

INFINITY ACOUSTICS

NOISE ASSESSMENT & MANAGEMENT PLAN

**BCA Manchester Auction Centre,
Redgate Lane, Manchester,
M12 4RX**



Project Description:

BS4142 Assessment & Management Plan of a Proposed Vehicle Preparation Building

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Report Authored By:

Principal Acoustic Consultant - Jamie Barratt-Gibson, *MSc, MIOA, MIET*

Quality Control:

Reviewed and Checked

Signature:


Company Details:

Infinity Acoustics Ltd

Tel: 01904 900 124

E: info@infinityacoustics.co.uk

W: www.infinityacoustics.co.uk

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1. Introduction

1.1 Infinity Acoustics Ltd has been appointed to undertake a noise assessment and noise management plan of the proposed vehicle preparation building at the BCA Auction Centre, Redgate Lane, Manchester M12 4RX.

1.2 The client has submitted a full planning application for the development to the Local Planning Authority (LPA), Manchester City Council. The application reference and title are: 142834/FO/2025 - *Erection of a single-storey building for storage, inspection and minor repairs of vehicles.*

1.3 The application was subsequently conditionally approved by the local planning authority. One of the conditions relates to noise and noise management of the development and is outlined below.

5) Prior to commencement of the use hereby approved, a Noise Management Plan (NMP) shall be submitted to and approved in writing by the City Council as local planning authority. The NMP shall include an assessment of noise from all activities associated with the vehicle preparation building. Any approved NMP shall be implemented in full before the use commences or as otherwise agreed in writing by the City Council as local planning authority.

1.4 The aim of the noise management plan and assessment below is to provide the relevant information to assist the client and local planning authority in discharging the condition, specifically in relation to the noise impacts from the site. The noise levels at the site will be measured and assessed according to the relevant standards, and noise control measures and management processes will be outlined where necessary to ensure the amenities of the nearby residents can be protected from any potential noise impact caused by the development. Before the installation of any noise control measures or sound

management processes outlined in this report, the contents of this report should be fully approved by the local authority.

1.5 The following noise assessment will be undertaken with reference to the National Planning Policy Framework 2024 and the Noise Policy Statement for England 2010 as well as the following standards.

1.6 BS4142:2014+A1:2019 - Methods for Rating and Assessing Industrial and Commercial Sound.

BS4142 is a British Standard that provides guidance and a standardised methodology for assessing industrial and commercial noise sources. BS4142 outlines methods for defining specific sound levels from a given development and/or noise source. Rating penalties are then applied to account for the acoustic characteristics of the noise source. Rating penalties can be applied for the following:

- Tonality,
- Impulsivity
- Intermittency.

Using the subjective method, the penalties vary in magnitude depending on how perceptible the acoustic characteristic is to the human ear. The rating noise level is then compared to the underlying L_{A90} background sound level of the area without the source under assessment operating to assess the likely noise impact. The level by which the rating noise level exceeds the background L_{A90} defines the potential for noise impact. The table below outlines the relevant criteria bandings described in BS4142

Description	Impact Rating
Rating noise levels +10 dB above the background	Significant adverse impact, depending on the context.
Rating noise levels +5 dB above the background	Adverse impact, depending on the context.
Where the rating level does not exceed the background	Low impact, dependent on Context

Table 1.0 – BS4142 Noise Criteria

The above methodology will be used to assess the noise from the development site. To ensure the amenity of all surrounding residents can be protected, it is understood that noise from the development should fall equal to or below the background sound levels, thus indicating low impact. This criterion point will be utilised in the subsequent assessment and noise management plan.

2. Site & Surroundings

- 2.1 The proposed development site is situated approximately 3.25Km away from Manchester City centre. The area surrounding the site is a mixture of commercial, industrial and residential units. In general, the area surrounding the site could be described as urban.
- 2.2 To the north of the site is the A57, Hyde Road and to the west of the site is the A6010 Pottery Lane, both of which facilitate high levels of road traffic flow. During the site visit, road noise was noted as the dominant feature of the acoustic environment and pervasive across much of the surrounding area.
- 2.3 There are multiple other commercial and industrial units in the direct vicinity of the site, including Tyre Bay, Hyde Road, Manchester, which operates between 09:00 – 18:00, B&M Home Store, which operates between 08:00 – 22:00, Gorton Car Sales, which operates between 10:00 – 17:00, and Manchester PDSA Pet Wellbeing Centre, which operates between 09:00 – 17:30. Based on the demographic of the surrounding area the development would not be out of place.
- 2.4 The BCA auction centre has two existing vehicle preparation and maintenance bays, which are situated internally within the existing structure. These vehicle preparation bays are utilised for undertaking repairs and maintenance of vehicles prior to the sale and auction. It is understood that the same type of operations will occur within the proposed new building, and the same or similar tools will also be utilised within this space. A visit to the existing site and vehicle maintenance and preparation bays has been undertaken to establish what tools and equipment will be used within the new site. The vast majority of the work within the preparation bays is undertaken with hand tools, wrenches and spanners. The following noise-generating tools and equipment used in the bays were identified.

