying whether the overall effect of the noise exposure (including the impact during the construction phase wherever applicable) is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation.

2.1.7 The Observed Effect Levels are as follows:

- Significant observed adverse effect level: This is the level of noise exposure above which significant adverse effects on health and quality of life occur;
- Lowest observed adverse effect level: This is the level of noise exposure above which adverse effects on health and quality of life can be detected; and
- No observed effect level: This is the level of noise exposure below which no effect at all on health or quality of life can be detected.

2.1.8 **Table 1** summarises the noise exposure hierarchy, based on the likely average response.

Table 1 - Noise Exposure Hierarchy

Perception	Examples of Outcomes	Increasing Effect Level	Action
No Observed Adverse Effect Level			
Not Noticeable	No Effect	No Observed Effect	No specific measures required

¹ Parts of PPG were updated in February 2024, however, the Noise section was updated in July 2019.

Perception	Examples of Outcomes	Increasing Effect Level	Action
Noticeable and not intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

2.2 Local Planning Policy

Rochdale Adopted Core Strategy October 2016

2.2.1 The Rochdale Core Strategy October 2016 contains a number of policies relevant to noise and the Proposed Development. These policies are set out below.

Policy C6 - Improving health and well being.

2.2.2 This policy states:

"We will improve peoples health and well being and reduce health inequalities by:

- Creating an economic, physical and social environment which promotes and supports healthy lifestyles;*
- Supporting and promoting accessible new health facilities and services in town centres and local centres; and*
- Focusing the above actions in areas of deprivation, poor health and/or greatest need.*

We will achieve this through:

[...]

i. Identifying and implementing measures to reduce traffic movements and congestion to reduce air and noise pollution.

[...]"

Policy G9 - Reducing the impact of pollution, contamination and land instability

2.2.3 This policy states:

"We will reduce all forms of pollution, contamination and land instability in the borough, by;

[...]

b. Requiring that development does not have impacts that lead to an unacceptable increase in air, water, noise, light or other pollution;

[...]"

Policy DM1 - General development requirements

2.2.4 This policy states:

"All development proposals, including changes of use of land and buildings, extensions and alterations, will be expected to demonstrate that they:

[...]

d. Mitigate against any impacts due to noise, air, dust, light and odour pollution, traffic generation or inadequate access, where such mitigation is identified as being necessary;

[...]"

Policy DM2 - Delivering planning contributions and infrastructure

2.2.5 This policy states:

"[...]

3. All types of development

For all types of development, including housing, we will seek contributions for any infrastructure or other measures necessary to mitigate any on site or off-site impacts from the development.

These contributions may cover, dependant on need:

[...]

e. Mitigation or compensation against environmental impacts e.g. noise, air quality (particularly in Air Quality Management Areas);

[...]"

Places For Everyone Joint Development Plan Document for Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan

2.2.6 The Places for Everyone Joint Development Plan is a long-term plan prepared by nine Greater Manchester councils to guide development in their boroughs from 2022 to 2039, **and was adopted in March 2024**. The plan aims to deliver sustainable and inclusive growth by focusing on:

- Building more affordable homes
- Creating better jobs
- Improving transport and infrastructure
- Protecting and enhancing green spaces
- Reshaping town centres

2.2.7 The key points in the document in relation to noise and amenity are:

- The importance of high-quality and well-managed green infrastructure, such as parks, open spaces, trees, woodlands, rivers and canals, is discussed in the plan. It states that these contribute to the quality of life, promote mental and physical health, and support economic growth.
- The plan recognizes that urban greenspace is under pressure and needs protection and enhancement. It also aims to ensure access to good quality greenspace, especially in densely populated and deprived areas.
- The plan discusses the need to tackle traffic congestion and air quality issues, which are particularly severe in densely populated areas.
- Policy JP-S5 focuses on clean air and aims to reduce the health impacts of air pollution by promoting sustainable travel and reducing car dependency.
- Policy JP-P1 emphasizes the importance of creating inclusive, well-designed, resilient, and safe places with access to green infrastructure and local services.
- Policy JP-Strat12 aims to increase the resident population of town centres, supported by new and improved public spaces and green infrastructure.

2.3 Guidance

BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'

- 2.3.1 This Standard (hereafter referred to as 'BS 4142') 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.
- 2.3.2 The procedure detailed in the Standard compares the measured or predicted noise level 'the specific noise level' from any of the above detailed noise sources 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'.
- 2.3.3 The specific noise level also acknowledges the following reference time intervals depending upon whether the noise source operates during daytime or night-time periods:
- Daytime (07:00 - 23:00): 1 hour; and
 - Night-time (23:00 - 07:00): 15 minutes.
- 2.3.4 There are a number of 'character corrections' which can be attributed to the specific sound level, either subjectively or objectively, depending upon the 'acoustic features' of the sound level under investigation. These character corrections vary in their weighting depending upon the severity of the acoustic feature, as follows (with regards to the subjective method):

Table 2 - BS 4142 Subjective Character Correction

Acoustic Feature	Correction (dB)	Comments
Tonality	+2	Where the tonality is just perceptible
	+4	Where the tonality is clearly perceptible
	+6	Where the tonality is highly perceptible

Acoustic Feature	Correction (dB)	Comments
Impulsivity	+3	Where the impulsivity is just perceptible
	+6	Where the impulsivity is clearly perceptible
	+9	Where the impulsivity is highly perceptible
Intermittency	+3	Where the intermittency is readily distinctive against the acoustic environment
Other sound characteristics	+3	Where a sound exhibits characteristics that are neither tonal nor impulsive, though is readily distinctive against the acoustic environment at the receptor

2.3.5 Where the assessment is carried out using the objective method, the tonality character correction is either 0dB or 6dB and the impulsivity character correction can range from 0dB up to 9dB in increments of 1dB, depending on the level of impulsivity identified.

2.3.6 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.

2.3.7 Assessment of the rating level relative to the background noise 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 +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; 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.

2.3.8 Whilst the Standard does make various references to it not being intended to assess noise impacts at indoor locations, Section 1.1 of the Standard does state:

'The methods described in this British Standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident'.

2.3.9 Example 6 in the Standard states:

'In addition to the rating/background sound level comparison shown in Table A.6, the primary concern is the potential for disturbance of residents who could be sleeping with open bedroom windows. Other guidance, such as BS 8233, might also be applicable in this instance'.

2.3.10 Furthermore, Example 8, which considers night-time commercial noise impacts at a dwelling, states:

'BS 8233 indicates that 40 dBA sound level from the plant, equating to an internal level of around 30 dBA or possibly lower, but with some acoustically distinguishing characteristics, may not be suitable for a bedroom.'

2.3.11 With the above in mind, and for a clear need to ensure that any potential commercial or industrial noise impacts do not give rise to sleep disturbance in bedrooms, this assessment will ensure that the predicted rating level (specific sound level including any character corrections) does not exceed 30dB in bedrooms.

BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings'

Noise Criteria Limits

- 2.3.12 The scope of this Standard is the provision of recommendations for the control of noise in and around buildings. It suggests appropriate criteria and limits for different situations, which are primarily intended to guide the design of new buildings or refurbished buildings undergoing a change of use, rather than to assess the effect of changes in the external noise climate.
- 2.3.13 The Standard suggests suitable internal noise levels within different types of buildings, including dwellings, as shown in **Table 3**.

Table 3 - BS 8233:2014 Internal Target Noise Levels

Criterion	Typical Situation	Design $L_{Aeq,T}$ (dB)
Suitable resting/sleeping conditions	Living Room	35
	Bedroom*	30
*For a Reasonable standard in bedrooms at night, individual noise events (measured with fast time weighting) should not exceed 45dB L_{max}		

- 2.3.14 BS 8233 goes on to recommend noise levels for gardens as follows:

'It is desirable that the external noise level does not exceed 50dB $L_{Aeq,T}$, with an upper guideline value of 55dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognised that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors might be warranted.'

- 2.3.15 BS 8233 goes on to say:

'In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces but should not be prohibited.'

Ventilation Requirements

- 2.3.16 Where a partially open window cannot be relied upon to provide an adequate level of façade sound insulation performance, it is necessary to consider alternative ventilation for habitable rooms. Section 8.4.5.4 within BS 8233 states:

'The Building Regulations' supporting documents on ventilation [48, 49, 50] recommend that habitable rooms in dwellings have background ventilation. Where openable windows cannot be relied upon for this ventilation, trickle ventilators can be used, and sound attenuating types are available. However, windows may remain openable for rapid or purge ventilation, or at the occupant's choice.'

Alternatively, acoustic ventilation units (see 7.7.2 [of the Standard] below) are available for insertion in external walls. These can provide sound reduction comparable with double glazed windows. However, ducted systems with intakes on the quiet side of the building might be required in very noisy situations, or where appearance rules out through-the-wall fans.'

- 2.3.17 Section 7.7.2 of the Standard states:

'NOTE 5 If relying on closed windows to meet the guide values, there needs to be an appropriate alternative ventilation that does not compromise the façade insulation or the resulting noise level.'

Calculation of Road Traffic Noise (CRTN)

- 2.3.18 The Calculation of Road Traffic Noise (CRTN) is a technical memorandum that describes procedures for road traffic noise measurements and calculations using the $L_{A10,18hr}$ noise index. CRTN is suitable for environmental assessments of schemes where road traffic noise may have an impact.

2.3.19 Using the prediction methodology detailed in CRTN, the Basic Noise Level (BNL) can be calculated for an 18 hour period (06:00 to 00:00) at 10m from the kerb of a road link using the following information:

- Annual Average Weekly Traffic flow (18 hour traffic flows);
- Average traffic speed; and
- Traffic composition, namely the proportion of heavy goods vehicles comprising the traffic flow.

2.3.20 The BNL is then corrected for road gradient, road surface, distance to the noise sensitive receptors, angle of view, reflections and the presence of screening, to arrive at a final noise level for each noise sensitive receptor of interest.

Design Manual for Roads and Bridges (DMRB) LA 111 Noise and Vibration

2.3.21 DMRB LA 111 states that the purpose of the assessment should be to determine and report the likely significant effects on sensitive buildings within the study area, and the level of detail of a noise and vibration assessment shall be proportionate to the quality of data available and the risk of likely significant effects occurring. It notes that a scoping assessment can be used to identify and focus the assessment on the risk of likely significant environmental effects.

Operational Noise

Scoping

2.3.22 For operational noise, further assessment may be required if:

- The proposed development is likely to cause a change in the BNL of 1dB $L_{A10,18hr}$ in the short-term i.e. do-minimum opening year (DMOY) compared to the do-something opening year (DSOY); or
- The proposed development is likely to cause a change in the BNL of 3dB $L_{A10,18hr}$ in the long-term i.e. do-something future year (DSFY) compared to the DMOY; or
- The proposed development involves the construction of new road links within 600m of noise sensitive receptors; or
- There would be a reasonable stakeholder expectation that an assessment would be undertaken.

Study Area

2.3.23 For the assessment of operational noise, LA 111 states that a study area shall be defined to include:

- Noise sensitive receptors that are potentially affected by operational noise changes generated by the proposed development, either on the route of the proposed development or other roads not physically changed by the proposed development; and
- Noise sensitive receptors in areas where there is a reasonable stakeholder expectation that noise assessment is undertaken.

2.3.24 It goes on to note that for most projects, the following study area would be sufficient:

- The area within 600 m of new road links or road links physically changed or bypassed by the project;
- The area within 50 m of other road links with potential to experience a short term BNL change of more than 1dB $L_{A10,18hr}$ as a result of the project.

Assessment

2.3.25 LA111 provides guidance on the environmental assessment of noise and vibration impacts from road schemes.

2.3.26 It contains advice and information on assessing both construction and operational traffic impacts affecting sensitive receptors adjacent to road networks.

2.3.27 It also provides guideline significance criteria for assessing noise and vibration impacts.

- 2.3.28 The assessment of operational noise impacts follows the DMRB approach focussing on changes in noise on the road network within the study area. The level of detail included is proportionate to the information available.
- 2.3.29 DMRB gives the descriptions for different changes in noise level and provides the following classifications for the magnitude of noise impacts:

Table 4 - DMRB Criteria for Determining Magnitude of Impact

Magnitude of impact	Change in noise level $L_{A10,18hr}$	
	Short-term	Long-term
No change	0 dB	0 dB
Negligible	0.1 – 0.9 dB	0.1 – 2.9 dB
Minor	1 – 2.9 dB	3 – 4.9dB
Moderate	3 – 4.9 dB	5 – 9.9 dB
Major	5 dB or more	10 dB or more

- 2.3.30 From this classification ‘minor’, ‘moderate’ and ‘major’ changes in noise are perceptible, whereas ‘negligible’ changes are not perceptible. ‘Moderate’ and ‘major’ impacts are considered to be significant, depending on context.

Perceptibility and Significance

- 2.3.31 Changes in noise level classed as significant are based on the assessment scale from DMRB shown in **Table 4** and expanded on in **Table 5** below to show the classification of perceptibility and significance. For this assessment, both short-term and long-term changes in noise that are ‘moderate’ or ‘major’ are regarded as significant.

Table 5 - Road Traffic Noise Impact Perceptibility and Significance

Magnitude of impact	Short-term	Long-term
No change	0 dB	0 dB
Negligible	0.1 – 0.9 dB	0.1 – 2.9 dB
Minor	1 – 2.9 dB	3 – 4.9dB
Moderate	3 – 4.9 dB	5 – 9.9 dB
Major	5 dB or more	10 dB or more

3.0 Scope and Methodology

3.1 Local Authority Consultation

- 3.1.1 A consultation exercise was undertaken with the Rochdale Metropolitan Borough Council (RMBC) on the 6th April 2023 to discuss noise monitoring locations and assessment methodology. The email sent is provided below:

“Lucion Delta-Simons have been instructed to undertake a Noise Impact Assessment to support a planning application for a proposed light industrial development (the ‘Proposed Development’), located at Unit A, Stakehill Industrial Estate, Finlan Road, M24 2SJ (the ‘Site’).

