acoustics consultants
AUSTRALIA

ANZ AUTO PARTS
199 MILLER ROAD, VILLAWOOD
NOISE ASSESSMENT

Report 11.00648-01

prepared on 25/11/2024

REPORT PREPARED BY

Acoustics Consultants Australia
ABN 81 646 523 953
U6, 31-33 Hume Street ▸ Crows Nest, NSW 2065
PHONE **(02) 9159 9859**
EMAIL **sydney**@acousticsconsultants.com.au

BASIS OF REPORT

This report has been prepared by **Acoustics Consultants Australia (ACA)** with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with the Client. Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from ACA. ACA disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

REFERENCE	DATE	PREPARED	REVIEWED	AUTHORISED
11.00648-01	25/11/2024	SF	BM	SF

CONTENTS

PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650

Report 11.00648-01

1. INTRODUCTION

ANZ Auto Parts operates a used car dismantling and parts salvage yard at 199 Miller Road, Villawood (Lot 11 DP 633263). The site operates between the hours 8:00 am - 5:00 pm Monday to Friday.

The site includes a main warehouse building which is currently used for motor vehicle dismantling and parts storage and a secondary obsolete single storey building to the front of the site.

Under Development Application (DA-639/2024) it is proposed to retain the existing main warehouse building for its current use, demolish the existing secondary single storey building and establish new off-street customer parking and landscaping at the location of the demolished building.

Other than the identified demolition, landscaping and off-street customer parking, no other changes to the buildings, internal layouts, on-site activities or operational hours are proposed.

Canterbury Bankstown Council requires an acoustic assessment be prepared to accompany the Development Application (DA) submission.

This acoustic assessment has been prepared by Acoustics Consultants Australia (ACA) on behalf of ANZ Auto Parts in support of Development Application (DA-639/2024) prepared by ICR Design.

The purpose of this assessment is to consider the potential for off-site noise emissions from the site to impact existing surrounding receivers in accordance with the provisions of the *NSW Noise Policy for Industry* (NPfI) and the *Protection of Environment Operations Act 1997* and *Regulations*.

Following assessment, it has been determined that the proposed use of the site is considered to comply with NPfI and accordingly would not be expected to give rise to notable adverse noise effects on the closest commercial and residential receivers to the site.

By adhering to the recommendations in this report general compliance with the with NPfI requirements may be expected.

Further details of methodology and Standards used to conduct the assessment, as well as the numeric assessment results are presented in the following sections of this report.

Acoustic terms used in this report are defined in the Glossary of **Appendix A**.

PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650

2. SITE AND SURROUNDING AREA

The Canterbury Bankstown Council Local Environmental Plan 2023 identifies the zoning of the site (Lot 11 DP 633263) at 199 Miller Road, Villawood and surrounding sites to the east, south and west as IN1 (General Industrial). To the north of the site is the Miller Reserve zoned RE1 (Public Recreation), with the closest residential receivers located approximately 65 m to the south of the site on Miller Road and Biloela Street within the R2 (Low Density Residential) zone.

An aerial view of the site and surrounding area is shown in **Figure 2.1**.

Figure 2.1 Aerial View of Site and Surrounding Receivers

PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650

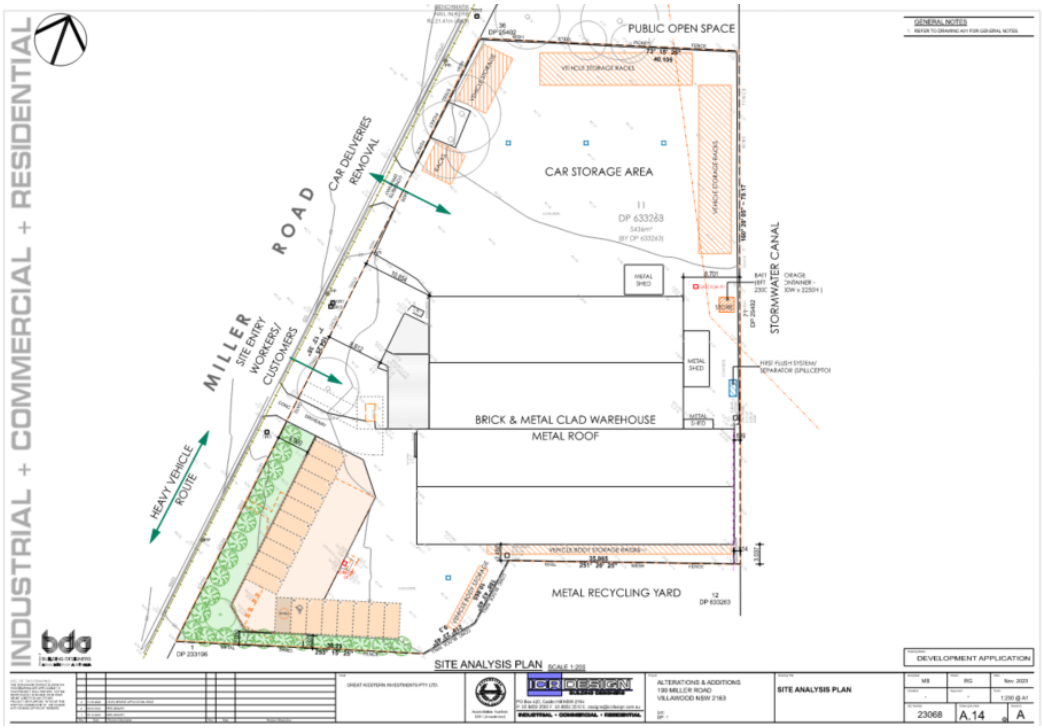
Site Activities and Layout

The ANZ Auto Parts site principally includes the main warehouse - a large brick and metal clad building with metal roof (primarily used for dismantling cars and storage of salvaged parts), a large external car storage area that includes a number of vehicle storage racks and a further single storey brick building to the front of the site.

The building at the front of the site is proposed to be demolished and replaced with a formalised carparking area with 18 car parking spaces and associated landscaping.

The proposed site layout plan is shown in **Figure 2.2**.

Figure 2.2 Site Layout Plan



The site accepts used (typically written off) vehicles delivered by car transporter into the external car storage area. The cars are unloaded from the transporter using a Toyota 5t forklift and placed in the externally located vehicle storage racks.

As required, the Toyota 5t forklift is used to carry the cars into the northern side of the warehouse where they are then stripped for parts within the 'dismantling area'. The vehicles are dismantled on the ground and on a car-hoist principally using two Milwaukee impact wrenches.

PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650

The parts are then sorted and stored in the 'parts storage areas' of the warehouse. A Crown 1t forklift is used to lift heavy parts such as engines. Other parts (e.g. panels, doors, wing mirrors, lights etc.) are manually stored in racks inside the warehouse.

Noise generated on the site is principally from the two Milwaukee impact wrenches, the two forklifts, periodic vehicle transporter movements and occasional customer vehicle movements.

There are no other notable on-site noise sources.

The warehouse building is passively ventilated.

Noise Sensitivities of the Surrounding Sites

The sites in the near vicinity of the subject site are all commercial/industrial uses of not particularly high noise sensitivity, including a metal recycling yard to the south, warehousing and distribution centre and furniture upholsterers to the east and various warehousing and industrial uses on the opposite side of Miller Road to the west. Adjoining the external car storage area is the Miller Reserve which is exposed to Miller Road traffic noise.

The closest residential receivers located approximately 65 m to the south of the site on Miller Road and Biloela Street are also exposed to Miller Road traffic noise.

PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650

3. EXISTING ACOUSTIC ENVIRONMENT

ACA undertook site visits on Saturday 9 and Tuesday 19 November 2024 to inspect the site and surrounds and to evaluate the existing acoustic environment and the potential for off-site noise impacts.

During ACA's inspections observations were made within the site, the surrounding area and at the closest residential area to the south of the site.

On-site noise measurements were undertaken within the facility to determine typical noise levels generated by the site activities.

During ACA's inspection, at the boundaries of the closest residential receivers the noise generated by the site was not found to be audible.

To determine the typical existing background and ambient noise levels at the closest residential boundary an environmental noise logger was installed at 282A Miller Road, Villawood at the location identified in **Figure 2.1**.

Background noise levels were measured continuously between 9 to 19 November 2024 at the identified location. The background noise levels obtained are be considered to be broadly representative of the prevailing background levels at the closest residential receivers to the subject site.

Noise Monitoring Equipment

All measurements were undertaken in general accordance with *AS1055:1997: Acoustics – Description and Measurement of Environmental Noise* and the *NSW Noise Policy for Industry* (NPfI).

The site noise monitoring was undertaken with a NTi XL2 Type 1 integrating sound level meter (serial number 35526).

The background noise monitoring was undertaken with a Rion NL-32 Type 1 noise logger (serial number 00982868).

The instruments were calibrated before and after the measurements using a SVAN Type SV33B acoustic calibrator and no significant drift in the pre and post calibration measurements occurred.

The instruments used in the survey comply with *AS IEC 61672.1:2013: Electroacoustics – Sound Level Meters – Specifications* and *AS IEC 60942:2017: Electroacoustics – Sound Calibrators* as appropriate, and have recent calibration certificates traceable to a NATA certified laboratory.

PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650

Noise Monitoring Methodology

The logger was set to A-Weighting and fast response and positioned with its microphone at 1.5 m above ground level. Statistical noise levels were processed and stored by the instrument every 15 minutes for the whole monitoring period.

The noise logger determines a variety of descriptors such as L_{A1}, L_{A10}, L_{A90} and L_{Aeq} used to describe the existing noise environment. Definitions of these parameters are provided in the Glossary of Acoustic Terms attached in **Appendix A**. The L_{A90} level is taken as the background noise level and is used to derive the Rating Background Levels (RBLs) as per the requirements of the NPfI.

Measured Noise Levels

Table 3.1 provides a summary of the daytime, evening and night-time RBLs derived from the unattended logging. The ambient L_{Aeq} levels are also shown. As required by the NPfI, in deriving the RBLs, any effects due to adverse weather (rain and wind greater than 5m/s at a height of 1.5m) have been excluded from the analysis. Meteorological data collected during the noise monitoring period at the Bureau of Meteorology Canterbury weather station was reviewed for this purpose.

Table 3.1 Rating Background Levels and Ambient Noise Levels from Unattended Logging

Location	Logging Period	Day (7am – 6pm)		Evening (6pm – 10pm)		Night (10pm – 7am)	
		RBL*	L_{Aeq}	RBL*	L_{Aeq}	RBL*	L_{Aeq}
282A Miller Road	9–19 November 2024	54	64	50	64	36	59

Note: * The background noise levels obtained are considered to be broadly representative of the prevailing background levels at the closest residential receivers to the subject site. Given the site's operational hours (8.00am – 5.00pm, Monday to Friday) only the daytime period is relevant to this assessment.

The noted background and ambient noise levels were observed to be controlled principally by local and distant road traffic, urban hum and natural noise sources.

Given the site's operational hours (8.00am – 5.00pm, Monday to Friday) only the daytime period is relevant to this assessment.

Daily noise monitoring plots are provided in **Appendix B** of this report.

PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650

4. OPERATIONAL NOISE CRITERIA

Noise Policy for Industry (NPfI) Operational Noise Criteria

For the purpose of assessing the potential impact of airborne noise emissions from the site, reference is made to the guidance set out in the NSW Environment Protection Authority's *Noise Policy for Industry* (NPfI).

The NPfI provides a framework and process for deriving noise criteria for consents and licences that enable the EPA and others to regulate premises that are scheduled under the Protection of the Environment Operations Act 1997. Whilst specifically aimed at assessment and control of noise from industrial premises, the approaches documented can be used to provide guidance for the assessment of noise from other operational sources.

The NPfI criteria for industrial noise sources are based on the consideration of two components:

- Controlling the intrusive noise impacts for residents in the short term; and
- Maintaining noise level amenity for residents and sensitive receivers in other land uses.

The controlling Project Noise Trigger Levels (PNTLs) are determined following the establishment of the Project Intrusiveness Noise Levels and Project Amenity Noise Levels, with the PNTLs being the more onerous of the two.

Intrusiveness Noise Levels

The intrusiveness trigger levels within the relevant day and evening periods are determined as follows:

- $L_{Aeq,15\ minute}$ ≤ Rating Background Noise Level (RBL, L_{A90}) + 5 dB

$L_{Aeq,15minute}$ represents the equivalent continuous A-weighted sound pressure level of the source over 15 minutes, unless other descriptors are specified as more appropriate to characterise the source. (See attached Glossary of Terms for full definitions).

Intrusive noise levels are only applied to residential receivers (residences).

Considering the background noise levels described in **Section 3** and the proposed operational hours of the subject site, the applicable daytime intrusiveness noise level at the residential boundaries considered by this assessment is:

- $L_{Aeq,15min}$ 59 dBA during the daytime (7.00am - 6.00pm).

PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650

Amenity Noise Levels

The Amenity Noise Levels set limits on the total noise level from all industrial noise sources affecting a receiver. Different amenity criteria apply for different types of receiver (e.g. residential, commercial, industrial) and different areas (e.g. urban, suburban, rural).

The closest residential receivers are regarded as urban area residential receivers for the purposes of assessment, in terms of the receiver classifications identified by the NPfI.

For urban area residential receivers the NPfI nominates the recommended amenity noise levels of $L_{Aeq,Period}$ 60 dBA (daytime), $L_{Aeq,Period}$ 50 dBA (evening) and $L_{Aeq,Period}$ 45 dBA (night). These levels refer only to noise from industrial sources. However, they refer to noise from all such sources at the receiver location, and not only noise due to a specific project under consideration. The NPfI nominates project amenity noise levels at 5 dB below the recommended amenity noise levels for individual sites where there is potential for cumulative industrial noise contributions from multiple sites.

Additionally, to standardise the time periods for the intrusiveness and amenity noise levels, the NPfI recommends that the $L_{Aeq,15min}$ will be taken to be equal to the $L_{Aeq,Period}$ + 3 dB. Accordingly, the determined daytime project amenity noise level applicable at the residential boundaries is:

- $L_{Aeq,15min}$ 58 dBA during the daytime (7.00am - 6.00pm).

Additionally, the NPfI nominates the recommended amenity noise levels of $L_{Aeq,Period}$ 65 dBA ($L_{Aeq,15min}$ 63 dBA) for commercial premises and $L_{Aeq,Period}$ 70 dBA ($L_{Aeq,15min}$ 68 dBA) for industrial premises when in use.

Project Noise Trigger Levels (PNTLs)

The PNTLs reflect the most stringent noise level requirement from the criteria derived from both the intrusiveness and project amenity noise levels to ensure that intrusive noise is limited, and amenity is protected.

The determined PNTLs applicable at the receiver boundaries are shown in bold in **Table 4.1**.

PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650

Table 4.1 Project Noise Trigger Levels for Operational Noise Emissions, dBA

Receivers	Area Classification	Period[1]	RBL[2] $L_{A90(15min)}$	Intrusiveness[3] $L_{Aeq(15min)}$	Project Amenity $L_{Aeq\ (15min)}$
Residences	Suburban	Day	54	59	60-5+3 = **58**
		Evening	50	55	50-5+3 = **48**
		Night	36	**41**	45-5+3 = 43
Commercial	All	When in Use	n/a	n/a	65-5+3 = **63**
Industrial	All	When in Use	n/a	n/a	70-5+3 = **68**

Note 1: Daytime: 7.00am–6.00pm; Evening: 6.00pm–10.00pm; Night-time: 10.00pm-7.00am.
Note 2: RBL = Rating Background Level.
Note 3: Intrusive criterion only applicable to residential receivers.
Note 4: Given the site's operational hours (8.00am – 5.00pm, Monday to Friday) only the daytime period is relevant to this assessment.

In assessing noise levels at residences, the noise level is to be assessed at the most affected point on or within the property boundary.

Managing operational noise emissions from the site to within the identified PNTLs would ensure general compliance with the NPfI, with respect to both amenity and intrusive noise impacts.

Modifying Factor Corrections for Annoying Noise Characteristics

The NPfI (Fact Sheet C) identifies corrections for annoying noise characteristics that are to be applied in industrial noise assessments. NPfI Fact Sheet C notes:

Where a noise source contains certain characteristics, such as tonality, intermittency, irregularity or dominant low-frequency content, there is evidence to suggest that it can cause greater annoyance than other noise at the same noise level. On the other hand, some sources may cause less annoyance where only a single event occurs for a limited duration.

Correction factors are to be applied to the source noise level at the receiver before comparison with the project noise trigger levels to account for the additional annoyance caused by these modifying factors.

The modifying factor corrections should be applied having regard to:

- *the contribution noise level from the premises when assessed/measured at a receiver location, and*
- *the nature of the noise source and its characteristics.*

PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650

Table C1 sets out the corrections to be applied. The corrections specified for tonal, intermittent and low-frequency noise are to be added to the measured or predicted noise levels at the receiver before comparison with the project noise trigger levels. The adjustments for duration are to be applied to the criterion.

The Modifying Factor Corrections (per NPfI Table C1) are set out in **Table 4.2**.

Table 4.2 Modifying Factor Corrections (per NPfI Table C1 and definitions in Section C2)

Factor	Assessment / Measurement	When to Apply	Correction[1]	NPfI Comments
Tonal noise	One-third octave band analysis using the objective method for assessing the audibility of tones in noise – simplified method (ISO1996.2-2007– Annex D).	Level of one-third octave band exceeds the level of the adjacent bands on both sides by: • 5 dB or more if the centre frequency of the band containing the tone is in the range 500–10,000 Hz • 8 dB or more if the centre frequency of the band containing the tone is in the range 160–400 Hz • 15 dB or more if the centre frequency of the band containing the tone is in the range 25–125 Hz.	5 dB[2,3]	Third octave measurements should be undertaken using unweighted or Z-weighted measurements. Note: Narrow-band analysis using the reference method in ISO1996-2:2007, Annex C may be required by the consent/regulatory authority where it appears that a tone is not being adequately identified, e.g. where it appears that the tonal energy is at or close to the third octave band limits of contiguous bands.
Low-frequency noise	Measurement of source contribution C-weighted and A-weighted level and one-third octave Measurements in the range 10–160 Hz	Measure/assess source contribution C- and A-weighted $L_{eq,T}$ levels over same time period. Correction to be applied where the C minus A level is 15 dB or more and: • where any of the one-third octave noise levels in Table C2 are exceeded by up to and including 5 dB and cannot be mitigated, a 2-dB(A) positive adjustment to measured/predicted A-weighted levels applies for the evening/night period • where any of the one-third octave noise levels in Table C2 are exceeded by more than 5 dB and cannot be mitigated, a 5-dB(A) positive adjustment to measured/predicted A-weighted levels applies for the evening/night period and a 2-dB(A) positive	2 or 5 dB[2]	A difference of 15 dB or more between C and A-weighted measurements identifies the potential for an unbalance spectrum and potential increased annoyance. The values in Table C2 are derived from Moorhouse (2011) for DEFRA fluctuating low-frequency noise criteria with corrections to reflect external assessment locations.

PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street ▸ Crows Nest, NSW 2650

		adjustment applies for the daytime period.		
Intermittent noise	Subjectively assessed but should be assisted with measurement to gauge the extent of change in noise level.	The source noise heard at the receiver varies by more than 5 dB(A) and the intermittent nature of the noise is clearly audible.	5 dB	Adjustment to be applied for **night-time only**.
Duration	Single-event noise duration may range from 1.5 min to 2.5 h.	One event in any assessment period.	0 to 20 dB(A)	The project noise trigger level may be increased by an adjustment depending on duration of noise (see Table C3).
Maximum adjustment	Refer to individual Modifying factors.	Where two or more modifying factors are indicated.	Maximum correction of 10 dB(A)[2] (excluding duration correction).	

Notes:

1. Corrections to be added to the measured or predicted levels, except in the case of duration where the adjustment is to be made to the criterion.
2. Where a source emits tonal and low-frequency noise, only one 5-dB correction should be applied if the tone is in the low-frequency range, that is, at or below 160 Hz.
3. Where narrow-band analysis using the reference method is required, as outlined in column 5, the correction will be determined by the ISO1996-2:2007 standard.

With consideration to the NPfI provisions in conjunction with the site observations this assessment has not considered modifying factor corrections.

PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650

5. OPERATIONAL NOISE ASSESSMENT

During the site visit undertaken on 19 November 2024, a review of the site's operational noise sources was undertaken. This identified that the most notable sources of noise from the site were two Milwaukee impact wrenches, two forklifts unloading cars and moving parts, periodic vehicle transporter movements and occasional customer vehicle movements.

In order to assess the level of noise generation noise levels of the impact wrenches and forklifts were measured on-site using an NTi-XL2 Type-1 integrating sound level meter.

Table 5.1 below summarises the measured noise levels.

Table 5.1 Measured Noise Source Levels

Octave Band Sound Level – dB									
Metric	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	dBA
Crown Forklift (1 Tonne) – Internal Reverberant Noise Levels in Parts Warehouse (Sound Pressure Levels at 4 m)									
L_{eq}	61	53	53	63	75	61	56	50	**76**
Toyota Forklift (5 Tonne) – External Noise Levels in Outdoor Yard (Sound Pressure Levels at 6 m)									
L_{eq}	72	65	66	64	67	59	58	50	**69**
Milwaukee Impact Wrench 1 – Dismantling Car in Dismantling Warehouse (Sound Pressure Levels at 3 m)									
L_{eq}	56	53	53	55	60	66	67	63	**72**
Milwaukee Impact Wrench 2 – Dismantling Car on Hoist in Dismantling Warehouse (Sound Pressure Levels at 3 m)									
L_{eq}	59	53	56	58	65	66	65	63	**72**

The measured noise source levels set out in **Table 5.1** have been used to inform a noise model for the site. Additionally, a sound power level of SWL 97 dBA ($L_{Aeq,15min}$) for a car transporter accessing and idling on the site has been assumed and a sound power level of SWL 87 dBA ($L_{Aeq,15min}$) for the car parking bay has been considered, assuming that 18 customer vehicle movements occur within a 1 hour period within the new car parking area.

Noise Modelling

To provide an estimate of the typical-worst case noise contribution from the site at the receiver boundaries, noise from the site has been predicted using the SoundPLAN Version 8.2 environmental noise modelling software, with consideration to the measured internal noise levels.