- Vehicle Lifts
- Large Wheel Nut Gun
- Small Dewalt Wheel Nut Gun
- Dewalt Drill
- Snap-On Electric Wrench
- Nuair Air Sil Evo HP3 Compressor
- Hammers and hand tools (Wrenches, Spanners).
- Vehicle Engine Idling

- 2.5 In general, the activities that will occur within the proposed new building will be the same as those in the existing maintenance bays and could be described as typical vehicle repair and maintenance activities.
- 2.6 The proposed building itself will be formed from composite steel sheet walls, Galvanised Roller Shutters and a high tenacity polyester technical fabric roof. It will be located in the existing car parking area adjacent to the existing vehicle maintenance and preparation bays. The current operational hours of the site are 08:00 – 17:30. However, the client proposes that the proposed maintenance and preparation building be operated between 06:00 – 18:00, Monday to Sunday.
- 2.7 The proposed development site and surrounding Noise Sensitive Receptors, as well as the background noise measurement locations, can be found in the figure below. The identified Noise Sensitive Receptors below will be key locations utilised in the noise management plan and assessment.



Figure 1.0 – Site and Surroundings

3. Proposed Noise Control Measures & Noise Management Plan

3.1 In order to ensure the noise impact from the development is as low as possible, a set of noise control measures and a detailed management plan have been devised and are outlined below.

Structural Noise Control and Sound Insulation

3.2 The walls of the proposed building should provide a minimum 25 dB R_w attenuation. An example composite sheet that can provide these levels of attenuation is the Kingspan Quadcore KS1000 R_w ; however, any composite panel providing the minimum level of attenuation, 25 dB R_w , could also be installed.

3.3 The proposed roller shutter door should provide a minimum 18 dB R_w of attenuation. An example roller shutter door that can provide this level of attenuation is the UK Roller Shutters GLV11-INS100. However, any other roller shutter could be installed provided it achieves the minimum required sound reduction of 18 dB R_w .

3.4 It is assumed that the high tenacity polyester technical fabric will provide a minimum of 10 dB attenuation for full shielding between source and receiver

Noise Management Plan

3.5 The following section of the report outlines the detailed noise management plan that will be implemented at the site.

3.6 The development site should not operate outside of the hours between 06:00 – 18:00 on any day of the week.

3.7 Rating noise levels from the development should not exceed the following noise levels at the closest dwellings outlined in Figure 2.0 in the section above. The noise limits are inclusive of any acoustic feature penalties applied in accordance with BS4142:2014+A1:2019.

Description	Day 07:00 – 18:00	Night 06:00 – 07:00
	$L_{A,r,Tr}$ 1hour	$L_{A,r,Tr}$ 1hour
Noise Limits at the NSR	46.0	40.0

Table 2.0 – Noise Limits

The noise limits above have been devised based on the statistically most repeated $L_{A90,15min}$ background sound levels at the measurement position with the lowest measured noise levels.

3.8 All noise-generating sources, tools and equipment, such as compressors and power tools, will be located within the structure and not be utilised in the open air outside of the building.

3.9 Operations that involve significant engine revving for extended periods of time, such as DPF regeneration and/or emissions testing, will not take place within the proposed structure and will be undertaken within the existing maintenance and preparation buildings, which are fully enclosed within heavy-weight structures.

3.10 The roller shutter doors will remain closed during the nighttime operation between 06:00 – 07:00 except when vehicle access is required.

3.11 Where any significantly noisy operations are required to be undertaken for extended periods of time within the proposed building, during the daytime period between 07:00 – 18:00, the roller shutter doors will remain closed for the duration of the activity.

3.12 The use of vehicle horns within the proposed structure will be strictly prohibited.

3.13 The noise-generating equipment used in the building, such as compressors and hand drills, wheel nut guns, will be selected so as not to exceed the sound levels presented in the following table. The noise levels have been obtained from measurements of existing equipment in the existing maintenance and vehicle preparation bays.

Description	Calculated Sound Power LwA
Compressor	78.0
Wheel Nut Gun	100.0
Vehicle Lift	75.0
Electric Wrench	89.0
Hand Drill	81.0
Small Wheel Nut Gun	95.0

Table 3.0 – Equipment Noise Limits

Where possible, all equipment within the development will be selected to ensure it produces noise levels lower than those presented above.

3.14 The use of wheel nut guns will be prohibited from use in the nighttime period between 06:00 – 07:00

3.15 A maintenance schedule for all equipment utilised with the proposed development will be devised and implemented. All equipment will be regularly maintained, and staff will be trained on proper usage of equipment to avoid malfunctions or improper use that may increase noise levels from the site.

3.16 A dedicated noise officer will be designated and could be either a manager or a supervisor assigned to oversee the proposed maintenance and preparation building. The noise control officer will be fully trained and made aware of the specifics of the noise management plan so the officer can effectively enforce the noise management plan.