From reviewing online mapping, the dominant noise sources on Site are understood to be from existing commercial/industrial in addition to road traffic noise from the A627 (M), A664, M62 and local road networks. Existing residential Noise Sensitive Receptors (NSRs) are located approximately 60m east (R1) and 50m north-east (R2) along Stakehill Lane. The Site location, red line boundary, NSRs and proposed measurement locations are presented in Figure 1 and the Proposed Site Plan is presented in Figure 2. We are seeking Rochdale Metropolitan Borough Councils (RMBC) comments regarding our methodology.

Lucion Delta-Simons are proposing to undertake a baseline noise survey to establish existing background sound and ambient noise levels on and around the Site. Currently, it is anticipated this will involve one fixed long term 24-hour noise measurement position (L1) covering a weekday day and night period, representative of eastern NSRs, and an additional spot measurement (S1) representative of north-eastern NSRs.

Baseline background sound levels obtained from the survey will be used to assess the noise impacts generated by the operation of the Site. This will be completed in line with guidance presented in BS 4142:2014+A1:2019. If details regarding proposed plant are available, an assessment will be undertaken to calculate the noise impact at nearby NSRs. If no detail regarding proposed plant is available, then the assessment will provide plant noise limits that should not be exceeded to avoid adverse impacts at the NSRs. It is understood that rating levels from the Site should be below existing background sound levels to avoid adverse impacts at NSRs; do RMBC agree with this approach?

If data is available, Lucion Delta-Simons will assess the potential road traffic noise impacts at NSRs from the surrounding road network by predicting noise levels both with and without the development in place. This will be completed in-line with guidance presented in the Calculation of Road Traffic Noise (CTRN) and assessed against criteria presented in Design Manual for Roads and Bridges (DMRB) LA 111 Noise and Vibration Revision 2.

Where necessary, mitigation measures will be recommended to reduce noise impacts to acceptable levels.

Would the above methodology be viewed as acceptable in relation to the proposed development at this Site? If you have any further input, I look forward to your response!”

- 3.1.2 Figure 1 and Figure 2 above relate to **Figure 1** and **Figure 2** within this report.

- 3.1.3 At the time of this assessment a response has not been received from RMBC.

3.2 Scope

- 3.2.1 The scope of the assessment has been determined in the following way:

- Analysis of the Site and the surrounding area was completed using available aerial photography in order to identify the location of the closest existing noise sensitive receptors to the Site;
- A Baseline Noise Survey has been undertaken to establish the existing background sound environment at the closest NSRs;
- Noise modelling software CadnaA has been used to create a 3D noise model of the Site to undertake operational noise and maximum noise event calculations to inform the assessment;
- Measured sound levels have informed and assessment in line with BS 4142 whereby the rated level of noise is compared against the background sound level at the closest noise sensitive receptor to the Site;

- Assess any likely traffic noise impacts as a result of the Proposed Development; and
- Provide advice for suitable mitigation for the Proposed Development.

3.3 Identification of Sensitive Receptors

3.3.1 Using online mapping services, the following sensitive receptors have been identified and subsequently assessed. The table below also states the time periods where each receptor is sensitive to noise.

3.3.2 The location of these receptors is shown in **Figure 1**.

Table 6 - Sensitivity of Receptors

ID	Receptor	Direction and Distance from Site	Sensitive Time Period
R1	Stakehill Lane	60m east	Daytime and Night-time
R2	Stakehill Lane	80m south-east	Daytime and Night-time
R3	Stakehill Lane	45m north-east	Daytime and Night-time

3.4 Operational Noise

- 3.4.1 A 3D noise model has been built to calculate the noise levels associated with operational HGV movements and deliveries on the Site at the closest NSRs.
- 3.4.2 The assessment has considered noise impacts during daytime and night-time periods. This has been undertaken to demonstrate a worst-case assessment where only external noise sources are assessed (i.e. HGV movements and loading/unloading of trailers).
- 3.4.3 To determine the impact as noise levels that could be produced from the proposed operations on the Site, the assessment has been undertaken using methods from BS 4142:2014+A1:2019. The rating levels of the operational processes are assessed against the background sound level at the identified receptors.
- 3.4.4 This assessment considers a 1-hour reference time for the daytime period, and a 15-minute reference time for the night-time period.
- 3.4.5 As a worst case, the operational assessment has assumed all 10 loading bays would be active in a single 1-hour daytime period and single 15-minute night-time period.
- 3.4.6 Noise emission data for vehicle movements associated with the car park has been adopted from a similar project and modelled as a moving point source in the 3D model. The assessment assumes a worst case 1 hour period of 62 vehicle movements, in accordance with traffic data provided by Vectos.

3.5 Plant Noise Limit

- 3.5.1 At this stage the exact details and location of fixed plant (e.g. air handling units and transformers) to be installed on the Site is not known. Therefore, as a conservative approach a plant noise limit is provided that the development should not exceed when measured in free-field conditions at the receptor assuming continuous 24-hour operational noise and based on assumptions described below.

3.6 Night-Time L_{AFmax} Event –

- 3.6.1 Maximum noise events associated with deliveries during the night-time period attributable to doors shutting, clicks, and bangs are also considered within the assessment.

- 3.6.2 The following table details the L_{AFmax} noise level associated with vehicle door slams as measured set out in Bayerisches Landesamt für Umwelt Parking Area Noise (2007):

Table 7 – Door Slam Source Noise Level

Event	Measurement Distance, m	Measured dB L_{AFmax}
Vehicle door slam	7.5	72.1

- 3.6.3 WHO Community Noise Guidelines recommend that individual noise events should not exceed 45dB L_{AFmax} internally more than 10-15 times at night.
- 3.6.4 It is widely accepted that a partially open window will provide around 15dB noise attenuation, and therefore internal noise levels are predicted at the receptor locations.

3.7 Traffic Noise - CRTN and DMRB Assessment

- 3.7.1 Given the location of the Site directly onto an arterial route, with an existing high level of traffic, it is considered that spreadsheet calculations of Basic Noise Level (BNL) changes due to traffic would be sufficient to identify the level of impact from the proposed development.
- 3.7.2 Baseline traffic flows and traffic flows with the proposed development have been provided by Vectos and are presented in **Appendix C**. Traffic data was provided as 18-Hour Annual Average Weekly Traffic (AAWT).
- 3.7.3 An assessment has been carried out using these traffic flows following the methodology set out in CRTN and assessed using the impact scale set out in DMRB LA 111.