The SoundPLAN program is used and recognised internationally and is also recognised by the EPA as a preferred computer noise model.

Factors that are addressed in the noise modelling are:

- Noise source locations and sound power levels;

PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650

- Screening from structures (buildings, structures);
- Receiver locations and heights;
- Ground topography;
- Noise attenuation due to geometric spreading;
- Ground absorption;
- Atmospheric absorption; and
- Influence of meteorology.

For the purposes of this assessment a typical worst-case scenario has been considered, with the following assumptions applied regarding the on-site noise sources:

Assessment Period (Day)

- Crown Forklift (1 Tonne) – Operating in Parts Warehouse
- Toyota Forklift (5 Tonne) – Operating in Outdoor Yard
- Milwaukee Impact Wrench 1 – Dismantling Car in Dismantling Warehouse
- Milwaukee Impact Wrench 2 – Dismantling Car on Hoist in Dismantling Warehouse
- Vehicle Transporter Manoeuvring and Idling in Outdoor Yard
- 18 x Customer Vehicle Movements in New Car Park

It should be noted that this scenario has been considered for conservative assessment purposes only. The coinciding use of all these items would not be expected to typically occur. Additionally, the mobile plant items would often operate in more shielded locations than considered by this assessment. Accordingly, the noise levels predicted are considered 'typical worst-case' and frequently lower noise levels may be expected from the site.

Predicted Noise Levels

The predicted typical worst-case $L_{Aeq,15min}$ noise levels that may be expected to arise external to the identified receivers are set out in **Table 4.3**. The noise predictions consider both standard meteorological conditions (D-Class atmospheric stability, 0 m/s wind) and default noise enhancing meteorological conditions (D-Class atmospheric stability, 3 m/s source to receiver wind).

Considering the worst-case scenario, the facility noise levels estimated at the closest residential and neighbouring sites are predicted to remain in compliance with the NPfI PNTLs as shown in **Table 4.3**.

PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650

Noise levels lower than those set out in **Table 4.3** would be anticipated for most of the time.

Section 5 of this report recommends a number of measures that would be applied to manage noise emissions from the site. These measures will be adopted by the operators of the site.

Table 4.3 Predicted $L_{Aeq,15min}$ Noise Levels External to Receivers

Receiver / Address	Predicted Noise Level $L_{Aeq,15min}$ (dBA)		Project Noise Trigger Level (PNTL) $L_{Aeq,15min}$ (dBA)			Compliance		
	Standard Met	Noise Enhancing Met	Daytime	Evening	Night	Daytime	Evening	Night
A – Residential Boundary (Miller Road)	47	49	58	n/a	n/a	Complies	Complies	Complies
B – Industrial Receiver to East (195 Miller Road)	59	60	68 (When in Use)			Complies	Complies	Complies
C – Industrial Receiver to South	56	57	68 (When in Use)			Complies	Complies	Complies
D – Commercial Receivers to West (Opposite Side of Miller Road)	58	59	63 (When in Use)			Complies	Complies	Complies
E – Recreational Area to North (Miller Reserve)	57	58	58 (When in Use)			Complies	Complies	Complies

Note 1: Commercial criteria have been adopted for the surrounding businesses. Some of the nearby uses may be regarded as industrial.
Note 2: Noise prediction undertaken under Daytime Standard Meteorological conditions (D-Class atmospheric stability, 0 m/s wind) and Daytime Noise Enhancing Meteorological conditions (3 m/s source to receiver wind).

PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street ▸ Crows Nest, NSW 2650

6. RECOMMENDATIONS

Table 5.1 outlines noise mitigation recommendations to manage potential noise impacts on residents from operations at the ANZ Auto Parts site. The table is divided in 3 sections:

- Treating the source: This refers to ways of reducing emissions directly at the source of sound generation (i.e. mechanical plant, mobile equipment etc.).
- Treating the path: This refers to treatment to the medium that is physically in between the source and the receivers (i.e. air paths, buildings, reflective surfaces, supporting structures).
- Management: This refers to measures that will be required by management to minimise noise from operations.

Table 5.1 Noise Mitigation Options

Item #	Recommendation	Reasoning
Treating the Source		
1	Site to operate with approved daytime hours only (8.00 am to 5.00 pm Monday to Friday).	To limit internal noise levels within the facility and reduce noise breakout.
2	Trucks to access site in controlled manner and not exceed speeds of 10 km/hour when on site. Maintain good driving behaviour and practices on the site. Horns not be used, unless in safety critical situations. Tonal reversing alarms not to be used (or minimised) on-site.	
3	Ensure vehicles accessing the site and equipment items used on site are generally well maintained and serviced to minimise their noise emissions.	
4	Ensure the access road is generally well maintained to avoid noise arising from irregular surfaces, potholes etc.	
Treating the Path		
5	Crown forklift and Milwaukee impact wrenches to be generally used within the warehouse building to optimise acoustic shielding from the building facades.	To reduce noise breakout.
Management		
6	Staff to proactively manage noise within the premises and attend to any noise issues that may arise without delay.	To minimise site noise emissions.
7	Maintain good management practices on site at all times and review procedures periodically.	
8	Deliveries of goods to site and waste disposal from the site to occur between the hours of 8.00 am and 5.00 pm only.	

It is expected that with the implementation of the noise mitigation measures set out above, noise levels at sensitive receivers would be controlled to within acceptable compliance margin of the NSW NPfI.

PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650

7. CONCLUSION

Acoustics Consultants Australia (ACA) has undertaken an evaluation of noise emissions from the ANZ Auto Parts site located at 199 Miller Road, Villawood.

The site operates between the hours 8:00 am - 5:00 pm Monday to Friday.

This assessment has been undertaken in relation to Development Application (DA-639/2024) which seeks to continue to operate the site as motor vehicle dismantling and parts storage facility and to demolish an existing single storey building and establish new off-street customer parking and landscaping on the site.

ACA's assessment has determined that the proposed used of the site including the operation of the proposed car park would not be expected to result in exceedances of the NPfI noise criteria or any notable reduction in the acoustic amenity of the area.

Accordingly, ACA supports the proposed DA.

PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650

APPENDICES

PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650

APPENDIX A: Glossary of Acoustic Terms

PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650

1 Sound Level (or Noise Level)

The terms “sound” and “noise” are to some degree interchangeable, however, in common usage “noise” is often used to refer to unwanted sound.

Sound may be defined as any pressure variation that the human ear can detect. The human ear responds to a wide range of changes in sound pressure. As the greatest sound pressures to which the human ear responds are 10,000,000 times greater than the lowest, the decibel (dB) scale, by the use of logarithms is used to express sound pressure levels more conveniently.

The standard reference sound pressure used to define a Sound Pressure Level is 2×10^{-5} Pascals (Pa).

The decibel is defined as ten times the logarithmic ratio of two pressures. The smallest perceptible change is approximately 1 dB.

Sound Pressure Level is typically abbreviated as SPL, L_P, or L.

2 “A” Weighted Sound Pressure Level

The most common frequency rating is ‘A-Weighting’. The A-weighting frequency response curve is designed to approximate the sensitivity of the human ear. The symbol L_A represents A-weighted Sound Pressure Level - The overall broadband level of a sound/noise is typically expressed as a dB(A) level.

Human hearing is most sensitive mid frequencies sounds (500 Hz to 4000 Hz), and less sensitive at higher and lower frequencies. Therefore, the level expressed in dB(A) correlates strongly with the perceived loudness of the sound/noise.