3.17 The dedicated noise officer will take a walk around the development building at least once a day to review and address any potential noise issues and ensure the noise management plan is being enforced. The dedicated noise officer will have the authority to overrule mechanics and staff operating within the proposed vehicle preparation and maintenance building with regard to potential noise issues and management of operations that may cause undue noise impact.

3.18 Clear communication and engagement with the surrounding community will be a priority at all times. The dedicated noise officer will be responsible for this. A dedicated phone line for nearby residents will be set up to ensure should noise impact from the vehicle preparation and maintenance building arise, any issues causing this can be dealt with in a swift and responsive manner.

3.19 An Incident Management System (IMS) will be set up and overseen by the noise control officer.

3.20 Should a noise incident occur or a complaint be received, the dedicated noise officer will investigate the complaint as soon as possible. The source of the

noise complaint should be identified, and the time, date and nature of the noise complaint should be recorded in the IMS.

3.21 As a result of receiving a complaint, the dedicated noise officer will undertake quantitative noise measurements for a minimum of 15 minutes at the perimeter of the site, Noise Sensitive Receptors or the complainant's location using a Class 2 sound level meter. The measured noise levels and subjective impression of vehicle prep and maintenance noise at the complaint location will be documented and logged within the IMS.

3.22 The subjective analysis of the vehicle preparation noise emanating from the building at the complainant's location above should be assessed on a sliding scale, which is outlined below. Should a Significant Observed Effect Level be identified, then immediate remedial measures will be implemented.

Impact Level	Definition	Action to be taken
Level 1: No Observed Effect Level	The vehicle preparation noise is inaudible or very faint, a significant concentration is required to distinguish the noise above the background sound levels of the area.	No
Level 2: Lowest Observed Effect Level	The vehicle prep and maintenance noise is only just distinguishable at a low level, specifically, the noise from the site would be masked by normal speech or normal leisure activity in and around a dwelling.	No
Level 3: Significant Observed Effect Level	The vehicle prep and maintenance noise is clear and distinct within the surrounding acoustic environment. It is highly likely that sleep or rest will be adversely affected.	Yes

Table 4.0 – Subjective Rating Scale for NSR Analysis

3.23 As a result of any investigation indicating a noise incident, remedial measures will be put in place to reduce the potential of similar noise complaints or events

occurring in future. All remedial measures should also be logged within the IMS system.

3.24 All details within the IMS system should be stored safely and securely, should the local authority environmental protection offices need to review them.

3.25 All staff will be trained on proper tool usage and low-noise working methods. Should any member of staff be found to be causing excessive noise, then they will be retrained.

3.26 The noise management plan and IMS database will be reviewed every 6 months with the noise officer and senior management team. Any complaints will be reviewed and, where applicable, the noise management plan updated to reduce the likelihood of similar complaints being received in future.

4. Computer Noise Model Results

- 4.1 A computer sound model of the site has been generated using DGMR Noise Prediction Software to assess the potential noise impact and effectiveness of the noise management plan. This software undertakes calculations using the methods outlined in ISO 9613-2:2024 Attenuation of Sound During Propagation Outdoors. The model assumes the noise control measures and management processes outlined in Section 3.0 have been implemented.
- 4.2 The results of the noise model can be found in the table and figures below. Model assumptions and input noise levels can be found in Appendix D.

Specific Noise Levels at NSR		
Location	Day $L_{Aeq,15min}$ (dBA)	Night $L_{Aeq,15min}$ (dBA)
NSR 1	30.0	31.0
NSR 2	26.0	27.0
NSR 3	21.0	24.0
NSR 4	29.0	32.0

Table 5.0 – Calculated Specific Noise Levels

- 4.3 As can be seen in the table above, the specific noise levels expected at the NSRs are low and would fall below the criteria outlined in the W.H.O Guidelines on community noise. This is a positive indication of the effectiveness of the NMP and noise control measures.