4.0 Baseline Survey

4.1 Measurement Locations

4.1.1 Measurements were undertaken at the following locations.

Table 8 - Measurement Locations

Measurement Location	British National Grid Coordinates		Date and Time	Observations
	X	Y		
L1	389309	408051	13 th April 2023 09:00 to 18 th April 2023 09:00	Upon the long-term logger set up and collection, the dominating noise source was road traffic noise from the local and arterial road networks. Birdsong could also be heard in addition to existing plant noise from surrounding commercial and industrial units.
S1	389287	408138	13 th April 2023 09:28 to 09:54	Throughout the duration of the short-term measurement road traffic noise was dominant from the arterial road network and Stakehill Lane. Pedestrians passing and talking was also noted in addition to birdsong. Metal clanks and bangs in addition to HGV vehicle reversing noises were noted occasionally throughout the measurement from existing commercial premises at Stakehill Industrial Estate.

4.1.2 Measurement locations are shown in **Figure 1**.

4.2 Survey Equipment

4.2.1 The following noise monitoring equipment was used throughout the survey. Measurements were taken in general accordance with BS 7445-1:2003 'The Description and Measurement of Environmental Noise: Guide to quantities and procedures.

Table 9 – Noise Measurement Equipment

Measurement Location	Equipment	Model Type	Serial Number	Date of Last Laboratory Calibration Prior to Survey
L1	Sound Level Meter	01dB Fusion	14431	7 th March 2022
	Pre-amplifier	01dB PRE22	213148	
	Microphone	GRAS 40CD	470625	
	Calibrator	01dB CAL-31	93438	2 nd December 2022
	Weather Station	Vaisala	UO410445	N/A
S1	Sound Level Meter	Rion NL-52	00620880	29 th March 2023
	Pre-amplifier	Rion NL-25	20940	
	Microphone	Rion UC-59	03474	
	Calibrator	Rion NC-74	34536108	6 th January 2023

- 4.2.2 The measurement equipment was checked against the appropriate calibrator at the beginning and end of the measurements, in accordance with recommended practice. Calibration certificates for which are available on request.

4.3 Weather Conditions

- 4.3.1 The table below summarises the periods of adverse metrological conditions during the survey.

Table 10 - Adverse Meteorological Conditions during the Survey

Adverse Condition	Time period
Wind Speeds $>5\text{ms}^{-1}$	None
Precipitation	13 th April 2023 from 09:45-10:15 and 15:00-15:15 14 th April 2023 from 09:30-10:45 and 11:45-18:30

4.4 Survey Summary Results

- 4.4.1 A summary of measured data at L1 is presented in the table below. A graphical representation of the survey data is shown in **Figure 3**.
- 4.4.2 The L_{Aeq} levels presented in the tables below are the logarithmic average of each measurement period. The L_{A90} and L_{A10} are the arithmetic average for each measurement period. The modal average $L_{A90,1h}$ and $L_{A90,15min}$ have also been calculated for the daytime and night-time periods respectively.

Table 11 – L1 Survey Summary Results

Measurement Location	Period		Measured Levels, dB				
			$L_{Aeq,T}$	$L_{A10,T}$	$L_{Amax,T}$	$L_{A90,T}$	Modal $L_{A90,T}$
L1	Weekday	Day	50.7	51.1	78.1	44.6	47
	Weekday	Night	47.1	45.1	74.1	38.4	37
	Weekend	Day	46.5	46.1	76.3	37.3	36
	Weekend	Night	44.0	43.9	71.2	37.4	38
	Overall	Day	49.5	49.1	78.1	41.7	36
	Overall	Night	46.2	44.7	74.1	38.0	38

- 4.4.3 For the attended measurement location S1, the presented measured data consists of the energetic 1-minute $L_{Aeq,T}$ samples over the stated measurement period. The results of the attended measurements are shown below.

Table 12 – S1 Survey Summary Results

Measurement Location	Period	Measured Levels, dB				
		$L_{Aeq,T}$	$L_{A10,T}$	$L_{AFmax,T}$	$L_{A90,T}$	Modal $L_{A90,T}$
S1	Daytime	53.1	53.9	65.1	51.2	51

- 4.4.4 To present a reasonable worst-case assessment, the daytime and night-time modal L_{90} from measurement position L1 has been used to inform the operational assessment at all NSRs.

5.0 Assessment

5.1 Operational Noise

- 5.1.1 A 3D noise model has been used to calculate the propagation of noise to each receptor location.
- 5.1.2 Predicted noise levels at receptor points within the noise model are taken 1.5m in height for the ground floor and 4m for the first floor. For daytime periods at residential dwellings, the receptor point is located within garden areas if these are closer than the building.
- 5.1.3 **Figure 4** and **Figure 5** show the sound propagation of the Site upon the receptor locations for the day and night periods, respectively.
- 5.1.4 To present a reasonable worst-case assessment, impacts have been calculated at the closest receptors to the Site, as identified in **Table 6**.
- 5.1.5 **Table 13** allocates character corrections to the various specific noise sources.

Table 13 - Operational Noise - Allocation of Character Corrections

Noise Source	Tonality Correction dB	Impulsivity Correction dB	Intermittency Correction dB	Other sound characteristics Correction dB
Site Operations	0	0	+3	0
Total Overall Correction	+3			

- 5.1.6 A correction for intermittency has been applied to account for vehicles arriving and departing at intervals. No other corrections are considered to be appropriate at this stage.
- 5.1.7 **Table 14** completes the BS 4142 Assessment for both the daytime and night-time periods.

Table 14 - Operational Noise - Allocation of Character Corrections

Receptor	Period	Specific Noise Level at Receptor dB $L_{Aeq,T}$	Total Acoustic Character Correction dB	Calculated Rating Level dB $L_{Ar,T}$	Measured Modal Background Sound Level, dB $L_{A90,T}$	Difference dB
R1	Daytime	25	3	28	36	-8
	Night-time	26	3	29	38	-9
R2	Daytime	16	3	19	36	-17
	Night-time	18	3	21	38	-18
R3	Daytime	12	3	15	36	-22
	Night-time	13	3	16	38	-22

- 5.1.8 The assessment indicates that, during daytime and night-time periods, the rated level of sound will be below the background sound level at all NSRs. Therefore, impacts are considered to be **negligible**.

5.2 Plant Noise Limits

- 5.2.1 The positioning and details of the fixed plant associated with the Site were not available at the time of assessment. Therefore, the assessment below determines plant noise limits that the development must not exceed at the NSRs to avoid adverse impacts.

5.2.2 The table below presents the rating limits at the NSRs for both daytime and night-time periods, inclusive of any acoustic character corrections.

Table 15 - Rating Limits BS 4142:2014+A1:2019 Assessment

Receptor	Period	Modal Background Sound Level dB LA90,T	Rating Noise Limits at Receptor dB LAr,T
R1	Daytime	36	36
	Night-time	38	38
R2	Daytime	36	36
	Night-time	38	38
R3	Daytime	36	36
	Night-time	38	38

5.2.3 Provided the Rating Noise Level at the NSRs do not exceed levels shown in the table above, there would be no adverse impact.