A change in sound pressure level of 1-2 dB is barely noticeable to most people, whilst a 3-5 dB change is perceived as a small but noticeable change in loudness. A 10 dB change is perceived as an approximate doubling or halving in loudness. The table below present the sound pressure levels of some common sources.

Sound Pressure Level dB(A)	Noise Source	Subjective Evaluation
130	Threshold of pain	Intolerable
120	Heavy rock concert	Extremely loud
110	Grinding on steel	
100	Loud car horn at 3 m	Very loud
90	Construction site with pneumatic hammering	
80	Kerbside of busy street	Loud
70	Loud radio or television	
60	Department store	Moderate to quiet
50	General Office	
40	Inside private office	Quiet to very quiet
30	Inside bedroom	
20	Recording studio	Almost silent

In addition to A-weighting, other less commonly applied frequency weightings include B, C and D weightings. Unweighted or Linear levels are sound levels measured without any weighting. These are expressed as simply dB, or dB(lin) or dB(Z).

PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650

3 Sound Power Level

The rate at which a noise source emits acoustic energy is defined by its Sound Power Level. Sound Power Levels are also expressed in decibel units (dB or dB(A)). Sound Power is typically identified as SWL or LW. The standard reference sound power used to define a Sound Power Level is 1 x 10^{-12} Watts (W).

4 Statistical Noise Levels

Environmental noise levels from various sources in the environment will vary in level over time. Statistical exceedance levels are typically expressed as L_{AN} levels (i.e. the A-weighted sound pressure level exceeded for N% of a specific measurement period.

The most commonly used statistical noise levels are as follows:

L_{Amax} Maximum noise level over a sample period (typically measured on fast time-weighting response).

L_{A1} Noise level exceeded for 1% of a sample period (typically 15-minute interval).

L_{A10} Noise level exceeded for 10% of a sample period (typically 15-minute interval).

L_{A90} Noise level exceeded for 90% of a sample period. This noise level is commonly used to describe the background noise level (in the absence of the source under investigation).

L_{Aeq} A-weighted equivalent noise level. This is equivalent to the steady sound level containing the same amount of acoustical energy as the time-varying sound. Often referred to as the average noise level.

ABL Assessment Background Level. This is the single figure background level representing each assessment period (day, evening and night) for each day. It is determined by calculating the lowest 10th percentile background noise level (LA90) for each period.

RBL Rating Background Level. This is the median value of the ABL values for each period (day, evening, night), determined over several days of measurements.

5 Building Acoustics Terms

A number of terms are used to describe the acoustic performance of building elements including sound transmission loss and impact isolation. The most commonly used terms are as follows:

R_w Weighted sound reduction index. The R_w is a typical measure for the sound insulation performance for a wall or floor system in a laboratory. The R_w in the BCA is used for the selection of appropriate construction systems.

R_w+C_{tr} Weighted sound reduction index with spectrum adaptation term. The R_w+C_{tr} is the weighted sound reduction index with a correction factor Ctr added that helps to quantify the low frequency performance. The R_w+C_{tr} in the BCA is used for the selection of appropriate construction systems.

$D_{nT,w}$ Weighted standardised level difference. The $D_{nT,w}$ is a typical measure for the sound insulation performance for a wall or floor system in a laboratory. The $D_{nT,w}$ in the BCA is used for the determination of airborne noise in the field.

$D_{nT,w}+C_{tr}$ Weighted standardised level difference with spectrum adaptation term. The $D_{nT,w}+C_{tr}$ is the weighted standardised level difference with a correction factor Ctr added that helps to quantify the low frequency performance. The $D_{nT,w}+C_{tr}$ in the BCA is used for the determination of airborne noise in the field.

$L_{n,w}+C_I$ Weighted normalised impact sound pressure level with spectrum adaptation term. The $L_{n,w}+C_I$ is a typical measure of the impact/structure borne noise between two spaces in a laboratory. A reduction in the $L_{n,w}+C_I$ corresponds to an improvement in impact isolation. The $L_{n,w}+C_I$ in the BCA is used for the selection of appropriate impact isolation systems.

$L_{nT,w}+C_I$ Weighted standardised impact sound pressure level with spectrum adaptation term. The $L_{nT,w}+C_I$ is a typical measure of the impact/structure borne noise between two spaces in the field. A reduction in the $L_{nT,w}+C_I$

PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650

corresponds to an improvement in impact isolation. The $L_{nT,w}+C_I$ in the BCA is used for the determination of impact noise in the field.

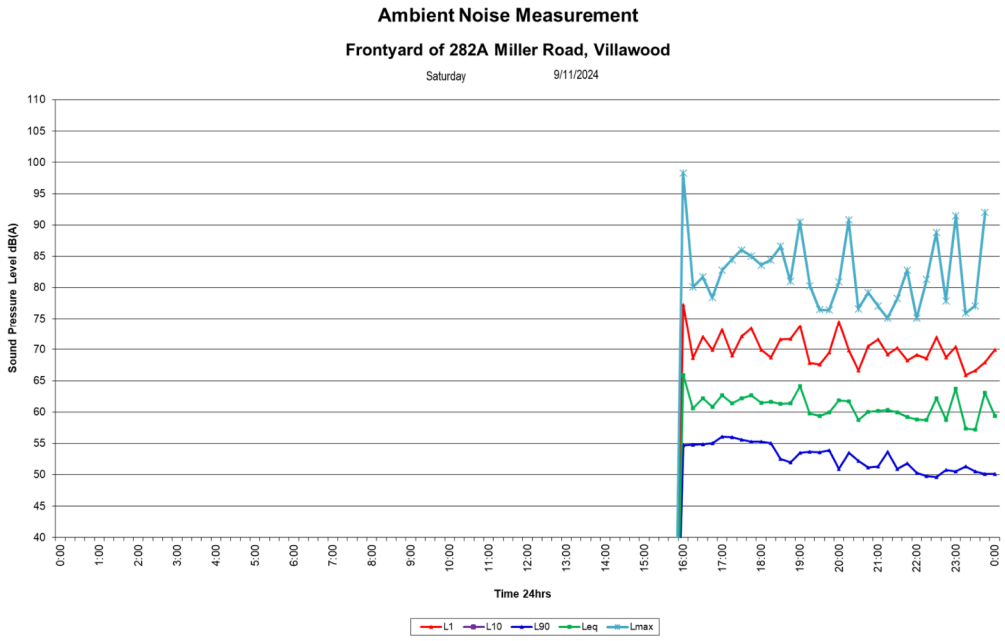
FSTC Field sound transmission class. The FSTC is a typical measure for the sound insulation performance for a wall or floor system in a building. The FSTC is used in the City of Sydney Council DCP for the selection of appropriate construction systems.