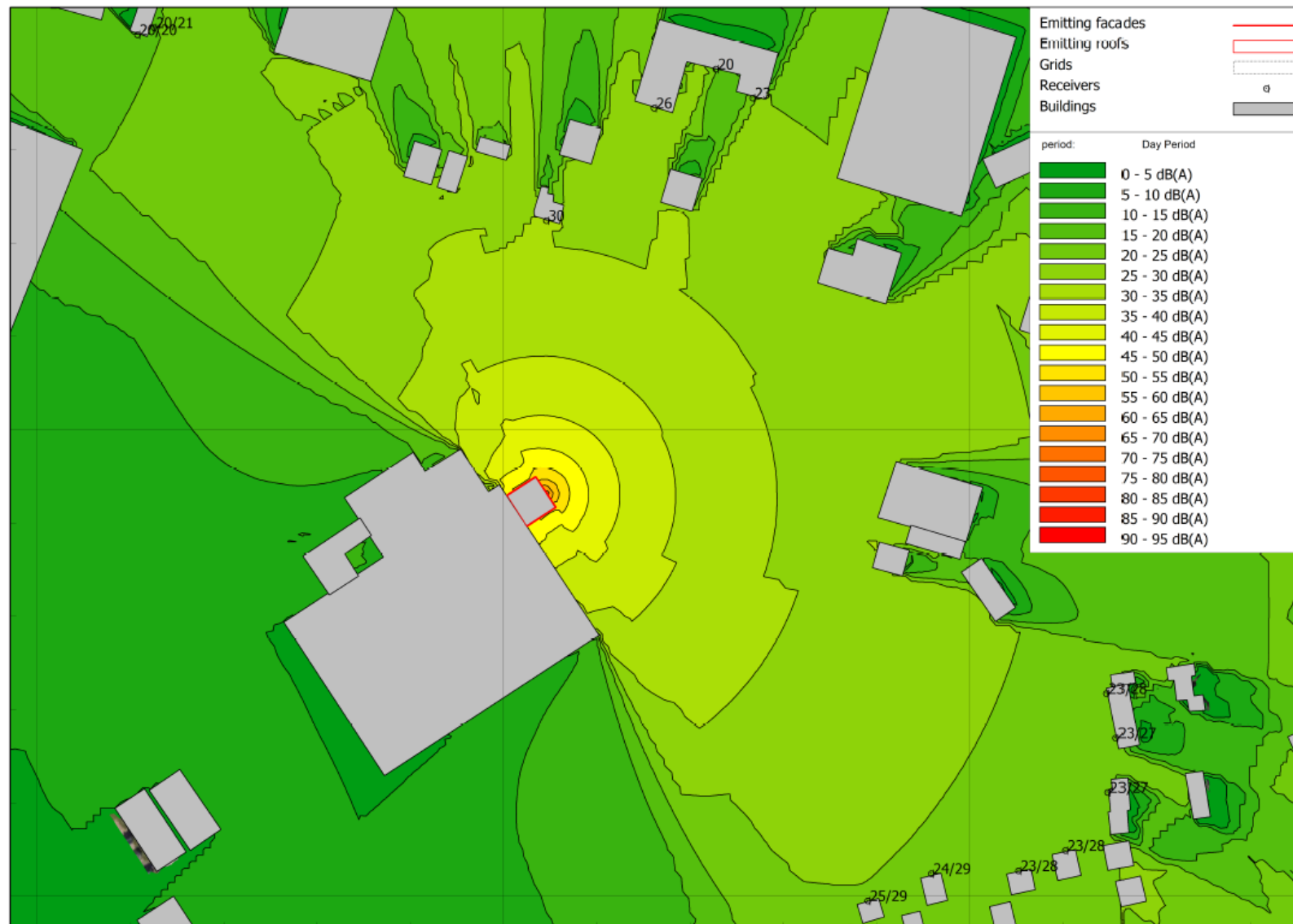


Figure 2.0 – Day – $L_{Aeq,1hour}$ – 1.5m Contour Height

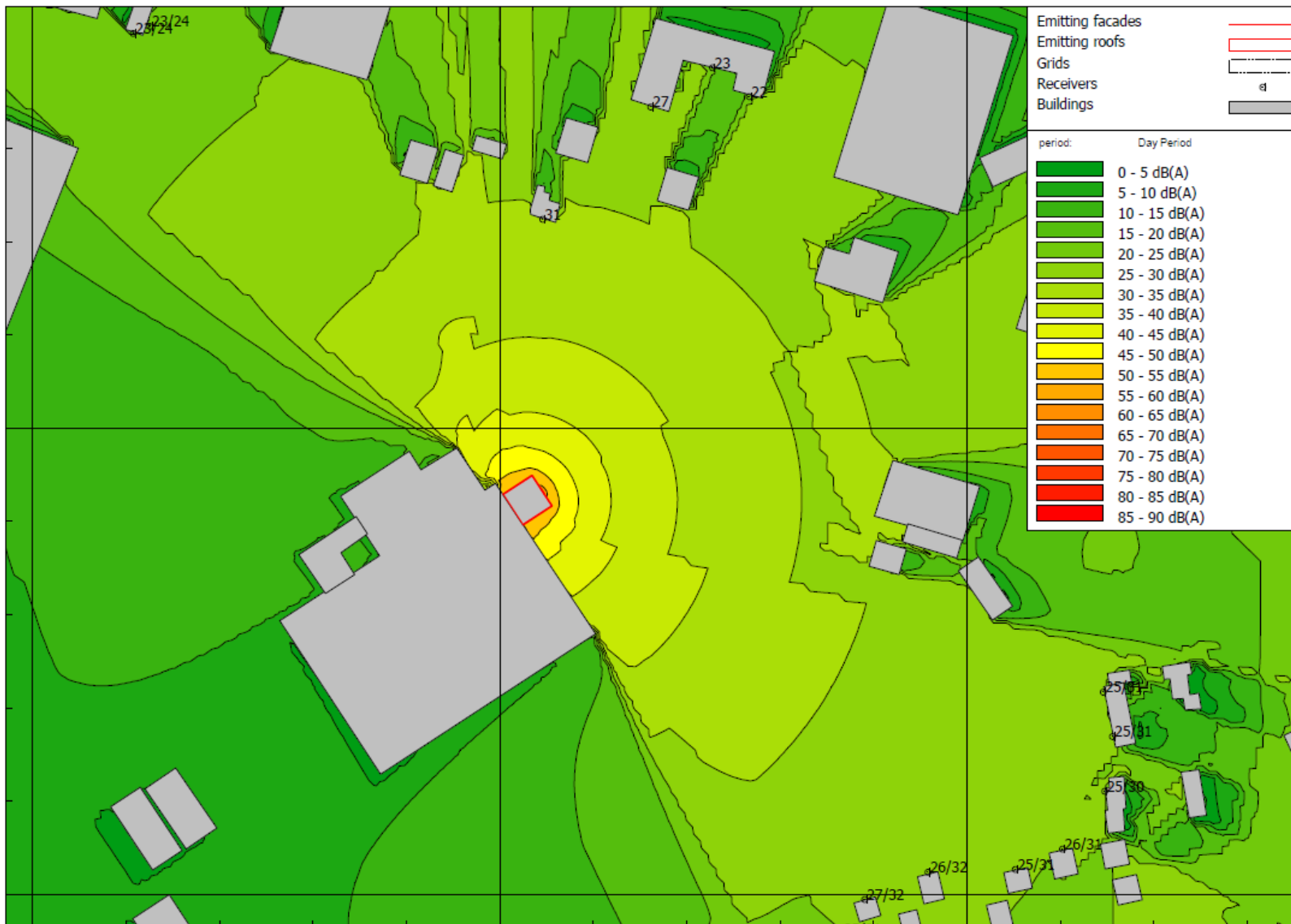


Figure 3.0 – Night – $L_{Aeq,15min}$ – 1.5m Contour Height

5. BS4142 Noise Assessment

5.1 The following section of the report assesses the noise from the development during its operational hours by undertaking a BS4142 Assessment. The assessment has been undertaken assuming all noise control measures and processes outlined in Section 3.0 of the report have been implemented.

5.2 The development is located over 100m from any of the closest residential dwellings, and the area is dominated by significant road noise, which is pervasive across the area. Further to this, all noise sources will be fully enclosed within the proposed structure. Given this, it is unlikely that any acoustic features associated with the development would be audible at the nearest dwellings. However, to provide a robust and conservative analysis, the following Rating Penalties will be applied in accordance with BS4142:

- +2 dB Tonality
- +3 dB Impulsivity
- +3 dB Intermittent activity

5.3 The BS4142 Assessment is presented in the table below. To provide a robust and conservative analysis, the assessment below considers the most exposed NSR. At all other NSRs, it is expected that the noise impact would be lower than stated in the assessment below.

Noise BS4142 Assessment		
Description	NSR Day (dBA)	NSR Night (dBA)
Specific Noise Level at NSR	30.0	32.0
Rating Noise Level +8 dB	38.0	40.0
Background L _{A90}	46.0	40.0
Level Above Background	-8.0	0.0

Table 6.0 – BS4142 Assessment

5.4 As can be seen in the assessment above, provided the recommendations outlined in the report and noise management plan are implemented, the defined noise limits can readily be achieved. Rating noise levels are expected to fall equal to or below the background sound level. This indicates 'Low Impact Depending on Context' when assessed in accordance with BS4142.