5.3 Night-Time LAFmax Event

5.3.1 A typical LAFmax noise event is assumed to occur when the Site is operational and would typically be attributable to vehicle door slams. The assessment uses the LAFmax noise event level set out in **Table 7** and calculates the internal noise level from this.

5.3.2 **Table 16** calculates the internal noise level based on the LAFmax noise event level.

Table 16 - Highest Predicted LAFmax Noise Level

Receptor	External LAFmax noise event level dB	Attenuation for partially open window dB	WHO Internal noise level criteria dB LAFmax	Calculated internal noise level dB LAFmax	Difference dB
R1	49	-13	45	36	-9
R2	40	-13	45	27	-18
R3	34	-13	45	21	-24

5.3.3 The table above shows the calculated internal noise level from a LAFmax event would not exceed internal noise level criteria at any NSR, assuming a partially open window will provide 13dB of attenuation. Therefore, a **negligible impact** is predicted.

5.3.4 **Figure 6** shows the LAFmax sound propagation of the Site upon the receptor locations.

5.4 Road Traffic Noise – CRTN & DMRB Assessment

5.4.1 The existing and predicted traffic flows on roads surrounding the Site have been provided by the project transport consultant. The data provided and supporting calculations are included in **Appendix C**.

5.4.2 BNL calculations have been undertaken for the without scheme (Do Minimum) and with Proposed Development (Do Something) scenarios. BNLs have not been corrected for any gradients, barriers, or road surface types.

5.4.3 The results of the BNL calculations are shown in **Table 17**.

Table 17 - BNL with and without the development

ID	Road	BNL LA10,18hr dB		Impact LA10,18hr dB
		Do Minimum	Do Something	
1	A627 (M) Slattlocks Link, roundabout approach/exit	69.5	69.8	+0.3 Negligible
2	A627(M), north of Slattocks Link	74.9	75.0	+0.1 Negligible
3	A627(M), south of Slattocks Link	74.6	74.7	+0.1 Negligible
4	A627(M) South (Healds Green)	74.6	74.7	+0.1 Negligible
5	A664 Rochdale Road	67.9	68.4	+0.5 Negligible

5.4.4 It can be seen in the table above that there is up to +0.5 dB LA10,18hour change in basic noise level on surrounding roads due to traffic associated with the Site, which indicates a **negligible** impact.

6.0 Summary and Conclusions

- 6.1.1 Lucion Delta-Simons Limited ('Lucion Delta-Simons') was instructed by UBS Triton Property Fund (the 'Client') to undertake a Noise Impact Assessment to inform a planning application for a development located at Unit A Finlan Road, Stakehill Industrial Estate, Middleton, M24 2SJ (the 'Site'). The proposed works at the Site comprise the demolition of existing single storey extension and service yard canopy, erection of extension and alterations to existing building, change of use to allow a flexible use within Classes B2, B8 and / or E(g)(iii) and a series of physical works to reconfigure the site including an extension to the service yard, new hard and soft landscaping and associated infrastructure (the 'Proposed Development').
- 6.1.2 The Proposed Development has the potential to cause noise impacts at NSRs during operation. Therefore, to ensure significant adverse effects are not observed a Noise Impact Assessment is required.
- 6.1.3 This assessment has been undertaken to identify the key noise sources associated with the proposal and which may have the potential to impact the closest noise sensitive receptors (NSRs). Accordingly, this assessment has been completed with due regard to:
- National Planning Policy Framework (NPPF);
 - Planning Policy Guidance (PPG);
 - BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'; and
 - BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings';
 - Calculation of Road Traffic Noise (CRTN); and
 - Design Manual for Roads and Bridges (DMRB) LA 111 Noise and Vibration Revision 2.
- 6.1.4 This assessment has been informed by a noise survey, completed over a weekday and weekend period, to quantify the existing background noise environment at the sensitive receptors.
- 6.1.5 Noise modelling software CadnaA has been used to create a 3D noise model of the Site to undertake operational noise and maximum noise event calculations to inform the assessment.
- 6.1.6 The operational assessment results have shown that the rated level of noise is below the daytime and night-time background sound levels at the closest NSRs and therefore a **negligible impact** is predicted.
- 6.1.7 The assessment has set noise limits for fixed plant items at the closest receptors. Provided the noise emission at receptor locations from fixed plant and operations from the Proposed Development does not exceed the levels set out in **Table 15**, the impacts from fixed plant would be **negligible**.
- 6.1.8 The BS 8233:2014 night-time $L_{A_{\text{Fmax}}}$ event assessment has concluded that the calculated internal noise level from a $L_{A_{\text{Fmax}}}$ event would not exceed internal noise level criteria at any NSR. Therefore, a **negligible impact** is predicted.
- 6.1.9 The traffic assessment results have shown that there is up to +0.5 $L_{A10,18\text{hr}}$ change in basic noise level on surrounding roads due to traffic associated with the Site, which indicates a **negligible impact**.

Figure 1 – Site Location, Sensitive Receptor Locations, and Measurement Locations