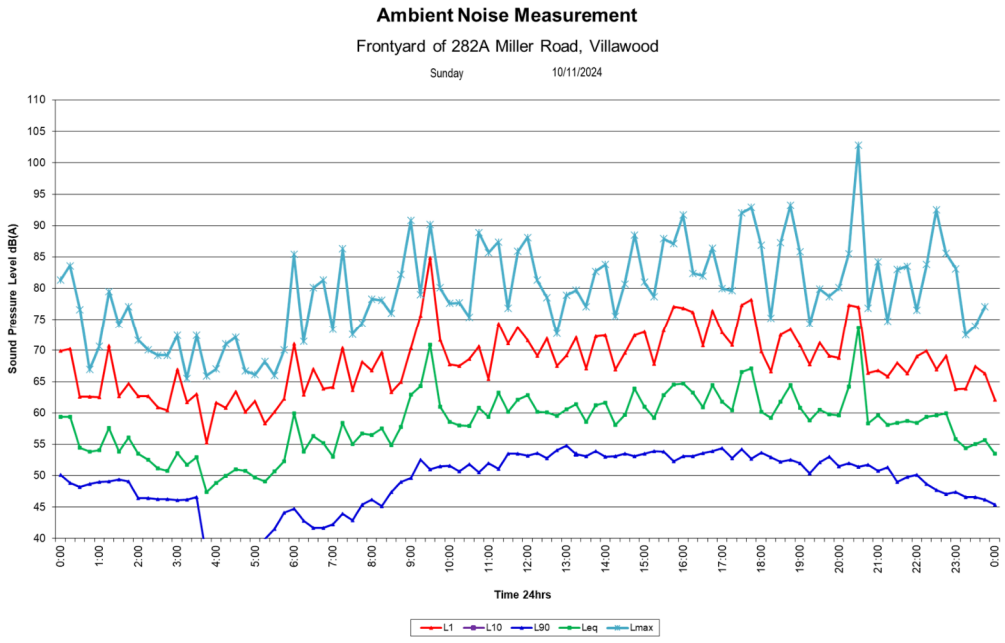
IIC Impact isolation class. The IIC is a typical measure of the impact/structure borne noise between two spaces in a laboratory. The IIC is used in City of Sydney Council DCP for the selection of appropriate impact isolation systems.

PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650

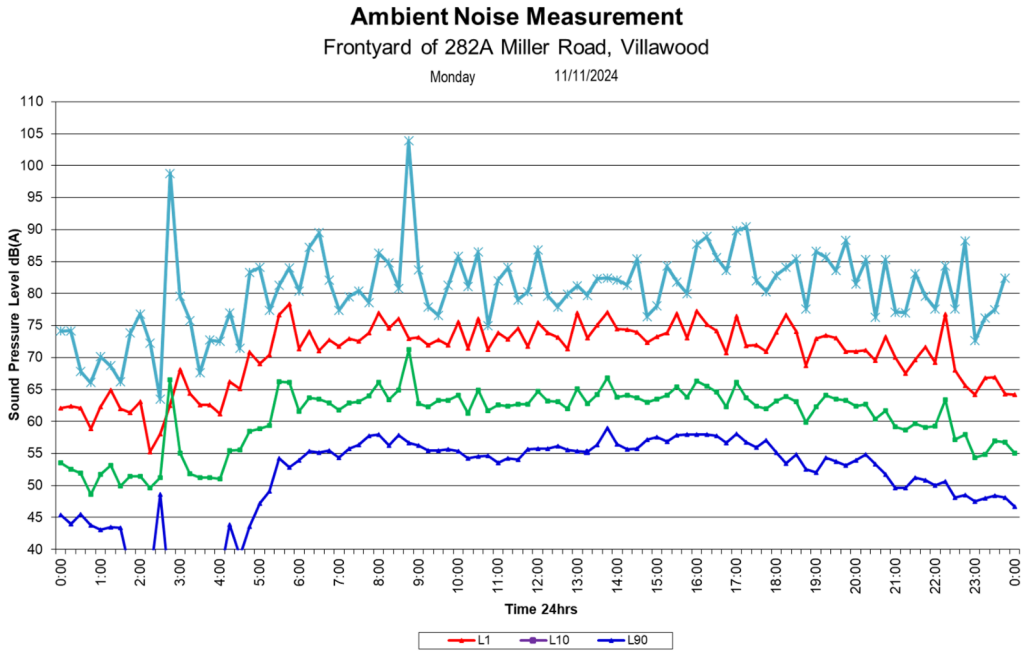
APPENDIX B: Noise Monitoring Plots

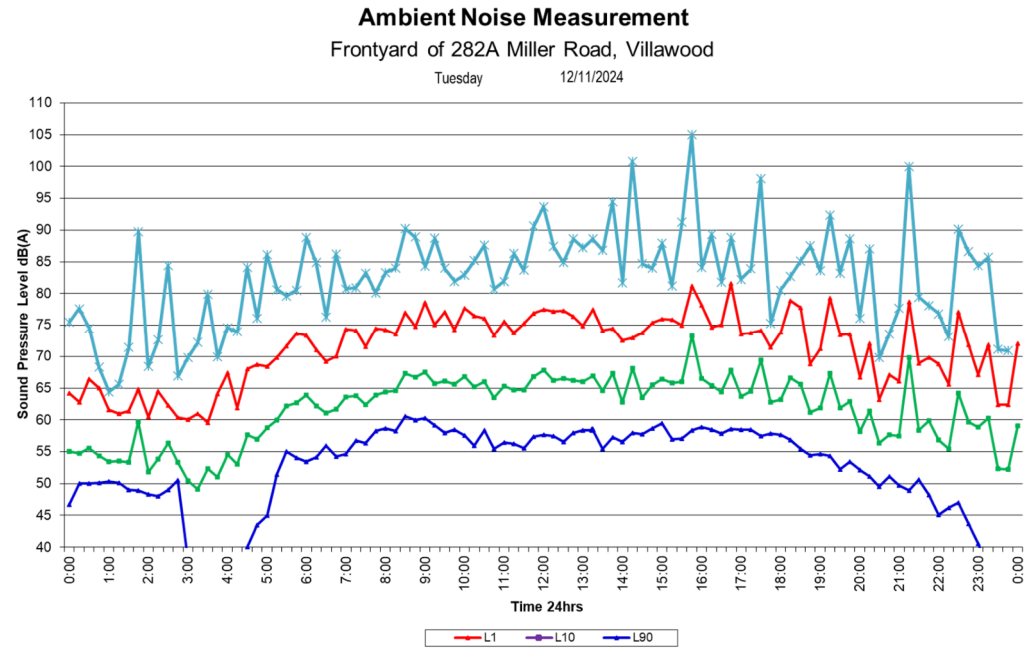
PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650