5.5 The assessment above represents the worst-case scenario utilising background sound levels from the NSR with the lowest measured background sound levels, along with rating penalties for acoustic features, which, given the intervening distance and shielding provided by the building, would likely not be readily audible at the nearby dwellings. Therefore, it can be concluded that the noise management plan and proposed noise control measures would be effective at limiting and reducing any potential noise impact from the development.

APPENDIX A – List of Terms and Glossary

The following section of the report outlines a glossary of terms used in the assessment to assist the reader in understanding the assessment above, which is, by necessity technical in nature.

Decibel DB - The decibel, often denoted as dB, is the logarithmic unit used to describe the magnitude of sound or noise levels. The typical range of sound pressure levels is from 0 dB, defined as the threshold of hearing, to 120dB, defined as the threshold of pain.

Frequency Hz – As well as the decibel sound and noise are also measured and defined in frequency. Frequency or Hertz (Hz) is an expression of the number of cycles a sound wave completes per second. Larger frequencies may be expressed in kilohertz (kHz). The typical range of human hearing is from 20 Hz to 20,000Hz; however, with age, the audible frequency range decreases in most humans.

A - Weighting – The A-weighting is the most commonly used weighting curve taken from IEC 61672:2003 and is applied to sound pressure level measurements. The A-weighting is applied to measured sound levels to account for the loudness perceived by the human ear, as the ear is less sensitive to low audio frequencies.

LAeq - The A-weighted 'equivalent continuous noise level', which is an average of the total sound energy measured over any given time period. L_{Aeq} is the level of a continuous noise that has the same total (A-weighted) energy as the real fluctuating noise, measured over the same time period. The A-weighting represents a curve that is applied to the measured noise levels to represent the way the human auditory system perceives sound.