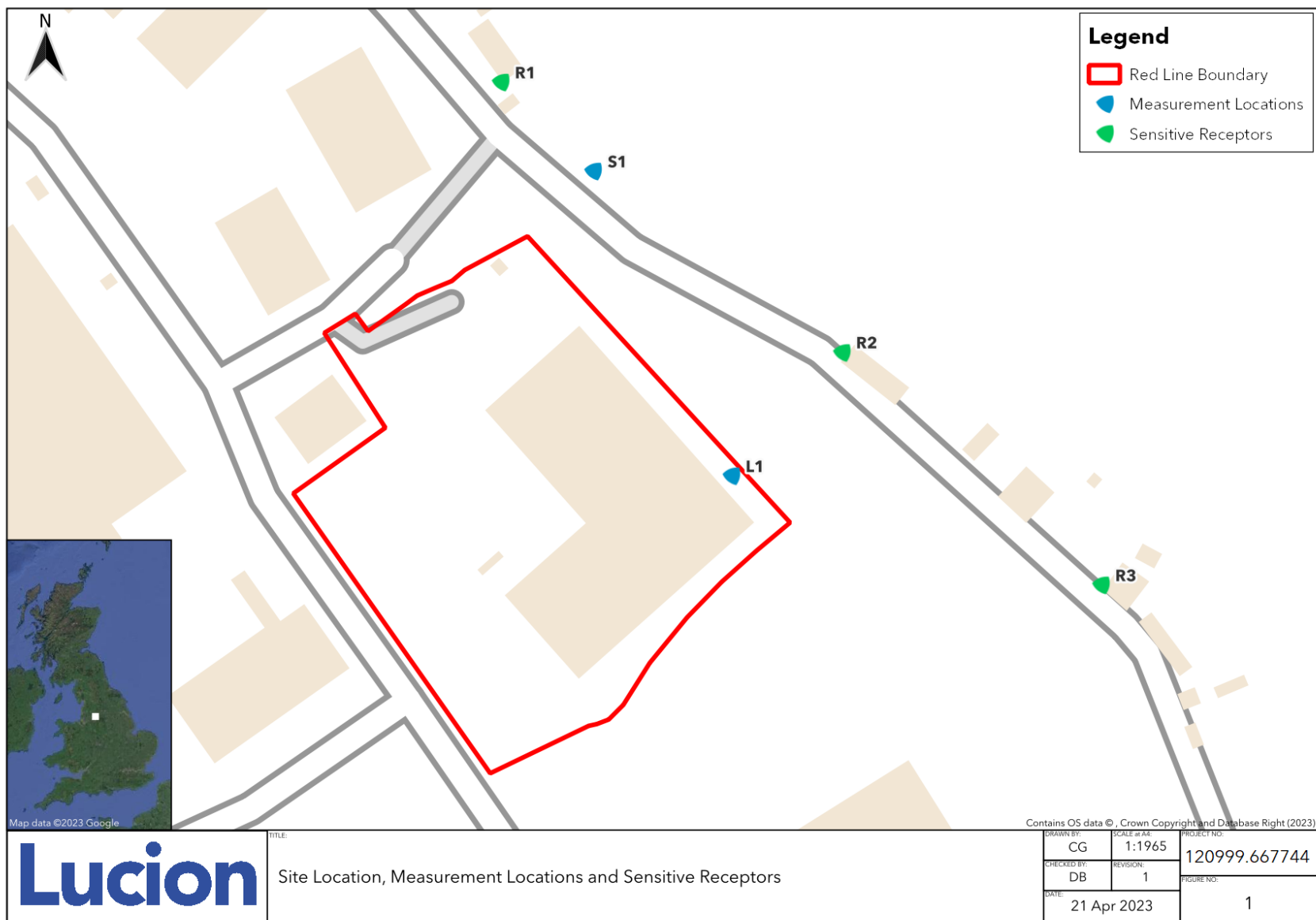


Figure 2 – Proposed Site Layout



Figure 3 – Measured Time History: L1

Measured Time History: L1

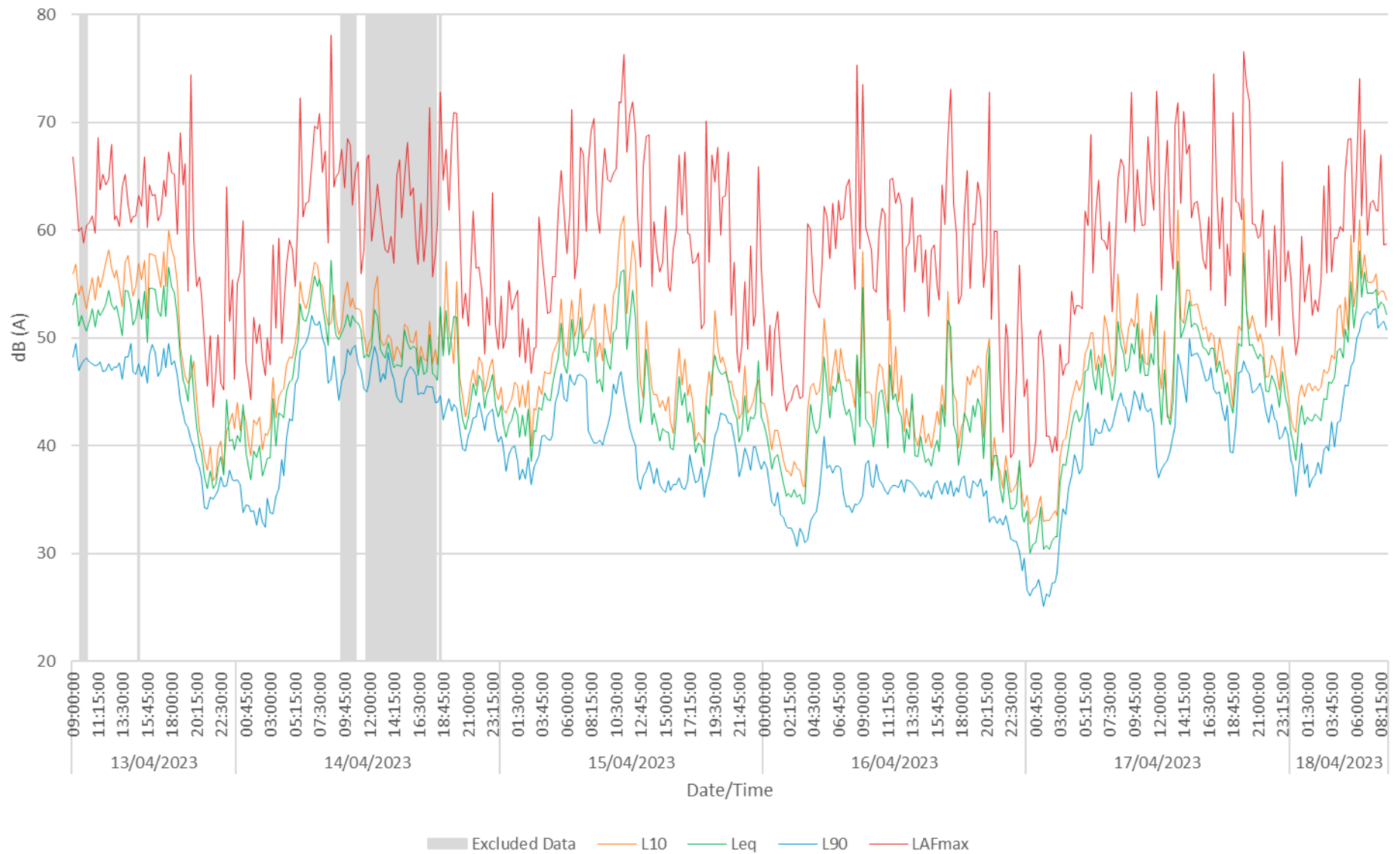