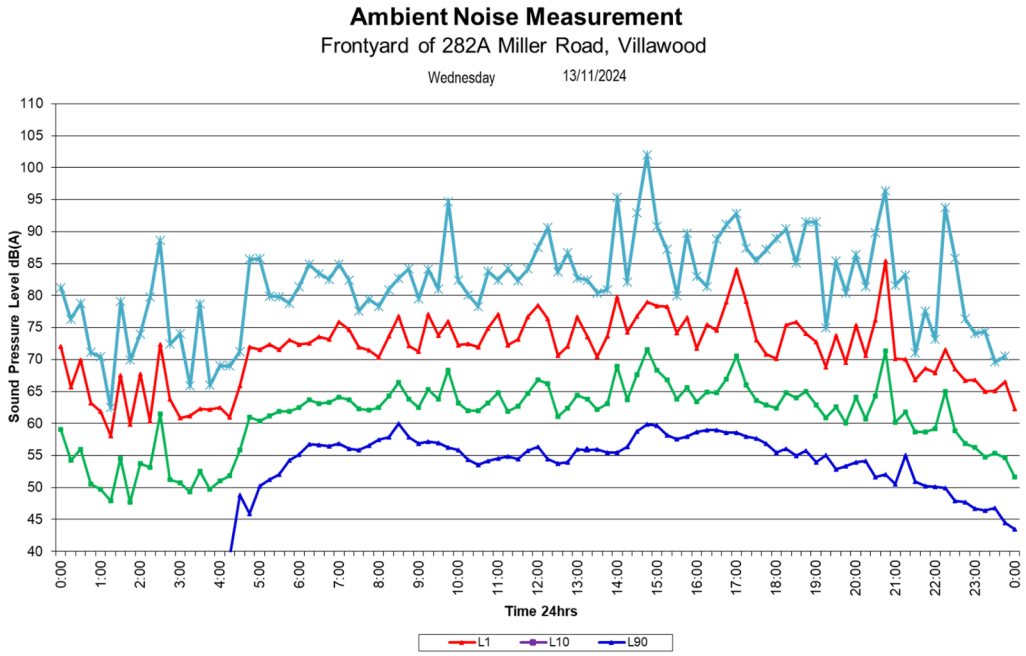


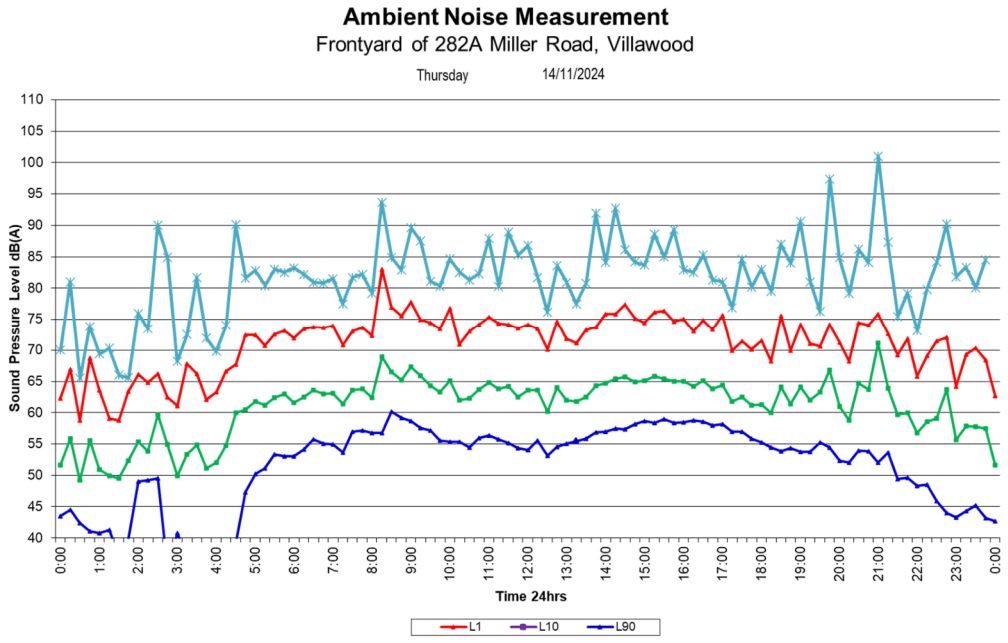
PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650





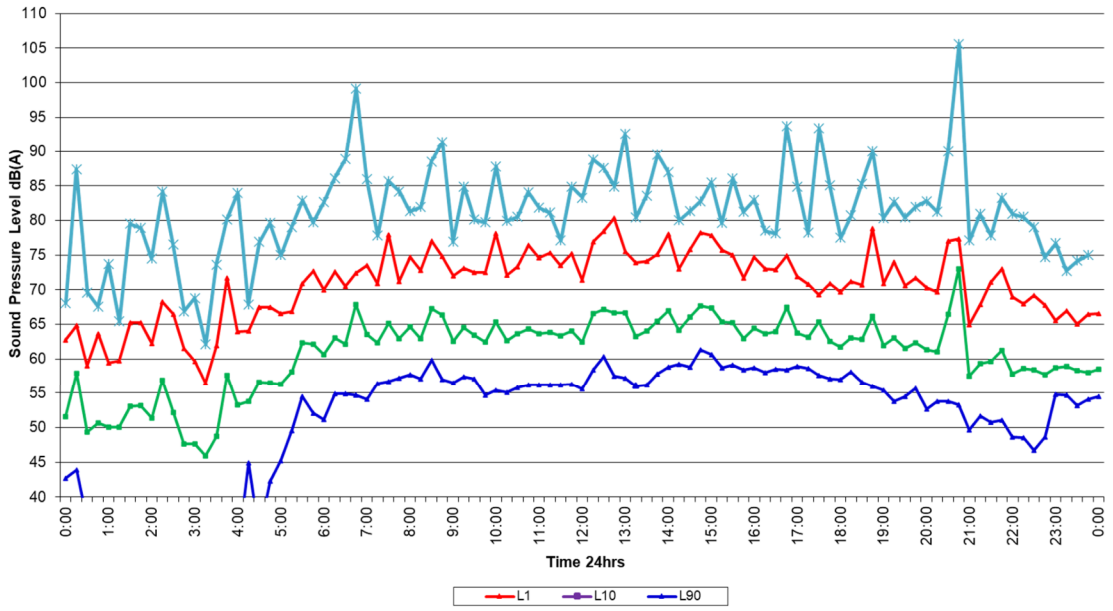
PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650