LAfmax - The maximum A-weighted noise level that was recorded during the monitoring period using a fast time weighting. This acoustic parameter represents more transient sound levels within the acoustic environment, which may only occur for a few seconds or minutes.

LA10 - This is the A-weighted noise level exceeded for 10% of a given time period. This parameter is typically used to measure and predict road traffic noise.

LA90 - This is the A-weighted noise level exceeded for 90% of any given time period. Generally, this acoustic parameter represents the underlying background sound level in a given area and doesn't generally include transient or short-term noise events that may occur within the surroundings.

Sound Pressure – Sound pressure is the difference between the instantaneous pressure at a point in the presence of a sound wave and the static pressure of the medium. Sound pressure fluctuates due to refractions and compressions of air molecules.

Sound Reduction Index – The sound reduction index, denoted by the parameter 'R', is the laboratory-measured sound reduction given material or construction. R is measured in 1/3 octave band frequencies. The R_w sound insulation parameter stands for the weighted standardised sound reduction index and is a single-figure global rating of the sound insulation of a given material or construction.

APPENDIX C – Noise Survey Results

A noise survey of the site was undertaken between Friday the 1st of August to Monday the 4th of August 2025.

The following equipment was used to undertake the noise survey. All equipment used was field calibrated with a drift of less than 0.3 dB before and after the measurement. Calibration certificates for the equipment can be provided upon request.

- Castle Mirus GA177 Class 1 Sound Level Meter – SN – 35762
- Castle Sonik-E Class 1 Sound Level Meter – SN – 075734
- Castle GA607 Class 1 Calibrator – SN – 039459

The long-term noise meter and associated microphone at Measurement Location 1 (ML1) were located 3.5m from the ground and attached to a steel lamppost situated on the perimeter of the site closest to NSR 4. This location was deemed representative of the background sound levels at NSR4 and all other NSRs. This location was deemed to be lower in noise levels than that witnessed at NSRs 1-3 due to the secluded nature of the area in comparison to the NSRs situated adjacent to the main road.

Further spot noise measurements of the background sound levels in proximity to NSR 1 to 3 were undertaken for further analysis.

Noise measurements of various activities at the site have also been undertaken. In these instances, the noise meter was positioned in proximity to the noise source, typically 1m and 1.5m from the ground.

The weather during the setup of the equipment is outlined below:

- 19.2 Degrees Celsius
- S wind with speeds of less than 1m/s
- Moderate cloud cover and no precipitation

During the collection of the equipment, the weather was.

- 29.8 Degrees Celsius
- SE wind with speeds of less than 1m/s.
- Full cover and no precipitation

Generally, the weather across the majority of the survey complied with the requirements of BS 7445-2. A full weather summary for the duration of the survey is outlined in the table below and has been taken from the nearest functioning weather stations.

Weather Data	
Description	Data
Temp (C)	11.5 – 21.5
Rainfall (mm)	0.0 – 22.8*
Wind Speed (m/s)	0.0 – 3.9
Prevailing Wind	S
Relative Mean Humidity (%)	79.7

Table 7.0 – Weather Data

**Significant rain occurred on the 4th of August, not included in the assessment of background sound levels.*

The summary results of the noise survey are presented in the table below and will be used in the subsequent noise assessment.

16- & 8-Hour Results ML1				
Date	Time Period	L_{Aeq} (dB)	L_{Afmax} (dB)	L_{A90}(dB)
Day – 01/08/2025	10:00 – 23:00	57.0	94.0	49.0
Night – 01/08/2025	23:00 – 07:00	46.0	74.0	42.0
Day – 02/08/2025	07:00 – 23:00	52.0	90.0	47.0
Night – 02/08/2025	23:00 – 07:00	46.0	77.0	41.0
Day – 03/08/2025	07:00 – 23:00	56.0	93.0	48.0
Night – 03/08/2025	23:00 – 07:00	46.0	80.0	41.0
*Day – 04/08/2025	07:00 – 09:45	55.0	88.0	50.0

Table 8.0 – Noise Survey Data ML1

*Significant rain occurred on the 4th of August, not included in the assessment of background sound levels.

1-Hour Results ML2			
Date	Time Period	L_{Aeq} (dB)	L_{A90}(dB)
Day – 01/08/2025	10:38 – 11:38	57.0	49.0
Day – 04/08/2025	08:50 – 09:50	60.0	52.0

Table 9.0 – Noise Survey Data ML1

The proposed operational hours are 06:00 – 18:00 every day of the week. Given this, the extension of operating hours relates to additional night operations between 06:00 – 07:00 and daytime operation between 07:00 – 18:00. The background sound levels from both of these periods will be analysed and presented in the figures below:

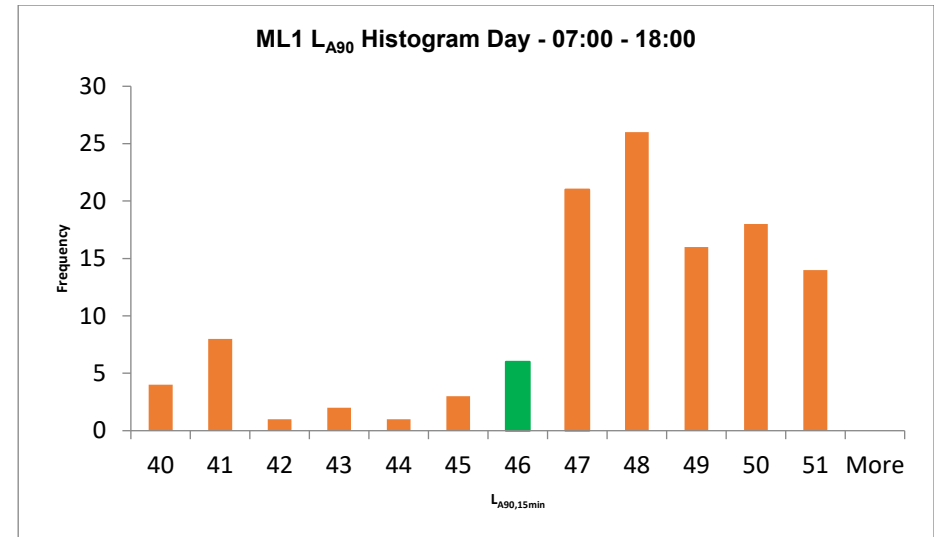


Figure 5.0 – L_{A90} Analysis Day

The lowest statistically most repeated L_{A90} value in the proposed period of operation of the day, between 07:00 – 18:00, is 48 dB. However, the background sound levels are lower than this level for 38% of the time. Therefore, a more appropriate and robust background sound level is 46 dB L_{A90}. The background sound levels of the area are equal to or higher than these levels for 84% of the time, and thus these levels will be used to set the noise limits within the management plan and will also be used for the BS4142 assessment.

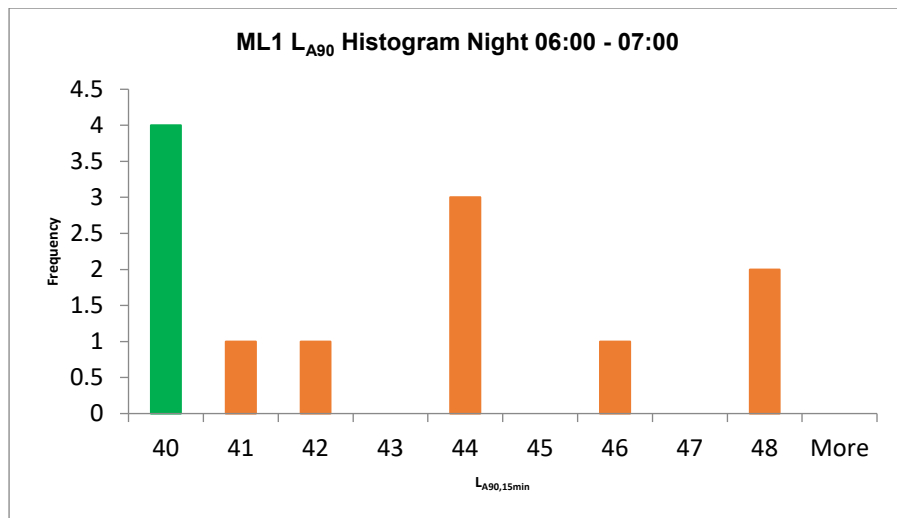


Figure 6.0 – L_{A90} Analysis - Night

The lowest statistically most repeated L_{A90} value in the proposed period of operation is 40 dB. This level sits at the bottom of the measured range. The background sound level of 40 dB L_{A90} will be used in the subsequent assessment and as a noise limit incorporated into the noise management plan and is deemed robust and conservative.

The noise survey time history for the long-term noise monitoring position is outlined below.

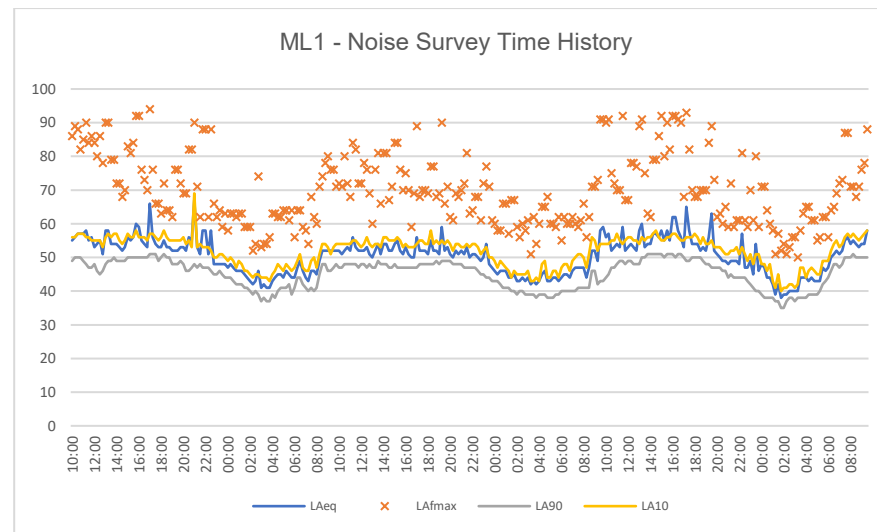


Figure 7.0 – ML1 – Noise Survey Time History

APPENDIX D – Calculations and Noise Model inputs

D1 – Noise Contours and Model Assumptions

The following assumptions have been made within the computer sound model:

- The ground in the area has been considered hard.
- The topography of the site and surrounding land has been taken from Google Earth and information gained on-site.
- The elevations and building heights have been obtained from information gained on-site and the associated plans for the development.
- The noise emanating from the proposed vehicle maintenance building has been input into the model as area sources set as L_{wA}/m^2 . Full breakout calculations can be found in the tables below.

D.2 - Noise Model Input Calculations – Specific Source Levels

The table below presents the source noise data used in the assessment. The noise data below was obtained by specific noise measurement of operations and plant at the site in the existing vehicle preparation and maintenance bays, as well as taken from the Infinity Acoustics Sound Database of noise data. The majority of the noise sources were measured internally, and thus a 6 dB correction has been applied to establish the non-reverberant noise levels and calculate the relative sound power of each individual noise source.

Description	LpA at 1m (dB)	LPA dB at 1m non-reverberant (-6dB)	Calculated LwA (dB)
Compressor	76.0	70.0	78.0
Big Wheel Nut Gun	98.0	92.0	100.0
Vehicle Lift	73.0	67.0	75.0
Electric Wrench	87.0	81.0	89.0
Hand Drill	79.0	73.0	81.0
Small Wheel Nut Gun	93.0	87.0	95.0
Hammer	90.0	84.0	92.0
Van Idle	--	61.0	75.0

Table 10.0 – Specific Noise Level Measurements and Sound Power Levels

D3 – Model Inputs - On-Time Corrections

The expected internal noise levels within the proposed building have been calculated over a 1-hour daytime and 15-minute nighttime assessment periods as per BS4142. Each noise source has been time corrected based on appropriate usage times established during the information gained during the visit to the existing site. The following formula has been used to establish the internal noise levels over the assessment period

$$L_{pA} = L_{wA} + 10 \log(D / (4 \pi r^2) + 4 / R)$$

Daytime Internal $L_{Aeq,1hour}$ Calculations					
Description	LwA (dB)	On time (Min)	Time Corrected LwA (dB)	LpA (dB)	Cumulative Internal LpA,1hour (dB)
Compressor	78.0	5	67.0	55.8	72.0
Big Wheel Nut Gun	100.0	0.5	79.0	67.8	
Vehicle Lift	75.0	10	67.0	55.8	
Electric Wrench	89.0	5	78.0	66.8	
Hand Drill	81.0	10	73.0	61.8	
Small Wheel Nut Gun	95.0	0.5	74.0	62.8	
Hammer	92.0	1	74.0	62.8	
Van Idle	75.0	15	69.0	57.8	

Table 11.0 – Day Internal Noise Level Calculations

Nighttime Internal $L_{Aeq,15min}$ Calculations					
Description	LwA (dB)	On time (Min)	Time Corrected LwA (dB)	LpA (dB)	Cumulative Internal LpA,15min (dB)
Compressor	78.0	5	73.0	61.8	76.0
Big Wheel Nut Gun	75.0	10	73.0	61.8	
Vehicle Lift	89.0	5	84.0	72.8	
Electric Wrench	81.0	10	79.0	67.8	
Hand Drill	92.0	1	80.0	68.8	
Small Wheel Nut Gun	75.0	15	75.0	63.8	

Table 12.0 – Night Internal Noise Level Calculations

The table below calculates the noise levels breaking out of the proposed building, assuming the calculated internal noise levels and the sound reduction of each façade element using the formula L1-R-6. The sound power of each façade element is then calculated within the sound mapping software and set at L_w/m^2 , which assumes the formula $L_w = L_p + 10\log(S)$.

Day Noise Breakout Calculations			
Element	Internal LpA (dB)	Rw (dB)	External LpA (dB)
Wall	72.0	25.0	41.0
Open Roller Shutter	72.0	0.0	66.0
Roof	72.0	10.0	56.0
Night Noise Breakout Calculations			
Element	Internal LpA (dB)	Rw (dB)	External LpA (dB)
Wall	76.0	25.0	45.0
Closed Roller Shutter	76.0	18.0	52.0
Roof	76.0	10.0	60.0

Table 13.0 – Noise Breakout Calculations

Disclaimer and Copyright

- 1) Infinity Acoustics Ltd has undertaken the above assessment and provided the above interpretations based on the information available at the time of the assessment, and details provided by the client, it has been undertaken given all reasonable skill and care.
- 2) All works have been undertaken in accordance with Infinity Acoustics Ltd's Terms and Conditions. The assessment has been undertaken on behalf of the client based on the Terms and Conditions agreed between the client and Infinity Acoustics Ltd.
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