Figure 4 – Noise Contour: Daytime

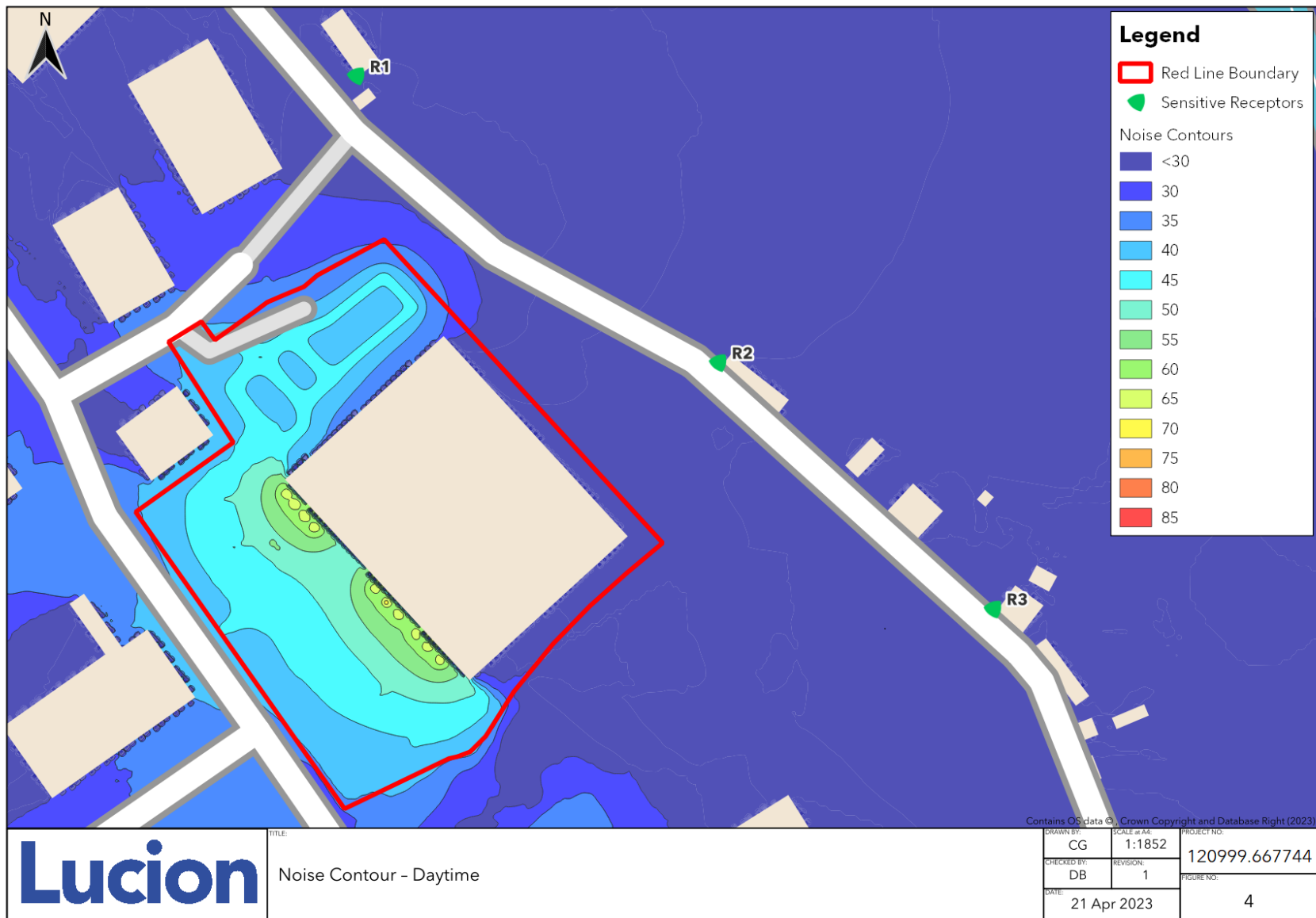


Figure 5 – Noise Contour: Night-time

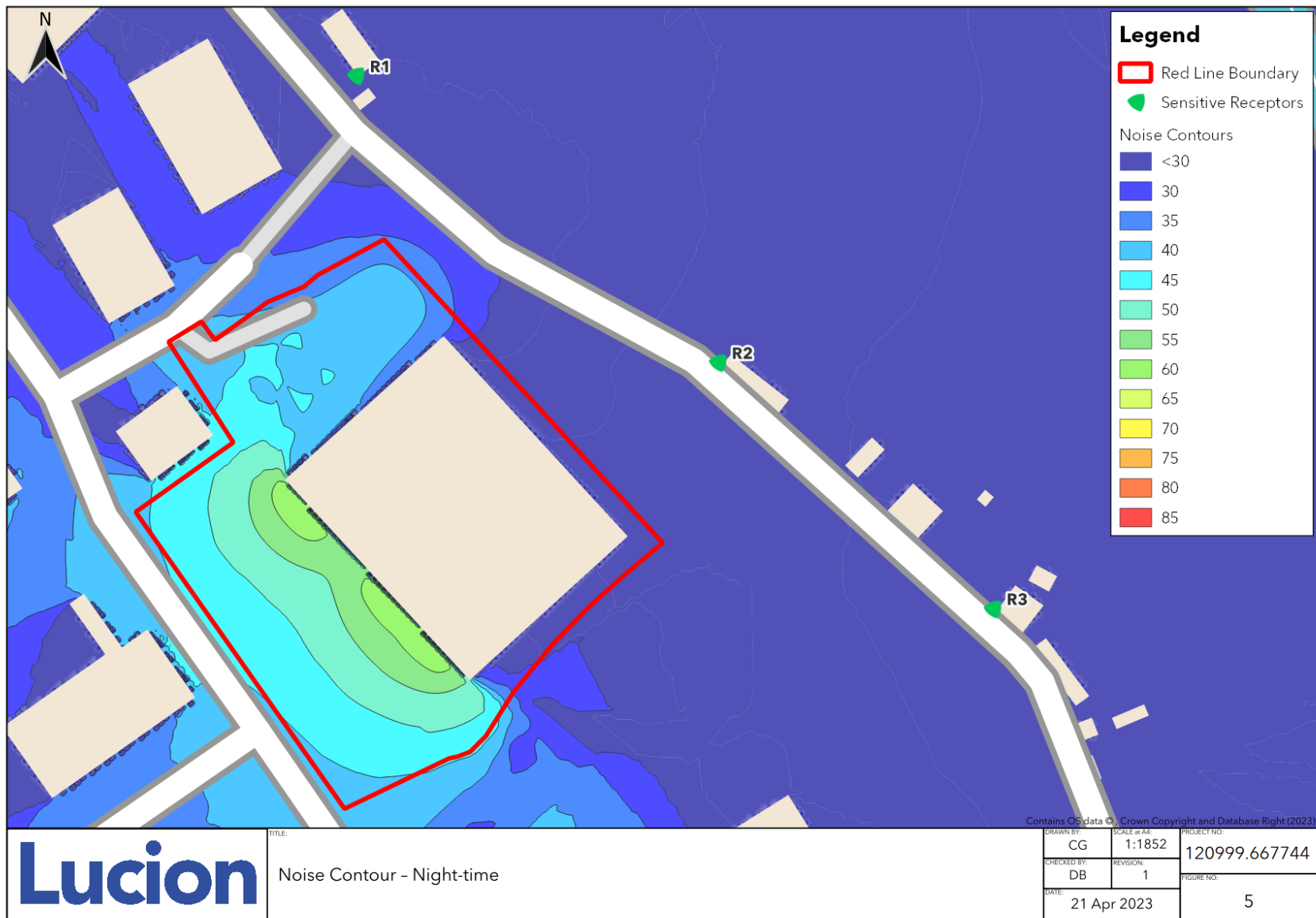
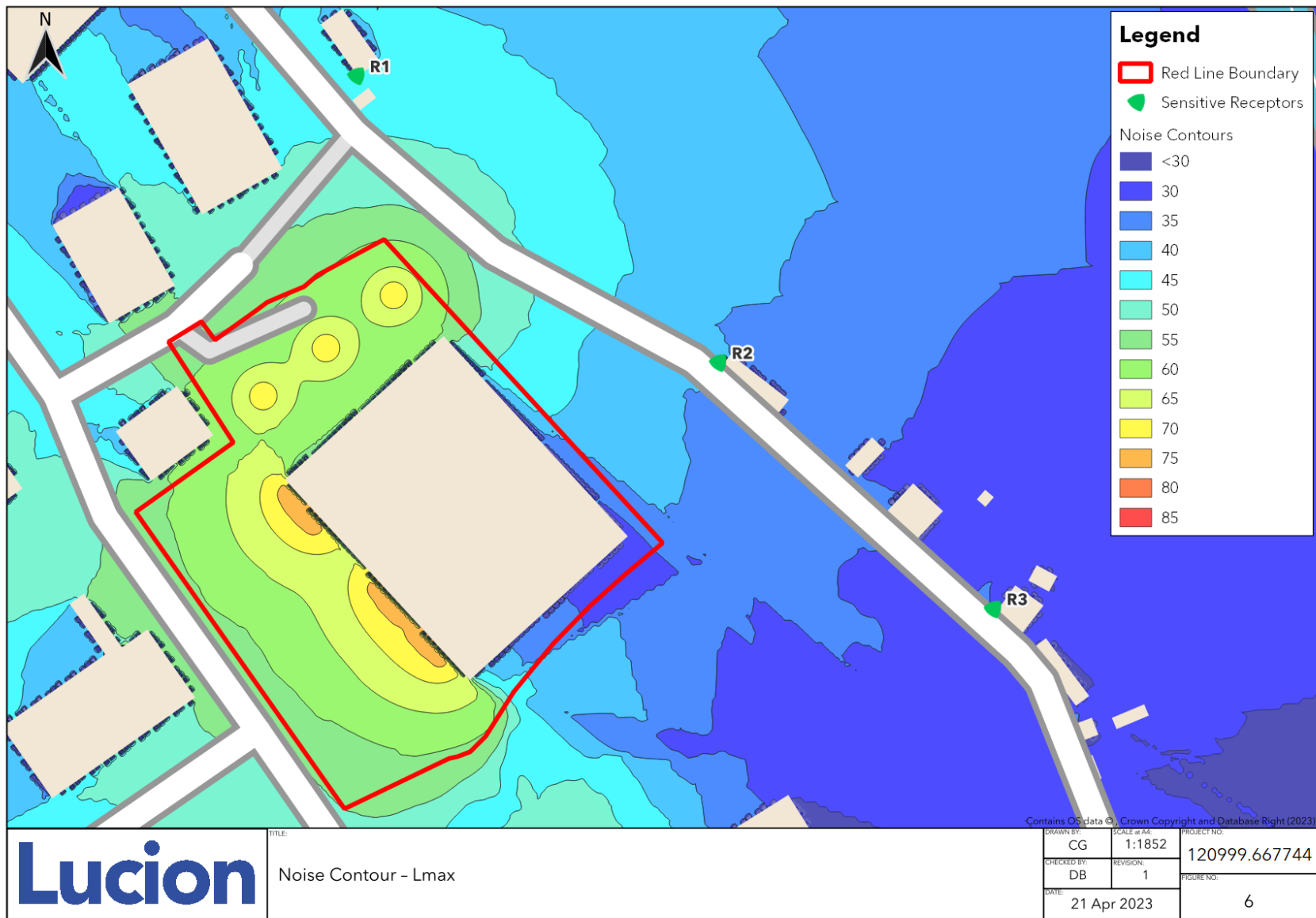