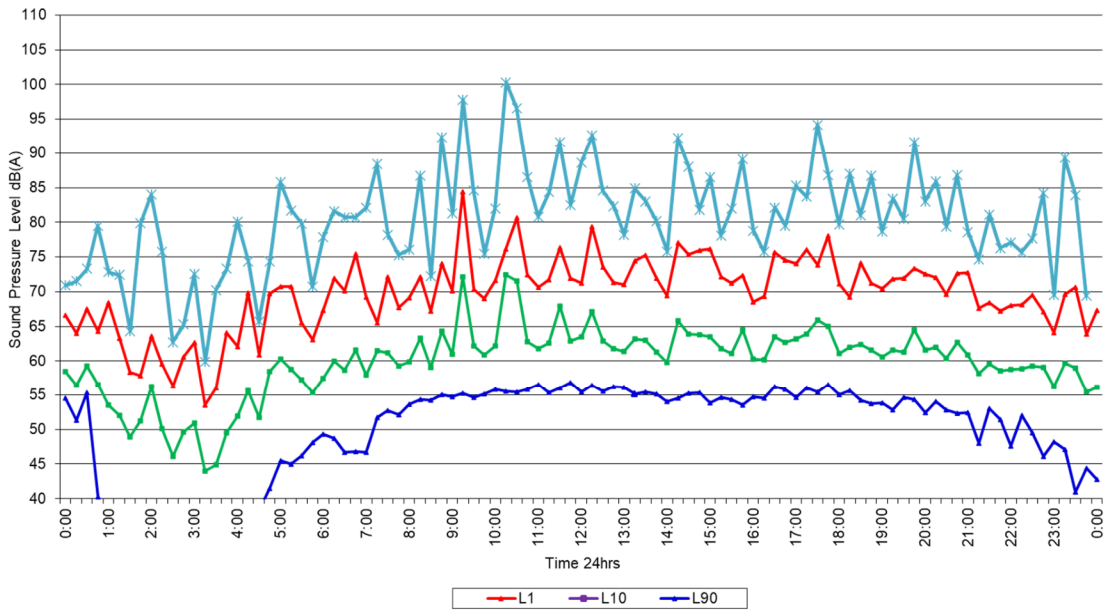


PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650

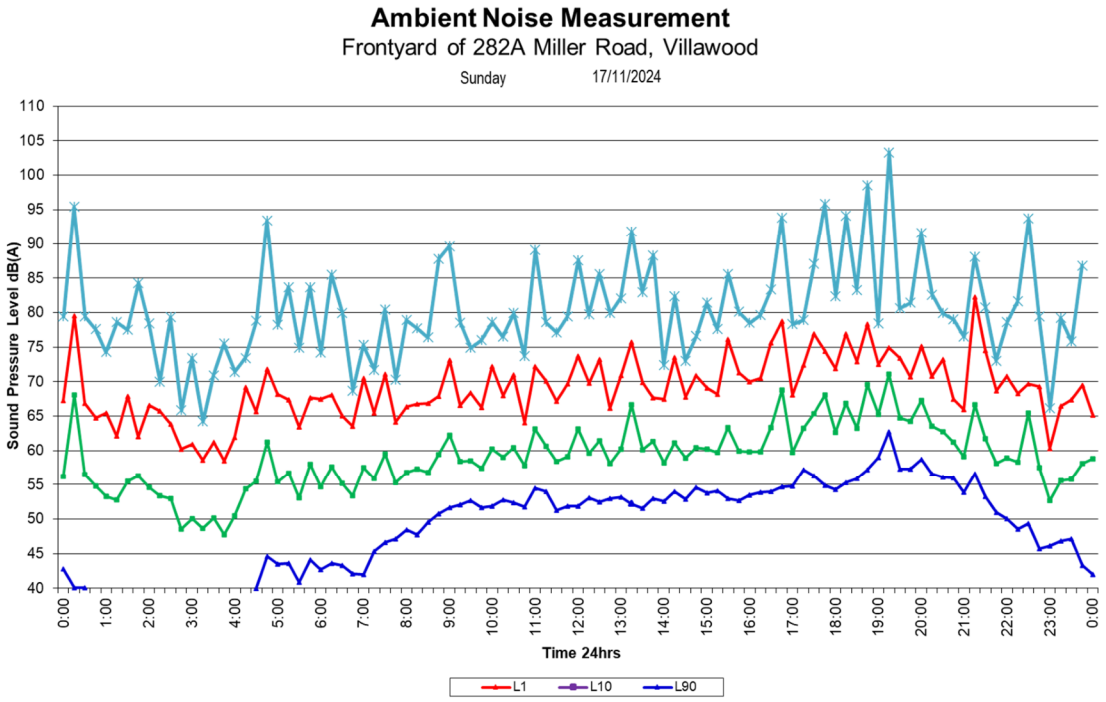
Ambient Noise Measurement
Frontyard of 282A Miller Road, Villawood
Friday 15/11/2024

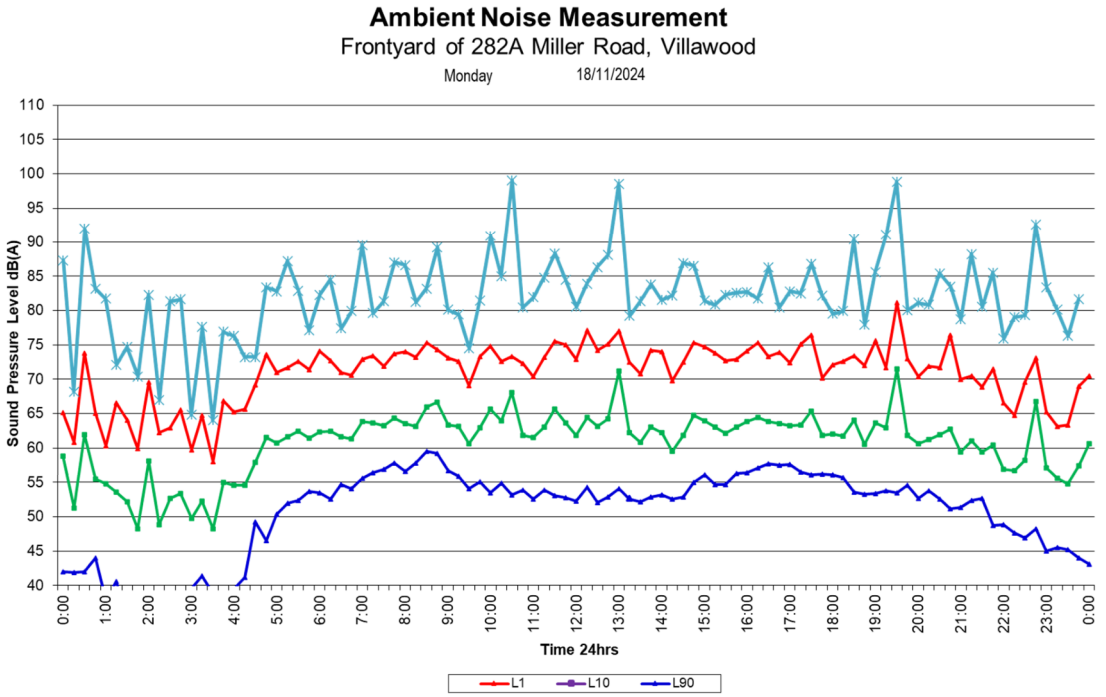


Ambient Noise Measurement
Frontyard of 282A Miller Road, Villawood
Saturday 16/11/2024

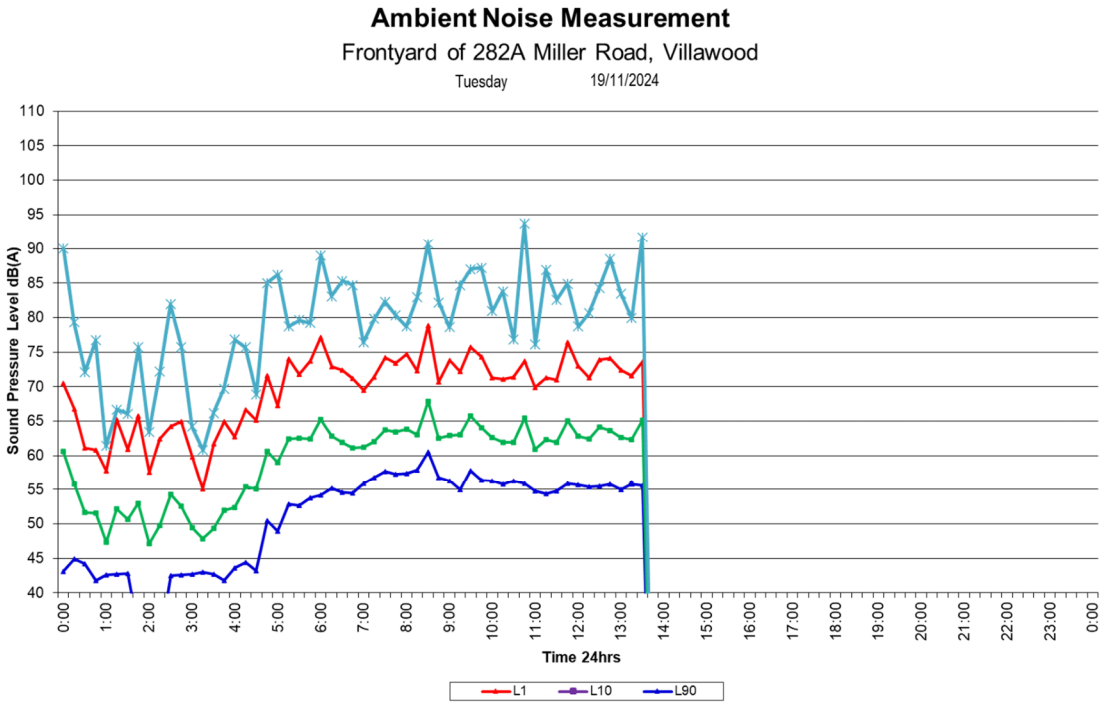


PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650





PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650



PHONE (02) 9159 9859
EMAIL sydney@acousticsconsultants.com.au ADDRESS U6 31-33 Hume Street Crows Nest, NSW 2650