Figure 6 – Noise Contour: L_{AFmax}



Appendix A – Limitations

Limitations

The recommendations contained in this Report represent Lucion's professional opinions, based upon the information listed in the Report, exercising the duty of care required of an experienced Environmental Consultant. Lucion does not warrant or guarantee that the Site is free of hazardous or potentially hazardous materials or conditions.

Lucion obtained, reviewed and evaluated information in preparing this Report from the Client and others. Lucion's conclusions, opinions and recommendations has been determined using this information. Lucion does not warrant the accuracy of the information provided to it and will not be responsible for any opinions which Lucion has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

This Report was prepared by Lucion for the sole and exclusive use of the Client and for the specific purpose for which Lucion was instructed. Nothing contained in this Report shall be construed to give any rights or benefits to anyone other than the Client and Lucion, and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. In particular, Lucion does not intend, without its written consent, for this Report to be disseminated to anyone other than the Client or to be used or relied upon by anyone other than the Client. Use of the Report by any other person is unauthorised and such use is at the sole risk of the user. Anyone using or relying upon this Report, other than the Client, agrees by virtue of its use to indemnify and hold harmless Lucion from and against all claims, losses and damages (of whatsoever nature and howsoever or whensoever arising), arising out of or resulting from the performance of the work by the Consultant.

Appendix B – Glossary

Glossary

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 B1 - Typical Sound Pressure Levels

Sound Pressure Level (dB)	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 factory
100 - 110	Burglar alarm at 1 m away
110 - 130	Jet aircraft on take off
140	Threshold of pain

Table B2 - 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 (2×10^{-5} 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.
L_{10} & L_{90}	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 C - Traffic Calculations

Table C 1 - Traffic Data, AAWT,18hour

ID	Road	Speed (km/h)	Do Minimum			Do Something		
			Flow	HGV Flow	% HGV	Flow	HGV Flow	% HGV
1	A627 (M) Slattlocks Link, roundabout approach/exit	50	11540	1473	13	12173	1634	13
2	A627(M), north of Slattocks Link	50	57974	3405	6	58607	3566	6
3	A627(M), south of Slattocks Link	50	55689	2880	5	56322	3041	5
4	A627(M) south (Healds Green)	50	55689	2880	5	56322	3041	5
5	A664 Rochdale Road	50	14785	347	2	15418	508	3

Table C 2 - Traffic Calculations

ID	Road	Scenario	Flow (vehicles)	Vehicle speed (km/h)	HGVs	% HGV	BNL (dB)	Change (dB)
1	A627 (M) Slattlocks Link, roundabout approach/exit	Do Minimum	11540	50	1473	13	69.5	-
		Do Something	12173	50	1634	13	69.8	+0.3
2	A627(M), north of Slattocks Link	Do Minimum	57974	50	3405	6	74.9	-
		Do Something	58607	50	3566	6	75.0	+0.1
3	A627(M), south of Slattocks Link	Do Minimum	55689	50	2880	5	74.6	-
		Do Something	56322	50	3041	5	74.7	+0.1
4	A627(M) South (Healds Green)	Do Minimum	55689	50	2880	5	74.6	-
		Do Something	56322	50	3041	5	74.7	+0.1

ID	Road	Scenario	Flow (vehicles)	Vehicle speed (km/h)	HGVs	% HGV	BNL (dB)	Change (dB)
5	A664 Rochdale Road	Do Minimum	14785	50	347	2	67.9	-
		Do Something	15418	50	508	3	68.4	+0.5